



Application to Participate in a  
Contract Special Assessment District Agreement  
for Single Building Unit Sewer Connection

**Hamburg Township • 10405 Merrill Road, P.O. Box 157, Hamburg, MI 48139 • (810) 231-1000**

**Property Owner Information:**

**Applicant Signature:**

Parcel I.D. #: \_\_\_\_\_

\_\_\_\_\_

Property Owner Address: \_\_\_\_\_

Print Name: \_\_\_\_\_

\_\_\_\_\_

Date of Application: \_\_\_\_\_

\_\_\_\_\_

Phone: Day: \_\_\_\_\_

\_\_\_\_\_

Evening: \_\_\_\_\_

**NOTE: Submittal of Application does not guarantee financing through a contract special assessment district or connection to Hamburg Township Sewer System.**

Please be advised that applications to participate in a Contract Special Assessment District will be accumulated for a period of time to be determined by the Township Supervisor. The expected time frame to collect enough applications to establish a contract special assessment district is between six months to one year. An additional six months to one year period may also be needed to complete financing and construction for your sewer connection.

Are you currently experiencing a failing septic system? \_\_\_\_\_ Yes \_\_\_\_\_ No.

Please described the current functioning capacity of the septic/drain field: \_\_\_\_\_

**\*Please attach site plan showing location of structure on lot, including well and septic tank location.**

***THIS SECTION TO BE COMPLETED BY SEWER COMMITTEE***

Application Approved: \_\_\_\_\_ Application Denied: \_\_\_\_\_ Date: \_\_\_\_\_

Sewer Committee Signature: \_\_\_\_\_

***THIS SECTION TO BE COMPLETED BY THE HAMBURG BOARD OF TRUSTEES***

Application Approved: \_\_\_\_\_ Application Denied: \_\_\_\_\_ Date: \_\_\_\_\_

Supervisor: \_\_\_\_\_ Clerk: \_\_\_\_\_

Non-Refundable Application Fee Due: \$ 200.00 Date Paid: \_\_\_\_\_ Receipt Number: \_\_\_\_\_

## **PROPOSED SANITARY SEWER PROJECT - *Common Questions & Answers:***

### **1. Why are sanitary sewers needed?**

Septic systems may fail allowing septic effluent to leach into the lake and groundwater. This is a public and environmental health hazard that will be alleviated with sanitary sewers. Properties have restrictive use and cannot be improved until an environmentally acceptable sewage disposal system is available.

### **2. What type of sanitary sewer system would be built?**

A low-pressure sewer system with individual grinder pumps which is being used throughout Hamburg Township.

### **3. Why would the Township construct this type of sewer system?**

An analysis of lifetime costs in similar areas shows that the pressure sewer system is more cost-effective and less destructive to the landscape than a gravity sewer system.

### **4. What does a grinder pump station look like?**

The visible parts are a 30-inch-diameter olive green or black cover on a tube rising approximately 8 inches above the ground surface. The grinder pump will be located with the agreement of the property owner and is often hidden by landscaping.

### **5. How does the grinder pump station operate?**

Using electrical power from your home, the pumps will typically run for about 45 seconds after approximately 12 to 15 gallons of wastewater have drained from the building sewer.

### **6. What happens when the electrical power goes out?**

Because most homes have a well with an electrical pump, your home will not be generating much water in the event of electrical failure. However, the Township Department of Public Works (DPW) will handle routine and emergency operation and maintenance utilizing portable generators.

### **7. Could wastewater from the public sanitary sewer back up into the house?**

No. Two check valves prevent the reverse flow.

### **8. Where would the sewers be constructed?**

Collector sewers would be constructed within the green belt along the road right-of-way. Pressure sewers would be installed via directional drilling, which pulls the pipe underground, avoiding destruction and restoration of the ground surface.

### **9. What will be done to repair damage to property during construction?**

The Contractor will restore the property to its original condition. This will be monitored via before/after video.

### **10. When would sanitary sewers be constructed?**

If approved, the sewer system could be operational within approximately 12 months.

### **11. What is the probable cost?**

The total project cost will be assessed based upon the number of residential equivalent units (REUs) applicable to each parcel. The greater the number of REUs within the service area, the lower the cost per benefiting parcel. Preliminary costs to serve this area and finance through a special assessment district would result in an assessment for a single-family home in the amount of \$13,000 - \$15,000 per connected REU on an occupied parcel, or \$7,000 to \$8,000 per vacant parcel. Financed through special assessment bonds, the annual principal payment would be \$ 650 to \$750 per occupied parcel, or \$350.00 to \$400.00 per vacant parcel plus interest on the unpaid balance. The interest amount will be determined by the market interest rate for the sale of the Bonds at the time the project is financed. The actual cost will be determined after final engineering for the project is completed and will be presented to property owners prior to establishing a special assessment district.

### **12. How would assessments be paid?**

Payments would be made annually through the winter tax bills over a period of twenty (20) years.

### **13. What costs are not included in the project cost?**

The cost to connect the building sewer to the grinder pump station and to abandon the septic tank; approximately \$1.50 per month for electricity to power the grinder pump station; \$30.50 per month for operation, maintenance, and repair of the sewer system facilities; and wastewater plant debt retirement, billed quarterly in the amount of \$91.50.

### **14. Are assessment costs tax deductible?**

The principal payments are not tax deductible. However, the interest payments may be. Please check with your tax preparer regarding this issue.

### **15. What if an assessed property is to be sold?**

Some purchaser's bank or mortgage company will require the assessment paid off at closing and others will not.

### **16. Can the assessment be paid off immediately, or can extra payments be made?**

Yes, you will be notified of the exact amount of the assessment prior to it being added to your tax bill. In the event you pay this assessment in full within the time allowed, you will not have to pay interest and no amount will be added to your taxes. If the full amount is not paid, the remaining principal and interest will be added to your tax bill until it is paid in full.

### **17. Must all properties be connected to the sanitary sewer system?**

Yes. All structures within a special assessment district must be connected. All structures outside of the district that are within 400 feet of an available sewer must connect if the septic system fails or the structure is modified or enlarged.

### **18. Is there help available for those who cannot afford the assessment and connection costs?**

The State of Michigan has established a process, which allows a qualifying property owner who demonstrates hardship annually to defer payment of the assessment.

**Any Additional Questions? Please call the Township Office at (810) 231-1000 Ext. 210; Utilities Coordinator**



FAX 810-231-4295  
PHONE 810-231-1000

P.O. Box 157  
10405 Merrill Road  
Hamburg, Michigan 48139

A GREAT PLACE TO GROW

## Policies and Procedures For The Establishment of Contract Special Assessment Districts

The following procedures will apply to all property owners who are seeking to connect a single family building unit to the Hamburg Township Sewer System and who want to finance the cost by agreeing to participate in a contract special assessment district. However, a property owner will not be assured of obtaining subject financing simply by completing the below steps. Any property owners seeking to connect more than one building unit to the Hamburg Township Sewer System shall comply with the provisions of the "Policies and Procedures for Development Project Sewer Connection" to the Hamburg Township Sewer System.

1. The property owner shall submit to the Township Utilities Department a completed application to participate in a Contract Special Assessment District together with a non-refundable application fee of \$200.00.
2. The DPW Technician will meet with the property owner on location to determine a grinder pump station location and prepare a site plan.
3. The Sewer Committee will review the site plan, obtain any necessary engineering input and determine whether the proposed connection applied for complies with the sewer master plan and is in the best interest of the Township.
4. In the event the proposed connection is determined by the Municipal Utilities Committee not to meet the above requirements, the property owner will be notified of this finding.
5. In the event the proposed connection is determined by the Municipal Utilities Committee to meet the above requirements, the Utilities Department will thereafter obtain an estimate of the cost to complete the sewer connection to the property owner's building.
6. The Utilities Department will then supply the estimated costs to the property owner.
7. The property owner will then execute a contract together with any easements deemed necessary by Hamburg Township in a form to be prescribed by the Township.
8. Pursuant to this agreement, the property owner will agree to pay all costs of installation, the appropriate connection fee per Ordinance #69, all equipment charges, legal costs, engineering costs, as well as an administration fee of \$600.00.

9. Applications to participate in a Contract Special Assessment District will be accumulated for a period of time to be determined by the Supervisor, but expected to be in the range of six months to one year.
10. In the event the Supervisor determines that a sufficient number of applications have been received to warrant funding and construction of the connections he shall summarize them and present them to the Hamburg Township Board of Trustees.
11. Once the Supervisor has submitted the Contracts for Special Assessment Districts signed by the owner to the Board, no additional applications will be accepted for inclusion in that particular group submitted for approval.
12. In the event the Township Board approves financing by adopting the appropriate resolutions to fund the group of Contracts for Special Assessment Districts submitted, the Supervisor shall, with the aid of financial and legal service, obtain funding for the construction of the connections.
13. Upon completion of the financing and receipt of the proceeds, the Supervisor shall authorize the construction of the property owners' connections to the Hamburg Township Sewer System.
14. In the event that the sewer connection application submitted by the property owner is for a new home to be constructed in Hamburg Township and a contract special assessment district is requested, a Land Use Permit will not be issued until such time as a special assessment district contract has been signed by the property owner and bonds have been sold to finance the sewer connection.

# ***ESTABLISHING NEW SANITARY SEWER SPECIAL ASSESSMENT DISTRICTS***

Project Name/Location: \_\_\_\_\_

NOTE: SANITARY SEWER SPECIAL ASSESSMENT DISTRICTS ARE ESTABLISHED FOR UP TO A **20-YEAR** PERIOD TO CORRESPOND WITH THE BOND RE-PAYMENT SCHEDULE.

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## **PROCESS OF ESTABLISHING NEW SANITARY SEWER S.A.D. DISTRICTS**

**Step 1: Initial Contact.** Resident or Property Owner will contact Township inquiring about or requesting that their subdivision or Lake build a sanitary sewer system through a Special Assessment District.

**Step 2: Drafting of Petition Form.** Prepare the petition form that will be signed by the property owners in the district based upon the proposed service area. All properties located in the special assessment district must be contiguous with each other and will include both vacant and occupied parcels. Method of assessment is generally determined by the Board of Trustees.

**Step 3: Prepare Map of Proposed District** – Must be included with petition form. Confirm district property information to make sure all parcels located in the proposed sewer service area are included in district boundary map.

**Step 4: Prepare Common Question and Answer Pamphlet for District.** This information can be handed out by the circulator of the petition if property owners have any general questions about the sewer system. The Township telephone number and contact person is listed on the bottom for further questions.

**Step 5: Draft and Mail Letter explaining the proper circulation method of the Petition Form and District Map to the property owner requesting petition to establish district.**

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## **PROJECT TRACK SHEET: Once Signed Petitions Returned to Township**

- \_\_\_ Verify signatures on petitions as the property owners of record.
  - \_\_\_ Calculate total land area for all properties located in the proposed sewer district.
  - \_\_\_ Calculate total land area owned by property owners who signed in favor or establishing district.
  - \_\_\_ If less than 50% of the total land area property owners are in favor of establishing the district, the property owners are notified of results and no further action is taken on the project unless more petitions are received by Township.
  - \_\_\_ If more than 50% of the total land area property owners are in favor, the project is forwarded to Township Board for review and potential acceptance of the project.
  - \_\_\_ Prepare project information sheet, prepare map showing property owners in support, copy petitions, and provide all information to Clerk.
  - \_\_\_ Prepare Supervisor's Certificate to acknowledge receipt of petitions and confirm support of property owners within proposed district.
  - \_\_\_ Draft Resolution #1 *Reimbursement Resolution* to allow Township to sell tax-exempt bonds in order to finance project and reimburse itself for the expenses of the project..
  - \_\_\_ Draft Resolution #2 *Resolution to Proceed with the Project and Directing Preparation of the Plans and Cost Estimates.*
  - \_\_\_ **If project approved, Board passes Resolution #1 and Resolution #2 tentatively declaring intent to create S.A.D. and directing the Township engineer to develop the Estimate of Project Cost.**
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**AFTER ESTIMATE OF PROJECT COST HAS BEEN PREPARED BY ENGINEER:**

- \_\_\_ Draft Resolution #3 Resolution Scheduling the First Public Hearing and Directing the Issuance of Statutory Notices.
- \_\_\_ **Township Board passes Resolution #3 scheduling the first public hearing for the proposed district and setting the date and time for the meeting.**
- \_\_\_ Must compile mailing list of all property owners included in proposed district, including tax i.d. numbers for the parcels, correct and updated property owner names and mailing addresses.
- \_\_\_ Prepare large map of the potential sewer district using G.I.S. showing district boundaries, all parcels to be included in the district, and all properties in favor of establishing S.A.D. Mount to foam poster board to be displayed at Public Hearing.

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**NEWSPAPER/INDIVIDUAL NOTICES FOR 1<sup>st</sup> HEARING** – Published in **Ann Arbor News** – Livingston County Addition (or other Newspaper of general circulation as set by Township Board).

Sent to Clerk on: \_\_\_\_\_ To be Published On: \_\_\_\_\_

Notice in newspaper must be published twice before the hearing in a newspaper circulating in the Township.

THE FIRST NOTICE MUST BE PUBLISHED AT LEAST 10 DAYS BEFORE THE DATE OF THE HEARING.

The Township is also required to give notice to each property owner or party with an interest in property to be assessed, whose name appears on the last township tax assessment roll, by first class mail at least 10 days before the hearing.

Date Notice Mailed to Property Owners: \_\_\_\_\_

- \_\_\_ Prepare and sign Affidavit of Mailing stating that Notices were mailed by first class mail to property owners, have signature notarized, and provide copy of Notice along with list of names and addresses of who Notices were mailed to and provide to Township Clerk.

\* This Notice must contain all information regarding the proposed sanitary sewer service area, the project details, and the process of establishing a special assessment district along with date, time and place of hearing.

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**1<sup>st</sup> Public Hearing** –

- \_\_\_ Property owners given opportunity to object to establishing district.
- \_\_\_ Property owners given opportunity to object to proposed district boundaries.
- \_\_\_ Property owners given opportunity to object to amount of preliminary estimate of project cost.

\* \_\_\_ **If project still approved by property owners after 1<sup>st</sup> Public Hearing, Township Board passes Resolution #4 Resolution Approving Project Details and Directing Preparation of the Special Assessment Roll.**

\_\_\_ Township Board passes motion authorizing Township engineer to begin final engineering for sanitary sewer project. This will include collecting topographical information, designing the sewer collection system, meeting with property owners to determine locations for grinder pump stations, permanent utility easement locations, etc. This process may take 6 months up to 1-year to complete.

\_\_\_ Township Bond Council is notified of the sanitary sewer project and prepares the Project Timing and Finance Schedule in order to begin the process of preparing for bond sales for the project.

\_\_\_ Utilities Coordinator prepares all grinder pump station easement grant forms and sends to property owners for execution. An easement grant form must be signed by the property owner before the contractor can install the grinder pump station and service lateral connection.

- \_\_\_\_\_ Township Engineer finishes engineering of sanitary sewer system and provides Township with completed construction drawing and MDEQ permit application to request issuance of permit to begin construction of the sanitary sewer system. State can take up to 45 – 90 days to issue permit.
- \_\_\_\_\_ Utilities Coordinator to prepare project Assessment Roll listing all property owner names, addresses, property legal descriptions, and amount of assessment based on the engineer’s final calculated project costs using the Blanket Bid contract pricing or from bids received from approved Contractors.
- \_\_\_\_\_ Prepare Supervisor’s Certificate for Assessment Roll and attach to roll before presenting to Clerk.
- \_\_\_\_\_ Draft Resolution #5 Resolution Acknowledging the Filing of the Special Assessment Roll, Scheduling a Public Hearing, and Directing the Issuance of Statutory Notices.
- \_\_\_\_\_ **Township Board passes Resolution #5 scheduling the second public hearing for the proposed district and setting the date and time for the meeting.**
- \_\_\_\_\_ Bond Council is notified to attend this meeting if property owners have any questions regarding the issuance of bonds to construct sewer district or any financially related questions.

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**NEWSPAPER/INDIVIDUAL NOTICES FOR 2<sup>nd</sup> HEARING** – Published in **Ann Arbor News** – Livingston County Addition (or other Newspaper of general circulation as set by Township Board).

See Publication and Mailing Notice requirements above under 1<sup>st</sup> Public Hearing.

\* This Notice must contain a listing of all parcel numbers located within the proposed special assessment district along with a map of the district boundaries along with date, time and place of hearing. This Notice must also clearly state that property owners must object to the amount of their assessment if they want to appeal to the Michigan Tax Tribunal.

- \_\_\_\_\_ Prepare and sign Affidavit of Mailing stating that Notices were mailed by first class mail to property owners, have signature notarized, and provide copy of Notice along with list of names and addresses of who Notices were mailed to and provide to Township Clerk.

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**2nd Public Hearing** –

- \_\_\_\_\_ Draft Resolution #6 Resolution Confirming Special Assessment Roll. Forward to Clerk to inclusion on Township Board Agenda.
- \_\_\_\_\_ Property owners given opportunity to object to amount of assessment for sanitary sewer service.
- \_\_\_\_\_ **After Second Public Hearing, Township Board passes Resolution #6 confirming the special assessment roll and issuing the Warrant to the Treasurer instructing the Treasurer’s Department to the collect the assessment amount on the property taxes.**
- \_\_\_\_\_ Provide any necessary documentation to property owner concerning special assessment district if they wish to appeal their assessment to the Michigan Tax Tribunal. Property owners in two of the districts have done so.

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**PREPARATION FOR SALE OF BONDS TO FINANCE SEWER CONSTRUCTION PROJECT:**

- \_\_\_\_\_ Draft Resolution # 7 Resolution Authorizing filing with the Michigan Department of Treasury.
  - \_\_\_\_\_ **Township Board passes Resolution #7 authoring the filing of the bond package with the Michigan Department of Treasury in order to apply for approval to sell the bonds.**
  - \_\_\_\_\_ Draft Resolution # 8 Bond Authorizing Resolution.
  - \_\_\_\_\_ **Township Board passes Resolution #8 authoring the preparation and sale of bonds to finance the sewer construction project.**
  - \_\_\_\_\_ Bond Council receives authorization and prepares the bonds and schedules date for selling of the bonds.
  - \_\_\_\_\_ Bonds are sold to finance construction of sewer system. Financial Planners, Bendzinski & Co. will prepare amortization schedule showing interest rate for project and the annual cost for property owners that will be assessed on their property taxes.
  - \_\_\_\_\_ Copies of the amortization table should be mailed to all property owners located in the special assessment district. Interest charged on sewer assessments may be tax deductible for property owners and information will reduce number of telephone calls to township.
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## AWARD PROJECT TO CONTRACTOR:

**Note:** If Blanket Bid Contract not in use at the time, project must be sent out to bid to the qualified Contractors. This can be done once the final engineering has been completed and the bid specifications drafted by the Township engineer.

- \_\_\_\_\_ If bidding of the project is necessary, Prepare Contract for Services based upon approved and accepted contractor bid and have signed by Contractor, Supervisor, and Clerk. Establish construction schedule with Contractor and verify schedule for invoicing for services rendered by Contractor.
- \_\_\_\_\_ If bidding is not necessary, skip to next step.
- \_\_\_\_\_ Draft Resolution # 9 *Award Resolution*.
- \_\_\_\_\_ **Township Board passes Resolution # 9 and issues the Notice to Proceed to the authorized Contractor to begin construction of the sanitary sewer collection system once the MDEQ issues the construction permit.**
- \_\_\_\_\_ Construction of the sanitary sewer system begins.
- \_\_\_\_\_ Hold regular pre-construction and during construction meetings with Contractor, Township engineer, and DPW Administrator to make sure project is running smoothly.
- \_\_\_\_\_ Make sure all restoration and restoration complaints are taken care of at the end of the sewer system construction.

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## ADMINISTRATION OF SEWER DISTRICT:

- \_\_\_\_\_ Once construction of sewer system has been complete, Notify property owners that they have **12 months** to complete their 4" building sewer connection from the house to the grinder pump station.
- \_\_\_\_\_ Provide property owners with list of approved Contractors or directions on how to complete building sewer connection.
- \_\_\_\_\_ Prepare *Sewer Connection Application* form for Contractor or homeowner making building sewer connection in order to get Sewer Permit from Livingston County Building Department. County charges \$66.00 for inspection fee.
- \_\_\_\_\_ Once County Building Department completes inspection of sewer connection, an approval or rejection will be issued and a copy forwarded to Hamburg Township.
- \_\_\_\_\_ Provide Utility Billing Clerk with copy of approved building sewer connection permit and grinder pump start-up sheet in order to begin billing of **O & M charges**.
- \_\_\_\_\_ Continue to provide customer service support to all property owners located in sewer district.



# Valuing Green Home Designs: A Study of ENERGY STAR® Homes

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**Authors** Bryan Bloom, MaryEllen C. Nobe, and Michael D. Nobe

**Abstract** A number of researchers have attempted to isolate the incremental effect of energy efficiency on home value; however, few studies have benefited from the availability of a comprehensive and continuous indicator of home energy efficiency such as the ENERGY STAR® program. This case study builds on past research by comparing original sale prices between ENERGY STAR qualified homes and non-ENERGY STAR qualified homes in Fort Collins, Colorado. Sale prices were analyzed using hedonic regression analysis. Results indicate that ENERGY STAR homes originally sold for \$8.66 more per square foot than non-ENERGY STAR homes.

Homebuyers in the United States play a significant role in reducing fuel consumption and the resulting carbon emissions. “The housing sector provides a number of opportunities to address two urgent national goals—reducing greenhouse gases and U.S. foreign oil dependence,” (Fernald, 2009). Total energy consumption, including both primary energy and renewable energy, in the U.S. residential sector has averaged 18.093 quadrillion Btu between 1980 and 2005 according to the U.S. Energy Information Administration (EIA, 2010). Residential energy consumption was 15.759 quadrillion Btu in 1980; by 2005, it had increased 37% to 21.659 quadrillion Btu (EIA, 2010). In comparison, the commercial sector averaged 14.105 quadrillion Btu and the transportation sector averaged 23.249 quadrillion Btu per year between 1980 and 2005 (EIA, 2010). In 2005, the majority of residential energy consumption was for space and water heating (Elliot, Langer, and Nadel, 2006).

Beyond the impact of residential energy consumption on total U.S. energy consumption, the level of energy efficiency designed into a home also has a direct bearing on homeownership costs. According to the Consumer Expenditure Survey, 34% of homeowners’ average annual expenditures were on housing in 2009 (Bureau of Labor Statistics, 2010). Of the amount spent by homeowners on their housing, 21.5% went to pay for utilities. In comparison, 13% of household annual expenditures were on food and 16% were for transportation costs in 2009. Since housing expenditures comprise such a significant portion of the average household budget, any reduction in operating and maintaining of homes will have direct benefits to homeowners in terms of reducing the overall cost of housing. By choosing to place more value on unseen amenities such as added insulation, infiltration reduction, duct sealing, or high efficiency furnaces versus other more visible amenities (i.e., marble flooring and granite counters), homeowners can realize significant reductions in utility requirements necessary to heat and cool

their homes (NAPEE, 2011). For example, homes designed and built to ENERGY STAR® standards are at least 15% more energy efficient than homes built to the 2004 International Residential Code, while many are 20%–30% more efficient than standard homes (“Features and Benefits”, n.d.; NAPEE, 2008). The result is both reduced homeownership costs and reductions in U.S. residential energy consumption and carbon emissions (Elliott, Langer, and Nadel, 2006; Fernald, 2009).

Although it is evident that energy-efficient homes can play a significant role in reducing U.S. energy consumption, greenhouse gas emissions, and home ownership expenses, widespread adoption and incorporation of energy-efficient designs and construction practices have been slow. Currently, energy-efficient homes only account for 21% of U.S. new home construction (2009 ENERGY STAR Qualified New Homes, 2010). Researchers have identified numerous reasons for this lack of implementation, including transaction costs, lack of information, uncertainty of energy savings, split incentives, and initial capital investment (Elliott, Langer, and Nadel, 2006; Fuller, 2009). Significant to this study are homebuilders’ perceptions that initial capital investments for increased energy efficiency will not be recaptured through energy savings or capitalization of these investments when the home is sold (Galuppo and Tu, 2010). As long as these perceptions persist among homebuilders, they will remain reluctant to invest in these systems and the residential market will continue to be a significant contributor to U.S. greenhouse gas emissions (Lande, 2008). Ultimately, the value consumers place on energy-efficient residential design either encourages or hinders further incorporation of energy-efficient features into homes (Galuppo and Tu, 2010).

Compounding this issue is the relatively short periods for which U.S. homeowners own their homes. On average, U.S. homeowners tend to sell their home every eight years (Dacquist, Emrath, Laquatra, and Laitner, 2001; Lande, 2008). Generally, for homeowners to justify additional design and construction costs related to increasing energy efficiency from an economic stand point, they must believe that they will recoup the added capital investments either through (1) reduced utility bills during the time they own their home, (2) an increased sales price, or (3) some combination thereof (Lande, 2008). Because payback periods for many energy efficient upgrades can easily exceed the duration homeowners typically own their homes, and little evidence exists to give them confidence that these costs will be capitalized into the sales price, many homeowners rationally conclude that added construction costs for increased energy efficiency are not economically justifiable.

Ultimately, homebuyers play a significant role in determining what role the residential sector will play in addressing U.S. energy consumption, greenhouse gas emissions, dependence on foreign oil, and home ownership costs. Through their purchasing behaviors, homebuyers either support or hinder progress within the residential sector in meeting the aforementioned objectives. If homebuyers are not willing to realize the capitalization of increased energy efficiency in the purchase of a home, builders will remain reluctant to include energy-efficient design and strategies in their projects. For energy-efficient building practices to

become more prevalent, it must be established that homebuyers are willing to pay more for energy-efficient homes, which is consistent with basic economic theory (Laquatra, Dacquisto, Emrath, and Laitner, 2002; Lande, 2008).

Incorporation of energy-efficient designs and construction techniques offer have the potential to offer immediate cash-flow benefits on monthly or yearly returns. As a result, buyers should be willing to pay more for homes with lower utility bills in anticipation of savings on future costs of operation, and consequently, sellers should attempt to charge more for homes with energy efficient features (Laquatra, Dacquisto, Emrath, and Laitner, 2002). Mandell and Wilhelmsson (2011) found that homeowners are willing to pay for increased energy efficiency. Other studies, however, that have sought to provide empirical evidence that homebuyers are in fact paying more for energy-efficient homes have suffered from the challenges inherent in quantifying energy efficiency in a manner that is recognized in the marketplace (Dacquisto, Emrath, Laquatra, and Laitner, 2001). Homes are complex commodities; finding historical and observable data to support the hypothesis that energy efficiency positively impacts housing values is difficult, especially when numerous other aesthetically-pleasing features exist that presumably take precedence over utility bills. Previous research studies attempting to capture and report the incremental value of energy efficiency have not had the benefit of utilizing a comprehensive measure of home energy efficiency. Not until recently has an assessment tool existed that allows researchers to easily identify which homes are more energy efficient. When the Environmental Protection Agency (EPA) extended its ENERGY STAR rating to homes, it created an easily identifiable metric of residential energy efficiency based on a Home Energy Rating System (HERS) index. The purpose of this study is to extend previous research to approach a more accurate answer to the question of whether or not and to what extent housing markets capitalize the value of energy efficiency using ENERGY STAR labeling.

The research question guiding this study is: Do homes constructed with more energy-efficient building systems, as qualified by the ENERGY STAR labeling program, have higher market values than non-ENERGY STAR qualified homes? If so, how much more are they worth?

Based on this question, the following hypothesis was developed:

H<sub>1</sub>: ENERGY STAR rated homes will have higher sales prices than comparable non-ENERGY STAR rated homes in the study area.

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## Review of Literature

The literature review focuses on prior studies of capitalization of energy efficiency within the residential markets. Although this topic has received considerable attention in the commercial real estate sector (both in the U.S. and internationally), there has been considerably less research relevant to this study conducted in the residential section. In 2001, the EPA sponsored a comprehensive analysis of published research literature titled *The Value of Energy Efficiency in Housing*:

*Review and Analysis of the Literature* (Dacquisto, Emrath, Laquatra, and Laitner, 2001). The report presents a review of published research on the capitalization of energy efficiency in housing over a 20-year history. Their report focused primarily on using past applications of hedonic regression analysis and, to a lesser extent, willingness-to-pay surveys to determine if energy efficiency is reflected in home values.

Sopranzetti (2010) explains hedonic regression as an analytical process that allows for the deconstruction of home prices into their component parts to determine how individual components contribute to the overall value. Similarly, Meese and Wallace (1997) define hedonic regression as a way of estimating the value of a complex commodity with a bundle of attributes, such as a house, by modeling the price of that commodity as a function of the particular set of attributes it possesses. Each attribute is valued independently and contributes its individual value to the overall value of the commodity, making it easier to observe the market value of each attribute by itself. For example, appraisers can use hedonic regression to determine the value of house attributes such as structural characteristics (e.g., square footage, number of rooms, number of bathrooms, and known defects), neighborhood characteristics (e.g., quality of the school system and/or neighborhood), or location within a given market (Sopranzetti, 2010). Energy efficiency, the attribute of most interest to this study, can also be identified and included as an analysis component in hedonic regression to determine its contribution to overall home value.

### *Hedonic Regression Studies*

The literature on hedonic house price models reviewed for this study dates back two and a half decades and includes many different methodologies. A summary of studies reviewed is provided in Appendix A. The collective results of these studies (Exhibit 1) indicate varying levels of capitalization of energy efficiency when homes are sold (Nevin and Watson, 1998; Dacquisto, Emrath, Laquatra, and Laitner, 2001); yet, the body of research as a whole suffers from challenges associated with identifying levels of residential energy efficiency. This shortcoming hinders integration of these findings into property appraisals; as a result, homebuilders are reluctant to trust that additional cost for increased energy efficiency design/construction will be capitalized in the future.

Some consistency is evident in the studies among the attributes identified for inclusion in the hedonic regression analysis (see Appendix A for a summary table), although considerable variations are also apparent and worthy of review. While all studies reviewed attempted to control for the various factors contributing to home value, all did so to a different degree. Furthermore, the studies reviewed included a wide range of sample sizes and variables in an effort to best identify the incremental market value of energy efficiency (Laquatra, 2002). An overview of the methodologies utilized in the studies is provided in Appendix B. In total, eight studies were reviewed. All but one were limited to small geographic markets and short periods of time. Sample sizes for these studies ranged from 67 to more than 15,000; the majority of studies had sample sizes between 81 and 505.

**Exhibit 1** | Key Results From Hedonic Studies

Reference	Key Findings	R <sup>2</sup>
Halvorsen (1981)	The 1974 spike in relative cost of fuel oil raised price differential between gas- and oil-heated houses to \$761 in 1974, and up to \$4,597 in the first half of 1975.	0.75
Corgel (1982)	Value of energy-efficient homes (with lower structural heat loss) was \$3,248 higher than inefficient homes.	0.73
Johnson (1983)	Home value increased by about \$20.73 for every \$1 in annual fuel bills.	0.80
Longstreth (1986)	A one inch increase in wall insulation increased home value by \$1.90 per square foot; a one inch increase in ceiling insulation increased home value by \$3.37 per square foot; high quality (energy efficient) windows increased home value by \$1.63 per square foot.	0.43
Laquatra (1989)	Home value increased by \$2,510 for each one-point decrease in thermal integrity factor.	0.67
Dinan (1989)	Home value increased by \$11.63 per \$1 decrease in fuel expenditures needed to maintain a home at 65 degrees F in average heating season.	n/a
Horowitz (1990)	Home value increased by about \$12.52 per \$1 decrease in electric bills, consistent with home buyers discounting savings at after-tax mortgage interest rate.	0.86
Nevin (1998)	Home value increased by about \$20 for every \$1 reduction in annual fuel bills.	0.41

Note: The sources are Nevin and Watson (1996) and Dacquisto, Emrath, Laquatra, and Laitner (2001).

Additionally, some of the samples looked strictly at new or nearly-new homes, some looked only at resale values, and others looked at all sales data within a given marketplace (Dacquisto, Emrath, Laquatra, and Laitner, 2001). Following is an overview of the variables used in each study reviewed.

*Structural Variables.* Structural variables account for the physical characteristics that contribute to home value (Sopranzetti, 2010). All of the studies reviewed included square footage as a structural variable while also controlling for property age to some degree. Additional structural variables most often included in the models were number of bathrooms, lot size, fireplaces, and garages. Only two of the eight studies reviewed account for all of the aforementioned variables. In some cases, the absence of certain variables may be the result of data limitations. Nevertheless, these variables have been found to have significant effects in the other regression analyses; failure to include these variables would compromise internal validity.

*Neighborhood and Locational Variables.* Neighborhood and locational variables represent the locational quality of a property within a community (Sopranzetti, 2010). The handling of neighborhood and locational variables differed significantly across the reviewed studies. These factors are not binary variables; they are not *have* or *have-not* items. As a result, it is not easy to quantify them

on a numerical scale, unlike *size* and *age*, making it difficult to measure the impact of their exclusion or mistreatment in a regression study. All but two of the reviewed studies included some degree of locational effects. For example, one study used distance to the central business district, while another used distance to the nearest interstate ramp. In smaller sample sizes with relatively few subdivisions, it may be easier to control for locational effects and more simplified criteria may suffice.

*Energy Efficiency Variables.* Energy efficiency variables represent different measures of energy conservation resulting from home design/construction. In the studies reviewed, significant differences existed on the approach used to identify energy efficiency. Some treated energy efficiency as a binary variable while others used utility bills as proxies for energy efficiency. For example, in one study energy efficiency was based solely on the type of fuel (natural gas or oil) that was used to heat the house. Another study based energy efficiency on roof temperatures as measured using infrared aerial photographs. All of these studies ignored other contributing factors to home energy efficiency, which is reflective of the difficulty inherent in identifying a single measure of energy efficiency. Because energy efficiency is clearly not a simple either-or phenomenon, it will be difficult to generalize results from studies employing this sort of methodology.

Other studies reviewed by Dacquisto, Emrath, Laquatra, and Laitner (2001) identify energy efficiency as the sum of four attributes: inches of wall insulation, inches of ceiling insulation, presence of storm windows and/or thermopane glass, and presence of wood/vinyl window frames. In these studies, separate coefficients are assigned to represent the implicit price of each of these features. A major limitation of this approach is that information on specific physical features contributing some level of energy efficiency may not be available in many data sets.

One particularly relevant study reviewed by Dacquisto, Emrath, Laquatra, and Laitner (2001) is the Laquatra (1986) study (Appendix B). Laquatra constructed a continuous variable called the “Thermal Integrity Factor” (TIF) to represent varying levels of energy efficiency. TIF assesses the annual heating load as measured in Btu per square foot of heated floor space per heating degree day, although it does not adjust for equipment efficiency, duct and distribution system losses, differences in fuel type, and energy usage for water heating, cooling, and other purposes. All of these deficiencies could result in differences in utility bills for houses with the same TIF and floor area (Dacquisto, Emrath, Laquatra, and Laitner, 2001). Application of this approach is also limited by the ability to obtain the data needed to calculate the TIF variable.

Based on the review of these studies, a minimal level of consistency can be identified with respect to which structural, neighborhood, and locational variables should be included in hedonic regression analysis of home values. Prior measures of energy efficiency, however, vary considerably. It is clear from the studies reviewed that identifying a usable measure of energy efficiency has been problematic. As a result, replication and application of study results have been limited, as evidenced by a general lack of application within the appraisal industry.

The measures of efficiency utilized in these studies were based on information that is simply not easily accessible to appraisers.

### *Improving Methodology*

Despite the limitations of research investigating how housing markets capitalize the value of home energy improvements, it still remains consistent with economic theory that such a phenomenon occurs to some degree. Improved methodologies are needed to enable more reliable and implicit conclusions; hedonic regression models seem to be the most effective way of achieving these conclusions (Dacquisto, Emrath, Laquatra, and Laitner, 2001; Sopranzetti, 2010). While each regression study possesses its own set of weaknesses, the ones reviewed here do take significant steps toward employing a reliable analysis. Taken together, all of the models provide a seemingly comprehensive list of explanatory variables that should encourage future studies to include as many of them as possible. The challenge remaining is to incorporate better identifiers of energy efficiency that are also accessible to appraisers.

Since these studies were conducted, better measurements of energy efficiency have become available, such as ENERGY STAR labeling for homes, LEED for Homes, and the National Green Building Standard. Third-party ratings of homes as either green or energy efficient provides a paper trail for appraisers to incorporate into appraisals. This paper trail provides the documentation necessary to support the analysis of a high performance home and measurements of contributory value (Admoatis, 2010).

### *Green Home Assessment Tools*

The green building industry has grown substantially in the last few decades. At the same time, several green home assessment tools have entered the residential market, providing consistent assessments of varying levels of energy efficiency and essentially creating a branding for energy-efficient homes that is readily identifiable. Current assessment tools for the residential market include the Environmental Protection Agency's (EPA) ENERGY STAR rating, the U.S. Green Building Council's LEED for Homes, and the National Association of Home Builders' National Green Building Standard. Each of these assessment tools sets forth various criteria to ensure that the homes certified met a minimum level of increased energy efficiency compared with more common building designs and construction practices. While each assessment tool has its strengths and weaknesses, it is not the purpose of this paper to provide an in-depth review of these assessment tools and the comparable levels of energy efficiency between assessments. Rather, the purpose is to assess the impact of energy efficiency branding on the ability to isolate increases in home value as a result of increased energy efficiency. Since consumers are likely to be more familiar with the ENERGY STAR rating system, which has been in existence longer than the other two rating systems, this system was chosen for use in this study.

*ENERGY STAR.* In an attempt to reduce the emission of greenhouse gases, the EPA introduced the ENERGY STAR program in 1992. The purpose of this voluntary program was to identify and promote energy-efficient products designed

to reduce greenhouse gas emissions. The ENERGY STAR label was initially listed only on items such as major appliances, office equipment, lighting, and home electronics. It has since expanded to include the construction of new homes, taking on a whole-house approach to measure energy efficiency. To qualify as ENERGY STAR labeled, a home must (a) meet the appropriate Home Energy Rating System (HERS) Index, (b) be verified and field-tested in accordance with the Residential Energy Services Network (RESNET) Standards by a RESNET-accredited provider, and (c) meet all applicable codes (“The Performance Path,” n.d.).

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## Methodology

A sample of 300 homes in Fort Collins, Colorado were selected to test the research question and related hypothesis guiding this study. The sample consisted of 150 ENERGY STAR qualified homes and 150 non-ENERGY STAR qualified homes. While this sample selection limits the application of the results to a broader population, it is within the range of sample size commonly utilized for similar studies. Sample homes were identified using energy rating data available through E-Star Colorado and the county assessor’s records. For each ENERGY STAR home included in the data set, a comparable home in the surrounding area was identified. To control for the considerable effect of location on home price, comparable homes were identified as close to the ENERGY STAR homes as possible based on address information. Generally comparable homes were at most 2–3 miles from the ENERGY STAR homes. It should be noted that although Fort Collins is a college town, all of the homes included in the study were in newer subdivisions that were located away from the campus community. Further, the study is delimited to single-family detached homes constructed during or after 1999 since newer homes have presumably higher levels of energy efficiency. Delimiting the study to nearly new homes also avoids the challenges of evaluating efficiency across homes of vastly different ages (Adomatis, 2010). Sales for all homes occurred between 1999 and 2005. When selecting comparable properties, it was also important to ensure that these properties were not infarct ENERGY STAR homes. To control for this, the builder name listed in the county assessor’s records was cross-checked with the list of participating ENERGY STAR builders as listed on the ENERGY STAR website.

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## Data and Analysis

Consistent with related literature on hedonic regression, the regression used in this study contains several independent variables (Exhibit 2). Original sale price per square foot is the dependent variable. The expected relationship between each independent variable and the dependent variable is indicated under the heading *Expected Relationship* (Exhibit 2). All of the model variables, with the exception of *BaseFin*, *Quality*, *CovProch*, and *ENERGYSTAR*, are scale variables. Variables appearing with a subscript “d” are considered dummy variables. These variables were measured in binary terms, whether or not a feature is present. For dummy variables, a value of 1 was given if the feature was present and 0 if the feature



**Exhibit 2** | Independent Variables and Expected Sign of Coefficient

Variable	Description	Expected Relationship
<i>Age</i>	Age of home in years	–
<i>TotalSF</i>	Total finished square feet of home	+
<i>LotSF</i>	Size of lot in square feet	+
<i>BaseSF</i>	Total basement square feet	+
<i>BaseFin<sub>(d)</sub></i>	Whether or not home has finished basement	+
<i>Stories</i>	Number of stories	+ / –
<i>Bedrooms</i>	Number of bedrooms	+
<i>Bathrooms</i>	Number of bathrooms	+
<i>Quality<sub>(d)</sub></i>	Superior quality of construction	+
<i>CovPorch<sub>(d)</sub></i>	Whether or not home has covered porch	+
<i>GarageSF</i>	Total garage square feet	+
<i>ENERGYSTAR<sub>(d)</sub></i>	Whether or not home is ENERGY STAR® qualified	+

Note: A subscript *d* represents a dummy variable.

**Exhibit 3** | Regression Coefficients and P-Values

Variable	Coeff.	p-Value
<i>Age</i>	–3.981***	<.001
<i>LotSF</i>	0.002***	.001
<i>TotalSF</i>	–0.038***	<.001
<i>BaseSF</i>	0.018***	<.001
<i>BaseFin<sub>(d)</sub></i>	0.395	.912
<i>Stories</i>	–6.594	.069
<i>Bedrooms</i>	–0.065	.969
<i>Bathrooms</i>	4.765	.057
<i>Quality</i>	5.830**	.013
<i>CovPorch<sub>(d)</sub></i>	–3.141	.362
<i>GarageSF</i>	0.043***	<.001
<i>ENERGYSTAR<sub>(d)</sub></i>	8.664**	.005
R <sup>2</sup>	73.5%	

Notes: A subscript *d* represents a dummy variable.

\*  $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$

was absent. The variable *Quality* is based on the quality indicator included in the county assessor's records.

Independent variables with a positive *Expected Relationship* are expected to increase house value as buyers are expected to pay more for houses with these amenities. *Age*, the only variable with a negative coefficient, is expected to have a negative effect on house value as buyers are expected to pay less for older homes (Exhibit 3). *Number of stories* does not have a predictable coefficient as the decision to buy a ranch or two-story house is presumably a decision of preference, not superiority. The *quality* variable is a seemingly subjective judgment of home construction, yet it is expected to be a strong indicator of home value. Quality ratings were provided within the county assessor's data. Homes could be rated as poor, average, or good. All of the homes in the data set were rated as being either of average or good quality.

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## Results

The result of the regression analysis for the independent variables identified in Exhibit 2 and the dependent variable *sales price* was statistically significant at  $p < .01$ . The  $R^2$  value was .735, indicating that 74% of the market valuation variation could be explained by the model. The effect size for the model was large ( $r = .857$ ) and it had good internal reliability as evidenced by a Cronbach's alpha of .317. The absolute coefficient ( $\beta$ ) values for the independent variables included in the model ranged from a low of 0.018 to a high of 8.664. Independent variables with beta approaching zero essentially have minimal effect on the *sales price*, while variables with larger beta have a greater impact on *sales price*.

Almost all of the non-energy coefficients have the expected signs with the exception of *TotalSF* and *Bedrooms*; the latter of which is not statistically significant ( $p = .969$ ). The coefficient of the *ENERGYSTAR* variable was statistically significant at  $p < .01$ . The beta of the *ENERGY STAR* variable is 8.664, higher than any other predictor variable.

*TotalSF*, one variable that would seem to be a strong predictor of home value, had a surprisingly negative coefficient, as well as a significant  $p$ -value. This may be because *TotalSF* is strongly correlated with other variables (e.g., *LotSF* and *Quality*) and that there might be a diminishing point of return for additional square footage (Nevin and Watson, 1998). Another possible reason for this result is that homebuyers that are more aware of the environmental impact of buildings may place more value on a smaller home that uses less materials and is more energy efficient. *Bedrooms* did not have a significant effect on sale price, even though this is typically a significant factor in residential pricing. Again, this may be due to inefficiency in recognizing collinearity. Future studies might benefit from considering and testing for collinearity and providing an approach to account for such correlation.

Two important limitations of these results were the exclusion of a location variable and the use of only ENERGY STAR rated homes. The model used in this study

did not address locational effects on home price. The data set used did not include quantifiable information on the market effect of locational variation. Instead, the researchers controlled for locational impacts by identifying comparables homes based proximity to ENERGY STAR certified homes. Had a locational variable been included in the data set, it is expected that the beta for *ENERGYSTAR* would be lessened but would not change from a positive to a negative relationship. Additionally, it would be expected that a significant amount of collinearity would exist between a locational variable and the *ENERGYSTAR* variable (and possibility *AGE*) since all of the homes were located in fairly new neighborhoods. It is recommended that future studies include a locational variable.

Further, employing the ENERGY STAR label and accompanying home energy rating as the determinant and measure of home energy efficiency does not take into account that homes without the ENERGY STAR label may have an equal or greater degree of energy efficiency. The purpose of focusing on ENERGY STAR homes was simplify the identification of energy efficient homes as this was identified as a significant challenge in previous studies. Additionally, identification of energy-efficient homes without third-party certification by either homebuyers or appraisers would require thorough understanding of design and construction strategies by homebuyers (or appraisers) as homes may be marketed as energy efficient when in fact they are not (Adomatis, 2010). Therefore, this study focused only on ENERGY STAR labeled homes. The purpose of this study, however, was to test the impact of third-party certification of home energy efficiency on market prices paid by consumers. In the area where this study was conducted, the results provide further support for added contributory value in the assessment of a certified energy-efficient home.

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## Conclusion

Although significant awareness exists on the impact of energy consumption by the U.S. residential sector, adoption of energy-efficient residential designs has been slow. Of most concern to homebuilders is the perception that the added costs related to increased energy-efficient design and construction will not be recognized when the home is sold (Galuppo and Tu, 2010). This concern has persisted even though prior studies have provided empirical evidence of consumers who recognize the contributory value of increased energy efficiency. These past studies, however, used measures of energy efficiency that were not easily replicable or recognizable by homebuyers, appraisers, or homebuilders. In recent years, several third-party certifications have become available that can be used to address this shortcoming of prior studies. Third-party certification can be used to document the incorporation of design and construction techniques (Adomatis, 2010). One well-established certification is the EPA's ENERGY STAR labeling for homes. By incorporating ENERGY STAR certification into a hedonic regression analysis of sales prices for homes in Fort Collins, Colorado, this study provides a much needed update on homebuyers' willingness to pay for increased energy efficiency.

The model tested in this study and which incorporated ENERGY STAR certification had an  $R^2$  of 74%, consistent with the range of  $R^2$  values for similar

models (see Exhibit 1), which ranged from a low of 0.41 to a high of 0.86. These results support the hypothesis that ENERGY STAR rated homes will have higher sales prices than comparable non-ENERGY STAR homes in the study area. Results indicate that ENERGY STAR homes originally sold for \$8.66 more per square foot than non-ENERGY STAR homes in the study area.

This study provides additional empirical evidence that homebuyers recognize the contributory value of increased energy efficiency. There is also evidence that the use of a third-party certification such as the ENERGY STAR rating system is valued by residential consumers. As similar assessment tools of residential energy efficiency (e.g., USGBC's LEED for Homes or the NAHB's National Green Building Standard) become more prevalent, similar cost premiums will be found for those homes as well. Further analysis, however will be needed to verify these predictions across other residential energy assessment tools. As additional studies are conducted, their combined results should strengthen the market for energy-efficient homes that are third-party certified. This, in turn should result in an increased percentage of new homes that are designed and constructed to be more energy efficient and an overall reduction in the energy consumption of the U.S. residential sector.

## Appendix A

### Review of Hedonic Studies

Study	Market Area, Time Period, and Types of Homes Included	Sample Size	Age of Homes in Sample
Halvorsen, R. and H.O. Pollakowski. The Effects of Fuel Prices on House Prices. <i>Urban Studies</i> , 1981, 18, 2, 205–11.	Oil and gas heated homes in Greenwood neighborhood in Seattle, Washington sold from 1970 to 1975.	269	Mean age not given
Corgel, J.B., P.R. Goebel, and C.E. Wade. Measuring Energy Efficiency for Selection and Adjustment of Comparable Sales. <i>The Appraisal Journal</i> , 1982, January, 71–8.	Single-family homes in Lubbock, Texas sold from 1978 to 1979.	100	Mean age not given
Johnson, R.C. and D.L. Kaserman. Housing Market Capitalization of Energy-saving Durable Good Investments. <i>Economic Inquiry</i> , 1983, 21, 374–86.	Electricity or natural gas-heated, single-family detached homes in Knox County, Tennessee sold in 1978.	1,317	Mean = 14 years Standard Deviation = 13 years
Longstreth, M. (1986). Impact of Consumers' Personal Characteristics on Hedonic Prices of Energy-conserving Durables. <i>Energy</i> , 1986, 11:9, 893–905.	Gas-heated, single-family detached homes in Columbus, Ohio SMSA sold from 1971 to 1978.	505	Mean = 22 years Std. Dev. = 15 years
Laquatra, J. Housing Market Capitalization of Thermal Integrity. <i>Energy Economics</i> , 1986, 8, 3, 134–38.	Newly built "Energy Efficient Housing Demonstration Program" homes in Minneapolis, Minnesota from 1980 to 1981.	81	New homes only

## Appendix A (continued)

## Review of Hedonic Studies

Study	Market Area, Time Period, and Types of Homes Included	Sample Size	Age of Homes in Sample
Dinan, T.M. and J.A. Miranowski. Estimating the Implicit Price of Energy Efficiency Improvements in the Residential Housing Market: A Hedonic Approach. <i>Journal of Urban Economics</i> , 1989, 25, 52–67.	Single-family detached homes in Des Moines, Iowa sold from January 1982 to June 1982.	234	Mean = 30 years Std. Dev. = 22 years
Horowitz, M.J. and H. Haeri. Economic Efficiency v. Energy Efficiency—Do Model Conservation Standards Make Good Sense? <i>Energy Economics</i> , 1990, 122–31.	42 nearly-new, electrically-heated homes in Tacoma City Light service district in Seattle, Washington built to the Model Conservation Standards (MCS) resold from 1983–1985, and 25 nearly new, electrically-heated control homes in the same area resold from 1983 to 1985.	67 (45 MCS and 25 control)	Nearly new homes
Nevin, R. and G. Watson. Evidence of Rational Market Values for Home Energy Efficiency. <i>The Appraisal Journal</i> , 1998, 401–09.	Electrically, piped gas or fuel oil-heated, single-family homes in American Housing Survey (AHS) national data from 1991, 1993, and 1995, and AHS metropolitan data from 1992 to 1996.	15,000+	Mean age not given

Note: The source is Dacquist, Emrath, Laquatra, and Laitner (2001).

# Appendix B

## Variables Used in Hedonic Studies

Reference	Halvorsen & Pollakowski (1981)	Corgel, Goebel, & Wade (1982)	Johnson & Kaserman (1983)	Longstreth (1986)	Laquatra (1986)	Dinan & Miranowski (1989)	Horowitz & Haeri (1990)	Nevin & Watson (1998)
Dependent Variable	<i>Sale Price</i>	<i>Sale Price</i>	<i>Sale Price</i>	<i>Sale Price/Sf</i>	<i>Sale Price</i>	<i>Sale Price</i>	<i>Sale Price</i>	Occupant-Estimated Market Value
Independent Variables	<p>Area (sf)</p> <p>Age (yrs)</p> <p># of bathrooms</p> <p>2-car garage (D)</p> <p>Central air conditioning (D)</p> <p>Date (month of sale = 100-112)</p> <p>Fireplace (D)</p> <p>Brick veneer (D)</p> <p>Cedar roof (D)</p> <p>Infra (D)</p>	<p>Util (\$ / yr, ending)</p> <p>Size (sf)</p> <p>Age (yrs)</p> <p># of bathrooms</p> <p>Ranch (D)</p> <p>Split foyer (D)</p> <p>2-Story (D)</p> <p>Brick (D)</p> <p>Carport (D)</p> <p>Garage-1 car (D)</p> <p>Garage-2car+ (D)</p> <p>Patio (D)</p> <p>Deck (D)</p> <p>Paved drive (D)</p> <p>Fireplace (D)</p> <p>Unit air (D)</p> <p>Central air (D)</p> <p>A index (D)</p> <p>Census increase from 78% black within census tract</p> <p>Population density</p> <p>City lot (sf)</p>	<p>House size (sf)</p> <p># of bathrooms</p> <p># of stories</p> <p>House age (yrs)</p> <p>Distance to central business district</p> <p>Pupils per teacher</p> <p>Sale year</p> <p>Ceiling insulation</p> <p>Wall insulation</p> <p>Wood or vinyl window frames</p>	<p>House size (sf)</p> <p># of bathrooms</p> <p># of stories</p> <p>House age (yrs)</p> <p>Distance to central business district</p> <p>Pupils per teacher</p> <p>Sale year</p> <p>Ceiling insulation</p> <p>Wall insulation</p> <p>Wood or vinyl window frames</p>	<p>Area (sf)</p> <p>Lot size (sf)</p> <p>Duplex (D)</p> <p>Attached (D)</p> <p>Thermal integrity factor</p> <p>Median house value for census tract</p> <p>Per pupil expenditure</p> <p>Mean commute for census tract</p> <p>Distance to interstate ramp</p>	<p>Floor area (sf)</p> <p># of bedrooms</p> <p># of bathrooms</p> <p>Family room (D)</p> <p>Dining room</p> <p>Lot (100 sf)</p> <p>Dishwasher (D)</p> <p>Central air conditioning (D)</p> <p>Window air conditioning (D)</p> <p>Garage-1 car</p> <p>Garage-2 car</p> <p>Garage (D)</p> <p>Fireplace (D)</p> <p>Age (yrs)</p> <p>Census income</p> <p>Basement (D)</p> <p>Miles from central business district</p>	<p>Floor area (sf)</p> <p>Heat pump (D)</p> <p># of bathrooms</p> <p>Fireplace (D)</p> <p>Wood/tile roof (D)</p> <p>Note: A second regression with different sample used to estimate electricity use:</p> <p>Model</p> <p>Conservation Standards (D)</p> <p>Floor area (sf)</p> <p>Household size</p> <p>Household income</p> <p>Wood stove (D)</p> <p>Electric blanket or bed heaters (D)</p> <p>Central thermostat (D)</p> <p>Dishwasher (D)</p> <p>Electric dryer (D)</p> <p># TVs/computers</p> <p>Electric water for tub/sauna (D)</p>	<p>Unit (sf)</p> <p>Lot size (sf)</p> <p>Age (years)</p> <p># of rooms</p> <p>Total utilities (all fuels)</p> <p>Lot size</p> <p>Unit size times total utility</p> <p># of rooms times total utility</p> <p>Garage (D)</p> <p>Porch (D)</p> <p>Central air conditioning (D)</p> <p>South (D)</p> <p>West (D)</p> <p>Midwest (D)</p> <p>Urban (D)</p> <p>Rural (D)</p>

## Appendix B (continued)

## Variables Used in Hedonic Studies

Reference	Halvorsen & Pollakowski (1981)	Corgel, Goebel, & Wade (1982)	Johnson & Kaserman (1983)	Longstreth (1986)	Laquatra (1986)	Dinan & Miranowski (1989)	Horowitz & Haeri (1990)	Nevin & Watson (1998)
Dependent Variable	<i>Sale Price</i>	<i>Sale Price</i>	<i>Sale Price</i>	<i>Sale Price/Sf</i>	<i>Sale Price</i>	<i>Sale Price</i>	<i>Sale Price</i>	Occupant-Estimated Market Value
Method of Measuring Energy Efficiency	Fuel type used to heat home (natural gas or oil)	Existence of either a cold roof (energy efficient) or a warm roof (not energy efficient)	Utility bills	Inches of insulation, presence of storm windows and/or thermopane glass, presence of wood/vinyl window frames	Thermal Integrity Factor = annual heating load for the house, measured in Btu/sf of heated floorspace/heating degree day	Utility bills/sf	Construction to meet Model Conservation Standards	Utility bills

Notes: The source is Dacquisto, Emrath, Laquatra, and Laitner (2001).

sf = square feet

yrs = years

D = Dummy, or indicator variable



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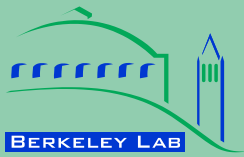
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Bryan Bloom, Colorado State University, Fort Collins, CO 80523.

MaryEllen C. Nobe, Colorado State University, Fort Collins, CO 80523 or [Mary.Nobe@colostate.edu](mailto:Mary.Nobe@colostate.edu).

Michael D. Nobe, Colorado State University, Fort Collins, CO 80523.



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**ERNEST ORLANDO LAWRENCE  
BERKELEY NATIONAL LABORATORY**

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# **An Analysis of the Effects of Residential Photovoltaic Energy Systems on Home Sales Prices in California**

**Ben Hoen, Ryan Wiser, Peter Cappers  
and Mark Thayer**

**Environmental Energy  
Technologies Division**

**April 2011**

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Prepared for the

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Principal Authors:

Ben Hoen, Ryan Wiser and Peter Cappers  
Ernest Orlando Lawrence Berkeley National Laboratory  
1 Cyclotron Road, MS 90R4000  
Berkeley, CA 94720-8136

Mark Thayer  
San Diego State University  
5500 Campanile Dr.  
San Diego, CA 92182-4485

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## Abstract

An increasing number of homes with existing photovoltaic (PV) energy systems have sold in the U.S., yet relatively little research exists that estimates the marginal impacts of those PV systems on home sales prices. A clearer understanding of these effects might influence the decisions of homeowners considering installing PV on their home or selling their home with PV already installed, of home buyers considering purchasing a home with PV already installed, and of new home builders considering installing PV on their production homes. This research analyzes a large dataset of California homes that sold from 2000 through mid-2009 with PV installed. Across a large number of hedonic and repeat sales model specifications and robustness tests, the analysis finds strong evidence that California homes with PV systems have sold for a premium over comparable homes without PV systems. The effects range, on average, from approximately \$3.9 to \$6.4 per installed watt (DC) of PV, with most coalescing near \$5.5/watt, which corresponds to a home sales price premium of approximately \$17,000 for a relatively new 3,100 watt PV system (the average size of PV systems in the study). These average sales price premiums appear to be comparable to the investment that homeowners have made to install PV systems in California, which from 2001 through 2009 averaged approximately \$5/watt (DC), and homeowners with PV also benefit from electricity cost savings after PV system installation and prior to home sale. When expressed as a ratio of the sales price premium to estimated annual electricity cost savings associated with PV, an average ratio of 14:1 to 22:1 can be calculated; these results are consistent with those of the more-extensive existing literature on the impact of energy efficiency (and energy cost savings more generally) on home sales prices. The analysis also finds - as expected - that sales price premiums decline as PV systems age. Additionally, when the data are split between *new* and *existing* homes, a large disparity in premiums is discovered: the research finds that *new* homes with PV in California have demonstrated average premiums of \$2.3-2.6/watt, while the average premium for *existing* homes with PV has been more than \$6/watt. One of several *possible* reasons for the lower premium for new homes is that new home builders may also gain value from PV as a market differentiator, and have therefore often tended to sell PV as a standard (as opposed to an optional) product on their homes and perhaps been willing to accept a lower premium in return for faster sales velocity. Further research is warranted in this area, as well as a number of other areas that are highlighted.

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# 1. Introduction

In calendar year 2010, approximately 880 megawatts (MW)<sup>1</sup> of grid-connected solar photovoltaic (PV) energy systems were installed in the U.S. (of which approximately 30% were residential), up from 435 MW installed in 2009, yielding a cumulative total of 2,100 MW (SEIA & GTM, 2011). California has been and continues to be the country's largest market for PV, with nearly 1000 MW of cumulative capacity. California is also approaching 100,000 individual PV systems installed, more than 90% of which are residential. An increasing number of these homes with PV have sold, yet to date, relatively little research has been conducted to estimate the existence and level of any premium to sales prices that the PV systems may have generated. One of the primary incentives for homeowners to install a PV system on their home, or for home buyers to purchase a home with a PV system already installed, is to reduce their electricity bills. However, homeowners cannot always predict if they will own their home for enough time to fully recoup their PV system investment through electricity bill savings. The decision to install a PV system or purchase a home with a PV system already installed may therefore be predicated, at least in part, on the assumption that a portion of any incremental investment in PV will be returned at the time of the home's subsequent sale through a higher sales price. Some in the solar industry have recognized this potential premium to home sales prices, and, in the absence of having solid research on PV premiums, have used related literature on the impact of energy efficiency investments and energy bill savings on home prices as a proxy for making the claim that residential PV systems can increase sales prices (e.g., Black, 2010).

The basis for making the claim that an installed PV system may produce higher residential selling prices is grounded in the theory that a reduction in the carrying cost of a home will translate, *ceteris paribus*, into the willingness of a buyer to pay more for that home. Underlying this notion is effectively a present value calculation of a stream of savings associated with the

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<sup>1</sup> All references to the size of PV systems in this paper, unless otherwise noted, are reported in terms of direct current (DC) watts under standard test conditions (STC). This convention was used to conform to the most-common reporting conventions used outside of California. In California, PV systems sizes are often referred to using the California Energy Commission Alternating Current (CEC-AC) rating convention, which is approximately a multiple of 0.83 of the DC-STC convention, but depends on a variety of factors including inverter efficiency and realistic operating efficiencies for panels. A discussion of the differences between these two conventions and how conversions can be made between them is offered in Appendix A of Barbose et al., 2010.

reduced electricity bills of PV homes, which can be capitalized into the value of the home. Along these lines, a number of studies have shown that residential selling prices are positively correlated with lower energy bills, most often attributed to energy related home improvements, such as energy efficiency investments (Johnson and Kaserman, 1983; Longstreth et al., 1984; Laquatra, 1986; Dinan and Miranowski, 1989; Horowitz and Haeri, 1990; Nevin and Watson, 1998; Nevin et al., 1999). The increased residential sales prices associated with lower energy bills and energy efficiency measures might be expected to apply to PV as well. Some homeowners have stated as much in surveys (e.g., CEC, 2002; McCabe and Merry, 2010), though the empirical evidence supporting such claims is limited in scope. Farhar et al. (2004a; 2008) tracked repeat sales of 15 “high performance” energy efficient homes with PV installed from one subdivision in San Diego and found evidence of higher appreciation rates, using simple averages, for these homes over comparable homes ( $n=12$ ). More recently, Dastrop et al. (2010) used a hedonic analysis to investigate the selling prices of 279 homes with PV installed in the San Diego, California metropolitan area, finding clear evidence of PV premiums that averaged approximately 3% of the total sales price of non-PV homes, which translates into \$4.4 per installed PV watt (DC).

In addition to energy savings, higher selling prices might be correlated with a “cachet value” based on the “green” attributes that come bundled with energy-related improvements (e.g., helping combat global warming, impressing the neighbors, etc.). A number of recent papers have investigated this correlation. Eichholtz et al. (2009, 2011) analyzed commercial green properties in the U.S, and Brounen and Kok (2010) and Griffin et al. (2009) analyzed green labeled homes in the Netherlands and Portland, Oregon, respectively, each finding premiums, which, in some cases, exceeded the energy savings (Eichholtz et al., 2009, 2011; Brounen and Kok, 2010). Specifically related to PV, Dastrop et al. (2010) found higher premiums in communities with a greater share of Toyota Prius owners and college grads, indicating, potentially, the presence of a cachet value to the systems over and above energy savings. It is therefore reasonable to believe that buyers of PV homes might price both the energy savings and the green cachet into their purchase decisions.

Of course there is both a buyer and a seller in any transaction, and the sellers of PV homes might be driven by different motivations than the buyers. Specifically, recouping the *net* installed cost of the PV system (i.e., the cost of PV installation after deducting any available state and federal incentives) might be one driver for sellers. In California, the average net installed cost of residential PV hovered near \$5/watt (DC) from 2001 through 2009 (Barbose et al., 2010). Adding slightly to the complexity, the average net installed cost of PV systems has varied to some degree by the type of home, with PV systems installed on *new* homes in California enjoying approximately a \$1/watt lower average installed cost than PV systems installed on *existing* homes in retrofit applications (Barbose et al., 2010). Further, sellers of *new* homes with PV (i.e., new home developers) might be reluctant to aggressively increase home sale prices for installed PV systems because of the burgeoning state of the market for PV homes and concern that more aggressive pricing might slow home sales, especially if PV is offered as a standard (not optional) product feature (Farhar and Coburn, 2006). At the same time, the possible *positive* impact of PV on product differentiation and sales velocity may make new home developers willing to sell PV at below the net installed cost of the system. After all, some studies that have investigated whether homes with PV (often coupled with energy efficient features) sell faster than comparable homes without PV have found evidence of increased velocity due to product differentiation (Dakin et al., 2008; SunPower, 2008). Finally, as PV systems age, and sellers (i.e., homeowners) recoup a portion of their initial investment in the form of energy bill savings (and, related, the PV system's lifespan decreases), the need (and ability) to recoup the full initial investment at the time of home sale might decrease. On net, it stands to reason that premiums for PV on *new* homes might be lower than those for *existing* homes, and that older PV systems might garner lower premiums than newer PV systems of the same size.

Though a link between selling prices and some combination of energy cost savings, green cachet, recouping the net installed cost of PV, seller attributes, and PV system age likely exists, the existing empirical literature in this area, as discussed earlier, has largely focused on either energy efficiency in residential and commercial settings, or PV in residential settings but in a limited geographic area (San Diego), with relatively small sample sizes. Therefore, to date, establishing a reliable estimate for the PV premiums that may exist across a wide market of homes has not

been possible. Moreover, establishing premiums for *new* versus *existing* homes with PV has not yet been addressed.

Additionally, research has not investigated whether there are increasing or decreasing returns on larger PV systems, and/or larger homes with the same sized PV systems, nor has research been conducted that investigates whether older PV systems garner lower premiums. In the case of returns to scale on larger PV systems, it is not unreasonable to expect that any increase in value for PV homes may be non-linear as it relates to PV system size. For example, if larger PV systems push residents into lower electricity price tiers<sup>2</sup>, energy bill savings could be diminished on the margin as PV system size increases. This, in turn, might translate into smaller percentage increases in residential selling prices as PV systems increase in size, and therefore a decreasing return to scale. Larger PV systems might also enjoy some economies of scale in installation costs, which, in turn, might translate into lower marginal premiums at the time of home sale as systems increase in size – a decreasing return to scale. Additionally, “cachet value”, to the degree that it exists, is likely to be somewhat insensitive to system size, and therefore might act as an additional driver to decreasing returns to scale. Somewhat analogously, PV premiums may be related to the number of square feet of living area in the home. Potentially, as homes increase in size, energy use can also be expected to increase, leading homeowners to be subjected to higher priced electricity rate tiers and therefore greater energy bill savings for similarly sized PV systems. Finally, as discussed previously, as PV systems age, and both a portion of the initial investment is recouped and the expected life and operating efficiency of the systems decrease, home sales price premiums might be expected to decline.

To explore these possible relationships, we investigate the residential selling prices across the state of California of approximately 2,000 homes with existing PV systems against a comparable set of approximately 70,000 non-PV homes. The sample is drawn from 31 California counties, with PV home sales transaction dates of 2000 through mid-2009. We apply a variety of hedonic pricing (and repeat sales) models and sample sets to test and bound the possible effects of PV on residential sales prices and to increase the confidence of the findings. Using these tools, we also

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<sup>2</sup> Many California electric utilities provide service under tiered residential rates that charge progressively higher prices for energy as more of it is used.

explore whether the effects of PV systems on home prices are impacted by whether the home is *new* or *existing*, by the size of either the PV system or the home itself, and finally by how old the PV system is when the home sells.<sup>3</sup> It should be stated that this research is not intended to disentangle the specific effects of energy savings, green cachet, recovery of the cost of installation, or seller motivations, but rather to establish credible estimates of aggregate PV residential sales price effects.

The paper begins with a discussion of the data used for the analyses (Section 2). This is followed by a discussion of the empirical basis for the study (Section 3), where the variety of models and sample sets are detailed. The paper then turns to a discussion of the results and their potential implications (Section 4), and finally offers some concluding remarks with recommendations for future research (Section 5).

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<sup>3</sup> Due to the limited sample of PV home sales in many individual years, the results presented in this report reflect average impacts over the entire 2000-09 period (after controlling for housing market fluctuations).

## 2. Data Overview

To estimate the models described later, a dataset of California homes is used that joins the following five different sets of data: (1) PV home addresses and system information from three organizations that have offered financial incentives to PV system owners in the state; (2) real estate information that is matched to those addresses and that also includes the addresses of and information on non-PV homes nearby; (3) home price index data that allow inflation adjustments of sale prices to 2009 dollars; (4) locational data to map the homes with respect to nearby neighborhood/environmental influences; and (5) elevation data to be used as a proxy for “scenic vista.” Each of these data sources is described below, as are the data processing steps employed, and the resulting sample dataset.

### 2.1. Data Sources

The California Energy Commission (CEC), the California Public Utilities Commission (CPUC), and the Sacramento Municipal Utility District (SMUD) each provide financial incentives under different programs to encourage the installation of PV systems in residential applications, and therefore have addresses for virtually all of those systems, as well as accompanying data on the PV systems.<sup>4</sup> Through these programs, Berkeley Laboratory was provided information on approximately 42,000 homes where PV was installed, only a fraction of which (approximately 9%) subsequently sold with the PV system in place. The data provided included: address (street, street number, city, state and zip); incentive application and PV system install and operational dates; PV system size; and delineations as to whether the home was *new* or *existing* at the time the PV system was installed (where available).

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<sup>4</sup> The CEC and CPUC have both been collecting data on PV systems installed on homes in the utility service areas of investor owned utilities (e.g., PG&E, SCE, SDG&E) for which they have provided incentives, as have some of California’s publicly owned utilities (e.g., SMUD) that offer similar incentives. The CEC began administering its incentive program in 1998, and provided rebates to systems of various sizes for both residential and commercial customers. The CPUC began its program in 2001, initially focusing on commercial systems over 30 kW in size. In January 2007, however, the CEC began concentrating its efforts on new residential construction through its New Solar Home Partnership program, and the CPUC took over the administration of residential retrofit systems through the California Solar Initiative program. Separately, SMUD has operated a long-standing residential solar rebate program, but of smaller size than the efforts of the CEC and CPUC.

These addresses were then matched to addresses as maintained by Core Logic (CL)<sup>5</sup>, which they aggregate from both the California county assessment and deed recorder offices. Once matched, CL provided real estate information on each of the California PV homes, as well as similar information on approximately 150,000 non-PV homes that were located in the same (census) block group and/or subdivision as the matched PV homes. The data for both of these sets of homes included:

- address (e.g., street, street number, city, state and zip+4 code);
- most recent (“second”) sale date and amount;
- previous (“first”) sale date and amount (if applicable);
- home characteristics (where available) (e.g., acres, square feet of living area, bathrooms, and year built);
- assessed value;
- parcel land use (e.g., commercial, residential);
- structure type (e.g., single family residence, condominium, duplex);
- housing subdivision name (if applicable)<sup>6</sup>; and
- census tract and census block group.

These data, along with the PV incentive provider data, allowed us to determine if a home sold after a PV system was installed ("second" sale). 3,657 such homes were identified in total, and these homes, therefore, represent the possible sample of homes on which our analysis focused. A subset of these data for which "first" sale information was available and for which a PV system had not yet been installed as of this “first” sale, were culled out. These “repeat sales” were also used in the analysis, as will be discussed in Section 3.

In addition to the PV and real estate data, Berkeley Laboratory obtained from Fiserv a zip-code-level weighted repeat sales index of housing prices in California from 1970 through mid-2009, by quarter. These indices, where data were available, were differentiated between low, middle,

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<sup>5</sup> More information about this product can be obtained from <http://www.corelogic.com/>. Note that Core Logic, Inc. was formerly known as First American Core Logic.

<sup>6</sup> In some cases the same subdivisions were referred to using slightly different names (e.g., “Maple Tree Estates” & “Maple Trees Estates”). Therefore, an iterative process of matching based on the names, the zip code, and the census tract were used to create “common” subdivision names, which were then used in the models, as discussed later.



and high home price tiers, to accommodate the different appreciation/depreciation rates of market segments. Using these indices, all sale prices were adjusted to Q1, 2009 prices.<sup>7</sup>

From Sammamish Data, Berkeley Laboratory purchased x/y coordinates for each zip+4 code, which allowed the mapping of addresses to street level accuracy.<sup>8</sup> Additionally, Berkeley Laboratory obtained from the California Natural Resources Agency (via the California Environmental Resources Evaluation System, CERES) a 30 meter level Digital Elevation Map (DEM) for the state of California.<sup>9</sup> Combining these latter two sets of data, a street level elevation could be obtained for each home in the dataset, which allowed the construction of a variable defined as the elevation of a home relative to its (census) block group. This relative elevation served as a proxy for “scenic vista”, a variable used in the analysis.

## **2.2. Data Processing**

Data cleaning and preparation for final analysis was a multifaceted process involving selecting transactions where all of the required data fields were fully populated, determining if sales of PV homes occurred after the PV system was installed, matching the homes to the appropriate index, ensuring the populated fields were appropriately coded, and finally, eliminating obviously suspicious observations (e.g., not arms length transactions, outliers, etc.). Initially provided were a total of 150,000 detached single family residential sale records without PV and a total of 3,657 with PV. These totals, however, were substantially reduced (by approximately 65,000 records, 1,400 of which were PV sales) because of missing/erroneous core characteristic data (e.g., sale date, sale price, year built, square feet).<sup>10</sup> Additionally, the final dataset was reduced (by approximately 14,000 records, 300 of which were PV sales) because some sales occurred outside the range of the index that was provided (January 1970 to June 2009). Moreover, to focus our analysis on more-typical California homes and minimize the impact of outliers or potential data-

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<sup>7</sup> The inflation adjustment instrument used for this analysis is the Fiserv Case-Shiller Index. This index is a weighted repeat sales index, accumulated quarterly at, optimally, the zip code level over three home price tiers (e.g., low, middle and high prices). More information can be found at: <http://www.caseshiller.fiserv.com/indexes.aspx>

<sup>8</sup> More information about this product can be obtained from <http://www.sammdata.com/>

<sup>9</sup> More information about this product can be obtained from <http://www.ceres.ca.gov/>

<sup>10</sup> Examples of “erroneous” data might include a year built or sale date that is in the future (e.g., “2109” or “Jan 1, 2015”, respectively), or large groups of homes that were listed at the same price in the same year in the same block group that were thought to be “bulk” sales and therefore not valid for our purposes.

entry errors on our results, observations not meeting the following criteria were screened out (see Table 1 for variable descriptions):

- the inflation adjusted most recent (second) sale price (*asp2*) is between \$85,000 and \$2,500,000;<sup>11</sup>
- the number of square feet (*sqft*) is greater than 750;
- *asp2* divided by *sqft* is between \$40 and \$1,000;
- the number of acres is less than 25 and greater than *sqft* divided by 43,560 (where one acre equals 43,560 *sqft*);<sup>12</sup>
- the year the home was built (*yrbuilt*) is greater than 1900;
- the age of the home (in years) at the time of the most recent sale (*ages2*) is greater than or equal to negative one;
- the number of bathrooms (*baths*) is greater than zero and less than ten;
- the size of the PV system (*size*) is greater than 0.5 and less than 10 kilowatts (kW);
- each block group contains at least one PV home sale and one non-PV home sale; and
- the total assessed value (*avtotal*), as reported by the county via Core Logic, is less than or equal to the predicted assessed value (*pav*), where  $pav = sp2 * 1.02^{(2010 - \text{year of sale})}$ .<sup>13</sup>

In addition, the repeat sales used in the analysis had to meet the following criteria:

- the difference in sale dates (*sddif*) between the most recent (second) sale date (*sd2*) and the previous (first) sale date (*sd1*) is less than 20 years;
- PV is not installed on the home as of *sd1*; and
- the adjusted annual appreciation rate (*adjaar*) is between -0.14 and 0.3 (where  $adjaar = \ln(asp2/asp1)/(sddif/365)$ , which corresponds to the 5th and 95th percentile for the distribution of *adjaar*).<sup>14</sup>

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<sup>11</sup> An alternative screen was tested that limited the data to homes under \$1 million (leaving 90% of the data) and \$600,000 (leaving 75%), with no significant change to the results.

<sup>12</sup> An alternative screen that incorporated the number of stories for the home along with the number of square feet in calculating the “footprint”, and therefore allowed smaller parcels to be used, was also explored, with no significant change in results.

<sup>13</sup> This screen was intended to help ensure that homes that had significant improvements since the most recent sale, which would be reflected in a higher assessed value than would otherwise be the maximum allowable under California property tax law, were removed from the dataset. The screen was not applied to homes that sold in 2009, however, because, in those cases, assessed values often had not been updated to reflect the most recent sale.

<sup>14</sup> This final screen was intended to remove homes that had unusually large appreciation or depreciations between sales, after adjusting for inflation, which could indicate that the underlying home characteristics between the two sales changed (e.g., an addition was added, the condition of the home dramatically worsened, etc.), or the data were erroneous.

**Table 1: Variable Descriptions**

Variable	Description
acre	size of the parcel (in acres)
acregt1	number of acres more than one
acrelt1	number of acres less than one
adjaar	adjusted annual appreciation rate
ages2	age of home as of sd2
ages2sqr	ages2 squared
asp1	inflation adjusted sp1 (in 2009 dollars)
asp2	inflation adjusted sp2 (in 2009 dollars)
avtotal	total assessed value of the home
bath	number of bathrooms
bgre_100	relative elevation to other homes in block group (in 100s of feet)
elev	elevation of home (in feet)
laspl	natural log of asp1
lasp2	natural log of asp2
pav	predicted assessed value
pvage	age of the PV system at the time of sale
sd1	first sale date
sd2	second sale date
sddif	number of days separating sd1 and sd2
size	size (in STC DC kW) of the PV system
sp1	first sale price (not adjusted for inflation)
sp2	second sale price (not adjusted for inflation)
sqft	size of living area
sqft_1000	size of living area (in 1000s of square feet)
yrbuilt	year the home was built

### 2.3. Data Summary

The final full dataset includes a total of 72,319 recent sales, 1,894 of which are PV homes and 70,425 of which are non-PV (see Table 2). The homes with PV systems are distributed evenly between *new* (51%) and *existing* (49%) home types, while the non-PV homes are weighted toward *existing* homes (62%) over *new* (38%) (see Table 5). The final repeat sales dataset of homes selling twice total 28,313 homes, of which 394 are PV and 27,919 are non-PV (see Table 3).

As indicated in Table 2, the average non-PV home in the full sample (not the repeat sales sample) sold for \$584,740 (unadjusted) in late 2005, which corresponds to \$480,862 (adjusted)

in 2009 dollars.<sup>15</sup> This “average” home is built in 1986, is 19 years old at the time of sale, has 2,200 square feet of living space, has 2.6 bathrooms, is situated on a parcel of 0.3 acres, and is located at the mean elevation of the other homes in the block group. On the other hand, the average PV home in the full sample sold for \$660,222 in early 2007, which corresponds to \$537,442 in 2009 dollars. Therefore, this “average” PV home, as compared to the “average” non-PV home, is higher in value. This difference might be explained, in part, by the fact that the average PV home is slightly younger at the time of sale (by two years), slightly bigger (by 200 square feet), has more bathrooms (by 0.3), is located on a parcel that is slightly larger (by 0.06 acres), and, of course, has a PV system (which is, on average, 3,100 watts and 1.5 years old).<sup>16</sup>

The repeat sale dataset, as summarized in Table 3, shows similar modest disparities between PV and non-PV homes, with the “average” PV homes selling for more (in 2009 \$) in both the first and second sales. Potentially more telling, though, non-PV homes show a slight depreciation (of -1.4%) between sales after adjusting for inflation, while PV homes show a modest appreciation (of 3.2%). Average PV homes in the sample are found to be slightly bigger (by 100 square feet), occupy a slightly larger parcel (by 0.2 acres), older (by 10 years), and, of course, have a PV system (which is, on average, 4,030 watts and 2.5 years old).

Focusing on the full dataset geographically (see Table 4 and Figure 1), we find that it spans 31 counties with the total numbers of PV and non-PV sales ranging from as few as nine (Humboldt) to as many as 11,991 (Placer). The dataset spans 835 separate (census) block groups (not shown in the table), though only 162 (18.7%) of these block groups contain subdivisions with at least one PV sale. Within the block groups that contain subdivisions with PV sales there are 497 subdivision-specific delineations. As shown in Table 5, the data on home sales are fairly evenly split between *new* and *existing* home types, are located largely within four utility service areas,

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<sup>15</sup> The adjusted values, which are based on a housing price index, demonstrate the large-scale price collapse in the California housing market post 2005; that is, there has been significant housing price depreciation.

<sup>16</sup> Age of PV system at the time of sale is determined by comparing the sale date and ideally an “installation date”, which corresponds to the date the system was operational, but, in some cases, the only date obtained was the “incentive application date”, which might precede the installation date by more than one year. For this reason the age of the system reported for this research is lower than the actual age.

with the largest concentration in PG&E's territory, and occurred over eleven years, with the largest concentration of PV sales occurring in 2007 and 2008.

In summary, the full dataset shows higher sales prices for the average PV home than the average non-PV home, while the repeat sales dataset shows positive appreciation between sales for PV homes, but not for non-PV homes. Though these observations seem to indicate that a PV sales price premium exists, these simple comparisons do not take into account the other underlying differences between PV and non-PV homes (e.g., square feet), their neighborhoods, and the market conditions surrounding the sales. The hedonic and difference-in-difference statistical models discussed in the following section are designed to do just that.

**Table 2: Summary Statistics of Full Dataset**

Non-PV Homes					
Variable	<i>n</i>	Mean	Std. Dev.	Min	Max
acre	70425	0.3	0.8	0.0	24.8
acregt1	70425	0.1	0.7	0.0	23.8
acrelt1	70425	0.2	0.2	0.0	1.0
ages2	70425	19	23.3	-1	108
ages2sqr	70425	943	1681	0	11881
asp2	70425	\$ 480,862	\$ 348,530	\$ 85,007	\$2,498,106
avtotal	70425	\$ 497,513	\$ 359,567	\$ 10,601	\$3,876,000
bath	70425	2.6	0.9	1	9
bgre_100	70425	0.0	1.2	-18.0	19.0
elev	70425	424	598	0	5961
lasp2	70425	12.9	0.6	11.4	14.7
page	70425	0	0	0	0
sd2	70425	9/30/2005	793 days	1/7/1999	6/30/2009
size	70425	0	0	0	0
sp2	70425	\$ 584,740	\$ 369,116	\$ 69,000	\$4,600,000
sqft_1000	70425	2.2	0.9	0.8	9.3
yrbuilt	70425	1986	23	1901	2009
PV Homes					
Variable	<i>n</i>	Mean	Std. Dev.	Min	Max
acre	1894	0.4	1.0	0.0	21.6
acregt1	1894	0.1	0.9	0.0	20.6
acrelt1	1894	0.2	0.2	0.0	1.0
ages2	1894	17.3	24.5	-1	104
ages2sqr	1894	937	1849	0	11025
asp2	1894	\$ 537,442	\$ 387,023	\$ 85,973	\$2,419,214
avtotal	1894	\$ 552,052	\$ 414,574	\$ 23,460	\$3,433,320
bath	1894	2.9	1	1	7
bgre_100	1894	0.2	1.3	-10.0	17.9
elev	1894	414	584	0	5183
lasp2	1894	13.0	0.6	11.4	14.7
page	1894	1.5	2.0	-1.0	9.0
sd2	1894	3/28/2007	622 days	8/1/2000	6/29/2009
size	1894	3.1	1.6	0.6	10.0
sp2	1894	\$ 660,222	\$ 435,217	\$ 100,000	\$3,300,000
sqft_1000	1894	2.4	0.9	0.8	11.0
yrbuilt	1894	1989	25	1904	2009

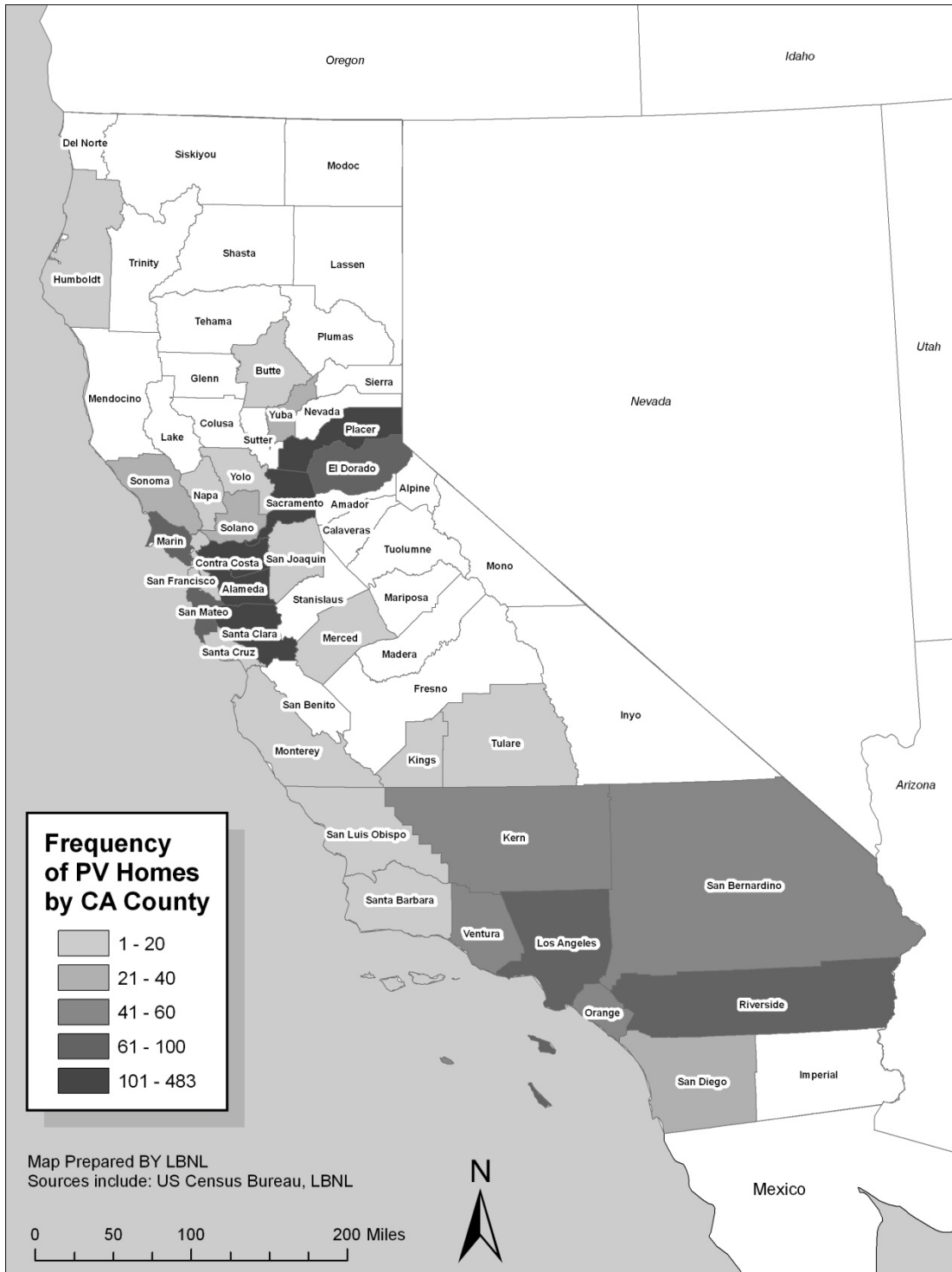
**Table 3: Summary Statistics of Repeat Sale Dataset**

Non-PV Homes					
Variable	<i>n</i>	Mean	Std. Dev.	Min	Max
acre	27919	0.3	0.7	0.0	23.2
acregt1	27919	0.1	0.6	0.0	22.2
acrelt1	27919	0.2	0.2	0.0	1.0
ages2	27919	23.6	22.7	0	108
ages2sqr	27919	1122.0	1775.0	1.0	11881.0
asp1	27919	\$ 488,127	\$ 355,212	\$ 85,398	\$ 2,495,044
asp2	27919	\$ 481,183	\$ 347,762	\$ 85,007	\$ 2,472,668
avtotal	27919	\$ 498,978	\$ 360,673	\$ 35,804	\$ 3,788,511
bath	27919	2.5	0.8	1	9
bgre_100	27919	0.0	1.3	-17.7	19.0
elev	27919	426	588	0	5961
las p1	27919	12.9	0.6	11.4	14.7
las p2	27919	12.9	0.6	11.4	14.7
pvage	27919	0	0	0	0
sd1	27919	5/5/2001	1780 days	11/1/1984	12/11/2008
sd2	27919	5/14/2006	786 days	3/11/1999	6/30/2009
sddif	27919	1835	1509	181	7288
size	27919	0	0	0	0
sp1	27919	\$ 444,431	\$ 287,901	\$ 26,500	\$ 2,649,000
sp2	27919	\$ 577,843	\$ 371,157	\$ 69,000	\$ 3,500,000
sqft_1000	27919	2.1	0.8	0.8	7.7
yrbuilt	27919	1982	23	1901	2008
PV Homes					
Variable	<i>n</i>	Mean	Std. Dev.	Min	Max
acre	394	0.5	1.4	0.0	21.6
acregt1	394	0.2	1.3	0.0	20.6
acrelt1	394	0.2	0.2	0.0	1.0
ages2	394	34.6	25.6	1	104
ages2sqr	394	1918.0	2336.0	4.0	11025.0
asp1	394	\$ 645,873	\$ 417,639	\$ 110,106	\$ 2,339,804
asp2	394	\$ 666,416	\$ 438,544	\$ 91,446	\$ 2,416,498
avtotal	394	\$ 682,459	\$ 478,768	\$ 51,737	\$ 3,433,320
bath	394	2.6	0.9	1	7
bgre_100	394	0.1	1.6	-5.5	17.9
elev	394	479	581	3	3687
las p1	394	13.2	0.6	11.6	14.7
las p2	394	13.2	0.6	11.4	14.7
pvage	394	2.5	1.6	-1.0	9.0
sd1	394	11/22/1999	1792 days	11/30/1984	1/7/2008
sd2	394	1/9/2007	672 days	8/1/2000	6/29/2009
sddif	394	2605	1686	387	7280
size	394	4.03	1.94	0.89	10
sp1	394	\$ 492,368	\$ 351,817	\$ 81,500	\$ 2,500,000
sp2	394	\$ 800,359	\$ 489,032	\$ 121,000	\$ 3,300,000
sqft_1000	394	2.2	0.8	0.8	5.3
yrbuilt	394	1972	26	1904	2008

**Table 4: Frequency Summary by California County**

<b>CA County</b>	<b>Non-PV</b>	<b>PV</b>	<b>Total</b>
<b>Alameda</b>	4,826	153	<b>4,979</b>
<b>Butte</b>	457	12	<b>469</b>
<b>Contra Costa</b>	5,882	138	<b>6,020</b>
<b>El Dorado</b>	938	85	<b>1,023</b>
<b>Humboldt</b>	7	2	<b>9</b>
<b>Kern</b>	2,498	53	<b>2,551</b>
<b>Kings</b>	134	5	<b>139</b>
<b>Los Angeles</b>	3,368	82	<b>3,450</b>
<b>Marin</b>	1,911	61	<b>1,972</b>
<b>Merced</b>	48	2	<b>50</b>
<b>Monterey</b>	10	2	<b>12</b>
<b>Napa</b>	36	1	<b>37</b>
<b>Orange</b>	1,581	44	<b>1,625</b>
<b>Placer</b>	11,832	159	<b>11,991</b>
<b>Riverside</b>	4,262	87	<b>4,349</b>
<b>Sacramento</b>	10,928	483	<b>11,411</b>
<b>San Bernardino</b>	2,138	50	<b>2,188</b>
<b>San Diego</b>	1,083	30	<b>1,113</b>
<b>San Francisco</b>	407	16	<b>423</b>
<b>San Joaquin</b>	1,807	20	<b>1,827</b>
<b>San Luis Obispo</b>	232	1	<b>233</b>
<b>San Mateo</b>	2,647	92	<b>2,739</b>
<b>Santa Barbara</b>	224	7	<b>231</b>
<b>Santa Clara</b>	6,127	157	<b>6,284</b>
<b>Santa Cruz</b>	90	1	<b>91</b>
<b>Solano</b>	2,413	39	<b>2,452</b>
<b>Sonoma</b>	1,246	32	<b>1,278</b>
<b>Tulare</b>	774	14	<b>788</b>
<b>Ventura</b>	1,643	42	<b>1,685</b>
<b>Yolo</b>	16	1	<b>17</b>
<b>Yuba</b>	860	23	<b>883</b>
<b>Total</b>	<b>70,425</b>	<b>1,894</b>	<b>72,319</b>

**Figure 1: Map of Frequencies of PV Homes by California County**





**Table 5: Frequency Summary by Home Type, Utility and Sale Year**

<b>Home Type *</b>	<b>Non-PV</b>	<b>PV</b>	<b>Total</b>
New Home	26,938	935	27,873
Existing Home	43,487	897	44,384
<b>Utility **</b>	<b>Non-PV</b>	<b>PV</b>	<b>Total</b>
Pacific Gas & Electric (PG&E)	36,137	1,019	37,156
Southern California Edison (SCE)	14,502	337	14,839
San Diego Gas & Electric (SDG&E)	8,191	35	8,226
Sacramento Municipal Utility District (SMUD)	11,393	498	11,891
Other	202	5	207
<b>Sale Year</b>	<b>Non-PV</b>	<b>PV</b>	<b>Total</b>
1999	110	0	110
2000	379	1	380
2001	1,335	10	1,345
2002	6,278	37	6,315
2003	8,783	63	8,846
2004	10,888	153	11,041
2005	10,678	168	10,846
2006	9,072	173	9,245
2007	8,794	472	9,266
2008	9,490	642	10,132
2009	4,618	175	4,793

*\* A portion of the PV homes could not be classified as either new or existing and therefore are not included in these totals*

*\*\* Non-PV utility frequencies were estimated by mapping block groups to utility service areas, and then attributing the utility to all homes that were located in the block group*

### 3. Methods and Statistical Models

#### 3.1. Methodological Overview

The data, as outlined above, not only show increased sales values and appreciation for PV homes (in 2009 \$) over non-PV homes, but also important differences between PV and non-PV homes as regards other home, site, neighborhood and market characteristics that could, potentially, be driving these differences in value and appreciation. A total of 21 empirical model specifications, with a high reliance on the hedonic pricing model, are used in this paper to disentangle these potentially competing influences in order to determine whether and to what degree PV homes sell for a premium.

The basic theory behind the hedonic pricing model starts with the concept that a house can be thought of as a bundle of characteristics. When a price is agreed upon between a buyer and seller there is an implicit understanding that those characteristics have value. When data from a number of sales transactions are available, the average individual marginal contribution to the sales price of each characteristic can be estimated with a hedonic regression model (Rosen, 1974; Freeman, 1979). This relationship takes the basic form:

Sales price =  $f$  (home and site, neighborhood, and market characteristics)

“Home and site characteristics” might include, but are not limited to, the number of square feet of living area, the size of the parcel of land, and the presence of a PV system. “Neighborhood” characteristics might include such variables as the crime rate, the quality of the local school district, and the distance to the central business district. Finally, “market characteristics” might include, but are not limited to, temporal effects such as housing market inflation/deflation.

A variant of the hedonic model is a repeat sales model, which holds constant many of the characteristics discussed above, and compares inflation adjusted selling prices of homes that have sold twice, both before a condition exists (e.g., before a PV system is installed on the home) and after the condition exists (e.g., after a PV system is installed on the home), and across PV

and non-PV homes. This repeat sales model, in the form used in this paper, is referred to as a difference-in-difference (DD) model, and is discussed in more detail later.

To test for the impact of PV systems on residential selling prices, a series of “base” hedonic models, a “base” difference-in-difference model, a series of robustness models, and two “other” models are estimated for this research.<sup>17</sup> As discussed later, these models are used to test for fixed (whether the home has a PV system) and continuous (the size of the PV system) effects using the full dataset of PV homes. They are also used to test for any differences that exist between new and existing PV homes and between homes with PV systems of different ages, and to test for the possibility of non-linear returns to scale based on the size of the PV system or the home itself. Before describing these models in more detail, however, a summary of the variables to be included in the models is provided.

### **3.2. Variables Used in Models**

In each base model, be it hedonic or difference-in-difference, four similar sets of parameters are estimated, namely coefficients on the variables of interest and coefficients for three sets of controls that include home and site characteristics, neighborhood (census block group) fixed effects, and temporal (year and quarter) fixed effects. The variables of interest are the focus of the research, and include such variables as whether the home has a PV system installed or not, the size of the PV system, and interactions between these two variables and others, such as the size of the home or the age of the PV system. To accurately measure these variables of interest (and their interactions) other potentially confounding variables need to be controlled for in the models. The base models differ in their specification and testing of the variables of interest, as discussed later, but use the same three sets of controls.

The first of these sets of control variables accounts for differences across the dataset in home and site-specific characteristics, including the age of the home (linear and squared), the total square feet of living area, and the relative elevation of the home (in feet) to other homes in the block group; the latter variable serves as a proxy for “scenic vista,” a value-influencing characteristic

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<sup>17</sup> As will be discussed later, each of the “base” models is coupled with a set of two or three robustness models. The “other” models are presented without “robustness” models.

(see e.g., Hoen et al., 2009).<sup>18</sup> Additionally, the size of the property in acres was entered into the model in spline form to account for different valuations of less than one acre and greater than one acre.

The second set of controls, the geographic fixed effects variables, includes dummy variables that control for aggregated “neighborhood” influences, which, in our case, are census block groups.<sup>19</sup> A census block group generally contains between 200 and 1,000 households,<sup>20</sup> and is delineated to never cross boundaries of states, counties, or census tracts, and therefore, in our analysis, serves as a proxy for “neighborhood.” To be usable, each block group had to contain at least one PV home and one non-PV home. The estimated coefficients for this group of variables capture the combined effects of school districts, tax rates, crime, distance to central business district and other block group specific characteristics. This approach greatly simplifies the estimation of the model relative to determining these individual characteristics for each home, but interpreting the resulting coefficients can be difficult because of the myriad of influences captured by the variables. Because block groups are fairly small geographically, spatial autocorrelation<sup>21</sup> is also, to some degree, dealt with through the inclusion of these variables.

Finally, the third set of controls, the temporal fixed effect variables, includes dummy variables for each quarter of the study period to control for any inaccuracies in the housing inflation adjustment that was used. A housing inflation index is used to adjust the sales prices throughout the study period to 2009 prices at a zip code level across as many as three price tiers. Although

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<sup>18</sup> Other home and site characteristics were also tested, such as the condition of the home, the number of bathrooms, the number of fireplaces, and if the home had a garage and/or a pool. Because these home and site characteristics were not available for all home transactions (and thus reduced the sample of homes available), did not add substantial explanatory power to the model, and did not affect the results substantively, they were not included in the model results presented in this paper.

<sup>19</sup> For a portion of the dataset, a common subdivision name was identified, which, arguably, serves as a better proxy for neighborhood than block group. Unfortunately, not all homes fell within a subdivision. Nonetheless, a separate combined subdivision-block group fixed effect was tested and will be discussed later.

<sup>20</sup> Census block groups generally contain between 600 and 3,000 people, and the median household size in California is roughly 3.

<sup>21</sup> Spatial Autocorrelation - a correlation between neighbors' selling prices - can produce unstable coefficient estimates, yielding unreliable significance tests in hedonic models if not accounted for. One reason for this spatial autocorrelation is omitted variables, such as neighborhood characteristics (e.g., distance to the central business district), which affect all properties within the same area similarly. Having micro-spatial controls, such as block groups or subdivisions, helps control for such autocorrelation.

this adjustment is expected to greatly improve the model - relative to using *just* a temporal fixed effect with an unadjusted price - it is also assumed that because of the volatility of the housing market, the index may not capture price changes perfectly and therefore the model is enhanced with the additional inclusion of these quarterly controls.<sup>22</sup>

### 3.3. Fixed and Continuous Effect Hedonic Models

The analysis begins with the most basic model comparing prices of all of the PV homes in the sample (whether new or existing) to non-PV homes across the full dataset. As is common in the literature (Malpezzi, 2003; Sirmans et al., 2005b; Simons and Saginor, 2006), a semi-log functional form of the hedonic pricing model is used where the dependent variable, the (natural log of) sales price ( $P$ ), is measured in zip code-specific inflation-adjusted (2009) dollars. To determine if an average-sized PV system has an effect on the sale price of PV homes (i.e., a fixed effect) we estimate the following base fixed effect model:

$$\ln(P_{itk}) = \alpha + \beta_1(T_t) + \beta_2(N_k) + \sum_a \beta_3(X_i) + \beta_4(PV_i) + \varepsilon_{itk} \quad (1)$$

where

$P_{itk}$  represents the inflation adjusted sale price for transaction  $i$ , in quarter  $t$ , in block group  $k$ ,

$\alpha$  is the constant or intercept across the full sample,

$T_t$  is the quarter in which transaction  $i$  occurred,

$N_k$  is the census block group in which transaction  $i$  occurred,

$X_i$  is a vector of  $a$  home characteristics for transaction  $i$  (e.g., acres, square feet, age, etc.),

$PV_i$  is a fixed effect variable indicating a PV system is installed on the home in transaction  $i$ ,

$\beta_1$  is a parameter estimate for the quarter in which transaction  $i$  occurred,

$\beta_2$  is a parameter estimate for the census block group in which transaction  $i$  occurred,

$\beta_3$  is a vector of parameter estimates for home characteristics  $a$ ,

$\beta_4$  is a parameter estimate for the PV fixed effects variable, and

$\varepsilon_{itk}$  is a random disturbance term for transaction  $i$ , in quarter  $t$ , in block group  $k$ .

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<sup>22</sup> A number of models were tested both with and without these temporal controls and with a variety of different temporal controls (e.g., monthly) and temporal/spatial controls (e.g., quarter and tract interactions). The quarterly dummy variables were the most parsimonious, and none of the other approaches impacted the results substantively.

The parameter estimate of primary interest in this model is  $\beta_4$ , which represents the marginal percentage change in sale price with the addition of an average sized PV system. If differences in selling prices exist between PV and non-PV homes, we would expect the coefficient to be positive and statistically significant.

An alternative to equation (1) is to interact the PV fixed effect variable ( $PV_i$ ) with the size (in kW) of the PV system as installed on the home at the time of sale ( $SIZE_i$ ), thereby producing an estimate for the differences in sales prices as a function of size of the PV system. This base continuous effect model takes the form:

$$\ln(P_{itk}) = \alpha + \beta_1(T_t) + \beta_2(N_k) + \sum_a \beta_3(X_i) + \beta_4(PV_i \cdot SIZE_i) + \varepsilon_{itk} \quad (2)$$

where

$SIZE_i$  is a continuous variable for the size (in kW) of the PV system installed on the home prior to transaction  $i$ ,

$\beta_4$  is a parameter estimate for the percentage change in sale price for each additional kW added to a PV system, and all other terms are as were defined for equation (1).

If differences in selling prices exist between PV and non-PV homes, we would expect the coefficient to be positive and statistically significant, indicating that for each additional kilowatt added to the PV system the sale price increases by  $\beta_4$  (in % terms).

This continuous effect specification may be preferable to the PV fixed effect model because one would expect that the impact of PV systems on residential selling prices would be based, at least partially, on the size of the system, as size is related to energy bill savings.<sup>23</sup> Moreover, this specification allows for a direct estimate of any PV home sales premium in dollars per watt (\$/watt), which is the form in which other estimates – namely average net installed costs – are reported. With the previous fixed effects specification, a \$/watt estimate can still be derived, but

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<sup>23</sup> Ideally, the energy bill savings associated with individual PV systems could be entered into the model directly, but these data were not available. Moreover, estimating the savings accurately on a system-by-system basis was not possible because of the myriad of different rate structures in California, the idiosyncratic nature of energy use at the household level, and variations in PV system designs and orientations.

not directly. Therefore, where possible in this paper, greater emphasis is placed on the continuous effect specification than on the fixed effect estimation.

As mentioned earlier, for each base model we explore a number of different robustness models to better understand if and to what degree the results are unbiased. In the present research, two areas of bias are of particular concern: omitted variable bias and sample selection bias.

The omitted variables that are of specific concern are any that might be correlated with the presence of PV, and that might affect sales prices. An example is energy efficiency (EE) improvements, which might be installed contemporaneously with a PV energy system. If many homes with PV have EE improvements, whereas the comparable non-PV homes do not, then estimates for the effects of PV on selling prices might be inclusive of EE effects and, therefore, may be inappropriately high. Any other value-influencing home improvements (e.g., kitchen remodels, new roofs, etc.), if correlated with the presence of PV, could similarly bias the results if not carefully addressed.

With respect to selection bias, the concern is that the distribution of homes that have installed PV may be different from the broad sample of homes on which PV is not installed. If both sets of homes are assumed to have similar distributions but are, in point of fact, dissimilar due to selection, then the estimates for the effects of PV on the selling price could be inclusive of these underlying differences but attributed to the existence of PV, thereby also potentially biasing the results.

To mitigate the issue of omitted variable bias, one robustness model uses the same data sample as the base model but a different model specification. Specifically, a combined subdivision-block group fixed effect variable can be substituted, where available, in place of the block group fixed effect variable as an alternative proxy for “neighborhood.” Potentially omitted variables are likely to be more similar between PV and non-PV homes at the subdivision level than at the

block group level, and therefore this model may more-effectively control for such omitted variables.<sup>24</sup>

To mitigate the issue of selection bias, one robustness model uses the same model specification as the base model but with an alternative (subset) of the data sample. Specifically, instead of using the full dataset with equations (1) and (2), a “coarsened exact matched” dataset is used (King et al., 2010).<sup>25</sup> This matching procedure results in a reduced sample of homes to analyze, but the PV and non-PV homes that remain in the matched sample are statistically equal on their covariates after the matching process (e.g., PV homes within a block group are matched with non-PV homes such that both groups are similar in the number of bathrooms, date of sale, etc.). As a result, biases related to selection are minimized.

Finally, specific to equation (2), a robustness model to mitigate both omitted variable and selection bias is constructed in which the sample is restricted to include *only* PV homes (in place of the full sample of PV *and* non-PV homes). Because this model does not include non-PV “comparable” homes, sales prices of PV homes are “compared” against each other based on the size of the PV systems, while controlling for the differences in the home via the controlling characteristics (e.g., square feet of living space). PV system size effects are therefore estimated without the use of non-PV homes, providing an important comparison to the base models, while also directly addressing any concerns about the inherent differences between PV and non-PV homes (e.g., whether energy efficient upgrades were made contemporaneously with the PV) and therefore omitted variable and sample selection bias.

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<sup>24</sup> Subdivisions are often geographically smaller than block groups, and therefore more accurately control for geographical influences such as distance to central business district. Moreover, homes in the same subdivision are often built at similar times using similar materials and therefore serve as a control for a variety of house specific characteristics that are not controlled for elsewhere in the model. For example, all homes in a subdivision will often be built using the same building code with similar appliances being installed, both of which might control for the underlying energy efficiency (EE) characteristics of the home. For homes not situated in a subdivision, the block group delineation was used, and therefore these fixed effects are referred to as “combined subdivision-block group” delineations.

<sup>25</sup> The procedure used, as described in the referenced paper, is coarsened exact matching (cem) in Stata, available at: <http://ideas.repec.org/c/boc/bocode/s457127.html>. The matching procedure creates statistically matched sets of PV and non-PV homes in each block group, based on a set of covariates, which, for this research, include the number of square feet, acres, and baths, as well as the age of the home, its elevation, and the date at which it sold. Because this matching process excludes non-PV homes that are without a statistically similar PV match (and vice versa), a large percentage of homes (approximately 80% non-PV and 20% PV) are *not* included in the resulting dataset.



### 3.4. New and Existing Home Models

Although equations (1) and (2) are used to estimate whether a PV system, on average, effects selling prices across the entire data sample, they do not allow one to distinguish any such effects as a function of house type, specifically whether the home is *new* or *existing*. As discussed earlier, *new* homes with PV might have different premiums than *existing* homes. To try to tease out these possible differences, two base hedonic models are estimated using equation (2), one with only *new* homes and the other with only *existing* homes.<sup>26</sup> Comparing the coefficient of the variable of interest ( $\beta_4$ ) between these two models allows for an assessment of the relative size of the impact of PV systems across the two home types.

Additionally, two sets of robustness models that were discussed earlier are also applied to the *new* and *existing* home models, one using the coarsened exact matched datasets and the other using the combined subdivision-block group delineations. These models test the robustness of the results for selection and omitted variable bias, respectively. Although it is discussed separately as a base model in the following subsection, the difference-in-difference model, using repeat sales of *existing* homes, also doubly serves as a robustness test to the *existing* homes base model.

#### 3.4.1. Difference-in-Difference Models

One classic alternative to estimating a hedonic model, as briefly discussed earlier, is to estimate a difference-in-difference (DD) model (Wooldridge, 2009). This model (see Table 1) uses a set of homes that have sold twice, both with and without PV, and provides estimates of the effect of adding PV to a subset of those homes as of the second sale (“DD” as noted in Table 1), while simultaneously accounting for both the inherent differences in the PV and non-PV groups and the trend in housing prices between the first and second sales of non-PV homes. Repeat sales models of this type are particularly effective in controlling for selection and certain types of

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<sup>26</sup> *New* and *existing* homes were determined in an iterative process. For PV homes, the type of home was often specified by the data provider. It was also discovered that virtually all of the *new* PV homes (as specified by the PV data providers) had ages, at the time of sale, between negative one and two years, inclusive, whereas the *existing* PV homes (as specified by the PV data providers) had ages greater than two years in virtually every case. The small percentage (3%) of PV homes that did not fit these criteria were excluded from the models. For non-PV homes, no data specifying the home type were available, therefore, groupings were created following the age at sale criteria used for PV homes (e.g., ages between negative one and two years apply to *new* non-PV homes).

omitted variable bias. In the former case, any underlying difference in home prices between PV and non-PV homes prior to the addition of PV is controlled for. In the latter case, PV and non-PV homes are assumed to have undergone mostly similar changes (e.g., home improvements) between sales. Any changes to the home that are coincident with the installation of a PV system (or the PV system household), on the other hand, are not directly controlled for in this model, though there is reason to believe that any such remaining influences are not imposing substantial bias in the present study.<sup>27</sup>

The set of PV homes that are used in the DD model are, by default, *existing* homes (i.e., the home was not new when the PV system was installed). Estimates derived from this model, therefore, apply to - while also serving as a robustness tests for - the *existing* home models as specified above.

**Table 6: Difference-in-Difference Description**

	Pre PV	Post PV	Difference
<b>PV Homes</b>	PV <sub>1</sub>	PV <sub>2</sub>	$\Delta PV = PV_2 - PV_1$
<b>Non-PV Homes</b>	NPV <sub>1</sub>	NPV <sub>2</sub>	$\Delta NPV = NPV_2 - NPV_1$
			$DD = \Delta PV - \Delta NPV$
<i>1 and 2 denote time periods</i>			

The base DD model is estimated as follows:

$$\ln(P_{itk}) = \alpha + \beta_1(T_t) + \beta_2(N_k) + \sum_a \beta_3(X_i) + \beta_4(PVH_i) + \beta_5(SALE2_i) + \beta_6(PVS_i) + \varepsilon_{itk} \quad (3)$$

where

PVH<sub>*i*</sub> is a fixed effect variable indicating if a PV system is or will be installed on the home in transaction *i*,

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<sup>27</sup> Support for this assumption comes from two sources. Although surveys (e.g., CPUC, 2010) indicate that PV homeowners install energy efficient “measures” with greater frequency than non-PV homeowners, the differences are relatively small and largely focus on lighting and appliances. The former is not expected to substantially impact sales prices, while the latter could. The surveys also indicate that PV homeowners tend to install other larger EE measures, such as building shell, water heating and cooling improvements, with greater frequency than non-PV homes. Additionally, it might also be hypothesized that PV homeowners may be more-likely to have newer roofs (perhaps installed at the time of PV installation). Dastrop et al. (2010), however, investigated whether home improvements that might require a permit affect PV home sales premium estimates, and found they did not. It should be noted that the PV Only model, discussed previously, directly addresses the concern of omitted variable bias for this analysis.

$SALE2_i$  is a fixed effect variable indicating if transaction  $i$  is the second of the two sales,  
 $PVS_i$  is a fixed effect variable (an interaction between  $PVH_i$  and  $SALE2_i$ ) indicating if  
transaction  $i$  is both the second of the two sales and contained a PV system at the time of  
sale,  
 $\alpha$  is the constant or intercept across the full sample,  
 $\beta_4$  is a parameter estimate for homes that have or will have PV installed (i.e., from Table 6  
“ $PV_1 - NPV_1$ ”),  
 $\beta_5$  is a parameter estimate if transaction  $i$  occurred as of the second sale (i.e., “ $\Delta NPV$ ”),  
 $\beta_6$  is a parameter estimate if transaction  $i$  occurred as of the second sale and the home  
contained PV (i.e., “ $\Delta PV - \Delta NPV$ ” or “ $DD$ ”), and all other terms are as were defined for  
equation (1).

The coefficient of interest is  $\beta_6$ , which represents the percentage change in sale price, as  
expressed in 2009 dollars, when PV is added to the home, after accounting for the differences  
between PV and non-PV homes ( $\beta_4$ ) and the differences between the initial sale and the second  
sale of non-PV homes ( $\beta_5$ ). If differences in selling prices exist between PV and non-PV homes,  
we would expect the coefficient to be positive and statistically significant.<sup>28</sup>

To further attempt to mitigate the potential for omitted variable bias, two robustness models are  
estimated for the base DD model: one with the combined subdivision-block group delineations  
and a second with a limitation applied on the number of days between the first and second sale.<sup>29</sup>  
The first robustness model is similar to the one discussed earlier. The second robustness model  
accounts for the fact that the home characteristics used (in all models) reflect the most recent  
home assessment, and therefore do not necessarily reflect the characteristics at the time of the  
sale. Especially worrisome are the first sales in the DD model, which can be as much as 20 years  
before the second sale. To test if our results are biased because of these older sales - and the

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<sup>28</sup> This is the classic model form derived from a quasi-experiment, where the installation of PV is the treatment. An  
alternative specification would look at the incremental effect of PV system size holding the starting differences  
between PV and non-PV homes as well as the time-trend in non-PV homes constant. This model form was not  
evaluated in the current analysis effort, but could be considered grounds for future research in this area.

<sup>29</sup> Ideally a matched dataset could be utilized, for reasons described earlier, but because the matching procedure  
severely limited the size of the dataset, the resulting dataset was too small to be useful.

large periods between sales - an additional data screen is applied in which the difference between the two sale dates is limited to five years.<sup>30</sup>

### 3.5. Age of the PV System for Existing Homes Hedonic Models

The age of the PV system at the time of home sale could affect the sales price premium for *existing* homes (PV systems on new homes are, by definition, also new). This might occur because older PV systems have a shorter expected remaining life and may become somewhat less efficient with age (and therefore deliver a lower net present value of bill savings), but also because older PV systems will have generated more energy bill savings for the home seller and the seller may therefore more-willingly accept a lower price. Together, these factors suggest that premiums for older PV systems on *existing homes* would be expected to be lower than for newer systems. In order to test this directly the following base model is estimated:

$$\ln(P_{itk}) = \alpha + \beta_1(T_t) + \beta_2(N_k) + \sum_a \beta_3(X_i) + \beta_4(PV_i \cdot SIZE_i \cdot AGE_i) + \varepsilon_{itk} \quad (4)$$

where

$AGE_i$  is a categorical variable for three groups of PV system age as of the time of sale of the home: 1) less than or equal to one year old; 2) between 2 and 4 years old; and, 3) five or more years old.

Therefore,  $\beta_4$  is a vector of parameter estimates for the percentage change in sales price for each additional kW added to a PV system for each of the three PV system age groups, and all other terms are as are defined for equation (2). The assumption is that the coefficients for  $\beta_4$  will be decreasing - indicating they are valued less - as the age of the PV systems decrease. The sample used for this model is the same as for the *existing* home model defined previously.

Additionally, two sets of robustness models are explored, one using the coarsened exact matched dataset and the other using the combined subdivision-block group delineations, to test the robustness of the results for selection and omitted variable bias, respectively.

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<sup>30</sup> As was discussed earlier, a screen for this eventuality (using *adjaar*) is incorporated in our data cleaning. This test therefore serves as an additional check of robustness of the results.

### 3.6. Returns to Scale Hedonic Models

As discussed earlier, it is not unreasonable to expect that any increases in the selling prices of PV homes may be non-linear with PV system size. In equation (2), it was assumed that estimated price differences were based on a continuous linear relationship with the size of the system. To explore the possibility of a non-linear relationship among the full sample of homes in the dataset, the following model is estimated:<sup>31</sup>

$$\ln(P_{itk}) = \alpha + \beta_1(T_t) + \beta_2(N_k) + \sum_a \beta_3(X_i) + \beta_4(PV_i \cdot SIZE_i) + \beta_5(PV_i \cdot SIZE_i \cdot SIZE_i) + \varepsilon_{itk} \quad (5)$$

where

$\beta_5$  is a parameter estimate for the percentage change in sales price for each additional kW added to a PV system squared, and all other terms are as are defined for equation (2).

A negative statistically significant coefficient ( $\beta_5$ ) would indicate decreasing returns to scale for larger PV systems, while a positive coefficient would indicate the opposite.

Somewhat analogously, as was discussed previously, premiums for PV systems may be related to the size of the home.<sup>32</sup> To test this directly using the full dataset, the following model is estimated:

$$\ln(P_{itk}) = \alpha + \beta_1(T_t) + \beta_2(N_k) + \sum_a \beta_3(X_i) + \beta_4(SQFT_i) + \beta_5(PV_i \cdot SIZE_i) + \beta_6(PV_i \cdot SIZE_i \cdot SQFT_i) + \varepsilon_{itk} \quad (6)$$

where

$SQFT_i$  is a continuous variable for the number of square feet for the home in transaction  $i$ ,<sup>33</sup>

$\beta_4$  is a parameter estimate for the percentage change in sale price for each additional 1000 square feet added to the home,

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<sup>31</sup> Neither this nor the following model is coupled with robustness models in this paper.

<sup>32</sup> PV system size is also somewhat correlated with house size as a result of the tendency for increasing energy use and larger roof areas on larger homes. If this correlation was particularly strong then coefficient estimates could be imprecise. The correlation between PV house size and PV system size in the full sample of our data, however, is rather weak, at only 0.14. Clearly, many factors other than house size impact the sizing of PV systems.

<sup>33</sup> In all of the previous models the number of square feet is contained in the vector of characteristics represented by  $X_i$ , but in this model it is separated out for clarity.

$\beta_5$  is a parameter estimate for the percentage change in sale price for each additional kW added to a PV system,

$\beta_6$  is a parameter estimate for the percentage change in sale price for each additional 1000 square feet added to PV homes, assuming the size of the PV system does not change, and all other terms are as were defined for equation (2).

A negative statistically significant coefficient for  $\beta_6$  would indicate decreasing returns to scale for PV systems as homes increase in size. Alternatively, a positive and statistically significant coefficient would indicate increasing returns to scale for PV systems installed on larger homes.

### 3.7. Model Summary

To summarize, the entire set of 21 estimated models discussed herein is shown in Table 7. The following definitions of terms, all of which were discussed earlier, are relevant for interpreting the models listed in the table, and therefore are briefly reviewed again. All “base” models are coupled with a set of “robustness” models (as noted by a capital “R” in the model number). The “Other” (returns to scale) models are presented alone. Models 1 - 4 and 6 - 8 use the hedonic pricing model, whereas Model 5 is based on the difference-in-difference (DD) model. “Fixed” (versus “continuous”) means that the PV variable is entered into the regression as a zero-one dichotomous variable (for Models 1-1Rb and 5-5Rb), whereas “continuous” (for all other models) means that the model estimates the impact of an increase in PV system size on residential selling prices. Base Models 1, 2, 7 and 8 use the full dataset, while Models 4 and 6 are restricted to *existing* homes, Model 3 to *new* homes, and Model 5 to the repeat sales dataset. The “matched” models use the smaller dataset of coarsened exact matched (PV and non-PV) homes. “Base” models estimate neighborhood fixed effects at the census block group level, whereas the “subdivision” models estimate neighborhood fixed effects at the combined subdivision-block group level.

**Table 7: Summary of Models**

Model Number	Model Name	Base Model	Robustness Model	Other Models	Dataset	Neighborhood Fixed Effects
1	Fixed - Base	X			Full	Block Group
1Ra	Fixed - Matched		X		Full Matched	Block Group
1Rb	Fixed - Subdivision		X		Full	Subdivision/Block Group
2	Continuous - Base	X			Full	Block Group
2Ra	Continuous - Matched		X		Full Matched	Block Group
2Rb	Continuous - Subdivision		X		Full	Subdivision/Block Group
2Rc	Continuous - PV Only		X		PV Only	Block Group
3	New Homes - Base	X			New	Block Group
3Ra	New - Matched		X		New - Matched	Block Group
3Rb	New - Subdivision		X		New	Subdivision/Block Group
4	Existing Homes - Base	X			Existing	Block Group
4Ra	Existing - Matched		X		Existing - Matched	Block Group
4Rb	Existing - Subdivision		X		Existing	Subdivision/Block Group
5	Difference-in-Difference (DD) - Base	X			Repeat Sales	Block Group
5Ra	Difference-in-Difference (DD) - Subdivision		X		Repeat Sales	Subdivision/Block Group
5Rb	Difference-in-Difference (DD) - Sddif < 5 Years		X		Repeat Sales w/ sddif < 5	Block Group
6	Age of System - Base	X			Existing	Block Group
6Ra	Age of System - Matched		X		Existing - Matched	Block Group
6Rb	Age of System - Subdivision		X		Existing	Subdivision/Block Group
7	Returns to Scale - Size			X	Full	Block Group
8	Returns to Scale - Square Feet			X	Full	Block Group

## 4. Estimation Results

Estimation results for all 21 models (as defined in Table 7) are presented in Tables 8-11, with the salient results on the impacts of PV on homes sales prices summarized in Figures 2-4.<sup>34, 35</sup> The adjusted  $R^2$  for all models is high, ranging from 0.93 to 0.95, which is notable because the dataset spanned a period of unusual volatility in the housing market. The model performance reflects, in part, the ability of the inflation index and temporal fixed effects variables to adequately control for market conditions.<sup>36</sup>

Moreover, the sign and magnitude of the home and site control variables are consistent with *a priori* expectations, are largely stable across all models, and are statistically significant at the 1% level in most models.<sup>37</sup> Each additional 1000 square feet of living area added to a home is estimated to add between 19% and 26% to its value, while the first acre adds approximately 40% to its value with each additional acre adding approximately 1.5%. For each year a home ages, it is estimated that approximately 0.2% of its value is lost, yet at 60 years, age becomes an asset with homes older than that estimated to garner premiums for each additional year in age. Finally, for each additional 100 feet above the median elevation of the other homes in the block group, a home's value is estimated to increase by approximately 0.3%. These results can be benchmarked to other research. Specifically, Sirmans et al. (2005a; 2005b) conducted a meta-analysis of 64 hedonic pricing studies carried out in multiple locations in the U.S. during multiple time periods, and investigated similar characteristics as included in the models presented here, except for relative elevation. As a group, each of the home and site characteristic estimates in the present

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<sup>34</sup> For simplicity, this paper does not present the results for the quarter and block group (nor combined subdivision-block group) fixed effects, which consist of more than 900 coefficients. These are available upon request from the authors.

<sup>35</sup> All models were estimated with Stata SE Version 11.1 using the "areg" procedure with White's correction for standard errors (White, 1980). It should also be noted that all Durbin-Watson (Durbin and Watson, 1951) test statistics were within the acceptable range (Gujarati, 2003), there was little multicollinearity associated with the variables of interest, and all results were robust to the removal of any cases with a Cook's Distance greater than  $4/n$  (Cook, 1977) and/or standardized residuals greater than four.

<sup>36</sup> As mentioned in footnote 22, a variety of approaches were tested to control for market conditions, such as spatial temporal fixed effects (e.g., census block / year quarter) both with and without adjusted sale prices. The models presented here were the most parsimonious. As importantly, the results were robust to the various specifications, which, in turn, provides additional confidence that the effects presented are not biased by the fluctuating market conditions that have impacted the housing market for some years.

<sup>37</sup> In some models, where there is little variation between the cases on the covariate (e.g., acres), the results are non-significant at the 10% level.



study differ from the mean Sirmans et al. estimates by no more than one half of one standard deviation.

In summary, these results suggest that the hedonic and repeat sales models estimated here are effectively capturing many of the drivers to home sales prices in California, and therefore increasing confidence that those same models can be used to accurately capture any PV effects that may exist.

#### **4.1. Fixed and Continuous Effect Hedonic Model Results**

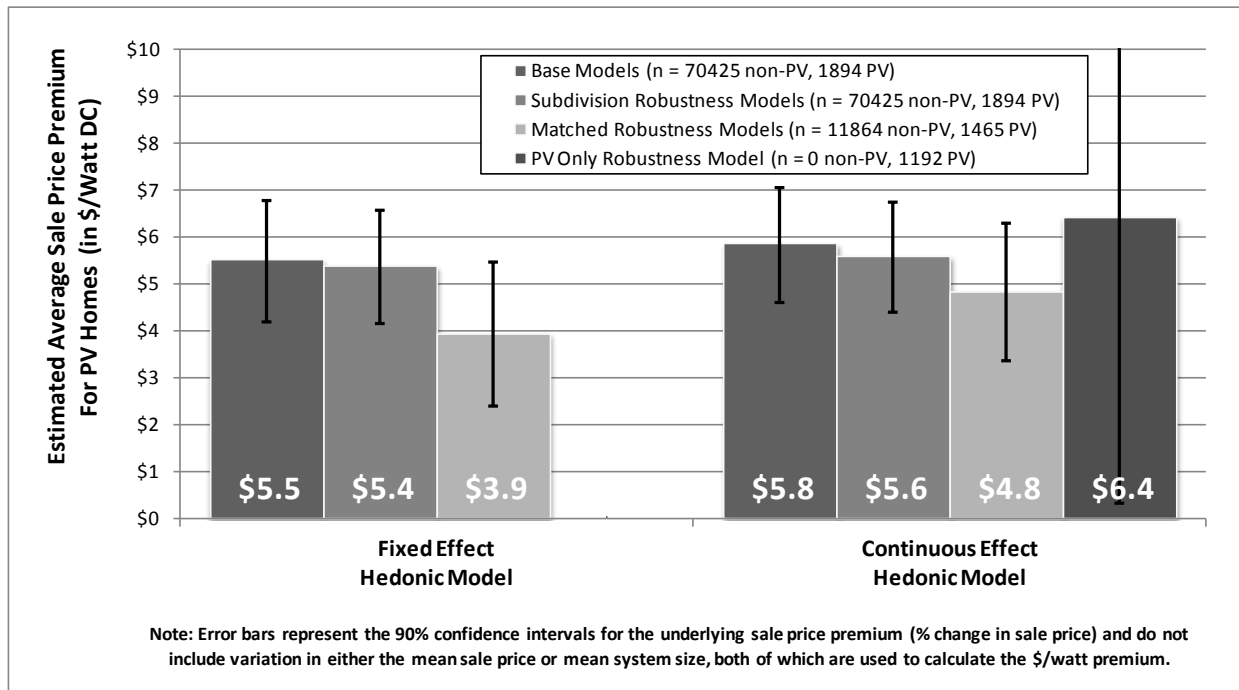
The results from the base hedonic models (equations 1 and 2) are shown in Table 8 as Models 1 and 2, respectively. These models estimate the differences across the full dataset between PV and non-PV homes, with Model 1 estimating this difference as a fixed effect, and Model 2 estimating the difference as a continuous effect for each additional kilowatt (kW) of PV added. Also shown in the table are the results from the robustness tests using the coarsened exact matching procedure and the combined subdivision-block group delineations, as shown as Models 1Ra and 1Rb for PV fixed effect models and Models 2Ra and 2Rb for continuous effect variables. Finally, the model that derives marginal impact estimates from *only* PV homes is shown in the table as Model 2Rc.

Across all seven of these models (Models 1 – 2Rc), regardless of the specification, the variables of interest of PV and SIZE are positive and significant at the 10% level, with six out of seven estimates being significant at the 1% level. Where a PV fixed effect is estimated, the coefficient can be interpreted as the percentage increase in the sales price of a PV home over the mean non-PV home sales price in 2009 dollars based on an average sized PV system. By dividing the monetary value of this increase by the number of watts for the average sized system, this premium can be converted to 2009 dollars per watt (\$/watt). For example, for base Model 1, multiplying the mean non-PV house value of \$480,862 by 0.036 and dividing by 3120 watts, yields a premium of \$5.5/watt (see bottom of Table 8). Where SIZE, a continuous PV effect, is used, the coefficients reflect the percentage increase in selling prices in 2009 dollars for each additional kW added to the PV system. Therefore, to convert the SIZE coefficient to \$/watt, the mean house value for non-PV homes is multiplied by the coefficient and divided by 1000. For

example, for base Model 2, \$480,862 is multiplied by 0.012 and divided by 1000, resulting in an estimate of \$5.8/watt.<sup>38</sup>

As summarized in Figure 2, these base model results for the impact of PV on residential selling prices are consistent with those estimated after controlling for subdivision fixed effects (\$5.4/watt and \$5.6/watt for fixed and continuous effects, respectively), differing by no more than \$0.2/watt. On the other hand, the estimated PV premiums derived from the coarsened exact matched dataset are noticeably smaller, decreasing by 20 to 30%, and ranging from \$3.9/watt to \$4.8/watt for fixed and continuous effects, respectively. Alternatively, the PV only Model 2Rc estimates a higher \$/watt continuous effect of \$6.4/watt, although that estimate is statistically significant at a lower 10% level. This estimate, because it is derived from PV homes only, corroborates that any changes to the home that are coincident with the installation of the PV (e.g., energy efficient upgrades) are not influencing results dramatically.

**Figure 2: Fixed and Continuous Effect Base Model Results with Robustness Tests**



<sup>38</sup> To be exact, the conversion is a bit more complicated. For example, for the fixed effect model the conversion is actually  $(\text{EXP}(\text{LN}(480,862)+0.036)-480,862)/3.12/1000$ , but the differences are *de minimis*, and therefore are not used herein.

Though results among these seven models differ to some degree, the results are consistent in finding a premium for PV homes over non-PV homes in California, which varies from \$3.9 to \$6.4/watt on average, depending on the model specification. These sale price premiums are very much in line with, if not slightly above, the historical mean net installed costs (i.e., the average installed cost of a system, after deducting available state and federal incentives) of residential PV systems in California of approximately \$5/watt from 2001 through 2009 (Barbose et al., 2010), which, as discussed earlier, may be reasonable given that both buyers and sellers might use this cost as a partial basis to value a home.<sup>39</sup>

Additionally, the one other hedonic analysis of PV selling price premiums (which used reasonably similar models as those employed here but a different dataset, concentrating only on homes in the San Diego metropolitan area) found a similar result (Dastrop et al., 2010). In their analysis of 279 homes that sold with PV systems installed in San Diego (our model only contained 35 homes from this area<sup>40</sup> – See Table 5), Dastrop et al. estimated an average increase in selling price of \$14,069, which, when divided by their mean PV system size of 3.2 kW, implies an effect of \$4.4/watt.<sup>41</sup>

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<sup>39</sup> Although not investigated here, one possible reason for sales price premiums that are above net installed costs is that buyers of PV homes may in some cases price in the opportunity cost of avoiding having to do the PV installation themselves, which might be perceived as complex. Moreover, a PV system installation that occurs after the purchase of the home would likely be financed outside the first mortgage and would therefore lose valuable finance and tax benefits, thereby making the purchase of a PV home potentially more attractive than installing a PV system later, even if at the same cost.

<sup>40</sup> Though we identified a higher number of PV homes that sold in the San Diego metropolitan area in our dataset, the home and site characteristics provided to us from the real estate data provider did not contain information on the year of the sale and therefore were not usable for the purpose of our analysis.

<sup>41</sup> In a different model, Dastrop et al. (2010) estimated an effect size of \$2.4/watt but, for reasons not addressed here, this estimate is not believed to be as robust.

**Table 8: Fixed and Continuous Base Hedonic Model Results with Robustness Tests**

	Fixed			Continuous			
	Base	Robustness	Robustness	Base	Robustness	Robustness	Robustness
		Matched	Subdivision		Matched	Subdivision	PV Only
	Model 1	Model 1Ra	Model 1Rb	Model 2	Model 2Ra	Model 2Rb	Model 2Rc
<b>pv</b>	0.036*** (0.005)	0.024*** (0.006)	0.035*** (0.005)				
<b>size</b>				0.012*** (0.002)	0.010*** (0.002)	0.012*** (0.001)	0.013* (0.008)
<b>sqft_1000</b>	0.253*** (0.001)	0.205*** (0.006)	0.250*** (0.001)	0.253*** (0.001)	0.205*** (0.006)	0.250*** (0.001)	0.224*** (0.010)
<b>lt1acre</b>	0.417*** (0.009)	0.514*** (0.040)	0.414*** (0.010)	0.416*** (0.009)	0.510*** (0.040)	0.413*** (0.010)	0.441*** (0.066)
<b>acre</b>	0.016*** (0.002)	0.013 (0.011)	0.015*** (0.003)	0.016*** (0.002)	0.013 (0.010)	0.015*** (0.003)	-0.002 (0.012)
<b>ages2</b>	-0.004*** (0.0002)	-0.006*** (0.0012)	-0.004*** (0.0002)	-0.004*** (0.0002)	-0.006*** (0.0012)	-0.004*** (0.0002)	-0.008*** (0.0030)
<b>ages2sqr</b>	0.00003*** (0.000003)	0.00004*** (0.000012)	0.00003*** (0.000003)	0.00003*** (0.000003)	0.00004*** (0.000012)	0.00003*** (0.000003)	0.00004*** (0.000033)
<b>bgre_100</b>	0.003*** (0.001)	0.015*** (0.004)	0.003*** (0.001)	0.003*** (0.001)	0.015*** (0.004)	0.003*** (0.001)	0.013*** (0.005)
<b>intercept</b>	12.703*** (0.010)	12.961*** (0.044)	12.710*** (0.012)	12.702*** (0.010)	12.957*** (0.043)	12.710*** (0.012)	12.842*** (0.073)
<i>Numbers in parenthesis are standard errors, *** p&lt;0.01, ** p&lt;0.05, * p&lt;0.1</i>							
<i>Results for subdivision, block group, and quarterly fixed effect variables are not reported here, but are available upon request from the authors</i>							
<b>Total n</b>	72,319	13,329	72,319	72,319	13,329	72,319	1,192
<b>Adjusted R<sup>2</sup></b>	0.93	0.95	0.94	0.93	0.95	0.94	0.93
<b>n (pv homes)</b>	1,894	1,465	1,894	1,894	1,465	1,894	1,192
<b>Mean non-pv asp2</b>	\$ 480,862	\$ 480,533	\$ 480,862	\$ 480,862	\$ 480,533	\$ 480,862	\$ 475,811
<b>Mean size (kW)</b>	3.1	3.0	3.1	3.1	3.0	3.1	2.7
<b>Estimated \$/Watt</b>	\$ 5.5	\$ 3.9	\$ 5.4	\$ 5.8	\$ 4.8	\$ 5.6	\$ 6.4
<i>PV Only Model Notes: Mean non-pv asp2 amount shown is actually the mean PV asp2. Sample is limited to block groups with more than one PV home</i>							

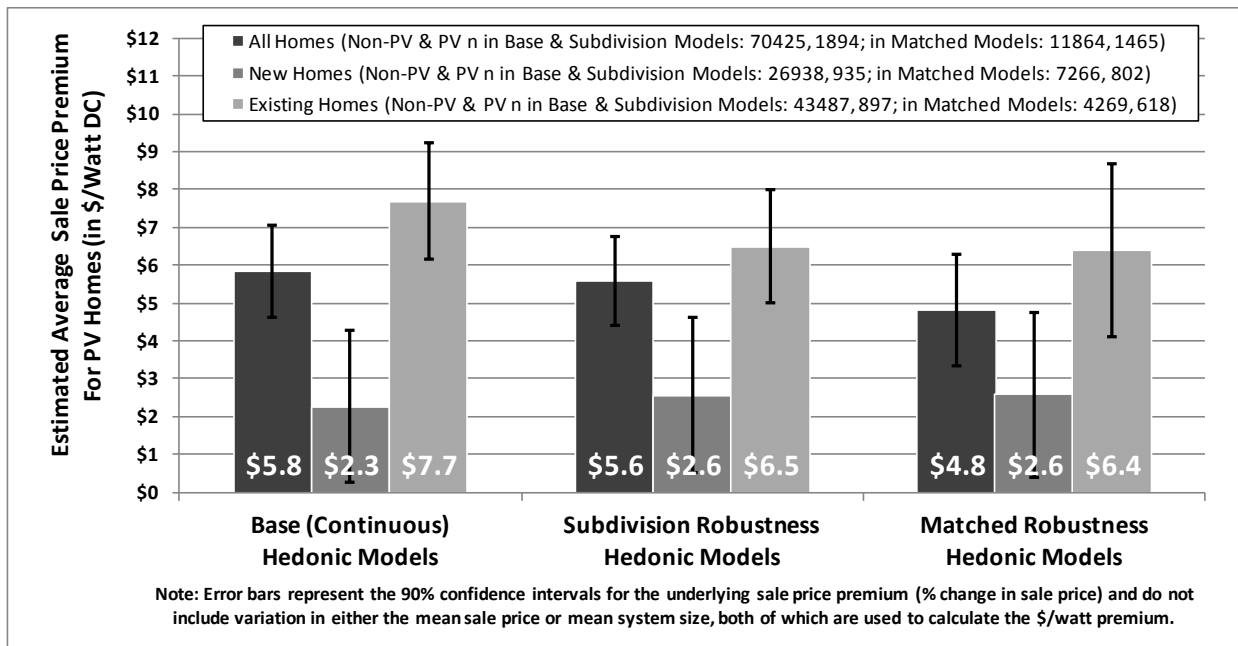
## 4.2. New and Existing Home Model Results

Turning from the full dataset to one specific to the home type, we estimate continuous effects models for *new* and *existing* homes (see equation (2)). These results are shown in Table 9, with Model 3 the base model for *new* homes and Model 4 the base model for *existing* homes. Also

shown are the results from the robustness tests using the coarsened exact matching procedure and the combined subdivision-block group delineations, as Models 3Ra and 3Rb, respectively, for *new* homes, and as Models 4Ra and 4Rb, respectively, for *existing* homes.

The coefficient of interest, *SIZE*, is statistically significant at or below the 10% level in all of the *new* home models and at the 1% level in all of the *existing* home models. Estimates for the average \$/watt increase in selling prices as a result of PV systems (as summarized in Figure 3, which also includes the results presented earlier for all homes, Models 2, 2Ra, and 2Rb) for *new* homes are quite stable, ranging from \$2.3 to \$2.6/watt. In comparison, for PV sold with *existing* homes, not only are the selling price impacts found to be higher, but their range across the three models is somewhat greater, ranging from \$ 6.4 to \$7.7/watt.

**Figure 3: New and Existing Home Base Model Results with Robustness Tests**



Though the reasons for the apparent discrepancy in selling price impacts between *new* and *existing* homes are unclear, and warrant future research, they might be explained, in part, by the difference in average *net* installed costs, which, from 2007 to 2009, were approximately \$5.2/watt for *existing* homes and \$4.2/watt for *new* homes in California (derived from the dataset used for Barbose et al., 2010). The gap in net installed costs between new and existing homes is

not wide enough to fully account for these findings, however, with the model estimates for PV selling price premiums below the average net installed costs for *new* homes and above the average net installed costs for *existing* homes.<sup>42</sup>

Several alternative explanations for the disparity between *new* and *existing* home premiums exist. As discussed previously, there is evidence that builders of *new* homes might discount premiums for PV if, in exchange, PV systems provide other benefits for new home developers, such as greater product differentiation and increased the sales velocity, thus decreasing overall carrying costs (Dakin et al., 2008; SunPower, 2008). Further, sellers of *new* homes with PV might be reluctant to aggressively increase home sale prices for installed PV systems because of the burgeoning state of the market for PV homes and concern that more aggressive pricing could even slow home sales. Additionally, because many builders of *new* homes found that offering PV as an option, rather than a standard feature, posed a set of difficulties (Farhar et al., 2004b; Dakin et al., 2008), it has been relatively common in past years for PV to be sold as a standard feature on homes (Dakin et al., 2008). This potentially affects the valuation of PV systems for two reasons. First, because sales agents for the *new* PV homes have sometimes been found to either not be well versed in the specifics of PV and felt that selling a PV system was a new sales pitch (Farhar et al., 2004b) or to have combined the discussion of PV with a set of other energy features (Dakin et al., 2008), up-selling the full value of the PV system as a standard product feature might not have been possible. Secondly, the average sales price of new homes in our dataset is lower than the average sales price of existing homes: to the extent that PV is considered a luxury good, it may be somewhat less-highly valued for the buyers of these homes.

These downward influences for *new* homes are potentially contrasted with analogous upward influences for *existing* homes. Related, buyers of *existing* homes with PV may - to a greater degree than buyers of the less expensive *new* homes in our sample - be self selected towards those who place particular value on a PV home, and therefore value the addition more. Finally, in contrast to *new* home sellers, who might not be familiar with the intricacies and benefits of the

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<sup>42</sup> A small number of “affordable homes” ( $n = 7$ ) are included in the *new* PV homes subset, which, as a group, appear to have a slight downward yet inconsequential effect on the overall sales premium results, and therefore were not investigated further herein. If the number of affordable homes with PV was significant in future research, those effects would best be controlled for directly.

PV system, *existing* home sellers are likely to be very familiar with the particulars of the system and its benefits, and therefore might be able to “up-sell” it more effectively.

These possible influences, in combination, may explain the difference in average PV premium between *new* and *existing* homes. The present analysis did not seek to disentangle or evaluate these specific drivers, however, leaving that important effort for future research.

**Table 9: New and Existing Home Base Hedonic Model Results with Robustness Tests**

	New Homes			Existing Homes		
	Base	Robustness	Robustness	Base	Robustnes	Robustness
	Model 3	Model 3Ra	Model 3Rb	Model 4	Model 4Ra	Model 4Rb
<b>size</b>	0.006*	0.006*	0.006**	0.014***	0.011***	0.012***
	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)
<b>sqft_1000</b>	0.247***	0.190***	0.250***	0.256***	0.238***	0.251***
	(0.002)	(0.006)	(0.002)	(0.002)	(0.015)	(0.002)
<b>lt1acre</b>	0.536***	0.279***	0.517***	0.373***	0.426***	0.376***
	(0.019)	(0.073)	(0.024)	(0.010)	(0.046)	(0.012)
<b>acre</b>	-0.007	0.338***	-0.009*	0.019***	0.011	0.017***
	(0.005)	(0.027)	(0.005)	(0.002)	(0.011)	(0.003)
<b>ages2</b>	-0.010	0.081***	-0.010*	-0.005***	-0.006***	-0.005***
	(0.006)	(0.017)	(0.006)	(0.000)	(0.002)	(0.000)
<b>ages2sqr</b>	0.00768***	-0.02443***	0.00715***	0.00004***	0.00004***	0.00004***
	(0.001676)	(0.004407)	(0.001604)	(0.000003)	(0.000014)	(0.000004)
<b>bgre_100</b>	0.008***	0.027***	0.007***	0.002	-0.002	0.002
	(0.001)	(0.003)	(0.001)	(0.001)	(0.009)	(0.001)
<b>intercept</b>	12.651***	12.585***	12.627***	12.820***	13.023***	12.833***
	(0.022)	(0.066)	(0.025)	(0.013)	(0.077)	(0.014)
<i>Numbers in parenthesis are standard errors, *** p&lt;0.01, ** p&lt;0.05, * p&lt;0.1</i>						
<i>Results for subdivision, block group, and quarterly fixed effect variables are not reported here, but are available upon request from the authors</i>						
<b>Total n</b>	27,873	8,068	27,873	44,384	4,887	44,384
<b>Adjusted R<sup>2</sup></b>	0.94	0.94	0.94	0.93	0.95	0.94
<b>n (pv homes)</b>	935	802	935	897	618	897
<b>Mean non-pv asp2</b>	\$ 397,265	\$ 399,162	\$ 397,265	\$ 532,645	\$ 590,428	\$ 532,645
<b>Mean size (kW)</b>	2.5	2.4	2.5	3.8	3.7	3.8
<b>Estimated \$/Watt</b>	\$ 2.3	\$ 2.6	\$ 2.6	\$ 7.7	\$ 6.4	\$ 6.5

#### 4.2.1. Difference-in-Difference Model Results

Delving deeper into PV system impacts on *existing* homes, Table 10 (and Figure 4) shows the results of the base Difference-in-Difference Model 5 as well as results from the two robustness tests (all of which can be compared to Models 4, 4Ra, and 4Rb above, as is done in Figure 4). As a reminder, one robustness model limited the differences in sales dates between the first and second sales to five years (Model 5Rb), and the other robustness model used the combined subdivision-block group delineations as fixed effects variables (Model 5Rc). The variables of interest are PVH, SALE2 and especially PVS.

PVH estimates the difference in the first sale prices of homes that will have PV installed (as of the second sale date) relative to non-PV homes. The three models are consistent in their estimates, showing approximately a 2% premium for “future” PV homes, though only two of these estimates are statistically significant, and then only at the 10% level. Regardless, this finding suggests that PV homes tend to sell for somewhat more even before the installation of PV, presumably as a result of other amenities that are correlated with the (ultimate) installation of PV (such as, potentially, energy efficiency features). SALE2 estimates the price appreciation trend between the first and second sales for all homes. The coefficient for this variable is significant at the 1% level, and is fairly stable across the models, indicating a clear general trend of price increases, over and above inflation adjustments, of approximately 2% to 2.5% between the first and second sales.

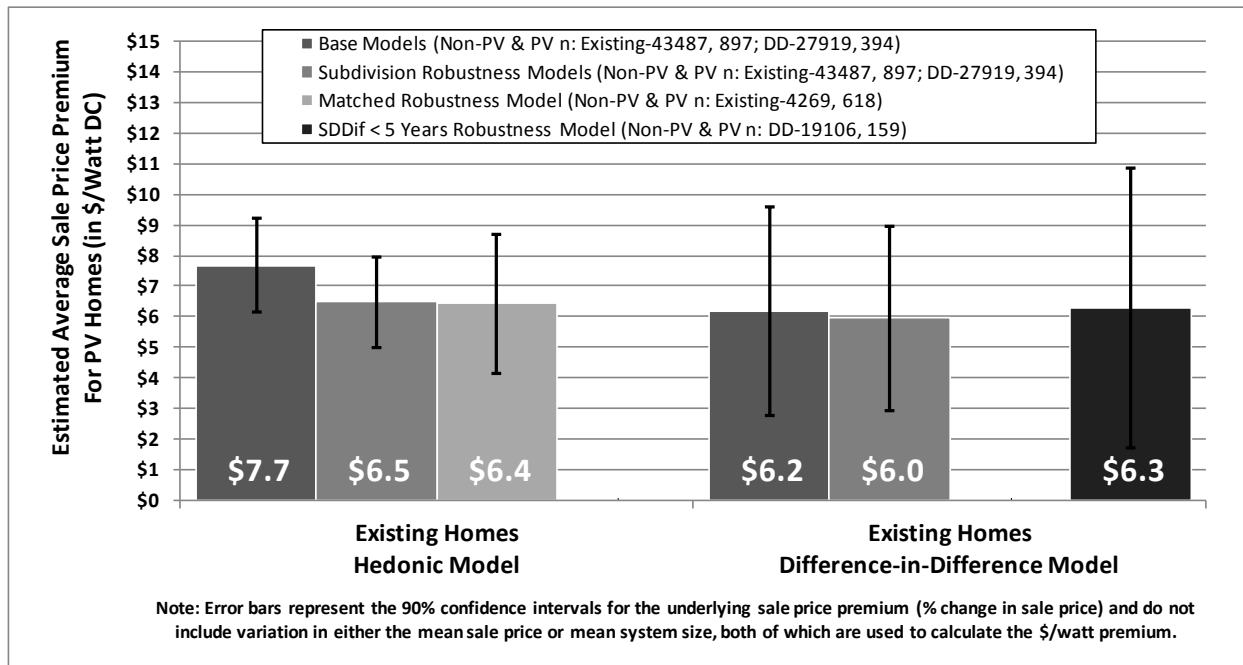
Finally, and most importantly, homes with PV systems installed on them as of the second sale - after controlling for any inherent differences in first sale prices (PVH) and any trend between the first and second sales (SALE2) - show statistically significant sale price premiums of approximately 5 to 6%. These premiums equate to an increase in selling prices of approximately \$6/watt for *existing* homes, closely reflecting the results presented earlier for the hedonic models in Table 9 and Figure 3. For comparison purposes, both sets of results are presented in Figure 4.

The premium for *existing* PV homes as estimated in the DD Models 5, 5Ra, and 5Rb and both robustness tests for the hedonic model (using the “matched” and “subdivision” datasets, Models 4Ra and 4Rb respectively) are consistently between \$6 and \$6.5/watt and are in line with –



though slightly higher than - the mean net installed costs of PV on existing homes in California of approximately \$5.2/watt from 2007 through 2009. The base hedonic *existing* home model, on the other hand, estimates a higher premium of \$7.7/watt. One possible explanation for this inconsistency is that the two robustness tests for the hedonic model and the various difference-in-difference models are less likely to be influenced by either selection or omitted variable bias than the base hedonic model. Regardless of the absolute magnitude, a sizable premium for *existing* PV homes over that garnered by *new* PV homes is clearly evident in these and the earlier results.

**Figure 4: Existing Home Hedonic and Difference-in-Difference Model Results with Robustness Tests**



**Table 10: Difference-in-Difference Model Results**

	Difference-in-Difference		
	Base	Robustness	Robustness
		Subdivision	Sddif < 5
	Model 5	Model 5Ra	Model 5Rb
<b>pvh</b>	0.022*	0.024	0.022*
	(0.013)	(0.021)	(0.012)
<b>sale2</b>	0.023***	0.026***	0.019***
	(0.002)	(0.002)	(0.002)
<b>pvs</b>	0.051***	0.061**	0.049***
	(0.017)	(0.027)	(0.015)
<b>sqft_1000</b>	0.255***	0.256***	0.251***
	(0.002)	(0.002)	(0.002)
<b>ltlacre</b>	0.374***	0.385***	0.377***
	(0.011)	(0.013)	(0.012)
<b>acre</b>	0.012***	0.009**	0.011***
	(0.003)	(0.004)	(0.003)
<b>age</b>	-0.005***	-0.005***	-0.005***
	(0.0002)	(0.0003)	(0.0003)
<b>agesqr</b>	0.00004***	0.00004***	0.00004***
	(0.000003)	(0.000003)	(0.000003)
<b>bgre_100</b>	0.002*	0.000	0.001
	(0.001)	(0.001)	(0.001)
<b>intercept</b>	12.677***	12.594***	12.694***
	(0.013)	(0.015)	(0.014)
<i>Numbers in parenthesis are standard errors. *** <math>p &lt; 0.01</math>, ** <math>p &lt; 0.05</math>, * <math>p &lt; 0.1</math>. Results for subdivision, block group, and quarterly fixed effect variables are not reported here, but are available upon request from the authors</i>			
<b>Total n</b>	28,313	19,265	28,313
<b>Adjusted R<sup>2</sup></b>	0.93	0.94	0.94
<b>n (pv homes)</b>	394	159	394
<b>Mean non-pv asp2</b>	\$ 488,127	\$ 450,223	\$ 488,127
<b>Mean size (kW)</b>	4.0	4.3	4.0
<b>Estimated \$/Watt</b>	\$ 6.2	\$ 6.3	\$ 6.0

### 4.3. Age of PV System for Existing Home Hedonic Model Results

To this point, the marginal impacts to selling prices of each additional kW of PV added to *existing* homes have been estimated using the full dataset of *existing* homes, which has produced an average effect, regardless of the age of the PV system. As discussed previously, it is

conceivable that older PV systems would garner lower premiums than newer, similarly sized systems. To test this directly, a base model is constructed - see equation (4) - that estimates the marginal impacts for three age groups of PV systems: no more than one year old at the time of sale; between two and four years old; and five or more years old. Results from this model as well as two robustness tests, using the coarsened exact matching procedure and the combined subdivision-block group delineations, are shown in Table 11 as Models 6, 6Ra, and 6Rb, respectively.

Each model finds statistically significant differences between PV and non-PV homes for each age group, and more importantly, premium estimates for newer PV systems are - as expected - larger than those for older PV systems and are monotonically ordered between groups, providing some evidence that older systems are being discounted by the buyers and sellers of PV homes. Specifically, the three models estimate an average premium for PV systems that are one year or less in age of \$8.3-9.3/watt, whereas those same models estimate an average premium of \$4.1-6.1/W for systems that are five or more years old.

#### **4.4. Returns to Scale Hedonic Model Results**

In the previous modeling, the marginal impacts to selling prices of each additional kW of PV in the continuous models have been estimated using a linear relationship. To test whether a non-linear relationship may be a better fit, a SIZE squared term is added to the model as shown in equation (5). Similarly, decreasing or increasing returns to scale might be related to other house characteristics, such as the size of the home (i.e., square feet). This hypothesis is explored using equation (6). Both model results are shown in Table 11 as Model 7 and 8, respectively.

Both models find small and non-statistically significant relationships between their interacted variables, indicating a lack of compelling evidence of a non-linear relationship between PV system size and selling price in the dataset, and a lack of compelling evidence that the linear relationship is affected by the size of the home. As such, the impact of PV systems on residential selling prices appears to be well approximated by a simple linear relationship, while the size of the home is not found to impact the PV sales price premium. In combination, these results seem to suggest that while California's tiered rate structures may lead to energy bill savings from PV

investments that vary non-linearly with PV system size and also vary by home size, those same rate structures have not – to this point – led to any clear impact on the PV premium garnered at the time of home sale. Similarly, though larger PV systems may be installed at a discount to smaller ones on a \$/watt basis, and though any marginal green cachet that exists may diminish with system size, those possible influences are not apparent in the results presented here.

**Table 11: Age of PV System and Return to Scale Hedonic Model Results**

	Age of PV Systems for Existing Homes			Returns to Scale	
	Base	Robustness	Robustness	Size	Square Feet
	Model 6	Matched Model 6Ra	Subdivision Model 6Rb	Model 7	Model 8
<b>size*1 year old</b>	0.016*** (-0.004)	0.016*** (-0.005)	0.013*** (-0.004)		
<b>size*2-4 years old</b>	0.015*** (-0.002)	0.010*** (-0.003)	0.013*** (-0.002)		
<b>size*5+ years old</b>	0.012*** (-0.003)	0.008** (-0.004)	0.008** (-0.003)		
<b>size</b>				0.008** (0.003)	0.021*** (0.006)
<b>sizesqr</b>				0.001 (0.001)	
<b>size*sqft_1000</b>					-0.003 (0.002)
<b>sqft_1000</b>	0.256*** (0.002)	0.238*** (0.015)	0.251*** (0.002)	0.253*** (0.001)	0.253*** (0.001)
<b>lt1acre</b>	0.373*** (0.010)	0.426*** (0.046)	0.376*** (0.012)	0.416*** (0.009)	0.416*** (0.009)
<b>acre</b>	0.019*** (0.002)	0.010*** (0.011)	0.017*** (0.003)	0.016*** (0.002)	0.016*** (0.002)
<b>ages2</b>	-0.005*** (0.000)	-0.006*** (0.002)	-0.005*** (0.000)	-0.004*** (0.000)	-0.004*** (0.000)
<b>ages2sqr</b>	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
<b>bgre_100</b>	0.002*** (0.001)	-0.002*** (0.009)	0.002*** (0.001)	0.003*** (0.001)	0.003*** (0.001)
<b>intercept</b>	12.820*** (0.013)	13.024*** (0.078)	12.834*** (0.014)	12.702*** (0.010)	12.701*** (0.011)

*Numbers in parenthesis are standard errors. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$*

*Results for subdivision, block group, and quarterly fixed effect variables are not reported here, but are available upon request from the authors*

<b>Total n</b>	44,384	4,887	44,384	72,319	72,319
<b>Adjusted R<sup>2</sup></b>	0.93	0.95	0.94	0.93	0.93
<b>n (pv homes)</b>	897	618	897	1,894	1,894
<b>Mean non-pv asp2</b>	\$ 532,645	\$ 590,428	\$ 532,645	\$ 480,862	\$ 480,862
<b>Mean size (kW)</b>	3.8	3.7	3.8	3.1	3.1
<b>Estimated \$/Watt</b>	\$8.3 - \$6.1	\$9.3 - \$4.9	\$7.0 - \$4.1	\$ 6.3	\$ 6.4

*Note: \$/watt estimates for Returns to Scale models include the non-statistically significant interaction coefficients and therefore should be interpreted with caution*

## 5. Conclusions

The market for solar PV is expanding rapidly in the U.S. Almost 100,000 PV systems have been installed in California alone, more than 90% of which are residential. Some of those “PV homes” have sold, yet little research exists estimating if those homes sold for significantly more than similar non-PV homes. Therefore, one of the claimed incentives for solar homes - namely that a portion of the initial investment into a PV system will be recouped if the home is sold – has, to this point, been based on limited evidence. Practitioners have sometimes transferred the results from past research focused on energy efficiency and energy bills more generally and, while recent research has turned to PV that research has so far focused largely on smaller sets of PV homes concentrated in certain geographic areas. Moreover, the home sales price effect of PV on a *new* versus an *existing* home has not previously been the subject of research. Similarly unexplored has been whether the relationship of PV system size to home sales prices is linear, and/or is affected by either the size of the home or the age of the PV system.

This research has used a dataset of approximately 72,000 California homes, approximately 2,000 of which had PV systems installed at the time of sale, and has estimated a variety of different hedonic and repeat sales models to directly address the questions outlined above. Moreover, an extensive set of robustness tests were incorporated into the analysis to test and bound the possible effects and increase the confidence of the findings by mitigating potential biases. The research was not intended to disentangle the various individual underlying influences that might dictate the level of the home sales price premium caused by PV, such as, energy costs savings, the net (i.e., after applicable state and federal incentives) installed cost of the PV system, the possible presence of a green cachet, or seller attributes. Instead, the goal was to establish credible estimates for the aggregate PV residential sale price effect across a range of different circumstances (e.g., new vs. existing homes, PV system age).

The research finds strong evidence that homes with PV systems in California have sold for a premium over comparable homes without PV systems. More specifically, estimates for average PV premiums range from approximately \$3.9 to \$6.4 per installed watt (DC) among a large number of different model specifications, with most models coalescing near \$5.5/watt. That

value corresponds to a premium of approximately \$17,000 for a relatively new 3,100 watt PV system (the average size of PV systems in the study). These results are similar to the average increase for PV homes found by Dastrop et al. (2010), which used similar methods but a different dataset, one that focused on homes in the San Diego metropolitan area. Moreover, these average sales price premiums appear to be comparable to the average *net* (i.e., after applicable state and federal incentives) installed cost of California residential PV systems from 2001-2009 (Barbose et al., 2010) of approximately \$5/watt, and homeowners with PV also benefit from electricity cost savings after PV system installation and prior to home sale.

Although the results for the full dataset from the variety of models are quite similar, when the dataset is split among *new* and *existing* homes, PV system premiums are found to be markedly affected, with *new* homes demonstrating average premiums of \$2.3-2.6/watt, while *existing* homes are found to have average premiums of \$6-7.7/watt. Possible reasons for this disparity between *new* and *existing* PV homes include: differences in underlying net installation costs for PV systems; a willingness among builders of new homes to accept a lower PV premium because PV systems provide other benefits to the builders in the form of product differentiation, leading to increased sales velocity and decreased carrying costs; and, lower familiarity and/or interest in marketing PV systems separately from the other features of *new* homes contrasted with a likely strong familiarity with the PV systems among *existing* home sellers.

The research also investigated the impact of PV system age on the sales price premium for existing homes, finding - as would be expected - evidence that older PV systems are discounted in the marketplace as compared to newer PV systems. Finally, evidence of returns to scale for either larger PV systems or larger homes was investigated but not found.

In addition to benchmarking the results of this research to the limited previous literature investigating the sales price premiums associated with PV, our results can also be compared to previous literature investigating premiums associated with energy efficiency (EE) or, more generally, energy cost savings. A number of those studies have converted this relationship into a ratio representing the relative size of the home sales price premium to the annual savings expected due to energy bill reductions. These ratios have ranged from approximately 7:1

(Longstreth et al., 1984; Horowitz and Haeri, 1990), to 12:1 (Dinan and Miranowski, 1989), to approximately 20:1 (Johnson and Kaserman, 1983; Nevin et al., 1999; Eichholtz et al., 2009), and even as high as 31:1 (Nevin and Watson, 1998).

Although actual energy bill savings from PV for the sample of homes used for this research were not available, a rough estimate is possible, allowing for a comparison to the previous results for energy-related homes improvements and energy efficiency. Specifically, assuming that 1,425 kWh (AC) are produced per year per kW (DC) of installed PV on a home (Barbose et al., 2010; CPUC, 2010)<sup>43</sup> and that this production offsets marginal retail electricity rates that average \$0.20/kWh (AC) (Darghouth et al., 2010), each watt (DC) of installed PV can be estimated to save \$0.29 in annual energy costs. Using these assumptions, the \$/watt PV premium estimates reported earlier can be converted to sale price to annual energy savings ratios (see Figure 5).

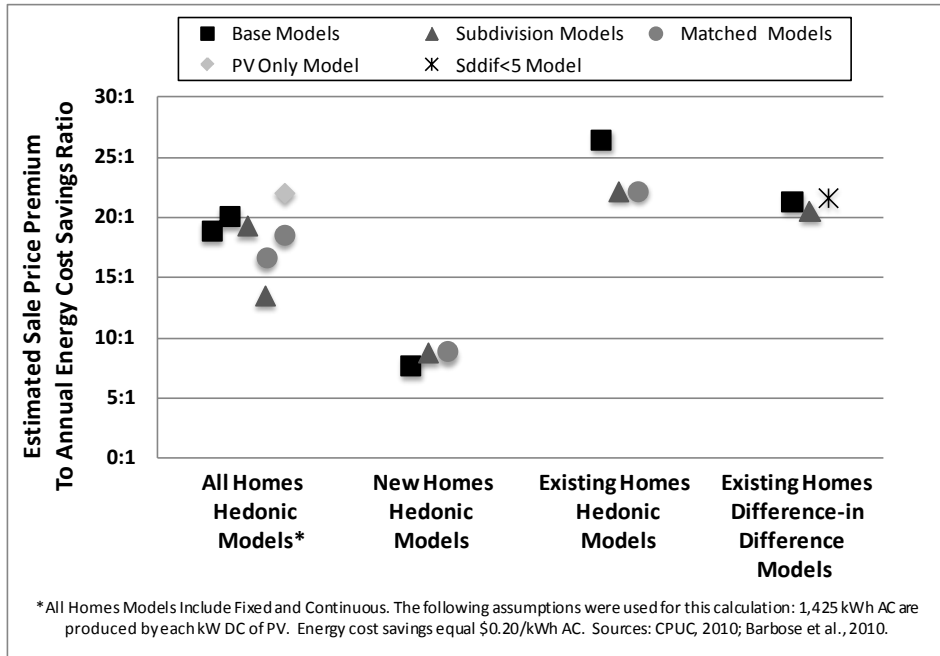
A \$3.9 to \$6.4/watt premium in selling price for an average California home with PV installed equates to a 14:1 to 22:1 sale price to energy savings ratio, respectively. For *new* homes, with a \$2.3-2.6/watt sale price premium, this ratio is estimated to be 8:1 or 9:1, and for *existing* homes, with an overall sale price premium range of \$6-7.6/watt, the ratio is estimated to range from 21:1 to 26:1. Without actual energy bill savings, these estimates are somewhat speculative, but nonetheless are broadly consistent with the previous research that has focused on EE-based home energy improvements.

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<sup>43</sup> The 1,425 kWh (AC) estimate is based on a combination of a 19% capacity factor (based on AC kWh and CEC-AC kW) from CPUC (2010), and an 0.86 conversion factor between CEC-AC kW and DC kW (Barbose et al., 2010).



**Figure 5: Estimated Ratios of Sale Price Premium to Annual Energy Cost Savings**



Although this research finds strong evidence that homes with PV systems in California have sold for a premium over comparable homes without PV systems, the extrapolation of these results to different locations or market conditions (e.g., different retail rates or net installed costs) should be done with care.

Finally, additional questions remain that warrant further study. Perhaps most importantly, although the dataset used for this analysis consists of almost 2,000 PV homes, the study period was limited to sales occurring prior to mid-2009 and the dataset was limited to California. Future research would therefore ideally include more-recent sales from a broader geographic area to better understand any regional/national differences that may exist as well as any changes to PV premiums that occur over time as the market for PV homes and/or the net installed cost of PV changes. More research is also warranted on *new* versus *existing* homes to better understand the nature and underlying drivers for the differential premium discovered in this research; in addition to further hedonic analysis, that research could include interviewing/surveying home builders and buyers and exploring the impact of demographic, socio-economic, and others factors on the PV premium.

Additionally, future research might compare sales price premiums to actual annual home energy cost savings, to not only to explore the sale price to annual energy cost savings ratio directly, but also to explore if a green cachet exists over and above any sale price premiums that would be expected from energy cost savings alone. Further, house-by-house PV system and other information not included in the present study might be included in future studies, such as the actual net installed costs of PV for individual households, rack-mounted or roof-integrated distinctions as well as other elements of PV system design, the level of energy efficiency of the home, whether the home has a solar hot water heater, whether the PV system is customer or 3<sup>rd</sup> party owned at the time of sale, and if the homeowner can sell the green attributes the system generates.<sup>44</sup> Such research could elucidate important differences in PV premiums among households, PV system designs and state and federal programmatic designs, as well as bolster confidence in the magnitude of the PV premium estimated here. Finally, and more generally, additional research could investigate the impact of PV systems on the time homes remain on the market before sale, a factor that may be especially important for large developers and sellers of *new* homes.

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<sup>44</sup> 3<sup>rd</sup> party owned PV systems would not be expected to command the same sort of premium as was discovered here. Although the level of penetration of 3<sup>rd</sup> party owners in our data was not significant (below 10%), and therefore would likely have not influenced our results in a substantive way, any future research, using more recent data, must account for their inclusion specifically.

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# A Planner's Guide to Financing Public Improvements

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## *Chapter 3*

# Special Assessments

The effects of Proposition 218 will be felt nowhere more intensely than in the area of special assessments. The initiative reverses many long-standing procedures and court interpretations relating to the use and levying of special assessments. By design, Proposition 218 restricts the uses to which assessments may be put, limits the property owners who may be charged assessments, increases local agency accountability, and prohibits assessments that lack the support of local property owners. Perhaps unwittingly, Proposition 218 may also increase the cost to local agencies of financing bonded indebtedness through assessments and impose upon local agencies substantial new administrative costs. As noted before, Proposition 218 is not written as clearly as it might have been. Given that clarification will only come through legislation and litigation, its full impact will not be known for some time.

Because it is a Constitutional amendment, Proposition 218 supersedes all conflicting statutory laws. It applies to charter cities as well as counties, general law cities, and special districts. The assessment acts discussed in this chapter will have many provisions, particularly dealing with formation procedures and the scope of assessment power, which are no longer valid. We will note in the discussions of the individual assessment acts where, as of this writing, the acts appear to conflict with the provisions of Proposition 218.

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## **Proposition 218**

Proposition 218 establishes a strict definition of "special benefit." For the purposes of all assessment acts, special benefit means "a particular and distinct benefit over and above general benefits conferred on real property located in the district or the public at large. General enhancement of property value does not constitute 'special benefit.'" In a reversal of previous law, a local agency is prohibited by Proposition 218 from including the cost of any general benefit in the assessment apportioned to individual properties. Assessments are limited to those necessary to recover the cost of the special benefit provided the property. From a practical point of view, this will make open space and park assessments difficult to levy. It also complicates the process of setting assessments intended to finance public services, such as police, ambulance, and fire, and public buildings, such as libraries. The Chief Administrative Office of the County of Los Angeles, for example, has opined that Proposition 218 will require the county to rescind its library assessment and carefully reexamine the legality of its fire assessment.

In addition, assessments levied on individual parcels are limited to the "reasonable cost of the proportional special benefit conferred on that parcel."

Previously, assessments were seldom if ever levied on public property. Proposition 218 specifically requires assessments to be levied on public parcels within an assessment district, unless the agency which owns the parcel can "demonstrate by clear and convincing evidence" that its parcel will receive no special benefit.

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## **Assessment District Formation Procedure**

Proposition 218 establishes a common formation and ratification procedure for all special assessment districts as defined by Section 4, Article XIII D of the California Constitution. These requirements apply to all special assessments, to the exclusion of any conflicting laws. At this writing, the various assessment district acts have not been amended to remove these conflicts and to clarify ambiguities in the application of Proposition 218. The Legislature is expected to begin considering bills for this purpose in 1997.

All assessments must be supported by a detailed engineer's report prepared by a registered professional engineer. The report must contain: the total amount of money chargeable to the assessment district, the amount chargeable to each parcel in the district, the duration of the payments, the reason for the assessment, and the basis upon which the proposed assessment was calculated (Section 4(c), Article XIII D, California Constitution). Although not explicitly mandated by Proposition 218, the report should also include a description of the improvements or services to be financed through the special assessment, the proposed district boundaries, and a description of the special benefit which each parcel receives as a result of the assessment.

Prior to creating an assessment district, the city, county, or special district must hold a public hearing and receive approval from a majority of the affected property owners casting a ballot. All owners of property within the assessment district must be mailed a detailed notice of public hearing and a ballot with which to voice their approval or disapproval of the proposed district at least 45 days prior to the hearing (Section 4(e), Article XIII D, California Constitution). The notice must contain: the total amount of money chargeable to the assessment district, the amount chargeable to each parcel in the district, the duration of the payments, the reason for the assessment, the basis upon which the proposed assessment was calculated, and a summary of the ballot procedure, as well as the date, time, and location of the public hearing. The notice must also disclose that a majority protest will result in the assessment not being imposed.

At the hearing, the governing body of the agency must consider all protests to formation of the district. Assessment district proceedings must be abandoned if a majority of the ballots received by the conclusion of the hearing protest creation of the district. Ballots are to be weighted according to the proportional financial obligation of the affected property - the larger the financial obligation, the greater the weight that must be assigned to that property. Unlike previous law under many of the assessment district acts, the governing body cannot overrule the property owner vote. No other form of election is required. Once an assessment is created, it may be repealed or reduced by popular initiative.

A key practical question about the ballot process under Proposition 218 is who votes when a property is held in multiple ownership (or there are multiple renters who are directly liable for payment of the assessment) or when the property is owned by a public agency? This is not answered in the initiative and is expected to be the subject of legislation, litigation, or both in the coming year.



Agencies are going to have to work harder than ever to levy a new assessment or increase an existing one. They must clearly identify the special benefit being conferred to the parcels being assessed, excluding any identified general benefit. They must apportion the assessment on an individual basis to parcels within the district. Where an assessment is challenged in court, Proposition 218 specifies that the agency carries the burden of proof in showing that the property is receiving a special benefit and that the amount assessed is proportional to, and no greater than, the special benefits conferred. Most importantly, agencies will have to educate property owners about the advantages of the prospective assessment. The ballot process established by Proposition 218 favors those property owners who oppose the assessment (since they are generally the most motivated to return a ballot). Refer to the League of California Cities' "Proposition 218 Implementation Guide" for a discussion of the limits on public agencies' communications in elections.

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## **Effective Date and Grandfathering**

All of the above requirements took effect on November 6, 1996, so they apply to any new or increased assessments proposed after that date. The intent of the sponsors of the initiative is that existing assessments cease by July 1, 1997 unless ratified by the assessed property owners.

As of December 1996, a number of jurisdictions had already indicated that they will hold ratification elections for and, where necessary to limit assessments to special benefits, redraw the boundaries of existing assessment districts. For example, the City of San Mateo will revisit its downtown assessment for parking and street cleaning, Sacramento County will bring its Landscaping and Lighting Districts to a vote, and the City of San Diego will place 33 Landscaping and Lighting and 14 Business Improvement Districts on the ballot for ratification. Some jurisdictions have chosen to convert existing assessments to special taxes in order to avoid any challenge that they do not meet the definition of special benefit. These require the approval of 2/3 of the jurisdiction's voters.

There are exceptions to the application of Proposition 218. These apply to many of the assessments already in place as of November 5, 1996. The following existing assessments are not required to comply with Proposition 218 (although increases after November 6, 1996 may):

- "(a) Any assessment imposed exclusively to finance the capital costs or maintenance and operation expenses for sidewalks, streets, sewers, water, flood control, drainage systems, and vector control..
- "(b) Any assessment imposed pursuant to a petition signed by the persons owning all of the parcels subject to the assessment at the time the assessment is initially imposed.
- "(c) Any assessment the proceeds of which are exclusively used to repay bonded indebtedness of which the failure to pay would violate the Contract Impairment Clause of the Constitution of the United States.
- "(d) Any assessment which previously received majority voter approval from the voters voting in an election on the issue of the assessment." (Section 5, Article XIII D, California Constitution)

Although they are usually sent out with the property tax bill, special assessments are not property taxes. Unlike taxes (including special taxes), the sum of a special assessment cannot exceed the cost of the improvement or service it is financing. Furthermore, special assessments cannot be levied against those properties which do not directly benefit from the improvements being financed. Property that is outside the area receiving the specific

improvements being financed cannot be charged a special assessment.

Ad valorem property taxes on the other hand, are levied on eligible real property based upon that property's assessed valuation, unrelated to the proportional benefits being received by that property. So called "special taxes" are levied for a specific purpose, but are similarly unrelated to the proportional benefit being received from the improvements being financed.

California statutes give local governments the authority to levy a number of special assessments for specific public improvements such as streets, storm drains, sewers, street lights, curbs and gutters, and landscaping. The legislative body of a city, county, or in some cases a special district (flood control district, fire protection district, etc.), may, by invoking the proper statute in the proper manner, create a special assessment district that defines both the area to benefit from the improvements and the properties that will pay for those improvements. Thereafter, each property within the district will be assessed a share of the cost of improvements that is proportional to the direct benefit it receives from those improvements.

Pursuant to California case law, a special assessment district is not considered a separate legal entity like a special district (*Dawson v. Town of Los Altos Hills* (1976) 16 Cal.3d 676). Most special assessment districts have no officers or governing board and are strictly financing mechanisms.

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## History

Special assessments have a long history of use. Nationwide, special assessments can be traced back to a 1691 levy for street and drain construction in New York City. In California, several of the major assessment acts date from the early part of the 20th Century. Until the Great Depression of the 1930's, special assessments were a major municipal financing tool. Economic conditions during the depression caused numerous landowner defaults on assessments which, in turn, made it difficult to pay off the bonds backed by the assessments, and public credit suffered. From that time until the passage of Proposition 13, special assessments were used sparingly as local governments came to rely largely upon property taxes for their income.

When Proposition 13 first took effect, it reduced local property tax revenues by over 50%. Special assessments gained immediate notice as a "new" source of funding. A quick comparison of the use of special assessments before and after Proposition 13 illustrates how assessments have grown in popularity. In the 1960's and mid-70's the volume of assessments is estimated to have been from \$20-50 million per year. By 1985, the estimated annual volume of special assessments had climbed to more than \$700 million.

There were several reasons for the popularity of special assessments. First, the California courts have held they are not ad valorem property taxes. As a result, special assessments are exempt from the taxation limits imposed by Proposition 13 (*Fresno County v. Malmstrom* (1979) 94 Cal.App.3d 974; *Solvang Municipal Improvement District v. Board of Supervisors* (1980) 112 Cal.App.3d 545; *County of Placer v. Corin* (1980) 113 Cal.App.3d 443). Second, they are not "special taxes" requiring two-thirds vote of the electorate prior to being imposed. In fact, prior to Proposition 218, special assessment districts were established by the city council or county board of supervisors and usually not subject to public vote. Third, the proceeds of a special assessment are not "proceeds of taxes" for purposes of the Gann Act (*City Council v. South* (1983) 146 Cal.App.3d 320). Accordingly, funds received from special assessments do not apply toward a jurisdiction's Gann Act spending limit.

Most of the special assessment acts also provide for the issuance of bonds. Bonds are, in effect, money that the local government is borrowing for the purpose of constructing the improvements authorized by the assessment district. These bonds are generally secured by the property within the district and the bonded indebtedness is repaid with the money generated by the assessments. Assessments are subject to reduction or repeal by popular initiative (Section 3, Article XIII C, California Constitution). Agencies securing bonded indebtedness with assessments created or increased after November 6, 1996 should disclose this fact to potential investors. Although the contract clause of the U.S. Constitution would likely preclude an initiative from eliminating an assessment securing bonded indebtedness, the loss of other potential sources of funding through initiative (which would affect the overall financial health of the agency) may be a concern.

Landowners are given the opportunity to pay off the assessment immediately, otherwise, the assessments become liens against the property and landowners pay them off in installments. Typically, assessment bonds are sold to provide the capital needed to pay for immediate construction of the project and are secured by property liens.

Several of the most common types of special assessments are summarized in the following paragraphs. These summaries are general discussions of complex financing acts. Please refer to the statutes themselves for detailed information, particularly on the subject of district formation and hearing requirements. Note that several of these acts are only available for use by cities.

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## The Assessment Acts

### Improvement Act of 1911

*(Streets and Highways Code section 5000 et seq.)*

The 1911 Act may be used by cities, counties, and "all corporations organized and existing for municipal purposes." Assessments under this Act may be used to fund a long list of improvements including:

- transportation systems (including acquisition, construction, maintenance, and operation costs related thereto);
- street paving and grading;
- sidewalks;
- parks;
- parkways;
- recreation areas (including necessary structures);
- sanitary sewers;
- drainage systems;
- street lighting;
- fire protection systems;
- flood protection;
- geologic hazard abatement or prevention;
- water supply systems;
- gas supply systems;
- retaining walls;
- ornamental vegetation;

- navigational facilities;
- land stabilization; and,
- other "necessary improvements" to the local agency's streets, property, and easements.

The 1911 Act may also be used to create a maintenance district to fund the maintenance and operation of sewer facilities and lighting systems.

Pursuant to this act, improvements must be completed before their total cost is assessed against the properties within the district. Contractors are, in effect, reimbursed for their work from the proceeds of the district. This aspect of the 1911 Act requires that sufficient funds be available for the project before it is begun and is a major drawback of the legislation. Total costs may include acquisition, construction, and incidentals (including engineering fees, attorney's fees, assessment and collection expenses, and cost of relocating utilities). The uncertainty that results from Proposition 218's voting requirements will probably discourage the future use of the 1911 Act.

Individual assessments constitute liens against specific parcels and are due within 30 days of confirmation. If assessments are not paid in full within this period, a bond in the amount due is issued to the installer of the improvements and assessments are collected from individual properties to pay off the bond. The property owner receives a separate bill indicating the assessment due. Bonds may also be issued under the Improvement Bond Act of 1915 even though the assessment repaying the bonds has been levied under the 1911 Act. Alternatively, for assessments of less than \$150, the assessment may be collected on the tax roll upon which general taxes are collected.

Since the parcel being assessed is the only security for any bonds issued, accurately estimating the value of the property is very important. The feasibility of the project will hinge on the value of the property involved.

As of this writing, the public notice and assessment procedure under the Act conflicts with the provisions of Proposition 218. Where differences exist, the requirements of the initiative prevail. Legislation is needed to reconcile these differences in the statute.

### **Municipal Improvement Act of 1913**

*(Streets and Highways Code section 10000 et seq.)*

The 1913 Act may be used by cities, counties, joint powers authorities, and certain special districts which are empowered to make any of the improvements authorized under the Act. It specifically authorizes the construction and maintenance of all the facilities authorized under the 1911 Act as well as the following:

- works and appliances for providing water service, electrical power, gas service, and lighting; and
- public transit facilities serving an area smaller than 3 square miles (including stations, structures, rolling stock, and land acquisition related thereto).

In addition, a municipality may enter into an agreement with a landowner to take over the operation and other activities of a sewer or water system owned by that landowner and create a 1913 Act assessment district for the purpose of reimbursing the landowner. Such an assessment district may also include other land that can be served by the system, upon the written consent of the other affected landowners.

Unlike the 1911 Act, the total cost of improvements is assessed against the benefited properties before the

improvements are completed. An assessment constitutes a lien against a specific parcel and is due within 30 days of recording the notice of assessment. If the landowner chooses not to pay the assessment in full at that time, bonds in the amount of the unpaid assessment may be issued under the 1911 Improvement Act or the 1915 Improvement Bond Act. Landowners will then be assessed payments over time.

A number of amendments to the Act enacted in 1992 have expanded its use to include certain building repairs and upgrades that are necessary to the public safety. For example, assessments may now finance work or loans to bring public and private real property or buildings into compliance with seismic safety and fire code requirements (Chapters 1197 and 832, Statutes of 1992.) Work is limited to that certified as necessary by local building officials. Revenues must be dedicated to upgrades; they cannot be used to construct new buildings nor dismantle an existing building. In addition, no property or building may be included within the boundaries of a 1913 Act district established for these purposes without the consent of the property owner. Furthermore, when work is financed on residential rental units, the owner must offer a guarantee that the number of units in the building will not be reduced and rents will not be increased beyond an affordable level.

The 1913 Act can also be used to finance repairs to those particular private and public real properties or structures damaged by earthquake when located within a disaster area (as declared by the Governor) or an area where the Governor has proclaimed a state of emergency as a result of earthquake damage (Chapter 1197, Statutes of 1992). The kinds of work which may be financed include reconstruction, repair, shoring up, and replacement. A jurisdiction has seven years from the time a disaster area is declared or a state of emergency is proclaimed to establish a district under this statute.

As of this writing, the public notice and assessment procedure under the Act conflicts with the provisions of Proposition 218. Where differences exist, the requirements of the initiative must be followed. Legislation is needed to reconcile the Act with Proposition 218.

### **Improvement Bond Act of 1915**

*(Streets and Highways Code section 8500 et seq.)*

This legislation does not authorize assessments. Instead, it provides a vehicle for issuing assessment bonds (including variable interest bonds) for assessments levied under the 1911 and 1913 Acts as well as a number of other benefit assessment statutes. Under this legislation, the local legislative body may also issue "bond anticipation notes" prior to actual bond sale - in effect borrowing money against the assessment bonds being proposed for sale. The 1915 Act is available to cities, counties, public districts, and public agencies.

After assessments have been levied and property owners given the opportunity to pay them off in cash, the local government will issue bonds for the total amount of unpaid assessments. Assessments collected to pay off 1915 Act bonds appear on the regular tax bill and are collected in the same manner as property taxes.

### **Park and Playground Act of 1909**

*(Government Code section 38000 et seq.)*

The Park and Playground Act is a method for cities to finance public park, urban open-space land, playground, and library facilities. Pursuant to a 1974 revision, the act incorporates the procedures and powers of the Improvement Act of 1911, the Municipal Improvement Act of 1913, and the Improvement Act of 1915 to finance improvements. In addition to the power to levy assessments and issue bonds, the act provides that the city council may condemn land for improvements.

## **Tree Planting Act of 1931**

*(Streets and Highways Code section 22000 et seq.)*

Pursuant to this act, cities may levy assessments to fund the planting, maintenance or removal of trees and shrubs along city streets and to pay employees to accomplish this work. Assessments for maintenance are limited to a period of 5 years.

These assessments are apportioned on the basis of street frontage. Work is to be administered by the city parks department or other agency as appointed by the city council.

As of this writing, the public notice and assessment procedure under the Act conflicts with the provisions of Proposition 218. Where differences exist, the requirements of the initiative prevail. Legislation is needed to reconcile the Act with Proposition 218. A city contemplating the use of the Act should document that street frontage is a valid measure of "special benefit." If frontage is not a directly indicator of benefit, use of this Act may be difficult to defend.

## **Landscaping and Lighting Act of 1972**

*(Streets and Highways Code section 22500 et seq.)*

This Act may be used by cities, counties, and special districts (including school districts). Alleged abuse of the Landscaping and Lighting Act by cities and school districts was one of the motivating forces behind Proposition 218. The initiative targeted the allegedly tenuous link between parks and recreation facilities and the benefit they provided to properties in the area. Prior to Proposition 218, the successful argument in favor of the Landscaping and Lighting Act was that parks, open space, and recreation facilities benefited properties by increasing their value. As a result of the strict definition of special benefit created by Proposition 218 ("General enhancement of property value does not constitute 'special benefit.'"), that justification no longer exists and this Act will be much harder to use.

The 1972 Act enables assessments to be imposed in order to finance:

- acquisition of land for parks, recreation, and open space;
- installation or construction of planting and landscaping, street lighting facilities, ornamental structures, and park and recreational improvements (including playground equipment, restrooms and lighting); and,
- maintenance and servicing of any of the above.

Amendments to the Act, effective January 1, 1993, exclude from the authorized improvements any community center, municipal auditorium or hall, or similar public facility, unless approved by the property owners owning 50 percent of the area of assessable lands within the proposed district. The election shall be conducted following the adoption of an ordinance or resolution at a regular meeting of the legislative body of the local agency and is in lieu of any public notice or hearing otherwise required by this part.

As of this writing, the public notice and assessment procedure under the Act conflicts with the provisions of Proposition 218. Where differences exist, the requirements of the initiative prevail. Legislation is needed to reconcile the Act with Proposition 218.

## **Benefit Assessment Act of 1982**

*(Government Code section 54703 et seq.)*

This statute provides a uniform procedure for the enactment of benefit assessments to finance the maintenance and operation costs of drainage, flood control, and street light services and the cost of installation and improvement of drainage or flood control facilities. Under legislation approved in 1989 (SB 975, Chapter 1449), this authority is expanded to include the maintenance of streets, roads, and highways. As with most other assessment acts, it may be used by cities, counties, and special districts which are otherwise authorized to provide such services. It does, however, have some differences that set it apart.

Assessments can be levied on a parcel, a class of property improvement, use of property, or any combination thereof. Assessments for flood control services can be levied on the basis of proportionate stormwater runoff from each parcel rather than a strict evaluation of the flood protection being provided. The amount of assessment must be evaluated and reimposed annually. Assessments are collected in the same manner as property taxes.

As of this writing, the public notice and assessment procedure under the Act conflicts with the provisions of Proposition 218. Also, the Act states that an assessment may be levied wherever service is available, regardless of whether the service is actually used - this may conflict with the initiative's definition of "special benefit." Where differences exist between statute and initiative, the requirements of the initiative prevail. Legislation is needed to reconcile the Act with Proposition 218.

### **Integrated Financing District Act**

*(Government Code section 53175 et seq.)*

This legislation creates an alternate method for collecting assessments levied under the 1911, 1913, and 1915 Acts, the Landscaping and Lighting Act of 1972, the Vehicle Parking District Law of 1943, the Parking District Law of 1951, the Park and Playground Act of 1909, the Mello-Roos Community Facilities Act of 1982, the Benefit Assessment Act of 1982, and charter cities' facility benefit assessments. The Integrated Financing District Act applies to all local agencies insofar as those agencies have the authority to use any of the above listed financing acts. Assessments levied under this act can be used to pay the cost of planning, designing, and constructing capital facilities authorized by the applicable financing act, pay for all or part of the principle and interest on debt incurred pursuant to the applicable financing act, and to reimburse a private investor in the project.

The Integrated Financing District Act has two unique properties:

- (1) it can levy an assessment which is contingent upon *future* land development and payable upon approval of a subdivision map or zone change or the receipt of building permits;
- (2) it allows the local agency to enter into an agreement with a private investor whereby the investor will be reimbursed for funds advanced to the agency for the project being financed.

Because the assessment is not triggered until development is ready to begin, these features make the act an attractive option when development is to occur in phases. Payment of assessments will be deferred until such time as public improvements are needed.

The procedure for creating an integrated financing district, including entering into a reimbursement agreement, is in addition to the procedure required by the applicable assessment act. The resolution of intention must include a description of the rates and method of apportionment, the contingencies which will trigger assessment of the levy, the fixed dollar amount per unit of development for the contingent levy, and a description of any proposed

reimbursement agreement. The assessment and entry into any agreement are effective upon approval of the legislative body.

As of this writing, the public notice and assessment procedure under the Act conflicts with the provisions of Proposition 218. Where differences exist, the requirements of the initiative prevail. Legislation is needed to reconcile the Act with Proposition 218.

### **Street Lighting Act of 1919**

*(Streets and Highways Code section 18000 et seq.)*

This act allows cities to levy benefit assessments for the maintenance and operation of street lighting systems. Assessments may also finance the installation of such a system by a public utility.

Assessments are liens against land and are due within 30 days of being recorded by the tax collector. The 1919 Act also establishes two alternate methods for collecting payments on an installment basis in the manner of property taxes. An assessment levied under this act must be evaluated and reapplied annually after a public hearing, and , pursuant to Proposition 218, a vote of the property owners.

As of this writing, the public notice and assessment procedure under the Act conflicts with the provisions of Proposition 218. Where differences exist, the requirements of the initiative prevail. Legislation is needed to reconcile the Act with Proposition 218.

### **Municipal Lighting Maintenance District Act of 1927**

*(Streets and Highways Code section 18600 et seq.)*

This statute provides for the maintenance and operation (but not the installation) of street lighting systems within cities. Assessments are limited to a maximum of 5 years.

As of this writing, the public notice and assessment procedure under the Act conflicts with the provisions of Proposition 218. Where differences exist, the requirements of the initiative prevail. Legislation is needed to reconcile the Act with Proposition 218.

### **Street Lighting Act of 1931**

*(Streets and Highways Code section 18300 et seq.)*

The 1931 Act is another means for cities to finance the maintenance and service (but not installation) of street lighting systems. Assessments under this act are levied annually and collected in installments in the manner of city taxes. The term of assessment is limited to 5 years.

As of this writing, the public notice and assessment procedure under the Act (which resembles the procedure under the 1919 Street Lighting Act) conflicts with the provisions of Proposition 218. Where differences exist, the requirements of the initiative prevail. Legislation is needed to reconcile the Act with Proposition 218.

### **Parking District Law of 1943**

*(Streets and Highways Code section 31500 et seq.)*

This act authorizes a city or county to levy assessments to finance:



- the acquisition of land for parking facilities;
- the construction, operation, and maintenance of parking facilities (including garages); and,
- the costs of engineers, attorneys or other people necessary to acquisition, construction, operations, and maintenance.

The Parking District Law incorporates the assessment procedures and powers of the 1911, 1913, and 1915 Acts discussed previously. It also authorizes the use of meters, user fees, and ad valorem taxes to raise funds.

Once parking facilities have been acquired, administration of the parking district is turned over to a "Board of Parking Place Commissioners" appointed by the city mayor or county board of supervisors. This board reports to the legislative body on the status of the district each year. Annual assessments are levied by the legislative body, in accordance with Proposition 218.

As mentioned earlier, the public notice and assessment procedures of the 1911, 1913, and 1915 Acts currently conflict with the provisions of Proposition 218. Where differences exist, the requirements of the initiative prevail. Legislation is needed to reconcile the Act with Proposition 218.

### **Parking District Law of 1951**

*(Streets and Highways Code section 35100 et seq.)*

Cities are authorized to finance the following activities under this act:

- acquisition of land for parking facilities (including the power of eminent domain);
- improvement and construction of parking lots and facilities;
- issuance of bonds; and,
- employee salaries.

Special assessments under the 1911 Act may be levied to replace the use of fees and charges to repay outstanding bonds. Other revenue sources may include user fees, parking meter charges, and ad valorem taxes.

District formation proceedings are initiated upon petition of involved land owners and generally follow the pattern of other assessment acts. As in the 1943 Act, the district is to be administered by an appointed parking commission.

As with those other acts, the public notice and assessment procedure of the 1951 Act currently conflicts with the provisions of Proposition 218. Where differences exist, the requirements of the initiative prevail. Legislation is needed to reconcile the Act with Proposition 218.

### **Parking and Business Improvement Area Law of 1989**

*(Streets and Highways Code section 36500 et seq.)*

This act recodifies and supplants the 1979 law of the same name, now repealed. The Parking and Business Improvement Area Law of 1989 enables a city, county, or joint powers authority made up of any combination of cities and counties to establish areas of benefit and to levy assessments on businesses within those areas to finance the following improvements:

- parking facilities;
- parks;

- fountains, benches, and trash receptacles;
- street lighting; and,
- decorations.
- Assessment revenues may also be used for any of the following activities:
- promotion of public events benefiting area;
- businesses which take place in public places within the area;
- furnishing music to any public place in the area;
- promotion of tourism within the area; and,
- any other activities which benefit businesses located in the area.

Assessments must be directly proportional to the estimated benefit being received by the businesses upon which they are levied. Furthermore, in an area formed to promote tourism, only businesses that benefit from tourist visits may be assessed. The agency creating the assessment district area is authorized to finance only those improvements or activities which were specified at the time the area is formed. An unusual feature of this law is that assessments may be apportioned differently among zones of benefit, in relation to the benefit being received by businesses within each zone. The agency should carefully document the special benefit which each assessed property will receive. Pursuant to Proposition 218, the assessment cannot finance improvements or services of general benefit.

Establishment proceedings may be initiated by either the legislative body of the city or county. The procedure is generally similar to other assessment acts and requires adoption of a resolution of intention and a noticed public hearing at which protests may be considered. If written protests are received from the owners of businesses which would pay 50 percent or more of the proposed assessment, the formation proceedings must be set aside for a period of one year. If these protests are only against a particular improvement or activity, the legislative body must delete that improvement or activity from the proposal. After a district has been established under this law, the legislative body must appoint an advisory board to make recommendations on the expenditure of revenues from the assessment. The advisory board may also be appointed prior to the adoption of a resolution of intention to make recommendations regarding that notice.

There's some ambiguity over whether Proposition 218 applies to the 1989 Law. Arguably, it does not apply since assessments are levied on businesses and are therefore not "a charge upon real property." Agencies should approach this assessment act with caution and a strong opinion from counsel before choosing not to comply with Proposition 218.

### **Property and Business Improvement District Law of 1994**

*(Streets and Highways Code section 36600 et seq.)*

A city, county, or joint powers authority made up of cities and counties may adopt a resolution of intention to establish this type of district upon receiving a written petition signed by the property owners of the proposed district who would pay more than 50 percent of the assessments being proposed. The city, county, or JPA must appoint an advisory board within 15 days of receiving a petition which shall make recommendations to the legislative body regarding the proposed assessments (Streets and Highways Code section 36631).

The improvements which may be financed by these assessments include those enumerated under the Parking and Business and Improvement Area Law of 1989, as well as such other items as:

- closing, opening, widening, or narrowing existing streets;

- rehabilitation or removal of existing structures; and
- facilities or equipment, or both, to enhance security within the area.
- Assessment revenues may finance the activities listed under the 1989 Law, as well as the following:
- marketing and economic development; and
- security, sanitation, graffiti removal, street cleaning, and other municipal services supplemental to those normally provided by the municipality.

No provision is made within this law for financing bonded indebtedness.

The property owners' petition is required to include a management district plan consisting of a parcel-specific map of the proposed district, the name of the proposed district, a description of the proposed boundaries, the improvements or activities being proposed over the life of the district and their cost, the total annual amount proposed to be expended in each year of the district's operation, the proposed method and basis of levying the assessment, the time and manner of collecting assessments, the number of years in which assessments will be levied (this is limited to five years maximum), a list of the properties being benefited, and other related matters (Streets and Highways Code 36622).

The legislative body's resolution must include the management district plan as well as the time and place for a public hearing on the establishment of the district and levy of assessments will be held (Streets and Highways Code 36621). This hearing must be held within 60 days after the adoption of the resolution. Hearing notice must be provided pursuant to Government Code section 54954.6. Both mailed and newspaper notice are required (Streets and Highways Code section 36623).

The proposal to form the district must be abandoned if written protests are received from the owners of real property within the proposed district who would pay 50 percent or more of the assessments (Streets and Highways Code section 36625). In addition, when a majority protest has been tendered, the legislative body is prohibited from reinitiating the assessment proposal for a period of one year.

The public notice and assessment procedures of the 1994 Law are similar to the provisions of Proposition 218. An agency proposing to use the Act should take care to ensure that they are proceeding in harmony with Proposition 218 and that the properties being assessed are receiving an actual special benefit. Where conflicts exist, the requirements of the initiative prevail.

No assessments under this law can be levied on residential properties or on land zoned for agricultural use (Streets and Highways Code section 36635).

This statute is an alternative to the Parking and Business and Improvement Area Law of 1989 and does not affect any districts formed under that law.

### **Pedestrian Mall Law of 1960**

*(Streets and Highways Code section 11000 et seq.)*

This authorizes cities and counties to establish pedestrian malls, acquire land for such malls (including power of eminent domain), restrict auto traffic within the malls, and to levy benefit assessments to fund mall improvements. Improvements may include:

- street paving;

- water lines;
- sewer and drainage works;
- street lighting;
- fire protection;
- flood control facilities;
- parking areas;
- statues, fountains and decorations;
- landscaping and tree planting;
- child care facilities;
- improvements necessary to a covered air-conditioned mall; and,
- relocation of city-owned facilities.

Assessments may also be used to pay damages awarded to a property owner as a result of the mall.

Establishment proceedings are similar to those found in other assessment acts. Accordingly, these provisions do not currently conform to the requirements of Proposition 218 and await reconciliation. Where conflicts exist, the requirements of the initiative prevail. Assessments and bonds are to be levied in accordance with the provisions of the Vehicle Parking District Law of 1943 (which provides for use of the 1911 and 1915 Acts, among others).

### **Permanent Road Divisions Law**

*(Streets and Highway Code sections 1160 et seq.)*

This statute enables counties to establish areas of benefit (called "divisions" under this law) within which assessments may be levied in order to finance construction, improvement, or maintenance of any county road, public road easement, or private road or easement which contains a public easement (Streets and Highways Code section 1179.5). The statute also empowers a board of supervisors to levy special taxes for these purposes upon approval by 2/3 of the electorate within the division.

Proceedings for the formation of a road division may be initiated by either: (1) a resolution of the Board of Supervisors; or, (2) submittal to the Board of Supervisors of a petition containing either the signatures of a majority of the land owners within the proposed division or the owners of more than 50 percent of the assessed valuation. The public notice and assessment procedures of the Permanent Road Divisions Law conflict with the provisions of Proposition 218 by failing to provide for a property owners' ballot. The requirements of Proposition 218 must be followed in order to establish a division. Legislation is needed to reconcile the Act with Proposition 218.

### **Community Rehabilitation District Law of 1985**

*(Government Code section 53370 et seq.)*

This act provides a means for cities and counties to finance the rehabilitation, renovation, repair or restoration of existing public infrastructure. It cannot, however, be used to pay for maintenance or services. A Community Rehabilitation District cannot be formed within a redevelopment project area.

A district established under the 1985 Act can rehabilitate public capital facilities such as:

- streets;
- sewer and water pipes;

- storm drains;
- sewer and water treatment plants;
- bridges and overpasses;
- street lights;
- public buildings;
- criminal justice facilities;
- libraries; and,
- park facilities.

It can also finance the expansion of facility capacity or the conversion to alternative technology.

The 1985 Act allows a rehabilitation district to use any of the following financing tools:

- Special assessments under the Improvement Act of 1911 and the Municipal Improvement Act of 1913 and bonds under the Improvement Bond Act of 1915.
- Special taxes and bonds pursuant to the Mello-Roos Community Facilities Act of 1982.
- Fees or charges, provided that these do not exceed the amount reasonably necessary to cover the cost of the involved project.
- Senior obligation bonds under the 1985 Act's own provisions (Gov. Code section 53387 et seq.).

Certain of the public notice and assessment procedures of this act conflict with Proposition 218. An agency proposing to use the Community Rehabilitation District Law should take care to ensure that they are proceeding in harmony with Proposition 218 and that the properties being assessed are receiving a concrete special benefit. Under Proposition 218, a general enhancement of property value is not a special benefit.

Public notice must be provided over a period of 5 weeks prior to the district formation hearing. This notice must contain the text of the resolution of intent, the time and place of the hearing, and a statement that the hearing will be open to all interested persons in favor of or opposed to any aspect of the district. If the district will utilize any of the above special assessment or community facilities acts, it may combine the notices required by those acts with this notice.

A separate procedure exists for issuing, administering, and refunding senior obligation bonds pursuant to the 1985 Act (Gov. Code sections 53387 - 53594). Issuance involves adopting a resolution of intention and submitting the bond issue to the voters of the district. Affirmation by a simple majority of voters is necessary to approve issuance of the bonds.

### **Geologic Hazard Abatement District**

*(Public Resources Code section 26500 et seq.)*

This statute authorizes a city or county to create an independent Geologic Hazard Abatement District (GHAD) empowered to finance the prevention, mitigation, abatement, or control of actual or potential geologic hazards through the levy and collection of special assessments. The statute broadly defines geologic hazards to include: landslides, land subsidence, soil erosion, earthquakes, or "any other natural or unnatural movement of land or earth."

A district can:

- acquire property by purchase, lease, gift, or eminent domain;
- construct improvements;
- maintain, repair, or operate any improvements; and,
- use any of the assessment and bond procedures established in the Improvement Act of 1911, the Municipal Improvement Act of 1913, and the Improvement Bond Act of 1915.

Proceedings for forming a GHAD may be initiated by resolution of the city or county or by petition of the owners of at least 10% of affected property. A landowner petition must include signatures, legal descriptions, and a map of the proposed district boundaries. In addition, the city, county, or petitioners must include a "plan of control" prepared by an engineering geologist which describes the geologic hazard to be addressed, its location, the affected area, and a plan for the prevention, mitigation, abatement, or control of the hazard.

When forming a GHAD, the legislative body of the city or county can be the governing body of the district. Alternatively, the legislative body can appoint five land owners to act as the district's board of directors. Thereafter, board members will be elected every four years from within the district. Unlike most special assessment districts, the GHAD is an entity independent of the city or county.

The current procedure for forming a GHAD conflicts with Proposition 218 in that it does not provide for a property owners' ballot on the question of formation. When forming a GHAD, the city or county must conform its procedure to the engineer's report, public notice, balloting, and other requirements of Proposition 218.

The statute also provides for emergency formation of a GHAD upon the request of two-thirds of the affected property owners (Public Resources Code sections 26568-26597.7). This is invalid to the extent it conflicts with Proposition 218.

The statute does not describe the method for dissolving a GHAD. However, the California Court of Appeal has opined that dissolution of a GHAD is subject to the procedures of the Cortese-Knox Local Government Reorganization Act (Gov. Code 56000, et seq.) and cannot be unilaterally undertaken by a city (*Las Tunas GHAD v. Superior Court (City of Malibu)* (1995) 38 Cal.App.4th 1002). Under this interpretation, although district formation is undertaken by a city or county without the involvement of the county Local Agency Formation Commission (LAFCO), dissolving a district requires adherence to LAFCO procedures.

A GHAD has several advantages to recommend it. One, its boundaries need not be contiguous, so it can focus on just those properties subject to hazard. Second, it is an independent district with its own board of directors drawn from the affected property owners. Third, it is not limited to a single city or county; its boundaries can cross jurisdictional lines. Fourth, its formation proceedings are not subject to review by the Local Agency Formation Commission, thereby simplifying the process. Fifth, its formation is exempt from the California Environmental Quality Act.

Contra Costa County has formed GHADs in its Blackhawk and Canyon Lakes developments. In both, the County Board of Supervisors serves as the governing body.

### **Open Space Maintenance Act**

*(Government Code sections 50575 et seq.)*

Cities and counties are empowered to spend public funds to acquire open space land for preservation (Government Code sections 6950-6954). The Open Space Maintenance Act provides a means to levy an ad

valorem special assessment to pay for the following services related to such land:

- conservation planning;
- maintenance;
- improvements related to open space conservation; and,
- reduction of fire, erosion, and flooding hazards through clearing brush, making fire protection improvements not otherwise provided the area, planting and maintaining trees and other vegetation, creating regulations limiting area use, and construction of general improvements.

The owners of lands representing 25% or more of the value of the assessable land within the proposed district may initiate district formation by filing a petition with the involved city or county. The local legislative body must then prepare a preliminary report containing a description of the proposed boundaries, the work to be done, an estimate of the cost of the assessment, and illustrating the parcels to be benefitted. The planning commission must review the report and make recommendation to the legislative body. Once the legislative body has reviewed the report, concluded that such a district is justified, and adopted an ordinance of intention to form an assessment district, it will set a time and place for hearing objections to the proposal. The ordinance of intention must specify the district boundaries, the proposed projects, the annual assessment, the maximum assessment, and the time of the protest hearing (Government Code section 50593). Notice must be placed in a newspaper of general circulation, mailed to involved property owners, and posted in a public place. The formation proceedings in current law conflict with the requirements of Proposition 218. A city or county must be careful to substitute the requirements of Proposition 218 for any conflicting provisions in the code. This statute needs to be amended to reconcile it with Proposition 218.

### **Fire Suppression Assessment**

*(Government Code section 50078 et seq.)*

Special districts, county service areas, counties, and cities which provide fire suppression services (including those provided by contracting with other agencies) are authorized to levy assessments under this act. The resulting revenues may be used to obtain, furnish, operate, and maintain fire fighting equipment and to pay salaries and benefits to firefighting personnel.

Unlike the other special assessment acts, invocation of fire suppression assessments does not require establishment of an assessment district. Instead, the jurisdiction levying the assessment specifies those parcels or zones within its boundaries that will be subject to assessment.

Assessments are based upon uniform schedules or rates determined by the risk classification of structures and property use. Agricultural, timber, and livestock land is assessed at a lower rate on the basis of relative risk to the land and its products. The local agency may establish zones of benefit, restricting the applicability of assessments. In addition, assessments may be levied on parcels, classes of improvement or property use or any combination thereof. Assessments are proportional to the fire protection benefits received by property and improvements, but may be levied whether or not the service is actually used.

The procedure for establishing a fire suppression assessment includes:

- filing of a report which details the land to be assessed, the initial amount of assessment, the maximum assessment, the duration of the assessment, and the schedule or rate of assessment;
- public notice and hearing;

- protest procedures; and,
- adoption of an ordinance or resolution imposing the levy.

Proposition 218, with its strict definition of "special benefit," may pose a problem for new or increased assessments under this code. In fact, some jurisdictions, such as the Tamalpais Valley Fire District and the County of Los Angeles, have placed fire protection levies before the voters as special taxes (subject to two-thirds approval), effectively converting them from assessments.

The agency proposing to levy fire suppression assessments must be careful to document the special benefit (excluding any benefit to the general public and any general enhancement of property value) accruing to each parcel that is included in the assessment district. In addition, the formation proceedings in current law conflict with the requirements of Proposition 218. A city or county must substitute the requirements of Proposition 218 for all conflicting provisions in the code.

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## Facilities Benefit Assessment

The City of San Diego is levying assessments for capital improvements in urbanizing areas designated on its general plan. The city's Facilities Benefit Assessment (FBA) ordinance is generally based upon the Municipal Improvement Act of 1913, but relies upon this charter city's home rule powers rather than state statutes for authority. It is being used to pay for capital improvements such as major arterial and local streets, sewer and water facilities, a park and ride lot, a fire station, and a library in the North City West Community Plan area.

The FBA ordinance establishes areas of benefit to be assessed for needed improvements in newly developing areas. Each parcel within an area of benefit is apportioned its share of the total assessment for all improvements (including those required for later development phases) which is then recorded on the assessment roll. Assessments are liens on private property as with the state assessment acts. Upon application for a building permit the owner of the parcel must pay the entire assessment (the payment is pro rated if only a portion of the parcel is being developed at one time). Payment releases the city's lien on the property. The funds that are collected are placed in separate accounts to be used for the needed improvements and do not exceed the actual cost of the improvements plus incidental administrative costs. San Diego's FBA financing relies upon assessments only and does not provide for issuing bonds.

The procedure for levying assessments laid out in the city's FBA ordinance parallels the state improvement acts. For the North City West Public Facilities Financing Plan FBA, the city prepared a report detailing needed improvements, construction costs and schedule, the proposed area of benefit, and the proposed formula for apportioning the assessment. After adopting the report and a notice of intention to consider enacting the assessment, the city scheduled a public hearing for the purpose of considering protests. At the hearing, the city presented additional information regarding the proposed boundaries of the areas of benefit, the facilities to be constructed, the method of apportionment, the method of computing annual increases in the assessment, and the amount of the city's contribution toward the cost of the improvements.

Assessments are apportioned based upon the parcels' Equivalent Dwelling Units (EDU). EDUs were assigned according to the development potential of the land as projected by the community plan, final map, or other measure. EDUs were computed prior to adopting the FBA after consultation with developers and landowners.

San Diego's FBA has been upheld by the courts in the face of challenges that it was a "special tax" subject to



Proposition 13 requirements and that it was beyond the city's authority to enact (*J.W. Jones v. City of San Diego* (1984) 157 Cal.App.3d 745 and *City of San Diego v. Holodnak* (1984) 157 Cal.App.3d 760).

The City of Sacramento has established an FBA that clones San Diego's model. Sacramento is using it to pay for \$16 million worth of improvements within the city's South Natomas Community Plan area. These include: traffic signals; bridges; street extensions and widening; and portions of a library, a community center and a fire station. As in San Diego, the city collects the full assessment when building permits are issued and there is no mechanism for issuing bonds.

Charter cities are subject to the requirements of Proposition 218. A city undertaking a facilities benefit assessment in the future, or proposing to increase an existing assessment, must comply with all the requirements and limitations of the initiative.

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## Seismic Safety Assessment

The city of Long Beach is using its powers as a charter city in forming a special assessment district to finance the private building improvements mandated by the city's seismic safety ordinance. Like many other cities, Long Beach requires that older buildings be brought up to current seismic safety standards. A strict city ordinance requires the demolition of pre-1934 buildings that have not been upgraded by 1991.

Participation in the district is voluntary. Building owners who want to be included in its boundaries must pay a non-refundable, good faith deposit and provide the city an accurate estimate of the probable cost of complying with the seismic safety ordinance. Once the city has received the owners' cost estimates and deposits, it will initiate district formation proceedings. The formation procedure is modeled after the 1911 and 1913 Acts.

After formation of the assessment district, the city issued \$17.44 million in taxable bonds to finance the district-wide cost of the improvements. Individual assessments will be equal to the cost of bringing a particular building into compliance with code, plus a share of the debt service and administrative costs.

Through the following measures, Long Beach will ensure that the funds collected by the assessment district (and the associated bond sale) go directly to addressing the community health and safety concerns embodied in its seismic safety ordinance.

The city will be responsible for hiring the necessary contractors to upgrade participating buildings. No payments or loans will be made to building owners.

The scope of the work will be limited solely to those improvements required by the city's seismic safety code. For example, fire sprinklers will not be installed because they are not mandated by the ordinance.

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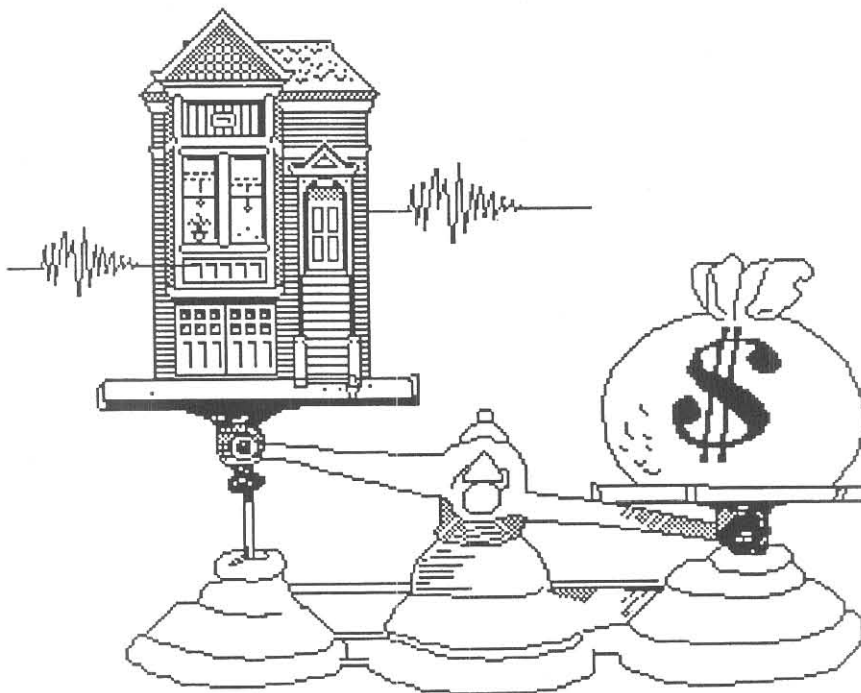
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# Seismic Retrofit Incentive Programs

## A Handbook for Local Governments



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# CREDITS

## Report Authors:

Dari Barzel -- ABAG -- Financial Services Manager  
Wayne Darragh -- ABAG -- Project Coordinator

## Support:

Marci Loss -- ABAG -- Production assistance  
Sarah Nathe -- BAREPP -- Production assistance  
José Rodriguez -- ABAG -- Legislative research  
Hing Wong -- ABAG -- Layout

## ABAG Management:

Revan A. F. Tranter -- Executive Director  
Eugene Y. Leong -- Associate Executive Director  
Gary Binger\* -- Planning Director

## Handbook on Seismic Retrofit Incentive Programs Review Committee:

Alan Goldfarb, Committee Chair\*\* -- Councilmember, City of Berkeley  
Richard Clinton -- Assistant Vice President -- Fireman's Fund  
Gardner Coombs -- President -- Northwest Asset Management Co.  
Charles Eadie -- Principal Planner -- City of Watsonville  
Richard Eisner\*\* -- Director -- BAREPP  
James Goltz\*\*\* -- Evaluation Program Manager -- Southern California Earthquake Preparedness Project  
Cathryn Hilliard/Mary Vail\*\* -- Legislative Affairs Coordinator -- ABAG  
Zenda James -- Finance Director -- City of Alameda  
James Kennedy -- Redevelopment Director -- Contra Costa County  
Keeley Kirkendall\*\*\* -- Vice President -- Bank of America State Bank  
Suzanne Larson/George Barbour -- Training Director -- ABAG  
Thomas Leary, Esq.\*\* -- O'Melveny & Myers  
Lynn Murphy -- Project Planner -- BAREPP  
John Nachbar -- City Manager -- City of Albany  
Jeanne Perkins -- Earthquake Program Manager -- ABAG  
David Prowler -- Assistant to Chief Administrative Officer -- City of San Francisco  
Tim Schaefer\*\* -- Senior Vice President -- Evensen Dodge Inc.  
Masood Sohaili, Esq.\*\* -- O'Melveny & Myers  
Brian Stoner\*\* -- Legislative Liaison -- State of California Seismic Safety Commission  
Thomas Tobin -- Director -- State of California Seismic Safety Commission

*\*member Review Committee \*\*member Legislative Subcommittee \*\*\*Phase I only*

*ABAG : Association of Bay Area Governments*

*BAREPP: Bay Area Regional Earthquake Preparedness Project*

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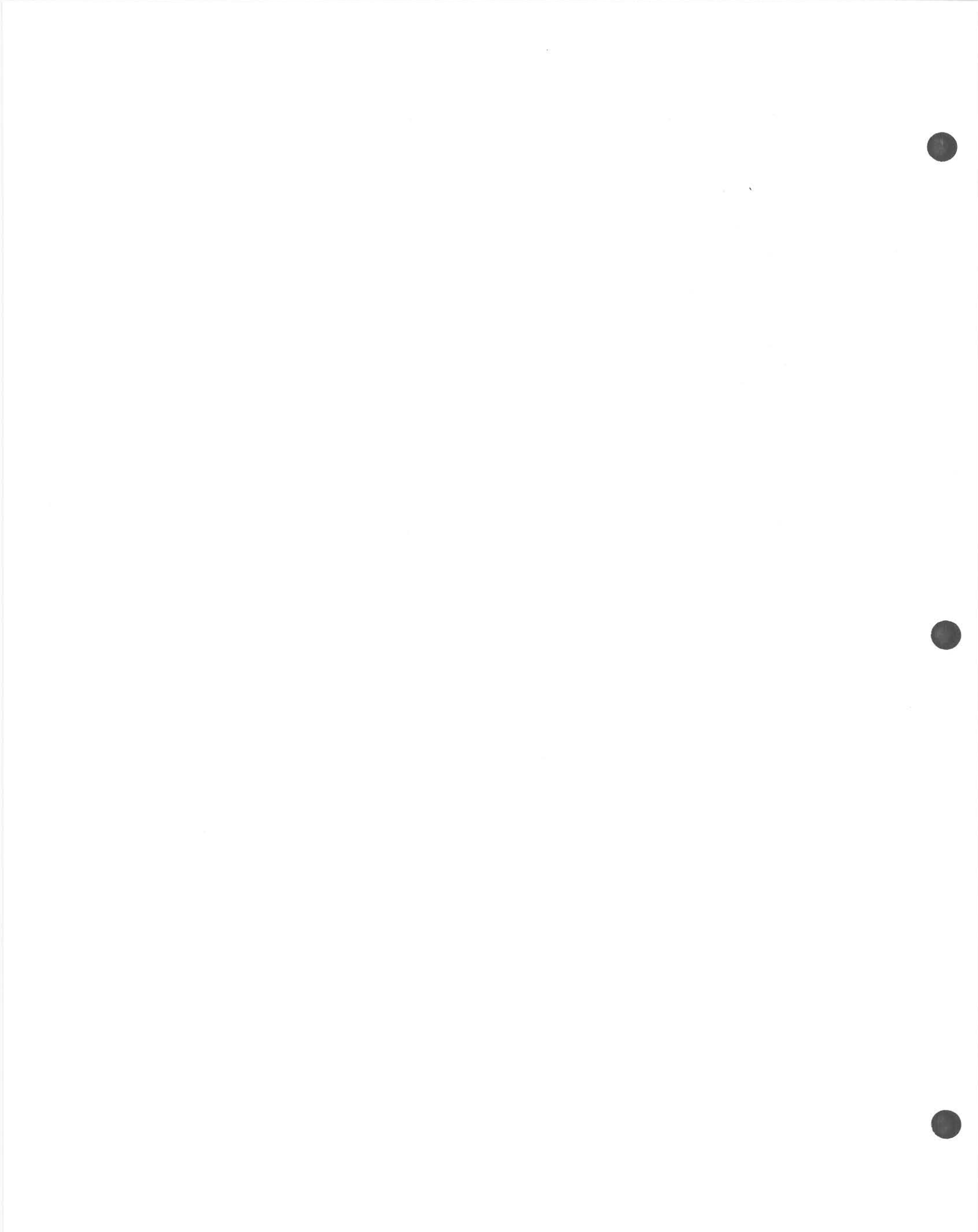
# PREFACE

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The financing of hazard mitigation continues to be one of the more difficult impediments to creating a seismically safe environment for Californians. Both State and local governments have undertaken mitigation utilizing a variety of funding mechanisms.

This *Handbook* grew out of a research project initiated by the California Seismic Safety Commission. That project explored the feasibility of utilizing Special Assessment district and other bond funding mechanisms available to most municipalities to finance retrofit of privately owned seismically hazardous structures. Making these financing tools available to private building owners will help local governments reduce or eliminate the hazard of potential collapse posed by these buildings.

Funding for the research and development of this document was provided by the California Seismic Safety Commission, the Bay Area Regional Earthquake Preparedness Project of the Governor's Office of Emergency Services, and the Federal Emergency Management Agency, (FEMA) through the National Earthquake Hazards Reduction Program. Jane Bullock, Chief, Lead Agency Unit, Office of Earthquakes and Natural Hazards, FEMA, was especially supportive of this effort. The research was designed and conducted by professional staff of the Association of Bay Area Governments.



# FOREWORD

California is one of the most seismically active States in the U.S. The statistics generated by seismologists are sobering. Over the coming decades variously sized earthquakes can be expected throughout the State, some with catastrophic damage potential. A sample statistic: there is a *90% probability* that either the San Francisco Bay Area or the Los Angeles basin will suffer a magnitude 7 or larger earthquake by the year 2020.

Probabilities of Large Earthquakes Occurring in Three California Regions			
	San Francisco Bay Area	Los Angeles Basin	
		San Andreas Fault	San Jacinto Fault
Earthquake Magnitude	7.0 or larger	7.5 or larger	6.5 to 7.0
Probability of occurring in next 10 YEARS	33%	20-30%	20%
Probability of occurring in next 30 YEARS	67%	60-70%	50%

Sources: U.S. Geological Survey, 1988. Probabilities of Large Earthquakes Occurring in California on the San Andreas Fault: U.S.G.S. Open-File Report 88-398, 92pp. and U.S. Geological Survey, 1990. Probabilities of Large Earthquakes in the San Francisco Bay Region, California: U.S.G.S. Circular 1053, 51pp.

Each of the many large earthquakes predicted throughout the State can cause billions of dollars in property damage, loss of human life, injury, and disruptions in transportation, communications and utilities.

As one response to this threat, because unreinforced masonry buildings (URMs) are susceptible to serious damage in a major earthquake, in 1986 the State of California adopted what is commonly referred to as "the URMLaw." As discussed later in this *Handbook*, this law requires municipalities and counties within the most seismically active zones in the State to identify and create hazard mitigation programs for the unreinforced masonry buildings in their jurisdiction. A number of earthquake experts are now recommending that such identification and mitigation be applied to other seismically hazardous structures as well, including concrete frame structures

lacking ductile connections, poorly designed tilt-up concrete buildings with inadequate roof-wall connections, and older (pre-1960) homes with inadequate strength in their foundations or cripple walls.

The URM Law stopped short of requiring the owners of URM buildings to upgrade their structures. Many communities, however, have taken the initiative and mandated retrofitting of privately-owned URMs and other hazardous buildings. A few jurisdictions have mitigated the URM hazard in their community and more are in the process of doing so. The vast majority of jurisdictions, however, having identified some or all of the hazards, are wondering what they might do to mitigate them. This *Handbook* has been designed with that group in mind.

The Handbook was conceived as part of an effort to find sources of financing for retrofit of privately owned hazardous buildings. The first step in the research process was to survey the 520 cities, towns and counties in California as to the status of their URM retrofit programs, and to gather information on any financial and non-financial incentive programs they may have established. Although more than 35% of those surveyed did respond, very few respondents had implemented any retrofit incentive programs. While the survey did not reveal the pot of gold, we were excited and encouraged by the creativity and resourcefulness of the few jurisdictions which have found ways to leverage or develop financing while promoting retrofitting in their communities. Their efforts are described in this *Handbook*. As you read through the *Handbook*, we urge you to contact the individuals listed so that you may discuss with them their experience and yours.

This *Handbook* introduces the subject of retrofit incentives with PERSPECTIVE, the thoughts of Charles Eadie, former Project Manager of the City of Santa Cruz Redevelopment Agency Downtown Recovery Plan. The heart of the *Handbook* lies in the CASE STUDIES, which describe steps to promote retrofitting taken by jurisdictions throughout California that may serve as models for others. The case studies were selected from responses to our survey. We met with staff at these municipalities to develop the case studies, which include descriptions of these jurisdictions' programs, as well as discussions of their programs' development, the resources they require, and their effectiveness.

For jurisdictions now trying to develop a system for prioritizing their hazardous buildings, we have included the case study of the City of Sonoma, which adopted a mandatory retrofit ordinance that includes an objective and flexible system of establishing time-lines for retrofitting buildings identified as hazardous. The case study of the City of Palo Alto offers a model for those jurisdictions seeking to develop voluntary ordinances, and includes several non-financial incentives. (Note that we did not include a case study describing the Los Angeles Division 88 ordinance. The ordinance is readily available to those who are interested in a copy. If only because of its size, the City of Los Angeles is unique, and the process by which it developed and

is implementing the ordinance is less likely to serve as a model for the majority of cities. For information about the city's program, refer to *Strengthening Unreinforced Masonry Buildings in Los Angeles* by William Spangle Associates; see: CONTACTS.)

Financing retrofit projects is always a concern. The case studies of the cities of Torrance and Long Beach offer detailed descriptions of the Special Assessment district bond financings which these cities pioneered as a method of providing funds to owners of seismically hazardous properties. The case study of the City of Upland shows how a small city marshalled resources to provide design cost rebates to owners who retrofit their properties. This case study includes excerpts from the complete and very thorough application package designed by the city.

The City of Fullerton case study demonstrates the use of redevelopment agency funds to effect seismic retrofit through targeted no-interest loans. Finally, the case study of the City of West Hollywood illustrates a multi-faceted approach to financial incentives, including adaptation of the city's rent control ordinance to meet the needs of owners and tenants.

There are several jurisdictions in California which have mitigated the hazard in all their identified URMs. While their success is clearly laudable, their stories have not been included in the *Handbook* because their programs were not applicable in the current environment. (The City of Santa Ana, for example, used a form of bond financing which no longer provides any advantage given subsequent changes in Federal tax laws.)

In addition to the case studies, the *Handbook* contains **PROGRAM HIGHLIGHTS**. As compared with the extensive discussion in the case studies, these are brief write-ups of actions taken by local governments to promote seismic retrofitting in their communities. Names and telephone numbers are provided for readers who would like additional information.

The next two chapters of the *Handbook* discuss the tools which jurisdictions can use in developing programs to promote retrofitting. **USING ZONING AS AN INCENTIVE TO RETROFIT** by Michael Dyett, AICP, discusses ways in which zoning can be used to promote seismic upgrading. The chapter entitled **LOCAL GOVERNMENT FINANCING OPTIONS** outlines potential sources of funding.

A description of the URM Law and of recent legislation comprises **CALIFORNIA STATE SEISMIC LEGISLATION**, which includes a discussion of the direction in which the State of California is headed as it continues to address the issue. **LIABILITY IMPLICATIONS AND CONSIDERATIONS** discusses the question of liability in the event of an earthquake. Finally, we have also included for easy reference a list of the **CONTACTS** whose names appear elsewhere in the *Handbook*.



In researching this *Handbook* we have learned a few basic lessons which we would like to share with our readers:

**\*Developing an approach to seismic retrofitting is essential, difficult and time-consuming.** It requires the dedicated attention over a long period of time of at least one staff member, and the guidance and complete support of the elected body of the jurisdiction. Understanding the nature and scope of the problem is an important first step.

**\*Successful programs require the active participation of the community.** The jurisdiction must work closely with property owners, tenants, the business community, historic preservationists, and all other interested parties to ensure that the program developed is perceived to be fair, reasonable, and workable. Education, before, during and after program development, is critical to its success.

**\*There is no such thing as a model program.** Each jurisdiction is unique in its circumstances and its resources, and each must develop its own approach.

We wish you good luck and hope this *Handbook* will be helpful as you search for solutions to the problem of retrofitting privately-owned seismically hazardous structures.

California is one of the most seismically active States in the U.S. Over the coming decades, earthquakes of varying intensity can be expected throughout the State. Yet, the State is replete with buildings, numbering in the thousands, which are not ready to withstand the expected shock. The potential for great loss of life, injury and property damage is immense.

Most local jurisdictions are aware of the need to address this issue. Since the 1986 adoption of the "URM (Unreinforced Masonry Building) Law" in California, municipalities large and small have devoted their limited resources to identifying URM buildings in their jurisdiction that are susceptible to serious damage in the event of a major earthquake, and developing mitigation programs as required by the law. A number of earthquake experts are now recommending, and several jurisdictions have begun, identification and mitigation of other seismically hazardous structures such as concrete frame structures lacking ductile connections, poorly designed tilt-up concrete buildings with inadequate roof-wall connections, and older (pre-1960) homes with inadequate strength in their foundations and cripple walls. However, many of the jurisdictions which are diligently identifying the hazards are at a loss as to how they might encourage owners to undertake needed retrofitting projects.

This *Handbook* is designed to help local jurisdictions develop their own seismic retrofit incentive programs. Using both extensive case studies and abbreviated descriptions, it offers the reader a chance to examine the steps which 17 cities have taken to address these issues. The *Handbook* also provides a comprehensive list of financing options. To give readers a context for their program development, the *Handbook* includes both a discussion of California's legislative activity in this area and an analysis of liability considerations.

The following is a chapter by chapter summary of the contents of the *Handbook*, with conclusions drawn as appropriate.

## PERSPECTIVE

The **PERSPECTIVE** section of this Handbook introduces the subject of retrofit incentives with the thoughts of Charles Eadie, currently the City Planner of the City of Watsonville. Prior to joining Watsonville's staff Mr. Eadie served as Project Manager of the City of Santa Cruz Redevelopment Agency Downtown Recovery Plan. Mr. Eadie acknowledges that decisions about retrofit requirements and financing are extraordinarily difficult, both for owners and for public officials. Santa Cruz struggled with the issue in the mid 1980's, in the end leaving the decision to retrofit up to individual owners. Today, after the 1989 Loma Prieta earthquake, Eadie

says "nearly every property owner wishes he or she had done more." Eadie lists the following principles, derived from his own experience and that of the City of Santa Cruz:

1. Never forget that you will have an earthquake
2. A retrofit will save lives, including possibly your own.
3. Any amount of retrofit is an advantage. The more you do the better. Even minor improvements can make the difference between repair and ruin.
4. A community unwilling to accept small architectural compromises of historical purity (through retrofit) risks major irreversible loss of historic character.
5. The disruption and cost of retrofit are minor compared to the catastrophic costs of doing nothing.
6. Recovery happens sooner when there is retrofitting.
7. Don't wait.

### CASE STUDIES

The heart of the *Handbook* lies in the **CASE STUDIES**, which are outlined in the table entitled *Retrofit Incentive Programs: A Quick Look*. The cities chosen to be the subjects of the case studies were selected from responses we received to a survey we sent to 520 cities, towns and counties in the State of California. Each case study was developed in consultation with the local jurisdiction, and includes a description of the jurisdiction's incentive programs as well as discussions of the programs' development, the resources they require, and their effectiveness. Neither the table on the following page nor the paragraphs below can do justice to the case studies. We urge you to read the case studies themselves and, most importantly, to get in touch with the contacts listed throughout the *Handbook* so that you can learn first-hand how their experience can benefit your unique circumstance.

### THE CITY OF FULLERTON

The City of Fullerton offers two-tiered, no-interest loans to owners who retrofit their buildings. The first tier comprises a deferred loan due on sale or transfer of title of the structure. The second tier, which can cover up to 50% of the remaining cost of retrofit, is payable in principal only over a ten-year period, with repayment starting two years after the project is completed. These loans are funded and offered by the city's redevelopment agency, and are very much integrated into the city's overall redevelopment plan. Approximately 114 of the city's 125 URM's are in the process of or have completed their retrofitting. Fullerton's success is in large part the result of the close working relationship

between the various departments involved. Note that in addition to its URM program, Fullerton has adopted and achieved full compliance with a tilt-up building retrofit ordinance.

#### THE CITY OF LONG BEACH

The City of Long Beach is renowned for issuing the first large Special Assessment bonds to finance retrofit of privately-owned hazardous structures. This bond issue made financing available, at an interest rate of 11.3%, to URM owners who joined the Special Assessment district. Copies of correspondence between the city and the owners over the course of the district's development are included as exhibits to the case study. Of the 506 URMs in the city at the time of the bond financing, about one quarter were included in the assessment district. About forty owners who did not participate in the first issue have requested that the city form a second assessment district. The City of Long Beach and its financing team learned many valuable lessons from their pioneering experience; perhaps the most important is the need to ensure that property owners thoroughly understand the program, the nature of their commitment under the program, and the roles the city does and does not play in the program. In retrospect, the city found education of the participants to be the most crucial, and the most difficult, part of implementing a Special Assessment financing program.

#### THE CITY OF PALO ALTO

The ordinance developed by the City of Palo Alto is often used as a model by those jurisdictions seeking to make retrofitting voluntary rather than mandatory. A copy of the ordinance is included as an exhibit to the case study. Palo Alto is also well known for offering an exemption from zoning requirements to owners considering retrofitting. While retrofitting is voluntary, the city does require owners of hazardous buildings to submit detailed engineering reports describing the potential for damage in the event of an earthquake. A lesser known feature of Palo Alto's ordinance requires that owners notify tenants when the report is complete, and that the report be made a matter of public record, attracting the attention of residents and affecting the property's rental and resale values. Palo Alto's approach has resulted thus far in the voluntary retrofit of 22 of the 91 buildings originally identified as hazardous. Interestingly, while the zoning exemption is very highly touted as an incentive, in fact only four projects thus far have requested it. The development of Palo Alto's ordinance took four years. The city learned the hard way that the community must be very much involved in the development of an ordinance if it is to be understood and accepted.

**RETROFIT INCENTIVE PROGRAMS:  
A QUICK LOOK**

	FULLERTON	LONG BEACH	PALO ALTO	SONOMA	TORRANCE	UPLAND	WEST HOLLYWOOD
<b>Retrofit Incentives</b>	<ul style="list-style-type: none"> <li>•deferred, no interest loans</li> <li>•matching loans</li> </ul>	long-term 11.3% financing	<ul style="list-style-type: none"> <li>•engineers reports made public</li> <li>•exemption from zoning requirements</li> </ul>	<ul style="list-style-type: none"> <li>•fee waivers</li> <li>•design rebates</li> </ul>	<ul style="list-style-type: none"> <li>•engineering subsidy</li> <li>•long-term 10.75% financing</li> </ul>	<ul style="list-style-type: none"> <li>•design and facade improvement rebates</li> <li>•bank loans</li> </ul>	<ul style="list-style-type: none"> <li>•fee waivers</li> <li>•zoning incentives</li> <li>•rent control modifications</li> <li>•long-term financing</li> </ul>
<b>Funding Source</b>	redevelopment agency	special assessment bond issue	no program costs	redevelopment agency	<ul style="list-style-type: none"> <li>•special assessment bond issue</li> <li>•general fund</li> </ul>	<ul style="list-style-type: none"> <li>•CDBG</li> <li>•commercial bank loans</li> </ul>	<ul style="list-style-type: none"> <li>•general fund</li> <li>•Mello-Roos bond issue</li> </ul>
<b>Comments</b>	<ul style="list-style-type: none"> <li>•flexible regarding scope and timing of mandatory retrofitting</li> <li>•offers attractive loans to owners</li> </ul>	largest special assessment financing done for this purpose in California	used by many as a model voluntary retrofit program	<ul style="list-style-type: none"> <li>•creative system for prioritizing buildings</li> <li>•clear, simple informational packet</li> </ul>	<ul style="list-style-type: none"> <li>•first special assessment financing done for this purpose in California</li> </ul>	<ul style="list-style-type: none"> <li>•qualified for CDBG under "Slum and Blight" category</li> <li>•arranged for reduced cost local bank loans (untested)</li> <li>•very thorough application package</li> </ul>	<ul style="list-style-type: none"> <li>•multi-faceted approach</li> <li>•includes rent control modifications allowing accelerated pass-through of retrofit costs</li> <li>•Mello-Roos financing in process</li> </ul>
<b>Ordinance Type</b>	mandatory retrofit	mandatory retrofit	mandatory engineering reports	mandatory retrofit	mandatory retrofit	mandatory engineering reports	mandatory retrofit
<b># URMS</b>	125	560	46	51	50	65	81
<b>Type of URMS</b>	99% commercial 1% residential	90% commercial 10% residential	100% commercial	90% commercial 10% residential	70% commercial 30% residential	100% commercial	80% commercial 20% residential
<b>Population</b>	109,000	430,000	57,000	8,000	133,500	64,000	36,000
<b>1990/91 General Fund Revenues: Fund Balance:</b>	\$42 million \$ 5 million	\$224 million \$ 11 million	\$48 million \$14 million	\$3 million \$1 million	\$93 million \$10 million	\$22 million \$ 8 million	\$34 million \$700,000

### THE CITY OF SONOMA

The City of Sonoma has drafted a mandatory retrofit ordinance which we offer as a model for those jurisdictions trying to develop a system for prioritizing hazardous structures. In most mandatory ordinances, the deadline by which owners must retrofit depends upon the priority assigned to their building. To determine a building's priority, Sonoma's ordinance establishes an objective, straightforward point system, explained fully in the case study, using factors such as type and hours of use, number of stories, proximity to public sidewalks and adjacent buildings, and structural adjustments (such as parapet bracing). Buildings may move up or down on the priority scale as they modify any of the factors which led to their original point assignments. Adjusting their priority level allows owners to adjust the timetable for retrofitting, resulting in a very flexible mandate.

The City of Sonoma also provides financial incentives to owners, offering permit fee waivers and architectural and engineering grants for seismic upgrading. The time allowed for complete upgrading ranges from 4 1/2 to twelve years, depending upon the building's priority. Nonetheless, within one year of program implementation, fourteen buildings were in the process of being, or had been, completely upgraded. As in the case of Palo Alto, a lesson which might be learned from the City of Sonoma's experience is the value of being sensitive to the concerns of the community. The ordinance was designed for maximum flexibility, and was thoroughly discussed with and explained to citizens at community meetings. One of the outstanding features of the City of Sonoma's program is how clearly it is articulated in the materials it offers to the community. Copies of that material are included as an exhibit to the case study.

### THE CITY OF TORRANCE

The City of Torrance issued the first Special Assessment bond to finance the retrofit of privately owned hazardous structures. The case study of the City of Torrance is included to highlight the fact that a relatively small city (population 134,000) with few URMs (seven parcels in the assessment district) can accomplish the same thing as a larger city such as Long Beach (population 430,000) with many URMs (307 parcels in the district). Torrance in fact pioneered the technique. The Special Assessment program is one of two incentives provided to owners of hazardous structures. The second, a subsidy to pay for engineering analysis, was used by owners of more than half of the city's URMs. To date, Torrance has seen 43 of its 50 identified URMs retrofitted.

### THE CITY OF UPLAND

The City of Upland is unusual in two respects. Like other jurisdictions, Upland offers owners rebates for seismic engineering and architectural costs as well as for city fees and for the cost of eligible facade improvements. Upland funded this program with Community Development Block Grant monies. Upland is also unusual in that it was able to convince local banks, at least in principle, to offer loans with favorable terms to owners seeking financing for seismic retrofitting. One of the interesting lessons learned by the city is that convincing just one owner to begin to retrofit reassures and inspires other owners, who then may begin the process themselves thereby encouraging others. The bank financing program was developed in response to owner concerns about the expense and availability of funding. Once they began the retrofit process the owners' fears did not materialize, and in fact to date no one has tested the bank financing program.

Upland is very proud of the spirit of cooperation in which the program was designed and is administered. The city works closely with owners and takes great pains to communicate with its citizens. The materials designed by the city to describe its program are very thorough. Included as exhibits to the Upland case study are the brochures describing the incentive programs and excerpts from the rebate program application package.

### THE CITY OF WEST HOLLYWOOD

The City of West Hollywood offers an array of incentive programs to owners seeking to retrofit. Fee waivers play a key role, as do exemptions from zoning requirements. West Hollywood also modified its rent control ordinance, allowing owners to pass through costs to tenants on a somewhat accelerated schedule. As of April 1992, 28 of West Hollywood's 69 hazardous URMs had been retrofitted. West Hollywood also recently established a Mello-Roos district to provide financing, similar to Special Assessment district financing, to owners of 6 hazardous structures. Although many have discussed this type of program in principle, West Hollywood may become the first city to issue Mello-Roos bonds for this purpose. In addition to learning how difficult it is to be a pioneer, West Hollywood has learned that dedicated staff people are key to the success of a city's programs. The menu of programs was developed for the city by a committed staff person who spent much of his time researching the issue and was personally involved with each of the affected owners.

### PROGRAM HIGHLIGHTS

In addition to the case studies, the *Handbook* contains short descriptions of steps taken by 8 local governments in the area of seismic retrofit, outlined in the table entitled *Program Highlights: A Quick Look*. The HIGHLIGHTS offer names and telephone numbers for those who would like more information. In addition to offering a menu of suggestions, this section illustrates that any jurisdiction which makes it a priority should be able to offer some kind of incentive to owners of buildings requiring retrofitting.

### USING ZONING AS AN INCENTIVE TO RETROFIT

Zoning can be used to promote seismic retrofit, according to Michael V. Dyett, AICP, founder of Blayney Dyett Greenberg, urban and regional planners. These techniques have been used to promote other public purposes, such as affordable housing and historic preservation. Dyett offers the following types of incentives for consideration:

- Density/intensity bonuses
- Transfer of development rights
- Reduction in development standards
- Relief from nonconforming provisions, and
- Restrictions on new occupancy of a potentially hazardous building

These incentives are discussed in this chapter. To illustrate their use, Dyett offers an example of an incentive program for seismic hazard upgrading using these zoning incentives.



**PROGRAM HIGHLIGHTS:  
A QUICK LOOK**

**Town of  
Arroyo Grande**

- (1) Flexible with its deadline for compliance
- (2) Offers reduced permit fees
- (3) Charges fees based on actual costs incurred by city
- (4) Allows continuance of non-conforming uses
- (5) Waives other aspects of updated zoning regulations

**City of Berkeley**

- (1) Imposes 1/2% transfer tax on property sales with proceeds used to retrofit the structure
- (2) Waives permit fees
- (3) Posts clearly visible warnings

**City of Inglewood**

- Offers two options for reimbursement:
- (1) Up to \$1000 for plans plus 25% of construction costs or
  - (2) Up to \$3000 for plans plus 50% of cost above \$3000 plus city fees

**City of La Verne**

- (1) Offers up to 50% grant to cover engineering and construction costs

**City of San Diego**

- (1) Voluntarily reviewed the URM situation in the community
- (2) Appointed City Manager's Committee on seismic retrofit
- (3) Requires that property owners may have to retrofit a structure when it changes use or increases occupancy

**City of San Jose**

- (1) Exempts permit fees
- (2) Offers design grants
- (3) Forming Special Assessment district to provide bond financing
- (4) Developed two grant programs
- (5) Developing tenant assistance program
- (6) Hired one individual to serve as full-time liaison with URM owners and community

**City of San Mateo**

- (1) Simplified LA model by creating two hazard categories and changing time limits
- (2) Ties some storefront improvements to retrofit projects
- (3) Provides grants and loans

**City of Vacaville**

- (1) Offers 3%, 25-year loans for seismic retrofit and tenant improvements
- (2) Offers facade loans

### LOCAL GOVERNMENT FINANCING OPTIONS

In recognition of the fact that no incentive for retrofit seems to work quite as well as money, we have attempted to discuss both the existence of funding and its accessibility. This section provides legal citations, background information and contacts for the following funding programs:

- California Housing Rehabilitation Program
- Community Development Block Grants
- HOME Program
- Small Business Administration
- General Obligation Bonds
- Marks-Foran Residential Rehabilitation Act
- Marks Historic Bond Act
- Mello-Roos Community Facilities District
- Public Purpose Bonds
- Special Assessment Districts
- Tax Increment Financing *or* Tax Allocation Bonds

Not all of the sources of funds we have outlined have actually been used to finance seismic retrofitting of privately owned buildings. We surveyed the many different Federal and State funding sources and described those which have been used successfully for this purpose or which seem to be potential sources. Whenever possible, we have included contacts who should be able to answer questions or provide additional information. We hope that communities are able to access some of the as yet untapped funding sources to finance seismic retrofit projects.

### CALIFORNIA STATE SEISMIC LEGISLATION

This section describes the recent history of California legislation relating to seismic hazard reduction, and describes how such legislation might affect cities and counties across the State, with particular attention paid to legislation that directly affects a jurisdiction's ability to provide financial assistance to owners of seismically hazardous structures. The discussion examines legislation pertaining to bond-related options such as Special Assessment Districts, Mello-Roos Districts and General Obligation Bonds. It also discusses redevelopment agencies as financing vehicles and describes ways in which the State has attempted to reach out directly to property owners.

This section also contains a short discussion of some issues that are often raised by local officials considering financial incentive programs. Addressed are concerns about private owners being granted a "gift of public funds," the question of whether assistance to finance the retrofit of religious structures is a violation of the separation of church and State, and the question of liability, an issue discussed in more detail in the next chapter.

This section, of necessity, provides only a quick overview of the most recent seismic retrofit-related legislation. The State of California Seismic Safety Commission is a good source of additional information.

#### LIABILITY IMPLICATIONS AND CONSIDERATIONS

Liability in connection with the issue of retrofitting can be viewed as a double-edged sword. Potential liability can be a disincentive for retrofitting or an incentive for taking action, depending upon how it is viewed. Tort liability is discussed in this section by Jeanne Perkins of the Association of Bay Area Governments and Kenneth Moy of Moy & Lesser. There are, as yet, no appellate court decisions on this issue and therefore no legal precedents. However, the authors conclude that it is highly likely, under the appropriate circumstances, that liability could be assigned to a private owner. Addressing the hazard under the guidance of experts will significantly lessen that likelihood. Public agency liability with respect to private buildings is not large and will not increase as a result of its activities in identifying and abating hazardous buildings.

There is nothing easy about the decision to retrofit old buildings. Retrofit is costly, time-consuming and disruptive to tenants and building owners. It changes the economic calculation in terms of rent needed to pay off the investment, creating hardships. It can pose architectural, engineering and logistical challenges. It can affect the historic integrity of a building.

What is doubly difficult is that the benefit is easy to discount. All the costs and hardships are immediate, yet the spectre of an earthquake is an abstraction, something that seems remote, far off in the future. People acknowledge the certainty of future earthquakes but assume that it will not happen to them.

These factors combine to make decisions about retrofit requirements and financing gut-wrenching and difficult. No one knows how, when or with what force an earthquake will strike any particular city. The odds favor the politician and building owner who assume that the earthquake won't strike during their term of office or their tenure as owner.

Unfortunately for Santa Cruz, the 1989 Loma Prieta Earthquake forever tagged the town as another grim lesson about the final and irretrievable costs of discounting long term benefits for short term gain. Three deaths, the loss of 34 downtown buildings, the end of a beloved historic district and the beginning of an arduous struggle for economic and community recovery was the steep price Santa Cruz paid to join the historic landscape littered with lessons begging to be learned.

In the mid 1980s the Santa Cruz community struggled with the issue of retrofit. After much controversy the decision was left to individual property owners because of the high short-term costs and lack of financial resources available.

Today nearly every property owner wishes he or she had done more. Many are thankful for any little bit they did.

A furniture store owner says he owes his life (and those of several others) to a minor retrofitting he did as an afterthought in conjunction with a reroofing. He still has nightmares thinking how close he came to not anchoring the roof.

Another owner of a small historic commercial building points to a redwood beam and some bracing he had put in his basement in the late 1970s on the advice of his contractor. Without those relatively minor additions, his building would have collapsed under the weight of the tons of brick from a neighbor's parapet. Instead he is repaired and back in business.

A partially completed retrofit of the historic Cooperhouse was enough to prevent total collapse of that building but not to save it. Still, the owner considers every penny of the

thousands he spent to be a worthwhile investment because of the lives that were saved.

For many businesses, access to their building after the earthquake was critical to their recovery. Access was a function of damage. Damage was a function of retrofit. Fifteen minutes of access, or no access at all, was the fate of many whose buildings had no retrofit and were most unsafe. They never retrieved their files, their records, their merchandise. For others, all inventory was recovered, including irreplaceable personal and collector's items.

In 1992, three years after Loma Prieta, many Santa Cruz building owners are still sitting with vacant lots. They face crushing economic realities. Lacking any retrofit, their buildings had been damaged beyond repair. Searching for elusive financial backing to rebuild, they sometimes speak with remorse about the relative pittance it would have cost for the proverbial "ounce of prevention."

Meanwhile, grand reopenings have taken place in several buildings which had retrofits (mostly partial) that were enough to render them repairable. For these property owners and businesses, recovery arrived much sooner. And their community, desperately searching for a break, was grateful for their foresight and pre-quake commitment.

If these brief snippets of personal experience could be translated into a set of principles, it would be these:

- Never forget that you will have an earthquake.
- A retrofit will save lives, including possibly your own.
- Any amount of retrofit is an advantage. The more you do the better. Even minor improvements can make a difference between repair and ruin.
- A community unwilling to accept small architectural compromises of historical purity (through retrofit) risks major irreversible loss of historic character.
- The disruption and costs of retrofit are minor compared to the catastrophic costs of doing nothing.
- Recovery happens sooner when there is retrofitting.
- Don't wait.

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Charles Eadie is the City Planner of the City of Watsonville. Prior to joining Watsonville, Eadie served as Project Manager of the Downtown Recovery Plan of the City of Santa Cruz Redevelopment Agency.

# CITY OF FULLERTON

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<i>Population:</i>	<b>109,000</b>
<i>1990/91 General Fund</i>	
<i>Revenues:</i>	<b>\$42 million</b>
<i>Fund Balance:</i>	<b>\$5 million</b>
<i># URM:</i>	<b>125</b>
<i>Type of URM:</i>	<b>99% commercial 1% residential</b>
<i>Ordinance Type:</i>	<b>mandatory retrofitting</b>
<i>Retrofit Incentives:</i>	<b>no interest loans</b>
<i>Funding Source:</i>	<b>redevelopment agency</b>

## BACKGROUND

The City of Fullerton is located in Orange County approximately 20 miles southeast of Los Angeles along the I-5 corridor and State Highway 91. Incorporated in 1904, the City of Fullerton owes its past economic growth to the acres of orange groves that could once be found around the city and the oil that was found beneath the city. Today, the city boasts more than 6,000 businesses and industries, with a total work force in excess of 71,000.

## ORDINANCE

The Fullerton city council adopted a mandatory seismic retrofit ordinance in December 1990. The ordinance is based on the Los Angeles model and has been incorporated into the Fullerton building code. The ordinance applies to all buildings constructed prior to 1934 and establishes four rating classifications: essential buildings, high-risk buildings, medium-risk buildings and low-risk buildings. The deadline for compliance under this ordinance was February 1992.

This ordinance also requires the building official to file with the county recorder a certificate stating that the subject building is within the scope of Chapter 88 - Earthquake Hazard Reduction in Existing Buildings. As a matter of policy, no such certificates were filed until a structure was in violation of the council approved deadline for compliance. This ordinance does not require

alteration of existing electrical, plumbing, mechanical or fire safety systems unless they constitute a hazard to life or property as determined by the building official.

The City of Fullerton has a separate ordinance requiring the retrofit of concrete tilt-up buildings. This ordinance, Chapter 89, applies to all buildings constructed prior to April 6, 1974 with concrete tilt-up bearing walls. This ordinance also requires the building official to file with the county recorder a certificate stating that the subject building is within the scope of Chapter 89.

#### INCENTIVE PROGRAM CONCEPT

Fullerton's Seismic Rehabilitation Loan Program was approved by the redevelopment agency in May 1991. This loan program was developed to finance seismic retrofit projects using tax increment funds from the city's redevelopment areas. Fullerton has designated two redevelopment areas - the Orangefair and the Central Redevelopment Projects Areas - which cover approximately 1.5 square miles of the city. Properties eligible for funding under this program include all commercial unreinforced masonry (URM) parcels or apartment buildings with five or more units that are located in either of the city's designated redevelopment areas and were identified in Fullerton's Unreinforced Masonry Survey. (The loan program is not offered for retrofit of concrete tilt-up structures.) There is also a retroactive financing clause which allows for the reimbursement of a portion of the "soft" cost of engineering retrofitting, title and insurance costs and push tests performed before the loan program was established. The availability of these funds is limited to the seismic retrofit of brick buildings in the designated redevelopment areas. The size of the loan is based on the extent of the seismic retrofit project.

The loans offered by the redevelopment authority to URM owners performing retrofit work are two-tiered. The first \$25,000 of the amount needed is a deferred, no-interest loan due on sale or transfer of title of the structure. The redevelopment authority will then finance 50% of the remaining cost of retrofit which is repaid over a 10 year period with principal payments starting two years after the project is completed. There is no established ceiling on the amount of matching loan which will be made.

The redevelopment authority oversees this loan program. The redevelopment authority takes bank-like precautions before making a loan such as running a title check on the structure, running a credit check on the owner and establishing that the loan-to-value ratio for the structure does not exceed 70%. The redevelopment authority also requires that 3 bids be submitted for the work and that the lowest bid be accepted. (The least expensive of the retrofits have come in at about \$12/square foot but others have cost considerably more than that. ) As with most funding programs, Fullerton's system is based on reimbursement. The building owner must submit receipts for work done in order to draw down loan funds. This system allows contractors to be paid on a periodic basis.

### PROGRAM RESOURCE REQUIREMENTS

The redevelopment authority has made 6 loans, totalling \$325,000, to date and has another 6 loans, totalling \$225,000, in the approval process. The city expects the demand for such funding to greatly increase. The redevelopment authority is concerned that the amount of tax increment funds available will not be sufficient to finance all the work required and that Fullerton is in danger of running out of funds for this program in the near future. A worst case scenario is that the amount of work necessary to completely address the seismic hazard in Fullerton will total approximately \$5 million.

The seismic retrofit loan program is directly related to the general rehabilitation program of the redevelopment authority. In fact, the redevelopment authority finds itself in a difficult position regarding buildings that were given rehabilitation loans prior to the passing of the URM Law. Some of the buildings with outstanding rehabilitation loans are seismically deficient which puts the authority in a situation, similar to that in which many banks find themselves, of being first lienholder on a structure in danger of becoming rubble in the next big earthquake. The redevelopment authority has identified these buildings and aggressively marketed the seismic retrofit loan program to their owners in an attempt to obtain some additional security for the rehabilitation loans.

### PROGRAM DEVELOPMENT

After the URM Law was passed by the State Legislature, the affected departments met with the Fullerton City Manager to discuss the city's approach to compliance. It was decided to pursue a mandatory retrofit program but to put an emphasis on restoring historical structures and preserving the historical fabric of the community through the use of the redevelopment authority. Before the ordinance was adopted, the city held a number of public meetings. There was a general meeting and then a number of smaller meetings targeted at URM owners, senior citizens, property owners in the redevelopment areas, etc. After the ordinance was adopted another series of meetings took place, particularly with the Chamber of Commerce. These meetings were held in an effort to calm some of the fears about the proposed program and to emphasize that the retrofit costs would not be as high as rumored.

There was clearly a realization among the Fullerton agencies involved in the enforcement of the retrofit ordinance that cooperation among themselves would be key to the success of the program. This sense of cooperation among city departments overflowed and created a sense of cooperation with URM owners. The Building Department has developed a very cooperative working relationship with URM owners. The use of the building and its historical significance are taken into consideration when developing the scale of the project. The Building Department considers



each building on a case by case basis when determining the extent to which other life safety and fire protection upgrades must be made. The Building Department has also adopted a policy allowing property owners to establish temporary offices in trailers on the project premises which can allow tenant businesses to continue to operate during the retrofit period.

#### PROGRAM EFFECTIVENESS

Owners of approximately 100 of the city's 125 URM's have either retrofitted their structure or submitted plans for proposed retrofitting. The owners who missed the original deadline but have since displayed some effort are being given an unofficial extension. Of the remaining buildings, owners of only 11 buildings have provided absolutely no indication that they are addressing the issue of seismic retrofitting. If the owners of these buildings have still done nothing 6 months after the deadline for compliance, their buildings will be "red-tagged" and ordered vacated.

To date 3 URM retrofits have been completed, 8 URM retrofits are under construction and 45 retrofit projects are in the plan check stage. Of the 220 tilt-up structures identified by the city, only 11 have not yet complied with the retrofit ordinance.

#### PROGRAM STRENGTHS

Any time a city has the means to provide some financial assistance to URM owners, it must be considered a program strength. The strong local economy and the pro-redevelopment attitude of Fullerton both add to the strength and success of Fullerton's retrofit program. It appears that the City of Fullerton's ability to deal with its URM owners in a very personalized manner is also a major strength of its retrofit program.

#### KEYS TO SUCCESS

There is a great deal of cooperation among the different departments involved in the retrofit program. Fullerton's Development Services Department and redevelopment authority have both been involved with the retrofit program since its inception and continue to work together closely on enforcement of the ordinance. The city also has a high level of professional expertise in-house, as exhibited by its ability to proceed with a tilt-up retrofit ordinance prior to the State of California legally requiring such retrofits.

EXHIBITS

- Seismic Loan Program - Loan Program Guidelines

CONTACTS

Chuck Daleo	Fullerton Building Official	(714) 738-6558
Rick Forintos	Project Coordinator - Fullerton Redevelopment Agency	(714) 738-6877



# CITY OF FULLERTON

## EXHIBITS



SEISMIC LOAN PROGRAM

Loan Program Guidelines  
January 1992

Section

- 1 BACKGROUND AND PURPOSE
- 2 AMOUNT OF AVAILABLE ASSISTANCE
- 3 DEFINITIONS
- 4 ELIGIBLE PROPERTIES AND PRODUCTS
- 5 SUBORDINATION
- 6 APPLICATION PROCEDURES, APPLICATION REVIEW, AND APPROVAL OF LOAN
- 7 POST-APPLICATION APPROVAL CHRONOLOGY AND BIDDING REQUIREMENTS
- 8 DISBURSEMENT OF LOAN FUNDS
- 9 LOAN PAYBACK
- 10 SUBSEQUENT LOANS
- 11 APPRAISAL
- 12 PARTICIPANT'S FUNDS
- 13 TITLE REPORT

EXHIBITS

- ELIGIBLE PROJECT AREAS
- APPLICATION
- ATTACHMENTS

SECTION 1 BACKGROUND AND PURPOSE

The Redevelopment Agency approved the Seismic Rehabilitation Loan Program on May 7, 1991, for the Orangefair and Central Redevelopment Project Areas. The program was adopted to assist and encourage commercial property owners to seismically upgrade their unreinforced masonry buildings to conform to the Seismic Ordinance. Apartments with five units or more are also eligible if they are unreinforced masonry.

SECTION 2 AMOUNT OF AVAILABLE ASSISTANCEInterest-Free Commercial Loans

Up to \$25,000 <sup>(1)</sup>	100% Agency Loan, deferred, and due on sale with no interest charge.
From \$25,001 and up (1)	This amount is on a 50/50 matching basis between owner and Agency. The loan repayment schedule begins two years after building completion, to be repaid in ten annual payments, with no interest.
Churches	Churches are eligible for 25% of total project costs not to exceed \$100,000 to be fully repaid over 10 years starting two years after building completion.

SECTION 3 DEFINITIONS

Eligible Projects - All seismically deficient buildings as identified in the City of Fullerton's Unreinforced Masonry Study conducted in 1990. However, larger projects which are receiving substantial Agency assistance are not eligible for seismic loans unless specifically approved by the Agency.

Development Standards - Architectural guidelines for the downtown project area are contained in the CBD Guidelines booklet. All plans for buildings in either project area, when the seismic work has a visual impact on the building, are to be reviewed and approved by the Redevelopment Design Review Committee.

Owner Participation Agreement - All property owners must have an OPA approved by the Redevelopment Agency. This Agreement contains all of the terms and conditions applicable to the project, project scope, and the chosen bidder's cost breakdown. In addition, there are requirements for insurance, title policies, and non-discrimination clauses which must be followed.

Program - The Seismic Rehabilitation Loan Program as approved by the Redevelopment Agency on May 7, 1991.

<sup>1</sup> ADJACENT PARCELS OWNED BY THE SAME OWNER ARE NOT CONSIDERED SEPARATE LOANS. THE AGENCY LOAN IS DEFERRED ON THE FIRST \$25,000 OF PROJECT COSTS WITH 50/50 MATCH OVER \$25,000.

SECTION 4 ELIGIBLE PROPERTIES AND PROJECTSA. Eligible Properties

Properties eligible for inclusion in the Program shall include all commercial parcels or apartments of five units or more within the boundaries of the Central Redevelopment Area and the Orangefair Redevelopment Area as identified in the City of Fullerton's Unreinforced Masonry Study conducted in 1990<sup>1</sup>. Also, those owners who have already started or completed seismic work, retroactive to March 6, 1990, may be reimbursed for those expenses if the work was done in conformance with Fullerton Seismic Ordinance requirements.

B. Eligible Work

Work eligible for Agency participation shall include the following as a minimum:

Interior or exterior repair or replacement in order to mitigate any unsafe or dangerous structural conditions as identified in the City's Unreinforced Masonry Study or such subsequent repairs as required by the Building Department. Such seismic work shall be in compliance with the architect's plans as approved by the Building Department and the RDRC. Seismic work which is performed in conjunction with new construction or which is done in conjunction with demolition or removal of more than 25% of the existing exterior walls is not eligible for this program.

Specific eligible costs may include, but are not limited to, the following:

Architectural plans and structural calculations<sup>2</sup>, new concrete footings or strengthening of existing footings, floor/wall anchoring, roof diaphragm/shear transfer, diaphragm chords, interior shear walls, crack repair, tuckpointing, strengthening wall parapets or projecting sign boards and reroofing, replastering and patching or replacing stucco or brick which is damaged as a part of the seismic strengthening.

SECTION 5 SUBORDINATION

All loans shall be secured by a Deed of Trust listing the Redevelopment Agency as beneficiary and the City of Fullerton as trustee. The Agency is willing to take a position as a junior lienholder; however, if insufficient security exists to protect the Agency's interest in the property, then the loan amount may be reduced or the loan denied. Specifically, the Agency will agree to subordinate its seismic loan to construction or permanent financing or refinancing for a more favorable interest rate without requiring repayment. The Participant's request for subordination for refinancing or other reasons shall be reviewed and determined in the sole discretion of the Agency which approval shall not be unreasonably withheld. The Agency, when revising the subordination request, prefers that the total of all liens shall not exceed 70% of the total loans to the appraised fair market value of the appraisal of the property. When the

<sup>1</sup> Except Concrete Tilt-up.

<sup>2</sup> Owner can include these as project costs for reimbursement after Agency loan is funded.



SECTION 5 (continued)

estimated property value begins to approach 50% loan to value including the Agency's proposed loan, an appraisal may be required to determine the actual appraised market value of the property (see SECTION 11).

SECTION 6 APPLICATION PROCEDURES, APPLICATION REVIEW, AND APPROVAL OF LOAN

1. Applicant shall discuss the proposed project with the Redevelopment staff and Building Department in order to develop the scope of the project.
2. Applicant shall fill out a seismic application, available from the Redevelopment Office, 303 West Commonwealth Avenue, Fullerton, CA 92632.
3. Review of the application, project, and plans will include the following:
  - A. Availability of Agency funds for this and other projects.
  - B. Is the building on the Historical Building Survey or a designated Local Landmark?
  - C. Severity of seismic problem.
  - D. Has the exterior of the building been previously remodeled and does the Agency already have a Rehabilitation Loan on the property?
  - E. Has the owner already spent money to do seismic work, are plans completed, and is the owner ready to start the project?
  - F. Are the total loans, including the Agency loan, not in excess of 80% of the building's fair market appraisal?

SECTION 7 POST APPLICATION APPROVAL CHRONOLOGY AND BIDDING REQUIREMENTS

1. After the application has been accepted, the applicant and Agency staff shall meet with the owner's designer(s) regarding the conceptual plans for the project. The owner and his contractors shall use the Secretary of the Interior's Standards in designing and constructing the improvements and in the repair of any damage caused by the seismic work. Design professionals and contractors should be chosen based on their familiarity with these Standards and their verified rehabilitation experience on similar types of buildings. The Agency and Development Services prefer the Hilti fastening system and that the primary street exterior of the building shall not be penetrated with support flanges of any type. Exceptions to this rule will be reviewed by the Development Services Department.
2. Once conceptual plans are prepared, the applicant shall process the plans through all applicable City of Fullerton review procedures, including the RDRG if repairs impact the exterior of the building or historic or architectural features considered to be significant.

SECTION 7 (continued)

3. Two written bids are required to determine the cost of the project. The owner shall select the lowest responsible bidder. An applicant may build a project by using: a) a general contractor, b) a managing contractor on a fee basis, or c) by acting as an owner/builder.
  - a. If a general contractor is used, two overall bids shall be provided in sufficient item detail to allow the Agency staff to determine that a substantially similar character of work was bid by all contractors submitting proposals. The more complex projects shall require an owner to employ a General Contractor unless it can be demonstrated that the owner or his representative has sufficient time and expertise to run the project.
  - b. In the case of a managing contractor employed on a fee basis, at least two bids for each subcontracted trade used shall be required in addition to a statement of the fee to be paid to the managing contractor. The fee paid shall not exceed the then prevailing industry standard for construction management fees.
  - c. If the applicant acts as an owner/builder, a cost estimate for each item of work to be performed by the owner/builder's own forces shall be provided, itemized by labor and material. If the applicant also utilizes the services of subcontractors to complete the rehabilitation, then at least two bids must be provided for any such subcontracted work. If the Agency staff questions the cost estimate of any owner/builder items not subcontracted, then the staff may request that the owner/builder provide two comparison bids for the work in question.
4. Once plans have been approved by the Building Department and bids solicited, the Agency staff shall schedule the item for the next available Agency meeting agenda. The Owner Participation Agreement shall be executed by the applicant prior to the Agency meeting. In addition to the basic agreement (attached to these guidelines in Appendix A), the following attachments to the Owner Participation Agreement will require the applicant's signature prior to the Agency meeting and are also included in Appendix A:
  - Attachment C: Short Form Deed of Trust
  - Attachment D: Promissory Note
  - Attachment E: Contractor's General Liability Insurance, Workmen's Compensation Insurance and Owners Fire Insurance Policies
  - Attachment F: Memorandum of AgreementA Lender's Policy of Title Insurance shall be provided to protect Agency from subsequent liens or claims.
5. After Agency approval and recordation of the Deed of Trust, the applicant may apply for reimbursement of eligible expenses. Under certain extenuating circumstances, the Agency may approve agreements after commencement of construction and may approve reimbursement of prior expenditures as long as they constitute eligible rehabilitation expenses as described in Section 3.B of the guidelines.

SECTION 8 DISBURSEMENT OF LOAN FUNDS

In order to draw down loan funds, the applicant shall submit the following items to the Redevelopment Office:

1. Participant's request for progress payment.
2. Paid invoices for the amount of eligible work.
3. Labor and material lien releases for all invoices submitted.
4. Under the owner/builder option, the applicant shall be reimbursed upon presentation of paid invoices for all materials and certified payrolls for all labor charges, up to the amount of the estimate for the work as discussed in Section 7, Item 3.C. above.

Reimbursement of eligible expenses shall be 100% of the first \$25,000 of eligible costs based on invoices submitted for payment, less a 10% retention. Amounts in excess of \$25,000 shall be reimbursed at 50% of eligible costs, less a 10% retention, until the maximum amount is reached. The retention shall be released to the applicant not earlier than 30 days after a Notice of Completion has been filed with the County Recorder's office.

SECTION 9 LOAN PAYBACK

Loan payback shall be made pursuant to the terms as contained in the note. The Agency may approve deferral of payback in the event of refinancing or other reasons acceptable to the Agency.

SECTION 10 SUBSEQUENT LOANS

If the scope of an approved project is expanded after construction has begun, an increase in the loan amount for eligible activities up to the stated limits of the program may be granted at the sole discretion of the Agency.

Should loan terms and amounts allowed under the program be changed subsequent to approval and disbursement of loan funds to an applicant, the applicant may reapply for an additional loan. A new application under the revised terms will be considered provided that additional work is being proposed. Only one reapplication under the terms of this section will be considered. Costs of work previously completed shall not be included in the reapplication.

SECTION 11 APPRAISAL

For projects with an Agency Loan over 50% loan to value (including senior loans), an appraisal may be required at Agency's option. The appraisal, if required, will be reviewed by the City of Fullerton's real estate office to determine its adequacy and conformance to industry standards.

SECTION 12 PARTICIPANT'S FUNDS

Participant's funds shall be available to complete participant's portion of project and be set aside exclusively for this project.

SECTION 13 TITLE REPORT

All projects shall require a title report to verify liens, easements and other matters of record, etc. and to insure the Agency's loan. The City of Fullerton has a contract with Commonwealth Land Title Company (CLTC) for title reports and the Agency shall utilize CLTC for its seismic loan program. The applicant will be required to pay for these services directly and can be reimbursed later on from loan proceeds after the loan records.



# CITY OF LONG BEACH

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<i>Population:</i>	<b>430,000</b>
<i>1990/91 General Fund</i>	
<i>Revenues:</i>	<b>\$224 million</b>
<i>Fund Balance:</i>	<b>\$11 million</b>
<i># URM's:</i>	<b>560</b>
<i>Type of URM's:</i>	<b>90% commercial 10% residential</b>
<i>Ordinance Type:</i>	<b>mandatory retrofitting</b>
<i>Retrofit Incentives:</i>	<b>long-term financing at 11.3%</b>
<i>Funding Source:</i>	<b>Special Assessment bond issue</b>

## BACKGROUND

The City of Long Beach, fifth largest city in California, encompasses a 50-square mile coastal area located on the southern edge of Los Angeles County. The city is known both as a major industrial center and as a popular beach resort area hosting a substantial tourist and convention business. Long Beach historically has been a leader in the area of seismic safety. In response to its losses in the 1933 earthquake, the city adopted the toughest building code in the nation. Its present day ordinance exempts all structures built after 1934. The City of Long Beach has been pursuing the seismic retrofit of hazardous buildings in its community for many years.

## HAZARDOUS BUILDINGS PROFILE

Despite its longstanding concern for seismic safety, in 1989 the city still contained approximately 560 unreinforced masonry buildings (URMs). The majority of the buildings are commercial in use.

### ORDINANCE

The city first adopted its seismic ordinance in the late 1970s. At that time the seismically hazardous buildings were divided into three categories:

- most dangerous:* these buildings were ordered repaired immediately or torn down
- more dangerous:* these buildings were given until 1985 to be brought up to code or demolished
- least dangerous:* these buildings were given until January 1991 to be brought up to code or torn down (on 1/1/91 the owners of these remaining buildings were served with a notice that they had 60 days to develop a plan for compliance and submit it to the Building Inspection Department).

By the end of the 1980s owners of buildings in the first two categories had complied with the ordinance. The city did not provide these owners with any financial or other incentives. There remained to be addressed those buildings categorized as *least dangerous* by the ordinance.

### INCENTIVE PROGRAM CONCEPT

Long Beach's program provided participants with long-term financing at the then-market interest rate of 11.3%. Initially, the city allowed a 3 month period in which property owners could apply for participation in the program. The application period was subsequently extended by 4 months. Property owners interested in participating submitted to the city, for review by its Superintendent of Building and Safety, a report prepared by a California licensed engineer or architect. In general, each report provided for the roof and floors of the building to be bolted to the adjoining walls, for the interior and exterior walls to be reinforced, and for provisions allowing existing usage and occupancy to be maintained and restored. The owners' parcels were then examined to determine their estimated and/or appraised values, and tax rolls were checked to ensure that none of the owners was delinquent in property tax payment. (See: PROGRAM DEVELOPMENT)

Of the 319 parcels for which applications had been submitted, 28 parcels were unable to qualify for the financing because of current year tax delinquencies. Approximately 30 dropped out prior to confirmation of assessments for unrelated reasons. Interestingly, none of the applicants failed to meet the value-to-lien requirement. (See: PROGRAM DEVELOPMENT) A total of 307 parcels were finally included in the assessment district, representing 137 structures or about one quarter of the city's remaining URM's. The parcels in the district are geographically dispersed throughout the city, with the majority located in the city's

downtown area. Of the 307 assessed parcels, 170 are concentrated in 3 multiple-unit buildings. Not all of the units in those buildings are included in the district.

In order to effect the financing Long Beach had to take certain legal steps. The first action the city took was to amend its municipal code so that it had the power to form the assessment district, levy the assessments, and issue the bonds. (See: PROGRAM DEVELOPMENT) The city next adopted a resolution of intention to proceed, and gave preliminary approval to the Assessment Engineer's report which contained estimates of project costs and per parcel assessments. Two months later the council adopted another resolution allowing an additional 65 properties to be included in the district. The council then held a public hearing and, as no protests were received, adopted a resolution establishing the district, authorizing the projects and confirming and levying the assessment for each parcel. Seven months later the bonds were issued and money was placed in an Improvement Fund awaiting disbursement to participating owners.

To receive bond funds an owner must submit to the city a certificate stating that eligible improvements have been completed and that the cost of those improvements is eligible for reimbursement. The certificate must be signed by the owner and the City Treasurer. Owners may either request reimbursement upon completion of seismic related work, or may request that progress payments be made directly to the contractor as construction progresses. However in the case of multi-unit buildings, to ensure that all necessary improvements to the building will be completed, no funds will be disbursed to owners represented in the district until the owners of units who chose not to participate in the district have secured alternative financing.

Undertaking and completing projects is the sole responsibility of individual property owners. All owners must submit final building plans to the city and obtain all the usual permits. Owners individually contract and arrange for the projects' construction, and any cost overruns are the sole responsibility of the owner. No provisions were made in the bond issue for financing such overruns. The time allotted for completion of all the projects is approximately two years. If there are bond proceeds remaining at the end of that time (perhaps because owners who participated in the district ultimately chose not to undertake the improvements, because final costs were under the amounts determined in preliminary estimates, or because they did not satisfy the city's requirements for release of the funds) these proceeds will be used to prepay the bonds.

The bonds are repaid through assessment liens against all the parcels included in the district. Assessment installments are payable in the same manner and time as general taxes on real property. Note that the assessments represent liens against parcels, not personal indebtedness of property owners.



The annual assessment billed against each parcel represents a pro rata share of the total principal and interest of the bonds coming due that year. The assessments in aggregate are sufficient not only to pay for the estimated costs of the seismic improvements, but also to cover related incidental expenses. These incidental expenses include the city's costs of developing and administering the program. Ongoing expenses payable from the bond issue include the cost to the city of monitoring construction, administering payments under construction contracts, and engineering expenses (See: PROGRAM RESOURCES) In addition to the basic assessment on each parcel, the city may levy an annual assessment to pay specified costs incurred by the city which are not covered by the basic assessment. These costs would arise from administration and collection of assessments, or administration and registration of the bonds. The additional annual assessment is capped at \$150 per parcel adjusted for inflation.

The bonds issued by Long Beach are secured by the assessments levied against the parcels. The assessment liens are on parity with all general and special tax liens. They are subordinate to pre-existing Special Assessment liens, but take priority over future fixed Special Assessment liens. Most importantly the assessment liens take priority over all existing and future private liens, including bank loans and mortgages.

Failure of an individual property owner to pay an assessment installment will not increase the assessments against other parcels. Generally, property securing delinquent assessment installments in California is subject to sale in the same manner as property sold for non-payment of general property taxes. However, Long Beach has covenanted that it will commence judicial foreclosure proceedings against parcels with assessment installments which are more than two years delinquent. It also will commence such proceedings against all delinquent parcels, even those delinquent for less than two years, in the event that the total of installments received by the city is less than 95% of the amount due. When insufficient assessments are received to make interest and principal payments on the bonds, amounts in the reserve fund are drawn down to make up the deficiency (See: PROGRAM RESOURCES). The city does have the option of deferring foreclosure proceedings if the reserve requirement is met, i.e. if the city chooses to advance monies to replenish the reserve fund.

#### PROGRAM RESOURCES

Four different city departments were involved in developing Long Beach's program: Community Development, the City Treasurer's office, the City Attorney's office and the Planning and Building Department. In addition, the Rehabilitation Officer spent a great deal of time with individual URM owners. The services of a financing team (financial advisor, bond counsel, and underwriter) were also used extensively. Long Beach estimates it cost at least \$40,000 in city staff time and other expenses to develop the program and issue the bonds. These costs, as well as the fees of the financing team, were reimbursed from the

proceeds of the bond issue. Ongoing program costs primarily involve the time of the Superintendent of Building and Safety to review and approve requests for funds, and the resources of the City Treasurer to administer the bond program and collect the assessments. The projected ongoing costs were also funded through the bond issue, and additional amounts may be collected if necessary by levying additional assessments (See: INCENTIVE PROGRAM CONCEPT).

Long Beach issued bonds in the amount of \$17.4 million to which were added approximately \$250,000 in accrued interest and owner deposits, for a total of \$17.7 million. The funds were allocated as follows:

- \$14.9 million of the bond proceeds were deposited into the Improvement Fund from which monies would be drawn to cover project costs. Monies in this fund earn interest, which is also deposited into the Improvement Fund and allocated to the projects. Together these sources were projected to supply the \$15.1 million needed to cover project costs.
- The bond proceeds also funded a \$1.7 million reserve account, required in most bond financings, which ensures that funds will be available to make timely bond payments.
- Approximately \$500,000 was borrowed to cover interest payments which needed to be made on the bonds prior to collection of assessments.
- \$450,000 was expended to pay the financing team and cover other issuance costs.
- Finally, the city received from the bond proceeds the \$40,000 to reimburse itself for monies it spent developing the program, as well as \$100,000 which it planned to use to cover ongoing administrative costs (See: INCENTIVE PROGRAM CONCEPT)

#### PROGRAM DEVELOPMENT

Long Beach's program might better be called an enabling rather than an incentive program. As the city had not provided any financial assistance to owners of buildings classified by its ordinance as "more dangerous" and "most dangerous," it saw no reason to provide such assistance to owners of the "least dangerous" structures. While the city ruled out any type of

subsidy program, however, it was not oblivious to the economic realities of the day. The poor real estate market, the slowing economy and the industry-wide problems of banks made it more difficult for the remaining class of owners to find private financing for retrofitting projects. The city felt that its most suitable function would be to obtain financing for the owners while steering clear of any responsibility for repayment. The best means of accomplishing Long Beach's objectives was determined to be a bond financing based upon the formation of an assessment district.

While assessment bonds of the type contemplated were commonly used by cities throughout California for other purposes, they had never before been publicly issued to finance repairs of privately owned structures. The uniqueness of this purpose made the assessment bond issuance process far more complicated than would normally be expected. New ground had to be broken on many fronts, a process which ended up taking 18 months rather than the 3 to 6 months more commonly spent on assessment financings. While developing an appropriate legal structure was challenging, the most difficult aspect of the development process involved qualifying the properties for participation in the district.

One issue which needed to be addressed was the status of applicant owners' property tax payments. As the assessments would be paid with property taxes (See: INCENTIVE PROGRAM CONCEPT), it was important to show that members of the district were current with their tax payments. To many people's surprise, it turned out that nearly one third of the applicants were delinquent on their tax payments, primarily as a result of a supplemental assessment that had been levied a number of years prior but for which the property-owners had never been billed. The screening process for owners delinquent on property tax payments caused about 12 applicants to drop out of the process.

As investors in assessment bonds are secured by the property upon which the lien is assessed, an important ratio in an assessment financing is the value-to-lien ratio. This ratio suggests to investors how much might be recouped from the sale of a property if its owner defaults on the assessment. (For foreclosure procedures see INCENTIVE PROGRAM CONCEPT) Typically, investors will require that assessment districts contain properties with minimum value-to-lien ratios of 3.0 to 1. Long Beach's financing team established a minimum 2.5 to 1 ratio, although a small number of properties with lower ratios were accepted into the district.

Typically, property values are determined by appraisal. Obtaining appraisals, however, can be expensive and time-consuming. The city's financial advisor devised a valuation method designed to minimize the number of properties for which appraisals would be required. As a first step, based on the assumption that a property's market value is always higher than its assessed value, an applicant's value-to-lien ratio was calculated using the property's assessed value. If the resulting ratio was 2.5 to 1 or higher, the property qualified for inclusion in the district.

The next test developed a proxy for market value by discounting the property's assessed value by 2% for each year since its most recent assessment, and increasing the resulting number to more accurately reflect changes in market value since the date of that assessment. The derived market value was then used to calculate the value-to-lien ratio. The procedure turned out to be extremely complex, but did attain the desired result as all but 50 parcels met the minimum value-to-lien ratio and were able to forego formal appraisals. The remaining parcels underwent a valuation process by a city approved MAI (Master Appraisal Institute) appraisal and in each case the valuation provided the necessary coverage. The following table illustrates the value-to-lien ratios of parcels which comprise the district, using both the assessed value and the derived or appraised market value.

Value-to-Lien Ratio	# Parcels (Value = Assessed Value)	% of Total Assessment	# Parcels (Value = Derived Value)	% of Total Assessment
< 1.00:1	27	15.7	0	0.0
1.00:1 to 1.99:1	32	20.9	0	0.0
2.00:1 to 2.49:1	28	11.3	5	4.1
2.50:1 to 3.49:1	49	17.5	41	26.1
3.50:1 to 4.49:1	42	10.6	29	15.4
> 4.50:1	129	24.0	232	54.4
<b>TOTAL</b>	<b>307</b>	<b>100.0</b>	<b>307</b>	<b>100.0</b>

In addition to evaluating owners' applications, Long Beach had to take certain steps to effect the bond issue. For legal as well as policy reasons, it was very important to make clear that the program being developed by the city was intended not to provide benefit to private owners but to address a public safety issue. Long Beach, which is a charter city, also needed to grant itself the powers necessary to form the assessment district. Accordingly, Chapter 3.52 was added to the city's municipal code specifically for the purpose of providing financing mechanisms to help lower the costs of private improvements required to be made to buildings in the city which fail to meet the minimum seismic and public safety requirements of the code. The new chapter established procedures for the issuance and sale of bonds, the formation of assessment districts, and the levying of assessments on properties, incorporating certain provisions of the Improvement Bond Act of 1915 and the Municipal Improvement Act of 1913, the acts allowing formation of Special Assessment districts (See: LOCAL GOVERNMENT FINANCING OPTIONS - SPECIAL ASSESSMENT DISTRICTS) Note that the amended

code established these procedures to assist in the financing of public safety improvements to private properties within the city, improvements which include but (theoretically) are not limited to seismic retrofitting.

#### PROGRAM EFFECTIVENESS

About one quarter of the city's 506 remaining URMs were included in the assessment district and will be retrofitted using the proceeds of the bond issue. Long Beach is now considering forming a second assessment district and floating another bond issue. About 40 property owners who failed to sign-up in time for the first assessment district have applied for inclusion in the second. It appears the second bond issue would be about 10% the size of the first one.

#### PROGRAM STRENGTHS

The primary advantage of the program to the city lies in the fact that Long Beach is able to provide owners with financing while retaining no repayment liability. Although the program does require ongoing monitoring and administration, these costs are fully covered by the assessments levied on the parcels receiving the financing. Because the program is privately financed and full financial responsibility lies with the property owners, the projects are not subject to regulations applied to public funds such as Davis-Bacon wage requirements. It is helpful too that the application process for property-owners is relatively simple and participation is optional.

#### KEYS TO SUCCESS

The effectiveness of Long Beach's program is likely linked to the earlier success of the city's retrofit efforts. Long Beach had a reputation for holding the line with URM owners. Buildings in the "most dangerous" and "more dangerous" categories which had failed to meet the earlier retrofit deadlines were razed by the city. This let URM owners know that the city was serious about its retrofit program.

Long Beach also has a great deal of experience in dealing with URMs. The issue is very well understood by staff, elected officials, and the public at large. As a result, very little controversy surrounded the city's development of its program.

By establishing this program, the city was merely offering an alternative to owners who could not find long-term financing. It was helpful too that the aggregate project size was large, so that the fixed costs of developing and administering the program could be shared among many owners. The city and its financing team also did a thorough job of marketing this financing option and convincing URM owners to sign up for membership in the assessment district. Having learned from its first issue, should it go ahead with the second Long Beach will pay particular attention to ensuring that owners understand fully the nature of their commitments and those of the city. The city found this to be the most difficult, yet the most crucial, aspect of the financing process.

Finally, the city showed a great deal of flexibility in its willingness to experiment with an untried method of financing. Long Beach exhibited a tremendous amount of patience as the financing team struggled to develop the program, a process which took 2 to 3 times as long as originally expected.

It is often said that Long Beach was able to develop this project because it is a charter city. While this was considered a key factor at that time, Long Beach's bond counsel now believes that general law cities too can use Special Assessment financing to fund retrofit programs (See: LOCAL GOVERNMENT FINANCING OPTIONS - SPECIAL ASSESSMENT DISTRICT).

#### EXHIBITS

- Sample letters to property owners sent over the course of the financing process.

#### CONTACTS

David Lewis	Rehabilitation Officer	(310) 590-6879
Richard Hilde	City Treasurer	(310) 590-6845
Tim Schaefer	Financial Advisor	(714) 545-1212
Masood Sohaili	Bond Counsel	(213) 669-6692



**CITY OF LONG BEACH**

**EXHIBITS**







## CITY OF LONG BEACH

DEPARTMENT OF COMMUNITY DEVELOPMENT

333 WEST OCEAN BOULEVARD • LONG BEACH, CALIFORNIA 90802 • (213) 590-6841

January 5, 1990

[REDACTED]

Dear [REDACTED]

According to our records, you are the owner of property which has been identified by the Department of Planning and Building of the City of Long Beach as requiring certain repairs to meet the City's seismic code by 1991.

The City is considering the feasibility of a bond issue to make funds available to property owners for the required seismic repairs. If such an issue is found to be feasible and desirable, we are of the opinion that funds could be made available under the following general conditions:

- o Interest rate would be within the market range of first mortgages.
- o There would be a pro rata commitment fee required to pay for initial costs of issuing the bonds.
- o Funds would be repaid on a monthly basis over a 30-year term at a fixed rate.
- o Security for the funds would be an assessment district lien on the property. This form of lien would be in a superior position to any existing mortgage.
- o The funds may only be used for work required for seismic repairs and cannot be used for general repairs and improvements.

If you have not yet finalized your financing for the seismic repairs to your property and if you may be interested in the bond program, we would like to discuss it with you further. We do think the bond financing offers some district advantages, particularly the interest rate and the 30-year term.



## CITY OF LONG BEACH

DEPARTMENT OF COMMUNITY DEVELOPMENT

300 WEST OCEAN BOULEVARD • LONG BEACH, CALIFORNIA 90801 • (310) 433-6222

May 21, 1990

Dear Interested Property Owner:

This letter is to inform you of the progress made to date in preparing to issue bonds to assist in financing seismic repairs to your property. At the same time, we need to let you know of information we will require from you and the date for you to submit that information.

On May 8, 1990 the City Council approved the first reading of the Procedural Ordinance providing guidelines for establishing the assessment district. The second reading of the Ordinance occurred on May 15, 1990. The next step in the public process will occur in early August 1990, when the City Council will consider the Resolution of Intention to form the assessment district. We still expect bonds to finance seismic improvements to be sold November 1990.

The next major step for you as a property owner interested in utilizing the bond financing is to complete an engineering analysis of your building as soon as possible. For your continued participation in the bond program, we will require a report, signed by an engineer or an architect licensed by the State of California, to be submitted to the City by June 29, 1990. This report is to include a description of your existing building, what work needs to be done to the building to bring it into compliance with the City's seismic code, and an accurate estimate of the cost of the work. At the same time, by June 29, 1990, you must also submit your Good Faith Deposit of \$1,000 per building.

Many of you are aware that the City Council will consider an amendment to the City's Seismic Ordinance. Some of you are also of the opinion that should the amendment be approved, there may be cost savings in making repairs to your building. This opinion has led some property owners to want to delay engineering analysis of their buildings until the City Council has acted on the proposed amendment. It should be emphasized that the proposed amendment does not extend the time period to make the repairs.

We believe any delays in proceeding with the engineering work is not in the best interest as to time for those property owners wishing to participate in the bond financing

program. In order to meet our schedule to sell bonds, and your schedule to make repairs to your building, we need to proceed on our current schedule. Therefore, we suggest that your engineer or architect describe work to be done, and estimate the cost of that work, under the existing code. This should be the cost estimate you submit to us on June 29, 1990. Subsequently, if the City does amend the Seismic Code and the cost of repairs to your building is less than the original estimate, we will allow a one-time reduction of the cost to repair just prior to selling the bonds.

We will be holding a meeting of all interested property owners on Tuesday, June 12, 1990 at the Pacific Coast Club, 430 Pine Avenue, in downtown Long Beach. The purpose of the meeting is to further bring you up to date on our progress in this matter, and to answer any questions you may have.

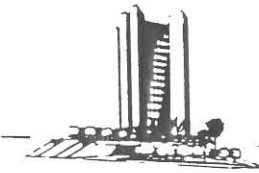
In the meantime, if you need information or have questions, please call me at (213) 590-6879.

Sincerely,



DAVID D. LEWIS  
Redevelopment Project Officer

DDL:bp



## CITY OF LONG BEACH

DEPARTMENT OF COMMUNITY DEVELOPMENT

333 WEST OCEAN BOULEVARD • LONG BEACH, CALIFORNIA 90802 • (213) 590-6841

September 11, 1990

Dear Property Owner:

This letter is to advise you that we have received your complete application for seismic bond financing to make the required repairs to your property located at \_\_\_\_\_ in Long Beach. That Property has been included in the preliminary Assessment Engineer's Report; the estimated cost to repair, upon which the property assessment is to be based, is \_\_\_\_\_.

On September 4, 1990 the City Council adopted the Resolution of Intention to Form an Assessment District and approved the preliminary Assessment Engineer's Report. The Council also consented to hold a public hearing on the proposed assessment district. The public hearing will be held at 10:30 a.m., Tuesday, October 16, 1990 in the Council Chamber in City Hall, 333 West Ocean Boulevard.

We are continuing to work with a financial consultant to complete the structure of the bond issue. At the present time, there appear to be some conditions of the bond sale about which we want to inform you.

1. The cost of issuing the bonds appears to be approximately 3.6% of the cost to repair. This amount covers all legal and administrative expenses and includes the bond underwriters fee.
2. There must be included in the bond issue an amount equal to 10% of the cost to repair for a reserve fund. The purpose of this fund is to cover any short-term cash flow problems in making payments to the bond buyers which might otherwise occur should any property owner default in making the annual assessment payment. If a default does occur and the reserve fund must be used to any degree, the fund will be repaid once the default is cured. This reserve fund will be invested, and the interest earned will be credited to each assessment on a pro rata basis. At the end of the repayment period, your share of the reserve fund will be used toward making the final payments on your assessment levy.
3. Also to be included in the bond issue is the first year's interest on the money to be used. You will not be required to make any payment of the funds used to repair your property until December 10, 1991. However, you will have initial

Page 2

use of those funds approximately one year earlier. Therefore, the interest payment to the bondholders for the first year must be included in the bond issue.

As we had advised you earlier, we will allow a one-time adjustment of your estimate of the cost to repair your property. If you wish to change the estimate you have already submitted, we ask you to submit any change before September 30, 1990. If we do not receive direction from you to change your estimate, we will include the current estimate in the final Assessment Engineer's Report, and your assessment levy will be based on that amount.

If you have any questions in this matter, please feel free to call me at 590-6879.

Sincerely,



DAVID D. LEWIS  
REDEVELOPMENT PROJECT OFFICER

DDL:dm



## CITY OF LONG BEACH

DEPARTMENT OF COMMUNITY DEVELOPMENT

333 WEST OCEAN BOULEVARD • LONG BEACH, CALIFORNIA 90802 • (213) 590-6841

September 27, 1990

Dear Property Owner:

As we had informed all property owners earlier, one of the primary underwriting conditions for the sale of bonds for seismic repair is that the market value of the property to be repaired be at least 3 times the actual cost of repairs.

In attempting to estimate the market value of the participating properties, we began by identifying the current assessed value for each property. We then adjusted the assessed value, taking into account the year the property was purchased by the current owner and the overall average annual increase of assessed values in the Long Beach area. We have also determined that value to lien ratios of 2.5 to 1 are sufficient for this program.

Based on the analysis described above, your property located at \_\_\_\_\_ has an adjusted assessed valuation for purposes of this bond financing program only of \$ \_\_\_\_\_. Your estimated cost to repair your property is \_\_\_\_\_. This results in a value to lien ratio of \_\_\_\_\_, which is below the acceptable ratio of 2.5 to 1.

We recognize that the assessed value of real property is not necessarily the true market value. It is, however, the only information we have readily available.

If you have any reliable information that will help us establish the estimated market value for your property, it would be most appreciated. Such information could be an appraisal undertaken by a professional appraiser for any purpose, such as a loan or refinancing, within the last 18 months or verification of a purchase price within the past two years. Any valid information will greatly assist us in this process. Please submit such information to us no later than October 12, 1990.

For those properties where no other reliable data is available, we may undertake a "letter-opinion" appraisal of the property or other alternatives to establish the value of the property. If there remain properties which, after

Property Owner  
September 27, 1990  
Page 2

undertaking all of the above described analyses, still fall below an acceptable value to lien ratio of 2.5 to 1, we will be forced to exclude those properties from the bond financing program.

Thank you for your assistance. If you have any questions in this matter, please call me at (213) 590-6879.

Sincerely,



DAVID D. LEWIS  
REHABILITATION OFFICER

DDL:dm





## CITY OF LONG BEACH

DEPARTMENT OF COMMUNITY DEVELOPMENT

333 WEST OCEAN BOULEVARD • LONG BEACH, CALIFORNIA 90802 • (213) 590-6841

December 3, 1990

Dear Property Owner:

On November 27, 1990 the City Council held a public hearing on the formation of Earthquake Repair Assessment District # 90-3. Following the public hearing, the Council approved the formation of the District. The property you own and for which you applied has been included in the District for purposes of financing the required seismic repairs.

We are currently working with the financial consultant and the bond underwriter to finalize the terms and timing of the bond issue. We still anticipate selling bonds in January 1991. We will keep you informed of our progress as we near the time of sale.

Several of you have asked specific procedural questions regarding the flow of bond funds once the bonds are sold. First, there will be established a construction account for each of the participating properties in the amount you have given us as your cost to repair your building. You will be responsible for selecting your own contractor to do the repair work. As the contractor proceeds and submits invoices to you for payment, you will first ensure the work is completed, to the degree of the payment request, in a satisfactory manner. You should then sign the invoice and submit it to the Assessment Engineer, Mr. Eugene J. Zeller. Following inspection of the work by the City, a check will then be drawn and mailed, payable directly to the Contractor.

If there are funds remaining in the construction account following the completion and payment for all seismic repair work, those funds, for a period not to exceed three years from the date of bond issuance, will be applied toward the payment of the annual assessment. If there still remain funds in any sizeable amount after the three year period, they may be used to pay off bonds.

Again, we will keep you informed as we near the sale of bonds. In the meantime, if you have any questions, please call me at (213) 590-6879.

Sincerely,

A handwritten signature in cursive script that reads "David D. Lewis".

DAVID D. LEWIS  
REHABILITATION OFFICER

DDL:dm

**CITY OF LONG BEACH**

DEPARTMENT OF COMMUNITY DEVELOPMENT

333 WEST OCEAN BOULEVARD • LONG BEACH, CALIFORNIA 90802 • (213) 590-6841

February 20, 1991

Dear Property Owner:

As you know, this past January we had expected to sell bonds secured by the City's Earthquake Repair Assessment District 90-3, which includes your property. However, our schedule for the bond sale was prepared at a time when we were unable to predict current world events and their effect on market conditions for our bonds.

In December, 1990, Merrill Lynch & Co. was selected as underwriter for our bond issue. Their early advice to us was that all steps must be taken to make our bond issue as attractive as possible to the highly competitive and limited taxable bond market, in order to get the lowest possible interest rate for the property owners. One strong recommendation made was to "validate" the bond issue, a process in which the City essentially sues itself to obtain a judgement from the court that the City in fact has the legal right to form the assessment district and sell these bonds. While neither we nor our bond counsel has ever questioned our right in this regard, the court judgement provides added security to the bond buyers. This process was begun last December, and since no challenge was filed within the required time period, we expect to receive a favorable judgement from the court the last week of this month.

Another requirement of the underwriter was to determine the current status of payment of property taxes on each of the properties in the assessment district. As you know, the assessment lien is billed to each property owner annually as part of the property tax bill, and is paid together with property taxes. The assumption of the underwriter is that there may be a correlation between the pattern of paying property taxes in the past with the payment of taxes, including assessment liens, in the future. In researching the current status of property tax payments, we have discovered that of the 338 owners in the district, 108 are delinquent in some portion of property tax payments. Each of those property owners will be receiving a separate letter explaining what must be done in this situation. The process of resolving this delinquent tax issue will, however, delay the sale of bonds for at least three weeks.

Property owner  
February 20, 1991  
Page 2

We are now anticipating the sale of bonds and the availability of funds the second or third week of April. We regret these delays in our schedule, but they have come as a result of factors beyond our control. We will continue to keep you informed of our progress toward the sale of bonds.

In the meantime, I urge you, if you have not already done so, to respond to Mr. Eugene Zeller's letter of December 28, 1990. Your response should include the status of your construction plans for the repair work, and the fact that you are a participant in the City's bond financing program.

As always, if you have any questions regarding the assessment district or the bond program, please call me at (213) 590-6879.

Sincerely,



David D. Lewis  
Rehabilitation Officer

DDL:gm

property.dl

**CITY OF LONG BEACH**

DEPARTMENT OF COMMUNITY DEVELOPMENT

333 WEST OCEAN BOULEVARD • LONG BEACH, CALIFORNIA 90802 • (213) 590-6841

February 20, 1991

Dear Property Owner:

As we continue our process toward the sale of bonds to finance earthquake repair to properties in Assessment District 90-3, one of the material disclosures required by the underwriter of the bonds is the current status of property tax payments on each property. We have just completed our analysis of each property in the district, and, quite frankly, we find the results rather startling. Of 338 owners in the District, 108 have delinquent tax payments.

Since the payment of the assessment lien is directly tied to the payment of property taxes, there is an assumed correlation in the pattern of property tax payments and the annual assessment payment. Property owners with delinquent tax payments who wish to remain in the district will be required to bring their property taxes current immediately.

According to the information we have received from our tax service consultant, you have a delinquent tax balance due on your property, located at \_\_\_\_\_, of \$ \_\_\_\_\_. If you wish to remain in the Earthquake Repair Assessment District 90-3 and have seismic repairs to your building paid with bond proceeds, you must pay all delinquent taxes on your property no later than March 15, 1991. Thereafter, you must pay your property taxes when they become due, because the private bondholders who are providing the funds for repair work do so as an investment and expect to be repaid on a timely basis. Therefore, if property taxes are not paid when due, the City is obligated for the benefit of the bondholders to commence foreclosure proceedings within 90 days.

To remain in the Assessment District, you must, as noted above, pay all back taxes by March 15, 1991. You must also, by March 15, 1991, send to me at the address on this letter evidence of payment of all back taxes. If our information is in error, please send me documentation that the taxes have been paid. If we do not hear from you at all by March 15, 1991, we will be forced to drop your property from the District.

We are sorry for this inconvenience, but this is an urgent matter which must be resolved. If you have any questions, please call me at (213) 590-6879.

Thank you for your assistance.

Sincerely,

David D. Lewis  
Rehabilitation Officer



## CITY OF LONG BEACH

DEPARTMENT OF COMMUNITY DEVELOPMENT

333 WEST OCEAN BOULEVARD • LONG BEACH, CALIFORNIA 90802 • (213) 590-6841

June 21, 1991

Dear Property Owner:

We are pleased to advise you that the bonds to finance the structural repairs to be made on your property pursuant to the provisions of the City of Long Beach Earthquake Repair Assessment District No. 90-3 have been sold and the funds are now deposited with the City. The interest rate on the bonds is 11.3%, and the term is 24 years. We were disappointed that the interest rate was higher than originally expected, but in today's economic conditions, that was the best rate submitted by potential buyers.

It is expected that the Property Improvement accounts will be established by June 24, 1991 and owners may then begin submitting requests for payment. Requests for payment are to be made to Mr. Dick Hilde, City Treasurer, City Hall, 333 West Ocean Boulevard, Long Beach 90802.

The process for making your requests for payment is to complete the Payment Request Form (copies enclosed), and to attach a duplicate original of the invoice or statement for which payment is requested. If you have already paid the invoice or statement, it must be stamped or marked "Paid in Full" by the vendor and then submitted for payment. The payment check will then be made out directly to you. If the invoice or statement has not been paid by you, we will pay the vendor directly.

Requests for payment will be processed by the City twice each month, on the 1st and the 15th. Those requests received by the City between the 1st and 15th of each month will be processed on the 15th, and those received between the 15th and 31st will be processed on the 1st of the next month. In most cases payments will be mailed out from 7 to 10 days following the date processing began.

As you know, these funds may be used only for seismic repair work. Do not submit invoices for work that is not a part of your seismic repair. Periodic inspections will be made by the City's Superintendent of Building to ensure that all work for which payment is requested is required for seismic repair.

<i>Population:</i>	<b>57,000</b>
<i>1990/91 General Fund</i>	
<i>Revenues:</i>	<b>\$48 million</b>
<i>Fund Balance:</i>	<b>\$14 million</b>
<i># URMs:</i>	<b>46</b>
<i>Type of URMs:</i>	<b>100% commercial</b>
<i>Ordinance Type:</i>	<b>mandatory engineering reports</b>
<i>Retrofit Incentives:</i>	<b>(1) reports available to tenants and public</b> <b>(2) exemption from zoning requirements</b>
<i>Funding Source:</i>	<b>not applicable</b>

### BACKGROUND

The City of Palo Alto, located 30 miles south of San Francisco in Santa Clara County, extends from San Francisco Bay to the lower foothills of the Santa Cruz mountain range. The city is the home of Stanford University. Santa Clara County's "Silicon Valley," renowned for its high technology industry, has its roots in Palo Alto which includes the Hewlett-Packard Corporation among its corporate residents. First incorporated in the mid 1800s, Palo Alto grew by adding discrete sites so that today it includes 43 individual named neighborhoods. Most of the city's retail businesses are concentrated in 5 major commercial zones, 1 of which is a large shopping center and another the traditional downtown.

### HAZARDOUS BUILDINGS PROFILE

The city identified 91 buildings as potentially hazardous. Of the potentially hazardous buildings identified, 46 are unreinforced masonry buildings (URMs) located in Palo Alto's downtown area. The buildings are primarily commercial in use, and include, for example, office buildings, a theater, a restaurant, and a supermarket.

### ORDINANCE

Palo Alto's ordinance emphasizes identification rather than mitigation, establishing the city's "Seismic Hazards Identification Program." Three categories of buildings are covered by the ordinance:

- (1) Buildings constructed of unreinforced masonry (except for those smaller than 1900 square feet with 6 or fewer occupants),
- (2) Buildings constructed prior to January 1, 1935 containing 100 or more occupants, and
- (3) Buildings constructed prior to August 1, 1976 containing 300 or more occupants.

Exceptions are made for those buildings which have been structurally upgraded in accordance either with the Los Angeles Division 88 Standard for URM buildings or the 1973, or later, edition of the Uniform Building Code.

Owners of buildings in the listed categories are required to submit to the Building Inspection Division of the city detailed engineering reports describing the potential for damage to their structure in the event of an earthquake. The reports are to be prepared by professional structural or civil engineers hired by the building owner.

The city's Building Inspection Division is instructed to notify owners of their responsibilities under the ordinance. The owners are to be notified within 6 months of enactment of the ordinance; however, owners of historic buildings are to receive notice following an 18 month delay to allow them more time to prepare. Engineering reports for URM's (category 1) are due 1 1/2 years from mailed notice, pre-1935 buildings (category 2) are due within 2 years, and pre-1976 buildings (category 3) are due within 2 1/2 years of mailed notice. Within 1 year of submitting the report the owner also must submit to the Building Inspection Division a letter of intent describing plans for taking care of any deficiency.

Upon receipt of an owner's report the Building Inspection Division, with the aid of civil or structural engineers, reviews the report to ensure it conforms with the ordinance's requirements. The report is then made available to all interested individuals. The owner is responsible for notifying tenants, in writing, within 30 days of its submission, that the report is complete and on file with the city. A semiannual status report is to be prepared by the chief building official for distribution to the City Council, discussing the number of buildings analyzed, the severity of structural inadequacies discovered, and any corrective actions undertaken by owners.

Building owners who violate the ordinance are guilty of a misdemeanor punishable by a fine of \$500, or by imprisonment in the County jail for a term not to exceed 6 months, or both, for each day they are out of compliance.

#### INCENTIVE PROGRAM CONCEPT

Palo Alto's approach includes both incentive and pressure to retrofit. Shortly after adopting its retrofit ordinance, the city enacted zoning changes designed to provide incentives for owners of hazardous buildings who are considering retrofitting. The zoning incentives provide that an owner who strengthens a building may add 2,500 square feet or 25% of the existing usable floor area, whichever is greater, up to a maximum zoning floor area ratio of 3:1, and remain exempt from on-site parking requirements.

The "stick" embedded in Palo Alto's program is its requirement that the engineering reports submitted by building owners be made a matter of public record. Palo Alto's residents are generally highly educated and very likely to take an interest in, and do something with, such information. The city also believes that publicizing a building's seismic deficiencies could affect its resale and rental values, its eligibility for refinancing, and the cost of purchasing earthquake insurance. The city felt these financial considerations would lead at least some building owners to retrofit voluntarily.

#### PROGRAM RESOURCE REQUIREMENTS

The Chief Building Official of the city of Palo Alto, was the individual who spent the most time on developing the city's ordinance, which took 4 years. He was supported in this effort by a civil engineering consultant and a 12 member citizen advisory committee. Outside of staff time and related expenses, there were no costs associated with development of the program. Ongoing resource requirements also are minimal: the city's building official must receive and review the engineers reports prepared by the owners, and report to the city council semi-annually on the number of buildings analyzed. The Building Inspection Division is instructed to hire civil or structural engineers to help with report reviews. The cost of the review is recovered from fees assessed upon the owners based on the time required for the review. Ultimately the city will bear all or a portion of the review costs, as the amount collected from owners will be deducted from the plan checking fee for construction work which deals directly with correcting deficiencies identified in the reports.



### PROGRAM DEVELOPMENT

The process of drafting Palo Alto's ordinance began in December 1981. The intention at the time was to pass an ordinance making retrofitting mandatory. The city recognized that a mandatory ordinance could have a negative financial impact on owners but decided against providing any financial assistance. When the first ordinance, which mandated retrofitting, was presented by staff to the city council, the outcry from the business community and the general public led the council to vote against the measure in April 1982.

The city was criticized for not including affected members of the community in the discussion and development of the ordinance. Accordingly, the council directed staff to "establish a citizen's committee to recommend an economical, practical and cost-effective method of reducing seismic hazards in Palo Alto". At least 2 structural engineers and an architect had to be included on the committee. The citizen's committee included representatives of the Chamber of Commerce, the Board of Realtors, the Downtown Merchants Association, Downtown Palo Alto Inc., the California Avenue Area District Association, the Planning Commission, Architectural Review Board and Historic Resources Board. This committee was able to represent the concerns of all the groups affected by the proposed ordinance and provided a vehicle for compromise before the issue would return to the council for a vote.

The citizen's committee and city staff switched their emphasis to development of a voluntary retrofit ordinance, despite the strong opposition of the city's building inspector. Negotiations then began covering, for example, such issues as building classification: although a system identifying 6 different types of hazardous buildings was originally proposed, in the end the committee agreed to divided affected buildings into 3 classes. After 2 years the city's staff and the citizens' committee were able to reach a compromise plan for a voluntary ordinance. In June of 1984 the city council unanimously approved the plan and instructed staff to begin work on an ordinance. The ordinance was adopted by council vote in January, 1986.

### PROGRAM EFFECTIVENESS

The results to date of Palo Alto's program are illustrated in the table below. Four projects have requested the zoning waiver, one of which is under construction and another in the building permit process. Nearly half of the buildings for which engineering reports have been submitted have been retrofitted even though that is not mandatory. In addition nearly as many buildings not covered by the ordinance have been retrofitted.

	Category 1	Category 2	Category 3	All Buildings
<b>Total Building</b>	46	18	27	91
<b>Reports Accepted</b>	34	9	12	43 (48%)
<b>Buildings Strengthened, Repaired or Demolished</b>	10	3	7	22 (23%)
<b>Reports Overdue</b>	2	6	8	26* (29%)

\* Owners of 11 of the 26 buildings have notified the city that they are in the process of complying

#### PROGRAM STRENGTHS

Palo Alto's approach promotes retrofitting while requiring virtually no incremental staff time or expenditure. From the owners perspective, the fact that there is no deadline for retrofitting means that they can pursue such projects when it is most convenient, when for example leases expire, building uses change or ownership is transferred.

#### KEYS TO SUCCESS

As Palo Alto learned from its experience, involvement of the community in drafting the ordinance was critical to its passage. Palo Alto also relies upon the vigilance of its citizens to encourage building owners to correct deficiencies. Without an active community, making the engineering reports generally available would not inspire retrofitting. It is also helpful that Palo Alto is a relatively wealthy community with a thriving downtown, so that given enough time and flexibility owners of hazardous structures generally can find financing for the necessary construction.

Many people believe the zoning incentives offered by Palo Alto had much to do with the program's success but it appears that, after an initial flurry of interest, the expansion incentive has not been widely used.

EXHIBITS

- City of Palo Alto Ordinance #3666

CONTACTS

Fred Herman

Chief Building Official

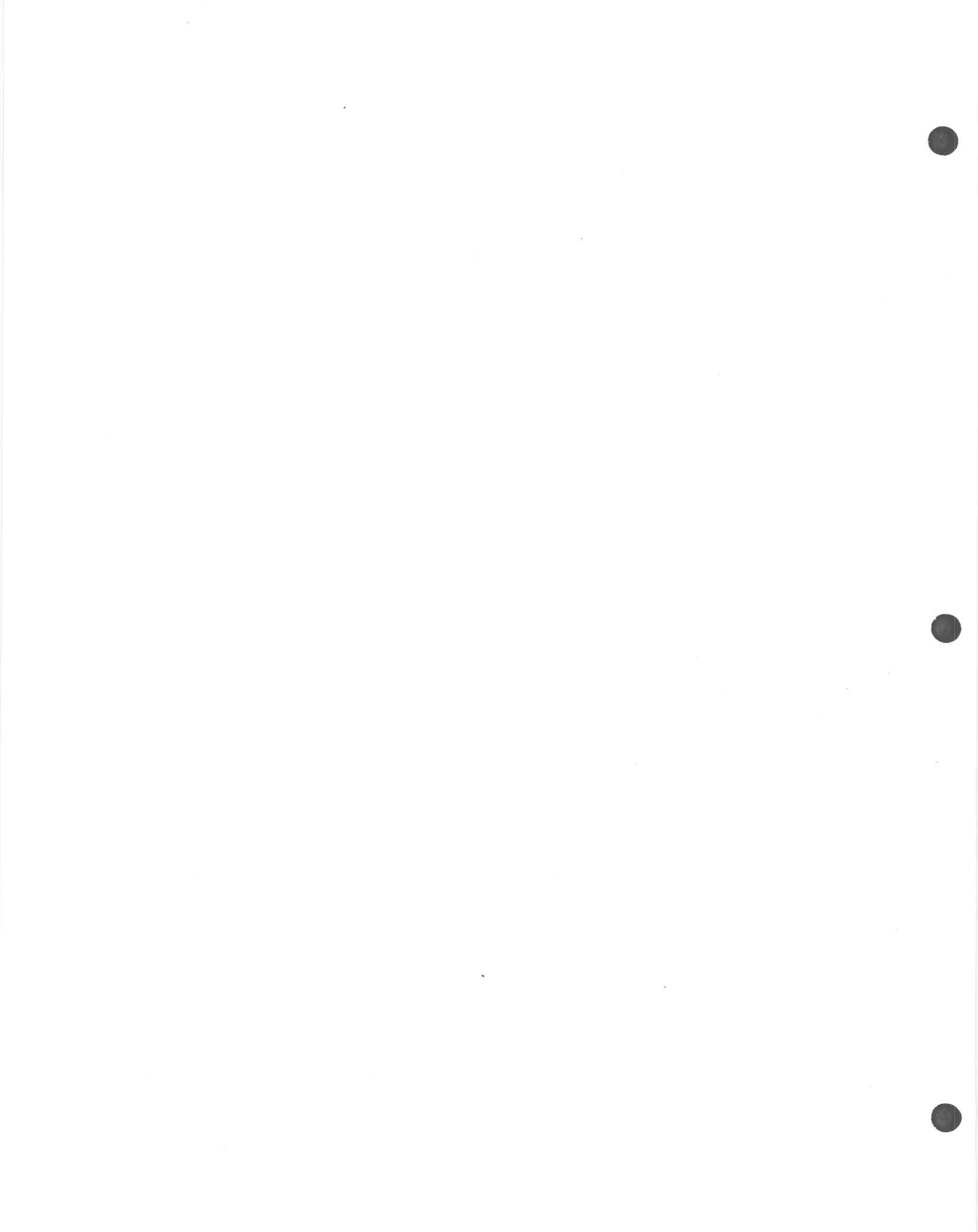
(415) 329-2550

REFER TO

*Earthquake Hazard Identification and Voluntary Mitigation: Palo Alto's City Ordinance*, by Fred Herman, James Russell, Stanley Scott and Roland Sharpe, December 1990, SSC 90-05. Published by the Seismic Safety Commission of the State of California; see CONTACTS)

**CITY OF PALO ALTO**

**EXHIBITS**



ORDINANCE NO. 3666  
ORDINANCE OF THE COUNCIL OF THE CITY OF PALO ALTO  
ADDING CHAPTER 16.42 TO THE PALO ALTO MUNICIPAL  
CODE SETTING FORTH A SEISMIC HAZARDS IDENTIFICATION  
PROGRAM

WHEREAS, the Palo Alto Comprehensive Plan has a Seismic Safety Element which calls for the City to implement measures to lessen risk to human life and property in the event of an earthquake (Environmental Resources Policy 14, Program 47); and

WHEREAS, the City Council established a Seismic Hazard Committee made up of engineers, architects and property owners to thoroughly explore possible seismic hazard programs; and

WHEREAS, the City Council has concluded that it wishes to implement a seismic hazards identification program to require certain building owners to investigate the potential hazards of their buildings; and

WHEREAS, such a seismic hazards identification program is consistent with California Health and Safety Code sections 19160-19169.

NOW, THEREFORE, the Council of the City of Palo Alto does ORDAIN as follows:

SECTION 1. Chapter 16.42 is hereby added to the Palo Alto Municipal Code to read:

**Chapter 16.42**

**SEISMIC HAZARDS IDENTIFICATION PROGRAM**

**Sections:**

- 16.42.010 Purpose.
- 16.42.020 Definitions.
- 16.42.030 Scope of program.
- 16.42.040 Building categories and implementation schedule.
- 16.42.050 Engineering reports.
- 16.42.060 Review of reports.
- 16.42.070 Responsibilities of the building owners.
- 16.42.080 Program status reports to the City Council.
- 16.42.090 Remedies.

16.42.010 Purpose. It is found and declared that in the event of a strong or moderate local earthquake, loss of life or serious injury may result from

damage to or collapse of buildings in Palo Alto. It is generally acknowledged that Palo Alto will experience earthquakes in the future due to its proximity to both the San Andreas and Hayward faults. The purpose of this ordinance is to promote public safety by identifying those buildings in Palo Alto which exhibit structural deficiencies and by accurately determining the severity and extent of those deficiencies in relation to their potential for causing loss of life or injury. The City Council finds it desirable to identify the hazards that these deficiencies may pose to occupants of buildings and pedestrians in the event of an earthquake. Such a seismic hazards identification program is consistent with California Health and Safety Code sections 19160-19169 and is necessary to implement the Palo Alto Comprehensive Plan's Environmental Resources Policy 14, Program 47.

16.42.020 Definitions. (a) "Bearing wall" means any wall supporting a floor or roof where the total superimposed load exceeds one hundred (100) pounds per linear foot, or any unreinforced masonry wall supporting its own weight when over six (6) feet in height.

(b) "Building," for the purpose of determining occupant load, means any contiguous or interconnected structure; for purposes of engineering evaluation, means the entire structure or a portion thereof which will respond to seismic forces as a unit.

(c) "Capacity for transfer" means the maximum allowable capacity of a structural system or connection to resist in a ductile manner the lateral forces it would encounter due to earthquake forces.

(d) "Civil engineer or structural engineer" means a licensed civil or structural engineer registered by the State of California pursuant to the rules and regulations of Title 16, Chapter 5 of the California Administrative Code.

(e) "External hazard" means an object attached to or forming the exterior facade of a building which may fall onto pedestrians or occupants of adjacent buildings. Examples of this type of hazard include, but are not limited to, the following:

1. Nonstructural exterior wall panels, such as masonry infill or decorative precast concrete.
2. Parapets.

3. Marquees, awnings or other roof-like projections from a building.

4. Masonry or stone wall veneer and wall ornamentation, including cornices or other decorative appendages.

5. Masonry chimneys.

6. Tile roofing.

7. Wall signs and exterior lighting fixtures hung from a building exterior.

8. Fire escapes or balconies.

(f) "Geometry" means a building's shape or configuration, including setbacks of wall/column lines, reentrant corners, discontinuities in vertical and horizontal lateral force diaphragms, open storefront and building stiffness variations due to the distribution of resisting elements or the use of materials of differing properties within the same structural element, or other irregularities in plan or elevation.

(g) "Occupants" means the total occupant load of a building determined by Table 33-A of the 1973 Uniform Building Code or the actual maximum number of occupants in that building if that number is less than seventy-five percent (75%) of the number determined by using Table 33-A. The number of actual occupants may be documented by counting actual seating capacity if permanent seating is provided in the occupancy, or by employee and client counts which can be substantiated as a practical maximum use of the space in the building. The chief building official will establish the procedure for documenting occupant loads.

(h) "Solution" means any justifiable method that will provide for the transfer of lateral forces through a system or connection to a degree which will substantially eliminate a potential collapse failure. A general description of the methods and materials to be used shall be included in sufficient detail to allow for a cost estimate of the solution to be made (i.e., adding shear walls, overlaying horizontal diaphragms, strengthening critical connections, etc.).

(i) "Unreinforced masonry (URM)" building means any building containing walls constructed wholly or partially with any of the following materials:



1. Unreinforced brick masonry.
2. Unreinforced concrete masonry.
3. Hollow clay tile.
4. Adobe or unburned clay masonry.

16.42.030 Scope of program. (a) Applicability. The following buildings in Palo Alto shall be required to have an engineering report submitted to the City's Building Inspection Division, pursuant to section 16.42.050, to determine: (i) the existence, nature and extent of structural deficiencies which could result in collapse or partial collapse of the building; and (ii) the existence, nature and extent of deficiencies in the anchoring of external hazards:

1. Buildings constructed of unreinforced masonry (URM), except those of less than one thousand and nine hundred (1,900) square feet containing six (6) or fewer occupants.

2. Buildings constructed prior to January 1, 1935 containing one hundred (100) or more occupants.

3. Buildings constructed prior to August 1, 1976 containing three hundred (300) or more occupants.

(b) Exemptions. The following buildings need not comply with this ordinance:

1. Buildings which have been structurally upgraded in substantial accordance with either the Los Angeles Division 88 Standard for URM buildings or the 1973, or later, edition of the Uniform Building Code.

2. Buildings whose uses are subject to amortization under this code; provided that, upon the termination of the nonconforming use, such a building shall be required to be rehabilitated to the then current lateral force requirements in the Uniform Building Code prior to occupancy by a conforming use.

16.42.040 Building categories and implementation schedule. (a) Building Categories. The categories of buildings within the scope of this ordinance are set forth in Table A, below.

(b) Owner Notification. The owners of buildings in categories I through III, except those designated as historic buildings, shall be notified within six (6)

months of enactment of this ordinance by the Building Inspection Division of the City of Palo Alto that their buildings are required to have an engineering report submitted to the City. Owners of designated historic buildings, as defined in Chapter 16.49, shall be notified within eighteen (18) months of enactment of this ordinance.

(c) Implementation Schedule. The owners of buildings in categories I through III must submit engineering reports within the time frame set out in Table A, below, from the date of mailed notice by the City.

TABLE A

<u>CATEGORY</u>	<u>DESCRIPTION</u>	<u>ENGINEERING REPORT SUBMITTED WITHIN DATE OF MAILED NOTICE (IN YEARS)</u>
I	All URM buildings.	1 1/2
II	All pre-1935 buildings other than URM with 100 occupants or more.	2
III	All buildings with 300 occupants or more constructed between January 1, 1935 and August 1976.	2 1/2

**16.42.050 Engineering reports.** (a) Preparation of Reports. Building owners shall employ a civil or structural engineer to prepare the investigation and engineering report outlined below.

(b) Purpose. To investigate, in a thorough and unambiguous fashion, a building's structural systems that resist the forces imposed by earthquakes and to determine if any individual portion or combination of these systems is inadequate to prevent a structural failure (collapse or partial collapse).

(c) General. Each building shall be treated as an individual case without prejudice or comparison to similar type or age buildings which may have greater or lesser earthquake resistance. Generalities or stereotypes are to be avoided in the evaluation process by

focusing on the specifics of the structural system of the building in question and the local geology of the land on which the building is constructed.

(d) Level of Investigation. Some buildings will require extensive testing and field investigation to uncover potential structural deficiencies, while others will allow the same level of overall evaluation by a less complicated process due to simplicity of design or the availability of original or subsequent alteration design and construction documents.

It is the responsibility of the engineer performing the evaluation to choose the appropriate level of investigation which will produce a report that is complete and can serve as a sound basis for a conclusion on the collapse hazard the building may present.

(e) Format for the Report. The following is a basic outline of the format each engineering report should follow. This outline is not to be construed to be a constraint on the professional preparing the report, but rather to provide a skeleton framework within which individual approaches to assembling the information required by the ordinance may be accomplished. It also will serve as a means for the City to evaluate the completeness of each report.

1. General Information. A description of the building including: (i) the street address; (ii) the type of occupancy use within the building, with separate uses that generate different occupant loads indicated on a plan showing the square footage of each different use; (iii) plans and elevations showing the location, type and extent of lateral force resisting elements in the building (both horizontal and vertical elements); (iv) a description of the construction materials used in the structural elements and information regarding their present condition; (v) the date of original construction, if known, and the date, if known, of any subsequent additions or substantial structural alterations of the building; and (vi) the name and address of the original designer and contractor, if known, and the name and address of the designer and contractor, if known, for any subsequent additions or substantial structural alterations.

2. Investigation and Evaluation of Structural Systems. All items to be investigated and the methods of investigation for each type of building under consideration are contained in Appendices A and B, available from the City's Building Inspection Division.

3. Test Reports. All field and laboratory test results shall be included in the report. Evaluation of the significance of these test results shall be made with regard to each structural system or typical connection being evaluated. This evaluation may be limited to a statement of the adequacy or inadequacy of the system or connection based on the lateral load demand it would be required to resist by calculation. If tests reveal inadequacy, a conceptual solution must be included in the report.

4. Conclusions. Based on the demand/capacity ratio and the specific evaluation items contained in Appendices A or B, a statement shall be provided explaining the overall significance of the deficiencies found to exist in the building's lateral force resisting system regarding potential collapse or partial collapse failure.

5. Recommendations. An appropriate solution, which could be used to strengthen the structure to alleviate any collapse or partial collapse threat, shall be specified.

(f) Exceptions and Alternatives. Exceptions to the specific items required to be included in an engineering report may be granted by the chief building official upon review of a written request from the engineer preparing the report. Such a request shall provide evidence that adequate information concerning the required item(s) can be determined by alternate means or that a conclusion can be made about the item without following the solution called for in the appropriate appendix. The purpose of granting such exceptions shall be to reduce the costs or disruption that would result from taking required actions, when it can be shown that they are unnecessary to provide information available by other equivalent means. In no case will an exception be granted which would result in an item not being completely evaluated. The decision of the chief building official in granting exceptions is final.

**16.42.060 Review of reports.** (a) The City shall utilize the services of civil or structural engineers to assist the Building Inspection Division in determining if the submitted engineering reports conform to the requirements of this chapter.

(b) The cost of this review shall be recovered by a fee assessed from the building owner based on the time required for the review. This fee amount shall be deducted from the plan checking fee collected for any

future construction work that deals directly with correcting any of the structural inadequacies specified in the engineering report.

(c) Copies of the engineering reports shall be available to interested individuals for a standard copying fee or may be reviewed at the Building Inspection Division offices.

**16.42.070 Responsibilities of the building owners.**

(a) Notification of Building Tenants. A building owner shall notify all tenants, in writing, that a structural investigation has been performed and that the report is available at the Building Inspection Division offices. This notice must be sent within thirty (30) days of the date the report is submitted to the City.

(b) Letter of Intent. A building owner shall submit a letter to the Building Inspection Division within one (1) year of the date the engineering report was submitted, indicating the owner's intentions for dealing with the potential collapse hazards found to exist in the building.

**16.42.080 Program status reports to the City Council.** The chief building official shall submit a semiannual report to the City Council on the status of the seismic hazards identification program. The reports shall include information regarding the number of buildings analyzed, the severity of the structural inadequacies discovered and any actions taken by individual building owners to correct these inadequacies.

**16.42.090 Remedies.** It shall be unlawful for the owner of a building identified as being included in the scope of this ordinance to fail to submit a report on either building collapse hazards or external hazards within the time period specified in section 16.42.040(c), Table A, or to fail to submit a letter of intent within the time period specified in section 16.42.070(b). The following remedies are available to the City:

(a) The City may seek injunctive relief on behalf of the public to enjoin a building owner's violation of this ordinance.

(b) A building owner violating this ordinance shall be guilty of a misdemeanor and, upon conviction thereof, shall be punishable by a fine of not more than Five Hundred Dollars (\$500) or by imprisonment in the Santa Clara County Jail for a term not exceeding six (6)

months, or by both such fine and imprisonment. Such building owner is guilty of a separate offense for each and every day during any portion of which such violation of this ordinance is committed, continued or permitted by such building owner.

(c) These remedies are not exclusive.

SECTION 2. The Council hereby finds that this ordinance will have no significant adverse environmental impact.

SECTION 3. This ordinance shall become effective upon the commencement of the thirty-first day after the day of its passage.

INTRODUCED: January 20, 1986

PASSED: February 3, 1986

AYES: Bechtel, Cobb, Fletcher, Klein, Levy, Patitucci, Renzel, Sutorius, Woolley

NOES: None

ABSTENTIONS: None

ABSENT: None

ATTEST:

Glenn L. Young  
City Clerk

APPROVED:

Michael Cobb  
Mayor

APPROVED AS TO FORM:

Margaret A. Sloan  
Sr. Assistant City Attorney

APPROVED:

William J. Tana  
City Manager

Kenneth P. Schwilke  
Director of Planning and  
Community Environment

Jack H. Herman  
Chief Building Official

APPENDIX AProcedures for Investigation of All Buildings  
(Except Unreinforced Masonry Bearing Wall Types)

(a) Preliminary Field Survey. Provide drawings of the building in plan, elevation and section sufficiently detailed to reveal the correct dimensions of the spans and extent of all structural elements in the building, including openings in walls and changes in framing directions or other data which will be used to evaluate the building.

(b) Areas of Special Investigation.

- (1) Specify the type of roof diaphragm used in the building and its capacity for transfer of lateral forces.
- (2) If the building is multi-story specify the existing floor diaphragm at each level above the foundation and give its capacity for transfer of lateral forces.
- (3) Specify the types and spacing of connections used at each level to transfer the forces of the horizontal diaphragms into the vertical shear resisting elements of the structure, and the capacity for transfer of each type of connection present in the building.
- (4) Specify the type of vertical structural elements which resist lateral forces and their individual capacities as determined either by testing or use of standard values for the types of construction found in the vertical elements.
- (5) Specify the type and spacing of connections used to connect vertical shear resisting elements to each other and to the building foundation, and the capacity for transfer of each type of connection present.
- (6) Specify the type of foundation system used and note any evidence of settlement.
- (7) Specify the type of connection used to attach wall appendages or pre-cast wall elements to the structural frame.

Standards for the Analysis and Evaluation of All Buildings  
(Except Unreinforced Masonry Bearing Wall Types)

(a) Purpose. The objective of these investigations is to identify and quantify the structural inadequacies that may be present in a building which

could lead to a collapse or partial collapse during an earthquake. The focus of the reports should be 1) determining the potential life safety threat that the building presents to its occupants and 2) the potential threat to pedestrians or occupants of adjacent buildings from falling external hazards.

(b) Capacity vs Demand of the Existing Structural System and Its Elements.

(1) Define the overall type of lateral force resisting system used in the building based on Table 23-1 of the 1973 Uniform Building Code. If the building has a dual or hybrid system, describe the systems and explain how they function both in combination and separately to justify the "K" factor to be chosen.

(2) For each type of diaphragm, shear wall, moment frame, braced frame and interconnection of lateral force resisting systems provide an analysis of the loads (demand) which these elements would be subject to based on the design parameters set forth in the 1973 edition of the Uniform Building Code.

(3) For each type of diaphragm, shear wall, frame and interconnection of lateral force resisting system determine a maximum capacity based on currently accepted or published allowable values, adjusted as appropriate for the material involved when used to resist earthquake forces.

(4) Provide a ratio of capacity to demand for each system or interconnection evaluated in (2) and (3) above and provide a statement of the significance of this ratio, regarding the potential for failures which could lead to a collapse, considering the materials used and the type of lateral force resisting system present.

(c) Specific Evaluation Items. The report shall contain a statement regarding the significance of each item in this section which is found to occur in the building.

(1) General.

A. Assess the condition of the structure, the quality of workmanship, the level of maintenance and the type of construction with regard to the potential loss of strength in the structural systems due to decay or deterioration.

B. Assess the redundancy exhibited in the structural system and the reserve capacity that elements of the system may provide.

C. Assess the presence or lack of ductility in the lateral force resisting elements and ductility differences due to the use of dissimilar materials in the horizontal and vertical diaphragms.

D. Assess how adequately the building is tied together in an overall sense to allow the lateral force resisting systems an opportunity to receive the forces they are designed to resist.



(2) Geometry.

A. Consider how and where torsional (rotation) forces, induced by the eccentricity of the building center of mass to its center of rigidity, are taken into the lateral force resisting system and identify the individual elements which will transmit these additional forces. Assess the potential capacity these elements have to resist the additional loads from this source.

B. Consider the effects of discontinuities in the lateral force resisting systems with regard to the existence of adequate ties, boundary members, chords or drag struts, etc. to allow redistribution of forces. Assess the capacity of the systems or elements which would receive the redistributed forces if adequate ties exist.

C. Consider the effects of reentrant corners (including the shape of individual columns) and assess their contribution to the response of the building at locations where they occur.

(3) Building Separation.

A. Consider the effects of adjoining buildings, which may have different vibration periods resulting in non-synchronized movement of the adjacent exterior walls, placing out of plane impact forces on these walls.

B. Assess the level of drift control, particularly at open storefronts and the actual physical separation distance between the exterior walls of the building and adjoining building walls.

C. Assess conditions where the wall of a building on one property provides support for structural elements of the adjoining property's building.

(4) Non-Ductile Reinforced Concrete Frames.

A. Consider non-ductile frames which act alone without the benefit of shear walls or braced frames.

B. Assess the level of compression or shear forces due to existing vertical loads on the critical supporting elements of the frame.

C. Assess masonry infill walls between frame members and their effect on the forces a column/beam joint will be subjected to when attempting to transmit lateral forces into these walls.

(5) Precast Concrete Connections

A. Assess the effects of temperature creep and shrinkage of concrete surrounding welded insert connections to precast systems and elements.

B. Consider the potential brittle failure of such connections.

(6) Non-Structural Elements.

A. Assess the effect that partitions, infill walls, precast concrete exterior (architectural) elements and ceiling systems, which have considerable strength and stiffness characteristics, may have on the overall response of the building.

B. Assess the effect of inadvertent bracing by non-structural elements such as infill walls, stair stringers or other situations of localized restraint on columns.

C. Assess the potential stress concentrations at the unrestrained ends of columns which may result from partial restraint or bracing of columns.

(7) Site Geology.

A. Consider the maximum ground shaking intensity for the building site and liquefaction potential or susceptibility by using available earthquake hazard maps.

B. Assess any existing site specific geology/soils reports to gauge the effects that the local conditions may have on the overall response of the building.

APPENDIX BProcedures for Investigation of Unreinforced Masonry Bearing Wall Buildings

(a) Preliminary Field Survey. Prepare framing plans for roof and floors noting all beams, trusses or major lintels of all URM piers or pilasters. Prepare elevations of all URM walls noting all openings in the walls and any discontinuities above the building base.

(b) Special investigations of the following nature must be made:

(1) Note all parts of the vertical load carrying system that may act as ties to lateral load-resisting elements, to determine the elements or systems that may control relative displacements between the building's base, floors and roof.

(2) Note on floor plans all interior crosswalls that are continuous between floors or floor and roof, even if the connection of such walls to the floor or roof is only by finishes.

(3) Draw the relationship of roof or floor framing and ceiling framing to determine the extent and method if any, of their inter-connection.

(4) Draw the support systems for URM walls that are not continuous to the building base noting the materials used to provide that support. (i.e., steel frame, concrete frame, etc.)

(5) Draw on floor and roof plans the extent of sheathing and finish materials and describe their nature and nailing pattern. Note any difference in materials used which could lead to substantial variations in diaphragm stiffness. Openings in floors or roofs adjacent to URM walls must be noted. Note the type of roofing system currently in place and note if this roofing is applied directly to the main roof deck or if there are locations where it is on a cricket or other superimposed deck.

(c) Investigation of current anchorage of URM walls to floors and roof. Show the location of all wall anchors on the floor/roof plans and specify their spacing, size, and method of connection. Details of the existing anchorage system should be prepared. Embedded portions of anchors must be exposed to determine this level of detail. A minimum of 2 percent or 2 anchors exposed per floor or roof level should establish average conditions.

(d) Investigation of existing URM walls. Investigate the following items if they occur in the building, and determine:

(1) The thickness of URM walls at all levels and location of any changes in thickness.

(2) The materials used for lintels and masonry arches and their bearing area on columns or piers.

(3) The materials used in columns or piers supporting lintel beams or arches.

(4) The height of parapets, cornices, and gable ends of URM walls above the uppermost existing anchorages.

(5) The anchorage or bonding of terra cotta, cast-stone or similar facing to the back up wythes of brickwork at cornices and other architectural appendages.

(6) The coursing of exterior wythes of masonry, the bonding of wythes of masonry, and the materials used in each wythe.

(7) The condition of mortar joints and areas of lightly unburned brick should be noted on the wall elevations. Existing cracks in wall elements should also be noted.

(e) Testing. The testing of existing anchorage systems must be made to determine an average capacity. Testing shall be accomplished in accordance with the following requirements.

(1) Existing Wall Anchors of URM Buildings. Five (5) percent of existing rod anchors shall be tested in pullout by an approved testing laboratory. The minimum tested quantity shall be four (4) per floor or roof level, with two (2) tests at walls with framing perpendicular to the wall and two (2) at walls with framing parallel to the wall.

The test apparatus shall be supported on the masonry wall at a minimum distance of the wall thickness from the anchor tested. Where due to obstructions this is not possible, details of the condition encountered and the alternate method used must be included in the test result report, with calibration adjustment for conditions where the reaction of the test apparatus contributes to the tension value of the anchor.

The rod anchor shall be given a preload of 300 pounds prior to establishing a datum for recording elongation. The tension test load reported shall be recorded at 1/8" relative movement of the anchor to the adjacent masonry wall surface.

The testing of existing URM walls to determine the allowable bed-joint shear is required in accordance with the following requirements.

(2) In Place Shear Tests of Brick Masonry. The bed joints of the outer wythe of the masonry shall be tested in shear by laterally displacing a single brick relative to the adjacent bricks in that wythe. The opposite head joint of the brick to be tested shall be removed and cleaned prior to testing. Steel bearing plates of the full dimension of the brick shall be inserted at

each end of the test jack. The bearing plates shall not contact the mortar joint. The minimum quality mortar in 80 percent of the shear tests shall not be less than the total of 30 psi when reduced to an equivalent zero axial stress. The shear stress shall be based on the gross area of both bed joints and shall be that at which movement of the adjacent brick is first observed.

The minimum quantity of tests shall be two (2) per wall or line of wall elements resisting a common force (i.e., per story) or one (1) per 1500 square feet of total URM wall surface, with a minimum of 8 tests for any building. The tests should be conducted at least two brick courses above or below the bond course and be distributed vertically to include a variety of dead load surcharge situations. The exact test location shall be determined at the building site by the engineer responsible for the investigation and the distribution of such tests must be approved by the building official prior to actual testing. In single story buildings, the wall above the lintel beam at an open storefront need not be tested.

Standards for the Analysis and Evaluation of  
Unreinforced Masonry Bearing Wall Buildings

(a) Analysis

(1) General

The total lateral seismic forces should be computed in accordance with the following equation:

$$V = ZIKCSW$$

The value of KCS need not exceed the value set forth in Table B1-1. The value of Z and I shall be equal to 1.0. The value of W shall be as set forth in the Uniform Building Code.

(2) Lateral Forces on Elements of Structures.

Parts or portions of buildings and structures shall be analyzed for lateral loads in accordance with Chapter 23 of the UBC but not less than the value from the following equation:

$$F_p = IC_pSW_p$$

For the provisions of this section, the product of IS need not exceed 1.0. The value of C<sub>p</sub> and W<sub>p</sub> shall be as set forth in the UBC.

Exception: Unreinforced masonry walls may be analyzed in accordance with Section (b).

(3) The elements of buildings required to be analyzed shall include the following:

Wall height to thickness ratio.  
Tension bolts for bending.  
In-plane shear forces.  
Parapets.  
Diaphragm stress and diaphragm chords at floors and roof.

(4) Anchorage and Interconnection.

Anchorage and interconnection of all parts, portions and elements of the structure shall be analyzed for lateral forces in accordance with the UBC and the formula in Subsection (2) above. Masonry walls shall be anchored to all floors or roof to resist a minimum of 200 pounds per linear foot acting normal to the wall at the level of the floor or roof or will be considered inadequate.

(5) Required Analysis.

Except as modified herein, the analysis and recommended structural alteration of the structure shall be in accordance with the analysis specified in the UBC. A complete, continuous load path from every part or portion of the structure to the ground shall be shown to exist for required lateral forces. All parts, portions or elements of the structure shall be shown to be interconnected by positive means.

(6) Analysis Procedure.

Stresses in materials and existing construction utilized to transfer seismic forces from the ground to parts or portions of the structure shall conform to those permitted by the UBC and those types of materials of construction specified under the Materials of Construction Section (b). In addition to the seismic forces required, unreinforced masonry walls shall be analyzed as specified in the UBC to withstand all vertical loads. When calculating shear or diagonal tension stresses due to seismic forces, existing masonry shear walls may be allowed to resist 1.0 times the required forces in lieu of the 1.5 factor required by the UBC. No allowable tension stress will be permitted in unreinforced masonry walls. Walls not capable of resisting the required design forces specified in this appendix shall be deemed inadequate.

Exception: Unreinforced masonry walls which carry no design loads other than their own weight may be considered as veneer if they are adequately anchored to elements which are not part of the existing lateral force resisting system.

(7) Existing materials.

When stress in existing lateral force resisting elements are due to a combination of dead loads plus live loads plus seismic loads, the allowable working stress specified in the UBC may be increased 100 percent. However, no increase will be permitted in the stresses allowed in Section (b). The stresses in members due only to seismic and dead loads shall not exceed the values permitted in the UBC.

- (8) Allowable reduction of bending stress by vertical load.

Calculated tensile fiber stress may be reduced by the full direct stress due to vertical dead loads.

- (b) Materials of Construction.

- (1) General

All materials permitted by this code, including their appropriate allowable stresses and those existing configurations of materials specified herein, may be utilized to show adequacy of existing construction.

- (2) Existing Materials.

Unreinforced masonry walls analyzed in accordance with this appendix may provide vertical support for roof and floor construction and resistance to lateral loads. The bonding of such walls shall be as specified in the UBC.

Tension stresses due to seismic forces acting normal to the wall may be neglected if the wall does not exceed the Height to Thickness ratio and the in-plane shear stresses due to seismic loads set forth in Table B1-2. If the Wall Height or Length to Thickness ratio exceeds the specified limits, the wall will be considered inadequate unless braced by vertical members designed to satisfy the requirements of the UBC. The deflection of such bracing members at design loads shall not exceed one-tenth of the wall thickness.

Exception: The wall may be supported by flexible vertical bracing members designed in accordance with this appendix if the deflection at design loads is not less than one quarter nor more than one third of the wall thickness.

All vertical bracing members shall be attached to floor and roof construction for the design loads independently of wall anchors. Horizontal spacing of vertical bracing members shall not exceed one-half the unsupported height of the wall or ten feet, whichever is less.

- (3) Existing roof, floors, walls, footings and wood framing.

Existing materials, including wood shear walls may be used as part of the lateral load resisting system, provided that the stresses in these materials do not exceed the values shown in Table B1-3. Wood shear walls may be recommended to strengthen portions of the existing seismic resisting system.

- (4) Minimum Acceptable Quality of Existing Unreinforced Masonry Walls.

All unreinforced masonry walls utilized to carry vertical loads and seismic forces parallel and perpendicular to the wall plane shall be tested as specified in Section (e) of the investigation portion of this appendix. All

masonry shall be of a quality not less than the minimum standards established or shall be considered inadequate. Pointing of mortar of all masonry wall joints may be performed prior to testing if joints are raked and cleaned to remove loose and deteriorated mortar. Mortar shall be Type S or N, except masonry cements shall not be used. All preparation and pointing shall be done under the continuous inspection of a special inspector, whose reports shall be included in the final report.

(5) Determination of Allowable Stresses for Design Methods Based on Test Results.

Design seismic in-plane shear stresses shall be related to test results in accordance with Table B1-4. Intermediate values between 3 and 10 psi may be interpolated.

Compression stresses for unreinforced masonry having a minimum design shear value of 3 psi shall not exceed 100 psi. Design tension values for unreinforced masonry shall not be permitted.

(6) Construction Details.

All unreinforced masonry walls shall be anchored at all floors and roof with tension bolts through the wall or by existing rod anchors at a maximum spacing of six feet. All existing rod anchors shall be secured to the joists to develop the required forces. Testing of the existing rod anchors shall be conducted according to Section (e) of the investigation portion of this appendix.

Diaphragm chord stresses of horizontal diaphragms shall be developed in existing materials or be considered inadequate.

Where trusses or beams other than rafters and joists are supported on masonry piers, these piers must be shown to provide adequate support during seismic loading.

Parapets and exterior wall appendages not capable of resisting the forces specified in this appendix shall be considered hazardous, and methods for proper anchorage must be developed.



TABLE B1-1  
HORIZONTAL FORCE FACTORS BASED  
ON OCCUPANT LOAD

OCCUPANT LOAD	KCS
Building with an occupant load greater than 100	0.133
All others	0.100

TABLE B1-2  
ALLOWABLE VALUE OF HEIGHT-THICKNESS (h/t) RATIO  
OF UNREINFORCED MASONRY WALLS WITH MINIMUM  
QUALITY MORTAR

	BUILDINGS WITH COMPLYING CROSSWALLS	ALL OTHER BUILDINGS
Walls of one-story buildings	16	13
First-story wall of multistory buildings	16	15
Walls in top story of multistory buildings	14	9
All other walls	16	13

NOTES:

1. Minimum quality mortar shall be determined by laboratory testing in accordance with Section (e) of the investigation portion of this appendix.
2. The wall height may be measured vertically to bracing elements other than a floor or roof. Spacing of the bracing elements and wall anchors shall not exceed six feet.
3. Crosswalls are defined as interior walls of masonry or wood frame construction with surface finish of wood lath and plaster, 1/2" thick gypsum board, or solid horizontal wood sheathing. They may not exceed 40 feet horizontal separation, must be full story height with a minimum length of 1 1/2 times the story height and be continuous through all stories.

TABLE B1-3  
VALUES FOR EXISTING MATERIALS<sup>1</sup>

<b>1. Horizontal Diaphragms</b>	
a. Roofs with straight sheathing with the roof covering applied directly to the sheathing.	100 pounds per foot for seismic shear
b. Roofs with diagonal sheathing with the roof covering applied directly to the sheathing.	400 pounds per foot for seismic shear
c. Floors with straight tongue and groove sheathing.	150 pounds per foot for seismic shear
d. Floors with straight sheathing and finished wood flooring.	300 pounds per foot for seismic shear
e. Floors with diagonal sheathing and finished wood flooring.	450 pounds per foot for seismic shear
f. Floors or roofs with straight sheathing and plaster applied to the values for items 1-a and 1-c joist or rafters.	Add 50 pounds per foot to the allowable
<b>2. Shear Walls</b>	
Wood stud walls with lath and plaster	100 pounds per foot each side for seismic shear
<b>3. Plain Concrete Footings</b>	$f'_c = 1500$ psi unless otherwise shown by tests
<b>4. Douglas Fir Wood</b>	Allowable stress same as No. 1 D.F.2
<b>5. Reinforcing Steel</b>	$f'_c = 18,000$ psi maximum <sup>2</sup>
<b>6. Structural Steel</b>	$f'_c = 20,000$ psi maximum <sup>2</sup>

<sup>1</sup> Material must be sound and in good condition.

<sup>2</sup> Stresses given may be increased for combinations of loads as specified in Subsection (b) of the analysis and evaluation portion of this appendix.

TABLE B1-4  
ALLOWABLE SHEAR STRESS FOR TESTED  
UNREINFORCED MASONRY WALLS

SHEAR TESTS	
Eighty percent of test results in psi not less than:	Seismic in-plane shear in psi based on gross area <sup>1</sup>
30 plus axial stress	3
40 plus axial stress	4
50 plus axial stress	5
100 plus axial stress or more	10 (maximum)

<sup>1</sup> Allowable shear stress may be increased by addition of 10 percent of the axial stress due to the weight of the wall directly above.

<i>Population:</i>	<b>8,000</b>
<i>1990/91 General Fund</i>	
<i>Revenues:</i>	<b>\$3 million</b>
<i>Fund Balance:</i>	<b>\$1 million</b>
<i># URM's:</i>	<b>51</b>
<i>Type of URM's:</i>	<b>90% commercial* 10% residential</b>
<i>Ordinance Type:</i>	<b>mandatory retrofitting</b>
<i>Retrofit Incentives:</i>	<b>(1) waive permit fees (2) rebate architect and engineering costs</b>
<i>Funding Source:</i>	<b>redevelopment agency</b>
<small>*commercial includes public facilities</small>	

### BACKGROUND

The City of Sonoma is a small city located 46 miles northeast of San Francisco. It is perhaps best known for the wineries located in and around it in the Sonoma Valley, which together with Napa Valley form a large part of Northern California's wine country. Tourism is an important part of Sonoma Valley's economic and employment base, as is the agriculture industry which includes orchards, dairy farms and turkey breeding as well as the wine industry. The City of Sonoma is very picturesque, and is centered around a historic plaza featuring buildings which date back to the mid 1800s.

### HAZARDOUS BUILDINGS PROFILE

In 1990 the City of Sonoma identified 51 buildings which were considered potentially hazardous (excluding four State-owned buildings). Twenty-nine of the 51 buildings are historic, and most are located on or near the plaza downtown. The buildings range in size from 550 to 15,000 square feet. Approximately 85% of the total square footage is devoted

to commercial use. The city estimates that the cost of repairing all 51 buildings may total between \$7.8 and \$14.5 million dollars including both structural work and tenant improvements.

#### ORDINANCE

The City of Sonoma's retrofitting ordinance, entitled the *City of Sonoma Seismic Upgrading Program*, was passed in October of 1990. The primary goal of the program is to mitigate the hazards associated with unsafe masonry and concrete buildings "in an economically feasible manner while preserving the historic character of the community." The ordinance is noteworthy not for the retrofit standards which it sets but for its unique and flexible system for prioritizing buildings. The ordinance requires the building department to identify buildings which do not comply with its requirements, and to notify owners of their buildings' deficiencies. Upon receipt of the notice, a property owner must hire an engineer or architect to prepare an upgrading design. Ultimately, buildings which do not comply with the requirements spelled out in the ordinance must be either retrofitted or demolished. The timing of implementation is dependent upon a building's assigned priority:

	DESIGN (from notice)	PERMIT (from notice)	UPGRADING COMPLETED (from permit)
High Priority	2 years	2 1/2 years	2 years
Moderate Priority	3 years	5 years	2 years
Low Priority	4 years	10 years	2 years

The priority system established by the ordinance assigns points for type of use (up to 5 points), number of stories (up to 3 points), proximity to public sidewalk (either 0 or 1 point), and proximity to adjacent buildings (also either 0 or 1 point). A higher number of points represents higher risk. Buildings can be credited with up to 3 points for structural adjustments, such as roof diaphragm or parapet bracing, which have already been made to the building. A worksheet for calculating a building's score is included in the ordinance (See: EXHIBITS - CITY OF SONOMA ORDINANCE #90-15).

The method of assigning points for type of use is noteworthy. The city has identified 10 types of uses to which a building might be put. Each type of use is assigned an "hours per week" figure representing the number of hours per week that use typically could be expected to take place. Office use, for example, is assigned 40 "hours per week" while residential use

is set at 84 "hours per week." For uses not originally identified by the city, the building official may assign an "hours per week" figure to a building based on its type and average hours of use.

After establishing the "hours per week" figure for each type of use, the city then determined the occupant load for each use as specified in the Uniform Building Code. Dividing the "hours per week" by the occupant load yields for each type of use an "occupant/hour factor." Restaurants, for example, are assigned 48 "hours per week" and an occupant load factor of 15, yielding an "occupant/hour factor" of 3.20. For residential facilities, assigned the above-mentioned 84 "hours per week" and an occupant load factor of 200, the resulting "occupant/hour factor" is 0.42. The city has developed a table, included in the ordinance, assigning occupant/hour factors to each of the 10 types of uses which it identified.

To determine the number of points a particular building should receive given its use, the "occupant/hour factor" for that use is multiplied by the building's square footage. This generates an "occupant/hour" figure. The "occupant/hour" figures are divided into ranges and assigned points. The owner of a 1,000 square foot restaurant, for example, would multiply its 3.2 factor by the number of square feet, arriving at an "occupant/hour" figure of 3,200. This figure falls in the 2,001 to 5,000 range, and the building would score 2 points. By contrast, a 1,000 square foot residence would generate an "occupant/hour" figure of 420 given its factor of 0.42 and would score 0 points.

A Low, Medium or High Priority is assigned to a building based upon its total score for occupant/hours, number of stories, proximity to sidewalks and buildings, and structural adjustments. Buildings receiving less than 4 points are assigned a Low Priority, those scoring between 4 and 6 points are considered Moderate Priority, and those with more than 6 points are High Priority. Buildings can change their score and move up or down on the priority scale, for example by making structural adjustments or changing their use.

#### INCENTIVE PROGRAM CONCEPT

The City of Sonoma offers 2 incentive programs to owners of hazardous buildings, the *Permit Fee Waiver Program* and *A&E Grants for Seismic Upgrading*. Both programs were established shortly after the ordinance was adopted, and were made effective January 1, 1991 and set to terminate on December 31, 1993. The *Permit Fee Waiver Program* applies to all seismic upgrade projects required by the ordinance and covers the following construction permit fees: (i) building, mechanical, electrical and plumbing permits, (ii) contractors license tax, (iii) micrographics fee, (iv) capital improvement tax, (v) impact fee, and (vi) within limitations, plan check fees. All other construction permit fees are assessed as normally

required. (Note that in the case of 100% affordable housing projects, the Community Development Agency will pay for all construction permit fees.)

Public Works Department fees also are waived under the *Permit Fee Waiver Program*, with encroachment fees waived for projects requiring seismic upgrade under the ordinance, and inspection fees waived for work required by the ordinance relating to installation and testing of underground fire and sprinkler system piping. Neither construction permit nor Public Works Department fees are waived for those portions of projects which create additional building floor area.

The *A&E Grants for Seismic Upgrading* reimburses owners for architectural and/or engineering expenses relating to plans for upgrading work required by the ordinance. The city will grant each owner a reimbursement per building of up to \$2.00 per square foot of eligible building area. Only fees paid to a licensed architect and/or engineer or an approved testing agency are eligible for reimbursement. To receive the grant an owner must submit an application (See: EXHIBITS - SAMPLE A&E REIMBURSEMENT GRANT APPLICATION) along with original invoices. Grants are distributed when the building department has approved the seismic upgrading plans. Cost of plans for separate tenant improvements, site work, interior and exterior finishes, additions, furnishings and similar items are not eligible for reimbursement.

#### PROGRAM RESOURCE REQUIREMENTS

Sonoma's redevelopment agency is funding the city's incentive programs. The estimated maximum cost to the city of the *Permit Fee Waiver Program* is \$75,000 while the *A&E Grants for Seismic Upgrading* are expected to cost up to \$460,000. The incremental staff time required for administration of the programs is minimal.

#### PROGRAM DEVELOPMENT

Sonoma's program development effort was straightforward and went very smoothly. The ordinance and incentive programs were developed by a technical committee composed of the Building Director, the Community Development Director, an architect, structural engineer, and the City Manager. Upon their design of the ordinance and incentive program concepts, community meetings were held to present these ideas to tenants and owners. The community expressed a number of fears, including concern about requirements for upgraded plumbing, wiring, and the like, worries about changing the character of the city, uneasiness about loss of local ownership because of the expense of upgrading, apprehension about demolition, and

general anxiety about the reasonableness of the requirements. Most of these fears were allayed at the meetings, and the ordinance passed without incident, although concern about the expense and financing of repairs is still an issue which the city hopes to address.

#### PROGRAM EFFECTIVENESS

Although the earliest deadline for retrofit is not until 1994, as of January 1992, 2 buildings had already been upgraded to comply with the city's ordinance. A third building was upgraded in accordance with the State Historical Building Code, and a fourth was strengthened in accordance with 1976 UBC or above. In addition, 9 buildings were in the process of upgrading. Six buildings have applied for and received reimbursements under the *A&E Grants for Seismic Upgrade* program.

Despite the progress being made, Sonoma is still concerned about making financing available to owners unable to access it themselves. The city is evaluating bond-based programs, such as assessment district or general obligation financing, but has determined that it cannot meaningfully explore its options until it has a better idea of total project costs. To this end it has doubled to \$2.00 per square foot the amount of grant funding for which owners may apply while emphasizing that the program will expire in December 1993. (Owners who have already received rebates will be granted the additional amount for which they would be eligible under the new program.) The objective is to have all the plans in hand by December 1993, and thus get a good estimate of the total retrofitting costs which the city might be asked to help finance.

#### PROGRAM STRENGTHS

The City of Sonoma's program is clearly articulated, simple to implement, and requires little additional staff time (although it does require money.) Through its system of prioritizing buildings, the city offers owners flexibility, allowing them to retrofit incrementally over time as best meets their needs.

#### KEYS TO SUCCESS

The success of the City of Sonoma's program rests on the city's ability to effect a straightforward program, clearly articulated and fully discussed with affected owners. The materials designed to describe the program are concise yet thorough (See: EXHIBITS - A&E GRANTS FOR SEISMIC UPGRADING AND PERMIT FEE WAIVER PROGRAM, a 1-page description, and ABOUT CITY OF SONOMA'S SEISMIC UPGRADING PROGRAM.) The programs were designed and are



administered by a small group of people who are very sensitive to the varying perspectives of affected parties. With the support of the city council, staff has made seismic safety a priority, and it is evident that the programs it designed are not ends in themselves, but steps in the mitigation process.

#### EXHIBITS

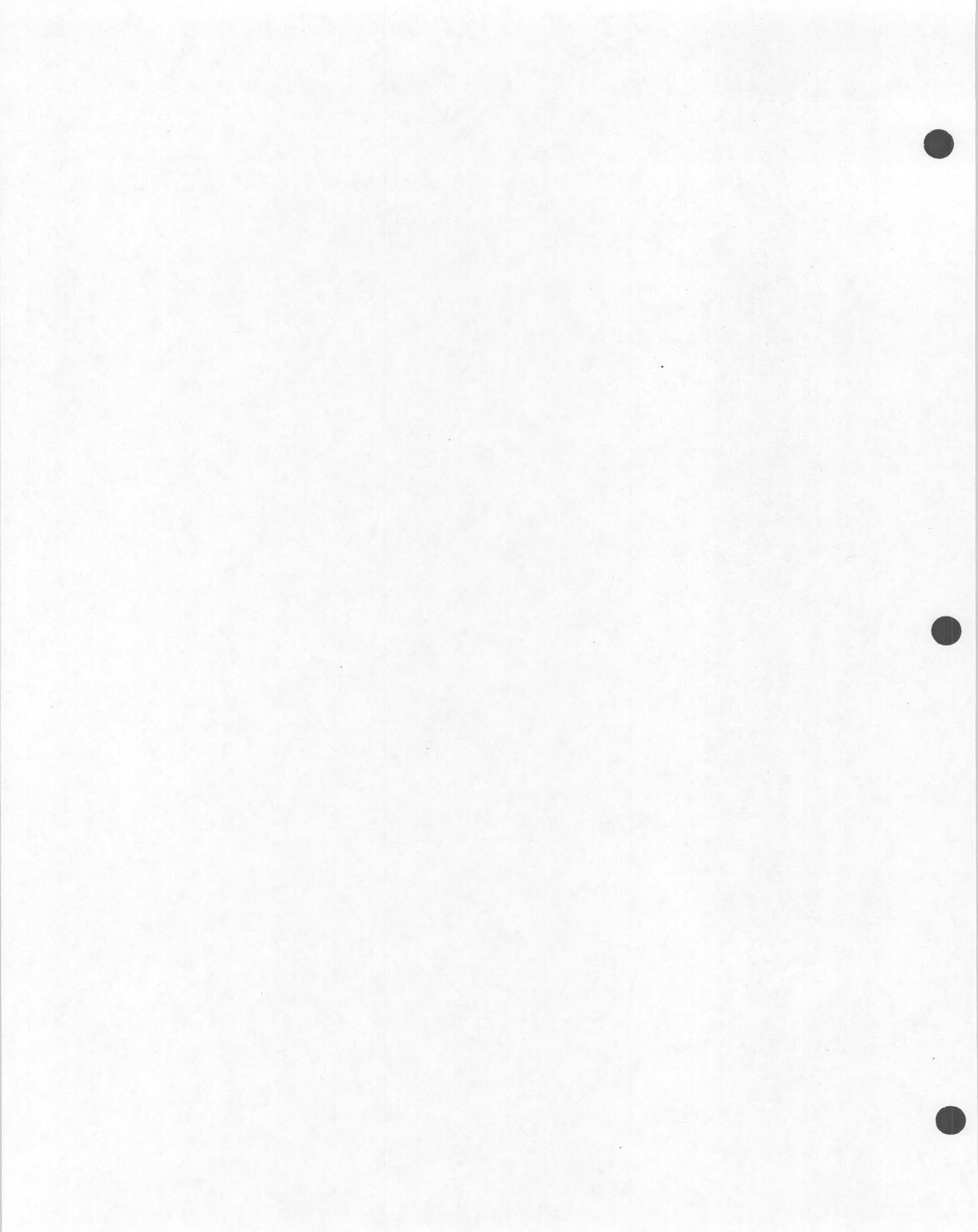
- City of Sonoma Ordinance #90-15
- *A&E Grants for Seismic Upgrading and Permit Fee Waiver Program*
- Sample A&E Reimbursement Grant Application
- About City of Sonoma's Seismic Upgrading Program

#### CONTACTS

Wayne Wirick	Building Official	(707) 938-3681
Michael Moore	Community Development Director	(707) 938-3681

**CITY OF SONOMA**

**EXHIBITS**



CITY OF SONOMA  
ORDINANCE NO. 90-15

ORDINANCE OF THE CITY OF SONOMA  
ADDING CHAPTER 14.24 TO THE SONOMA MUNICIPAL CODE  
SETTING FORTH A PROGRAM FOR THE REVIEW, REHABILITATION AND  
ABATEMENT OF EXISTING SEISMICALLY UNSAFE BUILDINGS.

Chapter 14.24 is hereby added to the Sonoma Municipal Code to read as follows:

CHAPTER 14.24  
REVIEW, REHABILITATION AND ABATEMENT  
OF EXISTING SEISMICALLY UNSAFE BUILDINGS

Sections:

- 14.24.010 Purpose, Scope & Application.
- 14.24.020 Definitions.
- 14.24.030 Preliminary building department review.
- 14.24.040 Notice to owner.
- 14.24.050 Property owner review.
- 14.24.060 Upgrading design - Requirements for continued use of structure.
- 14.24.070 Information required on plans.
- 14.24.080 Priority system and implementation schedule.
- 14.24.090 Notification of tenants.
- 14.24.100 Abatement - Rehabilitation or Demolition.
- 14.24.110 Appeals.
- 14.24.120 Violation - Penalty.
- 14.24.130 Severability.

14.24.010 Purpose, Scope & Application. A. Purpose. The City of Sonoma has experienced and will continue to experience moderate to great earthquakes in the future due to its proximity to the Rodgers Creek, Hayward and San Andreas faults. Many buildings subject to severe earthquake hazards continue to be a serious threat to the life and safety of people who live and work in the community in the event of an earthquake. The primary goal of this chapter is to provide alternative construction regulations designed to reduce the risk of death or injury resulting from earthquake hazards in existing masonry or concrete buildings, in an economically feasible manner while preserving the historic character of the community.

B. Scope. This chapter provides procedures for the systematic review and reconstruction of existing masonry and concrete buildings within the City of Sonoma to improve their safety in the event of an earthquake. The requirements of this chapter shall not apply to:

1. Public schools
2. Hospitals
3. State owned buildings
4. Detached one-and two-family dwellings.

The requirements of this chapter shall apply to the following classifications and areas of buildings:

1. All buildings or portions of buildings constructed with unreinforced masonry walls.
2. Diaphragms and connections of diaphragms in all buildings constructed of tilt-up concrete or masonry walls and constructed or being constructed prior to September 24, 1973.

This chapter does not require alteration of existing electrical, plumbing or mechanical systems unless such conditions or defects exist to the extent that the life, health, property or safety of the public or its occupants are endangered.

C. Application to Other Existing Buildings. Existing buildings, which are not subject to the requirements of this chapter and were constructed or being constructed prior to September 24, 1973, may be rehabilitated, remodeled or upgraded in accordance with the upgrading design provisions of Section 14.24.060, except that public schools, hospitals, fire stations, police stations, essential facilities and hazardous facilities, must comply with prevailing code requirements.

D. Application to Designated Historical Buildings. Designated historical buildings shall be upgraded in accordance with the State Historical Building Code. The design and upgrading provisions of this chapter may be used in conjunction with the State Historical Building Code as a method of complying with the minimum requirements of this chapter.

14.24.020 Definitions. For the purposes of this chapter, certain terms, phrases, words and their derivatives shall be construed as specified in this section or as otherwise specified in the Uniform Building Code, the Uniform Code for the Abatement of Dangerous Buildings, the State Historical Building Code or Chapter 19.04 of the Sonoma Municipal Code. Where terms are not defined, they shall have their ordinary accepted meanings within the context with which they are used.

A. "Architect" means a person who is licensed to practice architecture in this state.

B. "Designated Historical Building" means any building, structure or collection of structures, deemed of importance to the history, architecture, or culture of an area by an appropriate local, state, or federal governmental jurisdiction. This shall include structures on existing or future national, state or local historical registers or official inventories of historical or architecturally significant sites, places, historic districts, or landmarks.

C. "Engineer" as used in this chapter means any professional, civil or structural engineer who is licensed to practice engineering in this state.

D. "Occupant/Hours" is the result of the maximum occupant load for a particular type of use, multiplied by the prescribed typical number of hours the type of use might be occupied or open for business within a 7 day period.

E. "Prevailing Code" means the "regular building regulations" as that term is used in Section 18954 of the Health and Safety Code, which govern the design and construction of non-historical buildings within the city of Sonoma.

F. "Upgrading" means all work necessary to comply with the requirements of this chapter.

G. "Unreinforced Masonry Building" means any building or structure containing walls constructed wholly or partly with unreinforced masonry walls.

H. "Unreinforced Masonry Wall" is a masonry wall having an area of reinforcing steel less than 50 percent of that required by Section 2407(h) of the Uniform Building Code, 1988 Edition, with a height to thickness ratio greater than 2.

I. "Valuation" as used in this chapter shall mean the total value of all construction work, determined in accordance with prevailing code, except structural and fire upgrading work required by this chapter, for which a building permit is issued as well as finish work, roofing, mechanical systems, elevators, disabled access, and any other permanent equipment.

14.24.030 Preliminary building department review. Buildings within the scope of this chapter constructed or being constructed prior to September 24, 1973 shall be subject to a preliminary review by the building official to determine the general structural characteristics, the relative safety of the building, and its general compliance with the structural requirements of Section 14.24.060 A through E of this chapter and Appendix Chapter 1 of the Uniform Building Code. If the structure is determined to so comply, it is exempt from the requirements of this chapter. If the building official determines that the structure does not comply, it shall be further reviewed by the property owner in accordance with the provisions of Section 14.24.050.

A. The scope of the preliminary review by the building official or his authorized representative may include, but shall not be limited to, the following:

1. Location by street address and assessor's parcel number;
2. Type of occupancy and approximate square footage;
3. Type of construction and foundations, and type of material used in construction;
4. Age of construction; photos of the building exterior; construction drawings if available;
5. Quality of maintenance, cracks and cleanliness; evidence of leaks, foundation settlement, sagging floors or rusting metal and rotting wood; general deterioration of any other building material used;
6. General fire classification of the structure;
7. Adequacy of exiting system;
8. Type and strength of wall and parapet anchorage;
9. Type of diaphragms and bracing;
10. Type of interior partitions.

B. For the purposes of determining compliance with this chapter, the building official may rely on the information provided in items 1 through 10 above and shall not be required to provide extensive tests in connection with the preliminary review.

14.24.040 Notice to owner. A. Notice to Correct Deficiencies. For each building found to be not in compliance with the requirements of Section 14.24.060, the building official shall prepare a notice to owner to correct deficiencies. The notice to correct deficiencies shall include the following:

1. A statement to the effect that the structure has been reviewed and appears to be of the type which is prone to significant damage, including collapse, in a moderate to major earthquake;
2. The determination of non-compliance with the requirements of Section 14.24.060;
3. Where applicable, the findings on which the determination that the building or structure does not comply is based;
4. The determination of the priority for upgrading in accordance with the URM Building Priority System in Section 14.24.080;
5. The time schedule for abatement must be commenced and completed;
6. A statement that the structure shall be further reviewed by the property owner as provided in Section 14.24.050;
7. A statement that the owner is required to provide a copy of the notice to correct deficiencies to the tenant or tenants of the structure in accordance with Section 14.24.090.

B. Recordation. At the time that the aforementioned notice is served, the building official shall file with the office of the County Recorder a certificate stating that the subject building is within the scope of Chapter 14.24 of the Sonoma Municipal Code, Review, Rehabilitation and Abatement of Existing Seismically Unsafe Buildings. The certificate shall also state that the owner thereof has been ordered to review and structurally analyze the building and upgrade the building in accordance with this chapter.

14.24.050 Property owner review. Upon notice by the City to the property owner to correct deficiencies, the property owner shall require an engineer or architect to review and prepare an upgrading design for the subject building or structure within the time limits set forth in Section 14.24.080. Required upgrading may be designed in accordance with the provisions of Section 14.24.060.



14.24.060 Upgrading design - Requirements for continued use of structure.

Upgrading work and design shall be performed by the property owner, his representative, agent, or employee under the direct supervision of an architect, structural engineer or civil engineer specializing in structural work, to include but not be limited to the following standards:

A. The vertical dead load (without live or lateral loads) must not create any overstress as related to allowed stresses pursuant to this chapter, except that foundations may be assumed to have met the test of time where there is no settlement or damage;

B. The building must meet the requirements of prevailing code for vertical forces including live load with no more than fifteen percent overstress;

C. Walls, parapets, windows and doors must be adequate for a fifteen-pound wind, twenty percent gravity on walls, fifty percent gravity on parapets both in spanning between resisting elements and attachments supporting elements with no more than fifty percent increase to stresses in lieu of the presently allowed thirty-three and one-third percent increase;

D. Diaphragms must be capable of resisting prevailing code required lateral forces at not over one hundred percent increase in normal code values (base plus one hundred percent in place of base plus thirty-three and one-third percent). Where wood diaphragms are used to support concrete or masonry walls, the anchorage shall not be accomplished by toe nailing or the use of nails subject to withdrawal, nor shall wood ledgers or framing be used in cross-grain bending or cross-grain tension. Straight sheathed diaphragms shall not be used to resist lateral forces in concrete or masonry buildings. Chords, connections of diaphragms to the vertical elements and connections of collectors to the vertical elements in structures shall be provided;

E. Shear walls must be adequately connected and tied down to foundations. Unreinforced masonry may be used in shear parallel to plane of the wall provided that the wall is securely held in place perpendicular to wall;

F. Compliance with the fire and panic requirements of Chapter 14.20 of the Sonoma Municipal Code, Appendix Chapter 1 of the Uniform Building Code, or when applicable, the State Historical Building Code, concerning fire exit requirements, enclosed stairways, fire sprinkler systems, fire separations, fire protection and panic hardware. Alternative methods of fire protection, including but not limited to fire sprinkler systems and smoke detection systems, may be approved by the fire marshal and the building official.

G. Existing solid masonry walls of any type, except adobe, may be allowed a maximum value of four (4) pounds per square inch in shear, without testing, with a one-third increase for lateral forces where there is a qualifying statement by the engineer that an inspection has been made, that mortar joints are filled and that both brick and mortar are in good condition. Allowable values above apply to existing unreinforced masonry, except adobe, where the maximum unsupported height or length to thickness ratio does not exceed 12. Allowable shear stress may be increased by the addition of 10% of the axial direct stress due to the weight of a wall directly above. Higher quality mortar may provide a greater shear value based on analysis by the engineer. Wall height or length is measured to supporting resisting elements which are at least twice as stiff as the tributary wall. Stiffness is based on the gross section of the wall.

H. Compliance with state and federal regulations concerning disabled access is required.

I. Existing electrical, plumbing, mechanical and other nonstructural portions of the building which are found to be dangerous to the extent that the life, health, property or safety of the public or its occupants are endangered, shall be upgraded in accordance with prevailing code. The Uniform Code for the Abatement of Dangerous Buildings shall be used in determining whether dangerous conditions exist.

14.24.070 Information required on plans. The review and upgrading design prepared by the engineer or architect shall be submitted to the building official and shall include, but not be limited to, the following:

1. Location by street address and assessor's parcel number;
2. Type of occupancy, use of the building and accurate dimensions;
3. Type of construction, type of foundation, and material used in construction. Field and laboratory tests as determined necessary by the building official, the architect or the engineer, shall include but not be limited to the drilling of inspection holes, the determination of the strength and quality of materials, and a general description of how these materials are integrated within the structure;
4. Comprehensive review of conditions, maintenance and foundation performance;
5. Complete vertical load resume, analysis or estimate based on typical bays and details of all critical areas;

6. Investigation, review and analysis of building elements including, but not limited to, mortar, masonry, walls, parapets, diaphragms, shear walls, bracing, attachments and ornamentation, ceilings, lights, stairs, type and resistance of interior partitions, presence and adequacy of diaphragm chords, and ties;
7. Verification of elements of preliminary building department review;
8. Such plans or sketches, as necessary to describe building strengths and deficiencies;
9. Summary statement of findings;
10. Statement of the engineer or architect explaining the overall significance of the deficiencies found to exist in the building's vertical and lateral force resisting system as related to current code requirements and evaluation criteria;
11. Independent statement of engineer or architect as to his professional opinion regarding the safety of the building in regard to fire, panic, moderate and major earthquake, with reasons for his opinion, without regard to code requirements;
12. A statement by the architect or engineer, in his opinion, as to whether or not special or unusual factors exist that alleviate or intensify the risk;
13. Such other information or testing as required by the building official;
14. Calculations, plans and specifications to show compliance with the requirements of this chapter;
15. Exceptions and/or alternatives to the specific items required by this subsection may be granted by the building official upon review of a written request from the engineer or architect providing the review of the building. Exceptions may only be granted when it can be demonstrated that the specific item or items are unnecessary to provide information available by other equivalent means.

14.24.080 Priority system and implementation schedule. Buildings subject to this chapter shall be classified by priority in accordance with the URM building priority system specified in this section. The building official may revise the priority classification of a building when new factual information is provided which would result in a change of the total priority points previously assigned to the building. Buildings shall be reviewed and upgraded in accordance with the implementation schedule set forth in this section.

A. Method of determining occupant/hour factors. Occupant/Hour factors are determined by dividing the number of assigned hours per week for a particular use by the occupant load factor in U.B.C. Table 33-A. The assigned "hours per week" represents the typical number of hours per week a particular use might be open for business or used and is derived from Table - A herein. Occupant loads are determined by using Table 33-A of the Uniform Building Code; 1988 Edition.

B. Table - A.

USE	HOURS PER WEEK	OCCUPANT LOAD FACTOR	OCCUPANT/HOUR FACTOR
Retail	48	30	1.60
Office	40	100	0.40
Residential	84	200	0.42
Restaurant/Bar	48	15	3.20
School/Day Care	35	35	1.00
Hotel/Motel	84	200	0.42
Public Building	48	15	3.20
Assembly Halls/Churches	8	15	1.10
Accessory/Storage	7	100	0.07
Industrial/Manufacturing	48	200	0.24

Other: For uses not listed above, the Building Official shall assign appropriate "hours per week" values based on the type and average hours of use.

C. Structural adjustments. Negative priority points for structural adjustments may be allowed by the Building Official when partial structural rehabilitation has been performed or exists to the extent that structural deficiencies due to seismic forces are significantly reduced so as to substantially reduce the hazard to life safety created by such deficiencies in the event of an earthquake. **The Building Official shall not reduce the total of priority system points by more than three (3) points for structural adjustments.**

In considering structural adjustments, the Building Official shall consider only force resisting elements and systems (i.e. complete roof diaphragm with tension anchors, shear transfer connections, parapet stability) that, will substantially complete the structural rehabilitation for that element or portion of the building in accordance with the approved upgrading plans and specifications.

D. Priority System Worksheet.

URM BUILDING PRIORITY SYSTEM

Occupant/Hour Factors

Retail = 1.6	Office = .4	Residential = .42	Restaurant/Bar = 3.2
Schl./Day Care = 1	Hotel = .42	Public Building = 3.2	Assembly/Church = 1.1
Accessory = .07	Indstrl/Manuf. = .24	Other: Determined by Building Official	

Determining Occupant/Hours

Use _____	:	_____	x	_____	=	_____
		Square footage		Occ./hour factor		Occupant/Hours
Use _____	:	_____	x	_____	=	_____
		Square footage		Occ./hour factor		Occupant/Hours
Use _____	:	_____	x	_____	=	_____
		Square footage		Occ./hour factor		Occupant/Hours

TOTAL OCCUPANT/HOURS \_\_\_\_\_

POINTS

Occupant/Hours	Points
0 - 500	0
501 - 2,000	1
2,001 - 5,000	2
5,001 - 8,000	3
8,001 - 11,000	4
11,001 & Above	5

Occupant/Hour Points \_\_\_\_\_

Number of Stories	Points
1	1
1.5	1.5
2	2
3	3

Number of Stories Points \_\_\_\_\_

Proximity to Public Sidewalk	Points
Less than 10 feet	1
Equal or greater than 10 feet	0

Proximity to Sidewalk Points \_\_\_\_\_

Proximity to Adjacent Building	Points
Within 3 feet of adjacent building	1
Greater than 3 feet	0

Adjacent Building Points \_\_\_\_\_

Structural Adjustment	Points
Roof diaphragm, parapet bracing	-1
Storefront lateral bracing system	-1
Other bracing, ties, connections	-1

(Structural Report/Plans Required) Structural Adjustment Points \_\_\_\_\_

PRIORITY

Less than 4 points = LOW PRIORITY
4 to 6 points = MODERATE PRIORITY
More than 6 points = HIGH PRIORITY

TOTAL POINTS \_\_\_\_\_

F. Implementation schedule. **High-Priority Buildings.**

1. A review and upgrading design prepared by an engineer or architect must be submitted to the building official for approval within 2 years of notice to owner to correct deficiencies.
2. A building permit for complete upgrading in accordance with the engineer's or architect's review and reinforcement design must be issued within 2 1/2 years of notice to owner to correct deficiencies.
3. Complete upgrading shall be completed within 2 years of issuance of building permit.

G. Implementation schedule. **Moderate-Priority Buildings.**

1. A review and reinforcement design by an engineer or architect must be submitted to the building official for approval within 3 years of notice to owner to correct deficiencies.
2. A building permit for complete upgrading in accordance with the engineer's or architect's review and reinforcement design must be issued within 5 years of notice to owner to correct deficiencies.
3. Complete upgrading shall be completed within 2 years of issuance of building permit.

H. Implementation schedule. **Low-Priority Buildings.**

1. A review and upgrading design by an engineer or architect must be submitted to the building official for approval within 4 years of notice to owner to correct deficiencies.
2. A building permit for complete upgrading in accordance with the engineer's or architect's review and reinforcement design must be issued within 10 years of notice to owner to correct deficiencies.
3. Complete upgrading shall be completed within 2 years of issuance of building permit.

14.24.090 Notification of tenants. Upon receipt of notice to correct deficiencies, the building owner shall notify all tenants, in writing, that a review of the building has been performed and that said building may be structurally hazardous in the event of an earthquake.

14.24.100 Abatement - Rehabilitation or Demolition. Buildings subject to the requirements of this chapter which do not meet the requirements of this chapter shall be abated by rehabilitation, repair or demolition in accordance with the provisions of this chapter.

A. Rehabilitation. Designated historical structures, when rehabilitated, remodeled, repaired or upgraded shall comply with the provisions of the State Historical Building Code.

B. Demolitions. Buildings subject to the requirements of this chapter which do not meet the requirements of this chapter may be abated by demolition. Owners of buildings located within the Historic Conservation Combining District must receive approval from the Architectural Review Commission prior to obtaining a demolition permit to demolish the structure. Prior to obtaining a demolition permit for the demolition of a designated historical structure, the proposed building demolition shall be reviewed by the City's Environmental Review Committee and shall comply with the guidelines of the California Environmental Quality Act and the requirements of the Sonoma Municipal Code.

C. Substandard buildings, hazards or dangerous conditions which are not abated within the time limits set forth in Section 14.24.080, shall be considered a public nuisance and a dangerous building and shall be vacated and/or abated in accordance with the provisions of the Uniform Code for the Abatement of Dangerous Buildings and Chapter 14.30 of the Sonoma Municipal Code. In addition to any other remedy provided herein, the City Council may cause any building not abated within the time limits set forth in Section 14.24.080, to be vacated, strengthened, repaired, rehabilitated, remodeled, demolished or upgraded in accordance with the provisions of this chapter and place a lien on the property for all costs incurred in accordance with the provisions of the Uniform Code for the Abatement of Dangerous Buildings and/or Chapter 14.30 of the Sonoma Municipal Code.

14.24.110 Appeals Any person having record title, equitable or legal interest in the subject building may appeal any notice, order, decision, determination or action made in the administration of this chapter to the City Council of the City of Sonoma, provided that the appeal is made in writing and filed with the building official within 60 days from the date of service of said notice, order, decision, determination or action by the Building Official, except that an appeal for an extension of the implementation schedule set forth in Section 14.24.080 shall be made not less than 180 days prior to the required implementation date; however, if the building or structure is in such a condition as to make it immediately dangerous to the life, limb, property or safety of the public or adjacent property and is ordered vacated and is properly posted, such appeal shall be filed within 10 days from the date of service of this notice and order. Only one subject of appeal is allowed per building, provided due process is met.

A. The written appeal shall contain the following:

1. A heading in the words: "To the City Council of the City of Sonoma".
2. The names of the appellants named in the appeal.
3. A brief statement setting forth the legal interest of each of the appellants in the land and/or building involved.
4. A brief statement in ordinary and concise language of the specific order or action protested, together with any material facts claimed to support the contentions of the appellants.
5. A brief statement in ordinary and concise language of the relief sought and the reasons why it is claimed the protested order or action should be reversed, modified or otherwise set aside.
6. The submittal of any documents, sworn statements or other written material claimed to have value on the contentions made in support of the appeal.
7. The signatures of all parties named as appellants and their mailing addresses.
8. The verification (by declaration under penalty of perjury) of at least one appellant as to the truth of the matters stated in the appeal.

B. Upon receipt of an appeal filed pursuant to the above requirements, the Building Official shall present it at the next regular meeting of the City Council. **Failure to appeal will constitute a waiver of all rights to an administrative hearing and determination of the matter.**



14.24.120 Violation - Penalty. Any person, firm or corporation who or which violates any provision of this chapter as adopted by the ordinance codified herein, or any lawful order thereunder, is guilty of a misdemeanor as a separate offense for each and every day such person, firm or corporation violates or allows a violation to continue without taking reasonable means to cure or abate the same after having been ordered to do so. Such misdemeanors are punishable as provided by the general law of this state.

14.24.130 Severability. If any section, subsection, sentence, clause, phrase or word of this chapter is for any reason held to be invalid and/or unconstitutional by a court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this chapter. The City Council of the City of Sonoma hereby declares that it would have passed and adopted this chapter and each of the provisions thereof, irrespective of the fact that any one or more of said provisions be declared invalid and/or unconstitutional.

A&E GRANTS FOR SEISMIC UPGRADING

This program becomes effective on January 1, 1991 and terminates on December 31, 1992.

- A. Only plans prepared by a licensed architect and/or engineer or reports prepared by an approved testing agency, for upgrading work required by Sonoma Municipal Code Chapter 14.24 is eligible for the A&E grant. This work includes but is not limited to:
  - i. Review, investigation, analysis, testing, documenting and reporting of structural, fire and life safety, exting. mechanical systems and disabled access deficiencies.
  - ii. Preparation of reports, plans and engineering documents necessary to perform required upgrading and abatement work.
- B. Up to \$1.00 per square foot of eligible building area will be granted to one building owner per affected building. (Eligible building area is the gross area within and including the exterior walls of the building or portion thereof. The floor area of a building, or portion thereof, not provided with exterior walls shall be the usable area under the horizontal projection of the roof or floor area above.)
- C. The A&E grant is to be used exclusively for reimbursement of architectural and/or engineering fees.
- D. The A&E grant will be distributed upon building department approval of seismic upgrading plans for each building required to be upgraded within the scope of S.M.C. Chapter 14.24.
- E. The upgrading plans must be comprehensive and complete for all portions of the building found to be deficient in accordance with S.M.C. 14.24.
- F. Original invoices from the architect, engineer and/or testing agency for the preparation of upgrading plans, specifications, testing and reports shall be submitted with the grant application.
- G. Costs of plans for separate tenant improvements, site work, interior and exterior finishes, additions, furnishings and similar items are not eligible for the A&E grant program.

PERMIT FEE WAIVER PROGRAM

This program applies to all seismic upgrading projects required by Section 14.24 of the Sonoma Municipal Code and becomes effective on January 1, 1991 and ends on December 31, 1992.

1. Certain construction permit fees for seismic upgrading work required pursuant to S.M.C. Chapter 14.24 will be waived. Fees which will be waived include:
  - a. All Building, Mechanical, Electrical and Plumbing permit fees.
  - b. Plan Check fee up to four-tenths of one percent (0.4%) of the valuation of the work as defined by the Uniform Building Code and assigned by the Building Official.
  - c. Contractors License Tax
  - d. Micrographics Fee
  - e. Capital Improvement Tax
  - f. Impact Fee
2. All Public Works Department encroachment permit fees will be waived for projects requiring seismic upgrading pursuant to S.M.C. Chapter 14.24.
3. All Public Works Department inspection fees related to installation and testing of underground fire sprinkler system piping and required pursuant to S.M.C. Chapter 14.24.
4. No fees will be waived for those portions of projects which create additional building floor area.
5. All other construction permit fees not mentioned above will be assessed as normally required.

In addition to the program mentioned above for seismic upgrading, the Community Development Agency shall pay all of the construction permit fees listed in #1 above, for all 100% affordable housing projects as defined by Section 19.71 of the Sonoma Municipal Code.

**A&E REIMBURSEMENT APPLICATION**

*This program commences on January 1, 1991 and terminates on December 31, 1993.*

A. Only plans and reports prepared by licensed architects and/or engineers for upgrading work required by S.M.C. 14.24 are eligible for the A&E Reimbursement Grant Program. This work includes but is not limited to:

- i. Review, investigation, analysis, testing, documenting and reporting of structural, fire and life safety, exiting, mechanical systems and disabled access deficiencies.
- ii. Preparation of reports, plans and engineering documents necessary to perform required upgrading and abatement work.

B. Up to \$2.00 per square foot of eligible building area will be granted to one building owner per affected building. (Eligible building area is the gross area within and including the exterior walls of the building or portion thereof established pursuant to Section 14.24.080 of the S.M.C. The floor area of a building, or portion thereof, not provided with exterior walls shall be the usable area under the horizontal projection of the roof or floor area above.)

C. The A&E Reimbursement will be distributed upon building department approval of required upgrading plans for each building required to be upgraded within the scope of S.M.C. Chapter 14.24.

D. The upgrading plans must be comprehensive and complete for all required structural and nonstructural upgrading (i.e. disabled access, fire resistive construction, exiting, etc.) in accordance with S.M.C. 14.24 and must contain the necessary statements required by Section 14.24.070.

E. Original architect and/or engineer invoices for the preparation of upgrading plans, specifications, testing and reports shall be submitted with the reimbursement application.

F. Costs of plans or engineering work for tenant improvements, site work, interior and exterior finishes, additions, furnishings and similar items are not eligible for the A&E Reimbursement program.

Project Address: \_\_\_\_\_ Amount of Invoices \$ \_\_\_\_\_

Owner's Name: \_\_\_\_\_ Phone \_\_\_\_\_

Mailing Address: \_\_\_\_\_  
 Street/P.O. Box \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Engineer's Name: \_\_\_\_\_ Phone \_\_\_\_\_

Architect's Name: \_\_\_\_\_ Phone \_\_\_\_\_

Please attach all of the original invoices received from your architect and/or engineer for fees related to required upgrading work. The City of Sonoma reserves all rights to review and reject invoices or applications for due cause.

I certify that I have read this application and state that the information which I have provided, including attachments, is true and correct.

Signature of Owner \_\_\_\_\_ Date \_\_\_\_\_

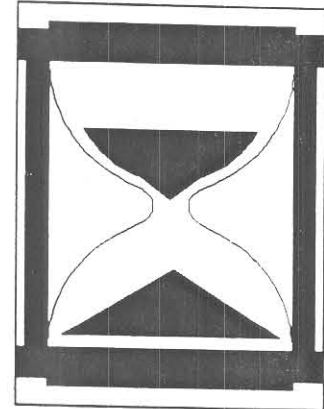
FOR OFFICE USE ONLY

1. Invoice Totals	\$ _____
2. Adjustments to Invoices	\$ _____
3. Total Allowed Invoice Amount	\$ _____
4. Eligible Square Footage	\$ _____
5. Eligible Reimbursement Amount (@ \$2.00/s.f)	\$ _____
6. REIMBURSEMENT AMOUNT (Enter the lesser amount shown on line 3 or line 5)	\$ _____

Building Official Approval \_\_\_\_\_ City Manager Approval \_\_\_\_\_

April 14, 1992

## **ABOUT CITY OF SONOMA'S SEISMIC UPGRADING ORDINANCE**



**Q. What is the purpose of the seismic upgrading ordinance?**

A. The primary goal of the seismic upgrading ordinance is to provide a systematic method of reducing the risk to human life posed by seismically unsafe buildings in the event of an earthquake. This will be accomplished by providing economically acceptable construction regulations designed to reduce the probability of catastrophic wall and ceiling collapse in certain buildings which are potentially unsafe, thereby reducing the number of deaths and injury in the event of an earthquake.

A study released by the United States Geological Survey in June of 1990, indicates there are 2 chances in three that an earthquake the size of the Loma Prieta quake will occur within the next 30 years. If that quake occurs on the Rodgers Creek Fault, we can expect the shaking to be 48 times greater than the shaking we felt here in Sonoma during the Loma Prieta event. As recently as April of 1992, scientists have increased the probability of a moderate to large earthquake occurring on the Rodgers Creek Fault.

**Q. What buildings are affected by the City of Sonoma's new seismic upgrading program (Sonoma Municipal Code Chapter 14.24)?**

A. All buildings constructed with unreinforced masonry walls and diaphragms and connections of diaphragms in buildings constructed prior to September 24, 1973, of tilt-up concrete or masonry are affected, except public schools, hospitals, state owned buildings and one-and two-family dwellings.

**Q. I have an older wood framed building which I would like to structurally upgrade, may I upgrade the building using the provisions of the new seismic upgrading program (S.M.C. Chapter 14.24)?**

A. Any existing building, including wood framed structures, except public schools, hospitals, fire stations and other essential facilities, constructed prior to June 1, 1973, may be upgraded or rehabilitated using the upgrading design provisions of the ordinance.

**Q. My building was not on the "Potentially Hazardous - URM Building List" prepared by the City of Sonoma in December of 1989; why is my building affected by the requirements of S.M.C. Chapter 14.24?**

A. The "Potentially Hazardous" - URM Building List, was prepared by the City of Sonoma and submitted to the Seismic Safety Commission to comply with the identification and notification requirements of Senate Bill 547 which was signed into law in 1986. The provisions of SB 547 required cities and counties located within Seismic Zone 4, to identify those buildings constructed of unreinforced masonry construction. There are masonry buildings within Sonoma which were constructed prior to September 24, 1973, which have partially reinforced walls and buildings constructed with reinforced masonry or concrete walls which have inadequate wall connections and roof systems. These buildings are subject to the requirements of S.M.C. Chapter 14.24 and therefore there may be buildings on the new list of potentially hazardous buildings which have not previously been identified.

April 14, 1992

**Q. Who determines if my building is affected by the ordinance?**

A. The Building Division of the City of Sonoma Community Development Department will conduct a preliminary review of all buildings within the scope of the ordinance to determine if the building meets the upgrading design standards of the ordinance. If the building is determined to comply with the upgrading design standards, the building will be taken off of the "potentially hazardous" building list. If the building does not comply, you will be issued a notice to correct deficiencies and provided with a copy of the preliminary review report.

**Q. What if I disagree with the findings of the preliminary report by the building department?**

A. The preliminary review findings of the building department may be adjusted or corrected by submitting evidence that the building department findings are incorrect by providing an engineering analysis of the building which shows that the building complies with the upgrading design requirements of the ordinance. Additionally, the ordinance provides that any decision made by the Building Official may be appealed to the City Council by the building owner.

**Q. How much will seismic upgrading work for my building cost?**

A. The cost of performing seismic upgrading work can vary greatly between different buildings and therefore cannot easily be assigned to your building without a detailed analysis of the work which must be performed. The best way to determine the cost for seismic upgrading for your building is to obtain an estimate from an engineer, architect or contractor, after upgrading plans have been prepared by your architect or engineer.

For the purposes of obtaining a general idea of overall URM upgrading costs, the URM Mitigation Technical Committee estimates that the average upgrading costs for basic seismic rehabilitation including tenant improvement work could be between \$34 and \$63 per square foot of building area.

**Q. Can my tenants occupy my building while seismic upgrading work is being performed?**

A. In some cases, tenants may be able to occupy some or all of the building while upgrading work is being performed provided that the building is maintained in a safe condition for the tenants and the public. Many owners and tenants prefer however, to perform the upgrading as expediently as possible, which usually requires temporarily relocating the tenant.

**Q. How will the priority of my building be determined?**

A. Included in the seismic upgrading ordinance is a unique URM Priority System. The system assigns priority points to a building based on six key elements including: the typical number of hours a type of use is occupied, the occupant load for the building, the number of stories of the building, the proximity of the building to the public sidewalk, the proximity of the building to an adjacent building, and whether or not certain key structural elements exist in the building. The Building Department assigns the priority points and makes the determination as to priority classification in accordance with the URM Priority System. The Priority System provides an effective, fair and practical means to measure and assign some level of risk to an existing potentially unsafe building.

April 14, 1992

**Q. Does the seismic upgrading program encourage or require the demolition of historical buildings?**

**A. No!** The seismic upgrading ordinance used in conjunction with the State Historical Building Code will actually help to preserve existing historical resources by allowing historical buildings to be upgraded without conforming with all of the requirements of the current building code. If a building owner were to propose demolition as a method of abating a seismically unsafe building, the owner would first be required to comply with the City's environmental review process as well as obtain approval by the City's Architectural Review Commission. Additionally, the ordinance affords the City Council the option of having required upgrading work performed on a building rather than demolition and all costs associated with the upgrading assessed on the tax roll for the property. Therefore, even if privately owned, buildings which are of primary historical significance to the City Council and the citizens of Sonoma could be saved from demolition.

Another important element that comes into play is the fact that under most circumstances, it will be more feasible economically to rehabilitate a historical building rather than demolish it. The reason for this is that buildings which are demolished may only be rebuilt if the proposed new building meets all current Uniform Building Code and City of Sonoma Zoning requirements. Three-fourths of the historical buildings which would be affected by the upgrading ordinance presently do not comply with the City's minimum parking requirements and would therefore need to provide additional parking for a proposed new building. For most of the historical buildings in town, it would be economically unfeasible to provide additional off-street parking as part of a new project in that there is a very limited amount of space on most historical properties. Additionally, there will be no tax breaks for persons proposing to demolish a building as opposed to performing structurally upgrading work.

**Q. What effect will seismic upgrading have on my property taxes.**

**A.** The State Constitution has been amended to prevent assessors from raising property values for seismic strengthening of unreinforced masonry bearing wall construction, necessary to comply with any local ordinance relating to seismic safety for a period of 15 years.

**Q. If I upgrade my building in accordance with the seismic upgrading program, will my building be earthquake proof?**

**A. No!** The ordinance is designed to reduce the risk to life resulting from a catastrophic or partial building collapse. Buildings upgraded in accordance with the ordinance will help to save lives in the event of a damaging earthquake, but probably will sustain some level of damage. Owners wishing to prevent major structural damage to their buildings should consider using the Uniform Building Code as the upgrading design criteria.

**Q. How can the assigned priority of my building be lowered to allow me more time to perform rehabilitation work?**

**A.** The assigned priority points for your building may be revised by performing partial seismic upgrading work or by changing the type of use to a category which is less intensive based on occupant/hours or by vacating a portion or all of the building. If the number of priority points can be reduced enough to place the building in a lower priority classification, the number of years for required upgrading will be extended to meet the schedule for the newly designated priority category.

April 14, 1992

**Q. What are occupant/hours?**

A. "Occupant/Hours" establishes the total accumulated number of hours a building might be occupied assuming the building is filled to maximum capacity for a 7 day period. Since the potential for injury or death resulting from a collapse or partial collapse of a building in the event of an earthquake is directly related to the number of people in and around the building, "occupant/hours" serves as an important factor in assigning the priority to a particular building.

**Q. When will upgrading work be required for my seismically unsafe building under the seismic upgrading ordinance?**

A. The seismic upgrading ordinance requires upgrading to be completed under an implementation schedule based on an assigned priority. Additionally, buildings which have been vacated for more than six months and buildings which are proposing significant remodeling or additions are required to perform seismic upgrading prior to reoccupying the building or as a part of remodeling or addition project. The timetable for required upgrading based on the priority implementation schedule is as follows:

**I. High-Priority Buildings:**

- a. Review and upgrading design submitted to Building Department within 2 years of notice to owner to correct deficiencies.
- b. Obtain a building permit to perform upgrading work within 2-1/2 years of notice to owner to correct deficiencies.
- c. Complete upgrading work within 2 years of issuance of building permit.

**II. Moderate-Priority Buildings:**

- a. Review and upgrading design submitted to Building Department within 3 years of notice to owner to correct deficiencies.
- b. Obtain a building permit to perform upgrading work within 5 years of notice to owner to correct deficiencies.
- c. Complete upgrading work within 2 years of issuance of building permit.

**III. Low-Priority Buildings:**

- a. Review and upgrading design submitted to Building Department within 4 years of notice to owner to correct deficiencies.
- b. Obtain a building permit to perform upgrading work within 10 years of notice to owner to correct deficiencies.
- c. Complete upgrading work within 2 years of issuance of building permit.

**Q. If I perform structural upgrading on my building will a fire sprinkler system be required to be installed?**

A. **Possibly!** In accordance with the Uniform Fire Code as amended and adopted by the city, fire sprinkler systems are required in all buildings subject to the requirements of the seismic upgrading program if the gross area of the building is greater than 4,000 square feet and the valuation of the upgrading work exceeds \$50,000, exclusive of the cost of the fire sprinkler system.

April 14, 1992

**Q. If I perform structural upgrading on my building, will access to the physically disabled be required?**

**A. Yes!** State building regulations require that when structural alterations, repairs or an addition is made to an existing building, access to the physically disabled must be provided in the following locations:

1. The area of addition, alteration or repair.
2. The path of travel from the public sidewalk or parking area to the addition, alteration or remodeled area must be made accessible.
3. Bathrooms, telephones and drinking fountains serving the remodeled area must comply with disabled access requirements.

**Q. By providing disabled access, does that mean I will be required to install an elevator in my existing two story building?**

**A. Probably not.** None of the buildings in Sonoma which would be affected by the seismic upgrading ordinance would be required to install an elevator unless the use of the upstairs portion of the building was changed to a restaurant, public building or other similar type of use. Uses in existing buildings such as retail businesses, offices, lodge rooms, apartments, hotels and motels do not require an elevator.

**Q. Is there any funding available to me for performing seismic upgrading work?**

**A. YES** The City of Sonoma offers the following funding programs:

- \* Reimbursements of up to \$2.00 per square foot of eligible building area is provided to property owners for the exclusive purpose of helping owners pay for the costs of preparing engineering analysis, reports and construction plans for upgrading work. This reimbursement program is due to expire on December 31, 1993.
- \* Certain building permit and plan checking fees for seismic upgrading work are paid by the City's Community Development Agency.

The typical building owner of a 4,200 square foot building would realize a cost benefit of approximately \$9,300 by taking advantage of the programs mentioned above. Other limited funding sources which may be available for seismic upgrading work depending on the type and use of your building are as follows:

1. Sonoma's Community Development Agency is currently exploring methods of providing additional financial assistance to owners through special districts, loan subsidies and public/private partnerships.
2. Small Business Administration (SBA) funding may be available for engineering, planning, permits, and construction costs to business borrowers that meet the agency's size standard and eligibility standards.
3. State Housing and Community Development Department administers a number of state programs aimed at encouraging renovation of housing resources for certain groups by providing loans at favorable terms.
4. Tax credits for rehabilitation may be available under the 1986 Tax Act.



April 14, 1992

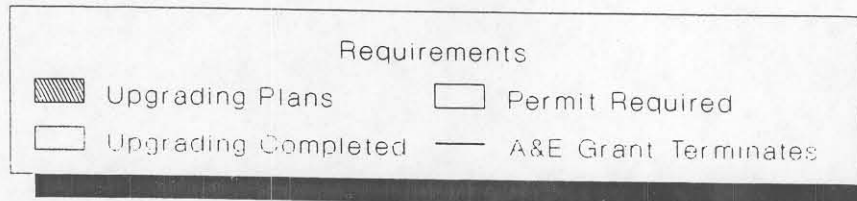
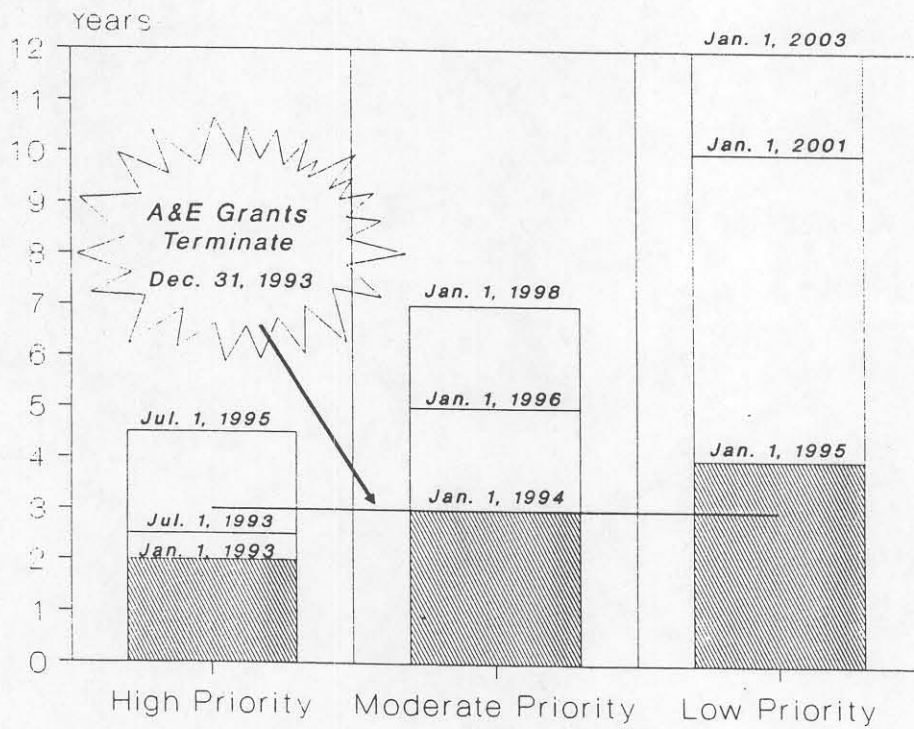
**Q. What does seismic upgrading work entail?**

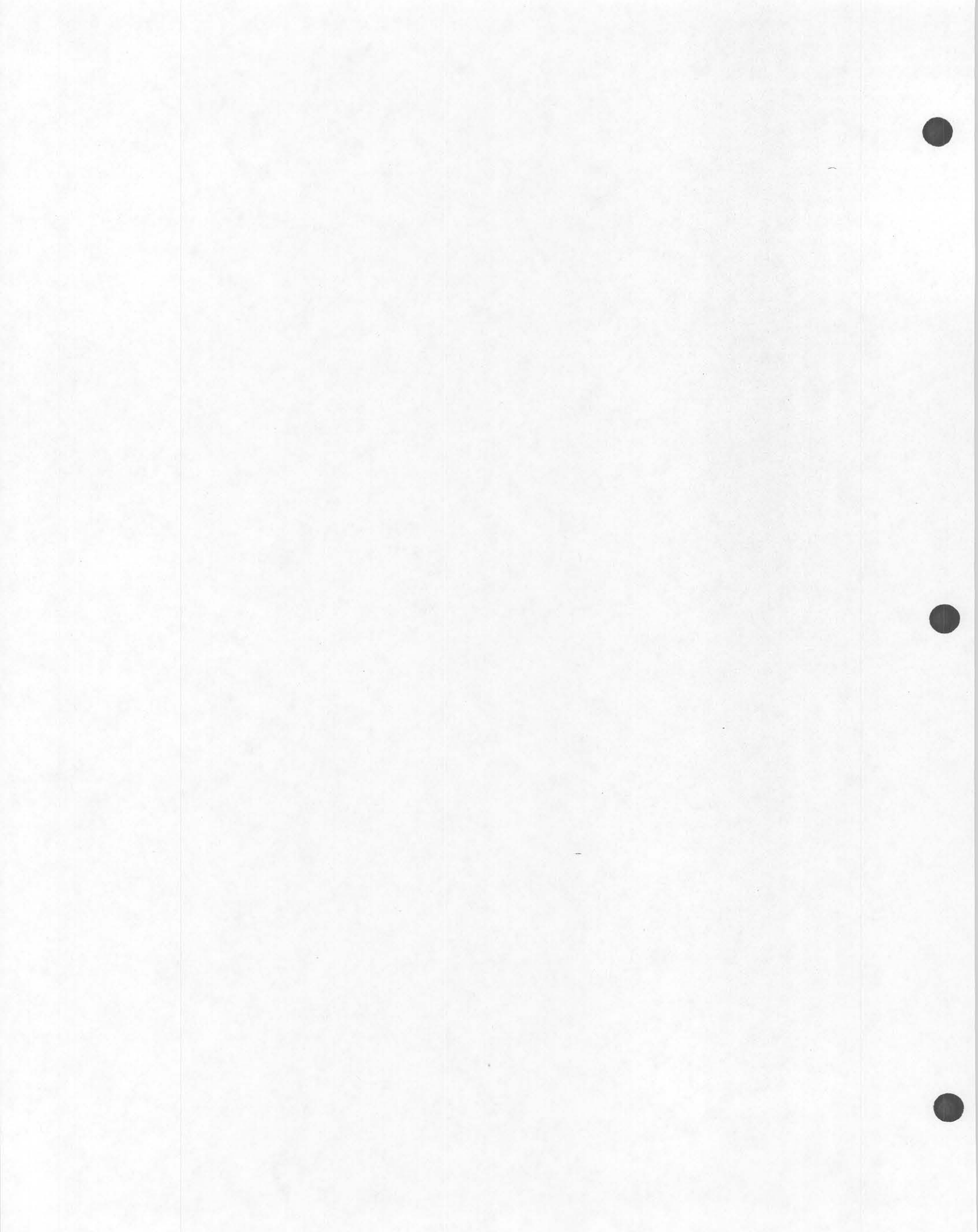
- A. In basic terms, seismic upgrading involves the following items:
1. Providing a rigid floor and roof system which will act as a complete structural unit (diaphragm) when a load is applied. This is usually accomplished by attaching plywood to the floors and roof.
  2. Providing wall stability so that the walls do not collapse inward or outward. This is sometimes accomplished by providing cross walls or wall bracing.
  3. Providing adequate anchors between the floor and/or roof system and the walls.
  4. Providing lateral stability for walls to prevent racking (in-plane shear) of the building.
  5. Provide parapet bracing if necessary to prevent the collapse or partial collapse of parapet walls.
  6. Secure veneers, ornamentation and appendages so as not to detach from supporting members.
  7. Comply with fire resistive construction, fire sprinkler and exiting requirements to afford safe passage for the buildings occupants.
  8. Provide disabled access throughout the ground floor of the building.
  9. Correct all dangerous conditions within the building.

**Q. I have received a "notice to correct deficiencies", where do I go from here?**

- A. Step #1 Review all documents, especially the "notice to correct deficiencies", included in your package of information provided by the city. Make sure the information appears to be correct.
- Step #2 Notify any tenants of the building that the building is potentially hazardous in the event of an earthquake as required by the ordinance.
- Step #3 Contact a licensed architect or engineer to provide an analysis of the building to determine the extent of deficiencies in accordance with the upgrading ordinance and to provide you with some approximate cost evaluations. Be sure they review disabled access and fire sprinkler requirements along with their structural evaluation.
- Step #4 Review all avenues of potential financing and funding assistance. Check your lease agreements to determine if there are any apparent problems relating to your legal rights to upgrade the building. Create a preliminary schedule for performing and completing work in accordance with upgrading deadline provided.
- Step #5 Contact a general contractor to provide refined cost estimates and perform work.
- Step #6 Complete all required upgrading work.

# CITY OF SONOMA Seismic Upgrading Schedule





<i>Population:</i>	133,500
<i>1990/91 General Fund</i>	
<i>Revenues:</i>	\$93 million
<i>Fund Balance:</i>	\$10 million
<i># URM's:</i>	50
<i>Type of URM's:</i>	70% commercial 30% residential
<i>Ordinance Type:</i>	mandatory retrofitting
<i>Retrofit Incentives:</i>	(1) long-term financing at 10.75% (2) engineering design subsidy
<i>Funding Source:</i>	(1) Special Assessment bond issue (2) general fund

### BACKGROUND

The City of Torrance encompasses a 20-square mile area located 10 miles south of Los Angeles along I-405. The city was originally founded in 1912 and incorporated in 1921. Torrance is presently the home to major employers such as Hughes Aircraft Company, Airesearch Manufacturing Company, and Mobil Oil Corporation. Torrance is the first city in California to use a bond instrument as a tool to finance the seismic retrofit of privately owned buildings.

### HAZARDOUS BUILDINGS PROFILE

The City of Torrance contains approximately 50 unreinforced masonry buildings (URMs). The majority of these URM's are commercial structures. They range in size from 1,200 to 20,000 square feet, and command rent per square foot of about \$0.50 to \$1.00. One can find the majority of these buildings in old Downtown Torrance.

### ORDINANCE

The city has a mandatory retrofit seismic ordinance that was adopted in 1987. Like some of the other cities in the greater Los Angeles area, Torrance's seismic retrofit ordinance is based on the 1982 Edition of Division 88 of the Los Angeles City Code.

### INCENTIVE PROGRAM CONCEPT

Torrance's program provides URM owners with 2 sources of assistance: a subsidy to pay for engineering analysis and a source of long-term financing to pay for retrofit construction.

The city developed the subsidy program to promote the preparation of engineering plans. It was hoped the owners of URMs would be more willing to pay for retrofit plans if the work was subsidized. In addition, the subsidy conveyed the city's concern regarding the life safety hazard posed by URMs and its interest in seeing the issue addressed. Torrance provided a \$0.50/square foot of building area subsidy to URM owners to defray the cost of plan preparation.

The city also prepared a voluntary Special Assessment district which would provide members with a long-term, market-rate source of financing for retrofit construction. Torrance allowed a 9 month period in which property owners could apply for participation in the program. Property owners interested in participating submitted to the city, for review by its Building and Safety Director, an assessment report prepared by a California licensed engineer. The assessment was determined using the lowest responsible bid from a series of 3 estimates of the cost of construction obtained by the owner, and a pro-rata share of issuance costs. If the 3 bids were not obtained, the Assessment Engineer determined a reasonable cost of the necessary seismic safety improvements based on comparable costs for similar buildings in the district. The owners' parcels were then examined to determine their appraised values.

A total of 7 parcels were eventually included in the assessment district, representing less than one-fifth of the city's URMs. The parcels in the district are located in the old downtown portion of the city, and consist of retail, office and apartment properties.

In December, 1988, the city council held the required public hearing and, as no protests were received, adopted a resolution establishing the district, authorizing the projects and confirming and levying the assessment for each parcel. Two months later the bonds were issued and money was placed in an Improvement Fund awaiting disbursement to participating owners.

Undertaking and completing projects is the sole responsibility of individual property owners. All owners must submit final building plans to the city and obtain all the usual permits. Owners individually contract and arrange for the projects' construction. A provision was made in the

bond issue for financing construction cost overruns by including a 5% contingency fund in the issue. The time allotted for completion of all the projects is approximately 3 years. If there are bond proceeds remaining at the end of that time (perhaps because owners who participated in the district ultimately chose not to undertake the improvements, or because they did not satisfy the city's requirements for release of the funds) these proceeds will be used to prepay the bonds.

The bonds are repaid through assessment liens against all the parcels included in the district. The annual assessment billed against each parcel represents a pro rata share of the total principal and interest of the bonds coming due that year. Assessment installments are payable in the same manner and time as general taxes on real property. Note that the assessments represent liens against parcels, not personal indebtedness of property owners.

The bonds issued by Torrance are secured by the assessments levied against the parcels. The assessment liens are on parity with all general and special tax liens. They are subordinate to pre-existing Special Assessment liens, but take priority over future fixed Special Assessment liens. Most importantly the assessment liens take priority over all existing and future private liens, including bank loans and mortgages.

Failure of an individual property owner to pay an assessment installment will not increase the assessments against other parcels. Property securing delinquent assessment installments is subject to sale in the same manner as property sold for non-payment of general property taxes. In addition, Torrance has covenanted that it will commence judicial foreclosure proceedings against parcels with assessment installments which are more than 150 days delinquent. (For another discussion of Special Assessment financing see CASE STUDY - CITY OF LONG BEACH)

#### PROGRAM RESOURCES

Four different city departments were involved in developing Torrance's program: the Building and Safety Department, the Finance Department, the Treasurer's Department and the City Attorney's Office. The services of a financing team (bond counsel and underwriter) were also used extensively. Torrance estimates it cost approximately \$30,000 in staff time and other expenses to develop the program and issue the bonds. The fees of the financing team were reimbursed from the proceeds of the bond issue. Ongoing program costs primarily involve the time of the Building and Safety Department to review and approve requests for funds, and the resources of the City Treasurer to administer the bond program and collect the assessments.

Torrance issued bonds in the amount of \$679,325. The funds were allocated as follows:

- \$563,430 of the bond proceeds were set aside to cover project costs. This amount represents an estimated cost of \$10/square foot for seismic safety improvements, plus a 5% reserve for construction contingency.
- The bond proceeds also funded a \$33,966 reserve account, required in most bond financings, which ensures that funds will be available to make timely bond payments.
- Approximately \$36,514 was borrowed to cover interest payments which needed to be made on the bonds prior to collection of assessments.
- \$45,415 was expended to pay the financing team and cover other issuance costs.

#### PROGRAM DEVELOPMENT

As with the City of Long Beach, Torrance's use of Special Assessment district bonds to finance seismic retrofit projects might better be called an enabling rather than an incentive program. The city felt that its most suitable function would be to obtain financing for the owners while steering clear of any responsibility for repayment.

While assessment bonds of the type contemplated were commonly used by cities throughout California, they had never before been issued to finance repairs of privately-owned structures. The uniqueness of this purpose made the assessment bond issuance process more complicated than would normally be expected. The process ended up taking 13 months rather than the 3 to 6 months more commonly spent on assessment financings. Rather than being sold publicly, the bond issue was privately placed with an investor.

One of the more difficult aspects of the development process involved establishing the procedures for participation in the district and explaining the process to property owners. It was important for participants to realize the nature of the assessment on their property, how each account would be impacted by both interest earnings and construction drawdowns, and the impact of being fully responsible for any amount committed to.

As investors in assessment bonds are secured by the property upon which the lien is assessed, an important ratio in an assessment financing is the value-to-lien ratio. This ratio suggests to investors how much might be recouped from the sale of a property if its owner defaults on the

assessment. Typically investors will require that assessment districts contain properties with minimum value-to-lien ratios of 3.0 to 1. Torrance's financing team established a minimum 2.0 to 1 ratio. The lowest value-to-lien ratio in the district was 2.1 to 1. Thirty percent of the assessment was on properties with ratios less than 3.0 to 1, while the remaining 70% of the assessment was on properties with ratios greater than 3.6 to 1.

The following table illustrates the value-to-lien ratios of parcels which comprise the assessment district.

Value-to-Lien Ratio	# Parcels (Value = Assessed Value)	\$ Amount of Assessment	% of Total Assessment
1.00:1 to 1.99:1	0	\$0	0
2.00:1 to 2.9:1	2	\$202,275	30
3.0:1 to 4.9:1	4	\$456,750	67
> 5.0:1	1	\$20,300	3
<b>TOTAL</b>	<b>7</b>	<b>\$679,3225</b>	<b>100.0</b>

#### PROGRAM EFFECTIVENESS

More than half of Torrance's 50 URMs took part in the subsidy program for plan preparation, a sign that the URM owners take the situation as seriously as the city does. Only 7 of the 50 URMs were enrolled in the assessment district; the majority of the property owners, who elected not to participate in the district, had the ability to obtain monies from their own sources at comparable interest rates and/or preferred to perform the needed repairs from their own funds. To date 43 of Torrance's 50 identified URMs have been retrofitted.

#### PROGRAM STRENGTHS

The primary advantage of the program to the city lies in the fact that Torrance is able to provide owners with financing while retaining no repayment liability. Although the program does require ongoing monitoring and administration, these costs are not material. Because the program is privately financed and full financial responsibility lies with the property owners, the projects are not subject to regulations applied to public funds such as Davis-Bacon wage requirements.



### KEYS TO SUCCESS

The effectiveness of Torrance's program is likely linked to the city's 2 step approach. The subsidy for plan preparation got URM owners to think about retrofiting, and the assessment district gave them an option for financing the work. This also let URM owners know that the city was serious about its retrofit program.

The issue of life safety related to URMs is very well understood by staff, elected officials, and the public at large. As a result very little controversy surrounded the city's development of its program.

Finally, the city showed a great deal of flexibility in its willingness to experiment with an untried method of financing. Torrance exhibited a tremendous amount of "municipal bravery" in being the first California city to use assessment district bonds for financing this type of program.

Torrance is a charter city. While this was considered a key factor at the time, some bond counsels now believe that general law cities can use Special Assessment financing to fund retrofit programs too (See: LOCAL GOVERNMENT FINANCING OPTIONS - SPECIAL ASSESSMENT DISTRICT).

### CONTACT

Mary Giordano-Specht	Finance Director	(310) 618-5855
Jim Isomoto	Acting Building & Safety Director	(310) 618-5920

<i>Population:</i>	64,000
<i>1990/91 General Fund</i>	
<i>Revenues:</i>	\$22 million
<i>Fund Balance:</i>	\$8 million
<i># URM's:</i>	65
<i>Type of URM's:</i>	100% commercial,
<i>Ordinance Type:</i>	mandatory engineering reports (implementation deferred)
<i>Retrofit Incentives:</i>	(1) "soft cost" and facade rebate (2) bank loans
<i>Funding Source:</i>	(1) CDBG (2) commercial banks

### BACKGROUND

The City of Upland sits at the foot of the San Gabriel Mountains approximately 40 miles east of Los Angeles along the I-10 corridor. Originally an agricultural community, the city is now primarily residential. Upland has a traditional downtown area in which the majority of its unreinforced masonry buildings (URMs) are located.

### HAZARDOUS BUILDINGS PROFILE

The hazardous structures identified by Upland are primarily 1 or 2 story commercial URM buildings located in an eight-block section of Upland's old downtown. Most of the buildings are occupied by local merchants. Some structures have residential uses on the second floor. The majority are less than 5,000 square feet in floor area. Rents range from \$0.50 to \$0.85 per square foot. Many of the URM's are of brick construction. Some of these structures share common walls and may have been a single unit at one time. Some of the altered facades hide historically significant details while others have been irreversibly changed.

### ORDINANCE

Upland chose to develop a retrofit ordinance based on the Palo Alto model (See: CASE STUDY - CITY OF PALO ALTO). The city's intent is to elicit voluntary action from the property owners by offering them incentives, invoking the mandate contained in the ordinance only if voluntary compliance is ineffective. The ordinance requires owners of URMs and of certain buildings containing 100 or more occupants to submit to the city's building inspection department engineering reports covering structural deficiencies and external hazards. The time allowed for submission of these reports ranges from 1 to 2 1/2 years, depending upon the building type. The ordinance exempts from this requirement owners of buildings which have been upgraded in accordance with either the Los Angeles Division 88 Standards or the 1973 or later edition of the Uniform Building Code. Under the ordinance, owners also are responsible for informing tenants that the report has been prepared, and for submitting to the building inspection department a plan for dealing with the hazards identified in the engineer's report. The ordinance provides that owners who do not comply may be guilty of a misdemeanor punishable by a maximum fine of \$500 or up to six months in jail, and that the city may order the building vacated and, ultimately, demolished.

The timelines for compliance contained in the ordinance are triggered when the building inspection department mails notices to owners informing them of the requirements established by the ordinance. In order to allow compliance to be voluntary rather than mandatory, the city has refrained from mailing these notices. The city plans to continue to defer the mailing as long as the retrofit incentive programs appear to be effective.

### INCENTIVE PROGRAM CONCEPT

The City of Upland's incentive program uses a 2 prong approach, one a publicly financed incentive and the other offering private financing. The publicly financed incentive is known as the *Upland Town Center Commercial Rehabilitation Rebate Program*. This program is designed to complement the overall strategy which the city has for the town center, and to provide incentives to landlords to improve the aesthetics of the town center as well as to eliminate public safety hazards. Under the program Upland will reimburse property owners up to \$10,000 for seismic engineering, architectural services, city fees and eligible facade improvements. In order to receive the rebate, owners must comply with all the facade improvements recommended by the city's Design Review Committee. Rebates are made after completion of all required seismic and facade work. Priority is given to projects which contain sales tax generating uses on the ground floor.

The private financing technique is called the *Upland Town Center Construction Loan Program*. To develop this program, the city worked with property owners and local banks to

negotiate terms upon which these banks would offer loans for purposes of seismic retrofitting. The five banks which participate in the program, all of which are based in or near Upland, have agreed to offer flexible loan origination fees, interest rates and repayment terms as well as other incentives to owners participating in the city's seismic retrofit program.

#### PROGRAM RESOURCE REQUIREMENTS

In designing the retrofit incentive program it was of particular importance to Upland that as little staff time as possible be required for development and administration. The city specifically did not want, for example, to implement or manage a low-interest amortized loan portfolio. The design of Upland's seismic retrofit program took approximately 100 hours of staff time over the course of the 9 month design period, which the city feels was very reasonable. The program was developed by the Planning Department with the assistance of Main Street Upland Inc., a group consisting of downtown property owners and merchants. The majority of staff time was devoted to meetings with local bankers and property owners. The city's staff spent a great deal of its time educating all the interested parties on the issues surrounding retrofitting. The city incurred some additional minor program costs, primarily for production of flyers and other program materials (See: EXHIBITS.)

Ongoing administration requirements of the program are minimal, and are incorporated into the regular functions of the planning department: all the work proposed under the ordinance is reviewed in the same manner as any other work proposed in town and all facade renovations go before the Design Review Board. The ordinance does allow the city to utilize the services of civil or structural engineers to review the reports submitted by building owners. The cost of these consultants would be recovered by a fee assessed from the building owner based upon the time required for the review. This fee would then be deducted from any plan checking fees collected for future construction work arising from the report.

To fund the public portion of the program the city used Community Development Block Grant (CDBG) funds (See: LOCAL GOVERNMENT FINANCING OPTIONS - COMMUNITY DEVELOPMENT BLOCK GRANTS). Upland became an entitlement city in 1988. In each of fiscal years 1990/91 and 1991/92 Upland's CDBG Citizens Advisory Committee agreed to allocate \$100,000 of the city's total entitlement (\$361,000 for FY 90-91 and \$410,000 for FY 91-92) to the seismic retrofit program. The level of program funding means that it will take at least 6 years for all the city's URMs to be retrofitted. Also, due to the current economy, some landlords are not able to take advantage of this program because they cannot afford the seismic retrofit.

An important aspect of the program is the fact that the facade improvement activities being funded are not labor intensive (with labor cost comprising less than 13% of total costs), and

therefore are not subject to certain HUD labor requirements. This allows implementation of and participation in the program to remain simple and inexpensive. The city developed a program description which accomplished HUD's National Objectives with respect to Slum and Blight. This source of funding has some shortcomings. As a result of recent regulatory changes, this source of funds has become self-limiting, as only 30% of CDBG funds can be used for slum/blight activities in any 1-to-3 year period.

#### PROGRAM DEVELOPMENT

"Cooperation" is the word used most often by city staff to describe the successful development of the retrofit incentive program. The city's program was designed with the full support of the mayor and council, the CDBG Citizens' Advisory Committee and city staff. The most important ingredient to the development and success of the program is the spirit of cooperation among the banks, the owners, and the community. Bankers, URM owners, engineers, architects and the city's staff were all educated through their participation in the program development. This education also led to a sense of control on the part of participants which increased their willingness to take part in the program. Since the inception of the program the city and Main Street Inc. have each sponsored 2 informational workshops.

Upland is one of the few communities that has been successful in rallying some interest among its banking institutions in providing loans to property owners who need to retrofit their buildings. Development of the privately-funded portion of the program required much negotiation. A critical factor to the city's success is the fact that the banks involved are all relatively small and headquartered in or near the city. All have deep roots in the area and are committed to Upland's business community. All are interested in fulfilling Community Reinvestment Act requirements, too. (Note that reliance on the local banking community may mean that property owners with credit difficulties will not have access to the program funds.) The city originally suggested that the local banks create a pooled loan fund against which retrofit loans could be made. The banks, however, were uncomfortable with the concept and instead chose each to be more accommodating of owners' requests, individually deciding how best to meet the owners' needs.

Another factor contributing to the city's success is its requirement that owners perform both facade improvements and seismic upgrade work. This is also important to the banks, as facade improvements more obviously add value to the property being upgraded. In linking seismic and facade improvements, Upland also feels it is providing URM owners with more value for their retrofit dollar. The program continues to be very interactive, with the city maintaining its cooperative relationship with property owners. URM owners applying to the program receive a great deal of upfront feedback and review commentary as their project works its way through the system.

Developing the CDBG-funded public component also required patience, education, and cooperation. City staff worked closely with the CDBG Citizen's Advisory Committee, and spent some time working with HUD to develop an acceptable program description. Note that the city does not have a redevelopment area in the town center. Staff felt that having one would have made the process much simpler.

#### PROGRAM EFFECTIVENESS

The city feels the rebate program resulted in facade improvements above and beyond those directly reimbursable through the grants. All the funds in the rebate program have been conditionally committed, and there is a waiting list for the next funds which become available. Since the program's inception in early 1991, one building has been completely retrofitted under the incentive program. The bank-based construction loan program remains untested.

#### PROGRAM STRENGTHS

A major strength of the program is its simplicity. The application is easy to complete and the city is eager to assist property owners with their proposals for seismic and facade improvements. The program requires little incremental staff time, however, as owners easily can and do take the necessary steps on their own.

Because the program offers a rebate grant, with funds disbursed only after the improvements have been completed, the city does not need to be concerned about spending money prior to obtaining the desired results. Owners do not have to worry about carrying the cost of engineering and other upfront expenses; however a \$10,000 grant represents a significant amount of money given labor costs in the city, which makes the money worth waiting for. Because projects can be completed on a timely basis, owners in fact end up carrying the costs for a relatively short time.

Finally, the city is finding that as participants in the programs undertake their projects, other owners are becoming less frightened of the cost and disruption of retrofit and are beginning the process themselves. The programs have thus acted as catalysts.

### KEYS TO SUCCESS

Upland's publicly funded incentive program relies on the fact that it is an entitlement city, and is willing and able to allocate a portion of its CDBG funds to a seismic retrofit program. Keys to the development of the privately-funded program included the concentration of hazardous buildings in a single area and the existence of an owners' organization active in that area, as well as the presence of a number of local banks willing to participate in the program.

### EXHIBITS

- Town Center Construction Loan Program
- Town Center Commercial Rehabilitation Rebate Program
- Excerpts from Commercial Rehabilitation Rebate Program

#### Application Package:

- + Cover Letter
- + Final Application
- + Program Guidelines
- + Program Flow Chart
- + Facade Improvement Guidelines
- + Owner's Participation Agreement
- + Selection Criteria for Engineering Services
- + Directive for the Processing of Plans for Structural Modifications of Unreinforced Masonry Buildings

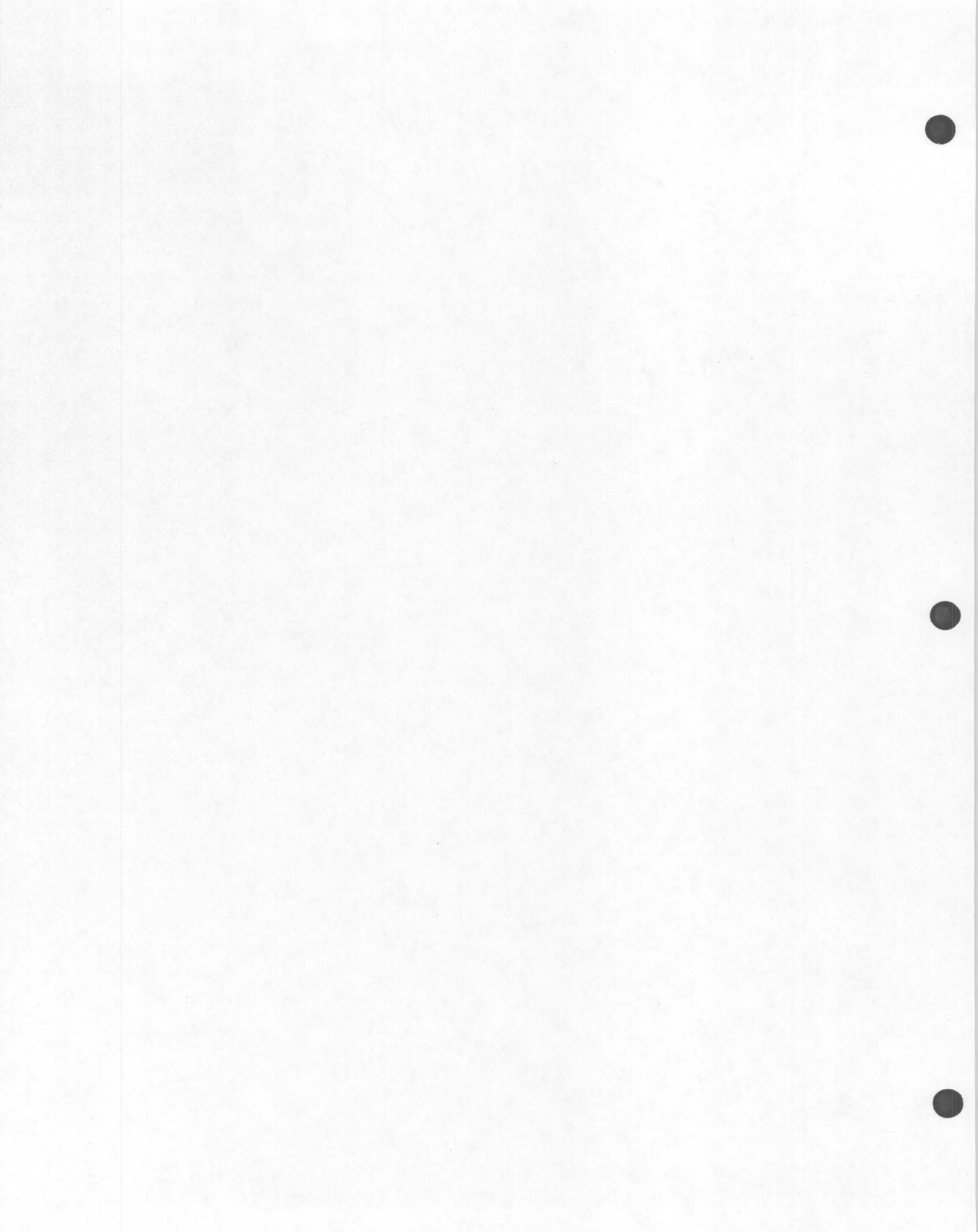
### CONTACTS

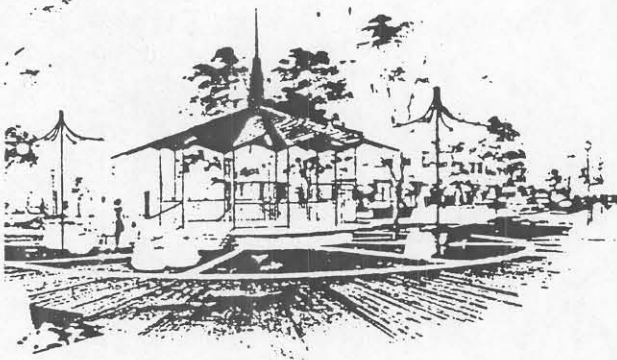
Mark Trabing	Housing and Development Specialist	(714) 982-1352
Jeffery Bloom	Planning Director	(714) 982-1352
John Raymond	Main Street Manager	(714) 949-4499

**CITY OF UPLAND**

**EXHIBITS**







## CITY OF UPLAND

*"The City of Gracious Living"*

460 No. Euclid Ave. P.O. Box 460  
Upland, California 91786  
(714) 982-1352

March 20, 1991

Dear Town Center Building Owner:

Thank you for submitting a Pre-application to the City of Upland Town Center Commercial Rehabilitation Rebate Program. This Pre-application helped us to determine the interest in this program. The interest is great and now we are ready to go. Enclosed please find the Final Application. To assist you in the process of obtaining a maximum of \$10,000 rebate for engineering, architectural services, city fees and eligible facade improvements, the City has developed the enclosed eight documents:

1. Commercial Rehabilitation Rebate Program Guidelines
2. Commercial Rehabilitation Rebate Program Flow Chart
3. Facade Improvement Guidelines
4. Final Application
5. Selection Criteria for Engineering Services
6. Owner's Participation Agreement
7. Interim Design Guidelines
8. Directive For the Processing of Plans for Structural Modifications of Unreinforced Masonry Buildings (for engineer or architect)

Please read this material carefully, and submit the Final Application as per the instructions, as soon as possible. Should you have any questions, please call me at 982-1352.

Sincerely,

Mark Trabing  
Housing and Development Specialist

## UPLAND TOWN CENTER Construction Loan Program

*Created and sponsored by:*

### **CITY OF UPLAND**

P.O. Box 460  
Upland, CA 91785  
(714) 982-1352

### **MAIN STREET UPLAND, INC.**

P.O. Box 364  
Upland, CA 91785  
(714) 949-4499

*A private lending program designed to assist Upland Town Center Property Owners with the seismic retrofit and facade improvement of their buildings.*

## **SUMMARY**

The Upland Town Center Construction Loan Program was established by the City of Upland, Main Street Upland, Inc., and the local lending community to help the Town Center property owners do two things: bring their buildings up to seismic building codes as required by city and state laws, and improve the appearance of the front and rear facades of their buildings.

The program is designed to be a flexible financing tool for the property owners, and to create an opportunity for the local lenders to participate in the seismic retrofitting -- and revitalization -- of the Upland Town Center. The creation of the Construction Loan Program reflects the willingness of the local lending community to fully support the revitalization effort in the Upland Town Center.

This program is designed to finance projects that would be more difficult to finance under conventional loan programs. There is a greater risk in the financing of downtown projects due to the age of the structures and the associated seismic risk.

The "risk" to lenders is reduced by following strict underwriting criteria

while supplying competitive financing rates. Additionally, only projects which have as their primary purpose the seismic reinforcement of the building are allowed to participate in the Program.

The Construction Loan Program is designed to work closely with the City of Upland's Commercial Rehabilitation Rebate Program, funded by Community Development Block Grant money. This program provides up to \$10,000 in rebates to cover the "soft" costs -- structural engineering and architecture, city fees -- as well as eligible facade work.

## **ELIGIBLE EXPENSES**

Eligible project expenses include seismic retrofit, such as shoring up or replacing walls and ceilings, replacing a roof, or construction of a roof diaphragm. (Note: All work may be eligible for loan program purposes if acceptable to the City. Rebate program has limitations relating to certain forms of work.)

## **RATE & TERMS**

The rate and terms of the program are not fixed; rather, the program is designed to provide flexibility to both owners and lenders. Depending on the

strength of the project and the owner's credit, there is the possibility of lower rates or more flexible terms. In most cases, the program provides the owners an opportunity to obtain financing (where they may not have been able to) and technical assistance for their projects.

## **APPLICATION PROCESS**

Borrowers must meet the application and credit criteria of the participating lenders. The City of Upland will make a preliminary determination of the project's eligibility, i.e. that the building requires seismic retrofit and is located in the Town Center target area. It is also anticipated that most of the borrowers will have applied to the City's rebate program as well. Eligibility for the rebate program will be determined upon review of the final application.

Each owner is encouraged to contact the participating lenders for more information about the application process. Each lender has different rates, application process, and set of criteria, so owners are encouraged to discuss their projects with more than one lender. The contact persons at each of the participating lenders are listed on the following page.

## PARTICIPATING LENDERS

### **Pomona First Federal Savings & Loan**

Ted Aiken, Assistant Vice President &  
Community Investment Officer  
550 Indian Hill Boulevard  
P.O. Box 3069  
Pomona, CA 91767  
(714) 625-4871

### **Upland Bank**

Dick Price, Vice President & Manager  
or Kitty Hill, Assistant Vice President &  
Assistant Manager  
100 North Euclid Avenue  
P.O. Box 5009  
Upland, CA 91785  
(714) 946-2265

### **Chino Valley Bank**

Russell E. Scranton, Vice President  
818 North Mountain Avenue  
P.O. Box 1309  
Upland, CA 91785  
(714) 946-6921

### **First Trust Bank**

Paul Stratton, Vice President & Manager  
Foothill Branch  
234 East Foothill Boulevard  
Upland, CA 91786  
(714) 983-0511, extension 440

### **Foothill Independent Bank**

Bill Davis, Vice President & Manager  
569 North Mountain Avenue  
Upland, CA 91786  
(714) 981-8611

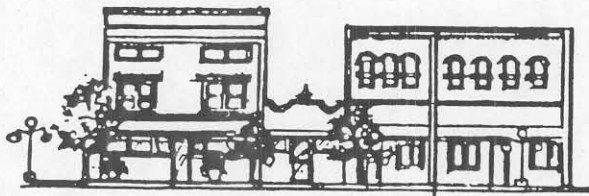
For more information about the **City of  
Upland's Commercial  
Rehabilitation  
Rebate Program**, contact:

Mark Trabing, Housing & Development  
Specialist  
City of Upland  
460 North Euclid Avenue  
Upland, CA 91786  
982-1352

For more information about **Town Center  
Construction Loan Program** or available  
technical assistance, contact:

John Raymond, Director  
Main Street Upland, Inc.  
134 North 2nd Avenue, Suite G  
P.O. Box 364  
Upland, CA 91785  
949-4499

**TOWN CENTER  
COMMERCIAL  
REHABILITATION REBATE  
PROGRAM**




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**\$10,000 GRANT REBATES FOR  
COMMERCIAL BUILDING  
OWNERS UNDERTAKING  
SEISMIC RETROFIT AND  
FACADE IMPROVEMENTS**

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**CITY OF UPLAND**

**P.O. BOX 460  
UPLAND, CALIFORNIA 91786**

**(714) 982-1352**

**SUMMARY**

The **Town Center Commercial Rehabilitation Rebate Program** will reimburse property owners of unreinforced masonry buildings up to \$10,000 for seismic engineering, architectural services, city fees and eligible facade improvements. Rebates will only be made after completion of all required seismic and facade work is complete.

A **Town Center Construction Loan Program** has also been established by local lenders in cooperation with Main Street Upland Inc. and the City. A separate brochure on this program is available from Upland Main Street Inc. or the City.

**PROJECT ELIGIBILITY**

1. The project must be a commercial building located within the Upland Town Center.
2. The project must include:
  - A. Complete seismic reinforcement of the building to meet the City's Seismic Ordinance; and,
  - B. Eligible facade improvements approved by the Planning Department.
3. Priority will be given to projects which contain sales tax generating uses on the ground floor.

## ELIGIBLE EXPENSES

**1. Engineering Plans - Structural** engineering plans, including specifications and cost estimates of structural modifications are an eligible expense. Plans must be done by a licensed structural engineer. Seismic reinforcement of the unreinforced masonry structure must be in conformance with the Upland Seismic Ordinance.

**2. Architectural Plans -** Plans for facade improvements or seismic retrofit (including floor plans, elevations, colors and material samples, and any other appropriate specifications) may be required by the Planning Department. If these plans are done by an architect, then the architect's fee is an eligible rebate expense. Improvements to the facade must conform to the Upland Town Center Interim Design Guidelines.

**3. Facade Improvements -** Supply and installation of signs and awnings where the installation (labor) portion of the contract involves no more than an "incidental amount" (13% of the contract amount). For example, if the total cost of manufacturing and installing a sign is \$3000, and the installation portion of the contract is not over 13% of \$3,000 (\$390), you are eligible for a \$3000 rebate. If the installation or labor portion of the contract is over 13% you will not receive a rebate. Other facade improvements may qualify if they meet the criteria noted above.

### 4. City Fees -

**A. Building Department fees:** plan check fee and building permit fees are reimbursable. Make sure that your engineer does not include these costs in his engineering fee. You will need receipts for plan check and permits to submit to the Planning Department for a rebate after construction is completed. The cost of plan check fees and permit fees for the Building Department will depend upon the extent of construction required.

**B. Planning Department fees:**

A Design Review Board fee (\$90) and Conditional Use Permit fees (if required) are reimbursable.

For an application and a complete information packet on this program, call the City Planning Department.

## CONTACT PERSONS

**For information on the overall  
Commercial Rehabilitation Rebate  
Program:**

Mark Trabing  
Housing & Development Specialist, City  
Planning Department  
460 North Euclid Avenue  
Upland, CA 91786  
(714) 982-1352 Ext. 252

**For facade improvements and  
Design Review Board:**

John Atwater  
Senior Planner, City Planning Department  
460 North Euclid Avenue  
Upland, CA 91786  
(714) 982-1352 Ext 252

**For information on the Town  
Center Construction Loan Program  
or other Town Center programs:**

John Raymond, Director  
Main Street Upland, Inc.  
Second Avenue Mall  
134 N. Second Avenue, Suite G  
Upland CA 91786  
(714) 949-4499



CITY OF UPLAND  
 COMMERCIAL REHABILITATION REBATE PROGRAM  
 FINAL APPLICATION

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Property Information

1. Property Address \_\_\_\_\_
2. Name of Tenant(s) \_\_\_\_\_  
 (Please attach copy of lease) \_\_\_\_\_
3. Property Owner Contact Person  
 (If partnership attach Partnership Agreement) \_\_\_\_\_  
 Address \_\_\_\_\_  
 Phone \_\_\_\_\_

-----  
Project Information

- |  |  |
|--|--|
| 4. <u>Proposed Engineer</u><br>(for seismic) | <u>Proposed Architect</u><br>(for required facade improvements, if an architect is required) |
| Name: _____                                  | _____  |
| Address: _____                               | _____  |
| Phone: _____                                 | _____  |
| Contact Person: _____                        | _____  |

Project Description

5. Give a detailed conceptual description of proposed facade improvements. Also describe seismic retrofit work if you are aware of what work is needed:

Seismic - \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Facade - \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Please attach a Preliminary Design of facade improvements (initial conceptual sketch of improvements) and a photograph of each exposed side of the building to be renovated. Specify in as much detail as you can, including colors and materials.

-----  
Project Financing

6. Proposed sources of funding \$ \_\_\_\_\_  
Owner's Cash Contribution \$ \_\_\_\_\_  
Conventional loan funds \$ \_\_\_\_\_

Firm financial commitment? Yes \_\_\_\_\_ No \_\_\_\_\_  
If yes, please attach documentation

Are you interested in learning more about the Commercial Rehabilitation Construction Loan Program offered by local private lenders? Yes \_\_\_\_\_ No \_\_\_\_\_

Commercial Rehabilitation Construction Loan funds needed \$ \_\_\_\_\_

If you are an owner-user of the building, are you interested in learning more about Small Business Administration (SBA) loan guarantee programs?

Yes \_\_\_\_\_ No \_\_\_\_\_

-----

7. Signature

Date

\_\_\_\_\_  
\_\_\_\_\_

The applicant certifies that the information contained in this application and attachments are true and that you have read and understand the Commercial Rehabilitation Rebate Program Guidelines.

## City of Upland Town Center

## COMMERCIAL REHABILITATION REBATE PROGRAM GUIDELINES

I. SUMMARY

The Upland Town Center Commercial Rehabilitation Rebate Program will reimburse property owners of unreinforced masonry buildings up to \$10,000 for seismic engineering, architectural services, city fees and eligible facade improvements. This document addresses the guidelines for this rebate program.

A Construction Loan Program has also been established by local lenders in cooperation with Main Street Upland Inc. and the City. A separate brochure which addresses this program, is available from Main Street Upland Inc. or the City.

II. PROJECT ELIGIBILITY

1. The project must be a commercial building located within the Upland Town Center.
2. The project must include: a) complete seismic reinforcement of the building to meet the City's Seismic Ordinance; and, b) eligible facade improvements approved by the Planning Department.
3. Priority will be given to projects which contain sales tax generating uses on the ground floor.

III. ELIGIBLE EXPENSES

1. Engineering Plans - Structural engineering work, including plans, specifications, and cost estimates of structural modifications, must be done by a licensed structural engineer. Seismic reinforcement of the unreinforced masonry structure must be in conformance with the Upland Seismic Ordinance. Also see a separate handout contained in this packet titled "Proposed Selection Criteria for Engineering Services."

2. Architectural Plans - Plans (including floor plans, elevations, colors and material samples, and any other appropriate specifications) may be required by the Planning Department's Design Review Board for review of facade improvements. If these plans are done by an architect, then the architect's fee is an eligible rebate expense.

Improvements to the facade must conform to the Upland Town Center Interim Design Guidelines.

3. Eligible Facade Improvements - Supply and installation of signs and awnings where the installation (labor) portion of the contract involves no more than an "incidental amount" (13% of the contract amount). For example, if the total cost of manufacturing and installing a sign is \$3000, and the installation portion of the contract is not over 13% of \$3,000 (\$390), you are eligible for a \$3000 rebate. If the installation or labor portion of the contract is over 13% you will not receive a rebate. Other facade improvements may qualify if they meet the criteria noted above. Please talk to Mark Trabing, Planning Department, before undertaking facade improvements (for which you want a rebate) other than signs and awnings. Also see a separate handout contained in this packet titled "Facade Improvement Guidelines."

4. Permits - The cost of the Building Department's 1) plan check fee and building permit fees are reimbursable. Make sure that your engineer does not include these costs in his engineering fee. You will need receipts for plan check and permits to submit to the Planning Department for a rebate after construction is completed. The cost of plan check fees and permit fees for the Building Department will depend upon the extent of construction required.

The cost of the Planning Department's 1) Design Review Board fee (\$90), and 2) Conditional Use Permit fees (if required) are reimbursable .

#### IV. PROCEDURES REQUIRED FOR A REBATE

1. Submit Final Application, along with attachments (detailed on the application) to the City's Planning Department C/O Mark Trabing, Housing and Development Specialist. Before submitting your application, when you are developing the conceptual idea of your facade improvements, it would be a good idea to talk to John Atwater or the "Current Planning" staff regarding various city requirements which may effect your facade proposal.
2. Planning and Building Departments will review the Final Application and determine if an architect is needed. You will either receive approval of your proposal by a Conditional Commitment letter or you will receive a request to discuss the proposed project with you.
3. Owner hires engineer and architect (if necessary).

4. Owner submits two sets of engineering plans to the City Building Department and one set to the Planning Department. Owner will also submit the Design Review Board Application (which will contain working drawings and specifications of facade improvements) to the Planning Department.
5. The Building Department and the Planning Department's Design Review Board review plans. Plans are approved or owner asked to revise.
6. After engineering plans and facade plans are approved, owner obtains contractor bids for work. Facade work must be under a separate contract than the seismic work.
7. Owner submits to the Upland Planning Department, C/O Mark Trabing : A) a copy of the successful bid(s) for eligible facade work, B) documentation of the cost of engineering and architectural plans, and C) documentation of the cost of permits, plan check fees, Design Review Board fees, and Conditional Use Permit fees (if any). The rebate is based upon the total of these costs.

After the rebate amount is agreed upon (before the beginning of construction), an Owner Participation Agreement (Agreement) will be executed between the City and the building owner. This Agreement will include in Attachment B of the Agreement, a Scope of Work and Budget (the amount of rebate to be paid to the building owner) upon completion of construction. The City will complete Attachment B once it is agreed upon between the City and the Owner. Do not begin seismic or facade improvements until all city approvals and building permits are issued.

8. Owner begins and completes construction.
9. After construction is completed, the building owner will submit to Mark Trabing: a) evidence of final approval of all related building permits; b) a copy of Design Review Board minutes of approval of facade improvements; c) photographs of completed facade improvements, d) invoices for all engineering and architectural design work and for facade work. The rebate designated in the Owner's Participation Agreement will then be paid to the building owner.
10. The amount of the rebate may only be modified by amending the Scope of Work in the Owner's Participation Agreement, and approved by the Housing and Development Specialist. Claims for reimbursements of items not contained in the Agreement and amendments will not be

honored. Facade improvements should be made within 180 days of signing of the Owner's Participation Agreement

Contact persons:

For information on the overall Commercial Rehabilitation Rebate Program:

Mark Trabing  
Housing & Development Specialist, Planning Department  
460 North Euclid Avenue  
Upland, CA 91786  
(714) 982-1352 Ext. 252

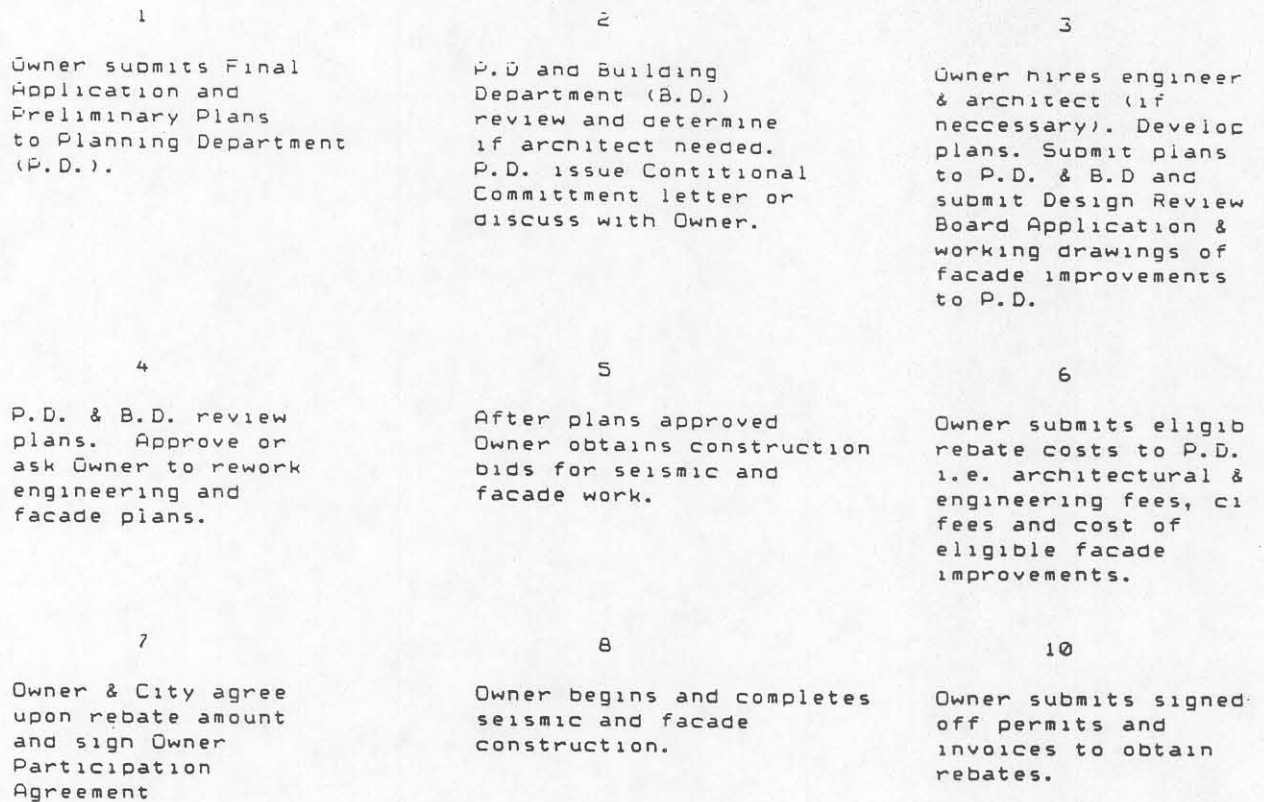
For facade improvements and Design Review Board:

John Atwater  
Senior Planner, Planning Department  
460 North Euclid Avenue  
Upland, CA 91786  
(714) 982-1352 Ext 252

For information on the Commercial Constuction Loan Program or other Town Center programs:

John Raymond, Director  
Main Street Upland, Inc.

TOWN CENTER COMERCIAL REHABILITATION REBATE PROGRAM  
FLOW CHART



Note: See "Commercial Rehabilitation Rebate Program Guidelines" for more detailed procedures.



City of Upland  
Commercial Rehabilitation Rebate Program

FACADE IMPROVEMENT GUIDELINES

The Commercial Rehabilitation Rebate Program has two purposes, assisting property owners to: 1) reinforce their unreinforced masonry buildings, and 2) improve the facade(s) of their buildings, at a level to be determined with the cooperation of the City Planning Department.

Due to federal regulations tied to the use of federal money, the City is restricted on the type of facade improvements it can reimburse owners for. The City will rebate eligible facade improvements, but may require other facade improvements not eligible for a rebate.

The total amount to be rebated will not exceed \$10,000 per building. The amount available for the cost of facade improvements is \$10,000 less the amount billed for engineering costs (for seismic retrofit) and for architectural services (which may be required for facade improvements) and permits (if not included in the engineering costs).

After reviewing your conceptual ideas for facade improvements in the Final Application, the Planning Department may require the building owner to hire an architect to draw plans of the facade improvements for submittal to the Design Review Board. The need for an architect will be made on a case by case basis depending upon the scope of work.

All facade improvements in the Town Center, regardless of participation in the Commercial Rehabilitation Rebate Program, are subject to the Design Review Board process. All facades should comply with all municipal codes including the sign ordinance, as well as the Town Center Interim Design Guidelines. The Planning Department will assist you in determining if your plans are in compliance.

The types of facade improvements you may wish to consider are the restoration, addition or replacement of the following types of facade improvements. The following facade improvements are not necessarily eligible for rebates.

- ornamentation and trim
- doors and windows
- columns or balustrades
- pavement surfaces

- roof systems visible from street
- inappropriate structural additions
- exterior lighting, attached to the building, not free-standing lighting in the public right of way
- landscaping - trees, planter boxes
- shutters
- commercial signs attached to buildings
- repointing of brick work, exterior water treatment
- remove obsolete signs and awnings
- awnings
- any other type of facade improvements you can think of

The following types of facade improvements are definitely eligible for a rebate if the labor portion of the contract is under 13% of the contract price:

Supply and installation of signs and awnings, where the installation portion of the contract involves not more than an "incidental amount" (13% of the contract amount). For example, if the total cost of manufacturing and installing a sign is \$3,000 and the installation portion of the contract is not over 13% of \$3,000 (or \$1,690), you will receive a \$3,000 rebate. If the installation or labor portion of the contract is over 13% you will not receive a rebate. Other facade improvements may qualify for a rebate if they meet the criteria noted above. This rather complicated formula is required by the federal government. Please talk to Mark Trabing, Planning Department, before undertaking facade improvements (for which you want a rebate) other than signs and awnings.

#### Facade Improvement Definitions

For the purposes of this program, the following definitions will apply:

Awnings/Canopy: A temporary, retractable shelter, that is supported entirely from the exterior wall of a building.

Codes: The latest editions of the City of Upland Building Code and Zoning Code.

Design Review: City Planning Department procedures that reviews plans for consistency with the Interim Design Guidelines and other Codes.

Design Guidelines: The Town Center Interim Design Guidelines, developed to ensure sensitive treatment of building exteriors.

Exterior Lighting: Lighting fixtures and the installation of same, attached or connected to a building undergoing

renovation. Exterior lighting does not include free-standing lighting in the public way.

Facade: The entire exterior surface of a building from grade to the roof line. Buildings that abut two streets and/or an alley, empty lot, parking area, or open space may have other faces considered facades at the discretion of the Planning Department.

Landscaping: Items such as trees, bushes, and planter boxes are eligible when considered integral to the facade treatment of the building. The Planning Department will determine eligibility.

Preliminary Design: Initial conceptual sketches of improvements based on the objectives of the owner(s). Preliminary designs are submitted with the Final Application.

Professional Fees: These costs include engineering and architectural services fees and do not include expenses spent on materials, physical improvements, equipment, or labor directly related to their installation.

Shutter: Moveable cover or screen for a door or window to provide protection from the elements.

Sign: Any commercial sign attached to the building which is consistent with the City of Upland Sign Ordinance and the Town Center Interim Design Guidelines.

Working Drawings and Specifications: The detailed drawings which show detailed methods of installation and materials and the specifications to be followed in the construction of the improvements.

City of Upland

COMMERCIAL REHABILITATION REBATE PROGRAM

OWNER PARTICIPATION AGREEMENT

THIS AGREEMENT made and entered into this \_\_\_\_\_ day of \_\_\_\_\_ 1991, by and between \_\_\_\_\_ (hereinafter "Owner") and the City of Upland, a municipal corporation, (hereinafter "City").

WITNESSETH

WHEREAS, Owner is owner of a commercial property commonly known as \_\_\_\_\_ Upland California (the "Property"), which is legally described in Exhibit "A" attached hereto,

WHEREAS, the property is in need of certain repairs and rehabilitation work, the cost of which has the effect of discouraging the upgrading of the property.

WHEREAS, City is the administrator of federal funds which may be used to provide incentives for the rehabilitation of commercial buildings, owned by a private for-profit business, where improvements are limited to the exterior of the building and the correction of code violations.

WHEREAS, Owner desires to undertake improvements to the building with the assistance of the financial incentives offered by the City.

NOW, THEREFORE, for and in consideration of their mutual promises, the Owner and the City hereby agree as follows:

1. REBATE AMOUNT: City shall reimburse Owner an amount not to exceed: \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) upon satisfactory completion of the rehabilitation work upon the property (the "Improvements") in accordance with the Scope of Work and Budget, attached hereto as Exhibit "B" and submission of acceptable evidence of full prior payment of all associated costs.

2. FINANCING: Owner agrees to finance the cost and expenses of constructing the Improvements and cost and expenses incidental thereto, using private funds.

3. TIME OF PERFORMANCE: Owner agrees to cause construction of the Improvements to be commenced and to be prosecuted with due diligence and good faith without delay, so that the same will be fully completed not later than \_\_\_\_\_ days after the date of this Agreement.

4. CHANGES IN WORK: Owner shall not permit any amendments or modification of the Improvements or the performance of any work pursuant to such amendments or modifications, without prior written consent of the City first being obtained with respect thereto.

5. RIGHTS OF INSPECTION: City shall have the right at any time and from time to time to enter the property for the purposes of inspection. Owner agrees to provide access to any such records pertaining to the project as the City may deem necessary to establish proper accounting of rebate amount.

6. INDEMNIFICATION: Owner shall indemnify, defend and hold harmless, the City its officers, agents, or employees from and against any loss, liability, or expense from defense costs, legal fees, and claims for damages that may arise or result from the wrongful acts or omissions or the allegedly wrongful or negligent acts or omissions of the Owner, its officers, agents or employees.

7. AGENCY: It is understood and agreed that the Owner is in no way the agent, employee or contractor for the City and the City will merely reimburse the Owner on the basis set forth in this contract for work and improvements done by the Owner.

8. USE OF DEBARRED CONTRACTORS: Owner shall not directly or indirectly employ, award contracts to, or otherwise engage the services of, any contractor during any period of disbarment, suspension or placement in ineligibility status by the U.S. Department of Housing and Urban Development (HUD) under the provisions of 24 CFR Part 24.

9. RELOCATION: Owner will not cause the displacement of any business, family or individual as defined under the Uniform Relocation Act, as a result of the project.

10. COMPLIANCE WITH REHABILITATION STANDARDS: All plans and specifications must comply with the City of Upland: Building and Fire Codes, Seismic Ordinance, General Plan and Zoning Ordinances and the Town Center Interim Design Guidelines.

11. THIRD PARTIES: This Agreement is made for the sole benefit of the Owner and the City and the City's successors and assigns, and no other person or persons shall have any rights or remedies under or by reason of this Agreement or any right to the exercise of any right or power of the City hereunder nor shall the City owe any duty whatsoever to any claimant for labor performed or materials furnished in connection with the construction of the Improvements.

IN WITNESS WHEREOF, The parties hereto have executed this agreement as of the day and year first set forth hereinabove.

"CITY"

By \_\_\_\_\_  
City Manager

"OWNER"

By \_\_\_\_\_

Attest

\_\_\_\_\_  
City Clerk



**CITY OF UPLAND  
COMMERCIAL REHABILITATION PROGRAM**

**SELECTION CRITERIA FOR ENGINEERING SERVICES**

The City of Upland will not select an engineering firm for the owner, nor will it recommend one firm over another, this document is intended to assist property owners in selecting a qualified and reliable engineering firm for their project. The enclosed requirements include those that the City of Upland will examine when the work is submitted, and gives each owner a set of criteria by which to judge several firms equally.

To be eligible for a rebate, any contract executed with an engineering firm must include language that the engineer has read and reviewed the Seismic Safety Ordinance and attests that the work to be performed is in compliance with it. The costs quoted in a proposal must include the costs of any and all testing to be performed on the structure, as well as the costs of all plans and specifications necessary for a building permit.

I. Proposal Format

Property owners are free to select their own engineers, but should judge firms based on proposals that address the criteria below. Before actually hiring any engineering firm, owners are encouraged to meet and discuss their projects with more than one firm. A description of each firm, for purposes of comparison between firms, should consist of a report including, but not limited to, the following:

- a. Approach and objectives
- b. Methodology
- c. Cost analysis for implementation
- d. Time frame for completion
- e. Firm/team description
- f. Relevant experience
- g. Key personnel
- h. References

II. Scope of Work

The engineer will be required to prepare plans, specifications, and cost estimates to enable the participating owner to proceed with appropriate structural modifications. Because several of the buildings in the Town Center may be eligible for historic designation, the engineer should show some knowledge of and experience in structural engineering and architectural rehabilitation of historic structures, even if the particular property in question is not a historic property. This may include knowledge and experience with the Secretary of the Interior's Standards for Historic Preservation and guidelines for applying the standards for stabilization, rehabilitation, and preservation. The Town Center Interim Design Guidelines loosely follow the Secretary of Interior's Guidelines, even for non-historical buildings.

Engineers will be required to apply these standards and guidelines to any and all modifications to buildings which may be eligible for historic certification. These are buildings which have been identified on the City's Historic Buildings Survey.

For any building, whatever its historic status, the engineer will be required to submit to the Building Department materials sufficient to comply with Section 8109.09 (the reporting section) of the City of Upland Earthquake Safety Ordinance. The text of that section follows:



City of Upland Building Department  
Text of Seismic Ordinance Referring to Engineer's Report

## Section 8109.09

- .050 Format for the Report. The following is a basic outline the format each engineering report should follow. This outline is not to be construed to be a constraint on the professional preparing the report, but rather to provide a skeleton framework within which individual approaches to assembling the information required by the ordinance may be accomplished. It will also serve as a means for the City to evaluate the completeness of each report.
- .0010 General Information. A description of the building including:
- (i) the street address;
  - (ii) the type of occupancy use within the building, with separate uses that generate different occupant loads indicated on a plan showing the square footage of each different use;
  - (iii) plans and elevations showing the location, type and extent of lateral force resisting elements in the building (both horizontal and vertical elements)
  - (iv) a description of the construction materials used in the structural elements and information regarding their present condition;
  - (v) the date of the original construction, if known, and the date, if known, of any subsequent additions or substantial structural alterations of the building;
  - (vi) the name and address of the original designer and contractor, if known, and the name and address of the designer and contractor, if known, for any subsequent additions or substantial structural alterations.
- .0020 Investigation and Evaluation of Structural Systems. All items to be investigated and the methods of investigation for each type of building under consideration are contained in Appendices A and B, available from the city's building inspection department.
- .0030 Test Reports. All field and laboratory test results shall be included in the report. Evaluation of the significance of these test results shall be made with regard to each structural system or typical connection being evaluated. This evaluation may be limited to a statement of the adequacy or inadequacy of the system or connection based on the lateral load demand it would be required to resist by calculation. If tests reveal inadequacy, a conceptual solution must be included in the report.
- .0040 Conclusions. Based on the demand/capacity ratio and the specific evaluation items contained in Appendices A or B attached to the ordinance codified in this chapter, a statement shall be provided explaining the overall significance of the deficiencies found to exist in the building's lateral force resisting system regarding potential collapse or partial collapse failure.

CITY OF UPLAND  
DIRECTIVE FOR THE PROCESSING OF PLANS  
FOR STRUCTURAL MODIFICATION OF UNREINFORCED MASONRY  
BUILDINGS

The Upland Building Department has identified approximately 67 unreinforced masonry buildings within the City. These structures are susceptible to failure in the event of a moderate or strong earthquake. To ensure the safety of the public, the Upland City Council has enacted the Seismic Hazards Ordinance which establishes the process for stabilizing these structures.

To facilitate the seismic stabilization review process, an outline of the process, and the major issues of concern are listed below.

- I. SCOPE OF PROJECT MEETING: With the initial contact between the applicant and the Planning Department, a joint meeting with the Building and Planning Departments, the developer, project engineer or architect will be scheduled. The purpose of the meeting will be to explore the scope of the proposed seismic reinforcement project. If the project location is within the Town Center boundaries, the applicant will receive a copy of the Interim Design Guidelines which outlines the design issues for that area.

The scope of project meeting will also discuss the potential effects of the structural modifications to the architectural integrity of the exterior of the building and the potential future use of the interior.

- II. PROJECT REVIEW PROCESS Any or all of the following boards may review the project. Check with the Planning Department project coordinator for further information:
- A. Administrative Committee
  - B. Design Review Board
  - C. Environmental Review Board
  - D. Planning Commission (public hearing)
  - E. Redevelopment Agency
  - F. City Council

### III. REQUIRED CONSTRUCTION PLAN CONTENT:

#### A. PLANS FOR PLANNING DEPARTMENT

Architectural plans including elevations and floorplans shall be submitted. Plans shall note any proposed modifications to the interior or exterior of the building. Color and material modifications shall also be completely noted and detailed on the plans.

The architectural plans shall also include notes and/or details on the following:

1. Proposed color and/or material changes.
2. Modification to any door and/or window openings, frames or hardware.
3. Modification of exterior pediments, parapets or ornamentation.
4. Removal of or repainting of exterior surfaces. (The methods of paint removal shall be completely noted and detailed on the plans).
5. Addition or removal of awnings or shade providing devices.
6. Removal and/or replacement of exterior facade treatment. (The methods of material removal shall be completely noted and detailed on the plans).
7. Proposed modifications to existing ceiling levels.
8. Proposed locations of interior columns or walls.
9. Addition of brick veneer.

#### B. PLANS FOR BUILDING DEPARTMENT:

Structural plans shall be submitted, including notes and details of any proposed additions or modifications to the interior or exterior of the building. Plans shall include details and locations of the following:

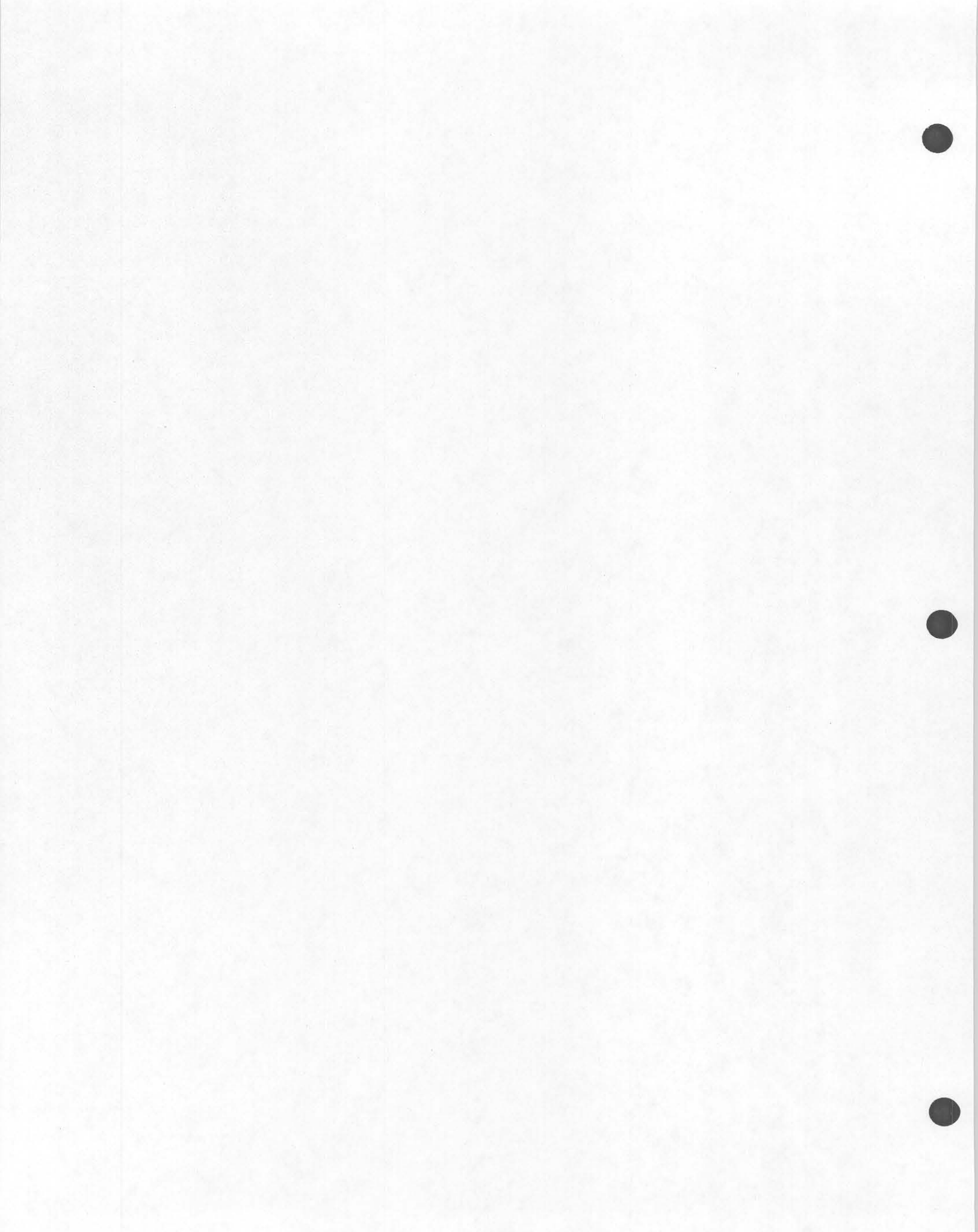
1. The addition of structural frames.
2. The addition or removal of cross or partition walls.
3. All connection details between the roof and wall, floor and wall, or wall to wall.
4. A statement of the theory or methodology followed in accordance with the City of Upland Seismic Ordinance.
5. The statical system used for the stabilization or retrofitting of the structure.
6. The details and description of the parapet connections to the roof diagram.

- IV. CONTRACTOR LIST Applicant's shall submit a listing of the names and phone numbers of all contractors and subcontractors involved in the project to the Building and Planning Departments. This list shall be kept current and specifically identify the responsibilities of each contractor or sub-contractor.
- V. PERIODIC INSPECTIONS The Building and Planning Departments will schedule special, periodic inspections with contractor and/or sub-contractors, prior to commencement of work during various stages of construction. The inspections are on an as need basis, determined by the City staff or at the request of the developer or contractor. The intent of the inspections is for clarification of methods or materials as described on plans submitted to the Building and Planning Departments.

All existing regulations for the processing of building permits and the associated requirements will be the same as for any other structural modification to an existing building.

This directive in no way precludes additional review by the City as determined necessary by the Chief Building Official or the Planning Director.

JZ 8/90



<i>Population:</i>	36,000
<hr/>	
<i>1990/91 General Fund</i>	
<i>Revenues:</i>	\$34 million
<i>Fund Balance:</i>	\$700,000
<hr/>	
<i># URM's:</i>	81
<hr/>	
<i>Type of URM's:</i>	80% commercial 20% residential
<hr/>	
<i>Ordinance Type:</i>	mandatory retrofitting
<hr/>	
<i>Retrofit Incentives:</i>	(1) planning fee waivers (2) zoning incentives (3) rent control modifications (4) Mello-Roos district bonds
<hr/>	
<i>Funding Source:</i>	(1) general fund (2) Mello-Roos district bonds
<hr/>	

### BACKGROUND

Incorporated as a General Law city in November 1984, West Hollywood is one of the youngest cities in Los Angeles County. The strength of West Hollywood's economic base has enabled the city to provide an array of social services to its residents. West Hollywood provides more money per capita to fund social services for its residents than any other municipal government in the United States. The city is located in an area which is highly susceptible to earthquake damage. The Hollywood/Raymond Fault, the Santa Monica Fault and the Elysian Park Fault, a "hidden" fault, all pass through some part of the city's 1.9 square miles.

### HAZARDOUS BUILDINGS PROFILE

The unreinforced masonry buildings (URMs) in West Hollywood were generally constructed before 1933. Thirty-two of the structures originally identified as potentially hazardous buildings were eventually proven to have sufficient structural integrity to be outside the

scope of the city's ordinance. A majority, 63, of the 81 URMs remaining on the list are exclusively commercial in use or a mix of commercial and residential uses. There are 12 apartment buildings, containing a total of 210 residential units, on the list of URMs. The remaining 6 structures include a homeless shelter, a fire station, garages and a warehouse.

#### ORDINANCE

The City of West Hollywood originally adopted Chapter 96 of the Los Angeles County Uniform Building Code as its Earthquake Hazard Reduction Ordinance. Although in effect since 1985, little had been done to require compliance with the noticing and retrofitting schedules. In April 1990, the Departments of Community Development and Rent Stabilization submitted a series of amendments to Chapter 96 which were approved by the City Council. The amendments related to the procedure and timing of seismic retrofit improvements, some policy options for financing incentives, procedures for demolition and the rules and regulations of the Rent Stabilization Ordinance as they relate to seismic rehabilitation.

The amendments to Chapter 96 provided a more flexible schedule to URM owners for complying with the ordinance. The original schedule called for complete retrofitting within 3 years of being served notice, with a 1 year extension upon the early installation of wall anchors. The amended schedule allows 12 to 18 months for the installation of anchors and 4 to 7 years, depending on building type, for full compliance. Under these amendments, all URMs in West Hollywood will have satisfactory wall anchorage within 2 years and full strengthening within 8 years. The amendments also allow the owners of historical buildings an additional 90 days for compliance (included in the schedule referenced above) to accommodate review by the Cultural Heritage Advisory Board.

The noticing section of West Hollywood's ordinance requires the city to record the URM status of a building so that such status is fully disclosed upon sale of the property. The revamped schedule for noticing URM owners under the amendments includes new classifications which attempt to identify structures, such as supermarkets, pharmacies, etc., whose function immediately following an earthquake disaster are important to recovery from such a disaster.

The amendments also addressed the issue of URM owners passing along the costs of retrofitting to tenants in light of West Hollywood's strong rent control ordinance. New amortization schedules and rent increase allowances for seismic retrofit projects were developed. A streamlined process for rent increase applications directly related to seismic retrofitting was also developed.

### INCENTIVE PROGRAM CONCEPT

The seismic retrofit incentive program devised by the City of West Hollywood is multi-faceted. The program provides both financial and non-financial incentives to the owners of URM's.

*Fee Waivers* play a key role in West Hollywood's retrofit incentive program. As an incentive to encourage owners to complete full strengthening of the structure as quickly as possible, the city waives the planning permit fees for owners who choose to do the full retrofit upfront. The city also waives the fee for a rent increase application when such an application is directly related to a rent hike to finance seismic improvements.

*Zoning Incentives* are also part of the city's retrofit program. West Hollywood's zoning ordinance does not require buildings that undergo major rehabilitation to comply with new zoning or land use requirements. This allows building owners to avoid demolishing a building or evicting current tenants because the retrofitted building would not be in compliance with new zoning requirements.

The *Rent Control Modifications* allow owners doing seismic retrofit work to pass through the costs of this work to tenants on a much quicker basis. The rules and regulations of the rent stabilization ordinance were amended to establish a 30-year amortization period for seismic rehabilitation work. The rules regarding the maximum rent increase allowed were also changed for owners doing seismic rehabilitation work. Rent increases over 50% are allowed to be passed on to tenants over a 3 year period. As an example, a rent increase of 60% would result in a 12% increase in each of the first 2 years (12% is presently the maximum annual increase) and an increase of 36% in the third year. It was felt this phasing of the increases would allow tenants sufficient time to look for other housing accommodations if necessary.

A *Mello-Roos District* is being formed by West Hollywood. (See: LOCAL GOVERNMENT FINANCING OPTIONS - MELLO-ROOS COMMUNITY FACILITIES DISTRICT.) The bonds issued by this district will provide a source of long-term, market-rate financing to URM owners. The proposed Mello-Roos district will include 5 properties (4 commercial structures and a 21-unit condominium) and will total approximately \$1 million. It is expected 12 of the 21 condominium units will be included in the district for a total of approximately \$750,000.

### PROGRAM RESOURCE REQUIREMENTS

Of the 4 incentive program components examined above, only the fee waivers have a direct fiscal impact on the city. West Hollywood estimates it will forego a maximum of \$69,000 by



waiving planning permit fees, and a maximum of \$12,000 by waiving rent increase application fees. The zoning incentives do not represent any additional cost to the city. The proposed Mello-Roos bond issue does not represent a direct cost to West Hollywood, but the great amount of staff time spent on developing the district represents an indirect cost to be borne by the city. The city also estimates it will take approximately 10% of one staff person's time for a year to coordinate the initiation of the Mello-Roos bonds loan program.

#### PROGRAM DEVELOPMENT

West Hollywood's revised seismic retrofit ordinance represents a great deal of work by the city's staff, particularly the Housing and Economic Development Division, the Building and Safety Division in the Department of Community Development, and the Department of Rent Stabilization. It was obvious to staff the existing ordinance was not doing what was necessary to address the public safety issue posed by West Hollywood's URMs. The amendments to the ordinance and related policy recommendations represent a tremendous amount of research and groundwork on the part of the city staff. All possible sources of information, such as the programs established by other cities and surveys of West Hollywood's URM owners, were tapped. Not including the time it has taken to establish a Mello-Roos district, it took the city staff approximately 6 months to develop the program.

#### PROGRAM EFFECTIVENESS

Of the 81 URMs originally identified, 12 were removed from the list on appeal from owners who provided information necessary to prove the structures meet current seismic standards. As of April 1992, 41 of West Hollywood's identified URMs had yet to be retrofitted. This number includes the 5 structures that will be joining the Mello-Roos district. Work on the structures which have been retrofitted to date has been financed privately.

#### PROGRAM STRENGTHS

The enforcement follow-through by the Building and Safety Division is considered a strength of West Hollywood's program. Existing city ordinances make it difficult to exercise demolition as a retrofit option, so Building and Safety, realizing that URM owners will most likely retrofit their structures, provided assistance. A regulatory strength of West Hollywood's program is the fact that no extension of retrofit deadlines is accorded a new URM owner. This keeps a property from being passed between fictional owners to avoid retrofit.

KEYS TO SUCCESS

Probably the most important quality resulting in community acceptance of West Hollywood's program was that the city paired a mandatory ordinance with a financing mechanism. The City of West Hollywood also indicated that much of the success this program enjoys can be traced to a dedicated staff person who worked with URM owners. This individual, who is no longer with the city, worked directly with owners to develop strategies for retrofitting their buildings. The city feels this one-on-one contact with URM owners was a major factor contributing to the success of the program.

CONTACT

Rhonda Sherman

Development Specialist

(310) 854-7468



# PROGRAM HIGHLIGHTS

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The previous section provided a detailed look at seismic retrofit programs in several communities throughout the State of California. In this section we would like to give you a glimpse of some additional techniques used by jurisdictions throughout the State to promote retrofitting of privately-owned hazardous structures.

# TOWN OF ARROYO GRANDE

POPULATION:        14,400  
URMS:                20

The Town Council of Arroyo Grande instructed the building department to work with the owners of identified potentially hazardous buildings to retrofit such structures under a “reasonable” timeline. The city originally set a deadline of three to five years for completion of the work, but in recognition of the recent economic downturn, and in the spirit of cooperation on which the program is founded, the city building department is being **flexible with its deadline** for compliance.

The Building Department also provides **reduced permit fees** to owners performing retrofit work. Instead of charging building permit fees on the basis of the valuation of the work, a valuation which the Building Inspector feels is difficult for anyone to make, the city estimates how many inspections it will need to make during the construction process and **charges fees based on the number of inspections and other handling costs the city will incur**. The building department also **allows the continuance of non-conforming uses and waives other aspects of updated zoning regulations** such as parking requirements.

## CONTACT

John A. Richardson                      Chief Building Inspector                      (805) 489-1303 x109 or 104

POPULATION: 106,000

URMS: 517

The City of Berkeley instituted an additional **1/2% transfer tax on property sales** which can either be paid to the city or used by the owner to pay for seismic retrofit work on the building. The city believes owners would rather see the monies go into their properties than into the city's tax coffers. The city estimates that on single-family homes the 1/2% tax would help cover the cost of such improvements as bolting structures to foundations, sheer wall improvements, chimney reinforcement and the like. The city also **waives permit fees** on seismic retrofit projects.

The City of Berkeley ordinance imposes a mandatory unreinforced masonry building (URM) retrofit program. Included in the ordinance is a requirement that owners of such buildings **post a clearly visible warning inside the main entrance of the building** stipulating as follows: "This is an unreinforced masonry building, which under State of California law, constitutes a severe threat to life safety in the event of an earthquake of moderate to high magnitude."

## CONTACTS

Harry Attri	Chief of Codes and Inspections	(510) 644-6526
Sonali Bose	Finance Director	(510) 644-6476
Alan Goldfarb	Councilmember	(510) 644-6399

## CITY OF INGLEWOOD

POPULATION: 112,500

URMS: 60

Inglewood has developed a program which presents **two options for reimbursement of construction costs** to property owners performing retrofit repairs. An owner may choose either to receive (i) reimbursement of up to \$1,000 of the cost of preparation of plans and engineering studies and (ii) 25% of the actual cost of the required improvements **OR** (iii) reimbursement of up to \$3,000 of the actual cost of engineering studies and plan preparation, (iv) 50% of any cost in excess of \$3,000, and (v) the actual cost of plan checking, building permits and related taxes and fees. The city funds this program with CDBG monies. The predominant choice for reimbursement is the second program. Even though the first reimbursement option (i and ii) could potentially result in a larger rebate, property owners avoid it because of the Davis-Bacon Wage laws with which they would have to comply if they use CDBG monies to pay for construction. Owners generally feel that the additional cost associated with compliance would not be offset by the larger rebate. The city estimates the reimbursements will range from a minimum of \$6,000 per building to a maximum of \$12,000 per building. The seismic retrofit program is overseen by two departments: the Building Department handles the technical aspects of the program while the Department of Community Development and Housing handles the financial components.

### CONTACTS

Jose Alvarez	Building Department	(310) 412-5294
Dianna Joe	Dept. of Community Development and Housing	(310) 412-5221

# CITY OF LA VERNE

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POPULATION:        31,100

URMS:                9

The City of La Verne has developed a program, to be funded with redevelopment agency monies, which will provide **property owners with a grant of up to 50% of cost** of engineering and construction for retrofitting. The city set a 5 year goal to complete the repairs, hoping to be able to fund 2 buildings a year at a cost of approximately \$50,000. However, the number of structures retrofitted is dependent on the funds available each year. The city hopes that in addition to the seismic repairs, owners will be encouraged to do facade renovations/restorations.

## CONTACT

Linda Christianson

Community Development Department

(714) 596-8706



# CITY OF SAN DIEGO

POPULATION:     1,144,000

URMS:            1,050

The City of San Diego is unique when compared to the other communities pursuing seismic retrofit programs because it is currently not located in Seismic Zone 4 and therefore is not subject to SB 547, the "URM Law." Approximately 6 years ago, San Diego began a **voluntary review of the unreinforced masonry buildings in the community with the appointment of a City Manager's Committee on the seismic retrofit of older buildings.** Initially, the Building Inspection Department proposed a mandatory retrofit ordinance to the City Manager's Committee. It was soon obvious that such an ordinance would raise immediate opposition from property owners and would certainly not be approved by the city council. The City Manager's Committee is now considering an alternative voluntary ordinance with some mandatory aspects. There is disagreement between structural engineers, local architects and property owners on how, or even whether, the issue should be addressed. There is also some local controversy regarding the possibility that San Diego may be reclassified so it is included in Seismic Zone 4. San Diego does have an existing **requirement that may cause property owners to retrofit a structure when it changes use or occupancy to one more hazardous than the existing use.** There has been some voluntary seismic retrofit work done in San Diego by both private owners and public agencies. The city is interested in, but has been unable to identify, a source of funds which would allow it to make construction grants to owners of hazardous structures.

## CONTACTS

Jean Libby	Building Inspection Department	(619) 236-7338
Peter López	Building Inspection Department	(619) 236-6087

<u>POPULATION:</u>	<u>782,000</u>
<u>URMS:</u>	<u>150</u>

The City of San Jose has identified approximately 150 privately-owned unreinforced masonry buildings (URMs) city-wide. Most of the buildings are almost exclusively commercial/retail, with a few providing low-cost housing on the upper floors. Many of the buildings are on the City Historic Resources Inventory. About half of the URMs are located in redevelopment areas. Fifty five of those, housing 121 businesses, are included in the redevelopment agency's retail focus area. San Jose has developed a multi-level set of programs to encourage retrofitting.

San Jose is **exempting permit fees** on retrofit projects, a program expected to cost the city approximately \$250,000 and the redevelopment agency about \$50,000. San Jose is also offering **design grants** to owners, a program to which the city and redevelopment agency are each contributing up to \$1 million. The city council has approved procedures for forming a **Special Assessment district** to provide long-term, market-rate financing for retrofits.

For owners of retail structures in the redevelopment agency's focus area, San Jose has developed **two grant programs to offset construction costs** at a cost to the redevelopment agency of \$4.6 million over 4 years. Retail buildings in the focus area have been ranked based on 4 criteria: historic significance, consistency with the downtown strategy plan, location within the retail focus area, and key building features such as strategic retail value, condition of building, retail desirability, building owners commitment, and tenant status. Owners of buildings receiving qualified ranking will be eligible for the basic grant. Owners of buildings receiving the highest ranking will be eligible for an additional grant, in exchange for which they will be asked to make a corresponding amount of tenant improvements. The agency also is developing a **tenant assistance program** for commercial and residential tenants located in retrofit assisted buildings.

San Jose also assigned one individual to act as **full time liaison with URM owners and the community**. The Liaison is a part of the City Manager's Department Office of Emergency Services. The Liaison provides information and answers questions about the programs offered by the city and the redevelopment agency, interacting with owners, tenants, the media, and other city departments. The Liaison also supplies the city council and the public with information on the progress which has been made towards retrofitting each of the identified buildings. The Liaison is expected to take a particularly active role in development of the financing district, working with the financing team, and explaining the program to and soliciting feedback from URM owners.

CONTACTS

Robert "Pi" Silverstein	Building Retrofit Program Liaison	(408) 277-4735
Noel Ameele	Redevelopment Agency Development Officer	(408) 277-4744

POPULATION:            87,500  
URMS:                    12

The City of San Mateo adopted a mandatory retrofit ordinance in January, 1990. San Mateo based its ordinance on the Los Angeles model, simplifying it by creating only 2 hazard categories and changing some of the time limits. If an owner installs anchors he or she can take up to 8 years to complete the retrofit; otherwise, the owner must complete retrofit within 3 years. The majority of the buildings affected by this ordinance have historic designations or are contributors to a proposed historic district.

The ordinance also directly addresses the conversion of unused second floors in commercial buildings to residential use. In San Mateo's commercial district there is also an attempt to tie some storefront improvement to retrofit projects. Both second-floor conversion and storefront projects are handled through San Mateo's Housing and Economic Development Division. Assistance in the form of grants and loans is made available for use towards the retrofit of buildings participating in these programs.

Of San Mateo's 12 unreinforced masonry buildings (URMs), 1 has been retrofitted, 3 are presently undergoing retrofit construction, and engineering plans have been prepared for the remaining structures.

## CONTACTS

Fred Cullum	Chief Building Officer	(414) 377-3390
Bob Muehlbauer	Housing and Economic Development	(415) 377-3393

# CITY OF VACAVILLE

POPULATION:        73,000  
URMS:                20

The City of Vacaville has established the "Key Building Loan Program," a **3%, 25 year loan program** to finance the cost of seismic retrofit. A property owner can also receive a **50% matching loan** for tenant improvements. The total amount of these loans is based on underwriting criteria which include a loan-to-value determination, setting a limit on total debt on the structure of up to 80% of the estimated post-rehabilitation property value. The city has an associated **facade loan program** providing up to \$15,000 worth of funding for facade renovation. These programs are paid for out of redevelopment funds through incremental tax revenues, and therefore are limited to those buildings located in the redevelopment area.

## CONTACT

David Gouin

Office of Housing and Redevelopment    (707) 449-5161

Local land use controls can be used to help reduce earthquake hazards. Incentives as well as controls on changes in building occupancy can complement both mandatory and voluntary unreinforced masonry building (URM) retrofitting ordinances. Typically, zoning is viewed in negative terms by many building owners because they perceive the emphasis is "thou shall not ... ." Planning Commissions and zoning administrators often reinforce this perception during the development review process, and public-private partnerships rarely are fostered through zoning. However, this relationship can change if zoning ordinances are used in a positive manner to implement General Plan policies by offering bonuses and other types of incentives to achieve specific public purposes. Notable examples include the density bonuses for affordable housing and transfer of development rights for historic preservation. Lessons learned from these programs may help local governments design similar initiatives to encourage property owners to retrofit and upgrade their hazardous buildings.

Where potential funding sources are limited and, due to bond issuance costs, the advantages of municipal borrowing are perceived as not that much more attractive than private credit, local governments may want to explore how zoning mechanisms can be structured to create specific incentives for retrofitting seismically-unsafe structures. In the preceding chapters, the CASE STUDIES and PROGRAM HIGHLIGHTS show that funding incentives alone may not be sufficient to ensure widespread program participation. Time limits on retrofitting have proven to be effective, particularly when combined with priority ranking systems. Any and all programs can be complemented by zoning incentives, which also could have time limits attached to them in order to reinforce the need to act.

## TYPES OF INCENTIVES

As part of a voluntary retrofit program, or to make a mandatory upgrading program more attractive, five general types of incentives to facilitate seismic upgrading of URMs and other potentially hazardous buildings may be appropriate for local zoning ordinances:

- Density/intensity bonuses;
- Transfer of development rights;
- Reduction in development standards;
- Relief from nonconforming provisions; and
- Restrictions on new occupancy of a potentially hazardous URM or other potentially hazardous building.

Each of these incentives is described more specifically below; choice of the right "incentive package" should be based on local conditions and needs. To show how these provisions might be combined into a comprehensive package, an approach to implementing a zoning incentive program is attached. This can be used as a guide in designing local programs.

### DENSITY/INTENSITY BONUSES

Where a number of URMs contribute to the historical or architectural character of a district or area, a city may want to offer specific increases in the maximum allowable building density or intensity to help offset the added costs of seismic upgrades. To encourage affordable housing, for example, the State requires that a 25% density bonus be provided, recognizing that the cost of providing such housing is greater than the cost of providing market-rate housing. Similarly, a number of communities allow taller or larger buildings if pedestrian amenities, such as plazas, are provided, or if parking is placed underground.

Within each zoning district, similarly-situated properties need to be equally treated so such provisions are not considered "spot zoning." To provide a strong legal foundation for this type of incentive, a community's General Plan policies should specifically identify the purposes to be achieved by a density/intensity bonus program (e.g. "to encourage seismic upgrades and conserve and enhance the community's historic and architectural resources"). The actual standards that would apply should be based on construction cost analysis and urban design and planning studies. As a starting point, local planners should consult the State of California Seismic Safety Commission's *Guidebook to Identify and Mitigate Seismic Hazards in Buildings*. (See: CONTACTS)

A density/intensity incentive program is more likely to work only where the base zoning "envelope" does not provide for substantial development potential but, instead, is geared to maintaining the existing scale of development. Where the zoning envelope is generous, there would be little incentive to participate in the retrofitting program.

### TRANSFER OF DEVELOPMENT RIGHTS (TDR)

The rationale for allowing a property owner to transfer unused development rights to another site is based on the concept that there is a public purpose to be achieved in requiring a seismic upgrade, and the existing use of the building may not generate sufficient income to justify the retrofitting costs. TDR is particularly suited to designated or certified historic

structures where no intensification of use is contemplated or even allowed. Restrictions of the right of transfer could be imposed. For example, transfers might only be allowed to adjacent lots within the same zoning district, or they could be permitted to any lot within the same zoning district, or to lots in specific zones where intensification of development is envisioned. The value of the development right to be transferred should approximate the cost of the retrofitting, so again careful analysis of construction costs is needed as a basis for designing an equitable and effective TDR program.

#### REDUCTION IN DEVELOPMENT STANDARDS

As with the preceding incentives, the objective of allowing for a minor reduction in certain specified building or site development standards would be to offset the added costs associated with retrofitting older structures. Seismically safe structures offer obvious public benefits, so there is some justification for allowing for reduced standards. Again, though, the challenge will be to tie the reduction in standards to the upgrade cost, so a "windfall" is not created, and after paying for the costs of upgrading, owners of URMs face the same requirements as owners of newer buildings.

Provisions for a reduction in development standards should include a specific requirement that the reduction is necessary to meet building standards for seismic safety. Specific restrictions could apply, such as no increase in building height. A time limit could be set, requiring applications for a reduction in development standards to be submitted within a specified period of time following adoption of the zoning incentive program, to coincide with State or local time limits for upgrading URMs.

#### RELIEF FROM NONCONFORMING PROVISIONS

Because many URMs were built before current zoning ordinances were adopted, they may not conform to the development standards that now apply to new construction. For example, there may not be any on-site parking and the setbacks may be less than are now required of new construction. Most zoning ordinances state that such nonconforming structures may not be altered or enlarged unless the alteration or enlargement will result in the elimination of the nonconformity.

To provide relief from these nonconforming provisions, the following exemptions may be made for alterations or enlargements for purposes of seismic upgrade.



- (1) Exterior or interior alterations or improvements may be allowed for purposes of retrofitting a structure occupied by a nonconforming use to meet building standards for seismic safety (*add appropriate reference to code or ordinance requirements*) without elimination of the nonconformity, provided there is no expansion of the use (*or an expansion not to exceed \_\_\_\_\_ percent*).
- (2) A nonconforming structure may not be altered or reconstructed so as to increase the discrepancy between existing conditions and the standards for front yard, side yard, rear yard, height of structure, driveways, or usable open space prescribed in the regulations for the district in which the structure is located unless such alteration or reconstruction is specifically required to meet local building standards for seismic safety (*add appropriate reference to code or ordinance requirement*).

**NEW OCCUPANCY OF A URM**  
**OR OTHER POTENTIALLY HAZARDOUS BUILDING**

A zoning ordinance could require that any applicant for a discretionary zoning permit for occupancy of a URM, or of another potentially hazardous structure that does not conform to current building code standards for seismic safety, present a schedule for upgrading the structure to meet seismic standards within a stated period of time. The Planning Director could require that priority be given to upgrading that would reduce potential hazards which might affect adjacent structures or would reduce the risk of structural failure by improved bracing, foundation anchors or other types of retrofitting.

EXAMPLE OF AN INCENTIVE PROGRAM FOR  
SEISMIC HAZARD UPGRADING USING ZONING INCENTIVES

This program is presented in outline form to illustrate an approach to designing provisions for zoning incentives that will encourage privately-funded seismic upgrading of existing URMs and other potentially hazardous structures.

- (1) Purpose. The purpose of the Seismic Hazard Upgrading Incentive Program for Unreinforced Masonry Buildings (URMs) and other potentially hazardous buildings is to provide financial incentives, consistent with State law (*requirement for mitigation programs*) to property owners and developers who undertake privately-funded upgrading of seismically hazardous structures.
- (2) Who May Apply for an Incentive. A property owner of a URM identified by the city as potentially hazardous, pursuant to \_\_\_\_\_ (*add applicable reference*) may request that the city grant a density or intensity (FAR) bonus or an incentive of financial value equivalent to such density/intensity bonus and a regulatory concession or incentive.
- (3) Types of Incentives. This section does not require the provision of direct financial incentives to finance seismic upgrading, but does provide for waiver of fees or dedication requirements. The following incentives and regulatory concessions or incentives are intended to ensure that the upgrading of seismically hazardous structures can be undertaken at a reduced cost:
  - (A) A reduction in site development standards or a modification of zoning code requirements or architectural design requirements which exceed the minimum building standards approved by the State Building Standards Commission, including, but not limited to, a reduction in setback and square-footage requirements and in the ratio of vehicular parking spaces that would otherwise be required.
  - (B) An increase in the maximum allowable density and/or intensity of land use, not to exceed \_\_\_\_\_ percent of the limit established by the base zoning district.
  - (C) Approval of a transfer of development rights to \_\_\_\_\_ (*specify whether the unused development rights may be transferred only to adjacent lots on the same block, to sites within the same district or to other sites or zoning districts specifically identified on the Zoning Map or in the General Plan*).

*(The development rights that may be transferred could be limited to the "unused" rights on the site, and the ordinance should specify that restrictions on future development are officially recorded and bind future owners.)*

- (D) Approval of mixed use zoning in conjunction with a development project if commercial, office, industrial, or other land uses will reduce the costs of a seismic upgrade for an existing structure and if the commercial, office, industrial, or other land uses are compatible with the upgrading project and the existing or planned development in the area where the proposed upgrading will take place.
  - (E) Waiver of fees for zoning permits, site plan review, building permits and *(specify other types of permits)*.
  - (F) Other regulatory incentives or concessions proposed by the developer or the city, which result in identifiable cost reductions.
- (4) Seismic Upgrade Incentive Agreement Required. After City Council approval of a request of incentives, the property owner shall be required to enter into an agreement with the city to guarantee completion of the proposed seismic upgrade. This Seismic Upgrade Incentive Agreement shall include, but not be limited to, the following provisions:
- (A) The components of the seismic upgrade shall be specified.
  - (B) The specific incentives that the city will make available to the property owner and any conditions pertaining to them shall be described.
  - (C) A commitment that seismic upgrade will be completed within a specified period of time. Security or compliance with these provisions shall be a promissory note in the amount of \_\_\_\_\_ percent of the construction costs, but not less than \$\_\_\_\_\_, secured by a deed of trust against the property.

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Michael V. Dyett, AICP, is founder of Blayney Dyett Greenberg, Urban and Regional Planners, San Francisco, California.

# LOCAL GOVERNMENT FINANCING OPTIONS

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In order for a jurisdiction to implement a hazard reduction program in its community, it is often suggested that the jurisdiction offer some form of financial assistance as an incentive. The problem of financing retrofit of hazardous buildings, however, is both critical and intractable. This chapter discusses the problems associated with financing retrofit projects, and lists sources of public funds which could possibly be used for this purpose.

This chapter focuses strictly on the issue of financing, implicitly assuming that the policy issues have been discussed at the local level and that the jurisdiction has made the commitment to provide financial incentives to owners of hazardous structures. In much of the discussion, this chapter takes the perspective of owners rather than of local government. This is because we assume the readers will be primarily public sector professionals who are conversant with the local government perspective while perhaps less so with private sector rationale. This approach is not intended in any way to minimize the importance of local governments' perspectives and responsibilities, comprising the health, safety and economic welfare of the public, which form the primary incentive for this *Handbook*.

## THE SCOPE OF THE FINANCING PROBLEM:

### ATTAINABILITY, AFFORDABILITY, AND ECONOMIC INCENTIVE

Some owners are able to fund retrofitting projects with their own cash. For those owners, access to financing is not a problem. Most owners, however, are unable to fund retrofitting projects themselves and need to rely to a greater or lesser extent on outside sources of funds.

To be useful it is important that financing be not just available, but also attainable and affordable. Sources of funds can and do exist which might seem to be available for retrofitting projects but which in fact are not attainable. The Rosenthal Bond program illustrates this problem most clearly. Rosenthal Bond funds were designed to be available for retrofit projects if the projects, by virtue of the retrofitting, generate additional revenue and this revenue is available to pay off the bonds. As retrofitting usually is not revenue generating, few if any projects can meet the criteria established by the funding source. To our knowledge Rosenthal Bond funds have never been used. In fact, very few people are aware of the program and the way in which it is meant to work. Many local governments, which are supposed to administer the program, have never heard of it. Various other problems, including subsequent changes in tax laws, have rendered the Rosenthal Bond program virtually useless.

A common hurdle to accessing available sources of funds is the fact that the buildings in need of retrofitting often do not meet the criteria established for these funds. Bank and bond

financing, for example, require that a specified loan-to-value ratio be present as a prerequisite to funding. Owners of highly leveraged buildings and buildings in depressed areas are often unable to meet these criteria and therefore do not have access to these types of financing. This problem is faced most acutely by owners of unreinforced masonry buildings (URMs) who are unable to obtain tenants because their buildings are considered hazardous. Subsequent to the Loma Prieta earthquake, the appraised value of URMs dropped precipitously because of their poor performance in that seismic event. Meanwhile, tenants began shying away from URM buildings, which had a negative impact on owners' cash flows. Owners in this situation would in fact see an increase in revenues as a direct result of retrofitting, as well as an increase in value to pre-quake levels. However, because these buildings generally carry a level of debt that is already based on their pre-quake values, their loan-to-value ratios are too high to permit the additional borrowing necessary for retrofitting projects.

Affordability of the project and its financing is the second major hurdle which trips up most owners considering retrofitting. As mentioned above, retrofitting is not necessarily revenue generating. It is also expensive. While it is commonly accepted that costs for post-earthquake repairs are significantly higher than the costs of retrofitting, owners have no mechanism allowing them to take into account the probability of their particular building being damaged in the next earthquake. Thus, owners who consider retrofitting out of concern about the safety and/or the long-term value of their property find themselves weighing the concrete expenses of retrofitting against perceived but unquantifiable benefits.

Owners must also consider the economic impact of retrofitting on tenants in their buildings. Few retail tenants can afford to interrupt their business for any length of time, and most feel that temporary relocation is impractical. Therefore, long-term retrofit projects causing major disruption would likely result in the loss of tenants. Increased lease rates required to pay for the project also are a concern. This is particularly difficult in the case of smaller buildings, where project costs per square foot are high because the fixed costs of retrofitting are spread over a smaller area. For all these reasons retrofit-only projects are uncommon. Retrofitting has mostly been undertaken in conjunction with larger remodeling projects, which are expected to result in revenues sufficient to compensate for the temporary loss of tenants as well as to at least pay for the project.

In many cases a major disincentive to retrofit is that it provides no net measurable economic benefit to owners. It has been argued that retrofitting property lessens liability exposure, rendering the decision to retrofit economically justifiable. This argument is weak for at least two reasons. First, although retrofit reduces liability exposure, it does not remove it entirely. The second reason relates to the way in which, as a practical matter, liability is handled by owners and insurers. (Note that we are discussing here liability insurance, not earthquake insurance which covers damage to property.) Owners who find themselves at increased

exposure to liability as a result of the hazardous condition of their buildings generally can deal with the matter by purchasing additional liability insurance. The incremental cost of this additional coverage is minuscule in comparison to the owners' other costs of doing business and, of course, to the cost of retrofitting. Insurance companies will offer the liability coverage, typically finding it less expensive to risk the loss than to determine the type of construction of each of the buildings owned by the businesses which it insures. Exposure to liability turns out to provide economic incentive to retrofit only to those large businesses which are self-insured. (See: LIABILITY IMPLICATIONS AND CONSIDERATIONS)

The most compelling way that jurisdictions can make an economic case for retrofit-only projects is by passing ordinances which require that owners either retrofit their property or face demolition. However, some skeptical owners have questioned the efficacy of such ordinances, doubting the political will of jurisdictions to actually carry them out.

Even when faced with the ultimate loss of their property, many owners will not retrofit either because the money to do so is not accessible to them, as discussed above, or because they simply cannot afford to make interest and principal payments on the financings. In discussions with property owners rebuilding in Santa Cruz we found that all but one relied heavily on 4% 30-year financing from the Small Business Administration. (Note that this source of funds is only available for earthquake recovery, not for preventive retrofitting.) All of these owners indicated that they could not have rebuilt their properties without these funds, and even with this low-cost source of financing most found the expense difficult to bear. One owner commented that he does not ever expect to break even, let alone reap economic rewards; he was undertaking the project on behalf of his heirs. Owners who are losing money or breaking even, and who are unable to raise lease rates or rents to pay for the retrofits, are unable to comply with retrofit ordinances. In some instances owners may be willing to raise rents but tenants would be unable to pay; in the case of owners of residential property, jurisdictions may not want or permit them to do so for policy reasons, particularly where affordable housing is at stake. Owners comment that it is unreasonable for jurisdictions to enact tough ordinances without suggesting the means to comply.

It is worth pointing out that the attitude expressed in the above paragraph, while common, is not necessarily appropriate. In many areas of the State healthy aftermarkets are occurring for URM buildings. Some owners are selling their properties, albeit at a loss, while others are attempting to retrofit. Gentrification and revitalization are occurring in some areas. In still other areas, rents are sufficiently high as a result of other market pressures that owners can afford to absorb as overhead the cost of retrofitting. In the City of Los Angeles, two-thirds of the 8,100 identified URMs have been strengthened or are under construction; less than 20% have been demolished.

### BANK LENDING

Faced with a project which needs financing, most owners turn to their local bank. In the case of retrofit projects, the banks are likely to be less than eager to lend. Obvious concerns are credit issues, such as loan-to-value ratios and debt service coverage (the ratio of funds available to make payments, to the principal and interest payments themselves). In a bank's view, retrofit projects are particularly difficult unless the owners have built up enough equity to support the additional loan.

For the most part, the banks look as much if not more at the owner's cash flow and ability to repay the loan; the value of the collateral is a secondary issue, as the bank wants never to have to collect on it. Further, the value of the collateral is, in the bank's eyes, not its cost but its market value. The market value of the property, and thus the bank's collateral, will not necessarily be improved by a retrofit project.

One might argue that the banks should be concerned with their potential for loss when the "big one" hits. We suspect that, as with the liability insurers discussed above, large banks in particular consider it reasonable to take the risk associated with hazardous buildings in their loan portfolio, planning to write off in the future such losses as are incurred rather than to spend money now to prevent potential losses. The banks' loss experience with the Loma Prieta earthquake did nothing to belie this argument.

New bank lenders, ones not already associated with a property, have an even stricter test of the value of the collateral. Until the seismic retrofit is complete, the banker considers that at any moment the earthquake may happen and the structure collapse. From a collateral perspective, then, unless earthquake insurance is available the banker really can only count on the value of the underlying land, less demolition/clean-up costs, less existing loans. It is a rare property that can withstand this form of analysis, and it is a rare bank which today will make such a loan.

The bankers' logic is derived primarily from the perspective taken by bank regulators. Bank regulators painfully scrutinize banks' portfolios and apply harsh tests to determine their creditworthiness. Regulators apply the logic outlined above to the analysis of banks' portfolios, and require that more capital be set aside in reserve against riskier loans. Riskier loans are therefore more expensive for the banks, which must then choose either to forego them in favor of cheaper loans or to pass the added cost onto the borrower. Adding to the borrower's cost, of course, makes it harder for the borrower to pay, debt service coverage deteriorates, and both bankers and owners find themselves in a frustrating position from which bankers extricate themselves by simply withdrawing from the market.

Note that the regulators make no allowances for Community Reinvestment Act (CRA) loans; CRA loans have to meet ordinary credit criteria. However, if the projects could stand up to ordinary criteria we likely wouldn't be relying upon CRA to get them funded. CRA turns out to be a very weak lever with which to pry loans out of the banking community.

### SOME SOURCES OF FUNDS

Owners unwilling or unable to use their own cash or to get bank funding will turn to local government to provide the funds for retrofitting. As mentioned above, this chapter does not address the issue of whether or not local governments should provide any amount of financing. Assuming that the policy decision is made to do so, as a practical matter local jurisdictions are no more able, and in many cases are less able, than property owners and banks to come up with the funds. This section mentions several sources of funds available for retrofitting privately-owned properties. These sources, highlighted in bold, are outlined in more detail later in this chapter.

One source of funds available to some jurisdictions is the **Community Development Block Grant Program (CDBG)** administered by local jurisdictions and funded by the U.S. Department of Housing and Urban Development (HUD). As CDBG is a grant program, the funds need not be repaid to HUD. In its own way CDBG is a very flexible source of funds, allowing jurisdictions to design and administer local retrofit programs. Los Angeles uses CDBG funds extensively for its retrofit program. However, the projects using this funding must comply with strict criteria; generally, the projects must benefit low- and moderate-income individuals. Most large cities (over 50,000 population) and urban counties receive "entitlements" under the CDBG program, funds to which they are entitled and which they receive each year. These funds generally are committed to existing programs. Diverting them to retrofit projects is a matter of political choice.

Owners of properties providing low- and moderate-income housing have perhaps the widest array of financing tools from which to choose. Most can use long-term tax-exempt bond financing which, in today's market, offers an interest rate about two-thirds of bank lending rates. The tax credit program, wherein owners can take direct deductions from their tax bill, is a very powerful tool. At various times the State and Federal governments may offer programs providing financing, subsidies, and/or incentives to property owners to construct, remodel or rehabilitate low- and moderate-income housing. Two State programs, the **California Housing Rehabilitation Program** and the **Marks-Foran Residential Rehabilitation Act**, are particularly applicable to retrofit projects. Most of the previous Federal programs have been replaced by a single new program, dubbed **HOME**. Various other agencies, both public and private, are available to provide funding for low- and moderate-income housing.



The financing processes and requirements for funding low- and moderate-income housing are very complex. An industry of bankers and consultants is poised to help eligible owners seeking such financing. Most owners nonetheless suffer from both the attainability and the affordability problem. Simply stated, the fundamental difficulty is that in order to afford to finance new projects, even at relatively low interest rates, owners need to raise rents. This, of course, could defeat the purpose of the housing, and may render it ineligible for these sources of funds. Further, because of the complexity of the field, it is generally not economical to seek financing of this sort for projects costing less than several million dollars.

Other sources of funds are available for particular types of properties. **Marks Historic Bond Act** funding is available to aid in the rehabilitation of historically or architecturally significant structures. The **Small Business Administration** offers a number of programs, the most applicable being a loan guarantee program for owner/tenants in seismically hazardous buildings.

In addition to the Federal and State programs mentioned above, bond financing can be an option for local jurisdictions wishing to offer market-rate financing to property owners in their community. **Special Assessment District** financing has proven useful in at least two cities, and **Mello-Roos Community Facilities District** financing, a similar technique, should also be helpful. However, both attainability and affordability can be problems with these types of financing. Possible additional sources of bond financing are **Tax Increment Financing** (also known as Tax Allocation Bonds) available to properties in redevelopment areas, taxable **General Obligation** bonds, which must be approved by a two-thirds vote, and **Public Purpose Bonds** which must be issued primarily for other public capital improvements allowing no more than 5% of the bond proceeds to be used for the purpose of retrofitting privately-owned property. The latter three techniques have never to our knowledge been applied for the purpose of retrofitting privately-owned property. A great deal of study, particularly on the part of bond counsel, and especially with regard to public purpose bonds, would need to be undertaken before these techniques could be recommended as sources of funds for local jurisdictions.

On the following pages you will find more detailed descriptions of the sources of funds highlighted in bold in this section. These sources of funds, although limited, are tools available to local governments interested in promoting retrofitting.

(Winter, 1991)

**LOCAL GOVERNMENT  
FINANCING OPTIONS**

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**STATE AND FEDERAL PROGRAMS**

## **CALIFORNIA HOUSING REHABILITATION PROGRAM**

*(Propositions 77, 84 and 107)*

*(California Government Code - Section 8878.15 et seq.)*

**General:** The California Housing Rehabilitation Program (CHRP) is administered by the California Department of Housing and Community Development (HCD) and is funded by General Obligation Bonds sold by the California State Treasurer. The program is divided into four categories, with funds allocated to each of those categories and split between rural and non-rural projects. The table below shows the project categories and the amount of funding available under each. CHRP is open to any individual or public or private entity capable of owning, rehabilitating and managing rental housing. Funds are allocated on a competitive basis.

<b>Program Category</b>	<b>Rural Appropriated (\$MM)</b>	<b>Rural Used (\$MM)</b>	<b>Non-Rural Appropriated (\$MM)</b>	<b>Non-Rural Used (\$MM)</b>
Seismic retrofit of Unreinforced Masonry Buildings (URMs)	4.0	none	16.0	13.65
General rehabilitation and acquisition of projects requesting seismic retrofit	4.0	none	16.0	13.65
Nonseismic general rehabilitation and acquisition	13.8	2.1	18.3	18.3
Single Room Occupancy (SRO) hotel/model rehabilitation and acquisition	6.8	none	10.2	9.375

**Benefits:** Through the CHRP program, HCD provides low interest loans directly to project sponsors. The interest rate on these loans is 3% calculated on a simple basis. The minimum term for rehabilitation-only projects is 20 years. The minimum term for refinance/rehabilitation or acquisition/rehabilitation is 30 years. Longer terms or 10-year extensions are sometimes available. Usually, annual interest-only payments are required with the principal due as a balloon payment at the end of the term.

**Types of Properties:** CHRP loans may be used for various types of rental housing developments to be occupied by very low-income and other lower income households, with some funds specifically targeted for SROs.

**Jurisdiction's Responsibilities:** The CHRP program does not require the participation of the municipality.

**Owner's Responsibilities:** It is the owner's responsibility to submit a complete application on a timely basis. Proposals at the most advanced stages are more likely to be funded.

**Limitations:** Under this program, loan limits for rehabilitation-only projects are \$15,000 per SRO unit, \$25,000 per 0-2 bedroom apartment and \$35,000 per 3+ bedroom apartment. An additional \$10,000 per unit is allowed when the project includes both rehabilitation and acquisition. New construction is ineligible.

After rehabilitation under this program a project must comprise a rental housing development with assisted units. Rent limitations apply to all assisted units for the full term of the agreement, regardless of prepayment, sale or transfer.

The CHRP program includes significant relocation rights and obligations. A URM must meet the following requirements to be eligible for program funds:

- (1) At least 50% of the gross floor area will be used for residential purposes
- (2) The building has been identified as "potentially hazardous" by the local building department due to the need for seismic reinforcement, and is located in a jurisdiction that has inventoried its unreinforced masonry buildings and has adopted a mitigation ordinance.
- (3) The building contains at least 6 residential units, and at least 70% of these units will be assisted units.
- (4) The assisted units could not be reinforced without also reinforcing the nonassisted units or nonresidential space.

For nonprofit sponsors, total after-rehabilitation debt may not exceed 100% of after-rehabilitation value. For for-profit sponsors, after-rehabilitation debt may not exceed 90% of after-rehabilitation value. HCD publishes a chart listing the maximum allowable initial gross rent by county and unit type.

**Comments:** Applications are accepted on an ongoing basis until all program funds have been committed. This program is very well suited for the rehabilitation of structures presently housing low-income residents, but remains limited in usefulness in many other aspects.

Property owners feel the requirements which must be met under this program are overly restrictive, particularly the percentage of residential units which must be reserved for low-income residents and the tenant relocation guidelines.

**Contact:** Department of Housing and Community Development  
P.O. Box 952051, Sacramento, CA 94252-2051  
(916) 445-6501

## ***COMMUNITY DEVELOPMENT BLOCK GRANTS***

***General:*** Community development block grants (CDBG) provide Federal funding for programs that are designed and administered by local governments. CDBG funds flow through to municipalities in various ways dependent upon the size and location of the municipality. Large cities and urban counties, as well as some smaller cities, receive entitlement funds from this program on an annual basis. Municipalities under 50,000 in population, which are not qualified for entitlement funds, may apply to the State through a competitive process for funds in the "Small Cities" program.

The CDBG program is administered by the Department of Housing and Urban Development (HUD). Authorized under Title I of the Housing and Community Development Act of 1974 as amended, the primary objective of the program is to provide "decent housing and a suitable living environment and expanding economic opportunities, principally for persons of low and moderate income." Activities funded through CDBG must also meet one or more of the three National Objectives: (i) benefit to low and moderate income individuals, (ii) aid in the prevention or elimination of slums or blight, or (iii) address other community development needs having a particular urgency because existing conditions pose a serious and immediate threat to the health or welfare of the community where other financial resources are not available to meet such needs.

***Benefits:*** CDBG funds are among the most flexible sources of financing of eligible projects. Municipalities may design grant and loan programs tailored to their communities' needs.

***Types of Properties:*** Many different types of properties can be served by CDBG funded programs. Designing a program which meets eligibility requirements may or may not be difficult, depending upon the complexity of the program being designed and on the activity and National Objective which the program is designed to meet. The table on the following pages, derived from HUD's *Guide to Eligible CDBG Activities*, outlines possible categories of programs for which a municipality might choose to use CDBG funds.

***Jurisdiction's Responsibilities:*** Jurisdictions must design and administer CDBG-funded programs. Those jurisdictions which receive entitlement funds can use a portion of those funds for a seismic retrofit program. Non-entitlement municipalities must apply to the State through the State CDBG "Small Cities" program. Jurisdictions seeking to use CDBG funds for seismic retrofit programs should seek additional guidance from HUD.

***Owner's Responsibilities:*** Owners need to meet the criteria established by the municipality for distribution of CDBG funds and must apply to the municipality for those funds.

**Limitations:** The National Objectives of CDBG are very specific for commercial and industrial buildings. Only certain activities are eligible under a CDBG-funded retrofit program. Under the "Small Cities" program, the maximum amount allowable per activity is \$500,000.

**Comments:** Municipalities which receive entitlement funds generally direct most of those funds to ongoing programs. Retrofitting could be very expensive, requiring a large allocation of funds. Reprogramming funds from ongoing programs to a retrofitting activity could prove politically difficult. The "Small Cities" program for non-entitlement jurisdictions is very competitive. The program has \$24 million to distribute annually, and receives anywhere from \$35 to \$75 million in applications. To have a reasonable chance of being accepted, "Small Cities" applications should address a number of CDBG objectives. Retrofitting alone is unlikely to be competitive.

**Contact:** Housing & Urban Development Department  
Regional Office - Region IX  
450 Golden Gate Avenue, San Francisco, CA 94102  
(415) 556-5900  
or  
Your regional office

Eligible Activity	Objective	Qualifies If	Example
<p><b><u>Housing Rehabilitation:</u></b>                      Rehabilitation of any publicly or privately owned residential property, including the conversion of non-residential property for housing, provided such rehabilitation meets a national objective</p>	<p>Low/Moderate Housing</p> <p>Slum or Blighted Area</p> <p>Spot Blight</p>	<p>The housing to be rehabilitated is occupied or will be occupied by Low/Moderate income persons. Rental units must be occupied at affordable rents</p> <p>Housing rehabilitation for households not known to have Low/Moderate incomes qualifies if:</p> <ul style="list-style-type: none"> <li>(1) the structure rehabilitated is located within a designated slum or blighted area;</li> <li>(2) housing deterioration is one of the conditions which contributed to the deterioration of the area; and</li> <li>(3) the structure to be rehabilitated is considered substandard under local definition before rehabilitation (such definition being at least as stringent as standards used in the Section 8 Housing Assistance program)</li> </ul> <p>Housing rehabilitation for households not known to have Low/Moderate incomes qualifies if:</p> <ul style="list-style-type: none"> <li>(1) the structure rehabilitated is located within a designated slum or blighted area; and</li> <li>(2) the rehabilitation is limited to the extent necessary to eliminate specific conditions detrimental to public health and safety</li> </ul>	<p>Conversion of non-residential structures into permanent housing for Low/Moderate persons.</p> <p>Correction of substandard conditions in housing units located in designated blighted areas exhibiting housing deterioration</p> <p>Elimination of faulty wiring, falling plaster or other similar conditions that are hazardous to all potential occupants</p>



Eligible Activity	Objective	Qualifies If	Example
<p><b><u>Special Economic Development:</u></b>                      Commercial or industrial improvement carried out by the municipality or a nonprofit, including acquisition, construction, reconstruction or installation of commercial or industrial buildings or structures and other real property equipment and improvements, or assistance for private for-profit entities for an activity determined to be "necessary or appropriate" (as specifically defined by the regulations) to carry out an economic development project.</p>	<p>Low/Moderate Area Benefit</p> <p>Low/Moderate Jobs</p> <p>Slum or Blighted Area</p>	<p>The assistance is to a commercial business which serves a Low/Moderate income residential area</p> <p>The assistance is directly linked to the creation or retention of permanent jobs, at least 51% of which are for Low/Moderate income persons</p> <p>The assistance is to a business in a designated slum or blighted area and addresses one or more of the conditions which contributed to the deterioration of the area</p>	<p>Assistance to neighborhood businesses such as grocery stores and laundromats, typically qualify</p> <p>Assistance to a manufacturer in financing an expansion which will create permanent jobs, at least 51% of which are for Low/Moderate income persons</p> <p>A low-interest loan to a business as an inducement to locate a branch store in a redeveloping blighted area</p>

Eligible Activity	Objective	Qualifies If	Example
<p><u>Clearance:</u>                      Clearance, Demolition, Removal of Buildings and Improvements, Movement of Structures to Other Site</p>	<p>Spot Blight</p>	<p>Clearance is undertaken to eliminate specific conditions of blight or physical decay on a spot basis not located in a slum or blighted area</p>	<p>Demolition of an abandoned and deteriorated structure</p>

Other categories of activities which might usefully be explored, always bearing in mind CDBG's national objectives, are Relocation: payments and assistance to individuals, families, businesses, nonprofit organizations and farms; Historic Properties: rehabilitation, preservation and restoration programs; and Commercial or Industrial Rehabilitation: for private for-profit businesses to the extent that rehabilitation is limited to improvements to the exterior of the building and the correction of code violations.

## *THE HOME PROGRAM*

***General:*** The HOME Program, a new housing assistance program from the Department of Housing and Urban Development (HUD), was created under Title II (the Home Investment Partnerships Act) of the National Affordable Housing Act of 1990. The general purposes of HOME include:

- To expand the supply of decent and affordable housing, particularly rental housing, for low- and very-low-income Americans. Such housing includes existing rental housing made affordable through tenant-based rental assistance.
- To strengthen the abilities of State and local governments to design and implement strategies for achieving adequate supplies of decent, affordable housing.
- To provide both financial and technical assistance to participating jurisdictions, including the development of model programs for affordable low-income housing.
- To extend and strengthen partnerships among all levels of government and the private sector, including for-profit and nonprofit organizations, in the production and operation of affordable housing.

HOME funds are available to States, cities, urban counties and consortia (contiguous units of local government). Funding for the HOME program includes a \$25 million set-aside for technical assistance. HOME funds are allocated by formula, with 60% of these funds available for cities, counties and consortia and 40% for States. Each participating jurisdiction will be required to set aside 15% of its formula allocation for development of projects owned, developed or sponsored by community housing development organizations (CHDOs). HOME funds may be used for a variety of activities to develop and support affordable housing. Eligible activities include: tenant-based rental assistance, assistance to first-time homebuyers and existing homeowners, property acquisition, new construction, reconstruction, moderate or substantial rehabilitation, site improvements, demolition, relocation expenses and other reasonable and necessary expenses related to development of non-luxury housing.

***Benefits:*** The HOME program is not a categorical housing program requiring a specific housing activity. Instead, the HOME program provides States and local governments flexibility to decide what kind of housing assistance, or mix of housing assistance, is most appropriate to meet their housing needs.

**Types of Properties:** Many different types of properties can be served by HOME program funds. The HOME program is structured to encourage States and local governments to use HOME funds most efficiently by requiring the smallest State and local matching contributions for the most cost-effective housing activities.

**Jurisdiction's Responsibilities:** Before receiving HOME funds, a jurisdiction must prepare (and HUD must approve) a Comprehensive Housing Affordability Strategy (CHAS), submit a notice of intent to participate, and provide a program description.

**Owner's Responsibilities:** The HOME program is specifically designed to meet the housing needs of low- and very-low-income residents, so the residents of buildings whose owners are applying for HOME program funds must meet HUD income guidelines if the project is to be eligible.

**Limitations:** HOME funds may not be used to pay for any administrative costs of a participating jurisdiction. Other activities prohibited under the HOME program include public housing modernization, tenant subsidies for certain special mandated purposes under Section 8, matching funds for other Federal programs, Annual Contributions Contracts (ACCs), activities under the Low-Income Housing Preservation Acts of 1987 and 1990, and operating subsidies for rental housing. Additionally, the funds cannot be used to create a reserve to undertake those activities at a later date.

**Comments:** As cities have not received HOME funds in the past, there are no established programs dependent on this source. Using these funds for seismic retrofit projects therefore will not require reprogramming, which may make the HOME program more accessible for seismic retrofit projects than established funding sources such as CDBG. However, as it is a new Federal program, we have no track record from which to judge the availability of HOME funds for this purpose.

**Contacts:** Office of Affordable Housing Programs  
U.S. Department of Housing and Urban Development  
451 Seventh Street, SW  
Washington, D.C. 20410  
or  
Housing and Urban Development Department  
Regional Office - Region IX  
450 Golden Gate Ave., San Francisco, CA 94102  
or  
Your HUD regional office

## ***THE SMALL BUSINESS ADMINISTRATION (SBA)***

***General:*** The Small Business Administration (SBA) program most likely to be of interest to owners of seismically hazardous buildings is the Guaranty Loan Program. Loans are made by private lenders with a percentage of the loan amount (up to a maximum of \$750,000) guaranteed by the SBA. Loan terms are dependent upon the use of the loan proceeds.

***Benefits:*** Interest rates on SBA guaranteed loans range from prime rate plus 2.25% to prime rate plus 2.75%, depending on the term of the loan.

***Types of Properties:*** This program is only suitable for small businesses that are owner/tenants in seismically hazardous buildings. The proceeds from a loan through this program may be used for leasehold improvements.

***Jurisdiction's Responsibilities:*** This program does not require the direct participation of the municipality.

***Owner's Responsibilities:*** The owner must initiate this process by contacting the SBA. An applicant must have an historical earnings and cash flow record which demonstrates an ability to repay the loan. An acceptable tangible net worth is required to demonstrate that the business operates on a sound financial basis.

***Limitations:*** The SBA requires sufficient assets be pledged as collateral. Although the SBA does not set minimum loan amounts, it is unusual to find a lender willing to participate in loans for amounts under \$50,000.

***Comments:*** A decision on a loan package is usually made within 10 working days after it is received by the SBA, not including the bank's processing time. A list of local lending institutions that participate in this program can be obtained from the SBA. This program can prove helpful to owners who can qualify for a loan but have been unable to find a bank willing to provide one. The Guaranty Loan Program will be of little help to owners who need some type of subsidy in order to afford a retrofit project.

***Contact:*** Small Business Administration  
San Francisco District Office  
211 Main Street, San Francisco, CA  
(415) 744-6820  
or  
Your district office

**LOCAL GOVERNMENT  
FINANCING OPTIONS**

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**BOND PROGRAMS**

## **GENERAL OBLIGATION BONDS**

*(California Government Code - Section 43600 et seq. for cities)*  
*(California Government Code - Section 29900 et seq. for counties)*

**General:** AB 1001 (Chapter 658, Statutes of 1991) allows the use of General Obligation (GO) bonds to finance the seismic retrofit of privately-owned hazardous structures. GO bonds are repaid from property and other general taxes levied throughout a jurisdiction so they must be used to finance projects with a public benefit.

**Benefits:** The funds from sale of GO bonds can be used to provide financing to owners of hazardous structures on any terms established by the municipality.

**Types of Properties:** A GO-funded loan program can be designed to finance retrofit of any type of property, assuming the project provides a public benefit.

**Jurisdiction's Responsibilities:** The jurisdiction must design and administer the program, issue the bonds, and make bond payments.

**Owner's Responsibilities:** The owner must agree to meet the requirements of the program.

**Limitations:** As with any GO bond, the issue must be approved by a two-thirds vote. General Obligation bonds are also subject to a jurisdiction's statutory debt limit.

**Comments:** To our knowledge, this financing mechanism has not been used by local governments to fund retrofitting of privately-owned structures.

**Contact:** Financial Advisor, Investment Banker, and/or Bond Counsel

***MARKS-FORAN RESIDENTIAL REHABILITATION ACT***  
***(California Health and Safety Code - Section 37910)***

**General:** The Marks-Foran Residential Rehabilitation Act authorizes cities, counties, housing authorities and redevelopment agencies to issue tax-exempt revenue bonds to finance residential rehabilitation. The rehabilitation program should be based on a public improvement plan reviewed and adopted by a citizens committee. Any work pursued with funding from this program must comply with a municipality's rehabilitation standards. The funds from such a Marks-Foran bond issue can be used to provide long-term, low-interest loans to owners of residential property.

**Benefits:** Marks-Foran bonds provide loans at tax-exempt rates to property owners.

**Types of Properties:** Single-family and multi-family residential properties qualify for Marks-Foran bond financing. Commercial properties may qualify if located in a designated residential rehabilitation area.

**Jurisdiction's Responsibilities:** The sponsoring municipality must designate an area for residential rehabilitation, must design and administer the loan program, and must issue the bonds.

**Owner's Responsibilities:** Property owners must apply for funding and demonstrate ability to repay loans.

**Limitations/Comments:** Up to 20% of loans for absentee-owned property and up to 40% of loans for owner-occupied property may be used for general property improvements not required by such local rehabilitation standards. Funds can also be used for architectural, engineering, appraisal, origination and other fees.

**Contact:** Financial Advisor, Investment Banker, and/or Bond Counsel



**MARKS HISTORIC BOND ACT**  
*(California Health and Safety Code - Section 37600 et seq)*

**General:** The Marks Historical Rehabilitation Act of 1976 allows a city, county, city and county or a redevelopment agency to issue bonds to finance the rehabilitation of historic properties. The project may comprise acquisition, relocation, reconstruction, restoration, renovation or repair of the historical property for any of four purposes, one of which is to provide for the safety of occupants or passersby. Prior to issuing bonds under this program, a municipality must adopt a historical rehabilitation financing program and designate historical rehabilitation areas.

**Benefits:** Provides tax-exempt financing to aid in the rehabilitation of historically or architecturally significant structures.

**Types of Properties:** Property must be "historical property" as defined by the Marks Act, (such as property listed on existing national, State or local historical registers or official inventories).

**Jurisdiction's Responsibilities:** A jurisdiction must adopt an historical rehabilitation financing program, setting forth the architectural and/or historical criteria to be used in selecting historical properties which may be eligible for rehabilitation financing. The jurisdiction's legislative body must designate historical rehabilitation areas using specified criteria. The jurisdiction must also allow affected citizens to participate in the planning and implementation of the historical rehabilitation financing program and in the designation of historical rehabilitation areas, providing for a maximum of citizen participation, including the establishment of a citizens advisory board.

**Owner's Responsibilities:** Owner must provide documentation that the structure meets the criteria for selection as an historically/architecturally significant building.

**Limitations:** Loans made under a Marks Historic Bond Act program must meet the following criteria:

- (1) outstanding loans on the project property, including the loan for rehabilitation, cannot exceed 90% of the post-rehabilitation value of the property
- (2) repayment period cannot exceed 40 years or 4/5 of the expected economic life of the property, whichever is less
- (3) loan must be used only for historical rehabilitation work as defined in the Act.

**Comments:** A seismic retrofit program designed around historically significant buildings may be an appropriate option for a community with a traditional downtown area that contains a number of historically significant structures and a high concentration of seismically hazardous structures. A municipality's historical rehabilitation financing program may include a public improvement portion. Such infrastructure improvements must take place within a designated rehabilitation area. A rehabilitation agency can also buy historical properties with this financing.

**Contact:** Financial Advisor, Investment Banker, and/or Bond Counsel

## **MELLO-ROOS COMMUNITY FACILITIES DISTRICT** *(California Government Code - Section 53311 et seq.)*

**General:** The Mello-Roos Community Facilities District Act of 1982, subject to certain limitations, allows jurisdictions to provide market rate loans to private property owners to finance seismic retrofit work. Mello-Roos is therefore useful as an alternative to private financing mechanisms, particularly when private financing is limited.

Mello-Roos bonds are payable from and secured by a special tax on the properties in the district, so a jurisdiction is not legally liable for the debt incurred under this type of issue. The special taxes are generally collected with property taxes, and are in place only so long as they are needed to pay principal and interest on the bonds. The interest on Mello-Roos bonds issued to finance seismic rehabilitation of private properties is exempt from California State taxes but is subject to Federal taxation. Mello-Roos financings are similar to Special Assessment financings. (See: SPECIAL ASSESSMENT DISTRICTS)

**Benefits:** Mello-Roos bonds can provide financing at rates comparable to bank lending rates. Mello-Roos districts are geographically flexible, and can be designed to include all owners who are interested in and qualify for the financing. Depending on the guidelines for membership (e.g. value to lien requirements, etc.) Mello-Roos financing may be easier to qualify for than traditional financing.

**Types of Properties:** Mello-Roos bonds can be used to finance the retrofit of all types of privately owned, seismically hazardous structures.

**Jurisdiction's Responsibilities:** As a prerequisite to establishing a seismic retrofit Mello-Roos district, a municipality must adopt a mandatory retrofit ordinance which sets specific code requirements. The ruling legislative body of the jurisdiction must also adopt a resolution of intention to establish the district, levy the special tax, and issue the bonds. The legislative body must within 60 days hold a public hearing on the formation of the district and the issuance of bonds, and then must submit the matter to a vote. The issue requires a "yes" vote from all property owners included in the district. The jurisdiction generally assembles and works with a financing team to help establish criteria for allowing property owners to join the district, to help work with the owners of URMs and other seismically hazardous structures, and to bring the bonds to market. Once the bonds have been issued, the jurisdiction's responsibilities include monitoring of construction and administration of the district.

**Owner's Responsibilities:** Owners must decide to become members of the district and demonstrate their ability to meet criteria established for membership in the district.

**Limitations:** Some limitations to the use of Mello-Roos financing to pay for seismic safety work on privately owned buildings are:

- (1) financing may be used to pay only for work necessary to comply with locally adopted seismic retrofit standards
- (2) financing cannot be used to demolish, replace or repair a building unless it is located in the disaster area declared as a result of the Loma Prieta earthquake of October 1989
- (3) all work financed on historical buildings must be done in accordance with the State Historical Building Code
- (4) the district must be authorized by a 100% "yes" vote (i.e. the district may only include the properties of those owners who want to participate in, and who qualify for, the Mello-Roos program)
- (5) Mello-Roos bonds may only be issued for this purpose prior to October 17, 1994

Mello-Roos bonds may be used to finance work on privately owned buildings. They cannot finance the retrofit of public buildings, because properties owned by government agencies are exempt from the taxes which are levied on properties in a Mello-Roos district.

**Comments:** Mello-Roos financings for the purpose of seismic retrofitting have generally been considered for use by general law cities and counties, although charter cities may use them as well. Membership in the district is voluntary so there are likely to be few compliance problems. To be certain a property owner is serious about joining the district, a jurisdiction may want to require potential members to submit preliminary plans, an engineer's estimate, and a sizeable non-refundable deposit, and make current all property tax payments. A Mello-Roos financing may require a significant amount of staff time, but there are few hard costs to the jurisdiction; all fees may be passed through to the district members. One of the more difficult efforts associated with a Mello-Roos financing may be determining the guidelines for membership in the district, such as setting value-to-lien ratios. The time necessary to establish a Mello-Roos district depends on the community and the commitment of the building owners. If the community has experience with Mello-Roos issues and the owners have already done engineering studies, then the bond can be issued relatively quickly. On the other hand, it is possible the establishment of a district could take several years. Proceedings to issue bonds can be concurrent with efforts to establish a district, which can shorten the overall timeline. An experienced municipality with a few well-prepared owners may theoretically be able to complete the formation of a district and issue bonds in 6 months or less. The legislation surrounding Mello-Roos financing is frequently updated; bond counsel should be consulted for the most current information. (See: CASE STUDY - CITY OF WEST HOLLYWOOD)

**Contact:** Financial Advisor, Investment Banker, and/or Bond Counsel

## ***PUBLIC PURPOSE BONDS***

***General:*** Many communities issue bonds and other forms of obligations to finance projects which serve a "public purpose" such as construction or remodeling of public buildings. Subject to certain restrictions, tax laws permit up to 5% of the proceeds of such a financing to be used for unrelated private purposes. Financing the seismic retrofitting of a privately owned building theoretically could be one use of this 5% portion.

***Benefits:*** These funds can be obtained without undertaking a separate financing, and would be available at the same low rate as the general issue.

***Types of Properties:*** A funding program of this type can be designed to meet the needs of a jurisdiction for the retrofitting of any type of structure.

***Jurisdiction's Responsibilities:*** The jurisdiction would prepare the financing as it would any other issue, working with its financing team and private owners to ensure that the financing is marketable and complies with tax laws. The jurisdiction will also be responsible for bond repayment.

***Owner's Responsibilities:*** The owner must work with the jurisdiction and the financing team and meet the criteria established by the jurisdiction.

***Limitations:*** Less than 5% of the proceeds of a public purpose financing may be used on private projects.

***Comments:*** To our knowledge this technique has never been used. This type of program would be particularly well suited for communities which expect to issue a public purpose financing and which have a small number of structures in need of seismic retrofitting. Note that the 5% limit is not designed for this purpose; rather, it is a built in "buffer" in case a portion of a financing accidentally is used inappropriately. Bond counsel needs to be consulted about the appropriateness of using the 5% portion in a planned manner to finance seismic upgrade of privately-owned hazardous structures.

***Contact:*** Financial Advisor, Investment Banker, and/or Bond Counsel

***SPECIAL ASSESSMENT DISTRICT***  
*(California Street and Highways Code - Section 5000 et seq.,  
10000 et seq. and 8500 et seq.)*

***General:*** Special Assessment District financing is similar to Mello-Roos Community Facilities District financing. (See: MELLO-ROOS COMMUNITY FACILITIES DISTRICT) Almost all Special Assessment proceedings are conducted under the Improvement Act of 1911, or the Municipal Improvement Act of 1913 used in conjunction with the Improvement Bond Act of 1915. The 1911 Act and the 1913 Act are general purpose acts that can be used, within certain limitations, by cities and counties to make market rate loans available to property owners to finance the seismic retrofitting of privately owned buildings.

Special Assessment financing presents an alternative to private financing mechanisms for owners of seismically hazardous buildings. Assessments levied on properties in a district are in proportion to the financing received for their retrofit projects. Bonds are issued based upon the total of unpaid assessments. A lien is created against each parcel with an unpaid assessment and the assessments are recorded in the county recorder's office. Assessments are collected in the same manner as property taxes and can be pre-paid in full within 30 days. The interest on Special Assessment bonds issued to finance the seismic retrofitting of privately owned buildings is exempt from California State taxes but is subject to Federal taxation.

***Benefits:*** Special Assessment bonds can provide financing, at rates comparable to bank lending rates, to owners of seismically hazardous structures. Depending on the guidelines for membership, this financing may be easier to qualify for than traditional financing.

***Types of Properties:*** Special Assessment bonds can be used to finance the retrofit of all types of privately owned, seismically hazardous structures.

***Jurisdiction's Responsibilities:*** Prior to establishing a Special Assessment district, the governing body of a municipality must adopt an ordinance mandating seismic retrofitting of affected buildings and a procedural ordinance. The ruling legislative body also must adopt a resolution of intention to establish the district, levy assessments and issue bonds. An Assessment Engineer then prepares a report describing, among other things, the method used for determining the assessment to be levied against each property. After a 60-day notice period, the legislative body must hold a public hearing on the formation of the district and the issuance of the bonds. Unless owners of at least half the parcels protest, the legislative body can then adopt resolutions forming the district and authorizing issuance of the bonds. The jurisdiction generally assembles and works with a financing team to help develop guidelines

for district membership. The municipality then offers district membership, in accordance with the developed guidelines, to all owners of seismically hazardous buildings. Membership can be voluntary.

**Owner's Responsibilities:** Owners must elect to participate in the district, obtain engineering and construction cost estimates, and demonstrate their ability to meet criteria established for membership.

**Limitations:** The following are some limitations applicable to any Special Assessment procedure:

- (1) The money raised must be used for a public purpose, such as improved public safety.
- (2) The total of the assessment cannot be greater than the sum of the cost of improvement and the expenses related to the bond financing.
- (3) The assessment on any parcel must be proportionate to the benefit received by that parcel.
- (4) The owner of a parcel assessed must be given an opportunity for a hearing on the extent of benefit his or her parcel is judged to receive.

**Comments:** Special Assessment financing for the purpose of seismic retrofitting has generally been considered for use by charter cities and counties, although general law jurisdictions may use this technique as well. As membership in a Special Assessment district may be voluntary, the jurisdiction should encounter few compliance problems. To be certain that a property owner is serious about joining the district, a jurisdiction may want to require potential members to make a sizable non-refundable deposit and to make current all property tax payments. A Special Assessment district may require a significant amount of staff time, but there are few hard costs to the jurisdiction as all fees may be passed through to district members. One of the more difficult efforts associated with a Special Assessment financing may be determining the guidelines for membership in the district, such as setting value to lien ratios.

In 1989, the City of Torrance established a Seismic Safety Assessment district to finance approximately \$680,000 worth of seismic retrofit projects. Torrance used a combination of the 1913 and 1915 Acts to finance the retrofitting of 7 of the 40 privately owned structures in the city which were designated as seismically hazardous. (See: CASE STUDY - CITY OF TORRANCE) In 1991, the City of Long Beach used the same method to finance approximately \$17.4 million worth of seismic retrofit projects on 307 parcels throughout the city. (See: CASE STUDY - CITY OF LONG BEACH). The interest rate on the Torrance bond issue was 10.75% while the rate on the Long Beach issue was 11.3%.

The time it takes to establish a Special Assessment district depends upon the experience of the community with such districts, the number of properties to be included in the district, and the commitment of the building owners. A smaller, experienced jurisdiction should theoretically be able to establish the district and issue the bonds in less than 6 months. By contrast the Long Beach financing took 18 months to complete.

**Contacts:**

Mr. Masood Sohaili

(Bond Counsel for City of Long Beach Assessment Financing)

O'Melveny & Myers, 400 South Hope Street, LA, CA 90071

(213) 669-6692

or

Mr. Tim Schaefer

(Financial Advisor on the City of Long Beach Assessment Financing)

Evensen Dodge Inc., 650 Town Center Drive, Costa Mesa, CA 92626

(714) 545-1212

or

Other Financial Advisor, Investment Banker,  
and/or Bond Counsel



## ***TAX INCREMENT FINANCING OR TAX ALLOCATION BONDS*** ***(California Health and Safety Code - Section 33670)***

**General:** Tax Allocation bonds are normally issued by redevelopment agencies to finance the revitalization of blighted and economically depressed areas. While to our knowledge they have not been issued for this purpose, Tax Allocation bonds theoretically can also be used to finance seismic retrofit projects. The "tax increment revenue" used to make principal and interest payments on the bonds is the portion of future property taxes that reflects an increase in the project area's assessed valuation due to the redevelopment work.

**Benefits:** Tax Allocation bond funds can be used for programs ranging from grants to low-interest long-term loans.

**Types of Properties:** These funds can be used to finance the retrofit of any structure located in the redevelopment district.

**Jurisdiction's Responsibilities:** The redevelopment authority of the jurisdiction must develop program guidelines for distributing funding, must issue bonds, administer the program, and make bond payments.

**Owner's Responsibilities:** An owner must qualify for funds under local program guidelines.

**Limitations/Comments:** Tax Allocation bonds have not, to our knowledge, been used to fund programs aimed at financing retrofitting of privately-owned seismically hazardous structures. The bonds issued to finance this type of program will likely be Federally taxable because of the emphasis on investment in privately owned buildings. It is unclear whether seismic retrofitting alone will generate sufficient tax increment revenue to cover bond payments.

**Contact:** Financial Advisor, Investment Banker, and/or Bond Counsel

# CALIFORNIA STATE SEISMIC LEGISLATION

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In 1986 the legislature of the State of California enacted a comprehensive law addressing the hazards posed by unreinforced masonry buildings (URMs) which mandated certain actions be taken by January of 1990. Three months before that deadline the San Francisco Bay Area experienced the Loma Prieta earthquake. In the two years which followed, much legislation was proposed to address various aspects of seismic safety. The following discussion highlights legislation which passed into law during that period and which provides incentive for retrofitting privately-owned seismically hazardous structures.

## THE URM LAW

In response to the danger posed by the great number of potentially hazardous buildings in California, in 1986 the State legislature enacted the unreinforced masonry building law (Chapter 250, Statutes of 1986: SB547 [Alquist]; Government Code Section 8875 et seq.) The backbone of the State's efforts to address seismically hazardous structures, this legislation, commonly known as the "URM Law," is aimed at mitigating the hazards posed by URMs. The URM Law applies to all jurisdictions in California's Seismic Hazard Zone 4, the region of highest earthquake activity in the nation. Seismic Hazard Zone 4 runs along California's coast from parts of San Diego County in the south through Humboldt County in the north, as well as inland in parts of the State, and contains several areas with a 60% or higher chance of a major earthquake occurring within the next thirty years. Seismic Hazard Zone 4 includes 365 jurisdictions containing roughly 80% of the State's population.

The URM Law spells out three tasks which local jurisdictions in Seismic Hazard Zone 4 are required to accomplish. The first step, which was to be completed by January 1, 1990, requires jurisdictions to identify all URMs which are "potentially hazardous." These are defined in the law as buildings "constructed prior to the adoption of local building codes requiring earthquake resistant design of buildings and constructed of unreinforced masonry wall construction." The law does not require local jurisdictions to identify warehouses and similar buildings with few occupants (excluding those used for emergency services or supplies), residential buildings with five or fewer living units, or structures which are historically or architecturally significant.

The second step required by the URM Law is development and implementation of a mitigation program. Each jurisdiction is free to develop its own program, the only requirement being that legal owners be notified that their buildings are potentially hazardous. The third step, which was also to be accomplished by January 1, 1990, is submission of the information collected and the mitigation plan to the California Seismic Safety Commission.

Note that the Seismic Safety Commission's primary function is to advise the governor and the legislature and coordinate the responsibilities of State agencies on issues regarding seismic safety. The Commission is responsible for establishing programs for earthquake hazard mitigation, and was required by the URM Law to develop an advisory report for local jurisdictions to use when complying with that law. While the Seismic Safety Commission collects the information submitted by local jurisdictions, the URM Law does not give the Seismic Safety Commission any regulatory authority to approve that material. As of June 1992, all but a handful of communities had complied with the requirements of the URM Law.

#### ENFORCEMENT OF LOCAL ORDINANCES

Case law clearly spells out the authority of local governments to conduct surveys of seismically hazardous structures and to require retrofitting (See: LIABILITY IMPLICATIONS AND CONSIDERATIONS). In addition, California legislation makes it clear that local jurisdictions have the right to abate potentially hazardous buildings (AB1279; Hauser: 1989-90 Legislative Session: Chaptered 90-192). This legislation states that the local jurisdiction's enforcement agency may order a building retrofitted to local building standards if the building is identified by the jurisdiction as being "potentially hazardous to life in the event of an earthquake," and (1) in the event of an earthquake the hazardous condition "would endanger the immediate health and safety of residents or the public," (2) the condition can be corrected with current technology, and (3) the owner has not complied with an abatement order of the enforcement agency. If the owner does not comply, the enforcement agency may apply to the superior court for appointment of a receiver who will obtain a lien against the property and act to abate the hazard in accordance with procedures set out in the legislation.

#### CONCERNS OF LOCAL JURISDICTIONS:

##### GIFT OF PUBLIC FUNDS, SEPARATION OF CHURCH AND STATE, AND LIABILITY

Much of this *Handbook* is based on the assumption that jurisdictions have decided to provide retrofitting funds to property owners, and are looking for ideas as to how they might do so. In California the question often arises of whether a particular financing program violates the State constitution's prohibition against a "gift of public funds." This question is directly addressed in some of the legislation enabling particular financing techniques, where the legislation expressly declares that the loans made pursuant to the legislation should not be construed to be gifts of public funds. Local jurisdictions need to consult with their attorneys to ensure that any financing programs which they design, whether or not pursuant to specific legislation, do not violate the constitutional prohibition.

The issue of "separation of church and State" also comes to the minds of those designing financing programs, querying whether it is appropriate for local agencies to provide assistance to religious institutions. The legal questions may be complex. With respect to the constitutional question, so long as a program is designed to finance retrofit of all buildings and not just those put to religious use, in general there is no Federal or State prohibition against local agencies providing assistance to religious institutions. This is articulated in Everson v. Board of Education, 330 U.S. 1, 18 (1946), a case which questioned the use of public tax dollars for parochial school children's transportation to school. In his opinion, Justice Black wrote that the First Amendment "... requires the State to be neutral in its relations with groups of religious believers and non-believers; it does not require the State to be their adversary. State power is no more to be used so as to handicap religions than it is to favor them." The use of taxes in that case was upheld since the government was not being discriminatory.

Where bond financing is involved, the regulations are somewhat different. Generally, if a program is bond financed, it must be designed to finance the retrofit of all buildings not just those put primarily to religious use or, for that matter, to other prohibited use; whether or not a building may be provided bond financing must be decided by bond counsel on a case-by-case basis. The main concern with bond financing, however, is the *type of work* that may be financed rather than which buildings may be eligible. Whether or not a program is being bond financed, local agencies again are advised to seek the opinion of counsel when putting together a financing program to ensure that they are in compliance with these and other relevant State and Federal statutes.

Liability is an issue which frequently comes up in discussions of seismic retrofit, with arguments being made for liability as both an incentive and a disincentive to retrofit. (See: LIABILITY IMPLICATIONS AND CONSIDERATIONS). Jurisdictions may be concerned about their potential liability as a result of the use of public funds to install equipment and construct improvements on private property. California law spells out conditions under which public agencies are liable for injuries caused by dangerous conditions of public property. In 1990 a bill was passed (SB2819: Robbins: 1989-90 Legislative Session: Chaptered 90-1318) which provides that seismic safety or fire sprinkler improvements "which are owned, built, controlled, operated, and maintained by the private owner of the building in which the improvements are installed are not public property or property of a public entity solely because the improvements were financed, in whole or in part, by means of the formation of a Special Assessment district."

SPECIAL ASSESSMENT, MELLO-ROOS AND GENERAL OBLIGATION BONDS

Having decided to offer financing to private owners of hazardous buildings, an obvious next step is for the jurisdiction to identify sources of funds which can be used for that purpose. Special Assessment District financings (California Street and Highways Code - Section 5000 et seq., 10,000 et seq. and 8500 et seq.) and Mello-Roos Community Facilities District financings (California Government Code - Section 53311 et seq.) have recently been explored as sources of loan funds. Generally speaking, these techniques allow local jurisdictions to form districts composed of properties which will participate in the seismic project being financed. A tax or assessment is levied on participants in the district, and bonds are issued which are repaid from the proceeds of the tax or assessment. (See: LOCAL GOVERNMENT FINANCING OPTIONS - MELLO-ROOS COMMUNITY FACILITIES DISTRICTS and SPECIAL ASSESSMENT DISTRICTS)

Special Assessment District and the more recent Mello-Roos District financing mechanisms were designed and have routinely been used to finance public infrastructure, facilities and services. Because the legislation enabling such financings did not originally contemplate their use to fund work on privately-owned structures, the techniques are not easily applied for such use. Nonetheless, Special Assessment bond financing has already been used by certain cities to finance seismic retrofit of privately owned hazardous buildings (See: CASE STUDIES - CITY OF LONG BEACH AND CITY OF TORRANCE) and several jurisdictions are at various stages in the process of creating Mello-Roos districts for that purpose (See: CASE STUDY - CITY OF WEST HOLLYWOOD). Legislation has been passed, and continues to be proposed, aimed at allowing, clarifying, and simplifying use of these techniques to finance retrofit of private structures.

The Mello-Roos legislation was the first to be amended for this purpose. Shortly after the Loma Prieta earthquake in 1989, legislation was passed allowing Mello-Roos districts to be used by jurisdictions located in a disaster area to finance the repair of buildings damaged or destroyed by the earthquake (SBX27: Mello: 1989-90 First Extraordinary Session of the Legislature: Chaptered 90-29X). This legislation also provided for financing of "work deemed necessary to bring buildings, including privately owned buildings, into compliance with seismic safety standards or regulations." This work may be financed through a tax levy on properties in the Mello-Roos district, provided that all the votes cast on the question are in favor of the tax. Work financed using Mello-Roos must be certified by local building officials as necessary to bring the building into compliance with seismic safety standards or regulations. All such work on qualified historical buildings must comply with the State Historical Building Code. Demolition of a building and its replacement with a new building can not be financed, nor can construction of a new building except in Federally declared disaster areas.

Recently legislation was passed to clarify ambiguities regarding the use of Special

Assessment techniques to finance seismic retrofit of privately-owned properties. (AB1700: Farr: 1991-92 Legislative Session: Chaptered.) This legislation states that cities and counties may issue bonds, incur debt and make loans to owners of private buildings for "seismic strengthening of unreinforced buildings and other buildings." The strengthening must be done in accordance with a plan approved by a jurisdiction's building official or drawn up by a registered civil engineer or a licensed architect, one of whom must certify that the work "is necessary for seismic safety reasons or is otherwise legally required for completion of the work or occupancy of the building." As with the Mello-Roos legislation discussed above, demolition and new construction are not permitted, work on historical buildings must be done in accordance with the State Historical Building Code, and "no lot, parcel, or building shall be included in the district without the owner's consent." Addressing a concern regarding affordable housing, the legislation specifies that to the extent funds are used to retrofit residential buildings containing affordable units for lower income households, the owner must enter into an agreement to maintain the number and level of rents of those units. To qualify to issue bonds and make loans under the program, the legislation requires a jurisdiction to have completed its inventory of URMs and to have adopted a mitigation ordinance in accordance with the URM Law.

The least expensive form of loan financing available to government entities is General Obligation bonding: issuance of bonds which are guaranteed by the full faith, credit and taxing power of the issuing jurisdiction. As with Special Assessment and Mello-Roos financings, tools originally designed for public finance, General Obligation bonds have been examined as possible vehicles to provide funding for retrofit of privately owned structures. Legislation was passed (AB1001: Brown: 1991 Legislative Session: Chaptered 91-0658) stating that a city or county may issue bonds for the purpose of seismic strengthening of unreinforced and other buildings. Use of this tool is subject to many of the same conditions described above such as certification that the work is necessary, preservation of low-income housing units, and jurisdictional compliance with the URM Law. Primarily because in California General Obligation bonds must be approved by a two-thirds vote, this technique has not yet been tested.

#### REDEVELOPMENT AGENCIES

In many cases URMs and other privately-owned seismically hazardous buildings are concentrated in one geographic area within a jurisdiction, such as an old downtown area. Often these geographic areas fall within the purview of a redevelopment agency. As compared with agencies throughout the country, redevelopment agencies in California have uniform structures and powers and generally have the ability to raise more types of revenues.

As a result, in California redevelopment agencies are important resources. Subsequent to the Loma Prieta earthquake, legislation was passed authorizing redevelopment agencies to take those actions they determine necessary to seismically strengthen specified buildings, including historical buildings, in order to bring them into compliance with seismic building code standards (AB356: Cortese: 1989-90 Legislative Session: Chaptered 90-933).

#### STATE REACHING OUT DIRECTLY TO PROPERTY OWNERS

The discussions above focus on State actions to help local jurisdictions effect retrofitting in their communities. The State also has taken steps to provide incentives directly to property owners. Two such steps are particularly noteworthy.

It is well known that in 1978 California voters passed Proposition XIII, amending the State constitution to limit the amount of *ad valorem* property taxes on real property to 1% of "full cash value." Full cash value is defined as "the county assessor's valuation of real property ... or ... the appraised value of real property when purchased, newly constructed or a change in ownership has occurred ..." Under Proposition XIII construction undertaken to retrofit hazardous properties could result in increased property taxes, a considerable disincentive to property owners. In 1990 a measure was put on the ballot and the State constitution was amended (SCA33: Rogers: 1989-90 Legislative Session: Chaptered 90-R-57) excluding from the definition of "new construction" seismic retrofitting improvements or improvements utilizing earthquake hazard mitigation technologies. Thus, private owners undertaking seismic retrofitting projects are exempt from the higher property taxes which otherwise would result from new construction.

Many jurisdictions are using disclosure of a building's seismically hazardous condition as an incentive for owners to retrofit (See for example: CASE STUDY - CITY OF PALO ALTO). The idea is twofold: that tenants of a building identified as hazardous might take action to encourage the owner to retrofit, and that the market value of the property will fall once it becomes known that the structure is hazardous, leading the owner to undertake retrofitting in order to maintain or restore the property's value. The State is in the process of taking steps to require disclosure by sellers of residential and commercial properties' seismic condition (AB2959: Klehs: 1989-90 Legislative Session: Chaptered 90-1499 and AB 1968: Arieas: 1991-92 Regular Session: Chaptered 859, respectively). This is particularly significant because it pertains to transfers of all types of residential and commercial property, not just those hazardous structures identified pursuant to the URM Law.

The material described above is but a sample of the many pieces of legislation pertaining to the retrofitting of seismically hazardous structures. Among other things, the California State legislature also has addressed seismic safety of affordable housing, historically significant

structures, and public, hospital, and school buildings, as well as speaking to the issue of earthquake insurance. Additional information on State legislation in this area is available from the Seismic Safety Commission of the State of California. (See: CONTACTS)

#### FUTURE DIRECTIONS IN HAZARD MITIGATION

Six years have passed since the State's URM Law became effective. Since then, 90 percent of the URM buildings affected by that law have been included in hazard reduction programs. Since the law gave considerable discretion to local governments by allowing them to tailor their own hazard reduction programs, there is quite a wide variation in the effectiveness level of the 190 local programs. The State plans to continue to monitor the status of local government compliance with the URM Law each year. In the meantime, the Seismic Safety Commission has recommended in *California at Risk 1992-1996*, that the State begin to focus on other facilities that pose unacceptable levels of earthquake risk.

Three seismic hazard guidebooks for building owners are currently being developed by the Commission. The first guidebook will disclose typical seismic hazards to buyers of residential buildings. (A publication entitled *Home Buyers Guide to Earthquake Hazards* is currently available from the Bay Area Regional Earthquake Preparedness Project; see: CONTACTS) A similar guidebook is also planned for commercial buildings. These guidebooks will rely on the real estate and lending markets to adjust to a greater awareness of seismic hazards. The guidebooks may spur many owners to reduce seismic hazards voluntarily at the time of sale, much the way owners treat termite repairs. The Commission has plans to issue a third handbook for URM building owners to help them retrofit.

One of the major stumbling blocks in addressing hazardous buildings other than URMs is the lack of uniform standards for seismic hazard evaluations, retrofits, and repairs. Lacking standards, most governments are reluctant to require hazard reduction for non-URM buildings, owners are discouraged from evaluating their buildings, and design professionals do not offer consistent advice. There are several efforts to develop new seismic standards. The Office of the State Architect and the Building Standards Commission must develop uniform seismic retrofit guidelines for State government buildings by January 1, 1993. These could eventually become the basis for future standards. The National Science Foundation, the Federal Emergency Management Agency and the Seismic Safety Commission have research programs focussed on this effort. SB 597 (Alquist) proposes to expand this effort to include key private building concerns in the development of new seismic evaluation and retrofit standards.



Hazardous materials are often stored in older buildings that may collapse in earthquakes or otherwise cause leaks capable of endangering the public. The Chemical Emergency Planning and Response Commission, the Office of Emergency Services, and the State Fire Marshall will soon be considering regulatory measures to ensure that seismic safety in buildings storing acutely hazardous materials is addressed.

Two fires caused major losses after the April 1992 Petrolia Earthquakes. These were a stirring reminder of the great fire after the April 1906 earthquake. In Petrolia, four critical minutes were lost when the doors of its firehouse were jammed shut after the first earthquake. By the time fire fighters extricated their equipment, the adjacent building was burning out of control. The Seismic Safety Commission will be asking the State Fire Marshall and other fire safety regulators to consider a statewide program to modify firehouse doors that may stick in earthquakes.

In 1991, the Building Safety Board recommended establishing a major program to reduce earthquake risk in hospitals built prior to the Hospital Seismic Safety Act. The program would address hospital buildings like those that collapsed and killed patients in the 1971 San Fernando Earthquake. The Seismic Safety Commission will be seeking legislation to create this program in the coming years.

In 1991, the legislature passed AB 1964 (Areias) to set a goal of reducing hazards in unreinforced masonry, State-owned government buildings by the year 2000 in conjunction with the Commission's recommended policy on acceptable levels of earthquake risk. This proposal was considerably less ambitious than that offered by the risk policy, which recommends addressing earthquake hazards in all major State government buildings by the year 2000. Governor Wilson vetoed this bill because the State does not yet know the scope of the problem. The Legislature will probably reconsider the need to set a goal once an inventory of State buildings is developed. In the meantime, the Commission plans to encourage State agencies to disclose to the public known seismic hazards in and around existing State government buildings. The State owns a number of buildings that were identified more than a decade ago as posing serious collapse hazards in earthquakes.

The State government is at a critical stage of the URM hazard reduction effort. Despite a significant budget deficit, the State is faced with the costs of retrofitting its own buildings and bridges, as are most local governments. Private building owners and local governments are looking to the State for both a firm commitment and assistance. Most cities, counties, and building owners have expressed a willingness to take more effective steps to reduce their hazards if affordable financing and standards are made available. Accomplishing needed retrofits will take an equally firm commitment from private lending institutions statewide. Increased public awareness as well as financial and insurance pressures will come to bear upon most URM building owners over the next decade to address the seismic hazards in their

buildings. The success of the URM Law and future hazard reduction efforts will be influenced by future earthquakes, the perception of risk, and how they, in turn, influence the public's willingness to allocate money for hazard reduction.



# LIABILITY IMPLICATIONS AND CONSIDERATIONS

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## BACKGROUND

In examining the issue of retrofitting of unreinforced masonry buildings, the question of potential tort liability is often brought up, sometimes as a disincentive for action (because determining that a building has a problem creates more liability than not knowing about a problem), and sometimes as an incentive for action (that fear of potential liability might act as an economic incentive for action).

The discussion in this chapter is limited to potential *tort liability*. A tort is a civil (as opposed to a criminal) wrong, other than a breach of contract, for which courts award damages. Thus, this discussion does not define liability in the broader, non-legal, context of the prospect of direct building or contents damage.

In assessing the potential for liability, one must understand that there are *4 elements of a tort*, each of which must be proven:

- a pertinent duty must be imposed on the building owner;
- the building owner must have violated that duty;
- the victim must have been injured or suffered damages; and
- there must be a causal connection between the building owner's negligence and the harm suffered by the victim.

The *concept of negligence* is usually based on the rule of reasonableness. How would a reasonable person have acted under similar circumstances? Could the injury or loss have been foreseen? What was the apparent magnitude of the risk? What were the relative costs and benefits of action vs. inaction?

Finally, the remarks in this chapter must be prefaced by noting the fact that after extensive research in the caselaw of 50 States, ABAG was unable to identify a single case where a public or private entity was held to be liable under traditional tort law for personal injury or physical damage directly resulting from earthquakes. Most cases are settled out of court, including the potential cases from the Loma Prieta earthquake in October 1989. In addition, if and when such a case makes it to trial, it will take approximately 2 more years to become an appellate court decision, and only appellate court decisions become legal precedent. However, *there is a very high probability that under the appropriate circumstances, liability will be imposed on either public or private entities for personal injury or property damage resulting from an earthquake.* The majority of this chapter spells out, in as clear a manner as possible, those circumstances for *private* building owners. As stressed below, the liability of the local government associated with those private buildings is exceedingly small.

### THE ANALYSIS

The most expeditious way to explain the operation of liability rules is to use a specific scenario. Therefore, assume the City Council of the City of Forward, California directs the implementation of a program to survey its entire city to determine the location of all unreinforced masonry buildings (as directed by California law) and, in addition, its downtown area to determine the location of all concrete buildings built between 1950 and 1970 (determined by the city to be most likely to be the non-ductile concrete buildings prone to pancake collapse in earthquakes). The program is implemented by the building department utilizing in-house engineers and other design professionals. The building department develops a list, including address and owner, and submits the list to the City Council. The City Council notifies the owners of the identified properties, but does not require retrofit of the buildings.

### PRIVATE OWNER LIABILITY

#### (a) No Remedial Action

Building owner Art receives the report and ignores it, doing nothing. A magnitude 7 earthquake strikes the City of Forward and there is significant personal injury and property damage on the property of the passive owner. If the injured parties can prove that the damages were caused in whole or in part by the dangerous conditions identified in the survey, there is a very high probability that liability will be imposed. The property owner has been placed on notice of the dangerous conditions of his property, and his callous reaction to such notice serves as both a legal and a social policy ground for recovery by the plaintiffs. In fact, under the circumstances, the plaintiffs may be able to recover punitive damages.

#### (b) Owner Study - No Remedial Action

Building owner Brenda receives the notice, engages her own experts, and has them develop a set of recommendations for retrofit. The experts determine that the building is reasonably safe. A magnitude 7 earthquake strikes the area and personal injury and property damage result. This building owner has some liability exposure. Depending on the process by which she selected the design and engineering professionals that she hired, and the directions given to those professionals in evaluating the building, her actions in following these recommendations appear reasonable and non-negligent. However, if there was negligence involved in selecting an unskilled design professional or instructing the professional in a way which clearly militates against a finding of earthquake hazards, that action may be judged negligent and be a source of liability.

(c) Owner Study - Remedial Action

Building owner Clean-Up receives the notice, engages appropriate experts, and implements a retrofit. The earthquake strikes, and personal injury and property damage occur. Is the building owner liable? Mere compliance with the recommendations of the design professionals will not absolutely bar the imposition of liability. However, if the design professionals selected were skilled, it is unlikely that liability will be imposed. On the other hand, if the building owner had knowledge of a major defect which the designers overlooked, and it is this defect which causes either personal injury or property damage, liability will likely be imposed for such injuries or damage.

LOCAL GOVERNMENT LIABILITY

To explore the issue of the liability of the local government associated with private buildings, it is necessary to change the scenario somewhat.

(d) Decision to Survey

Would the City of Future have exposed itself to potential liability had it *not* conducted the survey? More specifically, Dale (the owner of a building) and his customers are severely injured in a moderate earthquake. The owner claims that he would have retrofitted his building had he been notified by the city that a problem existed.

If the city is in the portion of California covered by the California law requiring identification of unreinforced masonry buildings (with certain exceptions, including single-family homes), the city has a mandatory duty to undertake that portion of the earthquake building survey. The city is liable for its failure to comply with a mandatory duty unless it has exercised "reasonable diligence" to discharge that duty.

One possible defense might be that the city did not have sufficient funds to undertake the inventory activities mandated by the State statute in the then current fiscal year. The harm suffered MAY be of the type against which the statute is designed to protect. The issue is foggy because the statute does not require the retrofitting of buildings. Therefore, its primary purpose is to inform and educate property owners. A foreseeable, and desirable, result would be remedial action by the property owner. At the present time, there is no reported case which would help determine if this apparent but secondary purpose of the statute is one on which the plaintiff can base a claim that the statute was "designed" to protect against the injuries and damages which would result from an unreinforced masonry building failure in an earthquake.

The next question is whether the local government has exercised reasonable diligence in the discharge of its duty. In this situation, the City of Future's use of due diligence to locate existing funds or to seek new funds to finance compliance with the law are presumed facts. Therefore, the immunity ought to apply. However, if funds become available in the future, it will be unreasonable for the local government to refuse to comply and immunity would no longer apply.

Even if the mandatory duty doctrine applies, it may be very difficult for Dale and his customers to prove that the failure of the City of Future to inventory the affected building proximately caused the injury which occurred. First, he would have to prove that the retrofit would have retrofitted the building. Second, he must prove that the retrofit would have prevented the particular harm which is the subject of the lawsuit.

With respect to those types of private buildings which are *not* constructed of unreinforced masonry, the question becomes: is there a legal duty on the city to conduct such a survey? A decision to implement such a program by the policy making body of the jurisdiction (in this case, the City Council) should fall under the discretionary immunity provisions of Government Code Sections 830 and 835.

#### (e) Inspection Process

Is the City of Future liable if the survey program is undertaken, but the inspections themselves or the consequent recommendations were conducted negligently? The California Government Code Section 818.6 immunizes local governments for an inspection process. The immunity would probably extend to the recommendations resulting from such inspections.

#### THE "ACT OF GOD" DEFENSE

Throughout this discussion, some may assume that the earthquake, being a natural, unpredictable and awe-inspiring event, is an "act of God" for which no liability should be imposed. This is not true.

The "act of God" defense is not triggered by the occurrence of a natural catastrophe which sets into motion a chain of events causing the injury or damage. If the natural catastrophe is one which is reasonably foreseeable and for which reasonable precautions can be taken, then the "act of God" defense is not available. The reasonable building owner must assume that a major earthquake will strike at or near its building while that building is in its ownership. It will be fruitless for the owner of a building to state that the injuries and damages that might result from the failure of its building during an earthquake could not be foreseen by it. Mass

media have disseminated information on earthquake hazards and the technical expertise necessary to evaluate and mitigate some of those hazards is available. The courts will conclude that it is only reasonable to expect responsible property owners to take some precautionary measures.

#### ECONOMIC ISSUES ASSOCIATED WITH LIABILITY EXPOSURE

Another issue surrounding liability to owners is related to the extent to which property retrofit, by lessening liability exposure, acts as an economic incentive to retrofit. The economic argument is weak for at least two reasons. First, although retrofit reduces the liability exposure, it does not remove it entirely. The second reason relates to, in a practical manner, how liability (whether for earthquakes or other risks) is handled. A typical building owner might have \$2 million in comprehensive general liability insurance coverage (CGL). As a result of learning of the hazard at its building, it might increase its CGL from \$2 million to \$10 million. The incremental cost of such an increase in coverage is minuscule in comparison to its other costs of doing business. Insurance companies offering GLC will typically find it more expensive to determine the type of construction of those buildings owned by the businesses it covers than the risk of loss. However, in the case of large companies which are self-insured, such risks are more likely to have economic weight. As a practical matter, however, these large businesses are unlikely to own the unreinforced masonry buildings typically being discussed for retrofit. They are more likely to own the non-ductile concrete buildings prone to collapse. Liability exposure may function as an economic incentive for these owners.

#### AUTHORITY OF LOCAL GOVERNMENTS TO CONDUCT SURVEYS AND REQUIRE RETROFITTING

Another legal issue, not associated with liability, surrounds the authority of local governments to conduct surveys and require retrofitting. Unlike the liability issues, there is clear caselaw in this area. Specifically, the police powers case of Barenfield v. City of Los Angeles, 162 Cal.App. 3d 1035, 209 Cal.Rptr. 8 (1984) clearly establishes this authority. It is important to note that the case was determined prior to the passage of the California law requiring many local governments in California to survey unreinforced masonry buildings and notify owners.

The city enacted a local ordinance which required the owners of all buildings constructed prior to October 6, 1933 which have unreinforced masonry bearing walls (with exceptions not applicable to this case) to take remedial actions designed to reduce earthquake-related



hazards. Each of the plaintiffs owned one or more buildings subject to the ordinance. Each of them received an order from the city requiring them to (1) perform seismic retrofitting of the building(s), or (2) submit a structural engineering analysis indicating that the building(s) meet the ordinance standards, or (3) install temporary safeguards so as to qualify for an extension of time to comply with (1), or (4) demolish the building(s). Plaintiffs sued claiming the ordinance constituted an unconstitutional taking of private property without compensation.

In support of its motion, the city offered evidence that unreinforced masonry buildings pose a safety threat to the public and that the ordinance bore a reasonable relationship to the objective of making the public more safe from this hazard. The plaintiffs offered evidence questioning whether the ordinance's provisions had a reasonable relationship to increased safety. The trial court granted the city's motion for summary judgment.

The appellate court noted that the issue of the reasonableness of the ordinance's provisions was brought into question by the plaintiffs' evidence. However, as challenge to the constitutionality of an enactment, the court must defer to the legislature's judgment unless it is manifestly unreasonable, arbitrary or capricious. *The court also upheld, without exposition, the ordinance's regulation of private property use as a valid exercise of the city's police powers and not as a taking.*

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Prepared by Jeanne B. Perkins, Earthquake Program Manager at ABAG, and Kenneth Moy, Moy & Lesser (ABAG Legal Counsel) based on legal research funded, in large part, by National Science Foundation Grants.

# CONTACTS

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## CITY OF ARROYO GRANDE

P.O. Box 550  
Arroyo Grande, CA 93420

*Mr. John Richardson, Chief Building  
Inspector*

Telephone: (805) 489-1303, ext. 104  
Facsimile: (805) 473-2193

## ASSOCIATION OF BAY AREA GOVERNMENTS

P.O. Box 2050, Oakland, CA 94604-2050

*Ms. Dari Barzel, Financial Services  
Manager*

Telephone: (510) 464-7932  
Facsimile: (510) 464-7979

*Ms. Jeanne Perkins, Earthquake Program  
Manager*

Telephone: (510) 464-7934  
Facsimile: (510) 464-7970

## BAY AREA REGIONAL EARTH- QUAKE PREPAREDNESS PROJECT

101 8th Street, Suite 152,  
Oakland, CA 94607

*Ms. Catherine Firpo, Resource Center  
Coordinator*

Telephone: (510) 540-2713  
Facsimile: (510) 540-3581

## CITY OF BERKELEY

Civic Center Building  
2180 Milvia Street, Berkeley, CA 94704

*Mr. Harry Attri, Chief/Codes and Inspections*

Telephone: (510) 644-6526  
Facsimile: (510) 644-6763

*Ms. Sonali Bose, Finance Director*

Telephone: (510) 644-6476  
Facsimile: (510) 644-6763

*Mr. Alan Goldfarb, Councilmember*

Telephone: (510) 644-6399  
Facsimile: (510) 644-6035

## BLAYNEY DYETT GREENBERG

Urban and Regional Planners  
70 Zoe Street, San Francisco, CA 94107

*Mr. Michael V. Dyett, AICP*

Telephone: (415) 957-2950  
Facsimile: (415) 543-8957

## EVENSEN DODGE INC.

650 Town Center Drive, Suite 430  
Costa Mesa, CA 92626

*Mr. Timothy J. Schaefer, Senior Vice  
President*

Telephone: (714) 545-1212  
Facsimile: (714) 557-9126

**CITY OF FULLERTON**

303 West Commonwealth Avenue,  
Fullerton, CA 92632

*Mr. Chuck Daleo, Building Official*  
Development Services Department  
Telephone: (714) 738-6558  
Facsimile: (714) 738-3110

*Mr. Rick Forintos, Project Coordinator*  
Redevelopment Agency  
Telephone: (714) 738-6877  
Facsimile: (714) 738-3115

**HOUSING AND URBAN  
DEVELOPMENT**

Regional Office, Region IX  
450 Golden Gate Avenue,  
San Francisco, CA 94102

*Community Development Block Grants*  
Telephone: (415) 556-5900

*HOME Program*  
Telephone: (415) 556-5900

**HOUSING AND COMMUNITY  
DEVELOPMENT**

P.O. Box 952051,  
Sacramento, CA 94252-2051

*California Housing Rehabilitation Program*  
Telephone: (916) 445-6501

**CITY OF INGLEWOOD**

One Manchester Boulevard,  
Inglewood, CA 90301

*Ms. Dianna Joe, Rehabilitation Loan  
Supervisor, Department of Community  
Development and Housing*  
Telephone: (310) 412-5221  
Facsimile: (310) 412-8737

*Mr. Joe Alvarez, Superintendent*  
Building Department  
Telephone: (310) 412-5221  
Facsimile: (310) 412-5188

**CITY OF LONG BEACH**

Civic Center, 333 West Ocean Boulevard,  
Long Beach, CA 990802

*Mr. David Lewis, Rehabilitation Officer*  
Department of Community Development  
Telephone: (310) 590-6845  
Facsimile: (310) 590-6215

*Mr. Richard Hilde, City Treasurer*  
Telephone: (310) 590-6845  
Facsimile: (310) 590-6780

**CITY OF LA VERNE**

3660 D Street, La Verne, CA 91750

*Ms. Linda Christianson, Community  
Development Department*  
Telephone: (714) 596-8713  
Facsimile: (714) 596-8737

**MOY & LESSER**

2397 Shattuck Avenue, Suite 500  
Berkeley, CA 94704-1552

*Mr. Kenneth Moy*

Telephone: (510) 848-0630

Facsimile: (510) 848-0636

**O'MELVENY & MYERS**

400 South Hope Street,  
Los Angeles, CA 90071

*Mr. Masood Sohaili*

*Mr. Thomas Leary*

Telephone: (213) 669-6000

Facsimile: (213) 669-6407

**CITY OF PALO ALTO**

250 Hamilton Avenue,  
Palo Alto, CA 94301

*Mr. Fred Herman, Chief Building Official*

Telephone: (415) 329-2550

Facsimile: (415) 329-2240

**CITY OF SAN DIEGO**

1222 First Avenue, San Diego, CA 92101

*Ms. Jean Libby, Building Inspection Dept.*

Telephone: (619) 236-6087

Facsimile: (619) 236-6030

*Mr. Peter Lopéz, Building Inspection Dept.*

Telephone: (619) 236-6087

Facsimile: (619) 236-6030

**CITY OF SAN JOSE**

Office of Emergency Services  
855 North San Pedro Street #404  
San Jose, CA 95110-1718

*Mr. Robert "Pi" Silverstein, Building  
Retrofit Program Liaison*

Telephone: (408) 277-4735

Facsimile: (408) 277-3345

**CITY OF SAN MATEO**

Department of Community Development  
330 West 20th Avenue,  
San Mateo, CA 94403

*Mr. Fred Cullum, Chief Building Officer*

Telephone: (415) 377-3387

Facsimile: (415) 377-3494

*Mr. Bob Muehlbauer, Housing and  
Economic Development*

Telephone: (415) 377-3393

Facsimile: (415) 377-3494

**SEISMIC SAFETY COMMISSION  
of the State of California**

1900 K Street, Suite 100,  
Sacramento, CA 95814

*Mr. Brian Stoner, Legislative Liaison*

Telephone: (916) 322-4917

Facsimile: (916) 322-9476

**SMALL BUSINESS ADMINISTRATION**

San Francisco District Office  
211 Main Street, San Francisco, CA

Telephone: (415) 744-6820

**CITY OF SONOMA**

No. 1, The Plaza, Sonoma, CA 95476

*Mr. Wayne Wirick, Building Official*

*Mr. Michael Moore, Community  
Development Director*

Telephone: (707) 938-3681

Facsimile: (707) 938-8775

**WILLIAM SPANGLE ASSOCIATES**

3240 Alpine Road,  
Portola Valley, CA 94028

Telephone: (415) 854-6001

Facsimile: (415) 854-6070

**CITY OF TORRANCE**

3031 Torrance Blvd., Torrance, CA 90503

*Ms. Mary Giordano-Specht, Finance  
Director*

Telephone: (310) 618-5855

Facsimile: (310) 618-5922

*Mr. Jim Isomoto, Acting Building & Safety  
Director*

Telephone: (310) 618-5920

Facsimile: (310) 618-5922

**CITY OF UPLAND**

460 North Euclid Avenue  
Upland, CA 91786

*Mr. Jeffery Bloom, Planning Director*

*Mr. Mark Trabing, Housing and  
Development Speicalist*

Telephone: (714) 982-1352

Facsimile: (714) 982-0798

**CITY OF VACAVILLE**

1104 Alamo Drive, Vacaville, CA 95687

*Mr. David Gouin, Office of Housing and  
Redevelopment*

Telephone: (707) 449-5161

Facsimile: (707) 449-5389

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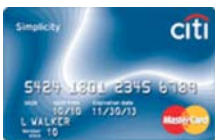
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- Discover is ranked #1 in customer loyalty—16 years in a row! (2012 Brand Keys Customer Loyalty Engagement Index report)
- 24/7 access to a U.S.-based Account Manager within 60 seconds
- \$0 Fraud Liability plus automatic mobile and email fraud alert options
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- \*Click apply to view rates, fees, rewards, limitations and other important information

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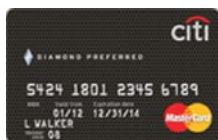
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Purchases		Balance Transfers		Regular APR	Annual Fee	Credit Needed
Intro APR	Intro APR Period	Intro APR	Intro APR Period			
0%*	15 months*	0%*	15 months*	10.99% - 20.99%* (Variable)	\$0*	Excellent Credit

### Citi® Diamond Preferred® Card



- 0% Intro APR on Balance Transfers and Purchases for 18 months. After that, the variable APR will be 11.99%-21.99% based upon your creditworthiness.\*
- 24/7 access to personalized concierge service providing assistance in booking hotel, flights, concert tickets and much more
- Special access for Citi cardmembers to purchase presale tickets, preferred seating, VIP packages, and other unforgettable live entertainment experiences through Citi Private Pass®
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Intro APR	Intro APR Period	Intro APR	Intro APR Period			
0%*	18 months*	0%*	18 months*	11.99%-21.99%* (Variable)	\$0*	Excellent Credit

### Citi® Diamond Preferred® Card



- 0% Intro APR on Balance Transfers and Purchases for 15 months. After that, the variable APR will be 11.99%-21.99% based upon your creditworthiness.\*
- Earn a \$100 statement credit after you complete a minimum balance transfer of \$500 within 30 days of account opening.
- There is a balance transfer fee of either \$5 or 3% of the amount of each transfer, whichever is greater.
- 24/7 access to personalized concierge service providing assistance in booking hotel, flights, concert tickets and much more
- Special access for Citi cardmembers to purchase presale tickets, preferred seating, VIP packages, and other unforgettable live entertainment experiences through Citi Private Pass®
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- No annual fee\*

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Purchases		Balance Transfers		Regular APR	Annual Fee	Credit Needed
Intro APR	Intro APR Period	Intro APR	Intro APR Period			
0%*	15 months*	0%*	15 months*	11.99%-21.99%* (Variable)	\$0*	Excellent Credit

### Citi ThankYou® Card



- Enjoy 0% Intro APR on Balance Transfers and Purchases for 15 months. After that, the variable APR will be 12.99% - 22.99% based upon your creditworthiness\*
- Plus earn 1 ThankYou Point for every \$1 you spend on purchases
- Earn an anniversary bonus on points earned from purchases every year\*
- Enjoy no limit on the number of points you can earn
- Redeem ThankYou Points for merchandise, travel rewards, gift cards, cash and more
- No annual fee\*

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Purchases		Balance Transfers		Regular APR	Annual Fee	Credit Needed
Intro APR	Intro APR Period	Intro APR	Intro APR Period			
0%*	15 months*	0%*	15 months*	12.99%-22.99%* (Variable)	\$0*	Excellent Credit

### Capital One® Cash Rewards

- \$100 Bonus after you spend \$500 in the first 3 months
- 50% bonus on the cash back you earn every year
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- No annual fee

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- Earn unlimited cash back that doesn't expire
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- Personalize your card with an image of your choice
- 0% intro APR on purchases and balance transfers until August 2013.

- OR -

Call Capital One at  
888-812-7376

Purchases		Balance Transfers		Regular APR	Annual Fee	Credit Needed
Intro APR	Intro APR Period	Intro APR	Intro APR Period			
0%	Until 08/2013	0%	Until 08/2013	12.90%-20.90% (Variable)	\$0	Excellent Credit

**Slate® from Chase**



- Introductory Offer - No Balance Transfer Fee!\*
- \$0 Introductory Balance Transfer fee when you transfer a balance during the first 60 days your account is open!\*
- After the first 60 days, the fee for future balance transfers is 3% of the amount transferred with a minimum of \$5.
- 0% Intro APR for 15 months on purchases and balance transfers\*
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Call Chase at  
877-312-0406

Purchases		Balance Transfers		Regular APR	Annual Fee	Credit Needed
Intro APR	Intro APR Period	Intro APR	Intro APR Period			
0%	15 months	0%	15 months	11.99%-21.99% (Variable)	\$0	Excellent Credit

\* See the online low interest rate credit card applications for details about terms and conditions of offer. Reasonable efforts are made to maintain accurate information. However all credit card information is presented without warranty. When you click on the "Apply Here" button you can review the credit card terms and conditions on the credit card issuer's web site.

# Economic Impact Analysis of Property Assessed Clean Energy Programs (PACE)

Research Performed by ECONorthwest for PACENow,  
April 2011

This report summarizes an analysis by ECONorthwest of the economic impacts of Property Assessed Clean Energy (PACE) programs. The analysis measures the output, employment and tax impacts of purchase activity with the same composition of the project activity of the PACE energy efficiency and renewable energy projects. The analysis is performed using the IMPLAN input-output model system and simulated the implementation of PACE projects in four cities, with computation of both local and national impacts. Significant, positive economic and fiscal impacts are potentially associated with PACE energy efficiency and renewable energy projects.



# Economic Impact Analysis of Property Assessed Clean Energy Programs (PACE)

Research Performed by ECONorthwest for PACENow,  
April 2011

## *Executive Summary*

ECONorthwest was engaged by the PACENow coalition to assist them in describing the economic effects of the Property Assessed Clean Energy (PACE) programs. Specifically, this report presents calculations of the direct, indirect, and induced impacts of purchases associated with hypothetical PACE program implementations on various measures of economic activity, including direct, indirect and induced impacts on output and employment, and the associated impacts on local, state and federal tax revenues.

## *Findings*

The analysis suggests that such programs have the potential of generating significant economic and fiscal impacts. Specifically, \$4 million in total PACE project spending, across the four cities included in this analysis (\$1 million in spending in each city) will on average generate:

- \$10 million in gross economic output;
- \$1 million in combined Federal, State and Local tax revenue;
- 60 jobs.

As a result, the PACE program projects have the potential to provide stabilizing economic influences that should redound to the

## *The Authors*



Randall Pozdena, PhD  
Senior Economist and  
Managing Director

Alec Josephson, MA  
Senior Economist and  
Director of Economic  
Impact Modeling

*See Appendix A for more  
information about the  
authors.*



## **ECON**orthwest

KOIN Tower  
222 SW Columbia St.  
Suite 1600  
Portland, OR 97201



Phone 503-222-6060  
Fax 503-222-1504  
[www.econw.com](http://www.econw.com)



benefit of involved communities, the regional and national economies and, thereby, to the value of housing collateral of associated mortgages. The channels by which this occurs are through the largely domestic supply-chain linkages of the purchases associated with the project developments themselves, and the net reduction in housing user costs that flows from implementation of cost-beneficial energy-efficiency improvements. We also offer an opinion regarding the likely effect of the senior property tax lien that is associated with the structure of the PACE program. We conclude that, under most likely conditions, the reduction in the cost and volatility of a building's purchased energy requirements should add strength and resilience to home values in a manner that counterbalances the lenders' concern about the lien impairing their mortgage loan collateral.

### Study Approach

The analysis performed by ECONorthwest uses hypothetical purchase activity with the same, approximate composition as PACE projects in terms of the economic sectors involved and does not evaluate particular PACE projects. The impacts of project purchases associated with PACE activity are traced to the linkages between PACE purchases and the chain of vendor relationships. Because PACE projects also have the potential to affect household spending, through reductions in energy costs, the impacts of that effect of the PACE projects were also examined.

The measurement of these relationships is performed within an input-output model framework using IMPLAN model and data. The purchase activity is modeled in four, separate cities with local impacts measured at the county or multi-county level. Impact measures are extended to the nation as a whole, thereby producing local, elsewhere-in-the-US, and total US impact measures for the modeled activities.

The remainder of this report presents the analysis that yielded these findings. First, a brief summary of the PACE program is presented to set the context of the analysis. Then, we report the results of tracing the direct, indirect and induced effects of the spending associated with types of energy-efficiency improvements proposed by the PACE program. We also investigate the economic impacts of any enlargement of household spending potential that arises from the reduced need to purchase energy at market prices. Measurement of the economic implications includes an accounting of the tax-revenue effects of each of the two spending impact channels.

In a final section of the report, the measured economic impacts are discussed in the context of the concerns expressed by bank regulators and secondary mortgage market agencies.

### *Background: The PACE Program*

Since 2008, twenty-four (24) states and the District of Columbia have passed laws enabling local government jurisdictions to establish special assessment districts (also called special improvement districts) that allow residential and commercial property owners to finance renewable energy (RE) and



energy efficiency (EE) improvements on their properties. The National Renewable Energy Laboratory describes the PACE program in this way:

*The pivotal innovation of PACE is the creation of EE/RE assessments that are tied directly to the house and repaid via the property owner's tax bill. The assessment, which is secured by a senior lien on the property, does not require an up-front payment. The lien provides strong debt collateral in the event the homeowner – or business owner – defaults on the assessment. Because the assessment and lien are tied directly to the property, they can be transferred upon sale.<sup>1</sup>*

By the first half of 2010, PACE programs had been launched in a handful of communities and early results were promising. The program appears to be effective in overcoming traditional barriers to significant investment in energy efficiency and renewable energy and the associated spending have been linked to construction activity in communities with PACE programs. Sonoma County, California, for example, reportedly experienced more than \$20 million in program spending activity by April 2010 and had seen its local construction industry employment rate improve dramatically in comparison to neighboring counties.<sup>2</sup>

In early May 2010, Fannie Mae and Freddie Mac issued short letters suggesting that the PACE program violated standard mortgage provisions.<sup>3</sup> In addition, on July 6, 2010 the Federal Housing Finance Agency (FHFA) and the Office of the Comptroller of the Currency (OCC) issued statements concluding that PACE programs “present significant safety and soundness concerns to the housing finance industry.”<sup>4</sup>

As reported by the Lawrence Berkeley National Laboratory's Clean Energy Financing Policy Brief in August 2010, that said, “Typically, the tax liens created by assessments are senior to other obligations, like mortgages, and must be paid first in the event of foreclosure. Fannie Mae, Freddie Mac, the FHFA and other financial regulators reasoned that PACE assessments were, in effect, loans not assessments and so violated standard mortgage provisions requiring priority over any other loan.”<sup>5</sup>

These and related developments have halted most PACE programs, according to Mr. David Gabrielson, Executive Director of PACENow.

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<sup>1</sup> Property-Assessed Clean Energy Financing of Renewables and Efficiency. NREL/BR-6A2-47097. July 2010.

<sup>2</sup> Written testimony of Sonoma County Auditor-Controller-Treasurer-Tax Collector Rod Dole before the House Ways and Means Committee, April 14, 2010

<sup>3</sup> Lawrence Berkeley National Laboratory, “Clean Energy Financing Policy Brief”, August 11, 2010. <http://eetd.lbl.gov/ea/emp/ee-pubs.html>

<sup>4</sup> <http://www.fhfa.gov/webfiles/15884/PACESTMT7610.pdf>

<sup>5</sup> Lawrence Berkeley National Laboratory, “Clean Energy Financing Policy Brief”, August 11, 2010. <http://eetd.lbl.gov/ea/emp/ee-pubs.html>



## *The Role of this Analysis*

PACE proponents are assembling information in an effort to respond to these interpretations of mortgage policy. This includes elucidating the economic and tax impacts of PACE projects as well as the projects' effects on household budgets and housing values. To the extent that PACE projects can be demonstrated to have the potential to enhance economic activity and associated tax collections, they have the potential to strengthen local, state and national economic and fiscal conditions. In so doing, PACE projects can improve the weakened housing and construction markets.

An additional issue, although not the direct focus of the quantitative research presented here, relates even more directly to the concerns of regulators and agencies regarding the PACE program and mortgage risk. To the extent the EE and RE projects reduce and/or stabilize households' energy budgets, the programs have the potential to be risk reducing, rather than risk enhancing, for mortgage lenders.

Both of these issues are discussed herein. We turn first to measuring the Program's potential economic impacts. There are two dimensions to this analysis. One is the impact of the spending that occurs as the result of installing energy efficiency and renewable energy measures. The second is the impact on the household of changes in the burden in utility bills and, thus, on the effective cash resources of the household to support other household spending.

## *Measuring the PACE Program's Project Spending Impacts*

PACE program projects generally involve spending on a variety of energy efficiency and renewable energy improvements to existing housing. The decision to employ the PACE program is made by consumers or developer/builders whose motives are reflective of consumer perspectives of the value of the projects. In this respect, PACE project implementations are no different from other home-improvement investment decisions that are made routinely in the economy, either by owner-occupants or property renovators.<sup>6</sup>

The accepted method of measuring the impact of a purchase such as the PACE or traditional home-improvement projects is to trace the impact of the initial ("direct") purchase decision on the activity of vendors of goods and services affected by the purchase. Input-output models are used to trace these

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<sup>6</sup> The only significant distinction is that the PACE projects are financed through a though a special finance mechanism. Specifically, through arrangements approved by participating tax authorities, the financing is effected by dedication of a property tax increment to support repatriation of the costs of the PACE improvements. A lien is placed on the property to provide security to the financing entity, and to permit the lien to follow the property when it is sold. Although much is made of this distinctive feature of the program, in fact so-called mechanics' liens are commonly placed against property to ensure that unpaid home-improvement contractors, in the worst case, will have a claim against the value of the property.





impacts. Distinctions are made among *direct*, *indirect* and *induced* impacts. (See Appendix B for a brief summary of the input-output model tool that was used to develop the economic impact findings.)

### *Direct impacts*

The renovation of buildings involves the purchase of capital equipment and labor to install such things as photovoltaic systems and insulation products. The expenditure of funds on these activities is associated with increased output by the directly involved enterprises. Each enterprise can be seen as a firm whose production function consists of purchases of labor services from its own employees, and purchases of output of other firms that produce the constituent materials that are used in the provision of the energy production and energy efficiency systems installed at the individual sites.

These activities are said to have *direct* impacts in the form of employment of the associated labor, and addition of value to the inputs purchased from other enterprises. The economic *output* of the installation activity and the *jobs* directly associated with that activity are two key measures of the direct impacts. Economists focus on the economic output measure because it is closest to the incremental contribution to total, gross economic output made by the installation activity. Policy makers concerned with job creation often focus more on the labor activity associated with the activity.

Other dimensions of direct impacts include the taxes as a course of providing the installation activity. The tax impacts take the form of local, state and federal tax payments associated with the incomes of those who own or work at the enterprise that performs the project as well as any payroll taxes, property taxes, sales taxes and other payments to taxing entities to which the provider of the PACE improvements is subject. Local governments and agencies are often interested in this dimension of the direct impacts of the installation activity.

### *Indirect impacts*

The direct purchase activity has *indirect* effects on the economy, in addition to the *direct* effects. These occur because the direct purchases result, in turn, in the purchase of goods and services from other businesses, since virtually no firms provide themselves with every needed input. These indirect, (“supply-chain”) impacts take the same, general form as the direct impacts. That is, indirect purchases result in impacts on labor services, create value-added, contribute tax payments, etc. in the course of each vendor providing its products and services to the installation sector. The input-output modeling of the various sectors that constitute the economy are used to trace the indirect effects through all of the myriad links in the supply chain. Each vendor to the direct installation activity has vendors, who, in turn, have vendors, etc. The matrix mathematics of input-output models permits aggregating the impacts on what is, in theory, an infinite chain of vendor relationships.

### *Induced impacts*

The third, and final mechanism by which the initial, direct purchase activity has impacts is through the consumption expenditures of those who enjoy incomes from the direct or indirect activities that occur.



That is, some of their income is spent purchasing goods and services that also result in a cascade of supply chain effects. These so-called *induced* impacts together with the indirect and direct impacts are additive and constitute the total impact of the installation activity. The ratio of the total impacts to the direct impacts on each of the dimensions of impact is often reported as the *multiplier* effect of the direct activity. Thus, multipliers can be measured for jobs, value-added, tax receipts, or any other dimension of the accumulated impacts.

### *The geography of impacts*

The impact analysis implicitly has geographic dimensions. That is, the various vendors associated with providing goods and services in response to the direct, indirect, and induced purchases can be located in the immediate locality, other localities and states, or foreign countries. It is possible, with the latest versions of input-output data, to assemble impacts at the various geographies. American policy makers are generally interested in activity that accretes to labor, business and governments within the boundaries of our nation. Purchases that occur in foreign countries are often considered "leakage" of impacts to these locations.

From the broader view of the world economy, even foreign impacts may ultimately stimulate demand for US goods and services through the international exchange of goods and services and international flows of financial capital. Nonetheless, it is not unreasonable for policy makers to be interested primarily in certain, specific geographies when measuring impacts. In the analysis reported herein, the direct purchases of installation services are assumed to be located in one of four, cities, with the impacts appraised at both the local and the national level. This is done because regions host different suppliers of goods and services, and have different labor market and tax systems. Thus, the aggregation of impacts to the national level can vary with the locus of the initial purchase activity.

### *The Modeling Tool*

The modeling of the impacts of purchases made under PACE program is performed using the IMPLAN ("IMpact Analysis for PLANning") model. IMPLAN was originally developed by the Forest Service of the U.S. Department of Agriculture in cooperation with the Federal Emergency Management Agency and the Bureau of Land Management of the U.S. Department of the Interior in 1993, and is currently licensed and distributed by the Minnesota IMPLAN Group, Inc.

The IMPLAN model is an implementation of an input-output model—a way of representing an economy that was developed by Wassily Leontief, for which he received the Nobel Memorial Prize in Economic Sciences. An input-output model uses tabular (matrix) representations of an economy to measure the effect of changes in one industry on others. It can be used to measure the effects of purchases made by US consumers and governments, and foreign entities. Details on the constituent



matrices of input-output model systems and the associated mathematics can be found in many sources.<sup>7</sup>

The IMPLAN model is a highly respected implementation of Leontief’s input-output concept, and is generally agreed to be superior to regional impact multiplier systems.<sup>8</sup> IMPLAN is constructed with data assembled for national income accounting purposes, thereby providing a tool that has a robust link to widely accepted data development efforts. In addition, IMPLAN has been subject to detailed scrutiny by experts on regional impact analysis. Most recently, the United States Department of Agriculture (USDA) recognized the IMPLAN modeling framework as “one of the most credible regional impact models used for regional economic impact analysis” and, following a review by experts from seven US agencies, selected IMPLAN as its analysis framework for monitoring job creation associated with the American Recovery and Reinvestment Act (ARRA) of 2009.<sup>9 10</sup> More information on the features of IMPLAN can be found at Appendix B or [www.implan.com](http://www.implan.com).

Application of the IMPLAN model in the case of the PACE program involves the following steps:

1. Development of a representation of PACE projects. This takes the form of a representation of the labor and product purchases that constitute an energy efficiency or renewable energy project.
2. Selection of locales (cities) in which to hypothetically implement the projects. City data is assembled from constituent county data.
3. For each selected city and project, building a model in IMPLAN that emulates the city by linking the constituent counties.
4. Applying the assumed purchase activity to the affected IMPLAN sectors.

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<sup>7</sup> See, for example: Leontief, Wassily W. *Input-Output Economics*. 2nd ed., New York: Oxford University Press, 1986; Miller, Ronald E. and Peter D. Blair. *Input-Output Analysis: Foundations and Extensions*, 2nd edition, Cambridge University Press, 2009: and Ten Raa, Thijs. *The Economics of Input-Output Analysis*. Cambridge University Press, 2005.

<sup>8</sup> One such system is RIMS III. See, US Department of Commerce, Bureau of Economic Analysis, *Regional multipliers: A user handbook for regional input-output modeling system (RIMS II)*. Third edition. Washington, D.C.: U.S. Government Printing Office. 1997.

<sup>9</sup> See excerpts from an April 9, 2009 letter to MIG, Inc., from John Kort, Acting Administrator of the USDA Economic Research Service, on behalf of Secretary Vilsack, at [www.implan.com](http://www.implan.com).

<sup>10</sup> In the economics profession, there is a lively debate as to whether job creation measured using input-output tools such as IMPLAN under- or overstates the economic impacts of the spending activities modeled using the IMPLAN system. Pessimists are tempted to assert that if spending occurs on Project A, then one should account for the fact that Project B may not be pursued because of the diversion of funds to Project A. This view of the economy as a zero-sum game is clearly incorrect in the aggregate, because we observe economic growth despite constrained investment budgets. In this analysis we implicitly embrace this more realistic view because the PACE program, though enabled by public policy, is implemented by the private sector which faces incentives to only pursue cost-beneficial programs. This pursuit of economically efficient projects is consistent with the notion that selecting productivity-enhancing (and thus, resource sparing) projects enlarges the potential of an economy, in contrast to the implication of the zero-sum game perspective.



5. Build a model in IMPLAN that links the purchase data and local models, one by one, to the national model. Run the models to compute direct, indirect and induced impacts.

The manner of representing the PACE activities in IMPLAN is discussed further below.

## Representing PACE Program Purchases in IMPLAN

In order to implement the IMPLAN model in the study of the PACE program, the purchases typically made with PACE projects must be associated with the sectors that are representable within IMPLAN. Recall that there are two, broad classes of PACE program projects:

1. The *energy efficiency* measures focus on reduction in the use of conventionally sourced energy through the use of higher-efficiency devices and products. Such measures include permanent improvements such as energy efficient HVAC systems; attic and wall insulation; duct and home sealing; cool roof systems; solar water heater systems; tankless water heaters; and evaporative coolers.
2. The *renewable energy* projects involve provision of energy to the household by means that are described as “renewable” because of their reliance on sunlight, wind, ocean waves and other, effectively non-depletable resources. Rooftop photovoltaic projects are expected to be the most common form of project associated with the PACE programs.

As the project descriptions above suggest, a diverse family of products constitute the PACE program, making it hazardous to assume a “typical” project. Installation of, say, a particular type of window product, is also difficult to represent in IMPLAN because IMPLAN is able to represent the production functions of a limited number of industrial products, and there is variation in production techniques and product features across producers of the same, general class product.

In addition, the costs of energy efficiency measures vary widely due to regional climate and the local costs of labor and materials. Adding efficient central air conditioning to a home with existing forced air heat, for example, costs approximately \$3,500-\$4,000 and takes about two days.<sup>11</sup> Installing double-paned windows can cost as much as \$20,000 in a two-story home.<sup>12</sup> According to GreenHomes America, a leading residential energy services company which operates from coast to coast, an average whole home retrofit project would cost the homeowner approximately \$10,000.<sup>13</sup> Average labor costs represent 55% of the total and materials costs represent approximately 45%.<sup>14</sup>

Similarly, the costs of renewable energy projects of a given capacity in kilowatts (kW) is also variable due to variations in the availability of the underlying natural resource (e.g., sunlight in the case of photovoltaic devices), the cost of installation labor, variations in the characteristics of the property, etc.

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<sup>11</sup> <http://www.fhfa.gov/webfiles/15884/PACESTMT7610.pdf>

<sup>12</sup> Lawrence Berkeley National Laboratory, “Clean Energy Financing Policy Brief”, August 11, 2010. <http://eetd.lbl.gov/ea/emp/ee-pubs.html>

<sup>13</sup> Email correspondence of Mr. Cliff Staten with GreenHomes America Senior VP Michael Rogers, 2/18/11.

<sup>14</sup> *ibid*



According to a December 2010 report by the Lawrence Berkeley National Laboratory, the national average for a 4kW solar photovoltaic system is \$30,000.<sup>15</sup> Materials account for 52%, while labor costs associated with marketing, permitting and system installation accounts for approximately 48% of the total.<sup>16</sup>

Because of the variations in the nature of energy efficiency and renewable energy projects, we determined it is not appropriate to characterize a “typical” PACE project. In addition, energy efficiency and renewable energy project activities are not represented at high resolution in the available input-output model data. These models disaggregate the economy into approximately 440 sectors, and it is necessary to represent project spending in terms of these sectors. Therefore, in the analysis that is presented herein, the PACE projects are not specified in detail; rather, we model the impacts in the following fashion:

1. An arbitrary amount of purchases (\$1 million in 2011 dollar terms) is used to represent PACE activity in a given locale. Since the inner workings of IMPLAN assume a constant production function (specific to the year the model data represents), taking this approach allows one to scale the impacts to an actual program simply by scaling actual spending to the \$1 million placeholder value.
2. It is arbitrarily assumed that 50% of the assumed purchases is associated with photovoltaic (renewable energy) installations, and 50% with energy efficiency projects.
3. Energy efficient project purchases were evenly allocated to the various weatherization and other energy efficiency product sectors represented in IMPLAN. (See Exhibit 1 in Appendix C for the list of IMPLAN and associated North American Industrial Classification System (NAICS) sectoral codes that likely comprise the sectors affected by the energy efficiency and renewable energy project purchases.)
4. No special edits of the IMPLAN model coefficients were made during the modeling. Specifically, the regional purchase coefficients (RPCs) that represent the share of product purchases that are made within the US was left at the average that IMPLAN derives from national income accounting data. For example, solar photovoltaic systems in IMPLAN have an RPC of 75 percent (i.e., less than would be the case with higher US content), because it is not possible to distinguish retail photovoltaic products from other crystalline semiconductor products. This probably yields a somewhat more conservative (low) total domestic impact because an active program like PACE could make special efforts to source products with higher shares of US content.

### Geographic Representation in IMPLAN

ECONorthwest and its client agreed that it would be useful to model the consequences of PACE activity in a variety of locales. The selected, four communities are:

1. Columbus, OH (built from Delaware and Franklin Counties)
2. Long Island, NY (built from Nassau and Suffolk Counties)
3. Santa Barbara, CA (represented by Santa Barbara County)
4. San Antonio, TX (represented by Bexar County)

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<sup>15</sup> “Tracking the Sun III,” December 2010. <http://eetd.lbl.gov/ea/emp/re-pubs.html>

<sup>16</sup> “The Prospect for \$1/Watt from Solar” U.S. DOE Workshop Presentation by John Lushetsky, August 10, 2010.



The primary reason for modeling various locales is that vendor relationships vary geographically, with some areas able to source from the immediate locale, while others tending to source from distant US sources, or overseas suppliers. Budgetary considerations limited the number of locales able to be modeled, because representation of each locale requires acquisition of individual databases, in addition to linkages to the national model. However, the four chosen locales are diverse in geography and climate conditions, and are locales of interest to the PACE program.

### Findings of the Project Spending Impact Analysis

The findings of the economic impact analysis are presented in detail in Exhibit 2 through Exhibit 10 in the Appendix C. These exhibits report the economic impacts of the hypothetical \$1 million in project purchases. In the exhibits, these impacts are reported along the following dimensions:

- **The type of project.** This is defined as a mix of energy efficiency measures or a photovoltaic renewable energy installation;
- **The dimension of the economic impact.** The reported measures are economic output, personal income, jobs and tax revenues;
- **The type of impact.** The direct, indirect, induced and total impacts are reported.
- **The geography of the impact.** Impacts are measured for each of the modeled cities, for the rest-of-the-nation, and the nation as a whole. In the aggregation to the geographic level, a 50% weight is put on energy efficiency and photovoltaic projects, respectively.
- **The type of tax revenue generated.** For compactness, the wide variety of tax types reported by IMPLAN are grouped into four tax base levies—corporate profits and dividends taxes, indirect business taxes, personal taxes, and social insurance levies.
- **The level of government receiving the tax revenues.** These are presented as state and local, and federal subtotals, respectively.

It would be cumbersome to describe here each of the several hundred impact measures provided in the exhibits. Instead, we first report here the range of impacts reported in the summary exhibits, Exhibit 2 and Exhibit 3 in Appendix C. These tables summarize the impacts by the type of project, the type of impact, and the dimension of the economic impact for each of the cities, and for elsewhere-in-the-US and the US as a whole.<sup>17</sup>

Turning first to solar photovoltaic projects, we find the following impacts for spending \$1 million in each of the four cities:

- The impact on total economic output ranges from approximately \$718,000 to \$872,000 at the individual city level, and is \$7.044 million for the rest of the US, and \$10.250 million for the US as a whole.
- The impact on personal income ranges from approximately \$284,000 to \$330,000 at the individual city level, and is \$2.066 million for the rest of the US, and \$3.325 million for the US as a whole.

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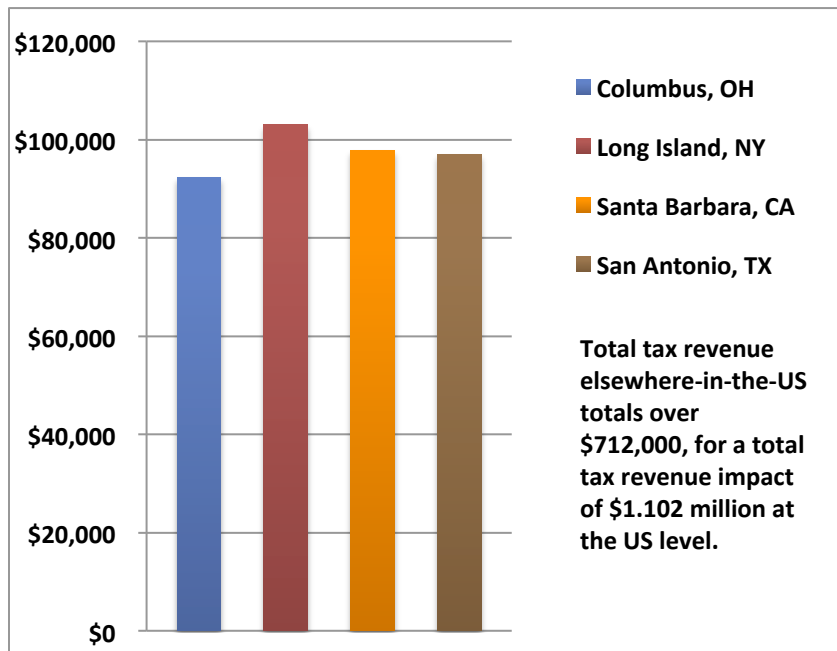
<sup>17</sup> Elsewhere-in-the-US and national totals aggregate across the four analyzed cities.

## Economic Impact Analysis of Property Assessed Clean Energy Programs (PACE)



- The impact on jobs ranges from 6 to 8 additional jobs at the individual city level, and is 35 for the rest of the US, and 60 for the US as a whole.
- Tax revenue impacts at the federal level range from \$55,000 to \$63,000 at the individual city level, and is \$426,000 for the rest of the US, and \$669,000 for the US as a whole.
- Tax revenue impacts at the state and local level range from \$34,000 to \$41,000 at the individual city level, and is \$287,000 for the rest of the US, and \$433,000 for the US as a whole.
- Total tax revenue impact at all levels of government is \$1.102 million at the US level.

Figure 1. Total Tax Revenue (Fiscal) Impacts at the City Level, per \$1 million in Project Spending per City.



For energy efficiency projects, we find the following impacts for each \$1 million in purchases at the city level:

- The impact on total economic output ranges from approximately \$717,000 to \$939,000 at the individual city level, and is \$7.570 million for the rest of the US, and \$10.925 million for the US as a whole.
- The impact on personal income ranges from approximately \$283,000 to \$352,000 at the individual city level, and is \$1.943 million for the rest of the US, and \$3.232 million for the US as a whole.
- The impact on jobs ranges from 5 to 8 additional jobs at the individual city level, and is 35 for the rest of the US, and 61 for the US as a whole.
- Tax revenue impacts at the federal level range from \$60,000 to \$66,000 at the individual city level, and is \$307,000 for the rest of the US, and \$658,000 for the US as a whole.
- Tax revenue impacts at the state and local level range from \$35,000 to \$41,000 at the individual city level, and is \$259,000 for the rest of the US, and \$411,000 for the US as a whole.
- Total tax revenue impact at all levels of government is \$1.058 million at the US level.



As we have modeled the two project types in IMPLAN, there appears to be a somewhat greater local impact associated with the energy efficiency versus the solar photovoltaic project types. This is consistent with the fact that the specialized products and labor needed to produce photovoltaic products are not likely to be as localized as are the products used in energy efficiency improvements.

When viewed from the jobs impact perspective, the \$4 million of PACE-type project spending across the four cities is associated with approximately 60 jobs somewhere in the nation. If one viewed the PACE program as a jobs stimulus program (akin to those pursued at public expense under American Recovery and Reinvestment Act of 2009), the cost per job at \$67,000 is quite modest. In fact, of course, in the PACE program the only significant role of government is to authorize a financing mechanism to overcome what some believe to be non-economic impediments to credit access.

If viewed, alternatively, from a fiscal perspective, the \$4 million of spending across the four cities ultimately provides over \$1 million in tax revenue to local, state or federal taxing entities. If the PACE program is able to identify and stimulate cost-beneficial investments in energy enhancements of housing, government stands to be a major beneficiary of the associated private spending.

### *Measuring the PACE Program's Household Budget Impacts*

In addition to the spending impacts associated with developing PACE-type projects, cost-beneficial PACE projects<sup>18</sup> should also reduce and/or stabilize the cost of energy to the households that occupy the affected housing units. By definition, a cost-beneficial project is one that, over its lifetime, provides the property owner more in the form of avoided energy costs than is spent enhancing the home.<sup>19</sup> Access to alternative energy sources (through so-called renewable energy projects) can also provide, in effect, insurance against the uncertainty about the path of future fossil fuel prices. This insurance effect can be modeled as a financial option that has a positive financial value even if conventional fuel prices are just variable, and do not necessarily trend upward.

Regardless of whether the project persistently lowers the market-energy needs of the household (through energy efficiency projects) or simply provides insurance against uncertainty in market fuel price movements, a cost-beneficial project reduces a household's effective budgetary burden of home

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<sup>18</sup> ECONorthwest was not asked to opine on whether typical PACE projects are, in fact, cost-beneficial. However, since private agents are the ones primarily involved in the decision-making, it is reasonable to anticipate that the projects that are successfully adopted are perceived as cost-beneficial by households or contractors developing the projects for sale to consumer households.

<sup>19</sup> The typical financial calculus involved in this determination involves, therefore, comparing the present value at the time the enhancement spending occurs of the stream of expected energy cost savings enjoyed over the lifetime of the energy enhancements. A discount rate is applied to the stream of energy cost savings in this calculation.





ownership.<sup>20</sup> Thus, to the extent that the project results in additional free cash flow in the household (after paying the tax increment used to pay for the PACE improvements), there can be annual increments of economic impact associated with the likely additional spending that the household will perform.

This impact can also be measured using the IMPLAN modeling system by assuming a hypothetical quantity of additional, non-utility spending by households. As with the PACE program spending impacts, there are direct, indirect, and induced effects of this spending. In this case, however, the amount measured by this method yields only the gross spending effects; the loss of spending to the utility sector will result in a partial offset to these impacts.<sup>21</sup>

Exhibit 11, on page 31, summarizes the city-level and US total impacts, in present value terms, of a household enjoying energy cost savings of \$1,000 per year in 2011 dollars for 25 years. As the exhibit reveals, the gross impacts of even a modest annual cost savings can yield large impacts on output, personal income, jobs, and tax revenues over a 25-year period.

### *Conclusions: The Implications of the Analysis for Issuers of Mortgages on PACE Project Properties*

The background of the PACE program reveals that the program is currently not operational because of concerns of bank regulators and secondary mortgage market entities regarding the security of their access to the collateral value of the property in the event of default. The existence of a senior lien (senior to the mortgage) is always of concern to mortgage issuers, especially in non-recourse states (i.e., states in which the lender may not levy claims against assets other than the mortgaged property itself).<sup>22</sup>

Several aspects of the impact analysis presented here bear upon the position taken by those concerned about such risks. First, to the extent that the PACE program operates in the manner assumed in the analysis in this report, use of the program has the potential to have positive economic impacts on the regional (city) economy, as well as the nation as a whole. Cost-beneficial programs that generate such impacts can contribute to the process of recovery for both the economy in general, and the construction services sector in particular.

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<sup>20</sup> Even in the special case where a renewable energy project only provides insurance against future volatility of market fuel prices, the household enjoys budgetary relief. It need not set aside funds against the eventuality of a surprise upward movement in energy costs.

<sup>21</sup> Without knowing the composition of utility and non-utility spending of the affected income groups, the effects of the shift in spending composition can only be estimated in rough terms.

<sup>22</sup> There are 17 such non-recourse states.



Second, to the extent that the projects generate the generous revenues for local, state and federal jurisdictions modeled here, additional stabilization of the general economy can be expected. This is because the difficulties that governments currently have in balancing their budgets is requiring either reductions in public services or increases in taxes, or both. The risk of loss of public services, or reductions in its quality, and the risks of increased taxation on private activity create an environment of uncertainty, in general, and disrupt household location, migration and housing tenure decisions. On some margin, these conditions weaken the strength of the housing market, aggravating lender collateral problems. Cost-beneficial private sector activity that has the effect of enhancing the value of housing services should not be discouraged by lenders, even from the perspective of their own self-interest.

Third, in an environment of uncertain and costly supply of conventional fuels, properties that are distinguished by having energy-sparing or inflation-defensive features will enjoy priority in desirability, and hence, enjoy superior pricing in the marketplace. In a manner similar to the relative price movements of gasoline-consumptive SUVs versus more fuel-efficient vehicles, properties with good energy efficiency characteristics will rise in price in an uncertain commodity price environment.

Finally, although the existence of a lien in a superior position to a mortgage is legitimately worrisome to lenders, the increment in value of the home that is represented by the energy technologies financed by the lien may well move counter-cyclically to other factors affecting home prices and collateral value. If this is the case, then the putative adverse presence of the lien may well be counterbalanced by the superior net resilience of PACE-improved home values. This seems true whether the economy fails to come gracefully out of the recession because of central bank difficulties managing the balance between inflation and real interest rates, or because of rising and/or uncertain energy costs:

- If the monetary expansion results in higher, general inflation levels in the future, households for whom the absolute energy cost of their budgets is below average will be less subject to inflation effects on energy cost components of their budgets than households with larger absolute energy budgets. Moreover, to the extent that the energy features of the home provide a hedge against some portion of general inflation, the value of the home will rise by an amount reflective of the value of that hedge.
- If real interest rates rise instead, those homes with fixed lien payments associated with the PACE program (and, ideally, a fixed-rate mortgage as well) enjoy, in effect, a reduction in the present value of the lien payment obligations. Although higher mortgage rates will not be favorable to home sales or home building, creditors with fixed-rate obligations enjoy an implicit capital gain (much as the holders of low rate mortgages will suffer a capital loss). Abandoning a home with a fixed lien in a rising real interest rate market makes no more sense than abandoning a low-rate mortgage in that environment.
- If energy prices rise independently of other prices (commodity price inflation), the value of the energy-sparing improvements will rise, even if and as the higher energy prices impair economic recovery, incomes and housing demand. By recognizing the value of the energy-sparing features of the home and accommodating borrowers who must take on property tax liens to enjoy these



features, the lenders are, in effect, putting themselves in a better position than if they had lent the same principal amount to a homeowner who had not acquired protection against energy price movements.

In summary, it is hard to construct a scenario in which the presence of a lien that is associated with value-enhancing and stabilizing housing services adds to the riskiness of a mortgage vs. a loan on a home without the lien and energy features, everything else being equal.

These arguments would be less persuasive, of course, if one did not believe that (a) the housing market recognizes the value of energy-sparing features of homes or that (b) the programs of PACENow and like initiatives will deliver improvements that cost-effectively provide the homeowner with lower energy cost burdens and/or a hedge against rising or uncertain energy prices. ECONorthwest cannot opine on the logic of (b), but has experience in evaluating the relationship between the market prices of homes and their energy features. In 1993, ECONorthwest published a study of an energy-efficient mortgage program that was performed for the Oregon Department of Energy. Using a unique database that contained information on various home insulation and heat source features of homes that sold in Oregon, ECONorthwest established both that the market does recognize the present value of energy cost savings in higher home prices and that the changes in Oregon's building code in 1992 (to reduce energy use by housing) were cost-beneficial.<sup>23</sup>

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<sup>23</sup> See, *Implementing Oregon's Energy Efficient Mortgage Program: Final Report*, ECONorthwest, June 1993. In Part 3 of that report ("Market Response to Energy Saving Features") an econometric analysis was performed using a special database provided by the Appraisers' Comp Service (ACS). At the time, the ACS maintained a database of real estate sales in major markets so that appraisers may obtain comparable sales information for use in appraisals. Uniquely, the database contained information on certain energy-related features of the homes sold including ceiling insulation value, floor insulation value, wall insulation value, type of heating and whether the home had been built to the 1992 code (in addition to many other features of the homes). The sales prices covered a narrow period of September 4, 1992 to June 15, 1993, and comprised approximately 2,780 total observations in two metropolitan areas of Oregon. The econometric analysis revealed that buyers assigned high values to energy-sparing features. The value of those features was such that ECONorthwest concluded on page 48 that "...the 1992 code enhancements are associated with significant enhancements in home value. All of the estimates are far in excess of the estimated costs of the 1992 code described by builders in Part One of this report."



## Appendix A: About the Authors

### *Randall Pozdena, PhD, Senior Economist and Managing Director*

Dr. Pozdena leads ECONorthwest's quantitative analysis practice. He joined ECONorthwest as a managing director and head of its Portland office in 1991. He has extensive experience in macro-economic modeling and forecasting, project feasibility analysis, banking and securities markets, real-estate economics, and monetary policy. In this capacity, he has developed and applied project evaluation and pricing tools, and state, regional and sectoral macroeconomic forecasting and economic impact models. Prior to joining ECONorthwest, Pozdena was research Vice President of the Federal Reserve Bank of San Francisco. He directed the Banking and Regional Studies section, which advised on matters relating to financial-market developments, mortgage and housing markets, banking operations and regulation, and the regional economies of the eight western United States. The latter duties involved developing and operating models of states and metropolitan-area economies and analysis of credit flows in the economy. Before his work at the Federal Reserve Bank, Pozdena was a senior economist at SRI International, where he provided consulting on economics, finance, and transportation economics. In addition, he has taught economics and finance at the Graduate School of Business, University of California, Berkeley and at the Graduate School of Administration, University of California, Irvine. He was also associated with the Institute of Transportation Studies at Irvine. Pozdena has been a member of the CFA Institute for over 15 years and a member, and former board member, of the Portland Society of Financial Analysts. He has written over 50 published books and papers, has 21 listings in the Journal of Economic Literature, and over 5,000 search cross-references in Google Research.

### *Alec Josephson, MA, Senior Economist and Director of Economic Impact Analysis*

Josephson has been with ECONorthwest since 1992 and has participated in well over 300 economic impact studies using the IMPLAN modeling systems. Josephson's experience spans a wide range of industries, sectors, and programs, including major transportation improvement projects; heavy and light manufacturing activities; renewable energy projects and technologies; agriculture, forestry, mining, and commodities; and economic development projects. Josephson recently completed a comprehensive economic analysis of the impacts from proposed changes to Seattle area transportation resulting from restructuring of the Alaska Way Viaduct, including analysis of tolling and other congestion models, impacts of freight traffic, analysis of the short-term construction impacts and the long-term accessibility and business development impacts. In addition to his work with ECONorthwest, Mr. Josephson is an adjunct professor of economics at Pacific University, where he teaches courses in energy and environmental economics, microeconomics, and macroeconomics. Mr. Josephson and his staff conducted the modeling presented in this report.





## Appendix B: The IMPLAN Modeling System<sup>24</sup>

### *Social Accounting*

IMPLAN's Social Accounting Matrices (SAMs) capture the actual dollar amounts of all business transactions taking place in a regional economy as reported each year by businesses and governmental agencies. SAM accounts are a better measure of economic flow than traditional input-output accounts because they include "non-market" transactions. Examples of these transactions would be taxes and unemployment benefits.

### *Multipliers*

Social Accounting Matrices can be constructed to show the effects of a given change on the economy of interest. These are called Multiplier Models. Multiplier Models study the impacts of a user-specified change in the chosen economy for 440 different industries. Because the Multiplier Models are built directly from the region specific Social Accounting Matrices, they will reflect the region's unique structure and trade situation.

Multiplier Models are the framework for building impact analysis questions. Derived mathematically, these models estimate the magnitude and distribution of economic impacts, and measure three types of effects that are displayed in the final report. These are the direct, indirect, and induced changes within the economy. Direct effects are determined by the Event as defined by the user (i.e. a \$10 million dollar order is a \$10 million dollar direct effect). The indirect effects are determined by the amount of the direct effect spent within the study region on supplies, services, labor and taxes. Finally the induced effect measures the money that is re-spent in the study area as a result of spending from the indirect effect. Each of these steps recognizes an important leakage from the economic study region spent on purchases outside of the defined area. Eventually these leakages will stop the cycle.

### *Trade Flows Method*

Unique to IMPLAN data, 2008 and forward, is a method of tracking regional purchases by estimating trade flows. An updated and improved method for calculating and tracking the movement of commodities between industries within a region, this method tracks over 500 commodities in each study area, and allows more accurate capturing of indirect and induced effects. This new method of capturing regional purchase coefficients also makes it possible for our Version 3 software to perform Multiregional Analysis, so users can see how a change in their local region causes additional affects surrounding areas.

### *Cost-Effective Modeling*

Tremendous amounts of data are required in order to run Social Accounting Matrices and Multiplier Models that will accurately estimate the effects of a given event on an economy. There are numerous

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<sup>24</sup> Abstracted from descriptive materials offered by IMPLAN at [www.implan.com](http://www.implan.com).



factors that need to be taken into account to fully visualize direct, indirect and induced effects of an event. The expense and labor of developing this data independently are prohibitive. By offering the data in many discreet forms, IMPLAN also allows studies to be localized effectively and only data of interest to be purchased.



## *Appendix C: Exhibits<sup>25</sup>*

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<sup>25</sup> The data in all exhibits is from ECONorthwest using IMPLAN modeling and emulation of PACE project purchases as described in the text of the report.





**Exhibit 1: IMPLAN and NAICS Sectors Associated with PACE Project Activity**

IMPLAN Sector	IMPLAN Description	2007 NAICS Codes
40	Maintenance and repair construction of residential structures	23*
99	Wood windows and doors and millwork manufacturing	32191
128	Synthetic rubber manufacturing	325212
137	Adhesive manufacturing	32552
146	Polystyrene foam product manufacturing	32614
149	Other plastics product manufacturing	32619
168	Mineral wool manufacturing	327993
216	Air conditioning- refrigeration- and warm air heat	333415
243	Semiconductor and related device manufacturing	334413



Exhibit 2: Summary of Economic Impacts of Photovoltaic Projects, per \$1 million in Project Purchases

**Economic Impacts - Solar Photovoltaics**

<b>Impact Area / Type of Impact</b>	<b>Direct</b>	<b>Indirect</b>	<b>Induced</b>	<b>Total</b>
<b>Santa Barbara, CA</b>				
Output	\$490,221	\$116,918	\$173,047	\$780,185
Personal Income	\$214,608	\$45,318	\$59,668	\$319,593
Jobs	3	1	1	6
<b>San Antonio, TX</b>				
Output	\$507,649	\$145,867	\$218,552	\$872,068
Personal Income	\$198,656	\$57,671	\$73,611	\$329,937
Jobs	5	1	2	8
<b>Columbus, OH</b>				
Output	\$501,674	\$132,488	\$201,844	\$836,006
Personal Income	\$202,121	\$55,477	\$68,120	\$325,718
Jobs	4	1	2	7
<b>Long Island, NY</b>				
Output	\$438,330	\$121,541	\$157,729	\$717,599
Personal Income	\$177,780	\$49,051	\$57,453	\$284,284
Jobs	3	1	1	5
<b>Elsewhere in the United States</b>				
Output	\$1,587,757	\$2,597,183	\$2,859,334	\$7,044,273
Personal Income	\$409,984	\$778,674	\$877,716	\$2,066,374
Jobs	4	12	18	35
<b>United States Total</b>				
Output	\$3,525,630	\$3,113,996	\$3,610,504	\$10,250,130
Personal Income	\$1,203,148	\$986,190	\$1,136,566	\$3,325,904
Jobs	20	16	24	60

Economic Impact Analysis of Property Assessed Clean Energy Programs (PACE)



Exhibit 3: Summary of Fiscal Impacts for Solar Photovoltaics, per \$1 million in Project Purchases

**Fiscal Impacts - Solar Photovoltaics**

Impact Area / Type of Impact	Direct	Indirect	Induced	Total
<b>Santa Barbara, CA</b>				
Federal	\$33,390	\$17,238	\$12,393	\$63,021
State and Local	\$12,188	\$8,920	\$13,578	\$34,685
Total All	\$45,578	\$26,158	\$25,971	\$97,706
<b>San Antonio, TX</b>				
Federal	\$33,990	\$13,135	\$16,104	\$63,228
State and Local	\$6,964	\$12,005	\$14,725	\$33,693
Total All	\$40,953	\$25,139	\$30,829	\$96,921
<b>Columbus, OH</b>				
Federal	\$29,878	\$10,819	\$14,317	\$55,013
State and Local	\$10,491	\$11,259	\$15,467	\$37,217
Total All	\$40,369	\$22,078	\$29,784	\$92,230
<b>Long Island, NY</b>				
Federal	\$36,904	\$11,239	\$13,725	\$61,867
State and Local	\$15,494	\$11,213	\$14,451	\$41,157
Total All	\$52,398	\$22,451	\$28,176	\$103,024
<b>Elsewhere in the United States</b>				
Federal	\$88,116	\$149,923	\$187,622	\$425,660
State and Local	\$37,306	\$100,785	\$148,646	\$286,737
Total All	\$125,422	\$250,707	\$336,268	\$712,396
<b>United States Total</b>				
Federal	\$222,276	\$202,352	\$244,160	\$668,788
State and Local	\$82,442	\$144,180	\$206,866	\$433,488
Total All	\$304,718	\$346,532	\$451,026	\$1,102,276



Exhibit 4: Summary of Economic Impacts of Energy Efficiency Programs, per \$1 million in Project Purchases

**Economic Impacts - EE Measures**

Impact Area / Type of Impact	Direct	Indirect	Induced	Total
<b>Santa Barbara, CA</b>				
Output	\$513,252	\$123,023	\$174,721	\$810,996
Personal Income	\$215,490	\$46,942	\$60,245	\$322,677
Jobs	3	1	1	6
<b>San Antonio, TX</b>				
Output	\$513,521	\$145,532	\$219,473	\$878,525
Personal Income	\$199,952	\$57,372	\$73,921	\$331,244
Jobs	5	1	2	8
<b>Columbus, OH</b>				
Output	\$565,830	\$155,640	\$217,883	\$939,353
Personal Income	\$215,850	\$62,958	\$73,534	\$352,342
Jobs	4	1	2	8
<b>Long Island, NY</b>				
Output	\$442,063	\$113,635	\$161,223	\$716,921
Personal Income	\$180,828	\$44,978	\$57,298	\$283,104
Jobs	3	1	1	5
<b>Elsewhere in the United States</b>				
Output	\$1,772,714	\$3,070,827	\$2,735,981	\$7,579,521
Personal Income	\$367,042	\$736,774	\$839,779	\$1,943,594
Jobs	6	11	17	35
<b>United States Total</b>				
Output	\$3,807,378	\$3,608,656	\$3,509,280	\$10,925,314
Personal Income	\$1,179,160	\$949,024	\$1,104,776	\$3,232,960
Jobs	21	16	24	61

Economic Impact Analysis of Property Assessed Clean Energy Programs (PACE)



Exhibit 5: Summary of Fiscal Impacts of Energy Efficiency Measures, per \$1 million in Project Purchases

**Fiscal Impacts - EE Measures**

Impact Area / Type of Impact	Direct	Indirect	Induced	Total
<b>Santa Barbara, CA</b>				
Federal	\$33,515	\$17,551	\$12,513	\$63,578
State and Local	\$12,119	\$9,146	\$13,709	\$34,973
Total All	\$45,633	\$26,697	\$26,222	\$98,551
<b>San Antonio, TX</b>				
Federal	\$36,421	\$12,584	\$16,715	\$65,720
State and Local	\$8,334	\$11,458	\$15,287	\$35,079
Total All	\$44,755	\$24,042	\$32,002	\$100,798
<b>Columbus, OH</b>				
Federal	\$32,427	\$12,301	\$15,454	\$60,181
State and Local	\$11,852	\$12,613	\$16,695	\$41,159
Total All	\$44,279	\$24,913	\$32,149	\$101,340
<b>Long Island, NY</b>				
Federal	\$37,245	\$10,333	\$13,688	\$61,265
State and Local	\$15,578	\$10,439	\$14,413	\$40,429
Total All	\$52,823	\$20,771	\$28,101	\$101,694
<b>Elsewhere in the United States</b>				
Federal	\$72,768	\$145,060	\$178,967	\$396,795
State and Local	\$17,150	\$101,554	\$140,997	\$259,701
Total All	\$89,918	\$246,614	\$319,964	\$656,495
<b>United States Total</b>				
Federal	\$212,374	\$197,828	\$237,336	\$647,538
State and Local	\$65,032	\$145,208	\$201,100	\$411,340
Total All	\$277,406	\$343,036	\$438,436	\$1,058,878

Economic Impact Analysis of Property Assessed Clean Energy Programs (PACE)



Exhibit 6: Summary of Impacts, Columbus Ohio, per \$1 million in Project Purchases

**Solar Photovoltaics**

Type of Impact	Direct	Indirect	Induced	Total
Output	\$501,674	\$132,488	\$201,844	\$836,006
Personal Income	\$202,121	\$55,477	\$68,120	\$325,718
Jobs	4.3	1.2	1.7	7.2

Type of Tax	Direct	Indirect	Induced	Total
<b>Federal</b>				
Corporate Profits	\$1,831	\$829	\$1,818	\$4,478
Indirect Business	\$534	\$1,804	\$2,378	\$4,715
Personal	\$9,924	\$2,589	\$3,164	\$15,676
Social Insurance	\$17,590	\$5,597	\$6,958	\$30,144
Total Federal	\$29,878	\$10,819	\$14,317	\$55,013
<b>State and Local</b>				
Corporate Profits and Dividends	\$1,949	\$883	\$1,935	\$4,766
Indirect Business	\$2,589	\$8,752	\$11,539	\$22,880
Personal	\$5,391	\$1,406	\$1,719	\$8,515
Social Insurance	\$564	\$219	\$275	\$1,057
Total State and Local	\$10,491	\$11,259	\$15,467	\$37,217
Total All	\$40,369	\$22,078	\$29,784	\$92,230

**Energy Efficiency**

Type of Impact	Direct	Indirect	Induced	Total
Output	\$565,830	\$155,640	\$217,883	\$939,353
Personal Income	\$215,850	\$62,958	\$73,534	\$352,342
Jobs	4.5	1.3	1.8	7.6

Type of Tax	Direct	Indirect	Induced	Total
<b>Federal</b>				
Corporate Profits	\$2,225	\$1,004	\$1,963	\$5,192
Indirect Business	\$645	\$1,999	\$2,566	\$5,210
Personal	\$10,560	\$2,937	\$3,415	\$16,912
Social Insurance	\$18,997	\$6,361	\$7,511	\$32,868
Total Federal	\$32,427	\$12,301	\$15,454	\$60,181
<b>State and Local</b>				
Corporate Profits and Dividends	\$2,368	\$1,069	\$2,089	\$5,525
Indirect Business	\$3,129	\$9,701	\$12,455	\$25,284
Personal	\$5,736	\$1,595	\$1,855	\$9,186
Social Insurance	\$620	\$249	\$297	\$1,165
Total State and Local	\$11,852	\$12,613	\$16,695	\$41,159
Total All	\$44,279	\$24,913	\$32,149	\$101,340

Economic Impact Analysis of Property Assessed Clean Energy Programs (PACE)



Exhibit 7: Summary of Impacts, Long Island, NY, per \$1 million in Project Purchases

**Solar Photovoltaics**

Type of Impact	Direct	Indirect	Induced	Total
Output	\$438,330	\$121,541	\$157,729	\$717,599
Personal Income	\$177,780	\$49,051	\$57,453	\$284,284
Jobs	3.0	0.8	1.1	5.0

Type of Tax	Direct	Indirect	Induced	Total
<b>Federal</b>				
Corporate Profits	\$1,279	\$556	\$1,002	\$2,836
Indirect Business	\$360	\$856	\$1,086	\$2,301
Personal	\$16,486	\$4,537	\$5,298	\$26,320
Social Insurance	\$18,780	\$5,291	\$6,340	\$30,411
Total Federal	\$36,904	\$11,239	\$13,725	\$61,867
<b>State and Local</b>				
Corporate Profits and Dividends	\$2,174	\$945	\$1,705	\$4,823
Indirect Business	\$3,135	\$7,458	\$9,455	\$20,048
Personal	\$9,489	\$2,611	\$3,050	\$15,150
Social Insurance	\$697	\$199	\$241	\$1,137
Total State and Local	\$15,494	\$11,213	\$14,451	\$41,157
Total All	\$52,398	\$22,451	\$28,176	\$103,024

**Energy Efficiency**

Type of Impact	Direct	Indirect	Induced	Total
Output	\$442,063	\$113,635	\$161,223	\$716,921
Personal Income	\$180,828	\$44,978	\$57,298	\$283,104
Jobs	3.1	0.8	1.1	4.9

Type of Tax	Direct	Indirect	Induced	Total
<b>Federal</b>				
Corporate Profits	\$1,324	\$530	\$1,000	\$2,854
Indirect Business	\$341	\$799	\$1,083	\$2,222
Personal	\$16,805	\$4,161	\$5,283	\$26,248
Social Insurance	\$18,776	\$4,844	\$6,323	\$29,942
Total Federal	\$37,245	\$10,333	\$13,688	\$61,265
<b>State and Local</b>				
Corporate Profits and Dividends	\$2,252	\$902	\$1,701	\$4,854
Indirect Business	\$2,965	\$6,961	\$9,430	\$19,355
Personal	\$9,672	\$2,395	\$3,042	\$15,109
Social Insurance	\$690	\$182	\$241	\$1,112
Total State and Local	\$15,578	\$10,439	\$14,413	\$40,429
Total All	\$52,823	\$20,771	\$28,101	\$101,694



Exhibit 8: Summary of Impacts, San Antonio, Texas, per \$1 million in Project Purchases

**Solar Photovoltaics**

Type of Impact	Direct	Indirect	Induced	Total
Output	\$507,649	\$145,867	\$218,552	\$872,068
Personal Income	\$198,656	\$57,671	\$73,611	\$329,937
Jobs	4.5	1.3	1.8	7.7

Type of Tax	Direct	Indirect	Induced	Total
<b>Federal</b>				
Corporate Profits	\$2,388	\$1,075	\$2,043	\$5,506
Indirect Business	\$610	\$1,566	\$1,891	\$4,067
Personal	\$11,903	\$3,747	\$4,305	\$19,955
Social Insurance	\$19,089	\$6,747	\$7,865	\$33,701
Total Federal	\$33,990	\$13,135	\$16,104	\$63,228
<b>State and Local</b>				
Corporate Profits and Dividends	\$818	\$368	\$700	\$1,886
Indirect Business	\$4,300	\$11,030	\$13,323	\$28,652
Personal	\$1,564	\$492	\$566	\$2,621
Social Insurance	\$283	\$115	\$137	\$534
Total State and Local	\$6,964	\$12,005	\$14,725	\$33,693
Total All	\$40,953	\$25,139	\$30,829	\$96,921

**Energy Efficiency**

Type of Impact	Direct	Indirect	Induced	Total
Output	\$513,521	\$145,532	\$219,473	\$878,525
Personal Income	\$199,952	\$57,372	\$73,921	\$331,244
Jobs	4.5	1.3	1.8	7.7

Type of Tax	Direct	Indirect	Induced	Total
<b>Federal</b>				
Corporate Profits	\$2,845	\$1,058	\$2,121	\$6,023
Indirect Business	\$767	\$1,493	\$1,963	\$4,222
Personal	\$12,659	\$3,600	\$4,469	\$20,727
Social Insurance	\$20,151	\$6,434	\$8,163	\$34,748
Total Federal	\$36,421	\$12,584	\$16,715	\$65,720
<b>State and Local</b>				
Corporate Profits and Dividends	\$974	\$362	\$727	\$2,063
Indirect Business	\$5,403	\$10,514	\$13,832	\$29,748
Personal	\$1,663	\$473	\$587	\$2,723
Social Insurance	\$295	\$109	\$142	\$546
Total State and Local	\$8,334	\$11,458	\$15,287	\$35,079
Total All	\$44,755	\$24,042	\$32,002	\$100,798



Economic Impact Analysis of Property Assessed Clean Energy Programs (PACE)



Exhibit 9: Summary of Impacts, Santa Barbara, California, per \$1 million in Project Purchases

**Solar Photovoltaics**

Type of Impact	Direct	Indirect	Induced	Total
Output	\$490,221	\$116,918	\$173,047	\$780,185
Personal Income	\$214,608	\$45,318	\$59,668	\$319,593
Jobs	3.4	0.9	1.4	5.6

Type of Tax	Direct	Indirect	Induced	Total
<b>Federal</b>				
Corporate Profits	\$1,094	\$150	\$892	\$2,135
Indirect Business	\$412	\$3,574	\$1,431	\$5,416
Personal	\$13,958	\$2,572	\$3,779	\$20,308
Social Insurance	\$17,927	\$10,944	\$6,292	\$35,162
Total Federal	\$33,390	\$17,238	\$12,393	\$63,021
<b>State and Local</b>				
Corporate Profits and Dividends	\$1,352	\$507	\$1,102	\$2,961
Indirect Business	\$2,945	\$6,710	\$10,233	\$19,887
Personal	\$7,218	\$1,486	\$1,955	\$10,658
Social Insurance	\$673	\$218	\$289	\$1,180
Total State and Local	\$12,188	\$8,920	\$13,578	\$34,685
Total All	\$45,578	\$26,158	\$25,971	\$97,706

**Energy Efficiency**

Type of Impact	Direct	Indirect	Induced	Total
Output	\$513,252	\$123,023	\$174,721	\$810,996
Personal Income	\$215,490	\$46,942	\$60,245	\$322,677
Jobs	3.4	0.9	1.4	5.7

Type of Tax	Direct	Indirect	Induced	Total
<b>Federal</b>				
Corporate Profits	\$1,083	\$177	\$900	\$2,160
Indirect Business	\$400	\$3,592	\$1,445	\$5,436
Personal	\$14,014	\$2,675	\$3,816	\$20,504
Social Insurance	\$18,019	\$11,107	\$6,353	\$35,479
Total Federal	\$33,515	\$17,551	\$12,513	\$63,578
<b>State and Local</b>				
Corporate Profits and Dividends	\$1,338	\$541	\$1,113	\$2,991
Indirect Business	\$2,858	\$6,841	\$10,332	\$20,030
Personal	\$7,246	\$1,539	\$1,973	\$10,758
Social Insurance	\$678	\$225	\$292	\$1,195
Total State and Local	\$12,119	\$9,146	\$13,709	\$34,973
Total All	\$45,633	\$26,697	\$26,222	\$98,551

Economic Impact Analysis of Property Assessed Clean Energy Programs (PACE)



Exhibit 10: Summary of Impacts, United States (aggregate), per \$1 million in Project Purchases per City

**Solar Photovoltaics**

Type of Impact	Direct	Indirect	Induced	Total
Output	\$3,525,630	\$3,113,996	\$3,610,504	\$10,250,130
Personal Income	\$1,203,148	\$986,190	\$1,136,566	\$3,325,904
Jobs	19.6	16.0	24.4	60.0

Type of Tax	Direct	Indirect	Induced	Total
Federal				
Corporate Profits	\$20,048	\$19,414	\$27,984	\$67,446
Indirect Business	\$7,214	\$17,650	\$26,040	\$50,904
Personal	\$73,692	\$59,976	\$69,150	\$202,818
Social Insurance	\$121,322	\$105,312	\$120,986	\$347,620
Total Federal	\$222,276	\$202,352	\$244,160	\$668,788
State and Local				
Corporate Profits and Dividends	\$17,330	\$16,778	\$24,188	\$58,296
Indirect Business	\$45,408	\$111,096	\$163,900	\$320,404
Personal	\$17,102	\$13,922	\$16,048	\$47,072
Social Insurance	\$2,602	\$2,384	\$2,730	\$7,716
Total State and Local	\$82,442	\$144,180	\$206,866	\$433,488
Total All	\$304,718	\$346,532	\$451,026	\$1,102,276

**Energy Efficiency**

Type of Impact	Direct	Indirect	Induced	Total
Output	\$3,807,378	\$3,608,656	\$3,509,280	\$10,925,314
Personal Income	\$1,179,160	\$949,024	\$1,104,776	\$3,232,960
Jobs	21.4	15.8	23.6	60.8

Type of Tax	Direct	Indirect	Induced	Total
Federal				
Corporate Profits	\$17,460	\$22,090	\$27,204	\$66,754
Indirect Business	\$4,870	\$17,546	\$25,312	\$47,728
Personal	\$72,308	\$57,784	\$67,216	\$197,308
Social Insurance	\$117,736	\$100,408	\$117,604	\$335,748
Total Federal	\$212,374	\$197,828	\$237,336	\$647,538
State and Local				
Corporate Profits and Dividends	\$15,094	\$19,092	\$23,514	\$57,700
Indirect Business	\$30,656	\$110,454	\$159,330	\$300,440
Personal	\$16,780	\$13,410	\$15,602	\$45,792
Social Insurance	\$2,502	\$2,252	\$2,654	\$7,408
Total State and Local	\$65,032	\$145,208	\$201,100	\$411,340
Total All	\$277,406	\$343,036	\$438,436	\$1,058,878



**Exhibit 11: Economic Impacts of \$1,000 in Annual Household Energy Costs for 25 Years (in Present Value)**

Impact Area	Output	Personal Income	Jobs (Full- and Part-time)	Federal Taxes	State and Local Taxes
Santa Barbara, CA	\$19,484	\$6,648	0.15	\$1,383	\$1,515
San Antonio, TX	\$21,730	\$7,197	0.18	\$1,441	\$1,358
Columbus, OH	\$19,979	\$6,578	0.17	\$1,548	\$1,404
Long Island, NY	\$21,007	\$7,400	0.15	\$1,769	\$1,879
United States (est.)	\$306,914	\$98,453	1.97	\$19,119	\$12,722

The impacts are the present value effects of \$1,000 in energy cost savings per year for 25 years. To reduce this stream of savings to a single number for comparability with project purchase impacts, the so-called *present value* of the savings is calculated. For the present value calculation, it is assumed that the appropriate real (inflation adjusted) discount rate is 3 percent, and that energy costs rise at a rate that is one percentage point higher than other prices. The US totals are estimated outside of IMPLAN using total US spending relative to the city totals observed in the program purchase modeling. These impacts should be considered gross impacts, since the potentially offsetting impacts of reduced utility activity are not captured in these measures.



## Special Financing for Energy-Saving Home Improvements from AFC First

### What's EnergyLoan?

Eligible Improvements

Find a Contractor/Dealer

Apply Now Online

**Apply By Phone**  
(888) AFC FIRST



**You Can Improve Your Home's Energy Efficiency and Comfort Today** with EnergyLoan® from AFC First, a fixed rate Monthly Payment Financing Plan designed to make energy-saving home improvements truly affordable.

#### Who is Eligible?

All homeowners who are making qualifying improvements to their primary residence or vacation home (1 to 2 unit primary residence or vacation home on permanent foundation) are eligible. Good credit and the ability to repay are required; all income levels are eligible.

#### What Home Improvements Can Be Financed?

The EnergyLoan program is for energy related and renewable energy improvements. All work can be financed if at least 50% of the project is comprised of the following:

#### Eligible Improvement Include All Makes and Models of:

- Heating & Cooling Systems
- Water Heaters
- Windows & Doors
- Insulation – All Types
- Roofing & Siding
- Solar PV & Solar Thermal
- Geothermal Heat Pumps
- Lighting & Controls
- Electrical & Plumbing
- Heated Sunrooms
- Most Energy Improvements

All Related Work

#### Who May Perform the Work?

Only AFC First EnergyLoan Approved Contractors may perform the work. Approved Contractors are authorized to perform work under the program. They are not agents of AFC First. All loans are made directly to the consumer.

#### What is True Fixed Rate™ EnergyLoan® Financing?

Many financing programs are promotional or "teaser" interest rates for an introductory time which then revert to a very high rate if the loan balance is not paid off during the promotional period. These "credit card" types of financing also do not necessarily guarantee a fixed rate or payment for the loan term. The EnergyLoan® from AFC First is different. It is a simple interest, fixed rate loan with longer terms available than typical bank financing. **The monthly payment and interest rate can never change.** And since there is no penalty for pre-payment, you may pay it off or make additional principal payments at any time.

#### How Do I Get an EnergyLoan®?

**1. Contact your AFC First Approved EnergyLoan® Contractor and get an estimate for qualifying improvements.**

- Loans from \$1,000 to \$25,000
- 100% Financing Available
- No Energy Audit Required
- True Fixed Rate™  
*Not a "Teaser" - Rate and Payment Can Never Change*
- No Lien Filed on Your Home
- No Home Equity Required
- New Homeowners Eligible
- No Points, Fees or Closing Costs
- 3, 5 or 10 Year Term
- No Penalty for Pre-Payment

#### Monthly Payment Examples

	36 Months	60 Months	120 Months
\$2,500	\$87	\$59	\$40
\$5,000	\$173	\$119	\$81
\$7,500	\$260	\$178	\$121
\$10,000	\$347	\$238	\$161
\$12,500	\$433	\$297	\$202
\$15,000	\$520	\$357	\$242
\$20,000	\$693	\$475	\$322
\$25,000	\$866	\$594	\$403

Subject to credit approval by AFC First Financial Corporation, Allentown, PA. All loans are made directly to the consumer by AFC First or Citizens State Bank on behalf of AFC First. Monthly payments based on 14.99% simple interest APR. Other rates and terms may be available.



**2. For fastest approval, apply online  
or apply by phone at (888) 232-3477.**

**3. We'll have a quick decision on your application, and answer  
any questions you may have.**

**4. Sign the simple one page loan note we will provide to you.**

**5. We pay the Contractor directly when the work is done to your  
satisfaction.**



*AFC First Financial Corporation is a national leader in energy efficiency lending and programs, founded in 1947. One of three approved Fannie Mae energy lenders in the nation, AFC First operates energy efficiency loan programs for states, utilities and manufacturers, with a network over over 3,000 contractors. AFC First is the nation's first private Home Performance with ENERGY STAR sponsor.*

AFC First is an Equal Housing Lender  
FannieMae Approved Energy Loan Lender  
HUD Designated Power Saver Lender



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# FEDERAL HOUSING FINANCE AGENCY



## STATEMENT

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For Immediate Release  
July 6, 2010

**Contact:** Corinne Russell (202) 414-6921  
Stefanie Mullin (202) 414-6376

### **FHFA Statement on Certain Energy Retrofit Loan Programs**

After careful review and over a year of working with federal and state government agencies, the Federal Housing Finance Agency (FHFA) has determined that certain energy retrofit lending programs present significant safety and soundness concerns that must be addressed by Fannie Mae, Freddie Mac and the Federal Home Loan Banks. Specifically, programs denominated as Property Assessed Clean Energy (PACE) seek to foster lending for retrofits of residential or commercial properties through a county or city's tax assessment regime. Under most of these programs, such loans acquire a priority lien over existing mortgages, though certain states have chosen not to adopt such priority positions for their loans.

First liens established by PACE loans are unlike routine tax assessments and pose unusual and difficult risk management challenges for lenders, servicers and mortgage securities investors. The size and duration of PACE loans exceed typical local tax programs and do not have the traditional community benefits associated with taxing initiatives.

FHFA urged state and local governments to reconsider these programs and continues to call for a pause in such programs so concerns can be addressed. First liens for such loans represent a key alteration of traditional mortgage lending practice. They present significant risk to lenders and secondary market entities, may alter valuations for mortgage-backed securities and are not essential for successful programs to spur energy conservation.

While the first lien position offered in most PACE programs minimizes credit risk for investors funding the programs, it alters traditional lending priorities. Underwriting for PACE programs results in collateral-based lending rather than lending based upon ability-to-pay, the absence of Truth-in-Lending Act and other consumer protections, and uncertainty as to whether the home improvements actually produce meaningful reductions in energy consumption.

Efforts are just underway to develop underwriting and consumer protection standards as well as energy retrofit standards that are critical for homeowners and lenders to understand the risks and rewards of any energy retrofit lending program. However, first liens that disrupt a fragile housing finance market and long-standing lending priorities, the absence of robust underwriting standards to protect homeowners and the lack of energy retrofit standards to assist homeowners, appraisers, inspectors and lenders determine the value of retrofit products combine to raise safety and soundness concerns.

On May 5, 2010, Fannie Mae and Freddie Mac alerted their seller-servicers to gain an understanding of whether there are existing or prospective PACE or PACE-like programs in jurisdictions where they do business, to be aware that programs with first liens run contrary to the Fannie Mae-Freddie Mac Uniform Security Instrument and that the Enterprises would provide additional guidance should the programs move beyond the experimental stage. Those lender letters remain in effect.

Today, FHFA is directing Fannie Mae, Freddie Mac and the Federal Home Loan Banks to undertake the following prudential actions:

1. For any homeowner who obtained a PACE or PACE-like loan with a priority first lien prior to this date, FHFA is directing Fannie Mae and Freddie Mac to waive their Uniform Security Instrument prohibitions against such senior liens.
2. In addressing PACE programs with first liens, Fannie Mae and Freddie Mac should undertake actions that protect their safe and sound operations. These include, but are not limited to:
  - Adjusting loan-to-value ratios to reflect the maximum permissible PACE loan amount available to borrowers in PACE jurisdictions;
  - Ensuring that loan covenants require approval/consent for any PACE loan;
  - Tightening borrower debt-to-income ratios to account for additional obligations associated with possible future PACE loans;
  - Ensuring that mortgages on properties in a jurisdiction offering PACE-like programs satisfy all applicable federal and state lending regulations and guidance.

Fannie Mae and Freddie Mac should issue additional guidance as needed.

3. The Federal Home Loan Banks are directed to review their collateral policies in order to assure that pledged collateral is not adversely affected by energy retrofit programs that include first liens.

Nothing in this Statement affects the normal underwriting programs of the regulated entities or their dealings with PACE programs that do not have a senior lien priority. Further, nothing in these directions to the regulated entities affects in any way underwriting related to traditional tax programs, but is focused solely on senior lien PACE lending initiatives.

FHFA recognizes that PACE and PACE-like programs pose additional lending challenges, but also represent serious efforts to reduce energy consumption. FHFA remains committed to working with federal, state, and local government agencies to develop and implement energy retrofit lending programs with appropriate underwriting guidelines and consumer protection standards. FHFA will also continue to encourage the establishment of energy efficiency standards to support such programs.

###

*The Federal Housing Finance Agency regulates Fannie Mae, Freddie Mac and the 12 Federal Home Loan Banks. These government-sponsored enterprises provide more than \$5.9 trillion in funding for the U.S. mortgage markets and financial institutions.*

# Introduction to Special Districts

Home > Community Planning and Development > Assistance for Governments and Organizations > Special District Information Program > Florida Special District Handbook Online > **Introduction to Special Districts**

## Programs

Assistance for Governments and Organizations

### Community Development Block Grant Program

Environmental Review Process

Related Links

Rebuilding Our Neighborhoods Manual

Staff Contacts

Section 3 Economic Opportunities

State of Florida Consolidated Plan

### Florida Small Cities Community Development Block Grant Program

Downloads and Information for Applicants

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Section 108 Loan Guarantee Program

### Disaster Recovery Initiative

Technical Assistance

Previous Disaster Recovery Initiatives

### Neighborhood Stabilization Program

Program Information and Downloads

Income Guidance

### Front Porch Florida Initiative

### Special District Information Program

Official List of Special Districts Online

Florida Special District Handbook Online

## Florida Special District Handbook Online: Introduction to Special Districts

### What are Special Districts?

Special Districts are very similar to counties and municipalities. However, special districts are local units of special-purpose government as opposed to local units of general-purpose government. Generally, Florida's laws treat them alike. Special districts provide specialized governmental services. They have limited, explicit authority - not implied authority - that is specified in its charter and / or the laws under which it operates.

A special district . . .

- ▶ is a unit of local special-purpose government (governing board has policy-making powers as opposed to an advisory function)
- ▶ operates within limited boundaries
- ▶ is created by general law, special act, local ordinance, or by rule of the Governor and Cabinet
  - ▶ The Florida Legislature creates special districts by passing a special act
  - ▶ The Governor and Cabinet create special districts by passing a rule (Florida Administrative Code)
  - ▶ Municipalities and counties create special districts by passing a local ordinance
  - ▶ General law authority creates certain types of special districts and allows counties and municipalities to declare a need to use them.

For more information see [Creating Special Districts](#).

These Entities Are Not Special Districts:

- ▶ General-purpose governments (Counties / Municipalities)
- ▶ School districts
- ▶ Community college districts
- ▶ Boards providing electrical services that are political subdivisions of a municipality or part of a municipality
- ▶ Municipal Service Taxing or Benefit Units as specified in:
  - ▶ [Section 125.01, Florida Statutes - Powers and duties](#)
- ▶ Special Improvement Districts created for the Seminole and Miccosukee Tribes under:
  - ▶ [Section 285.17, Florida Statutes - Special improvement districts; Seminole and Miccosukee Tribes](#)

For financial reporting and other purposes, special districts are classified as either "dependent" or "independent"

### What are Dependent Special Districts?

Dependent special districts have at least one of the following characteristics:

- ▶ Its governing body members are identical to the governing body members of a single county or a single municipality.
- ▶ Its governing body members are appointed by the governing body of a single county or a single municipality.
- ▶ During unexpired terms, its governing body members are subject to removal at will by the governing body of a single county or a single municipality.
- ▶ Its budget requires approval through an affirmative vote by the governing body of a single county or a single municipality.
- ▶ Its budget can be vetoed by the governing body of a single county or a single municipality.

### What are Independent Special Districts?

Independent special districts do not have any dependent characteristics. A special

## Handbook Quick Links

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5. [Reporting Requirements By Agency and Agency Contacts](#)



district that includes more than one county is independent unless the special district lies wholly within the boundaries of a single municipality.

## A Brief History of Special Districts

Benjamin Franklin established the first special district on December 7, 1736, when he created the Union Fire Company of Philadelphia, a volunteer fire department. Residents in a certain neighborhood paid a fee to receive fire protection services. Any resident not paying the fee had no fire protection services. Soon, many volunteer fire departments formed throughout Philadelphia. This prompted Franklin to boast that his city had the best fire service in the world.

In Florida, the first special districts were created almost 190 years ago. Then, Florida was a territory of log settlements scattered between the only two cities, Pensacola and St. Augustine. The entire territory consisted of two large counties, Escambia and St. Johns, whose contiguous border was defined by the Suwannee River. Because no roads existed, the Territorial legislators had to make the long, difficult sea voyage between the co-capitals, Pensacola and St. Augustine. In 1822, the legislators voted to establish a capital in a more convenient location. A year later, two men met on a pine-covered hill, halfway between Pensacola and St. Augustine, and chose the site of the new capital. Within a year, Florida's first Capitol, a small log cabin just big enough for all six legislators, was built in what is today Tallahassee.

Early, Floridians realized that the transportation needs of a growing territory could be effectively managed by a group of local citizens organized into a district with vested powers. During the same session that the decision was made to move the capital, the Territorial Legislature also authorized the creation of the first special districts in Florida by enacting the Road, Highway, and Ferry Act of 1822. Created to establish and maintain public roads, the first road districts had no taxation authority and solved their labor needs by conscription. Men failing to report to work were fined one dollar per day.

In 1845, soon after Florida became a state, the Legislature went a step further and established the first special district by special act. Five commissioners were empowered to drain the "Nachua Savannah". To finance the project, the first special assessments were made on landowners based on the number of acres owned and the benefit derived.

The popularity of special districts to fund public works continued throughout the end of the 19th century as more settlers came to Florida. By the 1920's, the population had increased substantially in response to Florida's land boom. Many special districts were created to finance large engineering projects. Some of these special districts are still in existence today, such as the South Florida Conservancy District and the Florida Inland Navigation District. By the 1930's, the surge of new residents created the need for the first mosquito eradication district and other very specialized districts. After World War II, the baby boom and Florida's growing popularity created the need for a variety of new special districts, such as aviation authorities and hyacinth control districts. Soon, beach erosion, hospital, and fire control special districts grew rapidly along with the traditional road, bridge, and drainage special districts.

## Uniform Special District Accountability Act of 1989

In 1989, the Florida Legislature passed the Uniform Special District Accountability Act of 1989 ([Chapter 189, Florida Statutes - Special Districts: General Provisions](#) ). Almost every year, the Florida Legislature revises and updates the Act.

The Act provides the general requirements for all types of special districts, although it excludes certain types of special districts from certain sections. Requirements of the Act include:

- ▶ Creation, merger, and dissolution processes
- ▶ Charter content
- ▶ Financial reporting
- ▶ Taxation and assessments
- ▶ Election procedures
- ▶ Operational requirements, such as mandatory compliance with Government-in-the-Sunshine, ethics, and comprehensive planning laws.

## Special District Advantages - Reasons Special Districts Are Created

- ▶ Special districts are created for the private and public sectors to finance, construct, operate, and maintain capital infrastructure, facilities, and services.
- ▶ Special districts allow for a governing board of appointed or elected members who have the expertise to focus on the specific community needs and issues the special district is addressing.
- ▶ Special districts can provide services when growth and development issues transcend the boundaries, responsibilities, and authority of individual municipalities and counties. This is one reason we have regional and multi-county special districts.
- ▶ Special districts can provide local governmental services - often in response to citizen demand - that a municipality or county is unable or unwilling to provide.
- ▶ Special districts allow municipalities and counties to focus more on general government issues.
- ▶ Special districts generate money to pay for projected growth without putting an excessive burden on other taxpayers and governments, since only those who benefit from the special district's services are required to pay.
- ▶ Special districts ensure accountability of public resources, since special districts are held to the same high standards as municipalities and counties.

- ▶ Special districts protect property values by assuring property owners that their roads, water and sewer lines, and other essential facilities and services will continue to be maintained.
- ▶ Special districts save money for affected citizens by selling tax-exempt bonds, purchasing essential goods and services tax-free, and participating in state programs and initiatives, such as state-term contracting and purchasing commodities and certain contractual services from the purchasing agreements of other special districts, municipalities, or counties.
- ▶ Special districts maintain the financial integrity of the special district by limiting its liability to civil lawsuits and providing state assistance in the event of a financial emergency.
- ▶ Special districts provide for a local special-purpose governmental agency with funding, employment, and missions separate from local general-purpose government.
- ▶ Special districts recruit qualified employees by offering governmental employment benefits and incentives, such as possible participation in the Florida Retirement System. Any independent special district created under a special act or general law for the purpose of providing urban infrastructure or services may provide housing and housing assistance for its employed personnel whose total annual household income does not exceed 140 percent of the area media income, adjusted for family size.
- ▶ Special districts provide opportunities for citizens to get involved in the governance of their community since it's possible for them to serve on the district's governing board and it's more convenient for citizens to attend governing board meetings, which are usually held near their homes.

### Contact Someone Who Can Answer Questions About Special Districts

- ▶ [Additional Information - Department of Economic Opportunity, Special District Information Program Contact](#)

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Department of Economic  
Opportunity



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An equal opportunity employer/program. Auxiliary aids and services are available upon request to individuals with disabilities.  
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GE Capital Online Credit Application



Welcome to the GE Capital Online Credit Application Center operated by GE Capital Retail Bank, the issuer of the GE Capital credit card. We encourage you to read the GE Capital Retail Bank [Consent to Electronic Communications](#), [Privacy Policy](#) and [Web Site Usage Agreement](#), which govern the use of the GE Capital Online Credit Application Center. Please note that this privacy policy and web site usage agreement may differ from those of any websites that you have previously visited. Please note that only US residents 18 years or older can apply online.

Your security is important to us. We take great care to protect your information by using 128-bit secure socket layer technology.

Initial Purchase Amount if Known \$   ,    .00 ?

[Wisconsin Residents: Click here for important information.](#)

Applicant Information - Please tell us about yourself.

First Name  Middle Initial  Last Name

Suffix

Mailing Address  Apt. Number

City  State  Zip Code

E-Mail Address \*  Confirm E-Mail

Primary Phone \*  -  -

Date of Birth  /  /  Social Security Number  -  -  ?

Cell Phone \*  -  -  Business Phone \*  -  -

Driver's License Number or State ID  ? State  Expiration Date  /

Monthly Net Income From All Sources \$    ,    .00 Housing

Alimony, child support or separate maintenance income need not be included unless relied upon for credit. You may include the monthly amount that you have available to spend from your assets. **MARRIED WI Residents only [click here.](#)**

\* You authorize GE Capital Retail Bank ("GECRB") to contact you at each phone number you have provided. By providing a cell phone number and/or email address, you agree to receive special offers, updates and account information, including text messages from GECRB and the contractors that accept the Card. Standard text messaging rates may apply.

**Statement Delivery**

Please select a delivery method for your billing statement. For 'Electronic Statements', you will receive a monthly email notifying you when you can view your billing statement online. You can review your new electronic statement by logging in to the service site and clicking on the "View Statement" link. For 'Paper Statement' delivery, no email notification will be provided.

Your email address is required above for eBill enrollment

Delivery Method  Electronic Statements  Paper Statement

**Optional Card Security - Up to \$10,000 in Protection on your GE Capital credit card**

With the opening of your new GE Capital credit card account, enjoy peace of mind knowing your account is protected. Enroll in the Card Security program and we can cancel your account balance up to \$10,000 in the event you experience a qualifying:

- Unemployment
- Hospitalization
- Leave of Absence
- Nursing Home Stay
- Disability
- Loss of Life

[Click Here for Features and Benefits](#)

[Click Here for Summary of Terms](#)

[Click Here for FAQs](#)

By clicking the enrollment button below, I intend to purchase optional Card Security and this qualifies as my signature. I acknowledge that I do not need to purchase Card Security to obtain credit. I have read and agree to the Summary of Terms above. I agree that you may bill my GE Capital credit card account a monthly fee of \$1.66 per \$100 of the ending monthly balance on my account. I may cancel at any time. Residents of MS are not eligible.

**Yes, I want to enroll in Card Security**



**No Thank You**



**Joint Applicant Information** - An additional card will be issued to the person indicated below. The applicant (and joint applicant, if any) will be liable for all transactions made on the account including those made by any authorized user. JOINT APPLICANT: You agree that we may send notices to you and/or at the applicant's address, regardless of whether you live at that address.

Do you have a Joint Applicant? Yes  No  Check 'Yes' only if applying jointly for credit.

**Important Information** - Please see below for Rates, Fees and Other Cost Information, Standard Provisions, Consent to Electronic Communications, Billing Rights, and Privacy Policy. You may [Download or Print](#) the Agreement here.

<b>GE CAPITAL RETAIL BANK</b> <b>Keep For Your Records</b> <b>SECTION I: RATES AND FEES TABLE</b> <b>CREDIT CARD ACCOUNT AGREEMENT</b>	
<b>Interest Rates and Interest Charges</b>	
<b>Annual Percentage Rate (APR) for Purchases</b>	<b>26.99%</b>
<b>Paying Interest</b>	Your due date is at least 23 days after the close of each billing cycle. We will not charge you any interest on non-

**APPLICANT and JOINT APPLICANT: We need your signature(s) below**

By applying for this account, I am asking GE Capital Retail Bank ("GECRB") to issue me a GECRB credit card (the "Card"), and I agree that:

- I am providing the information in this application to GECRB and the contractors that accept the Card and program sponsors. GECRB may provide information about me (even if my application is declined) to contractors that accept the Card and program sponsors (and their respective affiliates) so that they can create and update their records, and provide me with service and special offers.
- GECRB may obtain information from others about me (including requesting reports from consumer reporting agencies and other sources) to evaluate my application, and to review, maintain or collect my account.
- I consent to GECRB and any other owner or servicer of my account contacting me about my account, including using any contact information or cell phone numbers I provide, and I consent to the use of any automatic telephone dialing system and/or an artificial or prerecorded voice when contacting me, even if I am charged for the call under my phone plan.
- I have read and agree to the credit terms and other disclosures in this application, and I understand that if my application is approved, the GECRB credit card account agreement ("Agreement") will govern my account. Among other things, the Agreement: **(1) includes a resolving a dispute with arbitration provision that limits my rights unless I reject the provision by following the provision's instructions;** and **(2) makes each applicant responsible for paying the entire amount of the credit extended.**

**Federal law requires GECRB to obtain, verify and record information that identifies you when you open an account. GECRB will use your name, address, date of birth, and other information for this purpose.**

**If you apply with a Joint Applicant, each of you will be jointly and individually responsible for obligations under the Agreement and by signing below, you each agree that you intend to apply for joint credit.**

**I acknowledge that by clicking the "Accept & Submit", I am indicating my intent to sign this credit card application and that this shall constitute my signature.**

[Cancel](#)



Your security is important to us. We take great care to protect your information by using 128-bit secure socket layer technology.

[Accept & Submit](#)



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To see the response to your request for credit, [CLICK HERE](#) to be returned to the top of the page.

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Find Products & Services  
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Offers & Discounts  
Protect Your Information  
Frequently Asked Questions

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GE Reports

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Tuesday, September 11 - 2012

 *The Hamburg Township Sewer System*

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HAMBURG HOME
UTILITIES DEPARTMENT
HAMBURG TOWNSHIP SEWER SYSTEM
<b>SEWER GIS MAP</b>
SEWER EMERGENCIES
<b>SEWER CONNECTION APPLICATIONS</b>
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ROADS AND ROAD MAINTENANCE
 <b>SEWER ORDINANCE (ORDINANCE NO. 69F)</b>
 Sewer Ordinance Administrative Policies and Procedures Manual
<b>WATER SOFTENER ORDINANCE (ORDINANCE NO. 82)</b>
<b>HAMBURG TOWNSHIP MUNICIPAL UTILITIES COMMITTEE</b>
<b>HAMBURG TOWNSHIP WASTEWATER TREATMENT PLANT</b>
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SEWER GUIDE BROCHURE
"THE SEWER LINE" NEWSLETTER
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SEWER DISTRICTS MAP
CONTRACT SPECIAL ASSESSMENT DISTRICTS
PAYING YOUR SEWER O&M BILL
SEWER ASSESSMENT PAYOFFS
SEARCH HAMBURG WEBSITE
<input type="text"/>
<input type="button" value="Search"/>

## ESTABLISHMENT OF CONTRACT SPECIAL ASSESSMENT DISTRICTS

 **2011 CHECKLIST OF REQUIRED CONTRACT S.A.D. FINANCING INFORMATION**

The following procedures will apply to all property owners who are seeking to connect a single family building unit to the Hamburg Township Sewer System and who want to finance the cost by agreeing to participate in a contract special assessment district. However, a property owner will not be assured of obtaining subject financing simply by completing the below steps. Any property owners seeking to connect more than one building unit to the Hamburg Township Sewer System shall comply with the provisions of the "Policies and Procedures for Development Project Sewer Connection" to the Hamburg Township Sewer System.

1. The property owner shall submit to the Township Utilities Department a completed application to participate in a Contract Special Assessment District together with a non-refundable application fee of \$200.00.
2. The DPW Administrator will meet with the property owner on location to determine a grinder pump station location and prepare a site plan.
3. The Sewer Committee will review the site plan, obtain any necessary engineering input and determine whether the proposed connection applied for complies with the sewer master plan and is in the best interest of the Township.
4. In the event the proposed connection is determined by the Municipal Utilities Committee not to meet the above requirements, the property owner will be notified of this finding.
5. In the event the proposed connection is determined by the Municipal Utilities Committee to meet the above requirements, the Utilities Department will thereafter obtain an estimate of the cost to complete the sewer connection to the property owner's building.
6. The Utilities Department will then supply the estimated costs to the property owner.
7. The property owner will then execute a contract together with any easements deemed necessary by Hamburg Township in a form to be prescribed by the Township.
8. Pursuant to this agreement, the property owner will agree to pay all costs of installation, the appropriate connection fee per Ordinance #69, all equipment charges, legal costs, engineering costs, as well as an administration fee of \$600.00.
9. Applications to participate in a Contract Special Assessment District will be accumulated for a period of time to be determined by the Supervisor, but expected to be in the range of six months to one year.
10. In the event the Supervisor determines that a sufficient number of applications have been received to warrant funding and construction of the connections he shall summarize them and present them to the Hamburg Township Board of Trustees.
11. Once the Supervisor has submitted the Contracts for Special Assessment Districts signed by the owner to the Board, no additional applications will be accepted for inclusion in that particular group submitted for approval.
12. In the event the Township Board approves financing by adopting the appropriate resolutions to fund the group of Contracts for Special Assessment Districts submitted, the Supervisor shall, with the aid of financial and legal service, obtain funding for the construction of the connections.
13. Upon completion of the financing and receipt of the proceeds, the Supervisor shall authorize the construction of the property owners' connections to the Hamburg Township Sewer System.
14. In the event that the sewer connection application submitted by the property owner is for a new home to be constructed in Hamburg Township and a contract special assessment district is requested, a Land Use Permit will not be issued until such time as a special assessment district contract has been signed by the property owner and bonds have been sold to finance the sewer connection.

*Adopted by Township Board on March 27, 2001*

  
**UTILITIES DEPARTMENT  
HAMBURG**

1040  
Hamb  
Hours: M  
8:00 a.m.

UTILITIES CO  
Brittan  
E-mail: [bcampbell@h](mailto:bcampbell@h)



**W**  
**TREAT**  
Phys  
6  
Hamb  
Phone:  
Fax:  
**SEND ALL WV**  
Hamburg T  
1040

Hamb  
Phone:  
Fax:  
Hours: M  
8

Last Updated  
August 24, 2012  
Hamburg Township  
Web Questions? E-mail:  
[brichardson@hamburg.mi.us](mailto:brichardson@hamburg.mi.us)





# OLR RESEARCH REPORT

March 13, 2012

2012-R-0133

## **PROPERTY ASSESSED CLEAN ENERGY PROGRAMS**

By: Kevin E. McCarthy, Principal Analyst

You asked for information on property assessed clean energy (PACE) programs. You wanted know the status of, demand for, and success of PACE programs in other states. Specifically, you wanted to learn how many properties have taken advantage of PACE programs, the value of loans and improvements, estimated energy cost savings, and whether savings are expected to exceed costs over the anticipated life of the improvements.

Much of the information in this report regarding commercial PACE programs is taken from a 2011 study prepared by the U.S. Department of Energy's Lawrence Berkeley Laboratory (LBL), which is available at <http://eetd.lbl.gov/ea/ems/reports/pace-pb-032311.pdf>.

### **SUMMARY**

At least 24 states, including Connecticut, have adopted legislation authorizing PACE programs. These programs allow municipalities and counties to provide loans for energy efficiency and renewable energy improvements; in California water conservation improvements are also eligible. The loans are backed by an assessment on the improved property which is enforced by a lien. In most states, although not Connecticut, the lien has priority over existing mortgages.

As discussed in OLR report [2012-R-0027](#), the Federal Housing Finance Agency (FHFA) raised concerns about PACE programs, most notably regarding the priority of PACE liens over existing mortgages on participating properties. It has taken steps that have largely stopped the implementation of residential PACE programs, although its actions are the subject of litigation.

Relatively few projects were financed before the FHFA actions, and there is limited data available on the programs. We present information on two active programs that primarily serve residential property owners, in Babylon, New York and Sonoma County, California

(Sonoma also has a commercial program). In Babylon, there have been 652 loans to date with an average value of \$9,802 (a total of \$6.4 million). Sonoma County has financed over \$50 million in projects, representing 1,600 residential properties, 45 non-residential properties, and 2,500 individual improvements.

In the wake of FHFA's action, several jurisdictions developed PACE programs for commercial properties. As of January 2011 (the latest available comprehensive data), 71 projects have been approved and financed in commercial PACE programs in Placer and Sonoma counties, California, the city of Palm Desert, California, and Boulder County, Colorado. In total, the projects represent about \$9.7 million in energy efficiency and renewable energy project investments. The programs vary in the types of improvements they have financed. For example, the Sonoma County has primarily funded solar photovoltaic (PV) projects, while Boulder County has focused on energy efficiency projects. Among the four programs, the project loans range in size from \$2,000 to \$2.3 million, with an average of \$138,000. Commercial PACE programs have recently begun in Los Angeles County and San Francisco and programs are in development in Michigan, Ohio, and Vermont. OLR report [2012-R-0027](#) describes the enabling legislation in Michigan and Vermont.

We found very little data on energy costs savings and the extent to which these savings exceed the costs of the loans. Babylon reports that, on average, its loans have produced \$1,149 per year in energy savings and have an 8.7 year payback period. The largest PACE program, in Sonoma County, did not collect baseline energy consumption data until recently and therefore it cannot determine savings and payback periods for existing loans.

## **BACKGROUND**

The first on-going PACE programs were implemented in 2008 in Sonoma County and the city of Palm Desert in California and Babylon, New York. These programs were based on a pilot developed in Berkeley, California, which is described OLR report [2009-R-0031](#). Since then, at least 24 states, including Connecticut, have adopted legislation allowing municipalities or counties to adopt PACE programs. OLR report [2009-R-0440](#) provides information about the enabling legislation in Colorado, Maryland, New Mexico, North Carolina, Oregon, and Vermont.

Under PACE laws, a municipality or county typically establishes a district where local residents or businesses can participate in a loan program that finances energy efficiency or renewable energy improvement to their property (in California, the loans can also pay for water conservation projects). The municipality or county issues bonds to fund the program that are backed by an assessment on the participating properties. In most cases, the assessments are backed by a lien that takes priority over existing and future encumbrances, including existing mortgages. In Connecticut, the lien does not take priority over existing mortgages.

As discussed in OLR report [2012-R-0027](#), FHFA has jurisdiction over the residential secondary mortgage market, where mortgages are packaged into securities and are



bought and sold by investors. It regulates the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac), which dominate this market.

FHFA has raised three concerns regarding PACE programs. First, it believes that the priority liens established by PACE programs may alter valuations for mortgage-backed securities and pose significant risk to lenders and other entities in the secondary market. Second, FHFA believes that PACE loans lack adequate consumer protections. Third, it believes that the programs lack robust underwriting standards to protect homeowners and have inadequate energy retrofit standards.

In August 2010, Fannie Mae and Freddie Mac announced that they would not purchase mortgages originated on or after July 6, 2010 that were secured by properties encumbered by PACE obligations. FHFA subsequently directed that Fannie Mae and Freddie Mac continue to

refrain from purchasing mortgage loans secured by properties with outstanding first-lien PACE obligations. In effect, FHFA's actions precluded mortgages with PACE liens from being sold on the secondary market and largely stopped the implementation of PACE programs with regard to residential properties in Connecticut and elsewhere.

## **RESIDENTIAL PACE PROGRAMS**

FHFA took its actions when PACE programs were in their early stages and most programs were subsequently suspended with regard to residential properties. Some of these programs had been quite active. For example, Boulder County, Colorado had financed 598 residential projects at a cost of over \$9 million before suspending this component of its program. Babylon, New York and Sonoma County, which together with other parties have sued FHFA, have continued their residential programs.

### ***Babylon, New York***

Babylon began its PACE program in 2008, as part of the [Long Island Green Homes program](#). Babylon operates a waste-to-energy facility and state law requires it to maintain a reserve fund to pay for the necessary periodic re-lining of the ash pit operated in conjunction with this facility. The reserve fund was receiving negligible interest and the town decided to use the reserve to fund its energy efficiency program.

The town provides for energy saving improvements up to \$12,000 per home and the homeowner pays for the improvements through a monthly benefit assessment fee. The amount of the monthly benefit assessment fee is structured to be less than the monthly savings on a resident's energy bills resulting from the energy-efficient improvements. The town charges a 3% administrative fee that is built into the monthly payments residents will make to pay for the improvements. All approved projects must have an estimated savings-to-investment ratio of 1.3 or higher and a payback period of 10 years or less.

Babylon has issued 652 loans as of March 1, 2012, with another 665 in progress. The

average cost of the loans issued so far has been \$9,807, with the bulk of the costs for attic insulation and air sealing (\$3,550); heating, ventilation, and air conditioning (HVAC) systems (\$2,402); and

basement insulation (\$1,090). On average, the loans have produced \$1,149 per year in energy savings and have an 8.7 year payback period. Over the life of the loans, they are projected to have a 1.79 savings to investment ratio. There have been no defaults of the loans to date, although 32 have experienced delinquencies.

### ***Sonoma County, California***

In July 2008, the California legislature authorized municipalities to establish voluntary PACE programs to fund conservation and renewable energy projects proposed by property owners. On March 25, 2009, the Sonoma County Board of Supervisors created the Sonoma County Energy Independence Program (SCEIP). Since then, SCEIP has financed over \$50 million in projects for 2,500 individual improvements to 1,600 residential properties and 45 non-residential properties.

The projects are financed by loans backed on an assessment on the property, which is paid back through property taxes over 10 or 20 years with a simple interest rate of 7%. Financing is available to both residential and commercial applicants with a minimum assessment amount of \$2,500. The amount available for financing is based on the value of the property, and the assessment runs with the property.

In March 2011, SCEIP was awarded a \$3 million grant from the California Energy Commission, including \$800,000 to provide discounts for energy audits performed in connection with the program and \$550,000 to provide technical support and sample documents to develop a 'startup kit' for other jurisdictions interested in implementing residential PACE programs. Sonoma County will also engage in outreach specifically targeted to other local governments that will provide them with information on PACE program replication. The grant ends on March 31, 2012 and a full report will follow on each of the funded programs. Further information on the program is available at [http://drivecms.com/uploads/sonomacountyenergy.org/SCEIP Annual Report 2011.pdf](http://drivecms.com/uploads/sonomacountyenergy.org/SCEIP%20Annual%20Report%202011.pdf).

## **COMMERCIAL PACE PROGRAMS**

### ***Older Programs***

The LBL study covers four commercial PACE programs that were active as of January 2011, in Placer and Sonoma Counties, California, the city of Palm Desert, California; and Boulder County, Colorado. All of the programs are supported by public funds for credit enhancement or direct investments. Credit enhancement provides reserves or other means of reducing the risk of a loan, thereby reducing the interest rate on the loan.

As of January 2011, these programs had approved a total of 71 projects with a total of \$9.7 million in financing. The average loan amount was \$138,000, with loans ranging from \$2,500 to \$2.3 million. Table 1 provides further information on these four programs.

**Table 1: Commercial PACE Programs**

	<i>Loans</i>	<i>Total Funding</i>	<i>Average Loan</i>	<i>Interest Rate (%)</i>	<i>Term (years)</i>	<i>Funding Source</i>
<b>Sonoma County</b>	37	\$7.3 million	\$126,000	7	Up to 20	county
<b>Placer County</b>	2	\$319,000	\$160,000	7.25	Up to 20	county
<b>Palm Desert</b>	3	\$575,000	\$192,000	7	Up to 20	city
<b>Boulder County</b>	29	\$1.5 million	\$51,000	1.04 or 2.29	5 or 10	county moral obligation bonds

Sonoma County's program is open to commercial and industrial property and residential developments with more than four units. The lender holding a mortgage on the property must give its consent for the owner to participate in the program. All of the measures that are eligible under the residential program, such as efficient heating, ventilation, and air conditioning equipment are also eligible under the commercial program. In addition, the commercial program covers such things as energy management systems, efficient motors, and geothermal heat pumps. Further information on Sonoma County's commercial program is available at <http://www.sonomacountyenergy.org/lower.php?url=commercial-owner>.

Boulder's program was funded by a 2008 ballot measure that authorized the county to issue up to \$40 million in bonds. Of this amount, \$14 million was in tax-exempt bonds intended for low-income housing projects. However, due to actions imposed by federal mortgage agencies, the county suspended residential financing indefinitely. As it was not directly affected by these actions, a \$12 million commercial program moved forward. Boulder further reduced the interest rate for its program by using part of its federally-authorized qualified energy conservation bond allocation. Further information about these bonds, as well as the related clean and renewable energy bonds, is available at [http://www1.eere.energy.gov/wip/pdfs/qecb\\_creb\\_primer.pdf](http://www1.eere.energy.gov/wip/pdfs/qecb_creb_primer.pdf).

The improvements financed have varied by program. Most of the financings approved by Sonoma County will or have funded solar photovoltaic projects, while most of Boulder

County's projects are energy efficiency. In Boulder, loans have averaged approximately 10% of the property value; Placer County caps the loan-value ratio at this level.

### ***New Programs***

**Los Angeles.** The Los Angeles County PACE Program began on October 12, 2011. The program can be used to fund up to 100% of the installed cost of many building performance upgrades.

The program is open to non-residential income-producing properties, including those owned by non-profit organizations. The property must (1) be within the boundaries of a city that has adopted a resolution to join the countywide PACE district, (2) not have any notices of default or foreclosure for the past five years, (3) not be subject to any involuntary liens or judgments, and (4) not have been delinquent on property taxes for the past three years. The property owner must be current on any existing mortgages and the mortgage holders must explicitly consent to the PACE assessment.

The program does not specify eligible measures. Instead, projects will be evaluated on a case-by-case basis for compliance with the state law enabling such programs. So long as the measure is affixed to the property and can be reasonably proven to save energy or water, or generate clean power, it will be deemed eligible for PACE. Under orders adopted by the California Energy Commission, projects must achieve a 10% energy efficiency improvement before on-site power generation can be funded through PACE. The scope of work and projected energy efficiency improvement must be documented by an energy audit carried out by a qualified engineering firm.

Projects located in the city of Los Angeles that are served by the city's Division of Water and Power may also be eligible for credit enhancements. The city's Community Redevelopment Agency has budgeted \$2.5 million in grant funds to be used as a debt service reserve fund (DSRF) backing PACE bond financings for eligible projects. The fund will be available to meet bond debt service payments in event the owner fails to pay its regular principal and interest assessment payments. When the owner becomes current on payments, funds can be returned to the fund. The investor providing the financing benefits from the credit enhancement effect and the owner benefits from lower financing costs and avoiding the need to raise reserve funds from other sources. The fund can also be leveraged to support a portfolio of financings which a given Investor makes under the PACE initiative.

This funding will be allocated to eligible projects case-by-case as the PACE financings are developed. The funding will typically equal 10% of total bond proceeds. As the project is completed and the owner demonstrates payment performance, the amount of agency funds contributions to the DSRF may be diminished over time. Further information about the program is available at [https://commercial-pace.energyupgradeca.org/county/los\\_angeles/commercial\\_about](https://commercial-pace.energyupgradeca.org/county/los_angeles/commercial_about).

### ***San Francisco***

In October 2011, San Francisco launched the [GreenFinanceSF-Commercial Program](#) to help businesses green their buildings, cut down on carbon emissions, save energy, and create jobs. The program is open to commercial and non-profit properties and residential properties with five or more units. The program provides up to 100% of the cost of energy efficiency, renewable energy, and water conservation improvements.

To participate in the program, the property owner may not (1) be in default or (2) have a history of default on the mortgage or non-payment of property taxes, (3) have filed for bankruptcy recently, (4) have any significant pending legal action, or (5) have any involuntary liens or judgments. The combined debt (including new project financing) on the property cannot exceed the property's current value. The property value is determined by using the current assessed value or a recent appraisal by a city-approved appraiser. If the property has a mortgage or other private lien on it, the debt holders must consent in writing to the placement of a senior lien on the property.

Property owners who participate in the program must receive a program-approved energy audit to identify and prioritize building-specific energy saving opportunities and predict project savings. The cost of the audit can be included in the financing.

To ensure expected savings are realized, the owners must (1) participate in available and applicable utility rebate or customized incentive programs that offer inspections or other mechanisms to verify that the projected savings are achieved or (2) submit to independent project review and site inspections at additional cost. Participating property owners may be required to enroll in free or low-cost energy usage tracking services to help track how the installed improvements are performing over time. They are encouraged to do more detailed performance analysis on their own to further ensure continued energy and cost savings are achieved.

The program is using the "open market" model in which property owners negotiate project financing, including the interest rate and repayment term with qualified project lenders willing to fund their project. When a project is approved, the city sells a bond to the project lender, and the proceeds from the sale fund the project. A special tax is then levied on the property, which is collected through the property tax bill and paid back to the project lender. Other key features of the program are that it provides for the option of longer amortizations than typical commercial loans, and the payment obligation can run with the property, not the owner.

The financing repayment is secured by a senior lien on the property. The city is also providing an additional security option by establishing a DSRF that will help cover project lenders in case of late payments or default by the property owner. The city is using grant funds provided under the federal American Recovery and Reinvestment Act for the DSRF. Projects must apply to the city for consideration to take advantage of this limited credit enhancement option. Once the DSRF is fully allocated to approved projects, and other grant funds that cover program operational costs are exhausted, applicants will have to cover the operational costs through additional fees or add them to their total financed amount.

KM:dy



March 6, 2012

## Scaling Energy Efficiency in the Heart of the Residential Market: Increasing Middle America's Access to Capital for Energy Improvements

Middle income American households – broadly defined here as the middle third of U.S. households by income – are struggling. Energy improvements have the potential to provide significant benefits to these households – by lowering bills, increasing the integrity of their homes, improving their health and comfort, and reducing their exposure to volatile, and rising, energy prices. Middle income households are also responsible for a third of U.S. residential energy use, suggesting that increasing the energy efficiency of their homes is important to deliver public benefits such as reducing power system costs, easing congestion on the grid, and avoiding emissions of greenhouse gases and other pollutants.

While middle income Americans have historically invested in improvements that maintain and increase the value of their homes, they have seen an important source of financing – the equity in their properties – evaporate at the same time that their access to other loan products has been restricted. A number of energy efficiency programs are deploying credit enhancements, novel underwriting criteria, and innovative financing tools to reduce risks for both financiers and borrowers in an effort to increase the availability of energy efficiency financing for middle income households. While many of these programs are income-targeted, the challenges, opportunities, and emerging models for providing access to capital may apply more broadly across income groups in the residential sector.

### Challenges to Accessing Capital

The upfront cost of comprehensive home energy improvements is a barrier to investment. Many middle income households need financing to overcome this barrier – and capital access has plummeted in the wake of the recession.

#### *Using Home Equity to Finance Home Improvements*

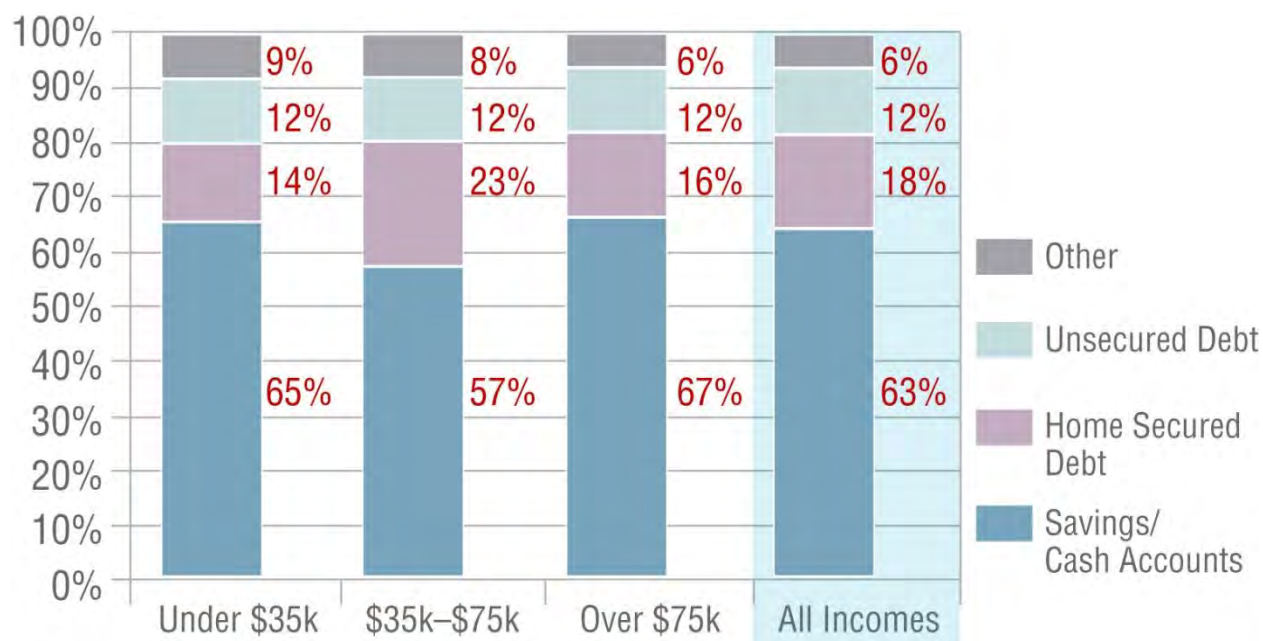
Middle income homeowners have historically invested in improving their homes. In 2001, these households accounted for almost a third of all home improvements made in the U.S., and they financed more than 35 percent of their home improvement investments (Guerrero 2003).<sup>1</sup> Compared to other households that financed improvements, middle income households were more inclined than other income groups to finance home improvements by borrowing against housing equity – two thirds of their financing was home-secured (see Figure 1).<sup>2</sup>

This is both good and bad news. The good news is that middle income households have historically invested in home improvements, and many (57 percent) have not needed financing to do so. The bad news is that the recession

<sup>1</sup> In 2001, middle income households spent an average of \$8,700 when using home-secured financing to pay for home improvements (Guerrero 2003). The level of home improvement spending impacted homeowner financing patterns. For improvements of \$5,000 to \$20,000, middle income households used home secured financing for 22% of expenditures, less than their overall average, but 10% more than their wealthier peers for the same expenditure range (Guerrero 2003).

<sup>2</sup> Home-secured financing includes home equity loans, home equity lines of credit and cash out refinancing. Unsecured financing includes unsecured loans and credit cards.

has eroded household savings – suggesting that more households will need financing to make improvements – at the same time that housing wealth, the primary asset against which middle income households borrow, has declined.



**Figure 1.** Home improvement financing patterns by income in 2001 (Guerrero 2003)

### *The Housing Collapse*

A number of factors contributed to the enormous speculative housing bubble in the mid-2000s (Lansing 2011). By 2007, primary residences accounted for approximately one third of U.S. household assets. For middle income households, these primary residences represented an even greater share of their assets – almost 50 percent (Bucks 2009).<sup>3</sup> The financial crisis and ensuing recession have since caused a sharp decline in housing values across the United States. Single family home prices have declined by 32 percent from the housing market's 2006 peak and carried household wealth down as well (see Figure 2) (S&P 2011).

This data masks more dramatic regional declines in housing values and the concentration of these price declines in low and middle value properties – those most likely to be owned by middle income Americans.<sup>4</sup> For example, the Case-Shiller Home Price Index indicates that low tier properties in Atlanta have lost 55 percent of their value since peaking at the end of 2006 – almost double the average 23 percent property value decline in the city over that time (see Figure 2).<sup>5,6</sup> In other words, not only did middle income households have more of their wealth invested in their

<sup>3</sup> The Federal Reserve Board data uses percentile of income. We use the 40<sup>th</sup>-70<sup>th</sup> percentiles (\$29,680 to \$79,100) to approximate middle income. In 2007, the overall average primary residence asset value as a percentage of wealth was 31.8 percent across all income groups, versus 48.4 percent for middle income households.

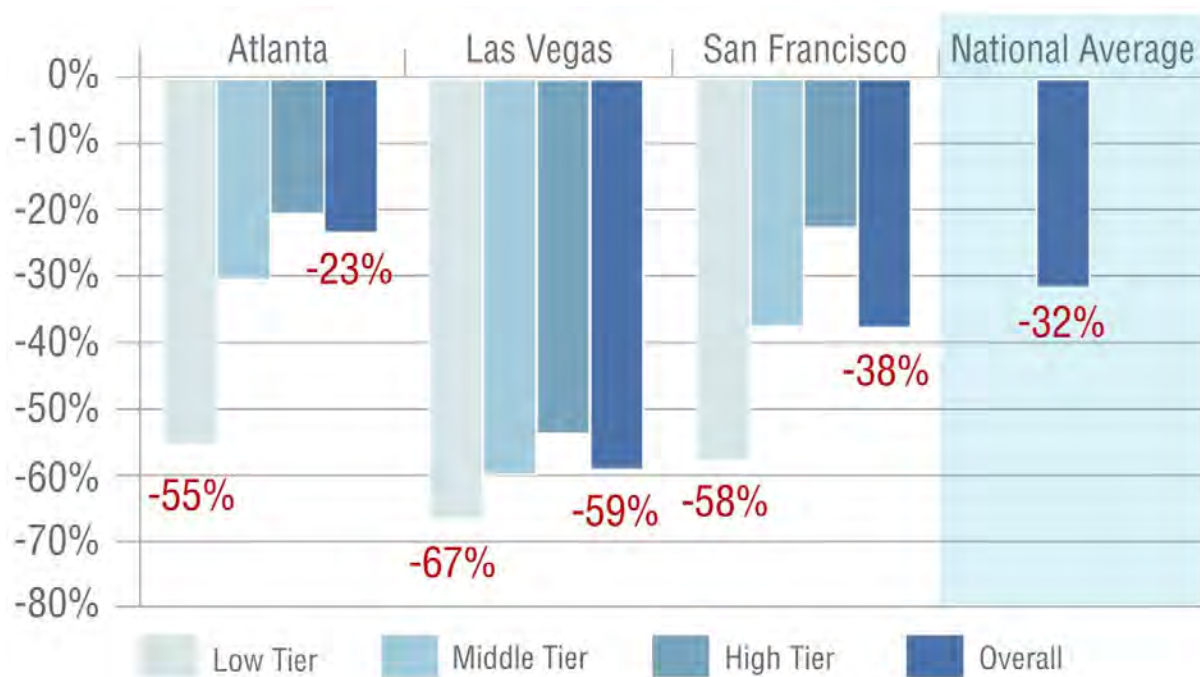
<sup>4</sup> The median middle income home value in 2007 was \$150,000 (U.S. Census). Assuming a value decline of approximately one third, this median value is likely to be approximately \$100,000 today. This value falls into the low tier of the 3-tiered Case-Shiller housing value pricing index across all of the index's 20 major metropolitan statistical areas (MSAs) except for Phoenix (where properties under \$95,901 are in the low tier).

<sup>5</sup> In Atlanta, as of June 2011, low tier properties are those valued under \$130,356, middle tier are those valued \$130,357-\$241,832 and high tier are those valued over \$241,832.

<sup>6</sup> Case-Shiller Seasonally-Adjusted Home Price Tiered Index Data. June 2011



primary residences heading into the recession, but their primary residences have lost a greater percentage of their value than those of their wealthier peers.



**Figure 2.** Case-Shiller 20-City Composite Home Price Index of single family home values January 2007 to June 2011 in three major U.S. cities, tiered by initial property value<sup>7</sup> (S&P 2011)

While property values (across tiers) nationally have returned to 2003 levels,<sup>8</sup> it would be incorrect to assume that the housing decline has only set middle income families back eight years. Many homeowners took advantage of rising property values by borrowing aggressively against their growing equity – leaving them with significant debt burdens that are, for some, larger than their home values. In fact, more than a quarter of all single family residential properties (13.3 million households) are now underwater or have near negative equity (<5% equity) (Corelogic 2011). This negative equity is concentrated regionally – the top five states have 38 percent of all negative equity properties.<sup>9</sup> It is reasonable to assume that many of these underwater properties are owned by middle income Americans – these households took on significant debt to purchase and improve properties, are more vulnerable to financial stress during a recession, and lost more of their home's value than their wealthier peers. These underwater households are more likely to behave like renters, under-investing in improving and maintaining their homes.

The news is not all bad though. While a majority of families across income groups have recently experienced declines in income and wealth – and middle income households have been hit harder than their wealthier peers – a large minority of the middle income population has maintained or increased their levels of wealth. From 2007 to 2009, most families (63 percent) experienced wealth declines – for those whose wealth declined, the median loss was substantial, 45 percent (Bricker 2011). However, more than a third of households (37 percent) have not

<sup>7</sup> *Ibid.* In Las Vegas, Low Tier properties are those valued under \$118,226, Middle Tier are \$118,226- \$178,664 and High Tier are those valued over \$178,664). In San Francisco, Low Tier properties are those valued under \$325,457, Middle Tier are \$325,457- \$601,276 and High Tier are those valued over \$601,276.

<sup>8</sup> *Ibid.*

<sup>9</sup> *Ibid.* The top five states are Nevada (60 percent underwater), Arizona (49 percent underwater), Florida (45 percent underwater), Michigan (36 percent underwater) and California (30 percent underwater).

experienced wealth declines or have seen only small changes in wealth. This makes it difficult to make universal conclusions about the state of middle income household finances. While many households are unquestionably suffering – and are likely unwilling or unable to make significant investments in energy efficiency without substantial financial incentives – a large minority of middle income households may be able to invest.

### *Household Savings & Employment*

Many American households feel insecure about their economic futures. Uncertainty about future earnings is high – in 2007, 31.4 percent of all families (across income groups) reported that they did not have a good idea of what their income would be for the next year (Bucks 2009). This uncertainty may well be even higher today as the U.S. unemployment rate has almost doubled since mid-2007. In 2009, almost nine percent of middle income households were unemployed while another 5.5 percent were underemployed (workers that take part-time jobs due to lack of available of full-time jobs) (Sum and Khatiwada 2010).<sup>10</sup>

For those households who have a reasonable expectation of future earnings, the recession has decreased their expectations of annual income growth from around two to three percent before the recession to less than half a percent in its wake – the lowest level in more than 30 years (Dunne and Fee 2011). Lower future earnings expectations are a function of both the recession and longer term trends – over the last 30 years, wages have not kept up with worker productivity gains.<sup>11</sup> Uncertainty and pessimism about future earnings are making households increasingly cautious with their finances as many households report higher levels of desired savings to buffer themselves from economic and other emergencies (Bricker 2011). These homeowners are likely to make fewer proactive home improvements, like energy upgrades, in favor of preserving limited savings and access to credit for unforeseen hardships.

### *Qualifying for Credit*

For those middle income households motivated to pursue energy efficiency, access to low-cost capital is often a significant barrier to investment. Many of the largest energy efficiency loan programs have application decline rates in the 30 to 50 percent range. Household ability to obtain secured financing has declined as housing prices have eroded and lenders have tightened underwriting standards and credit limits (NAR 2011).<sup>12</sup> Similar tightening trends are occurring in unsecured lending as personal creditworthiness has weakened and lenders have responded by increasing the minimum credit scores required to qualify for financing products and reducing the amount of overall credit available to each qualified borrower. Many households turn to high interest credit cards to finance expenditures as their options dwindle. These high-cost financing products are ill-suited to energy improvements – particularly those for which the motivation is to save money – as they worsen the payback period of these investments.

Since 2009, approximately 10,000 households have applied for financing through Pennsylvania's Keystone Home Energy Loan Program (HELP)<sup>13</sup>. About 40 percent of these households earn 80 percent of AMI or less, suggesting

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<sup>10</sup> As of Q2 2011, the unemployment and underemployment rates have dropped by approximately 0.5 percent across income groups.

<sup>11</sup> For a detailed discussion on wage stagnation, visit the Employment Policy Research Network: [http://www.employmentpolicy.org/sites/www.employmentpolicy.org/files/field-content-file/pdf/Mike%20Lillich/EPRN%20WagesMay%2020%20-%20FL%20Edits\\_0.pdf](http://www.employmentpolicy.org/sites/www.employmentpolicy.org/files/field-content-file/pdf/Mike%20Lillich/EPRN%20WagesMay%2020%20-%20FL%20Edits_0.pdf)

<sup>12</sup> Requirements to obtain conventional mortgages have been tightened, with the average credit score rising to about 760 in the current market from nearly 720 in 2007; for FHA loans the average credit score is around 700, up from just over 630 in 2007.

<sup>13</sup> Keystone HELP offers unsecured loans and loans secured by a subordinate lien mortgage at various interest rates. The specific offering depends on the measures financed and loan size. Underwriting includes a minimum credit score of 640, no bankruptcy,

that many middle income households are attracted to the program.<sup>14</sup> However, the program's early experience shows that middle income households are more difficult to serve – 57 percent of households earning  $\leq$  80 percent AMI do not meet the program's underwriting standards compared to 31 percent for households earning  $>80$  percent AMI (see Table 1).<sup>15</sup>

In addition to this higher rejection rate, fewer lower income households move forward with financing than their wealthier peers (58 percent of approved households earning  $\leq$  80 percent AMI fund loans compared to 73 percent of higher income households) – supporting the idea that, for many reasons, even when financing is available, it is more difficult to motivate middle income households to invest. Still, this data shows some promise as these middle income households account for about a quarter of all Keystone HELP loan volume.

Household Income	# Applications (% of Total Applications)	Applications Approved (Approval Rate %)	Loans Funded (Approval $\rightarrow$ Loan Conversion Rate %)	Average Loan Size
<80% AMI	~4,000 (40%)	~1,720 (43%)	~1,000 (58%)	~\$7,500
$\geq$ 80% AMI	~6,000 (60%)	~4,140 (69%)	~3,000 (73%)	~\$9,500

**Table 1.** Keystone HELP loan application, approval, and loan size rates by income, January 2010 to August 2011. (AFC First)

According to the Indianapolis Neighborhood Housing Partnership (INHP), the homeowners that they serve typically have little access to anything but credit card financing – often at annual rates from 15 to 25 percent, so INHP's new EcoHouse Project's mid-single digit fixed-interest rate loans<sup>16</sup> are an attractive tool for enabling energy improvements among households who are otherwise unlikely to be able to access affordable financing. With relatively lenient underwriting standards including credit scores as low as 580,<sup>17</sup> INHP is able to accommodate a wider range of applicants.<sup>18</sup>

Credit scores estimate an individual's likelihood of repaying certain types of debt relative to one's peers. Credit scores are a key metric for most lenders in evaluating consumer creditworthiness. Because credit scores are relative measures, a large shift in bill payment trends, like that caused by the recession, has triggered an increased likelihood of loan default for each "band" or range of credit scores. In other words, a credit score of 720 today reflects a higher estimated risk of loan non-payment than a credit score of 720 in 2005. For example, in the case of VantageScore,<sup>19</sup>

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foreclosure or repossession in the last seven years, no outstanding collections, judgments or tax liens exceeding \$2,500 and a 50 percent maximum DTI.

<sup>14</sup> 80 percent State Median Income (SMI) in PA is \$39,600 – suggesting that despite variance of AMI across regions in the U.S., many households who apply for Keystone HELP meet our middle income definition.

<sup>15</sup> Program underwriting is based on these criteria: Minimum FICO Score 640; no Bankruptcy, Foreclosure, Repossession in past seven years; no Unpaid Collection Accounts, Judgments, Tax Liens  $>$ \$2,500

<sup>16</sup> Loan interest rates are based on U.S. Treasuries. In July 2011, interest rates on secured loans were 5.97 percent and on unsecured loans were 6.66 percent.

<sup>17</sup> Households with credit scores as low as 580 can qualify for secured financing through INHP's EcoHouse Project loan program. Most national lending products require a minimum credit score of 640 to 680.

<sup>18</sup> For more information on the Indianapolis Neighborhood Housing Partnership EcoHouse Loan Program, see the Policy Brief posted here: <http://middleincome.lbl.gov/>

<sup>19</sup> VantageScore is a one of a number of consumer credit risk scores that use credit data and analytics as one measure of consumer creditworthiness. Many score models exist in the marketplace (others, like Fair Isaac (FICO) are mentioned elsewhere in this report). However the score values from one model are not comparable to the values of other score models – that is, a 650 score from one model is not comparable to a score value of 650 from a different model.

This Policy Brief is an excerpt from the report: "Delivering Energy Efficiency to Middle Income Single Family Households." For the full report and other resources visit: <http://middleincome.lbl.gov>

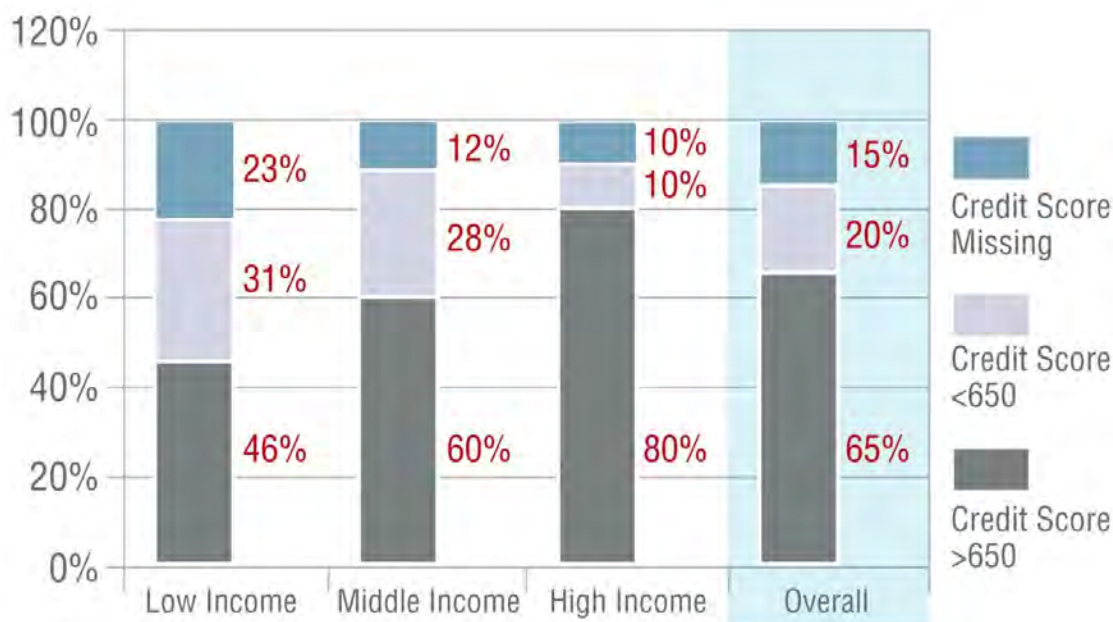
the delinquency rate on a new loan issued to a person with a 720 score between 2008 and 2010 is expected to be twice as high as on a new loan issued between 2003 and 2005 (see Table 2).

VantageScore	Loan Delinquency Rate		Delinquency Rate Increase
	2003-2005	2008-2010 (Anticipated)	% increase in rates btw 2003-2005 and 2008-2010
591-610	21.50%	25.44%	<b>3.9%</b>
611-630	17.11%	21.18%	<b>4.1%</b>
631-650	13.63%	17.81%	<b>4.2%</b>
651-670	10.90%	14.62%	<b>3.7%</b>
671-690	8.24%	11.74%	<b>3.5%</b>
691-710	5.99%	9.74%	<b>3.8%</b>
711-730	4.27%	8.11%	<b>3.8%</b>
731-750	3.21%	6.64%	<b>3.4%</b>
751-770	2.22%	5.28%	<b>3.1%</b>
771-790	1.67%	4.29%	<b>2.6%</b>
791-810	1.15%	3.33%	<b>2.2%</b>
811-830	0.80%	2.57%	<b>1.8%</b>
831-850	0.49%	1.78%	<b>1.3%</b>
851-870	0.38%	1.40%	<b>1.0%</b>
871-890	0.24%	0.90%	<b>0.7%</b>
891-910	0.19%	0.63%	<b>0.4%</b>
911-930	0.19%	0.53%	<b>0.3%</b>

**Table 2.** Changes in VantageScore loan delinquency rates for new loans originated from 2003-2005 compared to loans originated from 2008-2010 (anticipated).<sup>20</sup> (VantageScore)

Although credit scores do not explicitly take income into account, middle income households are likely to have lower credit scores than their wealthier peers (see Figure 3). These lower scores may be in part due to creditworthiness and in part due to the way in which scores are calculated, notwithstanding issues about how middle income households manage their credit. For example, a key factor in calculating credit scores is one's ratio of credit utilization to credit availability – many middle income households have less overall credit availability than their wealthier peers, often causing their credit utilization rate to be higher and their credit scores to be lower. This lower credit access may be a function of many things, including lower absolute levels of home equity and post-recession reductions in the maximum loan sizes lenders offer to customers. In other words, income implicitly impacts some credit scores – even in cases of identical loan repayment histories, middle income households may be assigned lower credit scores than their wealthier peers.

<sup>20</sup> Credit score models, including the VantageScore model, do not predict absolute delinquency rates. Rather, these models predict the “likelihood” of default for each consumer whose score falls within the indicated range.



**Figure 3.** Homeowner credit scores above and below 650 by income in Q4 2010<sup>21</sup> (Energy Programs Consortium)

Most lenders use credit scores as just one of several metrics for evaluating consumer creditworthiness. Underwriting standards for loan products, including those for home improvements, frequently include both a minimum credit score and a maximum debt-to-income (DTI) ratio.<sup>22</sup> A Federal Reserve Board study found that more than 20 percent of all households with home-secured debt had net DTI ratios higher than 40 percent, suggesting that as many as one in five households may not qualify for financing programs that include a maximum DTI underwriting requirement (Bucks 2009).<sup>23</sup> These numbers are higher among middle income households – more than one in three middle income households (35 percent) had net DTIs exceeding 40 percent.<sup>24</sup>

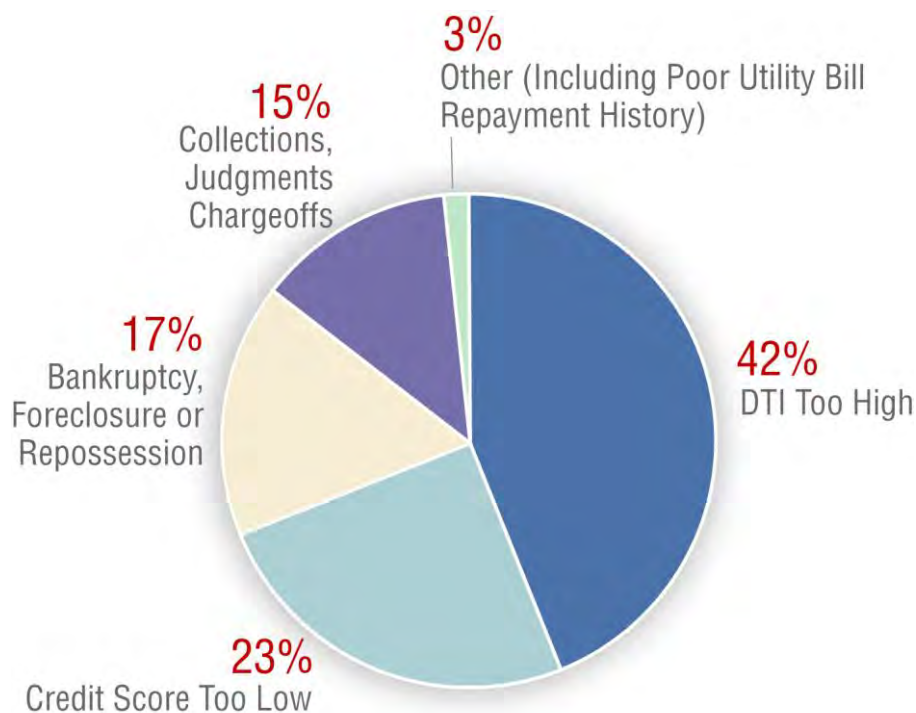
Program experiences to date suggest that maximum DTI underwriting requirements are significant barriers to capital access. For example, NYSERDA has declined more loan applications because household DTI ratios exceeded the allowable limit than for any other reason. Forty-three percent of NYSERDA's loan application declines (17 percent of loan applicants) have been caused by excessive DTI ratios while just 23 percent of declines were triggered by low household credit scores (See Figure 4). Major credit events like bankruptcy, foreclosure, repossession and outstanding collections account for more loan denials (33 percent) than low credit scores – these loan applicants will be very difficult to serve moving forward.

<sup>21</sup> Due to data limitations, for the purposes of the credit score analysis we use household income of \$30,000 to \$70,000 to define middle income. Credit score data from Energy Programs Consortium; based on analysis of TransUnion credit data from Intellidyn.

<sup>22</sup> The debt-to-income (DTI) ratio is a measure that reflects a household's ability to service its existing debt with current gross income. A household with a DTI ratio of 50 percent has annual debt service payments that equal 50 percent of the household's annual gross income. A maximum DTI is intended to ensure that borrowers have sufficient cash flow to make loan interest and principal payments.

<sup>23</sup> The Federal Reserve Board study's net DTI ratio calculation is not directly comparable to the way in which energy loan programs calculate DTIs. This calculation considered income net of taxes while loan underwriters use gross (e.g. before tax) income. These numbers may, therefore, overstate the problem. However, middle income households typically face lower effective tax rates than their higher income peers, suggesting that the gap between middle and higher income households with excessive DTI ratios may be larger than these numbers show.

<sup>24</sup> This includes both owners and renters.



**Figure 4.** Reasons for application rejection in NYSERDA’s residential energy efficiency loan program November 2010-October 30, 2011 (NYSERDA)

FICO Score Range <sup>25</sup>	Delinquency Projection (% Likelihood)
300-499	87
500-549	71
550-599	51
600-649	31
650-699	15
700-749	5
750-799	2
800-850	1

**Table 3.** Credit score and corresponding delinquency projections. (Transunion 2011 *in* SEE Action Financing WG).

### Opportunities for Increasing Access to Capital

Middle income households clearly need new ways of accessing affordable credit if they are to make home energy upgrades. However, it is important to acknowledge that there can be negative consequences to promoting loans and other products to particularly vulnerable segments of the population. Especially if programs are not ensuring savings, care needs to be taken with regard to who is given access to credit and what claims are being made about the benefits of energy improvements.

<sup>25</sup> These scores are not directly comparable to the VantageScore scores previously referenced, due to different credit calculation methodologies.

Underwriting criteria exist for a reason – to ensure that those that get access to financing are willing and able to make required monthly payments. For credit scores, the majority of middle income homeowners (60 percent) have scores of 650 or higher. For those with scores below 650, default risk skyrockets – the projected delinquency rate on unsecured loans more than doubles from 15 to 31 percent for individuals with FICO scores from 600-650 compared to their peers in the 650-700 score band (see Table 3).<sup>26</sup> This raises important questions about how to expand energy efficiency financing – particularly in the absence of certainty that the dollar value of energy savings will be sufficient to cover the full cost of the improvements over the measure's expected lifetime. Debt to income constraints raise similar issues – households with high DTIs are unlikely to have significant cash flow buffers at their disposal should energy improvements not deliver sufficient energy bill reductions to offset financing costs.

With those precautions acknowledged, there are ways that capital can be made more accessible and affordable in appropriate ways, and with prudent safeguards. This section describes options for using credit enhancements, alternative underwriting criteria, and other financing mechanisms that might better serve middle income households.

### *Credit Enhancements*

By reducing lender risk, publicly-supported credit enhancements can leverage these limited public monies and attract additional capital for residential loans.<sup>27</sup> Credit enhancements are used to reduce a lender's risk by sharing in the cost of losses in the event that loans default. These enhancements can take the form of loan loss reserves (LLRs), subordinated debt, and guarantees.<sup>28</sup> LLRs, often funded with ARRA or utility-customer funds, are the most commonly used credit enhancement, and they are frequently deployed to reduce borrowing costs or extend borrowing terms for program participants that would likely qualify for other (more expensive) loan products. Rather than simply lowering interest rates, a few innovative programs are using credit enhancements to incentivize their financial partners to offer energy improvement loans to households who would otherwise not have to access capital. Indianapolis is using a large LLR – with 50 percent<sup>29</sup> of losses covered – to households in its target income demographic,<sup>30</sup> and the cities of Madison and Milwaukee used part of their DOE Better Buildings grant to structure a \$3 million LLR to expand access to their loan product. This five percent loss reserve reduces the lender's losses in the event of loan defaults and supports a loan pool of up to \$60 million. It has been structured so that the cities' financial partner, Summit Credit Union, can recover more funds from the LLR on each loan default for lower credit quality consumers. Typically, a lender must absorb a fixed portion of each loss from any single loan to ensure it is appropriately motivated to lend responsibly. By allowing lenders to collect a greater percentage of their loss on loans to customers with low credit scores, the two cities were able to lower the minimum qualifying credit score to 540 – well below typical loan product eligibility (see Table 4).

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<sup>26</sup> One reason for this significantly higher default rate among lower credit score customers may not be lack of creditworthiness, but instead that these households are only offered high interest rate loan products that are more difficult to pay off.

<sup>27</sup> Loan loss reserves (LLRs) (see next footnote) reduce lender risk by providing first loss protection in the event of loan defaults. For example, a 5 percent LLR allows a private lender to recover up to 5 percent of its portfolio of loans from the LLR. A \$20 million fund of private capital would need a \$1 million public LLR (5 percent coverage), leveraging each public dollar 20 to 1. On any single loan default, the LLR often pays only a percent of the loss (often 80 percent) to ensure the lender is incentivized to originate loans responsibly.

<sup>28</sup> Loan loss reserves are held in an account and protect a lender against a specific level of loan losses. Subordinated debt stakes are similar to LLRs – instead of being held in an account, subordinated debt is lent out to customers, and the subordinated debt stake absorbs all losses up to a specified level. Loan guarantee protection can vary depending on the agreement, but can cover all or part of a lender's losses.

<sup>29</sup> In comparison, most LLRs for Recovery Act-funded programs have covered 5 to 10 percent of a portfolio's losses.

<sup>30</sup> INHP is targeting 80 percent of its EcoHouse lending to households at or below 80 percent of AMI and the remaining 20 percent to households earning between 80 percent and 120 percent of AMI. 120 percent of AMI for Indianapolis household of four is \$79,200, and 80% AMI for an Indianapolis household of four is \$52,800.

FICO Score Range	% of Each Loss Covered By LLR	% of Each Loss Absorbed by Credit Union
690+	70%	30%
650-689	80%	20%
610-649	90%	10%
540-610	95%	5%

**Table 4.** Milwaukee/Madison-Summit Credit Union loan loss reserve agreement. (Wisconsin Energy Conservation Corporation)

One issue that this type of arrangement raises is whether the lender will continue to be appropriately motivated to responsibly underwrite loans. In the Milwaukee/Madison case, this concern is mitigated by Summit Credit Union's demonstrated commitment to responsible lending to low and moderate income households. Summit's Chief Lending Officer, Dan Milbrandt, pointed out that expanding access to financing is difficult and that it takes effort on the part of the credit union to understand applicants' credit situations and figure out where, on the margin, less creditworthy households are willing and able to take on debt. "You have got to be willing to move beyond automated underwriting. There is a gray area, and Summit has experience examining mitigating factors so that we can responsibly lend to less credit qualified customers."

#### *Alternative Underwriting Criteria*

Rather than using credit enhancements to expand financing to "riskier" borrowers, a number of energy efficiency financing programs are deploying alternative underwriting criteria to identify creditworthy borrowers that do not meet traditional lending standards. NYSERDA's recently-launched Green Jobs-Green New York (GJGNY) initiative is using a Two-tiered underwriting process to expand access to financing for its Home Performance with ENERGY STAR® (HPwES) program.<sup>31</sup> Tier One underwriting uses standard credit score (minimum 640)<sup>32</sup> and DTI (maximum 50 percent) metrics to evaluate creditworthiness; 48 percent of applicants are rejected for this financing. NYSERDA is trying to reduce this decline rate with its Tier Two standards that offer households with low FICO scores or high DTIs a second opportunity to qualify for GJGNY financing (see Table 5 for a description of Tier Two underwriting standards). For those households with FICO scores below 640, NYSERDA Tier Two standards increase the maximum DTI to 55 percent and use utility bill repayment history in lieu of credit score to assess creditworthiness. For households with a FICO score above 680 that were rejected from Tier One because they had a DTI ratio above 50 percent, Tier Two standards increase the maximum DTI to 70 percent and use utility bill repayment history.<sup>33</sup>

<sup>31</sup> Households earning less than 80 percent of AMI are eligible for NY's AHPwES program, which provides a 50 percent rebate up to \$5,000.

<sup>32</sup> Minimum FICO score is 640, unless self-employed – minimum 680 if self-employed for at least 2 years, or minimum 720 if self-employed less than two years.

<sup>33</sup> There are many ways to calculate debt to income (DTI) ratios. Most programs use gross income. It is not clear, therefore, that a 70 percent DTI maximum is a meaningful metric for assessing creditworthiness (e.g. many households pay close to a third of gross income in taxes, suggesting that this metric might exclude very few households as debt service could include 100 percent of household net income). NYSERDA already assesses DTI ratios as part of its Tier 1 evaluation, but programs considering a different underwriting process should consider this issue.

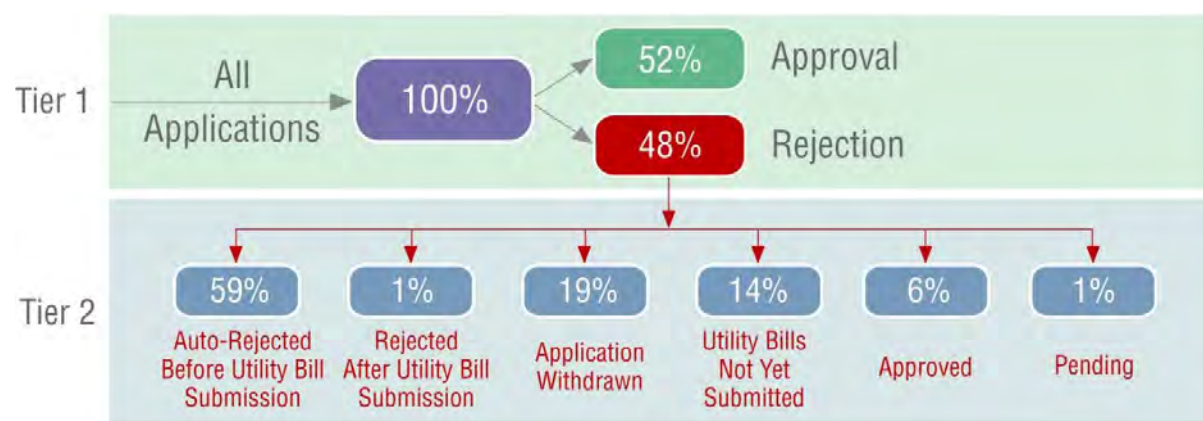


Since its November 2010 launch, over \$7.8 million has been loaned to 908 households through the GJGNY initiative, of which 48 loans (\$417,888) have been issued to households qualifying under the new Tier Two standards. Tier Two underwriting criteria have increased access to capital on the margin, increasing NYSERDA’s overall loan application approval rate by over two percent. This increase may underestimate the impacts of using utility bill repayment history as a means of assessing creditworthiness – a multi-step application process appears to have been a significant hurdle for many potential Tier Two participants and NYSERDA only launched the “High DTI” underwriting criteria in July 2011<sup>34</sup> (See Figure 5 for a summary of NYSERDA’s GJGNY loan application data).

Eligibility Requirements		Participant Benefits
<b>Tier 1</b> FICO≥640 DTI≤50%		3.99% financing Up to \$25,000 (3.49% with Automated Clearinghouse (ACH) payment)
<b>Tier 2 (Problem = Low FICO)</b> FICO≤640 DTI≤55% Strong Utility Bill & Mortgage Repayment History	<b>Tier 2 (Problem = High DTI)</b> FICO≥680 50≤DTI≤70% Strong Utility Bill & Mortgage Repayment History	

**Table 5.** New York’s Green Jobs-Green New York financing underwriting criteria. (NYSERDA)

NYSERDA has already made several changes to the Tier Two underwriting criteria since the initiative launched in 2010, which is indicative of the flexibility that is essential to experiment with increasing access to financing. One key challenge has been gaining access to customer utility bills for Tier Two consideration. Many programs around the country have struggled to access customer utility bills. In NYSERDA’s case, better access to utility billing information is important to deploying alternative underwriting criteria.



**Figure 5.** Summary of NYSERDA’s GJGNY loan application process and data (November 2010 to December 2011) (NYSERDA)

<sup>34</sup> GJGNY requires that applicants not qualified under Tier One but not initially disqualified from Tier Two for reasons unrelated to utility bill repayment history (e.g. recent bankruptcy, high DTI) to proactively submit utility bills. This step has been a barrier as more than 80 percent of applicants have failed to follow-up with bill submission. While the overall loan application approval rate increased by just 2.6 percent, this may underestimate the impacts of using utility bill repayment history as other underwriting criteria and the multi-step application process appear to be barriers. For example, if 84 percent (the rate of loan approval for applicants that submitted utility bills) of all households not automatically disqualified from the Tier Two track (e.g. those that failed to submit their utility bills) had been approved, GJGNY’s approval rate would have increased by 16 percent.

Other programs, including Midwest Energy and Clean Energy Works Oregon (CEWO), also use utility bill repayment history to evaluate creditworthiness. CEWO's underwriting process is notable for its low cost – while it includes a credit score check, instead of analyzing an applicant's DTI, CEWO examines utility bill repayment history. Using utility bill repayment history in lieu of DTI's significantly reduces loan underwriting expenses, and because more households in many programs are rejected for financing due to high DTIs than low credit scores, it may be an effective approach. The early data are promising – CEWO's application decline rate is just 10 percent since the program's 2009 launch – well below that of other energy efficiency loan programs. CEWO's financing partner, Craft3 (formerly known as Enterprise Cascadia), has dispersed \$14.7 million for 1,180 loans as of January 31, 2012.<sup>35</sup>

These initiatives are relatively new, so it is too early to draw firm conclusions about whether these criteria will be effective at identifying households who can afford to take on debt to invest in energy improvements.<sup>36</sup> While there is reason for some skepticism about the predictive power of utility bill repayment history on loan performance,<sup>37</sup> if on-time utility bill payment turns out to be a good borrower risk assessment tool, it has the potential to increase financing access – and is especially appealing if loan repayments are made on the utility bill as the CEWO program offers. Using on-bill repayment is likely to reduce loan delinquencies, especially where nonpayment can result in disconnection (which is not the case for CEWO).

### *Innovative Financing Tools*

In addition to making standard loan products more accessible, a number of new financial products may be more effective at serving middle income households. Here, we highlight four of these financing tools: OBF loan products that are paid off when properties transfer, employer-offered financing that is deducted from paychecks, and property assessed clean energy (PACE).

### **On-Bill Financing (OBF)**

On-bill financing is a tool through which a customer's utility bill is used to collect loan payments for energy improvements. Utilities or third parties can provide the up-front capital for the energy upgrades and the loan can be structured as an unsecured consumer loan, a secured loan, or can be attached to the meter (as opposed to the individual).<sup>38</sup> Some utilities have expressed reservations about performing lending functions in-house, suggesting that third party-funded on-bill models in which financial institutions have core lending responsibilities (e.g.

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<sup>35</sup> Thus far three loans have defaulted totaling \$39,674 in charge-offs. Their current criticized assets equal 3.87 percent of the outstanding portfolio, including watch list assets at 2.89 percent and problem assets at 0.98 percent. However, it is also important to note that most applicants – both those declined and those approved – have strong credit scores, most above 700.

<sup>36</sup> Ultimately, the viability of these alternative underwriting approaches must be assessed not based on how many loans additional loans are made, but whether such loans exhibit payment performance that justifies approving borrowers who would otherwise not qualify for financing.

<sup>37</sup> Households are uniquely motivated to pay utility bills to ensure that their power stays on. This motivation may not hold for unsecured loans, where the penalty for non-payment is a credit score reduction.

<sup>38</sup> If the repayment obligation is attached to a household's utility meter (meter attached), the obligation to pay the loan can stay with the property if a tenant or homeowner moves. In some programs, nonpayment of the bill can trigger utility shut-off of service, a powerful customer incentive to make interest and principal payments.<sup>38</sup> Because of this enhanced security, a household's credit characteristics become less important to underwriting. However, the same consumer protections that guard against utility service cancellation in the event of utility bill nonpayment also protect on-bill financing borrowers from meter shut-off in the event of loan nonpayment. Some utility commissions have expressed support for facilitating the convenience and messaging of on-bill repayment but are not inclined to support meter attachment which could lead to service disconnection. The extent to which meter-attached financing might influence real estate transactions properties also remains an open question.

managing credit risk, hedging interest rate risk) and utilities manage customer interactions (e.g. demand creation, quality assurance).

Because many households have long histories of paying their utility bills regularly, some financial experts believe that on bill repayment will reduce loan delinquency. On-bill financing for energy improvements is the most integrated with the savings those improvements are expected to deliver – which may help to alleviate consumer reluctance to take on debt to pay for them. Midwest Energy in Kansas operates a meter-attached residential loan program. If an individual doesn't pay their bill and leaves the property, only the late payments at that point are uncollectible. Any remaining monthly payments transfer to the next customer at that meter. Over three years, the Midwest Energy program has issued about 600 loans for a total of more than \$3.3 million in funding, and to date less than one percent of loans have been uncollectible (in line with the uncollectible rate of their other utility revenue).

### **Loan products that are paid off when properties transfer (Deferred Loans)**

Some middle income households simply do not have the financial capacity to make consistent principal and interest payments on debt. This is especially true when the financed improvements lead to uncertain cash flow, or if building rehab needs to be funded in addition to energy upgrades, increasing net monthly payments. There are many housing and economic development agencies around the country that will fund home improvements through deferred loans – often health and safety-related rehab for fixed income seniors that have equity in their homes. No monthly payments are required, but a lien is attached to the property that must be paid off when the property is sold or otherwise transferred.

The Opportunity Council in Washington uses these deferred loans for repairs needed before free weatherization services to low income families. In Camden, New Jersey the city is using Recovery Act funds to create a revolving loan fund to offer residents a home energy upgrade, paid for with a deferred loan. The Wyoming Energy Savers (WES) loan program offers both amortized and deferred loans based on participant income.<sup>39</sup> Those households earning less than 50 percent of AMI qualify for deferred loans, while those households earning 50-80 percent of AMI qualify for amortizing loans.<sup>40</sup> Income-qualified households who are current on their mortgage are eligible for loans up to \$15,000 for a list of pre-approved measures including heating equipment and weatherization measures. Deferred loans are offered at 3 percent interest due at time of home property transfer or sale.<sup>41</sup> One key disadvantage to this product type is that borrowed funds are likely to revolve very slowly.

### **Paycheck-Deducted Loans**

Paycheck-deducted financing involves repaying a loan through regular, automatic deductions from an employee's post-tax paycheck. The Clinton Climate Initiative (CCI) is piloting a program called the Home Energy Affordability Loan (HEAL) in Arkansas,<sup>42</sup> which allows employees of participating companies to finance energy upgrades with repayment through a payroll deduction. Originally, the model entailed CCI providing technical assistance for companies to make energy efficiency improvements to their own facilities. These companies would then put a portion of the savings from these improvements into a revolving loan fund for employees. The employer-assisted

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<sup>39</sup> An amortizing loan is one in which loan principal is paid down over the course of the loan. A deferred loan is one in which principal and/or interest payments are postponed for a specific period of time or until a specific trigger (e.g. property transfer).

<sup>40</sup> Depending on the county, 50 percent of AMI ranges from \$33,700 to \$47,450 for families of 4, and 80 percent of AMI ranges from \$53,900 to \$64,200.

<sup>41</sup> For more information, visit <http://www.wyomingcda.com/files/WESDes.pdf>

<sup>42</sup> The Clinton Climate Initiative plans to replicate the program in other states beginning in 2012. More information on the program is available here: [www.clintonfoundation.org/what-we-do/clinton-climate-initiative/cci-arkansas](http://www.clintonfoundation.org/what-we-do/clinton-climate-initiative/cci-arkansas).

model is still available, but CCI found that employee demand for financing was larger than the energy savings companies were realizing, and some companies have policies that preclude lending to employees. CCI developed a second model in partnership with local credit unions, in which a credit union, rather than the employer, provides the loan capital and loan repayment is deducted through payroll and automatically transferred to the credit union. For one pilot with the largest hospital in Arkansas, the hospital's credit union is offering 5.75 percent interest for up to three years for unsecured loans to employees who have worked at the hospital for at least three years. The loans are unsecured, but the payroll deduction allows the credit union to do lighter underwriting and offer a lower interest rate than they would otherwise offer for standard unsecured loans.<sup>43</sup> Beyond this security, some experts believe that households may be more likely to pay these loans because they are offered through — or are supported by — their employer, and they want to be seen as responsible employees and members of the company's social community.

### **Property Assessed Clean Energy (PACE)**

For those middle income households who have equity in their homes, PACE may be a promising financing tool if it gets past the current regulatory hurdles. PACE programs place tax assessments in the amount of the improvement on participating properties, and property owners pay back this assessment on their property tax bills. Like other property taxes, these assessments are treated as senior liens — which makes them very secure. PACE is debt of the property, which suggests that underwriting need not be based on a borrower's personal creditworthiness (and that the financing can be transferred with the property) — potentially getting around the credit score and debt-to-income issues highlighted in this chapter. Residential PACE currently faces significant regulatory hurdles, which have largely eliminated its use around the country, pending court rulings or federal legislation.<sup>44</sup>

### *Loan Pool Aggregation versus Loan Pool Separation*

As energy efficiency markets scale, and billions of dollars of private capital become necessary to meet household demand, program administrators and/or their financial partners will likely need to sell energy efficiency loans to “secondary market” purchasers.<sup>45</sup> One important issue to consider as energy efficiency financing markets scale is whether, before being sold into secondary markets, pools of loans made to lower credit quality households should be separated from pools of loans issued using “conforming” underwriting standards to higher credit quality households.<sup>46</sup> Some experts suggest that blended pools of loans, in which strong credits mitigate the risk of weaker credits, will be necessary to deliver attractive loan capital to middle income households at scale. These experts argue that credit enhancements should be deployed to reduce investor risk until a sufficient data set has been accumulated to evaluate the risk of these blended pools.

Others suggest that separate pools are more appropriate, because conforming loan pools would be easier to sell into secondary markets and because these pools would attract the lowest-cost capital available — enabling programs and financial institutions to pass on low-cost financing to these higher-credit households. They suggest that less creditworthy households should be offered public funding or that their loans should be heavily credit-enhanced if sold to private investors. The path forward may, ultimately, be a function of what risks secondary market investors are willing to bear, and whether policymakers deem the credit enhancements necessary to incentivize greater risk-

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<sup>43</sup> In some states, a direct lender or employer deduction from the paycheck may not be legal as employees must maintain personal control over their income. These states include: Illinois, Indiana, New Hampshire, New Jersey, New York, Washington, D.C. and West Virginia. However, this is generally viewed as a technical obstacle, and customers may voluntarily setup automated paycheck allocations to personal accounts, which are then automatically transferred to lenders or employers

<sup>44</sup> For more information, visit <http://www1.eere.energy.gov/wip/pace.html>

<sup>45</sup> A secondary market is a market into which previously issued financial instruments (e.g. loans, stocks, bonds) can be sold.

<sup>46</sup> A conforming loan is a loan whose structure (e.g. security, term) and underwriting criteria (e.g. minimum credit score) meet specific guidelines. The bellweather of conformity for energy efficiency loans is the Fannie Mae Energy Loan.

taking to be a reasonable use of limited public monies. Today, it is not clear that demand is at the requisite scale that developing secondary market access should be a national priority. Local, often socially-interested financial institutions (e.g. credit unions, CDFIs, coops) are often offering more attractive loan terms to customers than regional and national lenders (and holding these loans on their balance sheets).<sup>47</sup>

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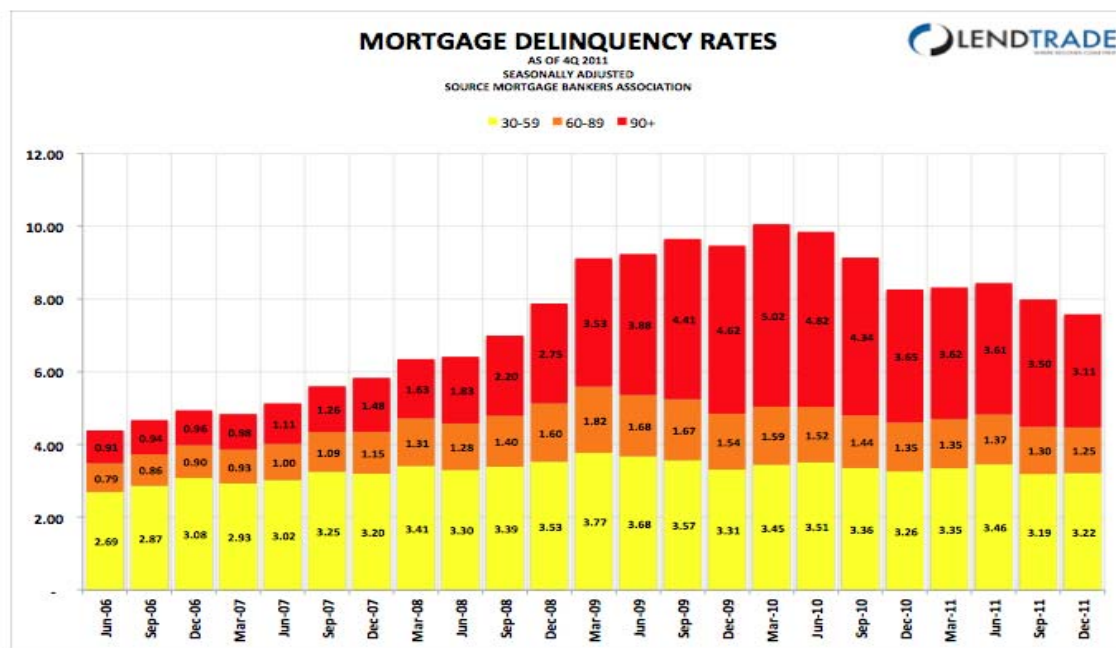
<sup>47</sup> These financial institutions often see energy efficiency lending as serving their social missions. In addition, efficiency lending often offers them a low-cost marketing tool, which warrants attractive lending terms. In Austin, Texas, Velocity Credit Union approved, funded and cross-sold energy efficiency loans at a higher rate than its other lending products. For more information, visit LBNL's policy brief on Austin Energy's Home Performance with ENERGY STAR© program: [http://eetd.lbl.gov/ea/emp/reports/ee-policybrief\\_032211.pdf](http://eetd.lbl.gov/ea/emp/reports/ee-policybrief_032211.pdf)



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# Mortgage Delinquency Rates fell to 7.58%

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## Mortgage Delinquency Rates fell to 7.58%

Posted [Feb 21 2012](#) by [Steven Schipper](#) in [Loan Performance](#) with [0 Comments](#)

February 16, 2012 – The Mortgage Bankers Association reported that the delinquency rate for mortgage loans

on one-to-four-unit residential properties decreased to a seasonally adjusted rate of 7.58 percent of all loans outstanding as of the end of the fourth quarter of 2011, a decrease of 41 basis points from the third quarter of 2011, and a decrease of 67 basis points from one year ago, according to the Mortgage Bankers Association's (MBA) National Delinquency Survey. The non-seasonally adjusted delinquency rate decreased five basis points to 8.15 percent this quarter from 8.20 percent last quarter.

The percentage of loans on which foreclosure actions were started during the third quarter was 0.99 percent, down nine basis points from last quarter and down 28 basis points from one year ago. The delinquency rate includes loans that are at least one payment past due but does not include loans in the process of foreclosure. The percentage of loans in the foreclosure process at the end of the fourth quarter was 4.38 percent, down five basis points from the third quarter and 26 basis points lower than one year ago. The serious delinquency rate, the percentage of loans that are 90 days or more past due or in the process of foreclosure, was 7.73 percent, a decrease of 16 basis points from last quarter, and a decrease of 87 basis points from the fourth quarter of last year.

The combined percentage of loans in foreclosure or at least one payment past due was 12.63 percent on a non-seasonally adjusted basis, a 10 basis point decrease from last quarter and was 107 basis points lower than a year ago.

"Mortgage performance continued to improve in the fourth quarter, reflecting the improvement we saw in the job market and broader economy. The total delinquency rate and foreclosure starts rate decreased and are back down to levels from three years ago. A major reason is that the loans that are seriously delinquent are predominantly made up of loans originated prior to 2008 and this pool is steadily growing smaller as a percent of total loans outstanding. In addition, employment is the key driver of mortgage performance and the mortgage delinquency rate is actually falling faster than the unemployment rate is declining," said Jay Brinkmann, MBA's Chief Economist and Senior Vice President for Research and Education.

"People often ask where we are in the housing recovery and how far we still have to go. This year-end report is a good time to take stock. By several measures, mortgage delinquencies are about half way back to long-term, pre-recession levels. The total delinquency rate peaked at 10.1 percent in the first quarter of 2010. It now stands at 7.6 percent, about half way to the longer-term pre-recession average of roughly 5 percent. The rate of foreclosure starts peaked in the third quarter of 2009 at 1.4 percent but has now dropped to 1 percent, about half way to the longer-term average of slightly under .5 percent. When it comes to real estate, however, all national measures are essentially meaningless since the important measures are local ones. This is certainly true here where the delinquency measures in some markets are much closer to their longer term averages while other markets have much further to go.

"The one exception is the percentage of loans in foreclosure which, while down somewhat at 4.4 percent, is still much closer to the all-time high of 4.6 percent reached in the fourth quarter of 2010 than the longer-term average of roughly 1.2 percent, despite the drop in delinquencies and foreclosure starts. Here the differences are clearly attributable to local conditions and legal structures. States with non-judicial foreclosure systems are seeing the backlog of foreclosures clear more rapidly and are down to an average rate of 2.8 percent. In contrast, the percentage of loans in foreclosure in the judicial system states has hit an all-time high of 6.8 percent, almost two and a half times higher than rate for non-judicial states.

"Total delinquency rates and foreclosure starts rates fell on a quarter-over-quarter basis for every loan type: prime fixed, prime ARM, subprime fixed and subprime ARM. The one exception was FHA where all

delinquency and foreclosure measures were up over the previous quarter. Part of the reason is that the FHA book of business has shown rapid growth, and purchase loans originated in 2008 and 2009 are only now entering the peaks of a normal delinquency curve.

“Finally, the improvements shown in this survey are broad-based geographically, with more than half of the 50 states and DC showing no change or a decline in foreclosure starts and 90+ day delinquencies. California, Florida and Arizona also showed marked improvement in most measures, but Nevada showed a large uptick in 90+ day delinquencies, possibly a sign that new foreclosures are being delayed for various reasons. The concentration of loans in foreclosure is still very much focused in a handful of states with Florida, California, Illinois, New York and New Jersey accounting for over 52 percent of loans in foreclosure in the US, while only making up 32 percent of loans serviced.”

Change from last quarter (third quarter of 2011)

On a seasonally adjusted basis, the overall delinquency rate decreased for all loan types except FHA loans. The seasonally adjusted delinquency rate decreased 20 basis points to 4.12 percent for prime fixed loans and decreased 151 basis points to 9.22 percent for prime ARM loans. For subprime loans, the delinquency rate decreased 157 basis points to 19.67 percent for subprime fixed loans and decreased 267 basis points to 22.40 percent for subprime ARM loans. VA loans also saw a decline, with the delinquency rate decreasing three basis points to 6.55, while the delinquency rate for FHA loans increased 27 basis points to 12.36.

The percent of loans in foreclosure, also known as the foreclosure inventory rate, decreased from last quarter to 4.38 percent. The foreclosure inventory rate for prime fixed loans declined four basis points to 2.52 percent and the rate for prime ARM loans decreased 33 basis points from last quarter to 8.72 percent. For subprime loans, the rate for subprime ARM loans decreased 56 basis points to 22.17 percent and the rate for subprime fixed loans decreased 17 basis points to 10.65. In contrast, the foreclosure inventory rate for FHA loans increased 27 basis points to 3.54 while the rate for VA loans increased 12 basis points to 2.37.

The non-seasonally adjusted foreclosure starts rate decreased seven basis points for prime fixed loans to 0.62 percent, 33 basis points for prime ARM loans to 1.83 percent, 17 basis points for subprime fixed to 2.33 percent and 86 basis points for subprime ARMs to 3.79 percent. The foreclosure starts rate increased 10 basis points for FHA loans to 0.88 percent and four basis points for VA loans to 0.60 percent.

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Mark Muro and Devashree Saha | August 30, 2011 1:21pm

## Bringing the Property Assessed Clean Energy Program Back to Life



With job creation and the renewal of the moribund housing sector increasingly now at crisis levels of urgency, there seems to be a renewed push in Washington to inject new life into the Property Assessed Clean Energy Program (PACE) — a program that some had given up for dead after the Federal Housing Finance Authority created a major implementation hurdle last year.

The newly introduced PACE Assessment Protection Act (H.R. 2599), which already has bipartisan support and endorsement from many organizations, provides at least a ray of hope that there might be a chance that PACE can become an important tool to boost job creation and economic growth in the residential clean energy market.

PACE really took off in 2009 and 2010 when many states passed PACE-enabling legislation. PACE programs are now authorized in 27 states and the District of Columbia allowing their local governments to provide energy retrofits to property owners in a defined financing district or geographic area and be repaid via assessments on the properties. Most of these programs have

focused on the residential sector and include a lien on the property that is often senior to the existing mortgage.

However, just as PACE was gathering momentum with other states expressing interest in it, the FHFA declared in July 2010 that PACE programs with first liens posed risk management challenges for lenders, servicers, and mortgage securities investors. FHFA instructed Fannie Mae and Freddie Mac to restrict the kind of loans that homeowners can get if they live in a PACE-designated area.

This essentially froze PACE-related work though several states have tried to find a way around the block. Maine introduced enabling legislation for municipalities to create loans to property owners for clean energy technologies that placed the lien in a subordinate position behind a mortgage. For its part, Michigan passed PACE legislation that limits the tool's use to commercial and industrial property owners and requires those with outstanding mortgages to show written consent from their mortgage holders.

Against this background, the PACE Assessment Protection Act offers a way forward. If passed, the legislation would force government sponsored entities to adopt standards that support PACE subject to certain criteria including limits on the total cost of the proposed energy improvement as a share of the value of the property; requirements that the property owner have more than 15 percent equity in the property; and a requirement that PACE-financed projects have positive savings-to-investment ratios.

Such provisions are a welcome proposed compromise--and a timely one. A resolution to this issue would not only create a steady and predictable demand for energy retrofit projects nationwide but also help with job creation by providing a growing demand for both energy efficiency installers and installers of small-scale renewable energy systems.

To see this, check out this study looking at the economic impact of PACE programs in four communities--Santa Barbara, San Antonio, Columbus, and Long Island, N.Y. After modeling PACE implementation in the four communities, the study team found that \$4 million in total PACE spending across the four cities would generate \$10 million in gross economic output, \$1 million in combined federal, state, and local tax revenue, and 60 jobs. Extrapolating from this study, if 1

percent of the 75 million owner-occupied homes were to invest in an average of \$20,000 PACE project each, the economic impact would translate into \$15 billion in gross economic output, \$4 billion in combined federal, state, and local tax revenue, and 226,000 jobs.

The bottom line: PACE has the potential to inject millions of dollars into the U.S. economy to make lasting energy improvements in metropolitan areas.

---

Mark Muro

Senior Fellow and Policy Director

**Metropolitan Policy Program**

Mark Muro, a senior fellow and director of policy for the Metropolitan Policy Program at Brookings, manages the program's public policy analysis and leads key policy research projects.

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Devashree Saha

Senior Policy Analyst

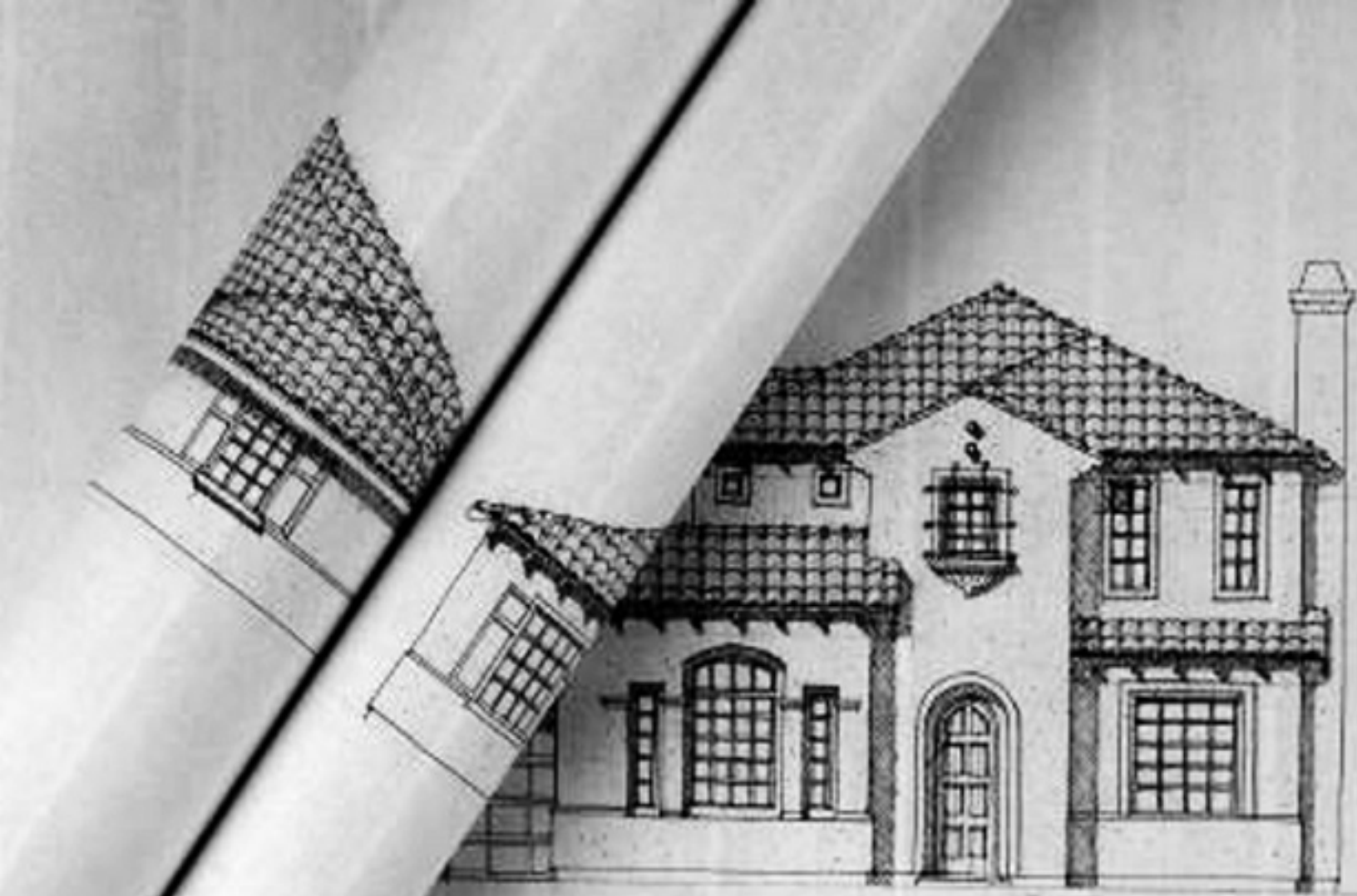
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Improving Training for Early Childhood Teachers



**community**  
**septic**  
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Massachusetts Department of Environmental Protection  
Bureau of Resource Protection  
Division of Municipal Services  
July 2005



The Community Septic Management Program (CSMP) was developed through the collaboration of the Department of Environmental Protection (DEP), the Executive Office of Administration and Finance, the Office of State Treasurer, and the Department of Revenue to provide funds and assistance to Massachusetts homeowners for compliance with Title 5.

This document is a comprehensive step-by-step guide to help communities implement the CSMP at a local level.

The Department of Environmental Protection would like to thank the following for their insight, knowledge, and contributions in writing and editing this document:

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Copies of this document can be found on DEP's web site at : <http://www.mass.gov/dep/brp/mf/othergrt.htm>.



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Massachusetts Water Pollution Abatement Trust  
One Ashburton Place  
Boston, MA 02108



Massachusetts Department of Environmental Protection  
1 Winter Street  
Boston, MA 02108

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# THE COMMUNITY SEPTIC MANAGEMENT PROGRAM

## Highlights of the Community Septic Management Plan:

- The Commonwealth provides funding for the Community Septic Management Program to the Community through a “State Revolving Fund” (SRF) loan.
- The SRF loan is offered at an effective 0% interest rate (the technical term is “50% Grant Equivalency”) by the Commonwealth to the Community. The Community re loans these funds usually at the rate of 5% interest to homeowners.
- The Town Meeting (or City Council) Vote authorizes Communities to borrow the SRF loan funds from the Massachusetts Water Pollution Abatement Trust.
- If less than the authorized SRF is borrowed (drawn down), the Community only repays the amount it has borrowed from the Commonwealth.
- The 5% interest charged on the betterment loans to homeowners provides “positive” cash flow and additional security to the Community.
- There should be NO additional taxes if the town participates in this program – the primary repayment obligation is undertaken by the homeowners receiving betterment loans.
- If a participating homeowner defaults on the payment, the Community has a municipal lien on the property. Any homeowner defaults will be charged an accrued interest rate of 14% rising to 16% if a “taking” is required (state law for “delinquent” municipal charges).
- The Community’s repayment to the Commonwealth begins in the second year after the program commences – a year or more after the homeowners begin making payments to the Community. This enables the Community to accumulate at least one year of payments, including 5% interest, to cover unexpected defaults.
- The participation of homeowners in areas identified as environmentally sensitive (to failed systems) is not mandatory. However, if the homeowner’s septic system constitutes an imminent health hazard according to the local Board of Health, the homeowner can be given priority for assistance. Homeowner participation is encouraged because correctly operating septic systems are beneficial to the environment and the low interest rate offered by the Program helps homeowners comply with Title 5.
- The Community has an option to set aside up to 2.5% of the loan funds to obtain consulting services to administer the Program. There is also a \$20,000 grant available for first-time Communities entering the Program to provide additional funds to assist with administrative costs.
- The betterment payments can be spread over a period of up to 20 years and is assumable by the buyer of a property.
- The Community can require repayment of betterment loans by the homeowner sooner than the SRF payments are required by the Commonwealth (for example: betterment loans are made to homeowners over 10 years; the Community takes its SRF loan for 20 years). This provides extra protection to the town.
- The Community does not have to adopt any special provision at the Town Meeting to accept the ‘Betterment Law’ Chapter 111, Section 127B ½ is a ‘General Law’ and is always available.

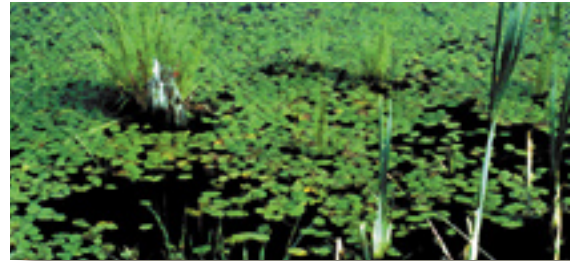
These points, presented during town meetings, can explain how the program works, where the funding sources come from, who can apply for funding, and how this program will address the environmental issues facing your community.



## SECTION 1. THE COMMUNITY SEPTIC MANAGEMENT PROGRAM

### Introduction

Across Massachusetts, failing cesspools and septic systems are a leading cause of contaminated drinking water, tainted shellfish beds, weed-choked lakes and ponds, and polluted beaches. In 1995, the Department of Environmental Protection (DEP) with the help of key stakeholders, revised Title 5 of the State Environmental Code to protect the health of Massachusetts citizens and the state's natural resources. This was the first time the state's septic system rules were revised since 1978. This revised code reflects a new understanding of the impact of septic systems on the subsurface environment and groundwater and surface waters like rivers, lakes, and ponds. Title 5 requires inspection of private on-site sewage disposal systems before properties using them are sold, expanded, or undergo a change in use. Systems deemed "failed" are required by Title 5 to be repaired, replaced, or upgraded to protect the public health and the environment.



To help homeowners comply with the revised Title 5 rules, the Commonwealth has invested approximately \$164 million in various assistance programs aimed at upgrading septic systems, building community systems, or new sewers. The Community Septic Management Program (CSMP) was developed through the collaboration of DEP, the Executive Office of Administration and Finance, the Office of the State Treasurer, and the Department of Revenue. Funding for the Program was provided by the 1996 Open Space Bond Bill that authorized DEP to spend \$30 million to assist homeowners to comply with Title 5. DEP will use the appropriation to fund loans to communities through the Massachusetts Water Pollution Abatement Trust (the Trust). Using the State Revolving Fund (SRF) loans



from the Trust, communities can provide betterment loans to assist homeowners who must address septic system failures. Betterment loans are described in greater detail in section 4 and 5 of this document.

This manual is a comprehensive step-by-step guide to help communities implement the Community Septic Management Program at the local level. Implementation includes the development of a local inspection or management plan

and a betterment loan program administered by the Board or Department of Health that will provide direct financial assistance to homeowners with failed septic systems. The effectiveness of the Community Septic Management Program's implementation depends largely on the initiative of local officials and their sensitivity to the needs and concerns of homeowners and the community.

Communities must identify and devise a plan to protect environmentally sensitive areas from septic system contamination. Such plans always include the creation of a database and the provision of financial assistance to homeowners using betterments. As discussed in these materials, the community may devise either a Community Inspection Plan (Option A) or a Local Septic Management Plan (Option B). Communities are eligible for a planning grant and a SRF loan of \$200,000 with either Option A or Option B. The SRF loan proceeds may be used to provide betterment loans to homeowners and for eligible administrative costs.



## SECTION 2. CSMP PLANNING GUIDANCE

The Community Septic Management Program (CSMP) provides financial and management tools for local boards of health (BoH) to identify and protect environmentally sensitive areas in their cities and towns. Communities are provided with pre-loan financial assistance in the form of a grant to identify and rank environmentally sensitive areas and to create a plan to protect such areas from septic system contamination. The grant is available after submission of the application described in this manual. After the development and acceptance by DEP of the local program and borrowing authorization by the Town Meeting or City Council, the community can provide financial assistance and incentives to homeowners with failed septic systems in environmentally sensitive areas and in the community at large.

Local implementation of the Community Septic Management Program must include two (2) program elements:

Community Inspection Plan : (Option “A”) which meets the requirements of 310 CMR 15.301(4)(c) and is approved by DEP;

OR

Local Septic Management Plan : (Option “B”) which identifies, monitors, and addresses the proper operation, maintenance, and upgrade of septic systems in a comprehensive manner,

AND

Financial Assistance : The community provides financial assistance to homeowners for the repair, replacement or upgrade of failed septic systems using betterment agreements under M.G.L. c. 111 §127B½. (See Sections 4 - 8).

A Community Inspection Plan (Option A) requires the regular inspection of all septic systems at least once every 7 years, and allows the systems covered by the plan to be relieved of the inspection upon property transfer requirement in Title 5. In comparison, the Local Septic Management Plan (Option B) does not require the periodic inspection of systems, does not relieve homeowners of system inspection upon transfer, and allows for a wide range of septic system management approaches. Communities may use either approach to identify and address septic system failures. To develop and implement either plan, grant money is provided by DEP and the Trust for the first two (2) rounds of the loan program.

Schedule for Planning Assistance : Within four (4) months from the date of signing the planning grant agreement with the Trust, the participating community must submit its Local Septic Management Plan or Community Inspection Plan for DEP’s review and initial approval and comment. The proposed plan must be modified in accordance with DEP’s comments, requirements, and time frame.

After acceptance of the borrowing element of the community’s plan at a town meeting or by the City Council, the community should forward the plan to DEP for final review and approval with the Program Application (Section 3). The Program Application is brief and designed to notify DEP that the plan has local approval and that Local Authorization to borrow the funds has been voted by the Town Meeting or City Council. For sample authorization language, contact your regional coordinator (See Resources in Appendices). DEP will certify the program approval and acceptance of the Community Inspection Plan or Local Management Plan by forwarding a Project Approval Certificate/Project Regulatory Agreement (PAC/PRA) to the Trust (Section 9). The PAC/PRA is an agreement between DEP and the community and is signed by the DEP Commissioner and Chief Executive Officer of the community. The PAC/PRA will incorporate DEP’s program requirements (e.g., the approved local Plan and Betterment Loan Program), and will set the schedule and budget for implementing the program within the community. The community will then be authorized to enter into an SRF Loan Agreement with the Water Pollution Abatement Trust (See Section 10 for more information.) Communities will have 18 months to disburse the SRF Loan to homeowners for septic system repairs, replacements, and upgrades through its local program.

Loan Administration and Project Management : All communities will receive SRF loan installments to keep pace with the schedule set forth in the PAC/PRA. Upon the completion of each betterment (i.e. each homeowner project), the community must submit a Title 5 Certificate of Compliance to DEP. Copies of the betterment agreements and supporting documentation must be available for inspection and audit by DEP. Within six months of the first installment payment, DEP reviews the program's progress. Each municipality must also submit quarterly reports to the Department of Environmental Protection (DEP) and the Massachusetts Water Pollution Abatement Trust (MWPAT) .

Municipal Program Completion : Completion of the project will occur when:

- a community expends the full SRF loan proceeds for activities eligible under the program and the Project Regulatory Agreement/Project Approval Certificate (PRA/PAC), or
- as much of the funding as is expended within the project period or if DEP determines that the plan will not move forward in a timely manner.

When implementation of a plan is complete, a community is required to certify that the program has been completed according to the provisions of the PRA/PAC.

## ***GUIDELINES FOR IMPLEMENTING COMMUNITY INSPECTION PLANS (OPTION A) 310 CMR 15.301 (4)***

### ***Introduction***

The Community Inspection Plan is one of two plans communities can choose when implementing the Community Septic Management Program. The following guidelines will help local and regional governmental agencies prepare Community Inspection Plans and details the minimum requirements necessary for DEP approval.



Title 5 requires the inspection of on-site sewage disposal systems at the time of transfer of title of the facility served by the system, unless *“the facility is subject to a comprehensive local plan of on-site septic system inspection approved in writing by the Department and administered by a local or regional governmental entity, and the system has been inspected at the most recent time required by the plan.”* (310 CMR 15.301(4)(c)). Under a Community Inspection Plan, a community must inspect all septic systems in the areas of the community subject to the Plan at least once every seven years. If the community implements a Community Inspection Plan, homeowners within the plan area are not required to have a septic system inspection when transferring title. Such a Community Inspection Plan:

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*“may prioritize systems to be inspected on the basis of proximity to water resources, soil or geological conditions, age or size of systems, history of performance, frequency of pumping or other routine maintenance activity, or other relevant factors, and may establish different schedules and frequency of inspection on the basis of such criteria, provided that all systems are inspected at least once every seven years by a System Inspector approved by the Department.”*

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### ***Minimum Requirements***

#### ***A. Scope and Basis for the Plan***

1. As required by Title 5, the proposed inspection plan must be comprehensive in nature. While this requirement does not mandate that the inspection plan be community-wide (in the case of a city/town) or region-wide (in the case of a regional entity), it does require the proponent to analyze and document the feasibility of implementing such a program and explain the reasons for proposing a plan of lesser scope (e.g., prioritizing a neighborhood with failed septic systems that impacts a nearby waterbody).

2. The proponent of the proposed Community Inspection plan must document the basis for scope and requirements of the plan (e.g., in the prioritization of the areas covered by the plan, the frequency of inspections, the nature and scope of interim maintenance measures, the implementation and administration of the plan).

B. Prioritization of Areas to be Inspected

1. The Community Inspection Plan must prioritize areas to be inspected based on the consideration of the following factors:

(a) Areas with high system failure rates attributable to:

- ✧ high ground water;
- ✧ poor soils (e.g. showing evidence of breakout);
- ✧ frequent pumping of systems required;
- ✧ proximity to water resources - e.g., systems located in close proximity to a surface water supply or tributary, or to private wells, systems located within a Zone I of a public well; cesspools or privies located in close proximity to a surface water or tributary, a bordering vegetated wetland or a salt marsh; large systems located within a nitrogen sensitive area or in close proximity to a surface water supply or tributary; and
- ✧ other Title 5 failure criteria.

(b) Areas of particular concern due to:

- ✧ high groundwater;
- ✧ poor soils;
- ✧ high density of private wells;
- ✧ within a Zone II or a Zone A;
- ✧ concentration of old systems and/or cesspools and privies; and
- ✧ close proximity to contaminated or degraded shellfish beds, nitrogen sensitive embayment, or other sensitive water resources (e.g. recreational lakes and ponds).

(c) Areas of high system density not included in (a) or (b) above.

(d) Areas that do not appear to pose a threat to public health or the environment.

2. The plan must include a map on which is depicted the above proposed prioritization of areas to be inspected. The map may be created as an overlay of a USGS (or GIS) map showing physical features and highlighting water resources (e.g. lakes, ponds, public water supply wells, reservoirs, Zone IIs, Zone A & B, wetlands, shellfish beds, etc.).

3. The plan must include a narrative describing prevailing site conditions in the areas that have been designated for inclusion in plan. If the area does not encompass the entire community or region, the narrative must also contain a comparative description of the site conditions existing outside of plan area (e.g., the narrative might explain that the area within plan consists of small lots close to pond, and that the area outside of plan consists generally of large lots with well drained soils).

4. The plan must describe the information and process from which the proposed inspection prioritization scheme is based (e.g., review of existing files in Board of Health, DPW, water/sewer department; survey of property owners; site visits by health agent/staff).

#### C. Proposed Schedule for System Inspections

1. The plan must identify the proposed schedule for system inspections, consistent with the requirements of Title 5. As provided for in 310 CMR 15.301(4)(c), all systems covered under the plan must be inspected at least once every seven (7) years by a DEP approved Septic System Inspector. A list of certified inspectors can be found on DEP's web site : <http://www.mass.gov/dep/brp/wwm/soilsys.htm>. The plan may identify different inspection frequencies for different categories of systems, based, e.g., on the area the system is located in or on the type and age of the system. In all cases, the plan must adequately explain and support the selected inspection schedule(s).

2. If applicable, the plan must also explain how large systems (discharging in excess 10,000 gallons per day or GPD), shared systems, innovative and alternative systems and other systems requiring periodic inspection under Title 5 are to be integrated into the plan. All system inspections must be performed in accordance with 310 C.M.R. 15.302, *Criteria for Inspection*, and all applicable DEP guidance and training materials.

#### D. Interim Maintenance Measures

The plan should describe any proposed interim maintenance measures (e.g., pumping and/or other routine maintenance activities), water quality monitoring, or reporting requirements to be required of property owners whose septic systems are covered by the plan.

#### E. Implementation and Administration of the Plan

1. The plan must describe the legal and jurisdictional basis for the establishment and enforcement of the Community Inspection plan and include all supporting documentation (e.g., enactment of a BOH regulation or a town bylaw or city ordinance). The plan must include these legally enforceable requirements:

- (a) all systems covered by the plan shall be inspected in accordance with the schedule in the DEP approved plan;
- (b) all inspections must comply with the inspection criteria in Title 5 and be performed by DEP approved Septic System Inspectors;

At the initiation of the plan:

- (1) a notice must be recorded on the properties deed served by the septic systems covered under the plan, stating the existence of the DEP approved inspection plan, its applicability to the property, and the requirement that the system be inspected in accordance with the schedule outlined in the DEP approved plan; or,
- (2) some other mechanism as approved by DEP for giving notice of the above described information to subsequent owners and other interested parties.

2. The plan must set forth a system for monitoring:

- (a) whether inspections are being performed in accordance with the DEP approved plan (using a DEP approved data base system for tracking septic system inspections); and
- (b) whether failed systems are being upgraded in accordance with the applicable time frames in Title 5.

3. The plan must include:

- (a) A proposed source of funds for administration and identification of the proposed revenue sources (e.g., fees, inspection charges) for inspections;
- (b) A proposed budget for administration and inspection;
- (c) A staffing plan for program management with identification of the personnel to be used to inspect the systems (and whether such personnel



will be staff of the city/town and/or private inspectors retained by the septic system owners and/or the city/town), as well as identification of other staff who will oversee the implementation and ongoing administration of the inspection program;

(d) An outreach and education strategy that includes a description of the proposed public education and outreach efforts that must be integrated into the implementation of the plan.

4. The plan must include an annual status report by the city/town, to be submitted to DEP within 30 days of the end of the State Fiscal year, July 1- June 30.

- (a) This plan should include the results of the above required monitoring system stating:
  - (1) the total number of systems inspected, categorized by uses (e.g., residential, commercial, institutional, school), flows, and age (if available), and
  - (2) the number of failed systems discovered during inspection, broken down by the above categories;
- (b) The number, use, flow, and age and compliance status of all systems required to be upgraded in compliance with the applicable time frames in Title 5; and
- (c) Identification of those systems which are not in compliance with the requirements of the plan, and a description of the actions taken by the city/town to address such noncompliance.

In addition, upon completion of the first time inspection of all the systems covered by the plan, the city/town shall submit a report to DEP evaluating the effectiveness of the plan and determining whether any modifications to the scope and requirements of the plan, consistent with Title 5 and applicable DEP Guidelines, are warranted.

5. **The plan must include an opinion of city/town legal counsel certifying that the plan and its requirements have been legally adopted and are enforceable by the city/town.**



## ***GUIDELINES FOR IMPLEMENTING LOCAL SEPTIC MANAGEMENT PLANS (OPTION B)***

### ***Introduction***

Under the Community Septic Management Program, communities may choose to develop a *Local Septic Management Plan (LSM)* which identifies, monitors, and addresses the proper operation, maintenance, and upgrade of septic systems in a comprehensive manner. Unlike a Community Inspection Plan, a Local Septic Management plan does not meet the requirements of 310 CMR 15.301(4)(c). As a result, septic systems covered by an LSM plan must be inspected prior to property transfer as required by Title 5.

At a minimum, an LSM plan must include, but is not limited to, the following elements:

- (a) Identification and prioritization of areas containing systems warranting more regular monitoring and maintenance and/or upgrade, based on existing and new information and data, as appropriate (e.g., voluntary inspections);
- (b) Development of a DEP approved data base system for tracking the inspection of septic systems and whether failed systems are being upgraded in accordance with the time frames outlined in Title 5; and
- (c) Development of requirements and a schedule for periodic pumping and other routine maintenance of systems covered by the program.

Once the Project Approval Certificate/Project Regulatory Agreement (PAC/PRA) is issued to the community and the loan agreement with the Water Pollution Abatement Trust is finalized, the community may begin the activities under its Septic Management plan. Activities should include:

- A. Creation of an administrative structure to manage the program (administrative tasks may be delegated to a regional planning agency or contractor or shared among communities),
- B. Prioritization of environmentally sensitive or threatened areas,
- C. Public Notification,
- D. Priority Lists,
- E. Homeowner Selection Criteria for loans,
- H. Development of Betterment Agreements,
- I. Project administration for repair of septic systems (procurement, funding and oversight), and
- J. Administration of loan repayment.

#### ***A. Program Administration***

Administrative responsibilities and tasks for the program should be defined as a part of local program development. Subcontracting for the oversight of the program or specific program tasks to a separate entity, such as a regional planning agency, county government, or a private consultant is permitted. Participating communities are responsible for preparing and processing the legal agreements and contracts to procure such services, when necessary. A formal Request for Services or Request for Responses (RFR) may be necessary to procure services from private contractors. The Town Counsel, City Solicitor, or Chief Procurement Officer should be consulted to ensure compliance to applicable state laws.

### B. Prioritization of Environmentally Sensitive or Threatened Areas

The Board of Health, together with other community officials, should identify and prioritize environmentally sensitive or threatened areas. All such areas presently or potentially impacted by failed, substandard or poorly sited septic systems should be identified using a numerical ranking system established by the municipality. The most seriously impacted areas shall be ranked number one, and so on in descending order, until all areas are ranked. Similar priority areas may be afforded equal ranking.

Each community must determine the level of community and citizen involvement necessary to establish environmental priorities. Keep in mind that because of funding limitations only the higher priority areas in a community are likely to receive the initial funding under the Community Septic Management Program.

### C. Public Notification

Public awareness and support of the Community Septic Management Program is likely to be an important to the success of the program in the community. It is the responsibility of each community to inform homeowners of the goals of the in their town/city and the availability of financial assistance to homeowners that need it.

Notice of the Program can be provided in the following manner:

- Notices in local newspapers (through legal and other advertisements, press releases, newspaper articles and letters to the editor),
- Discussions during public meetings,
- Public access cable television shows,
- Local commercial radio and television shows,
- Direct mailings to homeowners in priority areas,
- Adding program brochures along with municipal utility bills,
- Postings in heavily trafficked public places (town hall, community center, library, etc.).

Each community is responsible for notifying the public that loan applications will be received during a specified time. The notice should state the period for which applications will be accepted, areas within the town that are eligible for funding (if applicable), and the contacts for information within the Board of Health or other designated agency or administrator. DEP recommends that each community establish an annual time period for accepting applications (e.g. January 15 to February 15.) Applications received after the date can be put on a waiting list. Some communities have found that preliminary applications, those requesting only name, address and telephone number, are more successful than detailed loan applications, at least prior to establishing project priority lists. Interest in the program will vary from community to community. In some communities the local program will not require much effort to attract customers. Others will need an extensive marketing campaign.

The process for receipt of applications and record keeping should be established. Bear in mind that any personal financial information of applicants should be protected and kept in a secure filing system. Suggested Application Forms are provided in the appendices of this manual. Cities and towns may use or modify these forms. To avoid the appearance of arbitrariness, applicants must be informed of the criteria for awarding betterment loans well in advance of the award selection.

### D. Determining Priorities

The Board of Health or its consultants should make an approximate determination of the number of septic systems that can be repaired with the available program funds. Applications should be screened for location in priority areas and ranked according to reestablished criteria. Applicants whose property poses equal environmental or public health problems should be ranked on the basis of income and funding needs. Betterment loans cannot be awarded to any person or family with a gross taxable income in excess of \$150,000 prior to DEP approval. Properties in the community known to pose a current and direct threat to public health and the environment may also be afforded a higher priority in the ranking system. If there are not enough applications for properties in the priority area(s), the board of health can choose to extend the time to apply or award betterment loans based on date of the filing of the application. These criteria should be established prior to making betterment awards to avoid the appearance of arbitrariness.

### E. Priority Lists

After the application deadline has passed, a priority list may be prepared. A ranking of applications for assistance, based on previously established criteria should be made. Communities may wish to develop a “scoring” approach that awards extra “points” to those applicants in previously established environmental priority areas. Applicants with equal scores may achieve priority by an earlier application date. Communities may consider income when scoring otherwise equally ranked applications.

The final Priority List may include the following information:

- ✧ Name of applicant,
- ✧ Address of applicant,
- ✧ Environmentally sensitive area (Yes/No)?; If yes, identify the area ranking,
- ✧ Type of project (repair of septic system, shared system, sewer hookup, etc.),
- ✧ Estimated project cost/betterment amount.

Steps to creating a group of projects to receive Betterment Loans can be as follows:

- ✧ Establish deadline for applications.
- ✧ Rank project according to environmental impact.
- ✧ Apply level of funding to the list of projects to establish a cut off on the priority list.
- ✧ Reserve 10% for contingency.
- ✧ Certify noncompliance with Title 5.
- ✧ Create a waiting list from remaining pool of projects to rank project for future funding
- ✧ To bypass projects selected for funding, use the waiting list to choose the next highest rank project.

### F. Homeowner Selection

After the Priority List is finalized, municipalities can offer to enter into Betterment Loan Agreements with homeowners on the priority list. When communities issue an offer to enter into a Betterment Agreement with a homeowner, the offer should contain a strict time limit for response. The offer should explain that there is a waiting list and request that the Board of Health or its administrator be advised immediately if the homeowner is no longer interested in obtaining a Betterment Loan. It is strongly advised that a “grace period” be built in so that otherwise qualified applicants are not denied funding because of unforeseen circumstances (e.g. illness, vacation, etc.) Once the grace period has expired without a Betterment Agreement being created, the homeowner should be notified in writing advising the homeowner that he or she has been moved from the projects to be funded list to the waiting list. After this notice, the Priority List may be revised to ‘move up’ one or more homeowners from the Extended List.



Once an offer to enter into a Betterment Agreement is accepted, copies of the relevant Betterment Documents should be provided to the homeowner. The Program Administrator should be prepared to answer questions regarding what costs are eligible for funding, when and how money will be made available and what documentation must be provided to satisfy the program legal requirements. Setting timetables and deadlines is necessary to ensure that Betterment Agreements are promptly executed and that septic system repair and upgrade projects are commenced and completed on time.



The program administrator should review each form carefully to ensure that the homeowner provides all of the required information. Keep in mind that Betterment Agreements work like construction loans: money is disbursed to cover costs actually incurred to perform the design, repair or upgrade work. The total actual costs will not be determined until the project is complete. The Betterment Agreement forms provide that funding may be available for site investigation, design and repair or upgrade of a septic system.

It may be useful for the first few projects to have the City Solicitor or Town Counsel review the legal requirements to ensure that the forms are executed in compliance with Massachusetts law and that a valid Betterment lien is established. However, it is not likely that each Betterment Agreement will require legal review.

### G. Elderly Deferrals

The Board of Health can enter into Deferral and Recovery Agreements (DRAs) with eligible homeowners. Such agreements allow the homeowner to postpone payment of the betterment provided that the provisions of the applicable statute are complied with. The provisions include a requirement that the homeowner be eligible for a real estate tax exemption under clause 41A of Section 5 of Chapter 59 of the General Laws. The Board of Health must forthwith record at the registry of deeds a statement (notice) of the Agreement in order for it to be effective against third parties. The statute provides that if the applicant qualifies for entry into a DRA, the Board of Health shall grant it. However, a new application for a DRA must be filed each year with the Board. In addition, the Board must annually advise the Board of Assessors of the charges to be deferred.



Before advising homeowners that entry into a DRA is available, the Board of Health must verify that the town has accepted the provisions of Massachusetts General Laws (M.G.L.) Chapter 80 §13B at a town meeting or by vote of the City Council. Ask the Town Clerk or Town Counsel to verify whether the town has in fact accepted this statute. A majority vote is necessary to accept the provisions of the statute.

Chapter 59 sets out the following requirements for eligibility to enter into a DRA under Chapter 80 §13B:

#### A. Age and Status:

- I. Owner is single or, if married, the owner's spouse is not an owner. Owner must be 65 years or older by July 1 in the year in which application for the agreement is made or;
- II. Owner and spouse are joint owners. Either spouse must be 65 years or older by July 1 of the year in which application is made.

#### B. Ownership and Occupancy:

The applicant must have owned and occupied as a domicile any real property in Massachusetts (including the present property) for five (5) years. Massachusetts must have been the applicant's domicile for the preceding ten (10) years.

#### C. Gross Income:

Gross income from all sources in the calendar year preceding the year in which application is made may not exceed \$20,000.00. A town may adopt a higher maximum qualifying gross income amount but such amount may not exceed \$40,000.00.

A surviving spouse inheriting the property must have occupied it or other real property in Massachusetts for five (5) years. The surviving spouse who otherwise qualifies may continue to defer payment of the betterment. However, the total apportioned and deferred betterment payments (and taxes if applicable), together with interest accrued, may not exceed fifty (50%) percent of the owner's interest in the assessed value of the property.

Anyone having a legal or beneficial interest in the property (including a lender holding a mortgage) must approve of the Deferral and Recovery Agreement. The Deferral and Recovery Agreement form contains a section for such persons or entities to sign off.

Payment of a deceased spouse's deferred betterment charges shall not be required during the life of a surviving spouse who inherits the property and who enters into a DRA.

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Important! The community remains responsible for repayment of monies loaned by the Trust. If repayment by the homeowner of the costs associated with septic system betterment agreements is to be deferred, adequate planning for alternative means of repayment to the Water Pollution Abatement Trust must be made.

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## II. Program Costs, Homeowner Repayment and SRF Loan Repayment

### General

The Community Septic Management Program anticipates that private contractors will perform repairs and upgrades of failed septic systems. All design professionals (Professional Engineers and Registered Sanitarians), site investigators (i.e. soil evaluators) and construction contractors must have the qualifications and licenses required by Massachusetts law and carry adequate liability and other appropriate insurance. All work must conform to the requirements of 310 C.M.R. 15.00 (Title 5) and any applicable requirements of the state plumbing and building codes and other applicable laws and regulations. All required permits and licenses must be obtained in connection with repair and upgrade projects performed pursuant to the program. Prevailing wages are not required to be paid.



The steps to be undertaken to ensure that the work is performed adequately are described in Section 5.

### A. Administrative Costs

All communities must submit an administrative budget prior to final approval of the project. Eligible costs may be drawn down out of the preloan assistance grant. The Board of Health should work with the treasurer to ensure that requisitions for administrative costs, as well as other program costs, are handled promptly and efficiently and documented appropriately. Proceeds of the Trust loan (not to exceed 2.5% of the loan amount) may be used for local administrative costs and other costs of issuance related to the Trust loan.

### B. Eligible Betterment Project Costs

Betterment Agreements made pursuant to M.G.L. c. 111 §127B ½ can fund septic system repair and upgrade projects performed by the homeowner. Funds may be used for all costs necessary to repair or replace a failed septic systems by renovating the existing system; hook-up to existing sewers; or replacing traditional septic systems with an alternative system approved pursuant to Title 5.

The following costs are eligible for funding under the Program:

- (a) Performing soil and percolation tests and other necessary site analyses;
- (b) Specification of the Failed System components to be repaired, replaced and/or upgraded;
- (c) Design of the system or components thereof to be repaired, replaced and/or upgraded;
- (d) Obtaining all applicable federal, state and local permits and approvals required to complete the work;
- (e) Seeking bids and awarding contracts for assessment, design, consulting and construction work and materials in accordance with applicable laws, regulations and requirements;

- (f) Minimizing any disruption of utility service, and reasonably restoring the property to as near its original condition as practicable;
- (g) Engaging such other services and procuring such other materials as, within the reasonable discretion of the Board of Health, shall be necessary to complete the project in a good and workmanlike manner; and
- (h) Professional services for project oversight and management.

Other costs, directly or indirectly related to the project may be eligible. Before the commencement of a project, the Board of Health or its administrator and the homeowner should agree upon a scope of work. In the event that unanticipated circumstances arise such as the discovery of a boulder, ledge or other subsurface condition, the board may increase the loan sum provided that the work is reasonably related to the accomplishment of the project.

#### C. Homeowner Repayment of Betterment Loans

The Board or its administrator together with the municipal treasurer and accountant must set up a separate account for each Betterment project. After all betterment loan funds have been disbursed to a homeowner, a final accounting must be made. The Board of Health must certify the total amount funded for the project to the municipal assessor. The assessor, in turn, commits for collection to the tax collection the total project amount. In general betterment loans, together with accrued interest, are repaid through the Community's tax collection. The DOR/Division of Local Services accounting and collection requirements are described in a DOR Bulletin dated August 1997. More information can be found in the resource section of the Appendices.

#### D. Repayment of SRF Loan

Each municipality must authorize borrowing funds from the Massachusetts Water Pollution Abatement Trust through town meeting or city council vote. A vote of  $\frac{2}{3}$  of the members voting is necessary. Once borrowing authorization has been obtained, the municipality can seek DEP's approval of the municipality's Community Inspection Plan or Local Septic Management Plan. After DEP approval of the Local Plan, the chief executive officer of the municipality can execute a Loan Agreement with the Trust. The Loan Agreement describes the terms and conditions of the SRF loan made by the Trust to the municipality. Each community assumes full responsibility for repaying monies borrowed from the Trust. However, the repayment obligation is secured with the betterment agreements made with homeowners. DEP recommends that the Board of Health and/or its consultants meet with the municipal finance team, the town collector/treasurer, accountant, and assessor, to ensure the smooth implementation of the local program and appropriate fiscal accounting. Communities will commence repayment approximately two years after the loan agreement is made. The municipality need only repay monies actually drawn down to fund betterment loans.

The Community Septic Management Program anticipates that communities will charge homeowners either two percent (2%) or five percent interest (5%) on Betterment Loans at the option of the community.

*Interest accrued on Betterment Loans may be used for future administrative costs. Principal and interest payments are credited to a special 'receipt reserved' account reserved for future project costs. The repayments are not to be credited to the community's general fund account. Monies repaid to the community may be 'reloaned' to fund additional betterment projects provided that the local plan is reauthorized by the Town Meeting or City Council on an annual basis.*

The treasurer and accountant prepare a quarterly report detailing betterment loan activity and anticipated project funding for the next quarter. The report is provided to the Trust and DEP. The loan agreement between the Trust and the community will provide a Final Disbursement Date by which all SRF loan funds must be expended for homeowner septic repairs or administrative costs.

## SECTION 3. PROGRAM APPLICATION AND INSTRUCTIONS

### 1. General Information (see application form on next page)

A-G. For the Community/Applicant - Provide the name and address of the Applicant that will undertake the Project. List the name, title, telephone number and fax number of the contact person for the Project.

For the Program Administrator - If the Applicant has or will be contracting with another entity (public or private) to assist it in the Project administration, provide the same information for the Program Administrator.

H. Identify the Applicant's Department of Revenue ("DOR") identification number (i.e., the ID number used for all state revenue aid programs).

### 2. Type of Assistance

Identify the applicable financing option and Loan amount: - \$200,000;  
Select one of the Community repayment options (5, 10, 15 or 20 years).

### 3. Local Authorization and appropriation

The Applicant must demonstrate by means of a local authorization appropriation that it has sufficient approval to borrow funds to cover project costs.

### 4. Project Description

Statement of Program Objectives: The Applicant must include and highlight any updated information relevant to the project, particularly proposed changes to the project budget and schedule.

### 5. Certification

The authorized representative of the Applicant must sign the Application certification. The Applicant must attach a local resolution designating by title the official (e.g., Mayor, City or Town Manager, Chairman of the Board of Sewer Commissioners, Board of Selectmen) to act as the representative of the Applicant to sign for, accept, and take whatever action is necessary relative to the Project.

In addition the community will have to fill out a form for the Authority to File. The city council will generally name the authorized representative for the city. An action by town meeting will name the appropriate town body, such as the board of selectmen or the board of health, which will, in turn, name the authorized representative for the town. If the Authority to File statement identifies an office rather than an individual, the Applicant must submit a certified statement naming the individual currently in office.

The Authority to File statement must also be certified, either by a certification at the bottom of the statement or by submitting a separate certification. A sample form for Certifying the Authority to File may be obtained from your regional coordinator.

Finally, in the event the authorized official is replaced while the project is still active, the Applicant must submit a certified statement naming the new incumbent and the effective date of his or her appointment.

# Application

## 1. General Information

1. *For the Community/Applicant*

A. Community/Applicant:

\_\_\_\_\_

B. Street

\_\_\_\_\_

C. City, State, Zip Code

\_\_\_\_\_

D. Contact Person

\_\_\_\_\_

E. Title

\_\_\_\_\_

F. Telephone Number

( ) \_\_\_\_\_

G. Fax Number

( ) \_\_\_\_\_

H. Department of Revenue Identification Number

\_\_\_\_\_

2. *For the Administrating Entity:*

A. Administrating Entity

\_\_\_\_\_

B. Street

\_\_\_\_\_

C. City, State, Zip Code

\_\_\_\_\_

D. Contact Person

\_\_\_\_\_

E. Title

\_\_\_\_\_

F. Telephone Number

( ) \_\_\_\_\_

G. Fax Number

( ) \_\_\_\_\_

H. Dept. of Revenue Identification Number

\_\_\_\_\_

## 2. Terms of Loan Assistance

A. (\$200,000)

B. Repayment Period: 5 years \_\_\_ 10 years \_\_\_ 15 years \_\_\_ 20 years

## 3. Local Appropriation

Attach a certified copy of town meeting or city council vote, as applicable.

## 4. Project Description

Statement of Program Objectives For (a) or (b): Attach a copy of the Local Septic Management Plan or Community Inspection Plan, as approved by DEP.

The Applicant must include and highlight any updated information relevant to the Project, particularly proposed changes to the Project budget and schedule.

## 5. Certification

In submitting this Application for Loan assistance under the Local Septic Management Program, the Applicant certifies to the Department of Environmental Protection ("DEP") as follows:

"To the best of my knowledge and belief the information provided by the Applicant in this Application is true and correct, and the documentation submitted by the Applicant is complete and responsive to the Application and has been duly authorized by the governing body of the Applicant.

The applicant further assures DEP that it possesses the legal authority to apply for the Loan, and to finance and implement the proposed Project. A resolution, motion, or similar action has been duly adopted or passed as an official act of the Applicant's governing body, authorizing the filing of this Application. The same resolution, motion, or similar action is directing and authorizing the person identified below as the authorized representative of the Applicant to act on behalf of the Applicant in connection with this Application and to provide such additional information as may be required to receive Loan assistance."

\_\_\_\_\_  
Authorized Representative (Type)

\_\_\_\_\_  
Signature of Representative

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

## **SECTION 4. BETTERMENT AGREEMENTS M.G.L. c.111 § 127B ½**

The original Betterment Law, M.G.L. Chapter 80, defines a Betterment Assessment as “a charge imposed on real property ... which receives a benefit ... from a public improvement made by ... order of a board of officers of the commonwealth, a county, city, town or district.” Municipalities pay for improvements such as roads, sidewalks and sewer lines by traditional betterments. The innovative use of the betterment concept in the Betterment Bill, M.G.L. c. 111 §127B ½, (See Section 8) was inspired by the concept that in many towns septic systems serve as the wastewater disposal and treatment system in lieu of public sewers. By using a financing and repayment mechanism similar to the one used to construct public sewer improvements, a town can protect community water resources by providing financial assistance to homeowners and accelerating the pace of septic system repairs and upgrades.

Unlike traditional betterments, the betterment established under M.G.L. c. 111, §127B ½ is created through the agreement of the town and the homeowner. The Betterment Agreement provides an outline of the rights and responsibilities of the town and the homeowner in connection with the repair, replacement, or upgrade by the town or by the owner of the homeowner’s septic system. The basic elements of the Betterment Agreement are:

- ★ The town agrees to provide financial assistance to the homeowner to repair, replace, and/or upgrade the septic system or to do the work on the homeowner’s behalf.
- ★ If the homeowner performs the work, the homeowner agrees to repay, with interest, any money advanced by the town over an agreed upon period of time.
- ★ If the town contracts to perform the work, the homeowner agrees to repay the town’s costs, with interest, over an agreed upon period of time.
- ★ The town establishes an account, similar to a loan, which will be paid on the homeowner’s real estate tax bill.
- ★ The town may obtain a first priority “municipal lien” on the homeowner’s property if the repayments are not made on time.
- ★ Even if the town contracts to perform the work, the septic system remains the property of the homeowner.

Betterment Agreements are the tools used by towns to provide financial assistance to homeowners. DEP recommends that Boards of Health work closely with the municipal treasurer and assessor before entering into agreements with homeowners to ensure that the Betterment Agreements are consistent with program requirements.

The Betterment Agreement specifies that the Board of Health make a finding that the homeowner’s septic system exhibit one or more of the failure criteria set forth in Title 5. It is not necessary for the Board to condemn the homeowner’s property or issue an eviction order. However, the Board retains its powers under M.G.L. c. 111 §127B should the need to exercise those powers arise. For example, the Board continues to have authority to order an emergency or interim repair of a failing septic system.

After the finding is made, the Board must enter an order requiring that work be accomplished to bring the system into compliance with Title 5. The order can be satisfied either by the homeowner, using financial assistance provided by the town or by the town itself on the homeowner’s behalf. Notice of the Betterment Agreement is to be recorded at the Registry of Deeds to provide public notice of the existence of an agreement affecting the property. If the homeowner determines, after the site investigation or after receipt of the construction bids, that he or she is unwilling to proceed with construction, the order can be revoked. The homeowner must still repay all advanced money and costs to the town. In addition, the homeowner is still required, pursuant to Title 5, to repair or upgrade the septic system within the parameters set by the regulation (i.e. timeframes, maximum feasible compliance).

If the homeowner is performing the work, the Board of Health will approve the project by issuing a Disposal System Construction Permit and take the steps outlined in the Betterment Agreement (Owner to Procure and Contract) form. The model forms provide a framework for ensuring that costs are controlled, competent work is performed and completed, unexpected contingencies are handled promptly, and insurance is in place in the event of an accident. Both homeowner and contractor are held accountable to complete the project.

The Betterment Bill statute makes the homeowner liable for the repayment of all direct and indirect expenses incurred by the Board of Health in connection with the repair, replacement and/or upgrade of the septic system.

The recent revisions to the Betterment Bill eliminate the need to obtain and record an estimate of costs. However, some homeowners may discover that the proposed construction costs (even with low interest rate financing) exceed their reasonable ability to repay the town. Therefore both Betterment Agreement forms provide that until construction commences, the homeowner is not under an obligation to proceed with the construction phase of the project. Once construction commences, however, the homeowner agrees to expeditiously complete the project and to use reasonable efforts to ensure that the contractor completes their obligations as well.

Because unknown subsurface conditions may substantially increase the project costs, DEP recommends that a contingency reserve of up to 10% of the project costs be budgeted. The homeowner is obligated to repay only that part of the reserve actually drawn down to complete the project. Once the project is complete, any remaining reserve amounts can be released for use on other projects.

M.G.L. c. 111 §127B ½ makes it possible to “roll-over” the personal obligation to repay the town for Betterments from the original homeowner to subsequent owners. The effect of the law is to release the homeowner from the personal liability for repayment when a purchaser agrees to assume the liability. A written release should be provided to the homeowner within a reasonable time after request. The Betterment Agreement forms detail the steps to accomplish the roll over and the conditions under which rollovers may occur.

The law provides that the municipal lien securing any payment due shall arise *“on the day immediately following the due date of [the betterment] assessment or apportioned part of such assessment.”* If the apportioned payment is made in a timely manner, no betterment lien attaches to the property. Betterments under M.G.L. c. 111 §127B ½ operate in the manner comparable to sewer assessments under M.G.L. 83. Assessments under M.G.L. 83 also do not become liens until the day immediately following the due date of the assessment. Just like sewer assessments, it can be expected that lenders will require payment only of amounts due at the time the owner (or buyer) grants a mortgage.



A property subject to a betterment under M.G.L. c. 111 §127B ½ may be sold or mortgaged free of liens even though remaining betterment payments will come due in the future. This aspect of the law facilitates the transfer of properties improved with betterments by permitting the betterment to be amortized over the entire original term of the betterment agreement even if the property is conveyed to a new owner. As a result, property owners that experience financial hardship as a result of complying with Title 5 may have the full benefit of the financial assistance provided using betterments.

If a betterment lien arises, it jumps ahead of an existing mortgage and other liens. Because of this feature of the law, lenders will want to know exactly how much is outstanding on the betterment account so that an escrow can be established and collected along with the monthly mortgage payment.

After the project is complete the total amount of financial assistance or total costs of the town incurred in connection with the project must be provided to the homeowner and certified to the Assessor. The Assessor will, in turn, take the required steps to include the yearly charge for the project in the homeowner’s tax bill. As funds are repaid to the town, they are to be deposited into the special revenue account. The funds may then be used for additional septic system betterment projects.

The forms provided are intended to assist Boards of Health create Betterment Agreements with homeowners. The forms may be modified to suit particular circumstances and meet the needs of the town and homeowner. Boards of Health are encouraged to seek the input of municipal officials and others with experience providing assistance to homeowners and overseeing repair and upgrade projects.

## ***SECTION 5. PROJECT MANAGEMENT USING BETTERMENT AGREEMENTS***

### Betterment Agreement

Betterment Agreement projects anticipate that funding will occur in a single payment or design services and on a periodic basis for construction services and materials. The Betterment Agreement specifies that installment payments shall be made on the following basis:

(A) In the event the owner seeks a contractor to perform field work and preparation of plans for the project, the owner is advised to solicit three estimates for the necessary field work and plan preparation from registered professional engineers or registered sanitarians and submit to the City/Town the owner's choice of an engineer or sanitarian. The Board of Health may approve a payment not to exceed the amount of the selected estimate. A payment for field work and plan preparation can be made by check payable jointly to the owner and the engineer or sanitarian upon presentation and approval of the invoices.

(B) The contractor must allow the homeowner 30 days for the remittance of all invoices charged to the betterment project. In a payment request, the contractor shall give notice to the owner specifying the cost incurred for the payment requested. Such notice shall consist of a detailed request describing the value of the completed items of work. The City/Town may issue a check payable jointly to the owner and contractor, such check shall be forwarded by City/Town to the owner.

(C) Prior to making an installment payment, the Board of Health may cause the project to be inspected to verify that the work items described in the request have been actually completed. In any case, the contractor shall provide verification that the work referred to in the installment request has been completed in accordance with the approved plans.

(D) Prior to paying the final installment, the contractor shall provide verification that all work has been completed in accordance with the approved plans, including a sworn statement that all materialmen, subcontractors and employees have been paid for work on or materials supplied for the project and the Board of Health shall have issued a Certificate of Compliance for the project.

The Board of Health is responsible for submitting Form DMS T5-1000 (see Appendices) to DEP as betterment agreements are completed to request a payment requisition. Form DMS T5-1000 requires that a brief financial summary of each betterment project be provided. DEP reserves the right to review and audit individual betterment agreements for compliance with the Community Septic Management Program requirements. Based on the amount of completed individual betterments DEP will notify the Trust when the community will require a subsequent loan installment.



The Betterment Agreement specifies that the following items must be present in order for funding of the project to commence:

- (A) Inspection of the Failed System by a representative of Board of Health or by a DEP Certified Septic System Inspector, as deemed necessary by the Board of Health;
- (B) Approval of plans by the Board of Health that were submitted by the owner or contractor. In the event the owner seeks an installment payment to pay for field work and preparation of plans for the project, the owner shall
  - (i) solicit three bids for the necessary field work and plan preparation from registered professional engineers or registered sanitarians,
  - (ii) shall submit documentation of these bids to City/Town and
  - (iii) specify the owner's choice of an engineer or sanitarian. The owner must provide a detailed explanation if the proposed engineer or sanitarian is other than the low bidder or if fewer than three bids are submitted. The Board of Health may approve an installment payment not to exceed the amount of the selected bid. An installment payment for field work and plan preparation shall be made by check payable jointly to the owner and the engineer or sanitarian and shall be payable upon presentation and approval of the selected bid;
- (C) Submission to Board of Health by the owner of three bids for the project in accordance with the plans from licensed (including, but not limited to, a Disposal System Installer's Permit), insured, septic system contractors, which bids shall contain detailed breakdowns of the cost of the Project by tasks;
- (D) Approval by Board of Health of a contractor for the construction of the project selected by the owner from these bidders. The owner must provide a detailed explanation if the proposed contractor is other than the low bidder or if fewer than three bids are submitted;
- (E) Approval by Board of Health of a project budget based on the bid submitted by the contractor;
- (F) Execution of a construction contract between the owner and the contractor pursuant to the plans and specifications and approved by the Board of Health;
- (G) Issuance by the Board of Health of a Disposal System Construction Permit with respect to the project.

The Board or its administrator together with the municipal treasurer must set up a separate record and accounting for each Betterment project. Once all project funds are disbursed to the homeowner, the Board or its administrator must certify the total amount funded for the project to the municipal assessor. The process for including this amount on the homeowner's tax bill is established in M.G.L. c 44.

## *Septic System Betterment Program Checklist*

- Town establishes priorities for making Betterment Agreements with homeowners.
- Financing for Betterment Projects may be secured through state funding, local appropriation, borrowing, bonding, or a combination of these sources.
- Information on the Betterment Program is disseminated by town officials to the public.
- Homeowners submit applications and petition Board of Health to enter into Betterment Agreements.
- Board of Health reviews applications and develops a list of eligible homeowners.
- Board of Health selects eligible homeowners based on criteria established locally and in accordance with state or local funding program requirements.
- Eligible homeowners and Board of Health develop Betterment Agreements.
- If the homeowner is to perform the work, use Betterment Agreement.
- Board of Health executes Betterment Agreements with homeowners which include findings pursuant to M.G.L. c. 111 and an order to perform work.
- Notice of Betterment Agreement is recorded at the Registry of Deeds.
- Board of Health undertakes its responsibilities under the Betterment Agreement.

## *Using the Betterment Agreement (Homeowner to Procure and Contract)*

- ❑ Homeowner should schedule and conduct site visits with designers.
- ❑ Homeowner should schedule and conduct deep hole and perc tests; coordinates with Board of Health agent and soil evaluator.
- ❑ Homeowner procures written bids for design services.
- ❑ Homeowner selects winning design bid.
- ❑ Homeowner submits winning bid to Board of Health for approval and payment.
- ❑ Design is rendered.
- ❑ Board of Health or agent reviews and approves design and issues Disposal System Construction Permit.
- ❑ If necessary, homeowner schedules and conducts prebid conference with installers.
- ❑ Homeowner procures 3 written bids for system installation/ construction and related work.
- ❑ Homeowner selects winning installer bid.
- ❑ Board of Health or agent reviews and approves winning installer bid, including the construction schedule and budget.
- ❑ Board of Health or Agent receives, reviews and approves all necessary paperwork (DSCP, related permits and approvals [ZBA, ConCom], easement or license agreements from private parties; insurance certificates, etc.).
- ❑ Construction funds are made available by the Town Treasurer.
- ❑ Preconstruction advance is made, if necessary.
- ❑ First construction advance made after requisition (requisition must include contractor and homeowner signatures, affidavits/ lien waivers from subcontractors, copies of interim approvals, etc.).
- ❑ Second construction advance, if necessary.
- ❑ Construction work is completed by contractor.
- ❑ Board of Health or Agent conducts site inspection and issues Certificate of Compliance for System.
- ❑ Final Payment made to contractor after delivery of Certificate of Compliance, all related paperwork (affidavits, lien waivers, etc.). If money is to be withheld from contractor pending additional work, an escrow agreement should be established.
- ❑ Final closeout of project account.
- ❑ Amount paid to homeowner certified to Town Assessor.
- ❑ Betterment assessments repaid through tax collection pursuant to the Betterment Agreement.



## SECTION 6. SAMPLE FORM: BETTERMENT AGREEMENT

### Betterment Agreement [Owner contracts for the Work]

This Agreement is entered into by and between \_\_\_\_\_ (the “City/Town”), by its Board of Health and Treasurer, and \_\_\_\_\_ (the “Owner”) this \_\_\_ day of, 200\_.

WHEREAS, the Owner owns residential property, including improvements thereon, known as and numbered \_\_\_\_\_, \_\_\_\_\_, Massachusetts, \_\_\_, (Assessors’ Map \_\_\_, Lot \_\_\_, Block \_\_\_) and described in a deed dated \_\_\_\_\_ and recorded with the \_\_\_\_\_ Registry of Deeds in Book \_\_\_, Page \_\_\_, [filed as Document No. \_\_\_\_\_ with the \_\_\_\_\_ Registry District of the Land Court] (the “Property”); and

WHEREAS, the Owner has petitioned the City/Town to make findings pursuant to M.G.L.c. 111; and

WHEREAS, the Board of Health has made findings, pursuant to M.G.L.c. 111, that the on-site subsurface sewage disposal system serving the Property (the Failed System), exhibits one or more of the failure criteria set forth in Title 5 of the State Environmental Code, 310 CMR 15.000 (Title 5), such findings being made by the Board of Health prior to, or during the course of proceedings conducted pursuant to M.G.L. c. 111, §127B; and

WHEREAS, the Board of Health has adopted an Order requiring the Owner to repair, replace or upgrade the failed system to comply with the requirements of said Title 5; and

WHEREAS, the Owner has, pursuant to M.G.L. c. 111, §127B1/2, applied to the City/Town for financial assistance to repair, replace and/or upgrade the failed system; and

WHEREAS, the City/Town intends to provide financial assistance to the owner in the form of a Betterment Agreement made pursuant to said M.G.L. c. 111, §127B 1/2; and

WHEREAS, the parties intend by this Betterment Agreement to cause the repair, replacement and/or upgrade the failed system to comply with Title 5 and other applicable public health and environmental laws and to complete other work directly or indirectly related thereto (the “project” as described in Paragraph 4 hereof); and

WHEREAS, the parties intend to have the project performed by one or more persons under contract to complete the project (the “contractor(s)”); and

WHEREAS, the public purpose of the project is to protect the public health, safety, welfare and the environment by the repair, replacement and/or upgrade of the failed system.

NOW THEREFORE, the parties, for and in consideration of mutual covenants and other good and valuable consideration, do hereby agree to the terms of this Agreement, as set forth below.

#### **1. The Agreement**

The City/Town hereby agrees to provide financial assistance in an amount up to \$\_\_\_\_\_ to be advanced from time to time by the City/Town to the owner pursuant to the terms of this Agreement. The owner promises to repay, with interest as set forth herein, all sums provided to owner by the City/Town. Following notice to the owner by the City/Town collector of taxes of the amount of the betterment assessment, an amortization schedule shall be developed and incorporated as an attachment to this Agreement<sup>1</sup>.

Interest on the amounts advanced by the City/Town to owner shall be computed annually at the rate of \_\_\_\_\_ percent (\_\_\_%) per annum on the outstanding principal balance, accruing from the 30th day after the City/Town Assessor commits the betterment assessment to the City/Town collector of taxes. The amount to be repaid shall be included on and paid with the (quarterly, semi-annual, annual) municipal tax bill. Interest amounts due prior to the inclusion of amounts due hereunder on the tax bill shall be paid pursuant to an interim bill.

<sup>1</sup> In cases where the final amount of the betterment has been definitively established at the signing of the Betterment Agreement, the amortization schedule should be developed and incorporated into the Betterment Agreement at the outset.

All outstanding amounts due to the City/Town by owner if not prior paid, shall be due and payable on \_\_\_\_\_ [fill in date of term].

Prepayment in full or in part of all amounts advanced hereunder may be made by the owner without penalty.

This Agreement represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Agreement may only be amended or modified by a written modification.

## **2. Installment Payments.**

The City/Town shall make advances of funds to owner and contractor, pursuant to the terms of this Agreement, from time to time to pay for the project. Such advances shall be made solely for the purposes set forth in this Agreement.

The obligation of the City/Town to advance all or any part of the financial assistance for repair, replacement and/or upgrade of the failed system is subject to the following:

- (A) Inspection of the failed system by a representative of Board of Health or by a DEP Certified Septic System Inspector, as deemed necessary by the Board of Health;
- (B) Submission by owner or contractor on behalf of the owner of plans approved by the Board of Health for the project. In the event owner seeks an installment payment to pay for field work and preparation of plans for the project, owner shall (i) solicit a bid or bids for the necessary field work and plan preparation from registered professional engineers or registered sanitarians, (ii) shall submit documentation of these bids to City/Town and (iii) specify owner's choice of an engineer or sanitarian. The Board of Health may approve an installment payment not to exceed the amount of the selected bid. An installment payment for field work and plan preparation shall be made by check payable jointly to owner and the engineer or sanitarian and shall be payable upon presentation and approval of the selected bid;
- (C) Submission to Board of Health by owner of the bid or bids for the project in accordance with the plans from licensed (including, but not limited to, a Disposal System Installer's Permit), insured, septic system contractors, which bids shall contain detailed breakdowns of the cost of the project by tasks;
- (D) Confirmation by Board of Health that the contractor for the construction of the Project (the "Contractor") selected by owner has a valid Disposal System Installer's Permit in effect for the time period covering the system upgrade financed under this Betterment Agreement;
- (E) Review by Board of Health of a Project Budget based on the bid submitted by the contractor;
- (F) Execution of a construction contract between the owner and the contractor pursuant to the plans and specifications which have been previously approved by the Board of Health;
- (G) Issuance by the Board of Health of a Disposal System Construction Permit with respect to the project.

### **3. Conditions for Payment**

Installment payments of the financial assistance are to be made by the City/Town under the following conditions:

- (A) An installment payment for field work and preparation of plans shall be made to the owner and engineer or sanitarian in accordance with Subsection (B) of Section 2.
- (B) A reasonable time before the date on which any other installment payment is requested to be made, the contractor shall give notice to owner and City/Town specifying the total installment payment requested. Such notice shall consist of a detailed request describing the value of the completed items of work. The amount of the request shall equal the amount of the requested installment. The request shall be accompanied by a sworn certificate of the contractor that all suppliers, subcontractors and employees have been paid for prior work on the project. The City/Town may request the owner to provide further documentation in support of a request for an installment payment. Upon approval of any requested installment payment, the City/Town shall issue a check payable jointly to owner and contractor, which check shall be forwarded by City/Town to owner.
- (C) City/Town may require as a condition of any installment payment that owner submit satisfactory evidence that there are sufficient remaining funds to pay for completion of the project in accordance with the approved plans.
- (D) Prior to making an installment payment, the Board of Health may cause the project to be inspected to verify that the work items described in the request have been actually completed. In any case, the contractor shall provide verification that the work referred to in the installment request has been completed in accordance with the approved plans.
- (E) Prior to paying the final installment, the contractor shall provide verification that all work has been completed in accordance with the approved plans, a sworn certificate that all suppliers, subcontractors and employees have been paid for work on or materials supplied for the project and the Board of Health shall have issued a Certificate of Compliance for the project.

### **4. Scope of Work for Project**

The owner and the contractor, pursuant the Disposal System Construction Permit issued by the Board of Health, shall determine the Scope of the Work necessary to bring the failed system into compliance with Title 5. Such Scope of Work may include, but not be limited to:

- (a) performing soil and percolation tests and other necessary site analyses;
- (b) specification of the failed system components to be repaired, replaced and/or upgraded;
- (c) design of the system or components thereof to be repaired, replaced and/or upgraded;
- (d) obtaining all applicable federal, state and local permits and approvals required to complete the work;
- (e) seeking bids and awarding contracts for assessment, design, consulting and construction work and materials in accordance with applicable laws, regulations and requirements;
- (f) minimizing any disruption of utility service, and reasonably restoring the property to as near its original condition as practicable; and
- (g) engaging such other services and procuring such other materials as shall be reasonably necessary to complete the project in a good and workmanlike manner.

All such work shall be performed pursuant to written contracts and agreements, copies of which shall be incorporated by reference into this Agreement.

#### **5. City/Town's Right to Inspect**

The owner agrees to allow the City/Town, including its Board of Health, Health Agent and other officials, employees and agents to enter onto the property, as is reasonably necessary and upon reasonable notice, to test, examine and inspect the project to verify the completion and adequacy of the work.

#### **6. Covenant Not To Sue**

The owner covenants and agrees not to sue the City/Town for any claims of damage to or loss of property of the owner or others, or for breach of warranty regarding the performance or condition of the project, or for injury, illness or death arising out of the performance of any contractors or agents engaged to perform the Work. This Covenant Not To Sue provision shall have no application to causes of action which may have arisen prior to the execution of this Agreement, or to causes of action that are unrelated to this Agreement, or to causes of action against any person or entity other than the City/Town.

#### **7. Owner's Representations And Warranties To The City/Town**

The owner represents and warrants to the City/Town that:

- (A) Financial Information: The borrower's Affidavitt furnished to City/Town by the owner is accurate and complete;
- (B) Title: The owner has good record title to the property, subject only to the Encumbrances of Record;
- (C) Permits and Compliance With Law: The owner has obtained or will obtain all necessary governmental permits for the project. The On-Site Sewage Disposal System for the dwelling on the property, after completion of the project, will comply with all applicable laws, regulations, codes and ordinances, including but not limited to Title 5; and
- (D) Insurance: The owner and contractor have procured or will procure insurance in such forms and in such amounts as shall be satisfactory to the City/Town. Certificates of Insurance shall be attached as Exhibits to this Agreement.

Each of the foregoing representations and warranties in this section shall remain in force until the financial assistance is repaid in full. The owner shall indemnify and hold harmless the City/Town from and against loss, expense, or liability (including costs of defending any claim), directly or indirectly from the falsity, inaccuracy, or breach of any of the above representations and warranties.

#### **8. Owner's Obligations.**

During the term of this Betterment Agreement, the owner agrees that the owner shall comply with all of the terms and conditions of this and any related agreement and that the owner shall:

- (A) Completion of Project. Cause the project to be promptly completed in a manner in accordance with the approved plans and with the Project Budget and in compliance with all applicable laws, regulations, codes and ordinances and notify City/Town when the project is complete.
- (B) Records and Cooperation With City/Town. Keep complete records relating to the project, which records shall be available for inspection and copying by the City/Town, and cooperate fully with any audit of the project if so requested by City/Town.
- (C) Performance of Other Obligations. Perform all the owner's obligations and agreements under any present or future mortgage or other Covenant or Agreement which encumbers the property.
- (D) Use of Financial Assistance. The financial assistance is provided for the public purpose of protecting the public health, safety, welfare and the environment. The owner shall use the proceeds of the financial assistance solely for costs included in the project budget and ensure that the proceeds are not used for any other purpose.

### **9. Events Of Default**

The owner shall be in default under this Agreement upon the occurrence of any one or more of the following events:

(A) Sale, Transfer or Assignment Without Approval. The owner assigns or transfers any money advanced or to be advanced hereunder to any person or entity not approved by City/Town.

(B) Cessation of Construction. The owner or contractor ceases construction of the project for more than 30 consecutive calendar days. The Board of Health may waive this event of default upon application of the owner and a demonstration that such cessation occurred because of an Act of God, governmental order or restriction, fire or other casualty, or other causes beyond owner's reasonable control.

(C) False Representations or Warranties. Any representation or warranty made herein shall prove to be false or inaccurate in any material respect.

(D) Breach of an Obligation. The owner defaults in the performance of any of owner's obligations contained herein.

### **10. City/Town's Rights On Default**

Upon owner's default, the City/Town shall have no further obligation to make any further installment payments and all amounts advanced by City/Town to owner shall become immediately due and payable.

### **11. Notice of Betterment Agreement**

Upon execution of this Agreement by the owner and the City/Town a Notice of this Agreement shall be recorded as a betterment and shall be subject to the provisions of M.G.L.c. 80 relative to apportionment, division, reassessment and collection of assessment, abatement and collection of assets, provided however, that the lien which shall arise pursuant to M.G.L. c. 111, §127B 1/2 shall take effect by operation of law on the day immediately following the due date of such assessment or apportioned part of such assessment. The Betterment Lien, if any, shall be deemed to secure all amounts advanced hereunder, together with interest thereon, and shall include costs of collection and reasonable attorneys fees.

### **12. Improvements to the Property**

Any alterations or improvements to the property resulting from the project are the property of the owner, and the City/Town shall bear no responsibility for the condition of the improvement or its maintenance.

### **13. Cancellation of the Agreement by the Owner**

The owner may by written notice to the Board of Health and the Treasurer of the City/Town cancel owner's further obligations for repayment under this Agreement at any time prior to the end of ten (10) calendar days following notice in writing to the City/Town of the owner's proposed successful construction bid, based on the owner's evaluation of the proposed scope and cost estimate of the system upgrade derived from the field work, project design and the successful construction bid. However, in the event of such cancellation, the owner shall remain liable for repayment of all sums advanced by the City/Town to owner pursuant to this Agreement. All sums advanced by the City/Town to owner shall be repaid with interest and within the term set forth in Paragraph 1 hereof. Upon application of the owner, the Board of Health may revoke the Order for Improvements, provided however, that owner shall remain liable to comply with the provisions of Title 5.

### **14. Personal Obligation of the Owner**

In addition to those remedies available to the City/Town regarding the assessment and collection of betterments, the owner shall be personally liable for the repayment of the amounts advanced, plus interest thereon and the total direct and indirect costs incurred by the City/Town in the contemplation and the performance of this Agreement or the project. After written request of owner, in connection with the purchase or transfer of the owner's entire interest in the property, the City/Town shall permit



the assumption of the personal liability hereunder by said purchaser or transferee and shall release the personal liability of the owner. The assumption and release of liability hereunder shall be in writing and shall be executed prior to the purchase or transfer by the owner, the purchaser or transferee and the Treasurer of said City/Town.

**15. Notice**

Any notice required to be given under this Agreement shall be made in writing and shall be delivered by either in-hand delivery or by prepaid, first class mail.

If notice is made to the City/Town, it shall be made to:

Notice shall be deemed given on the day it is hand delivered or three (3) days after the date of posting of first class mail.

**16. Funding for the Agreement**

The obligations of the City/Town are expressly contingent upon funding. In the event that funding for the City/Town's obligation is unavailable, upon notice to the owner, the City/Town may cancel this Agreement and all obligations of the City/Town shall be null and void.

**17. Enforcement of Laws**

Nothing in this Agreement shall be deemed to stop or effect a waiver, or otherwise act as a bar or defense, to any legal proceeding by the City/Town relating to the system or the property.

**18. Severability**

In the event that one or more provisions of this Agreement is deemed unenforceable by a court of competent jurisdiction, the Agreement, except as deemed unenforceable, shall remain in full force and effect.

**19. Governing Law**

This Agreement shall be governed by Massachusetts law.

IN WITNESS WHEREOF, the undersigned parties have signed this Agreement as an instrument under seal this \_\_\_\_ day of \_\_\_\_\_, 200\_.

City/Town:  
By it's Board of Health:  
\_\_\_\_\_

Owner:  
\_\_\_\_\_

As to interest rate:  
City/Town  
By it's Treasurer:  
\_\_\_\_\_

Approved as to form:  
\_\_\_\_\_  
City Solicitor/Town Counsel

**Exhibits**

- |                             |  |
|-----------------------------|--|
| 1. Designer Contract        | 1. Project Budget                      |
| 2. System Plans and Design  | 2. Certificate(s) of Insurance         |
| 3. Construction Contract(s) | 3. Disposal System Construction Permit |

**SECTION 7. NOTICE OF BETTERMENT AGREEMENT PURSUANT TO M.G.L. c.111§127B 1/2**

THE COMMONWEALTH OF MASSACHUSETTS

.....  
CITY, TOWN OR DISTRICT  
OFFICE OF .....

TO THE REGISTER OF DEEDS OF ..... 20...

NOTICE is hereby provided that the BOARD OF HEALTH of ..... on ..... 20 ....., made findings pursuant to c. 111 s. 127B1/2 and on ..... 20 .... and adopted an order for improvements to be made to the on-site wastewater system serving the property described herein.

The property to be benefited is owned by ..... of ....., MA, is described on a plan entitled “.....” which is deposited in the office of ..... and is described in a deed dated ..... and recorded with said Deeds in Book ....., Page ..... [filed as Document No. .... with the ..... District of the Land Court](the “Property”). Pursuant to said M.G.L. c. 111 s. 127B 1/2, a Betterment is to be assessed on the Property in an amount to be determined pursuant to the Betterment Agreement of the Owner of the Property and the Board of Health dated .....

BOARD OF HEALTH OF  
.....  
CITY, TOWN OR DISTRICT  
.....  
.....  
.....

THE COMMONWEALTH OF MASSACHUSETTS

....., S.S. ...., 20....

Then personally appeared the above named ..... who acknowledged the foregoing to his/her free act and deed and the free act and deed of the ..... Board of Health, before me,

.....  
NOTARY PUBLIC  
MY COMMISSION EXPIRES:

## **SECTION 8. THE BETTERMENT BILL**

### M.G.L.c. 111 §127B½

#### Petition for Findings as to Septic System, Underground Fuel Storage Tank, or Lead Paint; Agreement on Remedial Measures; Responsibility for Costs.

At any time prior to or during the course of proceedings conducted pursuant to section one hundred and twenty-seven B, resulting solely from a residential underground fuel storage tank or the detection of dangerous lead paint levels, as determined under the authority of section one hundred and ninety-four, or in the event the state environmental code pursuant to section thirteen of chapter twenty-one A requires the repair, replacement and/or upgrade of a septic system the owner of a structure used for human habitation may petition the board of health in a city or town to make findings consistent with its authority under this chapter and may enter into an agreement, subject to appropriation, authorizing such board of health or such owner to cause the premises to be properly serviced by a septic system, removal of a residential underground fuel storage tank or to have removed any dangerous levels of lead paint, as determined under the authority of section one hundred and ninety-four, at the owners expense. An owner who enters into such an agreement shall be responsible for all expenses incurred by the board of health, directly or indirectly, or required by the board of health and incurred by the owner for such repairs, replacement and/or upgrade of a septic system, removal of a residential underground fuel storage tank or removal of dangerous levels of lead paint. A notice of such agreement shall be recorded as a betterment and be subject to the provisions of chapter eighty relative to the apportionment, division, reassessment and collection of assessment, abatement and collections of assessments, and to interest; provided, however, that for purposes of this section, such lien shall take effect by operation of law on the day immediately following the due date of such assessment or apportioned part of such assessment and such assessment may bear interest at a rate determined by the city or town treasurer by agreement with the owner at the time such agreement is entered into between the board of health and the property owner. In addition to remedies available under chapter eighty, the property owner shall be personally liable for the repayment of the total costs incurred by the city or town under this section; provided however, that upon assumption of such personal obligation to a purchaser or other transferee of all of the original owners interest in the property at the time of conveyance and the recording of such assumption, the owner shall be relieved of such personal liability.

Any costs incurred under the provisions of this section may be funded by an appropriation or issuance of debt, provided that any debt incurred shall be subject to the provisions of chapter forty-four and shall not exceed twenty years.

Any appropriation or borrowing by the city or town for purposes contained within this section shall not be included for the purpose of computation of the levy or borrowing limits otherwise imposed upon such city or town by the general laws.

An agreement between an owner and a board of health in a city or town pursuant to this section shall not be considered a breach of limitation or prohibition contained in a note, mortgage or contract on the transfer of an interest in property.

A board of health in a city or town acting pursuant to the provisions of this section shall have the same authority as set forth in section one hundred and twenty-seven B to institute an action for eviction. Any such action by the board of health shall not otherwise impair the rights or obligations of the occupants or owner with respect to each other.

## **SECTION 9. PROJECT APPROVAL CERTIFICATE/PROJECT REGULATORY AGREEMENT**

### DEPARTMENT OF ENVIRONMENTAL PROTECTION THE LOCAL SEPTIC MANAGEMENT PROGRAM

#### *Project Approval Certificate and Regulatory Agreement* *I. Project Approval Certificate*

The Department of Environmental Protection (DEP) of The Commonwealth of Massachusetts (the Commonwealth), in accordance with Section 2 of Chapter 15, Acts of 1996 (the Act), hereby approves the project of Town of \_\_\_\_\_ (the Borrower), developed in accordance with the Department's Community Septic Management Program Description and Requirements, and hereby certifies to the Massachusetts Water Pollution Abatement Trust (the Trust) the total costs of the project eligible for a Loan from the Trust in the amount of \$200,000, subsidized at a 50% grant equivalency. (See Exhibit A, page 34, for Borrower information, Project budget, completion schedule, and special conditions.)

This Certificate is issued by DEP on the basis of information provided by the Borrower in its application for financial assistance from the Community Septic Management Program. The Borrower has agreed to promptly notify DEP of any material change in the above information, which may be grounds for modification or rescission of this Certificate.

#### *II. Project Regulatory Agreement*

WHEREAS, DEP has issued the above referenced Project Approval Certificate, and the Department, as authorized under the Act, has allocated funds for loans from the State Revolving Loan Fund (SRF), administered by the Trust to fund local betterment programs; and

WHEREAS, the Borrower has requested that the Trust finance costs of the Project by a loan from the Trust to the Borrower (the Loan), and to evidence the indebtedness to be incurred thereby, the Borrower has executed and delivered a Loan Agreement to the Trust (the "Loan Agreement"); and

NOW, THEREFORE, in consideration of the premises and the mutual covenants hereinafter contained, the parties hereto agree as following provisions:

#### **Section 1. Project Funding**

**1.01** The Borrower agrees with DEP's determination of eligible Project Costs as set forth in the Project Approval Certificate, and shall seek payment or reimbursement of Project Costs in accordance with such determination.

#### **Section 2. Disbursement of Loan Proceeds**

**2.01 Disbursements.** Funds will be made available to the Borrower by advance installment payments and in amounts determined by DEP. The Borrower shall expend the full amount of the Loan consistent with the project completion schedule in Exhibit A unless DEP approves an extension of time as provided for in section 3.09 below.

- (a) All requisitions for advance payment shall be submitted by the Borrower in accordance with a form approved by DEP and at a frequency satisfactory to the department.
- (b) Each requisition shall be signed by the authorized officer of the borrower and shall set forth in reasonable detail the amount of advance payment requested. Each requisition shall also include a written certification signed by an Authorized Officer of the Borrower stating that:
  - (i) such payment is for Project Costs and that the obligations specified therein have not been the basis for a prior requisition that has been paid;
  - (ii) no Default as defined hereunder, and no Event of Default as defined in the

Loan Agreement, has occurred and is continuing and no event or condition exists which, after notice or lapse of time or both, would become a Default hereunder or Event of Default under the Loan Agreement; and  
(iii) the payment requested by the requisition will be for Project Costs to be or already authorized under a betterment agreement between the Borrower and system owner, and that no advance funds shall be disbursed to the system owner until such betterment agreement has been executed between the Borrower and the system owner.

**2.02 Loan Monitoring.** In addition, as a precondition to receiving and retaining any advance payments under this Agreement, the Borrower shall submit *“The Analysis of the Homeowner Septic Repair Special Revenue Account Quarterly Report”* (the Report) no later than fifteenth day of July, October, January, and April. The report requires the Borrower to provide information on the status of advance payments and to account for any actual and planned disbursements to system owners based on executed betterment agreements for each quarter ending September 30, December 31, March 30, and June 30. Both the Treasurer and senior accountant of the Borrower shall sign each Report. Reports must be mailed or hand delivered to the Title 5 Coordinator assigned to your loan by DEP’s Regional Office.

(a) Each system upgrade completed shall be evidenced by the submission of the Certificates of Compliance issued by the board of health documenting that the upgrade of each failed septic system financed by the Loan and the underlying betterment agreement between the Borrower and the system owner has been completed in compliance with 310 CMR 15.000 (Title 5).

(b) If requested by DEP, the Borrower shall submit further documentation in support of a report or a requisition.

**2.03 Program Completion.** Completion of the Program shall be evidenced by the filing with DEP of a certificate (the “Project Completion Certificate”) signed by an Authorized Officer of the Borrower stating that the project (i.e., the Borrower’s betterment program) has been completed and performed in accordance with the requirements of this Regulatory Agreement and the Loan Agreement. Such Project Completion Certificate shall be accompanied by a final report and any remaining Certificates of Compliance issued by the board of health documenting that the upgrade of each failed septic system financed by the Loan has been completed in compliance with 310 CMR 15.000 (Title 5).

### **Section 3. General Conditions and Covenants of the Borrower**

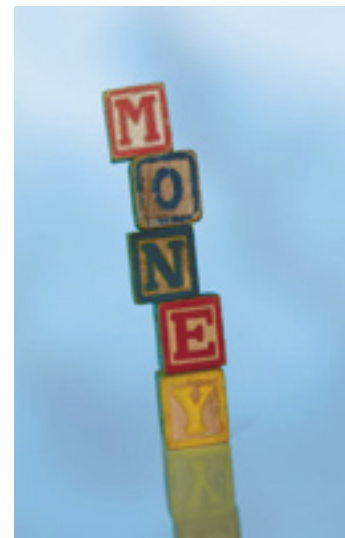
**3.01** The Borrower shall comply with all state statutes, regulations and requirements applicable to the Project, including, but not limited to the requirements of Title 5, M.G.L.c.111, §127B½, and with DEP’s approval of the project and its Community Septic Management Program Description and requirements.

**3.02** The Department and/or the State Auditor or his or her designee, shall have the right at reasonable times and upon reasonable notice to examine the books, records and other compilations of data which pertain to the performance of the provisions and requirements of this Regulatory Agreement. In addition, the Borrower shall give DEP access to the project site at reasonable times and upon reasonable notice to the Borrower by DEP.

**3.03** The Borrower shall retain all records relating to the project for seven (7) years after project completion, or until any litigation, appeal, claim, or audit that is begun before the end of the seven-year period is completed and resolved, whichever is longer.

**3.04** The Borrower shall maintain project accounts in accordance with generally accepted government accounting standards.

**3.05** The Borrower shall comply with the Civil Rights Act of 1964, 42 USC s.2000(a) et seq., as amended, and all Executive Orders and regulations promulgated thereunder. A Nondiscrimination in Employment form shall be signed and delivered to DEP.



3.06 The Borrower shall comply with the provisions set forth in Executive Order 237 (or in any successor Executive Order) for the use of minority and woman business enterprises (M/WBEs) in all construction, service and supply contracts related to the project.

3.07 The Borrower shall furnish information and otherwise cooperate with the Department in any evaluation pursuant to the Massachusetts Environmental Policy Act, M.G.L.c. 30, §61 et seq. (MEPA). The Borrower shall implement all mitigation measures required in connection with the review processes under MEPA.

3.08 The Borrower shall obtain, and comply with, all state permits and approvals required for the Project, and is solely responsible for the administration and successful completion of the Project.

3.09 The Borrower shall promptly notify DEP in writing whenever the Borrower has good reason to believe that: (1) the project costs which it will incur will be substantially less than those previously approved in the loan, as set forth in the Project Budget in Exhibit A; or (2) the Borrower will be unable to meet the schedule set forth in the Project Schedule in Exhibit A and/or requisition the full amount of the Loan. DEP shall not be obligated to certify, nor the Trust to pay for, project costs incurred in excess of the Loan amount unless DEP has approved the increase through an amendment to the project approval certificate and the loan has been amended to include the increased amount. DEP reserves the right to rescind its approval, in whole or in part, should the borrower fail to commit to executed betterment agreements, the full amount of the initial installment received by the borrower within six months of the executed loan agreement. DEP may, at its discretion, grant an extension to the program deadline in cases where the Borrower has demonstrated that its failure to requisition the full Loan amount was justified under the circumstances and that the Borrower will complete the project and requisition the remaining Loan amount in a timely manner.

3.10 The Borrower shall implement the project in accordance with the requirements of 310 CMR 15.000 and DEP's approval of the project and its Community Septic Management Program Description and Requirements. In doing so, the local betterment program component of its Comprehensive Community Septic Management Program must also take into account the financial needs of low and moderate-income homeowners in the following manner:

---

*The upgrade of septic systems having the greatest environmental impact should receive funding preference. However, in the event that the upgrades are of equivalent environmental priority, funding should first be allocated to upgrade the system owned by a low or moderate-income homeowner, as defined by the Massachusetts Housing Finance Agency ("MHFA").*

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3.11 Use of Betterment Agreement(s): DEP and the Trust have developed the following model Betterment Agreements for use under the Community Septic Management Program:

- Betterment Agreement (when the homeowner is contracting to do the upgrade of the failed septic system).

The Borrower is not precluded from modifying or supplementing the terms of these model Betterment Agreements, provided that any such changes are consistent with the model Betterment Agreements and the Borrower retains the language of the following provisions of the model Betterment Agreements:

In Betterment Agreement : (1) The Agreement (with the flexibility noted therein - see n.1); (2) Installment Payments (the Borrower has the discretion to specify additional procurement requirements - e.g., minimum no. of bids or BOH approval of construction contract); (3) Conditions for Payment; (5) Right to Inspect; (7) Owner's Representations and Warranties to City/Town; (8) Owner's Obligations; (9) Events of Default; (13) Cancellation of the Agreement by the Owner; and (14) Personal Obligation of the Owner.

3.12 DEP may suspend or terminate payments to the Borrower under the loan agreement in instances where it determines that there is probable cause to believe that the loan agreement was obtained on the basis of fraud, deceit, or illegality or that the Borrower has failed to comply with the terms of the Loan Agreement.

3.13 DEP's approval of this project for SRF loan assistance does not constitute a state sanction or approval of any changes or deviation from established water quality standards, criteria, and implementation dates or from dates established by applicable enforcement proceedings.

3.14 The Borrower shall provide DEP representatives with access to the project whenever it is in preparation or progress, including obtaining, through the underlying betterment agreements, the consent of the septic system owners to provide such access to DEP.

3.15 The Borrower shall comply with the special conditions set forth in Exhibit A.

#### **Section 4. Default/Remedies for Default**

4.01 Default. The Borrower shall have committed a Default under this Regulatory Agreement if the Borrower shall fail to perform and observe any covenant, agreement or condition on its part provided in this Regulatory Agreement and such failure shall continue for a period of thirty (30) days after written notice thereof shall be given to the Borrower by DEP; provided if such failure cannot be remedied within such thirty (30) day period, it shall not constitute a Default hereunder if corrective action satisfactory to DEP is instituted by the Borrower within such period and diligently pursued until the failure is remedied.

4.02 Remedies for Default. If a default shall occur, and be continuing hereunder, DEP may, in its sole discretion, take one or more of the following measures to the extent necessary to remedy the default:

- (a) DEP may postpone approval of requisitions submitted pursuant to Section 2 or direct the Trust to cancel all or any part of the Loan not yet disbursed to the Borrower; or
- (b) DEP may rescind approval of any requisition previously approved but not yet acted upon by the Trust; or
- (c) DEP may direct the Trust to declare an Event of Default under the Loan Agreement.

#### **Section 5. Miscellaneous**

5.01 Notices. All notices, consents, certificates and other communications hereunder shall be sufficiently given when delivered by hand or courier or photocopied or mailed by registered or certified mail, postage prepaid, addressed as set forth in Exhibit A or to such further or different address provided by any of the parties.

5.02 Assignments. The Borrower shall not assign this Regulatory Agreement, or any of the rights or obligations hereunder, without the prior written consent of DEP and the Trust.

5.03 Severability. In the event that any court of competent jurisdiction shall hold any provisions of this Regulatory Agreement invalid or unenforceable, such holding shall not invalidate or render unenforceable any other provision hereof.

5.04 Amendment. This Regulatory Agreement may not be amended, modified or changed in any respect except in writing and signed by the parties hereto. No such amendment, modification or change to this Regulatory Agreement (other than an amendment to Sections 2 and 4 and Exhibit A of such Regulatory Agreement) which, in the reasonable opinion of the Trust (expressed in a certificate of an Authorized Officer of the Trust delivered to DEP and the Borrower prior to the execution and delivery of such amendment, modification or change), would materially and adversely affect the rights and obligations of the Trust under the Loan Agreement shall be effective without the prior written consent of the Trust, which consent shall not be unreasonably withheld. A copy of any proposed amendment, modification or change to the applicable sections of the Regulatory Agreement shall be delivered to the Trust by DEP not less than ten (10) days prior to the date of execution and delivery thereof.



5.05 Execution in Counterparts. This Regulatory Agreement may be simultaneously executed in several counterparts, each of which shall be an original and all of which shall constitute but one and the same instrument.

5.06 Applicable Law. This Regulatory Agreement shall be governed by, and construed in accordance with, the laws of the Commonwealth.

IN WITNESS WHEREOF, the Department and the Borrower have caused this Regulatory Agreement to be executed by their duly Authorized Officers the day and year first above written.

DEPARTMENT OF ENVIRONMENTAL PROTECTION:

By \_\_\_\_\_  
Steven J. McCurdy  
Program Director  
Division of Municipal Services

BORROWER:

By \_\_\_\_\_  
Authorized Officer





***PAC/PRA EXHIBIT A***  
***LOCAL SEPTIC MANAGEMENT PROGRAM***

A. General Information

For the community/applicant

Community/Applicant:

Street:

City, State, Zip:

Contact Person:

Title:

Telephone:

Fax:

B. Budget

Title 5 Betterment Loans \$200,000

C. Project Completion Schedule

D. Special Conditions

For the Administrating Entity

Administrating Entity:

Street:

City, State, Zip:

Contact Person:

Title:

Telephone:

Fax:

## SECTION 10. STATE REVOLVING FUND PROCEDURES

Each municipality participating in the Community Septic Management Program will enter into a State Revolving Fund (SRF) loan with the Massachusetts Water Pollution Abatement Trust (the Trust). The SRF serves as the source of funds for making betterment loans to homeowners and for project administration. The funds are loaned on the basis of a 50% grant equivalency. The grant equivalency is the Commonwealth's method of describing the level of subsidy provided to lower the interest rate incurred by the municipality. As a result of this interest rate subsidy, the municipality will incur no interest charge during the term of the SRF loan.

To be eligible to enter into an SRF loan, each municipality must obtain the authorization required by the terms of the loan. In most towns, a 2/3 vote of the town meeting authorizes the borrowing. In other towns and cities, a 2/3 vote of the City Council, Town Council or Board of Aldermen must occur. After this vote, the chief executive of the town (Mayor, Town Manager, Chairman of the Board of Selectmen) may sign the Loan Agreement and related documents. The Loan Agreement and its attachments and certifications propose the basic legal terms and conditions of the SRF loan. This standard form agreement is provided by the Trust. In addition, the municipality will execute a Loan Questionnaire and a Borrower's Closing Certificate to evidence the SRF loan. The municipality will issue notes or bonds (as required by the Trust) and must supply the Trust with a legal opinion from the municipality's Bond Counsel. Samples of each of the documents are provided in the appendices.

Once the legal documents have been executed and returned to the Trust, the municipality may requisition SRF loan funds. Payment requisitions must be made on the DEP/Department of Municipal Services (DMS) T5-1000 form. The forms should be executed by the municipal treasurer and health official (or the persons who have been provided with authority to execute the forms). The forms are then forwarded to the DEP Regional Coordinator assigned to the municipality (See the Contact section of the appendices). The Coordinator will forward the requisition request to the DEP/DMS contact person and to the Trust. Payment requisitions may be made in amounts sufficient to cover anticipated funding needs for up to three months. Disbursements will be made by wire transfer only.

The municipal treasurer and accountant will be required to make an annual report to the Division of Local Services. (See appendices for forms). This report will summarize the financial aspects of Local Septic Management Program activity. During the fiscal year, copies of the quarterly report must be forwarded to the DEP Regional Coordinator and to the Trust.

The Division of Local Services has provided a bulletin to define the municipal accounting procedures for funds received by municipalities from the Trust and the funds repaid by homeowners who have obtained financial assistance through betterment loans. For more information, go to: <http://www.dls.state.ma.us/publ/bullidx.htm>. Once at the site, you will go to the reference section, and search for the bulletin, "Title 5 Betterment Loan Program — Accounting", through the UMAS, Special Revenue Fund section.

The Program establishes a timeframe during which betterment loans may be made to homeowners from the initial SRF loan. As a result, the municipality will have a sufficient opportunity to commence collections from homeowners. Operation of the program will require that the municipal accountant have an appropriate cash management strategy in place. Department of Revenue and Division of Local Services field representatives have been trained to provide assistance to municipal officials responsible for oversight and financial management of Local Septic Management Programs.





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**DEPARTMENT OF ENVIRONMENTAL PROTECTION - REGIONAL CONTACTS**

Current Department of Environmental Protection contacts for information, updates, technical assistance, and guidance related to the Community Septic Management Program:

<p><b><u>NORTHEAST/METRO BOSTON REGION</u></b> Nihar Mohanty One Winter Street Boston, MA 02108 Tel: (617) 654-6515 Fax: (617) 292-5851 email: <a href="mailto:Nihar.Mohanty@state.ma.us">Nihar.Mohanty@state.ma.us</a></p>	<p><b><u>SOUTHEAST REGION</u></b> Pamela Truesdale 20 Riverside Drive Lakeville, MA 02347 tel: (508) 946-2881 fax: (508) 947-6557 email: <a href="mailto:Pamela.Truesdale@state.ma.us">Pamela.Truesdale@state.ma.us</a></p>
<p><b><u>CENTRAL REGION</u></b> Joanne Kasper-Dunn 627 Main Street Worcester, MA 01608 tel: (508)-767-2763 fax: (508) 792-7621 email: <a href="mailto:joanne.kasper@state.ma.us">joanne.kasper@state.ma.us</a></p>	<p><b><u>WESTERN REGION</u></b> Deirdre Cabral 436 Dwight Street, Suite 402 Springfield, MA 01103 tel: (413) 755-2148 fax: (413) 784-1149 email: <a href="mailto:deirdre.cabral@state.ma.us">deirdre.cabral@state.ma.us</a></p>

**DEPARTMENT OF ENVIRONMENTAL PROTECTION - BOSTON RESOURCES**

For specific information on state revolving fund loans, financing and other funding related issues  
For information on SRF loan administration and project management, payments forms and draw down requests:

<p>Margaret Mansfield One Winter Street Boston, MA 02108 tel: (617) 292-5943 fax: (617) 292-5850 email: <a href="mailto:Margaret.Mansfield@state.ma.us">Margaret.Mansfield@state.ma.us</a></p>
<p>Stephen Hawko One Winter Street Boston, MA 02108 tel: (617) 292-5741 fax: (617) 292-5850 email: <a href="mailto:Stephen.Hawko@state.ma.us">Stephen.Hawko@state.ma.us</a></p>

*Massachusetts Water Pollution Abatement Trust*

For information on the status of wire transfers, disbursements of funds from the Trust, loan repayment information and copies of legal documents (loan agreement, loan amortization, etc.):

Mass. Water Pollution Abatement Trust  
One Ashburton Place, Room 1207  
Boston, MA 02108

Nancy Parrillo, Chief Financial Officer  
tel: (617) 367-9333 ext 508  
fax: (617) 227-1773

Keith McCarthy  
tel: (617) 367-9333 ext 521

*Department of Revenue/Division of Local Services*

The Department of Revenue/Division of Local Services provides information and technical assistance to cities and towns in matters regarding municipal finance. The Division has published the *“Guide to Financial Management for Town Officials”* which provides an excellent introduction for municipal officials in municipal finance. The DOR regularly publishes Informational Guidance, Bulletins, Regulations and other materials on its web site: <http://www.dls.state.ma.us/dor2.htm>.

For more information regarding financial accounting for the Community Septic Management Program and related issues contact:

Division of Local Services  
ATTN: Director of Accounts  
Box 9569  
Boston, MA 02114  
Tel: (617) 626 2300  
Fax: (617) 626 2330

DOR/DLS field representatives in each region are available to assist local officials comply with the fiscal accounting and reporting requirements for the Program.

*Infoline, Hotlines*

Serving more than 18,000 callers a year, DEP’s InfoLine is a one-stop source for business people, consultants, lawyers and municipal officials who need:

- Answers to general DEP Questions,
- Permit Application Kits,
- Compliance Fee Assistance,
- DEP Seminar Information,
- Referrals to Technical Experts,
- Policies and Guidance Documents,
- Environmental Education Materials, and
- Access to the MCP Hotline for information on waste site cleanup regulations.

DEP’s InfoLine and the Regional Service Centers are both a part of DEP’s commitment to making it easier for you to understand and comply with the environmental rules.

**From area code 617 and 781 and outside Massachusetts:**

(617) 338-2255 (TDD: 617-574-6868)

**From area codes 413, 508 and 978:**

1-800-462-0444 (TDD: 1-800-298-2207)

By Email: [infoline@state.ma.us](mailto:infoline@state.ma.us)

**Title 5 Hotline:**

Title 5 (Septic Systems): 1-800-266-1122 or (617) 292-5886.

**GIS Assistance**

To obtain GIS maps, data layers, general information and assistance in setting up GIS tools for the Community, information on ArcView (GIS Data Visualization Tool), general training to interested groups on what GIS can do.

Department of Environmental Protection One Winter Street 8th Floor Boston, MA 02108 Tel: (617) 292-5575 Fax: (617) 556-1049	Executive Office of Environmental Affairs 100 Cambridge Street 9th floor Boston, MA 02108 Tel: (617) 626-1000 Fax: (617) 626-1249
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**Consumer Protection Information**

Office of the Attorney General  
200 Portland Street  
Boston, MA 02114  
tel: (617) 727 2200 ext 3200

**Consumer Information Hotline:**

(617) 727 8400

**Regulations**

The State House Bookstore maintains a wide variety of publications, regulations and useful documents. A catalog of materials available at the Bookstore is available.

Secretary of the Commonwealth Room 116, State House Boston, MA 02133 tel: (617) 727-2834 fax: (617) 973-4858	Secretary of the Commonwealth Western Office 436 Dwight Street Springfield, MA 01103 (413) 784-1376
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Massachusetts Sites:

Massachusetts State Government	<a href="http://www.mass.gov">http://www.mass.gov</a>
Department of Environmental Protection	<a href="http://www.mass.gov/dep">http://www.mass.gov/dep</a>
DEP's Division of Municipal Services	<a href="http://www.mass.gov/dep/brp/mf/cwsrf.htm">http://www.mass.gov/dep/brp/mf/cwsrf.htm</a>
Department of Revenue	<a href="http://www.dls.state.ma.us/dor2.htm">http://www.dls.state.ma.us/dor2.htm</a>
Department of Public Health	<a href="http://www.mass.gov/dph">http://www.mass.gov/dph</a>

Other sites of interest:

EPA's Office on Water	<a href="http://www.epa.gov/ow/">http://www.epa.gov/ow/</a>
MA Association of Health Boards	<a href="http://www.mahb.org">http://www.mahb.org</a>
MA Association of Health Officers	<a href="http://www.mhoa.com">http://www.mhoa.com</a>

Relevant information, forms and updates about the Community Septic Management Program will be posted from time to time on DEP's web site.

National Small Flows Clearinghouse

West Virginia University  
P.O. 6064  
Morgantown, WV 26506-6064  
Tel: (800) 624-8301  
Fax: (304) 293-4191  
web: [http://www.nesc.wvu.edu/nsfc/nsfc\\_index.htm](http://www.nesc.wvu.edu/nsfc/nsfc_index.htm)

The National Small Flows Clearinghouse (NSFC) provides information, referrals, training and technical assistance for small communities to aid in solving wastewater problems. NSFC is sponsored by grants from the US Environmental Protection Agency. The Clearinghouse publication 'Small Flows' provides information in an easy-to-understand format and is available free of charge by mail or through the Internet.



## Regional Planning Agencies

Regional Planning Agencies offer a wide variety of services to the communities in their regions. Issues pertaining to economic development, land use, transportation, air and water quality, housing and others may be the subject of planning initiatives by RPAs. Planning agency staff can offer assistance in diverse areas such as GIS, creating and administering Local Inspection and Local Management Plans, and other tasks related to the implementation of the Community Septic Management Program.

Information on planning agencies and services may be obtained from:

<p>Metropolitan Area Planning Council 60 Temple Place Boston, MA 02111 tel: (617) 451-2770 fax: (617) 482-7185</p>	<p>Montachusett Regional Planning Commission Town Hall 173 Main Street Groton, MA 01450 tel: (978) 448-1111</p>
<p>Berkshire Cty. Regional Planning Comm'n. 1 Fenn Street Pittsfield, MA 01201 tel: (413) 442-1521</p>	<p>Nantucket Planning &amp; Economic Devel. Commission 4 North Water Street Nantucket, MA 02554 tel: (508) 228-7237</p>
<p>Cape Cod Commission 3225 Main Street Barnstable, MA 02630 tel: (508) 362-3828</p>	<p>Northern Middlesex Council of Gov'ts 115 Thorndike Street Lowell, MA 01852 tel: (508) 454-8021</p>
<p>Central Mass. Regional Planning Comm'n. 35 Howard Street Worcester, MA 01609 tel: (508) 756-7717</p>	<p>Old Colony Planning Council 70 School Street Brockton, MA 02401 tel: (508) 583-1833</p>
<p>Franklin Council of Gov'ts./Planning Dept. 425 Main Street Greenfield, MA 01301 tel: (413) 774-2251</p>	<p>Pioneer Valley Planning Commission 26 Central Street W. Springfield, MA 01089 tel: (413) 781-6045</p>
<p>Martha's Vineyard Commission P.O. Box 1447 Oak Bluffs, MA 02557 tel: (508) 693-3453</p>	<p>Southeastern Regional Planning and Economic Development District 88 Broadway Taunton, MA 02780 tel: (508) 824-1367</p>
<p>Merrimack Valley Planning Commission 160 Main Street Haverhill, MA 01830 tel: (978) 374-0519</p>	

# *SAMPLE APPLICATION*

## TOWN OF MIDDLEBORO

### COMMUNITY SEPTIC MANAGEMENT PROGRAM

#### **General**

The Town of Middleboro has received approval by Town Meeting vote to enact the Community Septic Management Program. This septic system replacement program, provided through the Department of Environmental Protection (DEP), makes available a loan to homeowners in our community, whom lie within an environmental sensitive area, as outlined herein. To qualify you must have a failed septic system and lie within an environmental sensitive area. A failed septic system should have a certification, stating such, issued by a DEP approved system inspector.

#### **Eligible Items**

The loan will consist of combining all costs associated with septic system repair, replacement or upgrading. This includes property line determination, soil evaluation, septic system design and general construction and installation. The Town of Middleboro or designee will determine any ancillary items that may be required eligible.

#### **Loan Terms**

The loan's terms will be a five percent loan, to be paid back over \_\_\_\_ (15 or 20) years. Payment will be twice yearly with your real estate tax bill.

The loan will be secured as a betterment assessment against your property. The betterment assessment may be paid off at any time, or when you sell your home, without penalty. You will be expected to make payment upon receipt of the first tax bill received, after the Board of Health for the completed issues the Certificate of Compliance and accepted Title 5 designed and installed septic system.

#### **Environmentally Sensitive Areas**

The Town of Middleboro has determined that the following areas are environmentally sensitive areas. The Town has designated a plan or map, entitled \_\_\_\_\_-, to provide an outline of environmental sensitive areas. Other areas, not outlined on the map at this point in time, shall be determined by the Town, on a case by case basis, until finalization of environmentally sensitive areas are completed.

1. Wood Pond Area
2. Areas within Zone II of the Town's ground water wells.
3. Areas within 100 feet of any stream, river or waterway
- 4.
- 5.
- 6.

The Town may designate specific environmentally sensitive areas as having a higher priority than others, based on the number of applicants that are received.

#### **Application Process**

Should you, as a resident and homeowner of the Town of Middleboro qualify, then complete the attached application and submit to \_\_\_\_\_ the Town Manager's Office. You will be notified of your eligibility. You should be aware that the Town might exhaust available monies, made available by DEP. If so, then you may be placed on a waiting or 'Priority List', until additional monies become available.

## Public Meeting

There will be a public meeting on \_\_\_\_\_ at Town Hall. The purpose of this public meeting will be to explain the program and answer any questions that you, the homeowner may have.

## The Process

Upon approval by the Town of Middleboro of your application, you will be expected to sign a Betterment Agreement with the Town of Middleboro. The Betterment Agreement outlines the terms of the loan and what is expected of both parties. Have your lawyer review the Agreement, if you find it necessary.

Once the agreement is signed, then you may proceed with one of two choices.

You may elect to obtain bids from engineers and/or general contractors (vendors) on your own. It is recommended that you obtain at least three bids. This will allow you to obtain the most cost effective price. It is up to you, the homeowner to select the choice that you feel most comfortable with. It does not necessarily have to be the lowest bidder. You will enter into a signed contract with either vendor. You may want to consider having the design engineer serve as the inspector of the general contractor's work and coordinator of submitting bills to Town Hall.

If you choose this option, engineers and general contractors will be expected to submit bills to you twice. You will be expected to review the bill, approve it and forward it to \_\_\_\_\_ at Town Hall.

A joint check will be issued by the Town with your name and the vendor's name to you. You will be expected to sign the check and give it to the vendor, if you approve their work. Upon completion of the engineering evaluation and design and the general construction, the Board of Health will inspect and issue a Certificate of Compliance for the septic system. This is the end of the project. A final check may be issued to the engineer and general contractor, provided that all work has been performed satisfactorily.

# **COMMUNITY SEPTIC MANAGEMENT PROGRAM**

## **BETTERMENT LOANS**

### **HOMEOWNER PACKAGE**

Dear Homeowner:

This package provides information for you, the homeowner, to apply for a septic system betterment loan. This loan is provided, through the Department of Environmental Protection at a five percent (5%) interest rate for a period of 5, 10, 15, or 20 years. There is no credit check required, although all of your real estate taxes, water bill or any other municipal account should be paid and up to date. The loan process is reviewed and approved by the Board of Health and you will be notified within two weeks (2) of your standing.

Attached are various documents for your review. These documents are outlined as follows:

***Application:***

This application must be completed and submitted to the Board of Health that will confirm your interest in the program.

***Homeowner Checklist For Engineering Design:***

This checklist contains a series of queries to ask an engineer, septic system inspector or a soil evaluator. These disciplines are necessary to initially inspect (System Inspector), perform a soil evaluation and percolation test (Soil Evaluator) and design a septic system (Civil or Sanitary Engineer). All must be certified and licensed by the Commonwealth of Massachusetts. Ask to see their license or certification.

***Homeowner Checklist for A General Contractor:***

This checklist allows you to question a general contractor whom may be bidding on the Board of Health approved septic system design plans.

***Betterment Agreement:***

The betterment agreement is the signed agreement between you, the homeowner and our community. This agreement may be reviewed by your lawyer when provided to you by our Board of Health. The agreement allows our community to provide you money to pay for the work that is agreed upon.

***Draft Contract for the Engineer***

***Draft Contract for the General Contractor***

**LOCAL SEPTIC MANAGEMENT PROGRAM**

**APPLICATION FORM**

**COMMUNITY OF (YOUR TOWN/CITY)**

Homeowner Information

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: (W) \_\_\_\_\_

Phone: (H) \_\_\_\_\_

General Information

	<u>YES</u>	<u>NO</u>
1. Has your septic system been failed by a certified inspector?		
1a. Does your system need to be pumped more than four (4) times per year?		
2. Have you had a soil evaluation test and/or engineering plans for your system completed (or in process)?		
3. Have you received estimates for engineering work? Have you received general contractor (installation) work?		
4. Can your property lot lines be determined, so that the proposed septic system and soil adsorption system be located without infringing on your neighbor's property?		
5. Are you in an environmentally sensitive area? (Check plan) Name of area: _____ No. _____		
6. Can you be connected to our community's existing sewerage collection system?		
7. If known, please provide information of the type and costs of the repairs: Needs: a. New soil absorption system (SAS) b. Entire new system c. Repairs done to parts of system d. Want connection to our community's existing sewer system 1. Engineering soil evaluation and design \$ _____ 2. Estimated costs of repair, replacement, or connection \$ _____ 3. Contingency amount (20%) \$ _____ Total Loan Estimate \$ _____		

I, we will agree to sign a betterment/loan agreement with the Town of \_\_\_\_\_, to pay for the required costs associated with the septic system repair, and am aware that these costs will be treated as a municipal lien on my property tax bill.

This loan is contingent on the Town determining that my property lies within an environmentally sensitive area that is deemed to be fundable by the town for that fiscal year.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
(Property Owner)

<u>Board of Health Use Only:</u>	
Project Number _____	
Environmental Area Number _____	Env. Area Priority No. _____
Date Accepted _____	Priority List No. _____

# ***BROCHURE FOR HOMEOWNERS***

## ***DRAFT***

### ***INTRODUCTION***

The \_\_\_\_\_ of \_\_\_\_\_ Board of Health has received funding approval from the Commonwealth of Massachusetts - Department of Environmental Protection to prepare and administer a septic system repair program. This program, referred to as the MA Title 5 Betterment Loan Program, will enable our community to provide financial assistance to homeowners living in environmentally sensitive areas, whom have failed septic systems. Through this program, the engineering and general construction costs associated with connection to an existing sewer main, or replacement or upgrade of a failed septic system can be provided as a low interest loan, to you, the homeowner. The loan will be paid back to the \_\_\_\_\_ with payment of your real estate tax bill. After reviewing this brochure, should you elect not to participate in this Program, please review another brochure the Board of Health or DEP has available. This brochure describes the “Homeowner Septic System Repair Program”, which is a program administered by the Massachusetts Housing Finance Agency (MHFA).

#### **The Betterment Law**

Under a revised state law, every town and city in Massachusetts has the option of providing upfront financing for residential cesspool or septic system repairs, replacements or upgrades for failed septic systems. This is done in much the same way many communities currently undertake public works improvements, such as the paving of roads and the installation of sewer or water mains. The Betterment Law allows a community to create a loan fund that must be authorized by \_\_\_\_\_ vote. The loan fund pays for Board of Health approved repairs to septic systems. The Community recovers those costs by assessing annual betterments on those individual homeowners property tax bills that benefit by the improvement.

#### **Financial Assistance Terms**

Financial Assistance consists of a five percent (5%) loan, that you, the homeowner pays back twice a year, with each real estate tax payment. Loan repayment terms may be over 10 or 20-year time periods, depending on costs of the septic system repair. Loans may be paid back early, without penalty.

#### **Elderly Deferral**

Elderly homeowners, with gross incomes of \$20,000 or less, may request a deferred payment loan. This type of loan does not have to be repaid back to our community, until the property is sold or transferred. The authority to have a deferred payment loan program must be specifically approved by \_\_\_\_\_ vote. Loans may be paid back early, without penalty.

#### **Community Yearly Program**

Each fiscal year, the Board of Health will provide a number of loans to homeowners located in environmentally sensitive areas. The number of homeowners provided loans would be based on available money and the priority of that particular environmental area. Your application will be kept on file, regardless of whether you qualify that particular year. Notice will be provided yearly, of homeowners standing, through the issuance of a priority list. Priorities of environmentally sensitive areas will be based on environmental concerns, such as the proximity of the failed septic system to our community’s water supply, surface waters, wetlands or coastal waters.

#### **General Assistance**

Once you have been determined to be eligible for a loan, the Board of Health will prepare a Betterment Loan Agreement for your execution. Upon completion of the loan agreement, the Board of Health is prepared to offer service in one of two ways, in order to complete the project. You may decide to control the project yourself or with an informed family member. You may select either an engineer for design of the septic system and/or a general contractor to install the septic system improvements from the Board of Health’s pre-approved list. All bills incurred for the work are submitted to the Board of Health for payment.

#### **For Further Information**

For further information on this program, please contact \_\_\_\_\_ at () - \_\_\_\_\_.

## *LOCAL SEPTIC MANAGEMENT HOMEOWNER CHECKLIST*

### ENGINEERING SERVICES

#### *Design Questions to Ask an Engineer Prior to Completing a Contract*

This checklist will assist you, the homeowner, in asking an engineer, who is proposing to evaluate and design a septic system improvement for you, appropriate questions that should assist you in determining their suitability to perform the work.

#### A. General Questions

1. Have you performed septic system design work (under the new Title 5 regulations issued by the Commonwealth in 1996) that has been approved by our communities Board of Health or other regulating Department?
2. When was the last year and how many septic systems have you submitted and received approval for by our Board of Health?
3. Do you have a current professional registration (civil or environmental) engineering registration provided by the Commonwealth of Massachusetts Engineering Board of Registration? Can you provide a copy for our records?
4. Will you provide up to three most recent references for your work, from local communities homeowners?
5. Are you insured and do you carry professional liability insurance as required by the Commonwealth of Massachusetts and professional standards, as provided by the American Association of Professional Engineers?

### SYSTEM INSPECTOR

#### B. Initial Location and Inspection of the Septic System

There are numerous septic system inspectors, licensed by the DEP - Commonwealth of Massachusetts. These inspectors are not necessarily engineers, and may be a cost effective alternative to hiring an engineering firm to perform the inspection.

1. We had (or haven't had) our septic system located and inspected. The inspector deemed that the system has failed and under Title 5 criteria, must be replaced. Will you review this inspection and ensure us that the Commonwealth's Title 5 regulations do indeed, require replacement of the entire system or a part of the system?
2. Our septic system has not been inspected, but we are having problems. Will you locate and sketch out the location and present system design and perform an inspection and provide options for us to consider, as outlined under the Title 5 regulations?
3. Will you or a subcontractor perform the inspection?

### ENGINEERING DESIGN OF SEPTIC SYSTEM

#### C. Design Questions

There are two components of septic system design. The first consists of noting where your property lines may be so that test holes can be dug. These holes will locate your soil adsorption system, which handles the fluid part of septic wastes.

The first part also includes actually digging the test holes with a backhoe, performing a soil examination and 'perc' test and then submitting the results to you, the homeowner, and the Board of Health.

This part of design does not have to be performed by a professional engineer, but can be done by a certified soil evaluator (certified by the Commonwealth of Massachusetts). The results of the soil examination are submitted to the Board of Health and You, the homeowner. The homeowner can then submit the results to a chosen registered professional engineering firm for design purposes.

These questions can be asked to either the professional design engineer or a chosen certified soil evaluator.

1. Will you charge us for determining where our property lines are located, or use general field work as determined from meeting with us today, as part of your design estimate?
2. If you cannot determine from our provided plans, or locations of known property bounds, drill holes, stakes or other property line markings, what will be your limits to determine property lines for location of the septic system components and soil adsorption system?

3. How will the soil examination (percolation test) be performed, by you or a subcontractor? Will you be present to show the subcontractor where to dig the holes for location of the soil adsorption system? Do the subcontractor and the heavy machine operator work directly for you, and do they carry the necessary liability insurance?
4. Will they be responsible for calling Dig Safe, if required?
5. Will the dug holes and tractor (tire) damages be filled in, graded and seeded or left in the general construction state of disrepair?
6. When the soil examination is completed, will you submit a copy to the Board of Health, our chosen design engineer and us?
7. How will billing be performed? We may request that billing be performed in the following manner:

Number / Description	Percent of Cost
----------------------	-----------------

1. Provide a written estimate for all phases of the proposed work:

*Inspection of System*

a. Initial Inspection, location of system and written evaluation

1. Inspection and location	25%
----------------------------	-----

2. Written and signed evaluation	75%
----------------------------------	-----

*Soil Evaluation and Percolation Testing*

2. a. Location of Lot Lines with side line stakes

b. Onsite backhoe for soil test with successful percolation test and soil examination

c. Written report and confirmation of submittal to Local BOH of certified test	75%
--	-----

d. Completion of backyard grading and cleanup	25%
---	-----

3. Engineering Design

a. Site visit and write up of estimate

b. Survey work for plan of work

c. Review of soil evaluation test and opinion to us of the type of systems that could be installed, along with price estimates for each one.

d. Draft plans for review and approval of approved septic system.

(We will provide permit fee for submittal to our Board of Health at that time)

e. Final plans submitted to Board of Health and a bill from you.	60%
--	-----

f. Board of Health approves the plan and we receive four copies for our use.

Written specifications will be included with plans	40%
--	-----

4. Engineering Oversight of Construction

a. Hourly charge for inspection of contractor's work.

b. Estimate of total time estimated for inspection and maximum costs

c. Time to provide written change orders on site, to be included with hourly charge.

d. Billing to be done per inspection, with 10 days to pay.



# *LOCAL SEPTIC MANAGEMENT PROGRAM*

## *HOMEOWNER CHECKLIST*

Questions to ask a General Contractor Prior to Agreeing to a Contract

This checklist will assist you, the homeowner, in asking a general contractor questions, prior to signing a written agreement, for the improvement or installation of a septic system or a sewage connection.

### A. General Questions

1. How many installations have you performed, under the old Title 5 regulations and under the new Title 5 regulations, and, how long have you been in business?
2. How many have been done in our Town/City over the past two (2) years?
3. Would you say the Board of Health and its agent has been satisfied with your work 100% of the time?
4. Are there any septic systems that you have worked on, or are presently working on, that have not been completed? If so, why not?
5. How long will it be before you provide a written estimate, if we provide a set of plans and written specifications right now?
6. If your written estimate is submitted, based on our provided plans and written specifications, how long will it be before you show up on the job?
7. Will you break down the pay estimate in phases as outlined below:

<b>Item</b>	<b>Description</b>	<b>% of Total</b>
a.	Submit a written estimate and if accepted, a contract.	
b.	Drop off materials and bring a machine to start digging	
c.	Complete Installation of any required septic system components	
d.	Complete the soil adsorption system	
e.	Obtain a successful inspection from the Board of Health	80%
f.	Cover over the system to grade	
g.	Seed and loam as required	20%

8. Will you provide us three references of homeowners of your last three jobs?
9. Do you carry insurance? If so, does it consist of:
  - a. Property Liability
  - b. Vehicle Liability
  - c. Workers Comp (unless self employed)
10. How long will our toilets, dishwasher, sinks, etc. be off line (can't be used)?
11. How long will this job take from start until completion?

# Forms

Sample Town Meeting/City Council Article and Vote	a
Payment Requisition	i
Form DA91	ii
Final Report	iv
DOR Form	vi
Sample Loan Agreement	vii
Sample Loan Questionnaire	xxv
Local Bond Counsel Legal Opinion	xxx
<i>(back to Appendices)</i>	

**Massachusetts Water Pollution Abatement Trust  
Community Septic Management Program  
Department of Environmental Protection**

These sample forms are for guidance purposes only. The Applicant's bond counsel should be consulted to determine the exact form of authorization required and which local body or official must approve the terms of borrowing and the forms of documentation.

**Sample Town Meeting/City Council Article and Vote**

To see if the Town/City will vote to appropriate a sum of money for the purpose of financing the following water pollution facility projects: repair, replacement and/or upgrade of septic systems, pursuant to agreements with Board of Health and residential property owners, including without limitation all costs thereof as defined in Section 1 of Chapter 29C of the General Laws; to determine whether this appropriation shall be raised by borrowing from the Massachusetts Water Pollution Abatement Trust or otherwise, or to take any other action relative thereto.

**Vote**

Voted: that \$\_\_\_\_\_ is appropriated for the purpose of financing the following water pollution abatement facility projects: repair, replacement and/or upgrade of septic systems, pursuant to agreements with the Board of Health and residential property owners, including without limitation all costs thereof as defined in Section 1 of Chapter 29C of the General Laws; that to meet this appropriation the Treasurer with the approval of the Board of Selectmen or City Council is authorized to borrow \$\_\_\_\_\_ and issue bonds or notes therefore under M.G.L. c.111, s.127B ½ and/or Chapter 29C of the General Laws; that project and financing costs shall be repaid by the property owners, in accordance with those agreements, but such bonds or notes shall be general obligations of the Town/City; that the Treasurer with the approval of the Board of Selectmen or City Council is authorized to borrow all or a portion of such amount from the Massachusetts Water Pollution Abatement Trust established pursuant to Chapter 29C and in connection therewith to enter into a loan agreement and/or security agreement with the Trust and otherwise contract with the Trust and the Department of Environmental Protection with respect to such loan and for any federal or state aid available for the projects or for the financing thereof; and that the Board of Selectmen, Board of Public Works, City Council, or other appropriate local body or official is authorized to enter into a project regulatory agreement with the Department of Environmental Protection, to expend all funds available for the projects and to take any other action necessary to carry out the projects.

DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 DIVISION OF MUNICIPAL SERVICES  
 COMMUNITY SEPTIC MANAGEMENT PROGRAM  
**PAYMENT REQUISITION**

SECTION I: LOAN INFORMATION LOAN No. _____	REQUEST NO. _____
LEGAL NAME AND ADDRESS OF BORROWER: _____	PAYABLE TO: _____
	PAYMENT METHOD: Wire Transfer
	Acct. #: _____

SECTION II: ADVANCE REQUEST  
 We request an advance of \$ \_\_\_\_\_ to be used to finance the upgrade of failed septic systems, through betterments, in accordance with the Program. This advance is requested in anticipation of the financial requirements of projects under this program for the next three months. We understand that we must make monthly accounting reports of these advance funds using Section III below.

SECTION III: ADVANCE ACCOUNTING	APPROVED PROJECT COSTS	PREVIOUS REQUEST \$	THIS REQUEST \$
PROJECT NUMBER			
<i>Advance</i>			
<i>Totals</i>			

ADVANCE RECONCILIATION

Amount Advanced: \$ \_\_\_\_\_  
 Advance Expended: \$ \_\_\_\_\_  
 Advance Balance: \$ \_\_\_\_\_

SECTION IV: CERTIFICATION OF THE BORROWER:

(i) Such payment is for Project Costs and the obligations specified herein have not been the basis for a prior requisition that has been paid.

(ii) No Default as defined in the Regulatory Agreement, and No Event of Default as defined in the Loan Agreement, has occurred and is continuing and no event or condition exists which, after notice or lapse of time or both, would become a Default hereunder or Event of Default under the Loan Agreement.

(iii) The payment requested by this requisition will be for Project Costs to be or already authorized under a betterment agreement between the Borrower and a system owner, and that no advance funds shall be disbursed to the system owner until such betterment agreement has been executed between the Borrower and the system owner.

Treasurer: _____	Date: _____	DMS Director Signature _____	Date _____
Authorized Health Official _____	Date: _____		



Massachusetts Department of Environmental Protection  
 Bureau of Resource Protection – Division of Municipal Services  
 Form DA91  
 Analysis of Homeowner Septic Repair Special Revenue Account

\_\_\_\_\_  
 City/Town of

\_\_\_\_\_  
 Quarter ended (date)

Note: File by 15<sup>th</sup> of month following end of quarter with:

Mass. Water Pollution Abatement Trust  
 ATTN: Treasurer  
 One Ashburton Place, Room 1207  
 Boston, MA 02108

MA DEP  
 ATTN: Regional Coordinator  
 [Western, Central, Southeast, or  
 Northeast]

Important:  
 When filling  
 out forms on  
 the computer,  
 use only the tab  
 key to move  
 your cursor -  
 do not use the



A. Balance from previous report: \$ \_\_\_\_\_  
 Amount

B. Advances from WPAT \_\_\_\_\_ \$ \_\_\_\_\_  
 Date Amount

C. Disbursements to or for homeowners (carry total  
 amount forward from schedule on next page) \$ \_\_\_\_\_  
 Amount

D. Other allowable costs (describe on attachment): \$ \_\_\_\_\_  
 Amount

E. Ending balance (A+B-C-D): \$ \_\_\_\_\_  
 Amount

E. Plan for disbursements during next quarter:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Completed By: \_\_\_\_\_

\_\_\_\_\_  
 Treasurer

\_\_\_\_\_  
 Auditor or Accountant



City/Town of \_\_\_\_\_

Date: \_\_\_\_\_, 20\_\_\_\_

Analysis of Homeowner Septic Repair Special Revenue Account

FINAL REPORT

Mass. Water Pollution Abatement Trust ATTN: Treasurer Room 1207, One Ashburton Place Boston, MA 02108	Mass. Div. of Local Services ATTN: Director of Accounts Box 9569 Boston, MA 02205-5490	Mass. Dept. of Environmental Protection ATTN: Regional Coordinator [Western, Central, Southeast, or Northeast]
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- A. Total advances from WPAT (excluding pre-loan assistance payments) \$
- B. Total disbursements to homeowners (complete the attached table) \$
- C. Pre-loan financial assistance received (maximum \$20,000) \$
- D. Pre-loan assistance spent (management plan, loan administration etc.): \$
- E. Ending Balance: LOANS (A - B) \$
- F. Ending Balance: PRE-LOAN ASSISTANCE (C-D) \$

G. Number of septic systems repaired/upgraded/replaced (provide copies of Certificates of Compliance) \_\_\_\_\_

Number of homes connected to sewers \_\_\_\_\_

*This is to certify that the above referenced project has been completed in accordance with the scope of work identified in the Statement of Program Objectives. As required by the project Regulatory Agreement all copies of the homeowner's Certificate of Compliance funded with Community Septic Management Funds have been forwarded to DEP along with the attached final report. All homeowner Betterments have been recorded by the Registry of Deeds and the appropriate tax collecting office has been notified of the pending assessments.*

Completed by: \_\_\_\_\_

\_\_\_\_\_  
Treasurer Auditor or Accountant  
City/Town of \_\_\_\_\_





City/Town of \_\_\_\_\_

Fiscal year ended June 30,

Analysis of Loans from WPAT for Homeowner Septic Repair<sup>1</sup>

Massachusetts Division of Local Services

Attn: Director of Accounts

Box 9569

Boston, MA 02114

Note: File with Analysis of Special Revenue Account for quarter ended June 30.

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A.	<i>Balance from previous report</i>		\$
B.	Notes or Bonds issued to Trust		\$
	Date	Amount	
C.	Collections from regular tax billing <sup>2</sup>		\$
	Date	Amount	
	August 1		
	November 1		
	February 1		
	May 1		
D.	Lump sum collections		\$
	Date	Name	Amount
E.	Principal payments to Trust		\$
	Date	Amount	
	August 1		
	February 1		
F.	Balance on June 30, 20_____		\$

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Completed by:

\_\_\_\_\_ Treasurer

\_\_\_\_\_ Accountant or Auditor

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<sup>1</sup> Form DA 92

<sup>2</sup> Principal (and interest if Town Meeting or City Council vote so provides)

Loan No: T5-97-1019-B

Date of Authorization : February 4, 2002

Borrower: Town of Wareham

# Sample

MASSACHUSETTS WATER POLLUTION ABATEMENT TRUST

## COMMUNITY SEPTIC MANAGEMENT PROGRAM

### LOAN AGREEMENT

LOAN AGREEMENT, dated as of the date indicated above (the "Agreement"), by and between the Massachusetts Water Pollution Abatement Trust (together with its successors and assigns, the "Trust"), an instrumentality of The Commonwealth of Massachusetts (the "Commonwealth"), and the political subdivision or public instrumentality of the Commonwealth indicated above (together with its successors and assigns, the "Borrower"):

#### WITNESSETH:

WHEREAS, the Trust is organized and exists under Chapter 29C of the General Laws of the Commonwealth (the "Enabling Act") to assist Local Governmental Units in the Commonwealth to initiate, acquire, construct, improve, maintain and operate Water Pollution Abatement Projects; and

WHEREAS, pursuant to the Enabling Act, the Trust is authorized to make loans to Local Governmental Units in the Commonwealth to finance or refinance costs of Water Pollution Abatement Projects and Local Governmental Units are authorized to contract with the Trust with respect to such loans and to issue Local Governmental Obligations to evidence their obligations to repay such loans; and

WHEREAS, in order to implement the financing programs authorized by the Enabling Act the Trust adopted on March 4, 1993, a resolution currently entitled "Amended and Restated Resolution Authorizing and Establishing a Water Pollution Abatement and Drinking Water Project Financing Program" (as heretofore or hereafter amended and supplemented in accordance with its terms, the "Program Resolution"); and

WHEREAS, the Borrower has developed a community septic management program, constituting a Water Pollution Abatement Project within the meaning of the Enabling Act, to assist eligible homeowners to upgrade failing septic systems and otherwise to comply with the requirements of 310 CMR 15.000 et seq. ("Title 5") through underlying betterment agreements with such homeowners (collectively, the "Project"); and

WHEREAS, the Department of Environmental Protection of the Commonwealth (the "Department") and the Borrower have executed and delivered a Project Approval Certificate and Regulatory Agreement pertaining to the Project (as more fully identified in Schedule A hereto, the "Project Regulatory Agreement"); and

WHEREAS, the Trust has heretofore approved a loan (the "Loan") from the Trust to the Borrower to finance or refinance costs of the Project in an aggregate amount not to exceed the Initial Loan Obligation set forth in Schedule C attached hereto (the "Initial Loan Obligation") and, to evidence the indebtedness to be incurred thereby, the Trust and the Borrower have duly authorized the execution and delivery of this Agreement and, pursuant to the Applicable Bond Act (as herein defined), the Borrower has duly authorized the issuance and delivery to the Trust of its obligations (as more fully described herein, the "Local Governmental Obligations") in an aggregate principal amount equal to the Initial Loan Obligation; and

WHEREAS, the Loan will be funded by the Trust from the proceeds of bonds issued by the Trust in accordance with the Enabling Act and under and pursuant to the Program Resolution and a Water Pollution Abatement and Drinking Water Project Bond Resolution (Pool Program) to be adopted by the Trust prior to the Closing Date (as herein defined) (the "Bond Resolution"); and

WHEREAS, in anticipation of the closing of the Loan as herein provided, the Trust will finance or refinance costs of the Project incurred by the Borrower prior to the completion of the Project from the proceeds of a temporary loan (the "Interim Loan") to the Borrower to be funded by the Trust from amounts held in the Clean Water Program Account in the Interim Loan Fund under the Program Resolution that are legally available for such purpose;

NOW, THEREFORE, in consideration of the premises and the mutual covenants hereinafter contained, the parties hereto agree as follows:

**Section 1.** Definitions. All capitalized, undefined terms used in this Agreement shall have the same meanings given such terms in the Recitals hereto or in Section 1 of the Enabling Act. In addition, the following words and phrases shall have the following meanings:

"Applicable Bond Act" means the general or special laws of the Commonwealth identified in Schedule A attached hereto;

"Authorized Officer" means the officer or officers of the Borrower, the Trust or the Department, as the case may be, identified in Schedule A attached hereto;

"Bonds" means the Pool Program Bonds issued by the Trust to fund the Loan, as more fully described in the Bond Resolution;

"Bond Trustee" means State Street Bank and Trust Company and its successors and assigns as Bond Trustee under the Bond Resolution;

"Business Day" means any day other than a Saturday, a Sunday or any other day on which banks doing business in the Commonwealth are authorized or required to be closed for business;

"Closing Date" means (i) the date set forth in Schedule A hereto, (ii) such earlier date as may be mutually agreed upon by the Trust and the Borrower, or (iii) such later date as may be designated by the Trust by written notice delivered to the Borrower not less than thirty (30) days prior to such later date, which later date shall be not later than three (3) years after the date of the Interim Loan Note;

"Code" means the Internal Revenue Code of 1986, as amended, and all Treasury Regulations promulgated thereunder to the extent applicable to the Loan, the Bonds or the Local Governmental Obligations;

"Commonwealth Assistance Contract" means the Amended and Restated Agreement for Contract Assistance dated as of September 1, 1999, between the Commonwealth and the Trust, as amended to the date hereof and as hereafter amended in accordance therewith, and the Contract Assistance Determination, if any, applicable to the Loan issued thereunder;

"Contract Assistance Payments" means amounts, if any, provided to the Trust by the Commonwealth in accordance with Section 6 of the Enabling Act and the Commonwealth Assistance Contract; except as otherwise provided herein, for purposes of this Agreement Contract Assistance Payments shall mean the amounts, if any, applicable to each Loan Repayment Date, and to each Scheduled Loan Repayment due on such date, set forth in the column labeled "Loan Subsidy Amounts - Contract Assistance Payments" in Schedule C attached hereto, as such schedule may be amended from time to time in accordance herewith;

"Debt Service Fund" means the Debt Service Fund established under the Bond Resolution;

"DEP Regulations" means the regulations of the Department applicable to the Program appearing in 310 CMR 44.00 as such regulations may be amended from time to time, including, without limitation, the Department's Community Septic Management Program Description and Requirements as amended and supplemented from time to time;

“Equity” means amounts held in or for the credit of the Clean Water Equity Fund under the Program Resolution as more fully described in the Program Resolution and the Equity Allocation Certificate;

“Equity Allocation Certificate” means the certificate of the Trust with respect to the Loan delivered to the Program Trustee pursuant to Section 205 of the Program Resolution;

“Equity Earnings” means earnings derived from the investment or deposit of Equity allocable to the Loan to the extent provided in the Equity Allocation Certificate; except as otherwise provided herein, for purposes of this Agreement Equity Earnings shall mean the amounts applicable to each Loan Repayment Date, and to each Scheduled Loan Repayment due on such date, set forth in the column labeled “Loan Subsidy Amounts - Equity Earnings” in Schedule C attached hereto, as such schedule may be amended from time to time in accordance herewith;

“Event of Default” means any of the events or circumstances specified in Section 9(a) of this Agreement;

“Federal Act” means Title VI of the Federal Water Pollution Control Act (Pub. L. 92-500, commonly known as the Clean Water Act), as amended by the Federal Clean Water Act of 1987 (Pub. L. 100-4), as the same may be further amended from time to time, and all regulations of the United States Environmental Protection Agency applicable thereto as amended from time to time;

“Fiscal Year” means the period beginning on July 1 in any year and ending on June 30 in the next succeeding year;

“Grant Equivalency Percentage” shall mean the amount set forth in Schedule A attached hereto;

“Interim Loan” shall have the meaning given such term in Section 3 hereof;

“Interim Loan Note” shall have the meaning given such term in Section 3 hereof;

“Interim Loan Disbursement Date” means each day on which proceeds of the Interim Loan may be disbursed to the Borrower from the Interim Loan Project Account in accordance with Section 4 hereof and the Project Regulatory Agreement;

“Interim Loan Project Account” means the account allocable to the Interim Loan established in the Interim Loan Fund under and pursuant to the Program Resolution in accordance with Section 3 hereof;

“Investment Obligations” shall have the meaning given such term in the Bond Resolution;

“Loan Prepayments” means all payments made by or for the account of the Borrower which reduce or eliminate the principal balance due on the Loan and the Local Governmental Obligations by reason of the prepayment of all or any part of the principal prior to the due date thereof;

“Loan Principal Obligation” means, at any time of calculation, the aggregate unpaid principal amount of the Loan, which amount shall equal the Initial Loan Obligation less all Scheduled Loan Repayments and all Loan Prepayments on account of the principal amount of the Loan then or theretofore made or provided for by or for the account of the Borrower and received by or for the account of the Trust;

“Loan Repayments” means, as the context requires, the Scheduled Loan Repayments or the Net Loan Repayments payable by the Borrower hereunder;

“Loan Repayment Dates” means February 1 and August 1 of each year (commencing on the first such date indicated on Schedule C attached hereto) or, if any such day is not a Business Day, the next succeeding Business Day;

“Loan Subsidy Amounts”, except as otherwise provided in this Agreement, means the amounts, if any, applicable to each Loan Repayment Date, and to each Scheduled Loan Repayment due on such date, set forth in

the column labeled “Loan Subsidy Amounts” in Schedule C attached hereto, as such schedule may be amended from time to time in accordance herewith;

“Local Bond Counsel” means an attorney or firm of attorneys (who may be counsel to any party hereunder) of nationally recognized standing in connection with the issuance of obligations similar to the Local Governmental Obligations, selected by the Borrower and satisfactory to the Trust;

“Net Loan Repayments” means the payments to be made by the Borrower in repayment of the Loan and the Local Governmental Obligations, and the interest, if any, payable thereon, which payments shall be made on the Loan Repayment Dates set forth in Schedule C attached hereto and in the amounts on each Loan Repayment Date (determined as provided in Section 4 hereof) set forth in the column labeled “Net Loan Repayments” in said Schedule C payable on such date (as such schedule may be amended from time to time in accordance herewith);

“Program” means the financial assistance program of the Trust established pursuant to the Enabling Act as more fully described in the Program Resolution;

“Program Trustee” means State Street Bank and Trust Company and its successors and assigns as Program Trustee under the Program Resolution;

“Project Cost” or “Costs” means any cost of the Project approved by the Department for payment or reimbursement from proceeds of the Interim Loan, as more fully described in the Project Regulatory Agreement;

“Scheduled Loan Repayments” means the fixed payments payable in repayment of the Loan and the Local Governmental Obligations, and the interest payable thereon, which payments shall be due on the Loan Repayment Dates and in the amounts set forth in the column labeled “Scheduled Loan Repayments” in Schedule C attached hereto (as such schedule may be amended from time to time in accordance herewith).

**Section 2.**                    Representations. (a) The Borrower represents and warrants to the Trust as follows:

- (i) The Borrower is a Local Governmental Unit as defined in the Enabling Act with full legal right and authority under the Enabling Act and the Applicable Bond Act to authorize, execute and deliver this Agreement and the Project Regulatory Agreement, to execute, issue and deliver the Interim Loan Note and the Local Governmental Obligations, to undertake the Project, and to carry out and consummate all transactions contemplated by the foregoing;
- (ii) The Borrower has duly and validly authorized the execution and delivery or adoption of this Agreement, the Project Regulatory Agreement, the Interim Loan Note and the Local Governmental Obligations and all approvals, consents and other governmental proceedings necessary for the execution and delivery of any of the foregoing or required to make them the legally binding obligations of the Borrower that they purport to be in accordance with their terms have been obtained or made;
- (iii) No action, suit, proceeding, inquiry or investigation, at law or in equity, before or by any court, public board or body, is pending or, to the knowledge of the Authorized Officers of the Borrower executing this Agreement, threatened seeking to restrain or enjoin the execution and delivery or adoption of this Agreement, the Project Regulatory Agreement, the Interim Loan Note or the Local Governmental Obligations or the carrying out of the Project; or contesting or affecting the validity of this Agreement, the Project Regulatory Agreement, the Interim Loan Note or the Local Governmental Obligations or the power of the Borrower to assess and collect taxes, rates and charges to pay all Loan Repayments hereunder; and neither the corporate existence of the Borrower nor the title to office of any Authorized Officer of the Borrower executing this Agreement, the Project Regulatory Agreement, the Interim Loan Note or the Local Governmental Obligations is being contested;
- (iv) The authorization, execution and delivery or adoption of this Agreement, the Project Regulatory Agreement, the Interim Loan Note and the Local Governmental Obligations, and performance of each thereof, will not

constitute a breach of, or a default under, any law, ordinance, resolution, agreement, indenture or other instrument to which the Borrower is a party or by which it or any of its properties is bound;

- (v) This Agreement and the Loan are, and when executed and delivered the Interim Loan Note and the Local Governmental Obligations will be, valid general obligations of the Borrower, for the payment of which its full faith and credit are and will be pledged, enforceable in accordance with their terms and the terms of the Enabling Act and the Applicable Bond Act, and payable as to principal, premium, if any, and interest (to the extent not paid from other sources) from taxes which may be levied upon all taxable property within the territorial boundaries of the Borrower, subject only to the limit imposed by Chapter 59, Section 21C of the General Laws of the Commonwealth to the extent applicable to the Interim Loan Note and the Local Governmental Obligations.
- (b) The Trust represents and warrants to the Borrower as follows:
- (i) The Trust has the full legal right and authority under the Enabling Act to adopt and perform the Program Resolution and the Bond Resolution, to authorize, issue, execute, deliver and perform the Bonds and to authorize, execute, deliver and perform this Agreement;
- (ii) The Trust has duly and validly adopted the Program Resolution and has duly and validly authorized the execution of this Agreement; at or prior to the Closing Date the Trust will duly and validly adopt the Bond Resolution and duly and validly authorize the execution and delivery of the Bonds; and all approvals, consents and other governmental proceedings necessary for the adoption of the Program Resolution and the Bond Resolution and the execution and delivery and performance of the Bonds and this Agreement or required to make them the legally binding obligations of the Trust that they purport to be in accordance with their terms have been or at or prior to the Closing Date will be obtained or made;
- (iii) No action, suit, proceeding, inquiry or investigation, at law or in equity, before or by any court, public board or body is pending or, to the knowledge of the Authorized Officers of the Trust executing this Agreement, threatened seeking to restrain or enjoin the adoption or performance of the Program Resolution or the Bond Resolution or the execution and delivery and performance of the Bonds or this Agreement or contesting or affecting the validity thereof or hereof; and neither the existence of the Trust nor the title to office of any Trustee of the Trust or any Authorized Officer of the Trust executing this Agreement is being contested;
- (iv) The adoption of the Program Resolution and the Bond Resolution and the authorization, execution and delivery of the Bonds and this Agreement, and performance of each thereof, will not constitute a breach of, or a default under, any law, resolution, agreement, indenture or other instrument to which the Trust is a party or by which it is bound; and
- (v) The Program Resolution is, and when adopted or executed and delivered the Bond Resolution, this Agreement and the Bonds will be, valid obligations of the Trust, enforceable in accordance with their terms and the terms of the Enabling Act.

**Section 3.** The Interim Loan. (a) Subject to the availability to the Trust of moneys for such purpose, the Trust (upon not less than ten (10) Business Days prior notice from the Borrower) agrees to provide the Interim Loan to the Borrower to pay or provide for the eligible Costs of the Project prior to its completion and the Closing of the Loan and (i) incurred by the Borrower on and after the date of execution and delivery by the Borrower of this Agreement or (ii) incurred by the Borrower prior to the date of its execution and delivery of this Agreement and either (x) paid by the Borrower from the proceeds of notes or other obligations issued by the Borrower in anticipation of the Loan, or (y) paid by the Borrower from other moneys available to the Borrower under a valid declaration of official intent to reimburse such payment from the proceeds of the Loan. The Interim Loan shall be evidenced by a note (the "Interim Loan Note") issued by the Borrower to the Trust pursuant to the Applicable Bond Act in form and substance satisfactory to the Trust and otherwise as hereinafter provided. The Interim Loan and the Interim Loan Note, when executed and delivered, shall be a general obligation of the Borrower payable as to principal and interest (to the extent

not paid from other sources) from taxes which may be levied upon all taxable property within the territorial boundaries of the Borrower, subject only to the limit imposed by Chapter 59, Section 21C of the General Laws of the Commonwealth to the extent applicable to the Interim Loan.

- (b) The Interim Loan Note shall be dated the date of its execution and delivery by the Borrower, shall mature and be payable on the Closing Date for the Loan, without interest thereon, and shall be in principal amount equal to the aggregate amount of proceeds thereof from time to time disbursed to or for the account of the Borrower (as evidenced by a disbursement schedule appearing on the Interim Loan Note), not exceeding the Initial Loan Obligation set forth in Schedule C hereto (or such lesser amount as shall equal the total eligible Costs of the Project approved by the Department at the date of the Closing of the Loan).
- (c) Upon execution and delivery by the Borrower of the Interim Loan Note, the Trust shall direct the Program Trustee to establish under the Program Resolution a separate account for the Project designated “Interim Loan Project Account - (Name of Borrower) Project No. \_\_\_\_\_” (an “Interim Loan Project Account”), to be held and maintained in accordance herewith, with the Federal Act and with the Program Resolution. Subject to the availability to the Trust of moneys for such purpose, the Trust shall deposit or cause the Program Trustee to deposit from time to time in the Interim Loan Project Account amounts (representing proceeds of the Interim Loan) sufficient in amount and time of deposit to satisfy each requisition for payment or reimbursement of Costs of the Project submitted to the Trust by the Borrower as provided in Section 4 hereof.
- (d) Notwithstanding anything herein to the contrary, the obligation of the Trust to make and fund the Interim Loan is expressly conditional upon the receipt by the Trust of the following, each in form and substance satisfactory to the Trust:
- (i) Copies, certified by an Authorized Officer, of all governmental proceedings of the Borrower authorizing the Loan and the Interim Loan and the execution and delivery of this Agreement, the Project Regulatory Agreement, the Interim Loan Note and the Local Governmental Obligations;
- (ii) A certificate or certificates of Authorized Officers of the Borrower confirming the representations and warranties of the Borrower in Section 2 hereof;
- (iii) A certificate or certificates of Authorized Officers of the Borrower as to the due authorization, execution and delivery of this Agreement, the Project Regulatory Agreement and the Interim Loan Note and to the further effect that (x) none of the foregoing instruments have been amended or supplemented since their date (except such amendments or supplements which have been approved by the Trust or the Department, as applicable, or which under the terms of the applicable instrument may be executed and delivered or adopted by the Borrower without the consent of the Trust or the Department) or repealed and that each such instrument remains in full force and effect as of such date, and (y) as of such date, no Event of Default or Default, as applicable, and no event which with the passage of time or the giving of notice may become or may be declared to be an Event of Default or a Default, shall have happened and shall be continuing under this Agreement or the Project Regulatory Agreement;
- (iv) The Interim Loan Note duly executed by Authorized Officers of the Borrower;
- (v) An opinion of Local Bond Counsel to the effect that this Loan Agreement, the Project Regulatory Agreement and the Interim Loan Note, and the execution and delivery thereof, have been duly authorized by the Borrower in accordance with the Applicable Bond Act; this Loan Agreement and the Project Regulatory Agreement have been duly and validly executed and delivered by the Borrower and each constitutes a valid and binding obligation of the Borrower enforceable in accordance with its terms and the terms of the Enabling Act and the Applicable Bond Act; the Interim Loan Note has been duly and validly executed by or on behalf of the Borrower and delivered to or upon the order of the Trust in accordance with this Agreement and the Applicable Bond Act; and the Interim Loan Note constitutes a valid and binding general obligation of the Borrower enforceable in accordance with its terms and payable as to principal, premium, if any, and

not paid from other sources) from taxes which may be levied upon all taxable property within the territorial boundaries of the Borrower, subject only to the limit imposed by Chapter 59, Section 21C of the General Laws of the Commonwealth to the extent applicable to the Interim Loan.

- (b) The Interim Loan Note shall be dated the date of its execution and delivery by the Borrower, shall mature and be payable on the Closing Date for the Loan, without interest thereon, and shall be in principal amount equal to the aggregate amount of proceeds thereof from time to time disbursed to or for the account of the Borrower (as evidenced by a disbursement schedule appearing on the Interim Loan Note), not exceeding the Initial Loan Obligation set forth in Schedule C hereto (or such lesser amount as shall equal the total eligible Costs of the Project approved by the Department at the date of the Closing of the Loan).
- (c) Upon execution and delivery by the Borrower of the Interim Loan Note, the Trust shall direct the Program Trustee to establish under the Program Resolution a separate account for the Project designated "Interim Loan Project Account - (Name of Borrower) Project No. \_\_\_\_\_" (an "Interim Loan Project Account"), to be held and maintained in accordance herewith, with the Federal Act and with the Program Resolution. Subject to the availability to the Trust of moneys for such purpose, the Trust shall deposit or cause the Program Trustee to deposit from time to time in the Interim Loan Project Account amounts (representing proceeds of the Interim Loan) sufficient in amount and time of deposit to satisfy each requisition for payment or reimbursement of Costs of the Project submitted to the Trust by the Borrower as provided in Section 4 hereof.
- (d) Notwithstanding anything herein to the contrary, the obligation of the Trust to make and fund the Interim Loan is expressly conditional upon the receipt by the Trust of the following, each in form and substance satisfactory to the Trust:
- (i) Copies, certified by an Authorized Officer, of all governmental proceedings of the Borrower authorizing the Loan and the Interim Loan and the execution and delivery of this Agreement, the Project Regulatory Agreement, the Interim Loan Note and the Local Governmental Obligations;
- (ii) A certificate or certificates of Authorized Officers of the Borrower confirming the representations and warranties of the Borrower in Section 2 hereof;
- (iii) A certificate or certificates of Authorized Officers of the Borrower as to the due authorization, execution and delivery of this Agreement, the Project Regulatory Agreement and the Interim Loan Note and to the further effect that (x) none of the foregoing instruments have been amended or supplemented since their date (except such amendments or supplements which have been approved by the Trust or the Department, as applicable, or which under the terms of the applicable instrument may be executed and delivered or adopted by the Borrower without the consent of the Trust or the Department) or repealed and that each such instrument remains in full force and effect as of such date, and (y) as of such date, no Event of Default or Default, as applicable, and no event which with the passage of time or the giving of notice may become or may be declared to be an Event of Default or a Default, shall have happened and shall be continuing under this Agreement or the Project Regulatory Agreement;
- (iv) The Interim Loan Note duly executed by Authorized Officers of the Borrower;
- (v) An opinion of Local Bond Counsel to the effect that this Loan Agreement, the Project Regulatory Agreement and the Interim Loan Note, and the execution and delivery thereof, have been duly authorized by the Borrower in accordance with the Applicable Bond Act; this Loan Agreement and the Project Regulatory Agreement have been duly and validly executed and delivered by the Borrower and each constitutes a valid and binding obligation of the Borrower enforceable in accordance with its terms and the terms of the Enabling Act and the Applicable Bond Act; the Interim Loan Note has been duly and validly executed by or on behalf of the Borrower and delivered to or upon the order of the Trust in accordance with this Agreement and the Applicable Bond Act; and the Interim Loan Note constitutes a valid and binding general obligation of the Borrower enforceable in accordance with its terms and payable as to principal, premium, if any, and



- Section 5.**                    The Loan. (a) On the terms and conditions provided herein and in the Project Regulatory Agreement, the Trust hereby agrees to make the Loan to the Borrower, and the Borrower agrees to accept the Loan, in an aggregate principal amount equal to the outstanding principal amount of the Interim Loan on the Closing Date, after credit for any proceeds of the Interim Loan returned to the Trust on or before such date pursuant to Section 4(d) hereof. On the Closing Date the Trust shall apply the proceeds of the Loan to the payment of the principal of the Interim Loan in full.
- (b)                    On or prior to the Closing Date the Trust shall file the Equity Allocation Certificate with the Program Trustee allocating Equity to the Loan in an amount sufficient to provide Equity Earnings hereunder in the amounts and on the dates set forth in Schedule C attached hereto, as such schedule may be amended from time to time in accordance herewith.
- (c)                    As evidence of the Loan made to the Borrower, the Borrower agrees to issue and deliver to the Trust on the Closing Date the Local Governmental Obligations in aggregate principal amount equal to the principal amount of the Loan. Subject to Section 11 hereof, the Local Governmental Obligations shall be issued in such form as shall be approved by the Trust and shall be payable on the Loan Repayment Dates and in the aggregate amounts as to principal and interest corresponding to the Scheduled Loan Repayments required hereunder with respect to the Loan. Except as otherwise provided in Section 6 hereof, the Loan Principal Obligation, and the corresponding principal amount of the Local Governmental Obligations, shall mature and bear interest in the amounts for each Scheduled Loan Repayment specified in Schedule C attached hereto.
- (d)                    Each Scheduled Loan Repayment made by or for the account of the Borrower hereunder, whether by direct payment to the Trust by the Borrower, or by application of Loan Subsidy Amounts as provided herein, shall satisfy the corresponding obligation of the Borrower to pay the principal and interest, if any, then due on the Local Governmental Obligations as the same become due on the applicable payment dates therefore, and each payment of principal and interest made by the Borrower on the Local Governmental Obligations shall satisfy the obligation of the Borrower to pay the corresponding Loan Repayment then due hereunder.
- (e)                    Except as otherwise provided in the Local Governmental Obligations, the obligation of the Borrower to pay on each Loan Repayment Date the Scheduled Loan Repayments then due in accordance with this Agreement and the principal and interest, if any, then due on the Local Governmental Obligations is a general obligation of the Borrower payable as to principal, premium, if any, and interest (to the extent not paid from other sources) from taxes which may be levied upon all taxable property within the territorial boundaries of the Borrower, subject only to the limit imposed by Chapter 59, Section 21C of the General Laws of the Commonwealth to the extent applicable to the Local Governmental Obligations.

**Section 6.**                    Loan Repayments. (a) Except as otherwise provided in this Section 6, the Loan Principal Obligation shall be repaid by the Borrower, and Scheduled Loan Repayments on account of such Loan Principal Obligation and interest, if any, thereon shall be payable by the Borrower, on the Loan Repayment Dates and in the amounts set forth in Schedule C attached hereto. All Loan Repayments payable on the Loan, and all Loan Subsidy Amounts, if any, applied on account of such Loan Repayments as hereinafter provided, shall be received and applied solely as permitted by the Federal Act and as provided herein, in the Bond Resolution and the Program Resolution. All Loan Repayments made by the Borrower hereunder, and all Loan Subsidy Amounts, if any, applied on account of such Loan Repayments, shall be applied, first, to the interest, if any, then due and payable on the Loan and, second, to the principal amount of the Loan then due and payable hereunder. Any portion of a Loan Repayment not paid in full when due shall bear interest hereunder until paid at twelve percent (12%) per annum.

- (b)                    Notwithstanding the provisions of Paragraph (a) of this Section 6, but subject to the provisions of Paragraphs (c), (e) and (i) of this section, on each Loan Repayment Date the Trust shall apply, and the Borrower shall receive, as a credit against the Scheduled Loan Repayment then payable on the Loan, the Loan Subsidy Amounts allocable to such Loan Repayment Date set forth in Schedule C attached hereto, as such schedule may be amended from time to time as provided in this Section 6. The Trust shall provide the

Borrower with written notice of each Loan Repayment due hereunder not less than ten (10) Business Days in advance of the applicable Loan Repayment Date (provided failure by the Trust to provide such notice or any defect therein shall not diminish the obligation of the Borrower to pay such Loan Repayment in the amount and at the time provided herein). Not less than five (5) Business Days prior to each Loan Repayment Date, the Borrower shall pay to the Bond Trustee for the account of the Trust, by wire transfer to such account or otherwise in such manner as the Trust may from time to time designate to the Borrower, the Net Loan Repayment then due on the Loan set forth in Schedule C attached hereto, as such schedule may be amended from time to time as provided in this Section 6. Subject to Paragraphs (c), (e) and (i) of this Section 6, payment on or before a Loan Repayment Date of the Net Loan Repayment payable on such date as aforesaid shall constitute full satisfaction of the obligation of the Borrower to pay on such Loan Repayment Date the Scheduled Loan Repayment otherwise payable on such date in accordance with Paragraph (a) of this Section 6. The Trust and the Borrower acknowledge and agree, subject to Paragraph (j) of this Section 6, that the schedule of Net Loan Repayments set forth in Schedule C hereto results in the Loan, after consideration of the Loan Subsidy Amounts to be applied to the obligations of the Borrower thereon, being the financial equivalent of a grant to the Borrower in an amount not less than the percentage of the eligible Project Costs to be funded by the Loan equal to the Grant Equivalency Percentage set forth in Schedule A hereto.

(c) The Borrower acknowledges that the ability of the Trust to establish the schedule of Net Loan Repayments for the Loan set forth in Schedule C hereto is dependent, in part, upon the application of Equity Earnings to the payment of debt service on the Bonds as provided in the Bond Resolution and in the amounts and at the times set forth in the Equity Allocation Certificate. The Trust and the Borrower further acknowledge that the Borrower is, and assent to the Borrower's status as, a third-party beneficiary with respect to all Investment Obligations from which Equity Earnings allocable to the Loan are to be derived by the Trust pursuant to the Bond Resolution and the Program Resolution. The Borrower further acknowledges that if (x) the obligor on any Investment Obligation from which the Trust expects to derive Equity Earnings allocable to the Loan shall default in any payment due on such Investment Obligation or (y) an Event of Default specified in Section 9(a)(i) hereof shall occur and be continuing and amounts allocable to the Loan held under the Bond Resolution or the Program Resolution are applied by the Bond Trustee to pay all or a portion of the principal or redemption price of, and interest on, the Bonds that would otherwise have been paid through application as provided in the Bond Resolution of the Loan Repayments due and unpaid hereunder, such default or application may reduce the amount of Equity Earnings thereafter available under the Bond Resolution to be applied to pay debt service on the Bonds. If at any time the Trust shall determine that a deficiency will exist in the Debt Service Fund on a Loan Repayment Date due to a reduction in Equity Earnings upon the occurrence of either of the foregoing circumstances, the Trust shall promptly furnish the Borrower with written notice of such deficiency and the resulting increase in the Net Loan Repayments payable hereunder and shall amend Schedule C hereto to reflect such increase. The amount of any increase in any Net Loan Repayment shall be paid by the Borrower on the scheduled Loan Repayment Date therefore (as shown in Schedule C hereto) or, if later, within five (5) Business Days of receipt by the Borrower of notice of an increase in such Loan Repayment.

(d) If Contract Assistance Payments are expected to be received by the Trust with respect to the Loan (as indicated in Schedule C attached hereto), the Trust and the Borrower acknowledge that the Borrower has entered into this Agreement in part in reliance upon the undertakings of the Commonwealth provided in the Commonwealth Assistance Contract to provide such Contract Assistance Payments to the Trust to be applied as provided in the Bond Resolution to pay a portion of the debt service payable on the Bonds and thereby to reduce the Scheduled Loan Repayments otherwise payable by the Borrower on the Loan as provided herein. In such a case, the Trust and the Borrower further acknowledge that the Borrower is, and assent to the Borrower's status as, a third-party beneficiary with respect to such provisions of the Commonwealth Assistance Contract, and the Trust represents and warrants to the Borrower that the Commonwealth Assistance Contract provides (or on or before the Closing Date will provide) for the payment to the Trust by the Commonwealth of Contract Assistance Payments allocable to the Loan in the amounts and payable on or before the dates set forth in Schedule C attached hereto. The Trust further warrants and agrees that so long as the Loan is outstanding all Contract Assistance Payments, if any, payable on account of the Loan under the Commonwealth Assistance Contract shall be applied by the Trust solely to the provision of Loan Subsidy Amounts hereunder or otherwise as provided herein and in the Bond Resolution.

- (e) Notwithstanding the foregoing provisions of this Section 6, the Borrower expressly acknowledges that any obligation of the Trust to apply Contract Assistance Payments as provided herein is limited solely to the Contract Assistance Payments allocable to the Loan actually paid to the Trust by the Commonwealth. The Trust agrees to comply with the provisions of the Commonwealth Assistance Contract as they pertain to the Trust and to make timely demand to the Commonwealth for the payment of any Contract Assistance Payments allocable to the Loan thereunder at the times and in the manner provided therein and herein. The Trust further agrees to diligently enforce the provisions of the Commonwealth Assistance Contract and to pursue any and all remedies available to it thereunder and under the Enabling Act upon any failure of the Commonwealth to comply with the provisions of the Commonwealth Assistance Contract. Notwithstanding the foregoing, any failure by the Commonwealth to provide Contract Assistance Payments (if any) in the amounts and at the times contemplated by this Agreement and the Commonwealth Assistance Contract shall not diminish the obligation of the Borrower to repay the Loan and the interest, if any, thereon in the amounts and at the times provided herein and in the Local Governmental Obligations. If at any time the Trust shall determine that a deficiency will exist in the Debt Service Fund on a Loan Repayment Date due to a default by the Commonwealth under the Commonwealth Assistance Contract, the Trust shall promptly furnish the Borrower with written notice of such deficiency and the resulting increase in the Net Loan Repayment next payable hereunder and shall amend Schedule Chereto to reflect such increase. The amount of any increase in such Net Loan Repayment shall be paid by the Borrower on the scheduled Loan Repayment Date therefore (as shown on Schedule C hereto) or, if later, within five (5) Business Days of receipt by the Borrower of notice of such increase as aforesaid.
- (f) When and to the extent that any default described in Paragraph (c) of this Section 6 by the obligor on any Investment Obligation shall be cured, or when and to the extent that any default described in Paragraph (e) of this Section 6 by the Commonwealth shall be cured, and, in either case, when the Trust or the Borrower shall recover amounts from such obligor or the Commonwealth on account of such default which amounts are not otherwise required to be applied to the payment of debt service on the Bonds in accordance with the Bond Resolution, the amounts so received (net of any costs to the Trust in recovering the same including reasonable attorneys fees) shall be promptly paid by the Trust to the Borrower (or retained by the Borrower, as the case may be) to the extent of any increased Net Loan Repayments made by the Borrower on account of such defaults as provided in Paragraph (c) or (e) of this Section 6, as applicable.
- (g) The Borrower further acknowledges that the Department, in the exercise of its audit procedures under the Project Regulatory Agreement, may reclassify certain Project Costs paid from amounts deposited in the Interim Loan Project Account as ineligible for financial assistance under Section 6 of the Enabling Act. In such event, unless the Borrower shall elect to repay such amount to the Interim Loan Project Account as hereinafter provided, on and after the date of such determination by the Department, Loan Subsidy Amounts shall cease to be applied hereunder on that portion of the Loan Principal Obligation (determined on a Pro-Rata Basis as hereinafter defined) equal to the amount of such ineligible Project Costs. As used in this Paragraph (g), the term "Pro-Rata Basis" means the portion of each Scheduled Loan Repayment allocable to the principal amount of the Loan payable hereunder subsequent to the date of a determination by the Department as described in this Paragraph (g) as is equal, as nearly as practicable, to the ratio by which the amount of ineligible Project Costs paid from the applicable Project Account bears to the total Loan Principal Obligation then outstanding. Upon any such occurrence the Trust shall recalculate the Loan Subsidy Amounts, if any, thereafter available with respect to the Loan, and the Loan Repayments payable thereon, shall certify such amounts to the Borrower and shall amend Schedule C attached hereto to reflect the reduced Loan Subsidy Amounts, if any, and the increased Loan Repayments thereafter payable hereunder, and shall surrender the Local Governmental Obligations to the Borrower in exchange for amended or substitute Local Governmental Obligations reflecting such change in Loan Repayments. Notwithstanding the foregoing, within thirty (30) Business Days of receipt by the Borrower from the Department or the Trust of written notice that an amount of Project Costs paid from the Interim Loan Project Account has been determined by the Department pursuant to the Regulatory Agreement to be ineligible for Loan Subsidy Amounts hereunder the Borrower may (and shall upon demand of the Department with respect to any such amount determined by the Department to be ineligible for funding under the Federal Act) repay such amount to the Trust for redeposit in the Interim Loan Project Account and the amount so repaid shall be deemed to not have been disbursed from the Interim Loan Project Account for ineligible Project Costs for purposes of this Paragraph

(g). Unless then or thereafter applied to eligible Project Costs in accordance with Section 4 hereof, such amount shall be applied as provided in Section 4(d) hereof.

(h) Notwithstanding anything herein or in the Project Regulatory Agreement to the contrary, all amounts received by the Borrower on or after the Closing Date in repayment or prepayment of the obligations of homeowners under underlying betterment agreements made in connection with the Project shall be applied by the Borrower either (i) to assist eligible homeowners to upgrade failing septic systems and otherwise to comply with Title 5 through additional betterment agreements with homeowners, or (ii) to pay or provide for all or a portion of the Loan Repayments due on the Loan hereunder or (iii) to prepay all or a portion of the Loan Principal Obligation as provided in Section 7(b) hereof.

(i) Notwithstanding any provision of this Agreement to the contrary, the Borrower and the Trust acknowledge and agree that this Agreement has been executed and delivered by the parties hereto prior to the sale of the Bonds incorporating in Schedule C hereto a schedule of Loan Repayments calculated on the basis of estimated interest rates on the Bonds and estimated Loan Subsidy Amounts based thereon. On the Closing Date for the Loan the Trust will amend Schedule C hereto (and deliver to the Borrower a copy thereof) to incorporate a schedule of Loan Repayments calculated on the basis of the actual interest rates on the Bonds determined upon their sale and a final schedule of Loan Subsidy Amounts, provided that (i) the first Loan Repayment Date on which the Borrower will be required to make a Loan Repayment to the Trust hereunder will be no earlier than the August 1 next following the Closing Date, and (ii) the Grant Equivalency Percentage of the Loan calculated on the basis of such final schedule of Loan Repayments shall be no less than the Grant Equivalency Percentage set forth in Schedule A hereto.

**Section 7.** Loan Prepayments. (a) Except as provided in this Section 7, the Loan Principal Obligation shall not be subject to prepayment by the Borrower prior to maturity without the prior written consent of the Trust.

(b) The Loan Principal Obligation, and the corresponding principal amount of the Local Governmental Obligations, shall be subject to prepayment at the option of the Borrower in whole or in part upon not less than sixty (60) days' prior written notice to the Trust at any time on and after that date on which a corresponding principal amount of Bonds is subject to redemption at a prepayment price equal to the Loan Principal Obligation so prepaid, plus interest, if any, accrued to the date of prepayment, plus an amount equal to any costs of the Trust (including without limitation redemption premium, if any, and interest payable on the Bonds net of any Loan Subsidy Amounts available to the Trust to pay the same) incurred in connection with any corresponding redemption of a principal amount of Bonds allocable to the Loan.

(c) Loan Subsidy Amounts available hereunder shall not be subject to acceleration upon prepayment of the Loan and no Loan Subsidy Amounts not then or theretofore payable hereunder shall be available hereunder to be applied to any such prepayment.

**Section 8.** Closing. The obligation of the Trust to fund the Loan on the Closing Date is expressly conditional upon the receipt by the Trust on or before the Closing Date of the following, each in form and substance satisfactory to the Trust:

(i) A certificate or certificates of Authorized Officers of the Borrower confirming as of the Closing Date the representations and warranties of the Borrower in Section 2 hereof;

(ii) A certificate of Authorized Officers of the Borrower as to the due authorization, execution and delivery of the Local Governmental Obligations and to the effect that (x) this Agreement, the Project Regulatory Agreement and the Local Governmental Obligations have not been amended or supplemented since their date (except such amendments or supplements which have been approved by the Trust or the Department, as applicable, or which under the terms of the applicable instrument may be executed and delivered or adopted by the Borrower without the consent of the Trust or the Department) or repealed and that each such instrument remains in full force and effect as of the Closing Date, and (y) as of the Closing Date, no Event of

Default or Default, as applicable, and no event which with the passage of time or the giving of notice may become or may be declared to be an Event of Default or a Default, shall have happened and shall be continuing under this Agreement or the Project Regulatory Agreement;

- (iii) An opinion of Local Bond Counsel to the effect that the Local Governmental Obligations, and the execution and delivery thereof, have been duly authorized by the Borrower in accordance with the Applicable Bond Act; the Local Governmental Obligations have been duly and validly executed by or on behalf of the Borrower and delivered to or upon the order of the Trust in accordance with this Agreement and the Applicable Bond Act; and the Local Governmental Obligations constitute valid and binding general obligations of the Borrower enforceable in accordance with their terms and payable as to principal, premium, if any, and interest (to the extent not paid from other sources) from taxes which may be levied upon all taxable property within the territorial boundaries of the Borrower, subject only to the limit imposed by Chapter 59, Section 21C of the General Laws of the Commonwealth to the extent applicable to the Local Governmental Obligations (in rendering the foregoing opinion, such counsel may take an exception on account of bankruptcy, insolvency and other laws affecting creditors' rights generally and to the exercise of judicial discretion in accordance with general equitable principles);
- (iv) The Local Governmental Obligations, in such denominations and registered to such registered owners, as the Trust shall designate pursuant to Section 11 hereof; and
- (v) Such further instruments, certificates and opinions as the Trust or its counsel may reasonably request to confirm as of the Closing Date the truth and accuracy of the statements made herein by the Borrower and compliance as of the Closing Date by the Borrower with the provisions hereof and of the Project Regulatory Agreement, the Enabling Act, the Applicable Bond Act and the Federal Act.

**Section 9.**                    Particular Covenants of the Borrower. The Borrower covenants and agrees as follows:

- (a)                    The Borrower is duly authorized under the Enabling Act, the Applicable Bond Act and all other applicable law to authorize the execution and delivery of this Agreement, the Project Regulatory Agreement, the Interim Loan Note and the Local Governmental Obligations, to accept the Loan, to undertake the Project and to perform and consummate all transactions contemplated by the foregoing. For so long as the Loan shall be outstanding, the Borrower shall comply with the provisions hereof and the Project Regulatory Agreement and all provisions of law applicable to the Loan, the Project, the Interim Loan Note and the Local Governmental Obligations, including without limitation the Enabling Act, the Applicable Bond Act, the Federal Act and the DEP Regulations, and shall take all actions necessary to fulfill its obligations hereunder and under any of the foregoing.
- (b)                    The Borrower shall apply the proceeds of the Interim Loan solely to the payment or reimbursement of Project Costs, or to the refinancing of the same as provided in the Project Regulatory Agreement, or as otherwise provided herein and in the Project Regulatory Agreement.
- (c)                    So long as any Bonds shall be outstanding and unpaid, the Borrower agrees that it shall not take, or permit to be taken, any action or actions that would cause any Bond to be an "arbitrage bond" within the meaning of Section 148 of the Code or a "private activity bond" within the meaning of Section 141(a) of the Code or that would cause any Bond to be "federally guaranteed" within the meaning of Section 149(b) of the Code, or that would otherwise cause any amounts payable with respect to the Bonds to become included in gross income for federal income tax purposes; the Borrower further agrees that it shall take all actions, and shall maintain all records and accounts, required by any provision of applicable law, necessary to comply with, or necessary to permit the Trust to comply with, the provisions of Section 148(f) of the Code.
- (d)                    For so long as the Interim Loan or the Loan shall be outstanding, the Borrower shall maintain all records and accounts pertaining to the Interim Loan and the Loan and the Project for such period and as otherwise required by the Federal Act, the DEP Regulations and the Project Regulatory Agreement and shall furnish to the Trust and the Department all reports thereon at the times and in the form required by the

Federal Act, the DEP Regulations and the Project Regulatory Agreement or as otherwise reasonably requested by the Trust or the Department. The Borrower shall permit the Trust or any party designated by it upon reasonable prior notice to the Borrower to make copies of any accounts, books and records of the Borrower pertaining to the Project, the Interim Loan, the Loan, the Interim Loan Note or the Local Governmental Obligations.

- (e) If any Event of Default described in clause (i) of Paragraph (a) of Section 9 hereof shall occur and be continuing, the Borrower shall promptly upon request of the Trust provide such information to the Trust as shall be necessary for the Trust to exercise the rights provided in Section 11 of the Enabling Act with respect to the Local Aid Distributions of the Borrower.
- (f) For so long as the Interim Loan or the Loan shall be outstanding, the Borrower shall duly observe and comply with the additional covenants and conditions, if any, set forth in Schedule B attached hereto.

**Section 10.** Defaults and Remedies. (a) The occurrence of any of the following events shall constitute, and is herein defined to be, an Event of Default under this Agreement, the Interim Loan Note and the Local Governmental Obligations:

- (i) if the Borrower shall fail to pay when due all or any part of any Loan Repayment payable hereunder; provided that a failure by the Borrower to pay the amount of any increase in any Net Loan Repayment payable hereunder as described in Paragraph 6(c) and in Paragraph 6(e) hereof shall not constitute an Event of Default hereunder unless such failure shall continue for a period of five (5) Business Days after receipt by the Borrower from the Trust of written notice of such increase as provided in Paragraph 6(c) or Paragraph 6(e), as applicable;
- (ii) if the Borrower shall fail to perform and observe any other covenant, agreement or condition on its part provided in this Agreement or in the Interim Loan Note or the Local Governmental Obligations and such failure shall continue for a period of thirty (30) days after written notice thereof shall be given to the Borrower by the Trust; provided if such failure cannot be remedied within such thirty (30) day period, it shall not constitute an Event of Default hereunder if corrective action satisfactory to the Trust is instituted by the Borrower within such period and diligently pursued until the failure is remedied;
- (iii) if any representation or warranty made by or on behalf of the Borrower in this Agreement shall prove to have been incorrect or to be misleading in any material respect as and when made;
- (iv) if (x) an order, judgment or decree is entered by a court of competent jurisdiction (a) appointing a receiver, trustee, or liquidator for the Borrower, (b) granting relief in involuntary proceedings with respect to the Borrower under the federal bankruptcy act, or (c) assuming custody or control of the Borrower under the provision of any law for the relief of debtors, and the order, judgment or decree is not set aside or stayed within sixty (60) days from the date of entry of the order, judgment or decree or (y) the Borrower (a) admits in writing its inability to pay its debts generally as they become due, (b) commences voluntary proceedings in bankruptcy or seeking a composition of indebtedness, (c) makes an assignment for the benefit of its creditors, (d) consents to the assumption by any court of competent jurisdiction under any law for the relief of debtors of custody or control of the Borrower or (z) legislation shall be enacted by the Commonwealth (a) appointing a receiver or trustee for the Borrower, or (b) assuming custody or control of the Borrower, or (c) providing for a moratorium upon the payment of the principal of or interest on the Interim Loan or the Loan;
- (v) if the Borrower shall fail to pay when due (whether at maturity or upon redemption or acceleration or otherwise) any principal of or interest on any indebtedness of the Borrower for borrowed money, other than the Interim Loan, the Loan, the Interim Loan Note and the Local Governmental Obligations and indebtedness described in Chapter 40D of the General Laws of the Commonwealth; and

- (vi) if a Default shall occur under the Project Regulatory Agreement (as defined therein) and the Department shall request that the Trust declare an Event of Default under this Agreement.
- (b) In addition to its other remedies provided herein, if an Event of Default specified in clause (i) or clause (iv) of Paragraph (a) of this Section 9 shall occur and be continuing, the Trust may proceed to enforce its rights hereunder and under the Interim Loan Note or the Local Governmental Obligations by exercise of the following remedies in such order of priority as the Trust shall determine in its discretion:
- (i) the Trust may apply to such default any and all Loan Subsidy Amounts allocable to the Loan then or thereafter held or received by the Trust;
- (ii) the Trust may exercise the rights provided in Section 11 of the Enabling Act with respect to the Local Aid Distributions of the Borrower;
- (iii) the Trust may apply to such default any or all amounts allocable to the Borrower then on deposit in the Interim Loan Project Account; or
- (iv) by notice to the Borrower the Trust may declare the Loan Principal Obligation of the Interim Loan or the Loan, as applicable, and all Scheduled Loan Repayments payable on the Loan, and the corresponding principal amount of the Interim Loan Note or the Local Governmental Obligations, as applicable, to be immediately due and payable and, upon such declaration, the Loan Principal Obligation and all interest, if any, accrued thereon shall be and become immediately due and payable, anything herein or in the Interim Loan Note or the Local Governmental Obligations to the contrary notwithstanding; provided that upon any such declaration there shall be no acceleration in any Loan Subsidy Amounts payable hereunder or in accordance herewith, all such Loan Subsidy Amounts to be payable thereafter solely in accordance with the schedule therefore set forth in Schedule C hereto, as amended from time to time in accordance herewith, and then only to the extent provided in this Agreement.
- (c) If an Event of Default specified in clause (vi) of Paragraph (a) of this Section 9 shall occur and be continuing, the Trust shall, if directed by the Department, exercise on behalf of the Department any and all remedies available to the Department upon a Default under the applicable Project Regulatory Agreement.
- (d) Notwithstanding anything herein to the contrary, if any Event of Default hereunder shall occur and be continuing, the Trust may proceed to protect its rights hereunder, and may seek to compel compliance by the Borrower with the terms and provisions hereof and of the Interim Loan Note and the Local Governmental Obligations, by suit or suits in equity or at law, for the specific performance of any covenant, term or condition hereof, or in aid of the execution of any power herein granted, and, except as herein limited, may exercise any other right or remedy upon such default as may be granted to the Trust under the Enabling Act, the Applicable Bond Act or under any other applicable provision of law.
- (e) During the continuance of an Event of Default, the Trust shall apply all amounts received upon the exercise of its rights and remedies hereunder as follows and in the following order:
- (i) to the payment of the reasonable and proper charges (including attorneys' fees) of the Trust and the Department incurred in the exercise of any right or remedy hereunder or under the Project Regulatory Agreement;
- (ii) to the payment and satisfaction of all interest then due and unpaid hereunder upon any defaulted Loan Repayments as provided in Section 6(a) hereof; and
- (iii) to the payment and satisfaction of the Interim Loan or to the payment and satisfaction of all Loan Repayments then due and unpaid hereunder, as applicable, as such Loan Repayments may be adjusted as provided in Section 6 hereof, and, if the amount available is not sufficient to pay all Loan Repayments then

due and payable hereunder, first to the payment of the portion of the Loan Repayments due and unpaid representing interest on the Loan and second to the portion of the Loan Repayments due and unpaid representing the principal of the Loan and, in either case, ratably in order of the due dates thereof.

- (f) No remedy conferred upon or reserved to the Trust is intended to be exclusive and every such remedy shall be cumulative and shall be in addition to every other remedy given under this Agreement or now or hereafter existing at law or in equity. No delay or omission to exercise any right, remedy or power accruing upon any Event of Default shall impair any such right, remedy or power or shall be construed to be a waiver thereof, but any such right, remedy or power may be exercised from time to time and as often as may be deemed expedient.

**Section 11.** Assignment, Transfer and Exchange. (a) The Borrower acknowledges that the Trust will pledge and assign this Agreement or all or part of its rights hereunder, and the right, title and interest of the Trust in and to all or part of the Loan and Loan Repayments hereunder to the Bond Trustee in accordance with the Bond Resolution, and in connection with any such assignment may transfer to the Bond Trustee the Loan and any or all Loan Repayments and the Local Governmental Obligations attributable thereto, and the Borrower by its execution and delivery of this Agreement expressly consents to any such assignment and transfer.

- (b) In connection with any assignment by the Trust provided herein, the Borrower further agrees to deliver the Local Governmental Obligations to the Trust on the Closing Date, or on any date thereafter when Local Governmental Obligations may be assigned, exchanged or transferred in accordance with their terms and the terms of this Agreement, in such denominations, registered to such owners, in one or more series, and otherwise in such form and tenor as the Trust may request to evidence the Loan made, and the Loan Repayments payable, hereunder, separately or as a whole, or in part one or in part the other, or in any combination thereof, provided that the aggregate principal amount payable on the Local Governmental Obligations shall not exceed the Loan Principal Obligation payable hereunder on the Loan plus interest, if any, accrued and to accrue thereon as provided therein and herein.

- (c) Except as hereinabove provided, so long as any Event of Default shall not have occurred hereunder and be continuing, the Trust shall not assign this Agreement or the Interim Loan or the Loan made hereby, or transfer or sell the Interim Loan Note or the Local Governmental Obligations, without the prior written approval of the Borrower.

- (d) The Borrower may not assign this Agreement or the Interim Loan, the Loan, the Interim Loan Note or the Local Governmental Obligations, or any of its rights or obligations hereunder or thereunder, without the express prior written consent of the Trust.

**Section 12.** Action by Parties. Where this Agreement shall provide for any direction, consent, approval or other action to be taken or made by the Borrower, the Trust or the Department hereunder, such direction, consent, approval or other action shall be sufficiently taken or made for all purposes of this Agreement if taken or made by Authorized Officers of the Borrower, the Trust or the Department, as the case may be.

**Section 13.** Notices. All notices, consents, certificates and other communications hereunder shall be sufficiently given when delivered by hand or courier or photocopied or mailed by registered or certified mail, postage prepaid, addressed to the Addresses for Notice set forth in Schedule A attached hereto or to such further or different address as any of the parties hereto or the Department may designate in writing to the other notice parties indicated in said Schedule A.

**Section 14.** Severability. In the event any provision of this Agreement shall be held invalid or unenforceable by any court of competent jurisdiction, such holding shall not invalidate or render unenforceable any other provision hereof.



**Section 15.** No Right of Set-Off. By their execution and delivery of this Agreement, the Trust and the Borrower agree that, except as otherwise provided in this Agreement, neither the Trust nor the Borrower shall have any right to set-off and apply any amount at any time held, and other indebtedness at any time owing, by the Trust or the Commonwealth to or for the account of the Borrower, or by the Borrower to or for the account of the Trust or the Commonwealth, as applicable, against any and all of the obligations of the Borrower or the Trust, as applicable, now or hereinafter existing under this Agreement.

**Section 16.** Amendment of Agreement and Other Instruments Except as expressly provided herein with respect to the amendment of Schedule A, Schedule B and Schedule C hereto, this Agreement, the Interim Loan Note and the Local Governmental Obligations may not be amended, modified or changed in any respect except in writing signed by the parties hereto. No such amendment, modification or change of this Agreement which, in the reasonable opinion of the Department (expressed in a certificate of an Authorized Officer of the Department delivered to the Trust prior to the execution and delivery of such amendment, modification and change by the Trust) materially and adversely affects the rights and obligations of the Department under the Project Regulatory Agreement, shall be effective until the Department shall have consented in writing thereto. The Trust shall deliver a copy of any such proposed amendment, modification or change of this Agreement to the Department at least ten (10) days prior to the execution and delivery thereof by the Trust.

**Section 17.** Term. The term of this Agreement shall be from the date of execution and delivery hereof by the parties hereto until all Scheduled Loan Repayments payable hereunder shall have been paid in full or provision for the payment thereof shall have been duly provided for in accordance with this Section 17.

**Section 18.** Execution in Counterparts This Agreement may be simultaneously executed in several counterparts, each of which shall be an original and all of which shall constitute but one and the same instrument.

**Section 19.** Applicable Law. This Agreement shall be governed by and construed in accordance with the laws of the Commonwealth.

**Section 20.** Further Assurances. The Borrower shall, at the request of the Trust, authorize, execute, acknowledge and deliver such further resolutions, conveyances, transfers, assurances and other instruments as may be necessary or desirable for better assuring, conveying, granting, assigning and confirming the rights, covenants and agreements granted or made or intended to be granted or made by this Agreement, the Interim Loan Note and the Local Governmental Obligations.

**Section 21.** Prior Agreements. Except as otherwise provided herein, this Agreement merges and supersedes all prior negotiations, representations, and agreements between the parties hereto relating to the subject matter hereof and constitutes the entire agreement between the parties hereto in respect hereof.

IN WITNESS WHEREOF, the Trust and the Borrower have caused this Agreement to be executed by their duly Authorized Officers the day and year first above written.

MASSACHUSETTS WATER POLLUTION  
ABATEMENT TRUST

By \_\_\_\_\_  
Authorized Officer  
Title: Chief Financial Officer

BORROWER

By \_\_\_\_\_  
Authorized Officer  
Title:

- A. Project Regulatory Agreement - Number and Date: T5-97-1019-B
- B. Applicable Bond Act: M.G.L. Ch. 111, Sec. 127B½ and M.G.L. Ch 29C (the “Project”)
- C. Authorized Officers:
- a) Of the Trust: The Chairman and Vice Chairman of the Trust (and each designee thereof pursuant to M.G.L. Ch.30 §6A) and the Executive Director and Treasurer of the Trust.
  - b) Of the Borrower: Mr. Dale Zacamy, Treasurer  
Town of Wareham  
54 Marion Road  
Wareham, MA 02571
  - c) Of the Department: The Commissioner, the Deputy Commissioner and the Deputy Assistant Commissioner for Financial and Construction Management of the Department.
- D. Grant Equivalency Percentage: 50%
- E. Closing Date: December 31, 2003
- F. Addresses for Notices:
- To the Trust: Massachusetts Water Pollution Abatement Trust  
1 Ashburton Place  
12th Floor  
Boston, MA 02108  
Attention: Executive Director
  - To the Borrower: Mr. Dale Zacamy, Treasurer  
Town of Wareham  
54 Marion Road  
Wareham, MA 02571
  - To the Department: Department of Environmental Protection  
One Winter Street  
2nd Floor  
Boston, MA 02108  
Attention: Commissioner

Initial Loan  
Obligation: \$ \_\_\_\_\_

Schedule of Loan Repayments

<u>Date</u>	<u>Scheduled Loan Repayments</u>	<u>Loan Subsidy Amounts</u>	<u>Net Loan Repayments</u>	<u>Equity Earnings Payments</u>	<u>Contract Assistance</u>	<u>Principal</u>	<u>Interest</u>	<u>Total</u>	<u>Total</u>

**COMMUNITY SEPTIC MANAGEMENT PROGRAM**  
**SAMPLE      LOAN QUESTIONNAIRE      SAMPLE**

Note: The following information must be provided to the Trust with respect to the Borrower's proposed community septic management loan program under M.G.L. Ch. 111, Sec. 127B 1/2 and M.G.L. Ch. 29C (the "Project"). All questions should be completed other than those which are not applicable to the Borrower, the Loan or the Project (if such is the case, indicate "NA"). If certain information requested is unavailable attach an explanation.

If you have any questions on this form please contact your bond counsel or the Trust at 367-9333, Attention: Nancy E. Parrillo, Chief Financial Officer (Extension 508).

\*      \*      \*

A.      GENERAL

1.      Name of Local Governmental Unit: Town of Leicester
2.      Chief Financial Officer:

        Name:  
        Address:

        Telephone:  
        Fax:  
        E-mail Address:

3.      Bond Counsel:  
        Attention:  
        Address:

        Telephone:  
        Fax:

4.      Financial Advisor:  
        Attention:  
        Address:

        Telephone:  
        Fax:

5.      Wire Transfer Instructions for Loan Disbursements:

        Bank:  
        Account No.  
        ABA No.

B. THE PROJECT

1. This Questionnaire pertains to a Loan to be issued by the Massachusetts Water Pollution Abatement Trust to finance or refinance Eligible Costs of the community septic management loan program identified in the following Project Approval Certificate and Regulatory Agreement between the Borrower and the Department of Environmental Protection:

PAC/PRA No. \_\_\_\_\_

Option: (1) \_\_\_\_\_ (2) \_\_\_\_\_

Initial Loan Obligation: \$ \_\_\_\_\_

2. Description of the Project: For purposes of this Questionnaire the Trust assumes that the Borrower's Project is solely the implementation of a community septic management loan program to assist owner-occupants of residential (1 to 4 family) real property pursuant to betterment agreements to upgrade failing septic systems to comply with the requirements of 310 CMR 15.000 et seq. ("Title 5"). The Trust also assumes that the Borrower will implement the Project in accordance with Title 5 and the Department's approval of the Project and its Community Septic Management Program Description and Requirements. If the Project includes any other components or undertakings by the Borrower not described by the foregoing, or the improvement of any other kind of property, please explain:

3. Have any loan/betterment disbursements ("Project Costs") to homeowners been made/ incurred to date? Yes \_\_\_\_\_ No \_\_\_\_\_

(a) If Yes, provide details regarding number of betterment agreements, amount disbursed, etc.

(b) If No, state estimated date of commencement of loan/betterment disbursements to homeowners: \_\_\_\_\_

4. If loan/betterment disbursements have commenced:

(a) To date, what has been the source of funds to pay Project Costs (check all that apply):

- (i) BAN proceeds \_\_\_\_\_
- (ii) Revenue cash \_\_\_\_\_
- (iii) Bond proceeds \_\_\_\_\_
- (iv) Other (specify) \_\_\_\_\_

(b) State date of first payment of Project Costs:

(c) If any Project Costs were paid from revenue cash (even if later reimbursed from borrowed funds), indicate:

(i) Date the Borrower took some form of official action indicating intent to borrow funds to reimburse the Borrower for these Project Costs \_\_\_\_\_  
\_\_\_\_\_. (Please attach a copy of the vote, resolution or other instrument indicating such official action).

(ii) Purpose, amounts and dates of expenditures, if any, made before official action:

<u>Purpose</u>	<u>Amount</u>	<u>Date</u>
----------------	---------------	-------------

5. Will any portion of the proceeds of the Loan be used to pay (or reimburse the Borrower for the payment of) non-capitalized costs (e.g., salaries, utilities, supplies or other administrative costs including interest on debt)? Yes \_\_\_\_\_ No \_\_\_\_\_. If Yes, describe the nature and amount of these costs.

### C. REFINANCING OF INDEBTEDNESS

1. Will any proceeds of the Loan be applied to repay any outstanding BAN's or other temporary indebtedness with respect to the Project other than an Interim Loan from the Trust? Yes \_\_\_\_\_ No \_\_\_\_\_. Will any proceeds of the Loan be applied to refund, refinance or otherwise pay debt service on any bonds or other long-term indebtedness with respect to the Project? Yes \_\_\_\_\_ No \_\_\_\_\_. (If the answer to both of the foregoing questions is No, skip to Paragraph (D) below.)

2. Are there any outstanding BAN's or other temporary indebtedness that will be repaid from proceeds of the Loan? Yes \_\_\_\_\_ No \_\_\_\_\_. If Yes, provide the following information separately for each issue of BAN's or other temporary debt to be repaid in whole or in part from the proceeds of the Loan:

(a) Principal amount outstanding:

(b) Issue date (original issue date in the case of temporary debt issued to repay prior temporary debt):

(c) Maturity Date:

(d) Is the temporary debt prepayable prior to maturity? Yes \_\_\_\_\_ No \_\_\_\_\_. If Yes, when?

(e) Was the temporary debt issued for purposes in addition to the payment of costs of the Project? Yes \_\_\_\_\_ No \_\_\_\_\_. If Yes, what portion of the principal amount of the debt was issued for Project Costs?

(f) If the principal amount of the temporary debt outstanding issued to pay Project Costs is greater than the Initial Loan Obligation of the Loan, what is source of funds to repay the remaining temporary debt?

(g) Do any proceeds of the temporary debt remain unexpended? Yes \_\_\_\_\_ No \_\_\_\_\_ If Yes, how much?

(h) To what use or purpose have investment earnings on the proceeds of the temporary debt been applied? Debt Service \_\_\_\_\_; Project Costs \_\_\_\_\_;

Other (specify): \_\_\_\_\_. What is the total estimated amount of investment earnings?

3. Has any long-term indebtedness (bonds, loans, etc.) been issued or incurred to pay Project Costs? Yes \_\_\_\_\_ No \_\_\_\_\_. If Yes, does the Borrower expect to refund or refinance any portion of this indebtedness with proceeds of the Loan? Yes \_\_\_\_\_ No \_\_\_\_\_. If Yes, provide the following information separately for each issue of bonds or other long-term indebtedness to be refunded or refinanced:

(a) Principal amount outstanding:

(b) Issue date (original issue date in the case of a series of refundings):

(c) Maturity dates and interest rates (attach schedule):

(d) Redemption provisions including optional and mandatory (i.e., sinking fund) redemption dates and amounts and redemption prices (attach schedule):

(e) Were the bonds or other long-term debt issued for purposes in addition to the payment of costs of the Project (or repayment of BAN's issued for that purpose)? Yes \_\_\_\_\_ No \_\_\_\_\_. If Yes, what portion of the principal amount of the debt outstanding was issued for Project Costs?

(f) Do any proceeds of the bonds or other long-term debts remain unexpended? Yes \_\_\_\_\_ No \_\_\_\_\_. If Yes, how much?

(g) Were any proceeds of the bonds or other long-term debt invested following issuance? Yes \_\_\_\_\_ No \_\_\_\_\_. If Yes, to what purpose were the earnings applied? Debt Service \_\_\_\_\_; Project Costs \_\_\_\_\_; Other (specify): \_\_\_\_\_. What is the total estimated amount of investment earnings?

#### D. LITIGATION

1. Is any action, suit, proceeding, inquiry or investigation before or by any court, public board or other body presently pending or, to your knowledge, threatened, against or affecting the Borrower seeking to restrain or enjoin the execution and delivery by the Borrower of the Loan Agreement or the issuance and delivery of the Borrower's Interim Loan Note or Local Governmental Obligations to evidence and secure the Interim Loan or the Loan or challenging any proceeding of the Borrower with respect to the Interim Loan or the Loan or the Project, or contesting or affecting the validity or enforceability of the Interim Loan or the Loan or any such proceedings? Yes \_\_\_\_\_ No \_\_\_\_\_.

If Yes, attach a detailed description of the litigation or other proceeding or claim and indicate below the name, address and telephone number of your counsel for these purposes.

2. Is any litigation or other proceeding pending or, to your knowledge, threatened against or affecting the Borrower which, if determined adversely to the Borrower, would likely result, either individually or in the aggregate, in final judgments which would materially adversely affect the ability of the Borrower to repay the Interim Loan or the Loan? Yes \_\_\_\_\_ No \_\_\_\_\_.

If Yes, attach a detailed description of the litigation, proceeding or other claim and indicate below the name, address and telephone number of your counsel for these purposes.

To the best of my knowledge and belief, the information set forth above is correct and complete as of the date hereof.

Date: \_\_\_\_\_

\_\_\_\_\_  
Chief Financial Officer of Borrower

Name (print): \_\_\_\_\_

Title (print): \_\_\_\_\_



COMMUNITY SEPTIC MANAGEMENT PROGRAM  
FORM OF LOCAL BOND COUNSEL LEGAL OPINION

(Date of Interim Loan Note)

Massachusetts Water Pollution Abatement Trust  
Boston, Massachusetts

Re: \$ \_\_\_\_\_  
\_\_\_\_\_ of \_\_\_\_\_, Massachusetts  
Interim Loan Note

We have examined the law, a certified copy of proceedings and other papers relating to the issue by the \_\_\_\_\_ of \_\_\_\_\_, Massachusetts (the "Borrower") of a \$ \_\_\_\_\_ zero percent Interim Loan Note (the "Note") dated \_\_\_\_\_, \_\_\_\_\_ under Chapter 29C and Chapter 111, Section 127B ½, of the General Laws of The Commonwealth of Massachusetts (collectively the "Acts") and a vote/loan order of the \_\_\_\_\_ passed \_\_\_\_\_, \_\_\_\_\_. The Note is being issued by the Borrower to evidence and secure its obligations to repay an interim loan made to the Borrower by the Massachusetts Water Pollution Abatement Trust (the "Trust") under the Loan Agreement dated as of \_\_\_\_\_, \_\_\_\_\_ (the "Loan Agreement") between the Borrower and the Trust.

We have also examined the Note and the Loan Agreement as executed and an executed copy of the Project Approval Certificate and Regulatory Agreement dated as of \_\_\_\_\_, \_\_\_\_\_ (the "Project Regulatory Agreement"), between the Borrower and the Department of Environmental Protection of The Commonwealth of Massachusetts, relating to the community septic management loan program described in the Loan Agreement and the Project Regulatory Agreement.

On the basis of this examination we are of opinion, as of the date hereof and under existing law, as follows:

(1) The Loan Agreement and the Project Regulatory Agreement have been duly authorized, executed and delivered by the Borrower in accordance with the Acts and each constitutes a valid and binding obligation of the Borrower enforceable in accordance with its terms.

(2) The Note has been duly authorized, executed and delivered by the Borrower in accordance with the Loan Agreement and the Acts and constitutes a valid and binding general obligation of the Borrower enforceable in accordance with its terms and payable as to principal and interest (to the extent not paid from other sources) from taxes which may be levied [without limitation as to rate or amount] upon all taxable property within the territorial boundaries of the Borrower [, subject only to the limit imposed by Chapter 59, Section 21C of the General Laws of The Commonwealth of Massachusetts].

The rights of the registered owner of the Note and the enforceability thereof and of the Loan Agreement and the Project Regulatory Agreement may be subject to bankruptcy, insolvency, reorganization, moratorium and other similar laws affecting creditors' rights heretofore or hereafter enacted to the extent constitutionally applicable and their enforcement may also be subject to the exercise of judicial discretion in appropriate cases.

Very truly yours,

Low interest loans are also available for septic repairs through the Massachusetts Housing Finance Agency (MHFA) and their bank loan program for homeowners. Information on this program and a list of participating banks may be accessed through the website at: <http://www.mhfa.com>

*Similarities and Differences between Community Septic Management Program(CSMP) and the Mass. Housing Finance Agency Homeowner Septic Repair Loan Program (MHFA Bank Program)*

<b>Community Septic Management Program (CSMP or Title 5 Betterment Program)</b>	<b>Homeowner Septic Repair Loan Program (MHFA Bank Loan Program)</b>
The focus of this program is on protecting environment. Under this program a community identifies environmentally sensitive areas it wants to protect and proactively seeks out homeowner participation to eliminate pollution caused by failed septic systems.	The focus of this program is to offer loans to homeowners who may not readily qualify under CSMP. It is also useful for homeowners who need access to cash in a hurry. It is also useful for homeowners in a community that has chosen not to participate in CSMP.
The interest rates are subsidized by DEP funds.	The interest rates are subsidized by DEP funds.
The loans under this program are not based on household income. The loans may be offered at 2% or 5%. Generally, there is no cost associated with applying for loan (unless local authorities decide otherwise)	The loans are income based. The interest rate depends on the household income. The rates could be 0%, 3% or 5%. There is cost associated with borrowing (application fee.)
These loans generally do not take into consideration the homeowner's credit.	Under this program loans are made after taking homeowner's credit into consideration.
Since this program is community based, there is a real opportunity at the community level to explore alternatives and take a leadership role in solving difficult problems. Areas that have been neglected in the past due to the lack of funding and/or attention can be addressed under this program. The idea of local people solving local problems can be fully implemented under this framework.	
Shared systems, innovative solutions are possible and are encouraged (where applicable) under this program. The loans may be made available to non-owner occupied homes (vacation homes).	The funding under this program is limited to owner occupied units.
Elderly Deferrals are possible under this program. Board of Health must verify that the town has "accepted" the provisions of General Laws Chapter 80 s.13B at the Town meeting or by vote of the City Council. A majority vote is necessary to accept the provisions of the statute.	0% loans are available to homeowners who have fixed incomes (usually \$28,500 or less depending on the MHFA's market area and number of members in a household) AND whose systems are deemed as eminent health hazards.

[site](#)
[map](#)
[contacts](#)

dep home > water > wastewater & septic systems



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## Community Septic Management Programs

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### Related Links

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Community Septic Management Programs

### Program Information for Communities

The Community Septic Management Program (CSMP) was developed through the collaboration of DEP, the Executive Office of Administration and Finance, the Office of the State Treasurer, and the Department of Revenue. Through the CSMP, DEP funds loans to communities through the Massachusetts Water Pollution Abatement Trust. Using the State Revolving Fund loans from the Trust, communities can provide betterment loans to assist homeowners who must address septic system failures.

#### Implementing the Community Septic Management Program

The purpose of this program is to provide funding of up to \$200,000 in the form of low cost loans to allow communities to devise a Community Inspection Plan or a Local Septic Management Plan.  
[Web page](#)

#### CSMP Project Manual and Other Guidance

The CSMP Manual sets out the parameters of a betterments program. Other guidance documents provide a framew ork for decentralized w astewater treatment.  
[Web page](#)

#### State Revolving Funds

The SRF Program provides low -interest loans to cities, tow ns, and other local governmental units for drinking w ater and w astewater-related infrastructure projects.  
[Web page](#)

#### Massachusetts Department of Revenue

Information about a Massachusetts personal income tax credit for repair or replacement of a failed septic system  
[DOR Website](#)

#### US EPA Voluntary National Guidelines for Management of Onsite and Clustered (decentralized) Wastewater Treatment Systems

Guide that helps communities establish comprehensive management programs to ensure that all septic systems function properly.  
[US EPA Website](#)

## US EPA Handbook for Management of Onsite and Clustered (Decentralized) Wastewater Treatment Systems

A "how-to guide" for implementing EPA's Voluntary National Guidelines for Management of Onsite and Clustered (Decentralized) Wastewater Treatment Systems.

[US EPA Website](#)

[Back to Community Septic Management Programs index](#)

Community Septic Management Programs

### Financial Assistance for System Owners

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The Commonwealth has developed three programs to assist on-site septic system owners with wastewater management problems.

#### Community Septic Management Program

This MassDEP program offers 0% loans to communities, which in turn provide low-interest betterment loans to eligible homeowners with failed septic systems through their [local Boards of Health](#).

Description of the Community Septic Management Program

[Web page](#)

Information about betterments

[Web page](#)

Regional Contacts for the Community Septic Management Program:

Metro/Northeast: [Nihar.Mohanty@state.ma.us](mailto:Nihar.Mohanty@state.ma.us) - 978-694-3237

Southeast: [Pamela.Truesdale@state.ma.us](mailto:Pamela.Truesdale@state.ma.us) - 508-946-2881

Central: [Stella.Tamul@state.ma.us](mailto:Stella.Tamul@state.ma.us) - 508-767-2763

Western: [Deirdre.Cabral@state.ma.us](mailto:Deirdre.Cabral@state.ma.us) - 413-755-2148

#### Homeowner Septic Loan Program

This is a bank loan program for homeowners whose systems have failed Title 5 inspection. Participating banks offer low interest rates to eligible homeowners through this MassHousing Program. For more information contact Massachusetts Housing Finance Agency (MHFA), 617-723-0500 or go to their Website:

[MassHousing Website](#)

#### Tax Credit

The Commonwealth provides a tax credit of up to \$6,000 over 4 years to defray the cost of septic repairs to a primary residence. Forms are available from the Department of Revenue (DOR) to enable homeowners to claim up to \$6,000 in tax credits for septic upgrades. The credit cannot exceed \$1,500 in any year and may be spread out over 4 years. The tax credit is limited to work done on a primary residence only. Tax Form Schedule SC is the correct form for the tax credits.

[MassDOR Website](#)

In addition, a federal program is available to aid septic system owners with wastewater management problems:

#### USDA Rural Development Program

This program offers government loans to assist very low income rural homeowners who are in need of repair and improvements to their homes for health or safety reasons, including septic system repairs or upgrades.

[USDA Website](#)

[Back to Community Septic Management Programs index](#)

A reprint from

***The***  
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***Evidence of Rational  
Market Valuations for  
Home Energy Efficiency***

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For more information, contact Rick Nevin ([rnevin@icfconsulting.com](mailto:rnevin@icfconsulting.com)) or Gregory Watson ([gwatson@icfconsulting.com](mailto:gwatson@icfconsulting.com)) .

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# Evidence of Rational Market Valuations for Home Energy Efficiency

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**According to this study, residential real estate markets assign to energy-efficient homes an incremental value that reflects the discounted value of annual fuel savings. The capitalization rate used by homeowners was expected to be 4%–10%, reflecting the range of after-tax mortgage interest rates during the 1990s and resulting in an incremental home value of \$10 to around \$25 for every \$1 reduction in annual fuel bills. Regression analysis of American Housing Survey data confirms this hypothesis for national and metropolitan area samples, attached and detached housing, and detached housing subsamples using a specific fuel type as the main heating fuel.**

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**I**nvestments in high-efficiency heating and air conditioning equipment, insulation, and other energy-efficient home features have historically been justified and promoted based on the investment payback to the homeowner. The payback period is the number of years needed to fully recover energy efficiency investments through reduced fuel costs. More recently, the U.S. Environmental Protection Agency initiated a marketing program called “ENERGY STAR Homes.” This effort teaches that energy-efficient homes produce immediate positive cash flow for home

buyers because the reduction in monthly fuel bills more than offsets the higher monthly mortgage payment needed to finance such investments. Some home buyers, however, still hesitate to invest in energy efficiency because they are uncertain that they would stay in their homes long enough to recover their investment through lower fuel bills and that they could recover an investment in energy efficiency when they sell their homes. Standard underwriting criteria for home mortgages can also increase the down payment requirements or mortgage insurance

**Rick Nevin** is a vice president with the ICF Consulting Group, Fairfax, Virginia. He specializes in managing and conducting financial, statistical, and economic analyses for public and private sector clients. He was the project manager and principal author of the Regulatory Impact Analysis for the Department of Housing and Urban Development’s proposed rule for lead-based paint hazard evaluation and control. He is also managing a variety of research and analysis tasks to develop and expand accessible home financing under the Environmental Protection Agency’s “ENERGY STAR Homes” program. Mr. Nevin earned an MBA in management from Northwestern University, Evanston, Illinois, and a BA and MA in economics from Boston University. Contact: ICF Consulting Group; ICF, Inc.; 9300 Lee Highway; Fairfax, VA 22301-1207. (703) 934-3000. Fax 934-9740. Nevin@icfkaiser.com.

**Gregory Watson** is a senior associate with the ICF Consulting Group. He was a contributor to an annual compendium of federal, state, and local government finance statistics published by the U.S. Advisory Commission on Intergovernmental Relations and is currently conducting a statistical analysis for the Department of Housing and Urban Development, examining changes in the American housing stock. He earned an MA in economics from the University of Wisconsin, Madison, and a BA in economics from the University of Chicago.

*Underwriting criteria may prevent home buyers from qualifying for mortgages if the appraised value of the home does not fully reflect the value of energy efficiency investments.*

costs on these homes because energy efficiency investments raise the upfront price of a new home. Underwriting criteria may even prevent home buyers from qualifying for mortgages if the appraised value of the home does not fully reflect the value of energy efficiency investments. Home appraisals may not always reflect the cost of energy efficiency investments because research has never clearly demonstrated or quantified the relationship between energy efficiency and market value.

#### **ENERGY-EFFICIENT HOMES AND STANDARD MORTGAGE UNDERWRITING CRITERIA**

Even if energy-efficient home investments pay for themselves in energy savings, the cost of such investments can adversely affect the qualifying ratios for a home mortgage, including the front-end and back-end income ratios and the loan-to-value ratio. The front-end ratio (or housing-cost-to-income ratio) is monthly housing expenses (principal, interest, taxes, and insurance, or PITI) divided by gross monthly income. The back-end ratio (or total debt-to-income ratio) is total monthly obligations (including auto loans, for example) divided by gross monthly income. The loan-to-value ratio is the amount of the mortgage divided by the lower of the appraised value or price of the home.

Standard underwriting criteria for 30-year, fixed-rate mortgages include a 28% constraint for the front-end ratio and a 36% constraint for the back-end ratio. Neither of these standard criteria account for utility costs as part of monthly housing expenses (PITI) or total monthly obligations. Therefore, the cost of energy-efficient upgrades for a new home can increase the home buyer's monthly PITI or total obligations beyond the qualifying constraints, even when the savings in monthly fuel bills more than offsets the higher mortgage interest. This income ratio anomaly was substantially addressed when the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac) responded to the energy crises of the 1970s by establishing energy-efficient mortgage (EEM) guidelines that allow for a "2%

stretch" over normal income ratio criteria for energy-efficient home mortgages.<sup>1</sup> The 2% stretch means that the front-end ratio for an EEM is raised to 30%, and the constraint for the back-end ratio is raised to 38%. For a household earning \$60,000 per year, the 2% stretch can accommodate up to about \$100 per month for higher mortgage payments related to cost-effective energy efficiency upgrades.

The 2% stretch gives lenders more flexibility with income ratios for energy-efficient homes but does not allow any flexibility with the loan-to-value ratio. Home buyers generally must pay for mortgage insurance to qualify for a 30-year fixed-rate mortgage with a loan-to-value above 80%. They also pay higher rates for mortgage insurance if their loan-to-value exceeds 90%, and often cannot qualify for the mortgage if their loan-to-value exceeds 95%. For a typical \$160,000 house, an 80% loan-to-value loan requires 20% down, or \$32,000, resulting in a mortgage loan amount of \$128,000. If \$5,000 of energy-efficient upgrades are included in the purchase of the home, the price increases to \$165,000, and a higher down payment is needed to maintain the same loan-to-value ratio. At best, if the appraised value for the home is \$165,000, the home buyer must add \$1,000 to the down payment to maintain an 80% loan-to-value. At worst, if the appraiser does not recognize any additional value for energy efficiency and estimates the appraised value at \$160,000, then the home buyer must add the entire \$5,000 to the down payment in order to maintain the 80% loan-to-value.

The Federal Housing Administration (FHA) offers an EEM that allows the incremental cost of energy-efficient, cost-effective upgrades to be added directly to the mortgage, as long as these additional costs do not exceed the greater of \$4,000 or 5% of the property's value (not to exceed \$8,000). The FHA EEM is designed so that someone who qualifies to buy a home without energy efficiency investments would also qualify for the FHA EEM without any increase in the required down payment. The FHA EEM defines "cost effective" to include energy efficiency investments with a total cost that is less than the present value of the energy saved over the useful life of the investment.

1. William Prindle, "Energy-Efficient Mortgages: Proposal for a Uniform Program," 1990 Summer Study on Energy Efficiency in Buildings, American Council for an Energy-Efficient Economy, Washington, D.C., August 1990, 7.155.

This EEM, however, is subject to the FHA maximum single-family mortgage limits, which can be as low as \$86,317 and go up to \$170,362.

Fannie Mae and Freddie Mac are currently engaged in pilot programs that allow the incremental cost of energy-efficient, cost-effective upgrades to be added to the appraised value of a home. Under these programs, the home buyer must provide only the additional down payment associated with the increase in appraised value in order to maintain the same loan-to-value ratio (e.g., an additional \$1,000 down with a \$5,000 upgrade to maintain an 80% loan-to-value). The Fannie Mae and Freddie Mac EEMs would provide substantial relief from loan-to-value constraints on energy-efficient homes that exceed FHA limits, but these programs are not generally available outside the pilot program areas at this time.

### Review of Literature on Market Valuation of Energy-Efficient Homes

Seven studies provide some insight into the relationship between residential housing values and energy costs (see table 1). Six of these studies were published between 1981 and 1986, and the most recent study was published in 1990. The data for these studies were collected over a time period of considerable variation in fuel prices and mortgage interest rates. The first four studies are also not directly comparable because some drew relationships between home value and fuel type, while others linked home value to specific energy efficiency characteristics (e.g., the amount of insulation).

The research results are qualified by sample size limitations, narrow regional or local data sets, and/or the absence of data on key regression variables affecting residential housing values. It is significant, however,

**TABLE 1 Published Research on Market Value of Energy-Efficient Homes**

Study	Sample Size	Time Period	Key Findings
a	269	1970–1975	The 1974 spike in relative cost of fuel oil raised price differential between gas- and oil-heated houses to \$761 in 1974, and up to \$4,597 in first half of 1975.
b	100	1978–1979	Value of energy-efficient homes (with lower structural heat loss) was \$3,248 higher than inefficient homes.
c	81	1980	Home value increased by \$2,510 for each one-point decrease in thermal integrity factor.
d	505	1971–1978	A one-inch increase in wall insulation increased home value by \$1.90 per square foot; a one-inch increase in ceiling insulation increased home value by \$3.37 per square foot; high-quality (energy-efficient) windows increased home value by \$1.63 per square foot.
e	1,317	1978	Home value increased by about \$20.73 for every \$1 decrease in annual fuel bills.
f	234	1982	Home value increased by \$11.63 per \$1 decrease in fuel expenditures needed to maintain house at 65° F in average heating season.
g	67	1983–1985	Home value increased by about \$12.52 per \$1 decrease in electric bills, consistent with home buyers discounting savings at after-tax mortgage interest rate.

- a Robert Halvorsen and Henry O. Pollakowski, "The Effects of Fuel Prices on House Prices," *Urban Studies*, v. 18, no. 2 (1981): 205–211.
- b John B. Corgel, Paul R. Geobel, and Charles E. Wade, "Measuring Energy Efficiency for Selection and Adjustment of Comparable Sales," *The Appraisal Journal* (January 1982): 71–78.
- c Joseph Laquatra, "Housing Market Capitalization of Thermal Integrity," *Energy Economics* (July 1986): 134–138.
- d Molly Longstreth, "Impact of Consumers' Personal Characteristics on Hedonic Prices of Energy-Conserving Durable Good Investments," *Energy*, v. 11, no. 9 (1986): 893–905.
- e Ruth C. Johnson and David L. Kaserman, "Housing Market Capitalization of Energy-Saving Durable Good Investments," *Economic Inquiry* (July 1983): 374–386.
- f Terry M. Dinan and John A. Miranowski, "Estimating the Implicit Price of Energy Efficiency Improvements in the Residential Housing Market: A Hedonic Approach," *Journal of Urban Economics*, v. 25, no. 1 (1989): 52–67.
- g Marvin J. Horowitz and Hossein Haeri, "Economic Efficiency v. Energy Efficiency," *Energy Economics* (April 1990): 122–131.



*Although home buyers are not likely to make present-value calculations or fuel bills, they will look at average fuel bills and energy efficiency features before buying a home.*

that all seven studies report higher home values associated with energy efficiency. Comparable results shown for the last three studies suggest that home value increases by \$11–\$21 for every dollar reduction in annual fuel expenditures. The last study also suggests consistent criteria that could be used in home appraisals to quantify the increase in market value associated with energy efficiency. Specifically, the higher market value associated with energy efficiency in this study appears to reflect projected fuel savings discounted at the home buyer's after-tax mortgage interest rate.

#### **Rational Market Hypothesis**

The hypothesis presented here is that rational home buyers should bid more for energy-efficient homes as long as the incremental cost of the energy-efficient home does not exceed the present value of its expected fuel savings. Further, the discount rate used to determine the present value of expected fuel savings should be the home buyer's after-tax mortgage interest rate.

Throughout the 1990s, the interest rate on 30-year fixed-rate mortgages has ranged from just under 7% to just over 9%. A home buyer paying a 7% mortgage rate and using the mortgage interest deduction in the top marginal income tax bracket will pay an after-tax interest rate of approximately 4%. At the other extreme, home buyers with a 9% mortgage rate could pay a total financing cost of almost 10% if they pay an additional percentage rate for mortgage insurance and cannot benefit from the mortgage interest deduction (because their standard deduction exceeds their itemized deductions). Using the range of 4%–10% for after-tax interest rates, the hypothesis for the regression analysis can be stated as follows:

*With after-tax interest rates between 4%-10% and stable fuel price expectations, home buyers should pay \$10-\$25 more for every dollar reduction in annual fuel bills resulting from energy efficiency.*

If home buyers expect stable fuel prices, then paying \$10 for every \$1 reduction in annual fuel bills is an energy efficiency investment having a 10% return, and paying \$25 per \$1 reduction in annual fuel bills yields a 4% return. Although home buyers are not likely to make present-value calculations on fuel bills, they are likely to look at average fuel bills before buying a home and obtain

information about insulation and other energy efficiency features. Fuel costs may be considered just one of many complex factors affecting the decision to buy a home, but the same can be said about other determinants of home value—from number of bedrooms to the quality of local schools. In a rational, competitive market, the value of energy efficiency, like the value of any other housing characteristic, should reflect its marginal value to home buyers. If home buyers expect stable fuel prices, then the marginal value of energy efficiency in recent years should be \$10–\$25 for every dollar reduction in annual fuel bills.

#### **Data**

The rational market hypothesis was tested for energy-efficient home values using 1991, 1993, and 1995 American Housing Survey (AHS) national data, and for 1992 through 1996 metropolitan statistical area (MSA) data. The AHS is a unique data source for this research in that it includes both house characteristic data (home value, number of rooms, square feet, lot size, and other key housing characteristics) as well as utility expenditure data. These data are reported by homeowners in lengthy interviews with the Census Bureau. Although independent data measurement (e.g., actual sales prices for homes) is preferable to self-reported values, the AHS provides a relatively large sample to ease concerns about random reporting error. Further, the AHS includes Census Bureau weights indicating the universe of owner-occupied housing units represented by each sample unit.

A complete set of national AHS data is collected every two years, while the MSA data are collected on a staggered cycle. The national sample includes data on rural housing not included in the MSA data and non-MSA urbanized areas, but the MSA data provides larger sample sizes within each specified MSA. The MSA data also provides a completely separate set of survey respondents (i.e., there is no overlap with the national sample). The period 1992–1996 reflects a complete cycle of MSA surveys, with a few MSAs surveyed in both 1992 and 1996. The MSA analysis here examines each of these five years of data and a merged MSA sample, including the complete cycle of MSA surveys. In the case of the few MSAs surveyed in both 1992 and 1996, the merged sample includes only the 1996 data.

For each national and MSA sample, the analysis examined subsets of the weighted AHS data on owner-occupied housing in adequate condition reporting electricity, piped gas, or fuel oil as the main heating fuel. The 8% of housing units using wood and other fuel types were excluded from the analysis because they provided incomplete data on fuel expenditures. Rental units were excluded because survey data on property values and fuel expenditures for rental units are probably distorted by reporting errors. Units in “adequate condition” are defined by the Census Bureau as having none of a series of major flaws or some combination of moderate flaws that make the unit substandard in quality. Substandard units were excluded from the analysis. These include houses experiencing electricity and heating equipment failure, which could obviously lower total fuel bills. Even when units were classified as substandard for another reason, their low fuel bills were attributed to uncomfortable internal temperatures.

The AHS data were separated into detached housing and attached housing to account for differences in their valuation models and consumption patterns. The detached housing sample was large enough to permit

the analysis of homes in each category of main heating fuel (electricity, piped gas, or fuel oil). This further segmentation was intended to reveal any variation by fuel type.

### Model Specification

Table 2 lists the variables in the regression model for single-family detached home values in the national AHS sample. Beside each independent variable description is the expected sign of the coefficient; also, the range anticipated by the hypothesis for the total utility variable is shown.

**Established indicators of home value.** The model incorporates independent variables for lot size, unit square feet, age of unit, and number of rooms, plus dummy variables to indicate whether the unit has a porch (or deck, balcony, or patio), garage (or carport), and/or central air conditioning. The coefficients for lot size, unit square feet, and number of rooms are all expected to be positive because home buyers are expected to pay more for additional living space. The coefficients for porch, garage, and central air conditioning are also expected to be positive because home buyers are expected to pay more for these amenities. Finally, the coefficient for age is expected to be negative be-

**TABLE 2 Variables in Regression Model for Detached Home Values**

Variable	Variable Description	Expected Value
<i>House Value</i>	This is the owner’s reported value of the house. It is not the purchase price, nor is it the assessment for tax purposes.	Dependent variable
<i>Intercept</i>	Constant/intercept.	
<i>Lot</i>	Lot size in square feet.	+
<i>Age</i>	Age of property in years.	-
<i>UnitSf</i>	Size of unit in square feet.	+
<i>Rooms</i>	Number of rooms.	+
<i>Totutil</i>	Sum of reported household expenditures on fuel oil, gas, and electricity, including the total consumption of these fuels (There is no way to distinguish how much electricity was used for heating and cooling as opposed to lighting and other electricity consumption.).	-10 to -25
<i>Lot2-MM</i>	Lot size square feet squared, in millions.	-
<i>Unitsf2-K</i>	Size of unit square feet squared, in thousands.	-
<i>SFUtil-K</i>	Unit square feet multiplied by total utility, in thousands. This is to account for more space requiring more utility consumption.	+
<i>RMUtil</i>	Number of rooms multiplied by total utility. This is to account for more rooms requiring more utility consumption.	+
<i>Garage</i>	Whether or not a garage or carport was present.	+
<i>Porch</i>	Whether or not a porch or deck was present.	+
<i>AirCond</i>	Whether or not the house had central air conditioning.	+
<i>South</i>	If unit is in the South.	
<i>West</i>	If unit is in the West.	
<i>Midwst</i>	If unit is in the Midwest.	
<i>Urban</i>	If unit is in an urbanized area but not inside the central city.	
<i>Rural</i>	If unit is in a rural area.	

cause home buyers are expected to pay less for older homes.

**Second derivative variables.** The model incorporates variables for the squared values of lot size and unit square feet. Negative coefficients are anticipated for these variables due to diminishing marginal values for additional space.

**Total annual fuel expenditures.** The rational market hypothesis anticipates a negative coefficient for total annual fuel expenditures. Further, the expected value for this coefficient is between -10 and -25, indicating that home values decreased by \$10–\$25 for every dollar increase in annual fuel bills.

**Fuel interaction variables.** Two independent variables are included in the model to account for the interactions between fuel costs and living space (measured by square feet and number of rooms). The room utility variable was constructed by multiplying the number of rooms in a house by its annual fuel bill, and the square feet utility variable was constructed by multiplying the housing unit's square feet by its annual fuel bill. The inclusion of these variables in the model is intended to isolate the effect of energy efficiency in the coefficient for total annual fuel expenditures. For houses with equal living space, home buyers are expected to pay more for homes with lower fuel bills, but the two interaction variables are included to control for larger homes that have higher utility bills because they have more interior space. The expectation of positive signs for these two fuel interaction variables is that the preference for more space is generally stronger

than the preference for lower utility bills.

**Location variables.** The model incorporates two types of location dummy variables: one set identifies region (the omitted category is the Northeast) and the other set defines urban status (the omitted category is Central City). Both the region and urban status categories are as defined by the Census Bureau.

**Attached housing model.** The attached housing model is exactly the same as the detached housing model, except that the lot size and lot squared variables are not included in the attached housing model because a substantial majority of the attached housing units in the AHS do not report any values for lot size.

**MSA model.** The attached and detached housing models for the MSA data are the same as the national AHS model, except that the location variables are dummy variables for each specific MSA.

### Regression Results for Relationship Between Fuel Expenditures and Home Values

Table 3 shows the total utility coefficients from each of 15 national AHS regressions examining detached homes, attached homes, and the subsets of detached homes reporting their main heating fuel as electric, piped gas, and fuel oil. The total utility coefficients from the 30 MSA regressions are shown in table 4. Table 5 provides the approximate sample sizes for each type of AHS sample and subsample examined in the analysis, and table 6 shows the approximate  $R^2$  values for the regressions associated with each type of sample and

**TABLE 3 Total Utility Coefficients in National AHS Home Value Regressions**

	1995	1993	1991
Detached homes	-23.41***	-20.00***	-21.16***
Attached homes	-20.49	-12.34	-18.88
Detached electric homes	-16.42**	-31.43***	-28.55***
Detached piped gas homes	-28.94***	-22.48***	-36.25***
Detached fuel oil homes	-21.92***	-5.05	+6.04

\*\*\*Significance > 99%; \*\* significance > 95%.

**TABLE 4 Total Utility Coefficients in MSA Home Value Regressions**

	1996	1995	1994	1993	1992	1992–1996
Detached homes	-9.92***	-22.44***	-30.89***	-10.40**	-26.38***	-17.68***
Attached homes	-20.69	-15.35	-35.65**	-25.85	16.50	-23.18***
Detached electric homes	-36.73***	-12.53*	-33.66***	-13.11	-20.64**	-28.60***
Detached piped gas homes	-6.79*	-26.65***	-27.65***	-24.43***	-33.97***	-20.29***
Detached fuel oil homes	-10.07	-30.44**	-20.07	12.31	6.61	-2.64

\*\*\* Significance > 99%, \*\* significance > 95%, \* significance > 90%.

**TABLE 5 Approximate Sample Sizes for AHS Regressions**

	National	MSA	Merged MSA
Detached homes	16,000	10,000	46,000
Attached homes	800	600	3,000
Detached electric homes	3,600	2,000	9,000
Detached piped gas homes	10,000	7,000	32,000
Detached fuel oil homes	2,400	1,000	5,000

**TABLE 6 Approximate  $R^2$  Values for AHS Regressions**

	National	MSA	Merged MSA
Detached homes	0.41	0.55	0.59
Attached homes	0.28	0.47	0.53
Detached electric homes	0.38	0.55	0.58
Detached piped gas homes	0.43	0.57	0.61
Detached fuel oil homes	0.40	0.48	0.50

subsample (exact sample sizes and  $R^2$  values vary by year). Detailed regression results for the national AHS data and the MSA regressions are available from the authors.

### Discussion of Results

Forty-five regressions were conducted. All  $F$  values exceed the 99% level of significance. In the larger sample size regressions, almost all of the coefficients have the expected signs, and most are significantly different from zero at the 99% level. The limitations of the AHS data are reflected in  $R^2$  values for the national sample regressions of about 0.40. This is not surprising because the AHS does not provide data that quantifies neighborhood crime rates or public school rankings, which certainly affect home price variations across different neighborhoods. Also, the variable in the national sample regression for urban status (urban, rural, or central city) provides only a discrete indicator variable to reflect the extent to which real estate values tend to increase in a continuous fashion for housing units closer to the city center. The region variable is also a discrete indicator variable that does not capture the extent of home value variation associated with different metropolitan areas within a region. Despite these limitations on the model's specification, the relatively large sample size from the AHS results in estimated values and the standard errors for the fuel expenditure coefficients that provide strong support for the rational market hypothesis.

The results for the MSA regressions confirm the findings from the national sample regressions. The  $R^2$  values for the MSA regressions are also higher than the  $R^2$  values for the national sample, with an  $R^2$  value as

high as 0.61 for the merged MSA regression for detached homes with piped gas. The higher  $R^2$  values for the MSA regressions suggest that the dummy variables for each MSA capture more of the "location" value in residential real estate than the combination of region and urban status variables in the national sample. The remaining unexplained variance in the MSA regressions almost certainly reflects the importance of other more complex location variables (local schools, crime, and length of work commute) that are known to affect home values but are not detailed in the AHS data.

Beyond showing that the total utility coefficient is significantly different from zero, the MSA and national AHS regressions are remarkably consistent with respect to the specific value assigned to the total utility coefficient. For both the MSA and national samples, the total utility coefficients for attached and detached homes are very similar, with an average value of about -20, indicating that home buyers during this period discounted their future fuel savings at after-tax mortgage interest rates of about 5%. The smaller samples show more variation, but about half of the 45 regressions have total utility coefficients within one standard error of -20, consistent with random error around a normal distribution mean of -20. These findings provide strong evidence that the market value of energy-efficient homes reflects projected fuel savings discounted at the average home buyer's after-tax mortgage interest rate.

### Detached Home National Samples

All three of the larger national samples for detached homes show total utility coeffi-

*Home buyers in the 1990s have recognized market value for energy efficiency based on annual fuel savings discounted at 5% after-tax mortgage interest rate.*

coefficients between -20 and -24, at the upper end of the range of -10 to -25 anticipated by the rational market hypothesis. Further, standard errors for these fuel expenditure coefficients are between 3.0 and 3.4, indicating a high probability that the true value of this coefficient is not only greater than zero but specifically in the upper end of the range anticipated by the hypothesis. The smaller single-year MSA samples for detached homes show more variation, but all five of these samples show total utility coefficients within or just outside of the anticipated range of -10 to -25, with a coefficient of -18 for the larger merged MSA sample.

#### **Attached Home National Samples**

The statistical significance of the results for the attached home national samples and single-year MSA samples are limited by small sample sizes, but the values for their total fuel expenditure coefficients are completely consistent with the detached housing analysis. The value of this coefficient in the larger merged MSA sample is -23, with a standard error of 8.3. This consistency in the fuel expenditure coefficients for attached and detached housing contrasts with two significant differences between these two housing types. First, the attached housing model has no independent variable for lot size. Second, the coefficients for the unit square feet variables indicate that the incremental market value associated with more living space is higher for attached homes than for detached homes, consistent with the fact that attached housing is disproportionately located closer to central cities where real estate values are higher.

In spite of the significant differences between attached and detached housing markets, the rational market hypothesis anticipates little or no difference in the fuel expenditure coefficient because the discounted value associated with every dollar reduction in annual utility bills should not be affected by other housing characteristics. Therefore, the consistency of the fuel expenditure coefficients in the attached and detached housing regressions is entirely supportive of the hypothesis.

#### **Electric-Heat Detached Home National Samples**

Regression analyses for the subset of detached housing units that identify electricity as their main heating fuel show national sample coefficients for the fuel expenditure

variable that range from -16 to -31, with standard errors between 6.4 and 7.4. The smaller single-year MSA samples result in more variation in the total fuel expenditure coefficients for these samples, but these values are all roughly consistent with the hypothesis. The value of this coefficient in the larger merged MSA sample is -28.6, with a standard error of 3.9. Almost all of the national and MSA regressions show total fuel expenditure coefficients for electric homes within one standard error of the upper end of the -10 to -25 range anticipated by the rational market hypothesis, consistent with the results for all detached housing analysis. These consistent results for the electric home subsamples suggests that the market value associated with lower fuel expenditures does not simply reflect a premium paid for homes with a fuel type that may be more economical than other heating fuels in certain regions.

#### **Gas Heat Detached Home Samples**

The regression analyses for homes that identify piped gas as their main heating fuel reinforce the conclusions suggested by the analysis of electric homes. In the national sample regressions, the fuel expenditure coefficients range from -22 to -36, with standard errors between 4.0 and 4.6. The 1991 coefficient is the only estimate that is more than one standard error above the range anticipated by the rational market hypothesis, possibly reflecting the preference for gas heat over fuel oil following the spike in fuel oil prices in 1990. A similar pattern appears in the single-year MSA regressions. The larger merged MSA sample shows a fuel expenditure coefficient of -20, with a standard error of just 2.5, consistent with the results for all detached housing. These results indicate that the incremental home value of \$20 per dollar reduction in annual fuel expenditures is evident both within and across subsets of housing using different fuel types as their main heating fuel.

#### **Fuel Oil Heat Detached Home National Samples**

The regression results for detached homes with fuel oil heat reflect the relatively small size of this subsample and appear to be distorted by extreme fluctuations in fuel oil prices in the early 1990s. Detailed results for this subsample show that some coefficients are not significantly different from zero and/or do not have the expected signs, especially in the

regression analysis for the 1991 data. The 1995 coefficient for the fuel expenditure variable is -21, consistent with results for other fuel types, but the 1993 coefficient is -5, and the 1991 coefficient is +6. Also, the coefficient for unit square feet in the 1991 fuel oil regression is negative. Similar patterns are reflected in the MSA regressions, with positive values for the fuel expenditure coefficients in 1992 and 1993.

The anomalous results in the fuel oil regressions for the early 1990s almost certainly reflect the extreme spike in fuel oil prices following the invasion of Kuwait in the summer of 1990. AHS respondents in the 1991 survey were reporting annual fuel bills that reflected extraordinarily high fuel oil prices during the 1990–1991 winter. Further, the national AHS sample of detached homes reporting fuel oil as their main heating fuel declined by almost 30% between the 1991 and 1995 surveys, while the sample size for all detached homes declined by only 2% between these two samples. This finding suggests that a large percentage of homes with fuel oil heat were converted to gas or electric heat in the years following the 1990 spike in fuel oil prices. Homeowners with the most financial incentive for converting from fuel oil and those most likely to have the financial means to convert would tend to be upper-income households disproportionately concentrated in larger homes with higher property values. Because the 1991 survey was actually conducted from July 1991 through December 1991, a substantial number of households may have reported higher home values in 1991 based on fuel conversions that were already planned or underway. These same households, however, may have reported their main heating fuel and annual fuel expenditures based on the spike in fuel oil prices from the previous winter. These factors could have substantially distorted the regression results for this subsample in the early 1990s.

## CONCLUSION

The 45 regressions collectively indicate a clear convergence for the value of home energy efficiency. Almost half of the fuel expenditure coefficients are within one standard error of -20. This suggests that home buyers in the 1990s have recognized market value for energy efficiency based on annual fuel savings discounted at a 5% after-tax mortgage interest rate. The major exception to these findings were the regressions for homes heated by fuel oil in the early 1990s. These outliers appear to reflect the sharp increase in fuel oil prices in 1990 and conversions to gas heat in subsequent years.

The convergence of the fuel expenditure coefficients around -20 is consistent with research findings that the selling price of homes increased by \$20.73 for every \$1 decrease in annual fuel bills.<sup>2</sup> Other research supports the underlying conclusion that energy efficiency increases home value by an amount that reflects annual fuel savings discounted at the prevailing after-tax mortgage interest rate.<sup>3</sup>

The implication for home buyers is that they can profit by investing in energy-efficient homes even if they do not know how long they might stay in their homes. If their reduction in monthly fuel bills exceeds the after-tax mortgage interest paid to finance energy efficiency investments, then they will enjoy positive cash flow for as long as they live in their homes and can also expect to recover their investment in energy efficiency when they sell their homes.

The implication for appraisers is that cost-effective energy efficiency investments *do* appear to be reflected in residential housing market values. Therefore, the appraised value of energy-efficient homes could understate their actual resale value if the comparables used in the appraisal do not reflect the value of a cost-effective energy efficiency investment.

2. Ruth C. Johnson and David L. Kaserman, "Housing Market Capitalization of Energy-Saving Durable Good Investments," *Economic Inquiry* (July 1983): 374–386.

3. Marvin J. Horowitz and Hossein Haeri, "Economic Efficiency v. Energy Efficiency," *Energy Economics* (April 1990): 122–131.

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# The Changing Culture of American Land Use Regulation: Paying for Growth with Impact Fees

Ronald H. Rosenberg  
*William & Mary Law School*

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# THE CHANGING CULTURE OF AMERICAN LAND USE REGULATION: PAYING FOR GROWTH WITH IMPACT FEES

Ronald H. Rosenberg\*

## I. INTRODUCTION

**A**MERICA, over the last century, has been a society of change—a dynamic, growing society. This dynamism has been reflected in a nation characterized by expansion of every kind—demographic, educational, economic, and geographic. Throughout much of the twentieth century, the concept of growth was regarded by some as the fundamental American destiny, as a natural outcome of a prosperous economic system, and as an indicator of the superiority of the American political system. Under this ideology, in a general sense, growth was “good” and it was to be facilitated by public policy and public subsidies as well as by private investment. The physical growth of our living communities possessed organic connotations reflecting social progress and the nation’s economic vitality. Following this view, a century ago even the adverse impacts of industrialization such as air pollution could be considered to be the inevitable and necessary costs of prosperity.<sup>1</sup> The American growth ideal associated general economic expansion with greater personal opportunity and higher individual real incomes which would, in turn, lead to a superior quality of life. This growth concept also suggested greater personal freedom and choice in the selection of the form and location of one’s residence. To fulfill this desire, throughout the last century and into the present, most Americans have aspired to achieve the twin goals of owning their own homes<sup>2</sup> and living in suburban areas

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\* 2005. Ronald H. Rosenberg

1. In the late nineteenth and early twentieth centuries, Pittsburgh, Pennsylvania, was called the “smokey city.” This nickname was considered a positive identification since it signified the economic prosperity associated with industrial facilities. In fact, coal dealer William P. Rend spoke before the Union City Club of Chicago in 1892 and he said “[s]moke is the incense burning on the alters of industry. It is beautiful to me.” *Smoke Prevention: Report of the Special Committee on Prevention of Smoke, Presented to Engineers’ Club of St. Louis*, J. ASS’N ENG’G SOC’YS 11 (1892) (quoted in DAVID STRADLING, *SMOKESTACKS AND PROGRESSIVES: ENVIRONMENTALISTS, ENGINEERS AND AIR QUALITY IN AMERICA, 1881-1951*, at 43-44 (1999)).

2. The social goal of home ownership is particularly strong in the United States and it is accurate to say that Americans are a nation of homeowners. As of 2003, overall home ownership rates reached 68.3% of all American families regardless of income. However, there are significant disparities between demographic subgroups depending upon race, age,



outside of the central city.<sup>3</sup>

Growth in America cannot to be measured solely by the numbers—that is, the expanding population<sup>4</sup> or the general increase in families or individual incomes.<sup>5</sup> The idea of growth has a physical and a spatial dimension to it. As the nation's population has grown over the last century, the form and distribution of living patterns has changed as well. Today, America can best be described as a suburban nation with over 80% of its total population concentrated in metropolitan areas<sup>6</sup> and, overwhelmingly, they are living in single family, detached homes.<sup>7</sup> The nation has transformed itself over the last century so that the location of homes and jobs have drastically shifted from cities to suburbs<sup>8</sup> and there is little evi-

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and state. See U.S. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES: 2004-2005 (124th ed. 2004) [hereinafter 2004-2005 CENSUS].

3. This suburban migration reflects what Anthony Downs terms the “dominant vision” of metropolitan growth which reflect residential norms for the last fifty years. Downs sees this “dominant vision” as possessing five components: 1) ownership of detached single-family homes on spacious building lots; 2) ownership of automobiles; 3) working in low-rise workplaces in park-like settings; 4) residence in small communities with strong local governments; and 5) environments free from the signs of poverty. See ANTHONY DOWNS, *NEW VISIONS FOR METROPOLITAN AMERICA* 5-6 (1994). Following the incentives of “consumer sovereignty,” developers have provided the market with suburban environments that people demand. See, e.g., Peter Gordon & Harry W. Richardson, *Prove It: The Costs and Benefits of Sprawl*, BROOKINGS REV. 23 (Fall 1998) (“it is hard to avoid concluding that ‘sprawl’ is most people’s preferred lifestyle”).

4. American population has consistently grown during the twentieth century. By July, 2003, the Census Bureau estimated the nation’s population to be just over 291 million people. This should be compared to the population in 1900 which was approximately 76 million—nearly a quadrupling of population in a century. 2004-2005 CENSUS, *supra* note 2, at 7 tbls. 1&2. During the period from 1970 to 2000, American overall population grew by over 32%. This population increase resulted from both increased numbers of American citizens and higher numbers of immigrants. In fact, in the decade of the nineties the immigrant population growth rate grew faster (3.4% per year) than in any decade other than 1900 to 1910, 1910 to 1920 and 1920 to 1930. *Id.* at 8 tbl. 5.

5. Nominal incomes for all American households measured in constant 2002 dollars, have risen approximately 16% over the past twenty-two years, growing from \$36,608 in 1980 to \$42,409 in 2002. 2004-2005 CENSUS, *supra* note 2, at 443 tbl. 666. The real shift over this period occurred in the distribution of income with the trend over the last two decades being the concentration of income in the top 5% of the population with this segment increasing its share of income total from 14.6% in 1980 to 20.8% in 2002, measuring in constant 2002 dollars. *Id.* at 447 tbl. 672. During this same period, the lowest fifth of the population experienced a nearly 20% drop in the distribution of aggregate income demonstrating that the rich did get richer and the poor got poorer.

6. In fact, the percentage of the American population living in metropolitan areas has increased from 68.6% to 80.3% during the last two decades, with the amount of land area occupied by this growing metropolitan populace also expanding from 10.9% to 20% of the nation’s land base. See STATISTICAL ABSTRACT OF THE UNITED STATES 31 tbl. 29 (122d ed. 2002) [hereinafter 2002 CENSUS].

7. Statistics indicate that, during the nineties, the single family unit was by far the most common form of new residential construction. In 2003, single family structures represented approximately 80% of the new housing construction starts. See 2004-2005 CENSUS, *supra* note 2, at 599 tbl. 928.

8. Immediately following World War II, approximately 70% of metropolitan residents lived in cities. By 1990, this percentage had declined to nearly 40% of such residents. See DAVID RUSK, *CITIES WITHOUT SUBURBS* 5 (2d ed. 1995). Not only have cities become relatively less populous, their remaining residents have become disproportionately poor. In 1990, 50% of all poor people lived in cities, while in 1960 only 33% of the poor lived there. See F. KAID BENFIELD ET. AL., *ONCE THERE WERE GREENFIELDS* 123 (1999).

dence to suggest that a reversal of this pattern will be forthcoming anytime soon.<sup>9</sup>

Suburban American growth also reflects a greater affluence of American families with house size and housing amenities now common features in new housing.<sup>10</sup> However, the suburban lifestyle is described by more than just house size and the number of bathrooms, garages and other amenities. It is also defined by a wide array of site-specific, neighborhood and community-wide public services enhancing the quality of life; for example, sidewalks, curbs and gutters, internal subdivision streets, libraries, emergency medical, and social services, as well as public schools, recreational facilities, and fire stations. While some of these services may be provided by private corporate suppliers, the bulk are the responsibility of units of local government. Therefore, the construction of a single home cannot be considered as an isolated event, but rather as part of a continuum of connected public responses linking new residents to the broad range of community improvements and services. Funding these growth-related capital costs has become one of the most controversial contemporary policy questions and one which has been initially determined in the many chambers of local government and ultimately, when contested, resolved in the state courts and the legislatures.

For most growing communities today, meeting this fiscal demand presents a formidable financial challenge. Most growing communities are under tremendous fiscal pressure to fund community services expected by

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While the poor have become concentrated in cities, job growth has located primarily in suburban areas. See Anne Gearan, *Clinton to Help Needy Own Car*, ATLANTA CONST., Feb. 24, 2000, at C1 (stating two-thirds of all new jobs are created in the suburbs).

9. Sociologist J. John Palen suggests that suburbanization is likely to continue for the immediate future and he writes that a suggested "back-to-the-city" movement was largely the creation of the popular media. J. JOHN PALEN, *THE SUBURBS* 226 (1995). However, the pursuit of the suburban ideal has actually had mixed results in terms of the suburbanite's level of satisfaction. While America has become a suburban nation, its "low density, dispersed, single-use, automobile-dependent new development" have been critically termed "sprawl." See Oliver A. Pollard, III, *Smart Growth: The Promise, Politics, and Potential Pitfalls of Emerging Growth Management Strategies*, 19 VA. ENVTL. L.J. 247, 248 n.2 (2000). Sprawl development patterns have been associated with a number of serious problems including air and water pollution and the loss of open space, agricultural land, and natural areas, as well as serious traffic congestion. This has occurred in spite of planning, zoning and land use control efforts. See generally Lee R. Epstein, *Where Yards Are Wide: Have Land Use Planning and Law Gone Astray?*, 21 WM. & MARY ENVTL. L. & POL'Y REV. 345 (1997). But see Steven Hayward, *Suburban Legends*, NAT'L REV., Mar. 22, 1999, at 35, 38 (suggesting that anti-sprawl forces think that "commuting suburbanites are making unenlightened lifestyle choices because they lack the expert supervision that only their betters in government can provide").

10. Census data has indicated that the average new home size has increased to 2,330 square feet as of 2003, which constitutes a jump of nearly 50% from the average new home in 1970. 2004-2005 CENSUS, *supra* note 2, at 600 tbl. 930. Beyond size, new American homes are much more likely to be two or more stories, to have four or more bedrooms, 2.5 or more bathrooms, have central air conditioning, fireplaces, and garages than they did in 1970. See 2004-2005 CENSUS, *supra* note 2, at 600 tbl. 930. In fact, features such as central air conditioning have become so commonplace that they are not even considered to be amenities, but rather standard features, in 88% of new homes. *Id.*

residents and often required by state and federal government.<sup>11</sup> Public debate in many communities often focuses upon the question of how to supply needed public improvements without increasing the general taxes on existing residents.<sup>12</sup> This local funding problem has been exacerbated over the last twenty years by at least two factors: 1) significant reductions in intergovernmental funding transfers from both state and federal government and 2) the imposition of voter-mandated limitations on the ability of the locality to generate tax revenues from community-wide taxation sources.<sup>13</sup> In this atmosphere of fiscal conservatism, even the local funding of public services for *existing* residents becomes a controversial and disputed public issue. Not surprisingly, there is often little support for using scarce local tax revenues to pay for the capital needs caused by the influx of *future* community residents. Often the public discourse repeats the mantra that new growth “should pay its own way.” Frequently, the issue of funding infrastructure needs for new growth has emerged as an extremely significant growth management question as well. In many locales, land development is characterized as being “out of control” and causing a problem termed “sprawl.”<sup>14</sup> No community wishes to subsidize

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11. Minimum service levels are specified and required by state and, occasionally, federal law. This has become known as the unfunded mandate problem that has engendered such strong hostile reaction from local governments. State legislatures have responded, and at least seventeen states have adopted statutes requiring state government to reimburse local governments for complying with the costs of new mandates and this has resulted in litigation. See, e.g., *City of Sacramento v. State*, 785 P.2d 522 (Cal. 1990); *County of Los Angeles v. State*, 729 P.2d 202 (Cal. 1987); *Schmidt v. Dep’t of Educ.*, 490 N.W.2d 584 (Mich. 1992).

12. Localities, constrained in their ability to raise sufficient revenues for needed public services, have resorted to a range of techniques to enhance their economic well-being. See, e.g., Jennifer Lenhart, *Leesburg Revives Growth Debate*, WASH. POST, Feb. 11, 2002, at B1 (discussing town’s annexation of 7,000 acres of county land for commercial purposes to improve the town’s tax base). Some jurisdictions have imposed a direct real estate sales tax on each sale transaction. In England, the Department of Inland Revenue has imposed a “stamp duty” or property transaction tax of up to 4% depending on the value of the property being sold. See Anthea Masey, *Stealthy Way to Avoid Tax*, EVENING STANDARD, June 5, 2002, at 7.

13. The most famous example of this kind of property tax revolt was the 1978 California statewide initiative known as Proposition 13, which served to amend the California Constitution to impose strict limits on the rate at which real property was to be taxed and upon the rate at which realty assessments were to be increased from year to year. *Nordlinger v. Hahn*, 505 U.S. 1, 1 (1992). The United States Supreme Court sustained this method of preferential tax assessment against a Fourteenth Amendment Equal Protection challenge finding at least two constitutionally satisfying justifications for the system in *Nordlinger v. Hahn*. *Id.* at 15.

14. Nearly thirty years ago, with the beginning of the environmental movement in America, commentators began to critique the prior assumptions about the desirability of endless economic growth. One writer, employing rhetoric reminiscent of the National Environmental Policy Act of 1969 or NEPA, expressed thoughtful doubts about this premise and described a nascent attitude challenging the short-term thinking of growth advocates. He wrote,

Once, citizens automatically accepted the idea that growth—in numbers of people, in jobs, in industries—would ease the public burden by increasing the tax rolls and spreading per capita costs. Now they have doubts. They seem to be expressing the belief that larger size reflects not only lesser quality but also higher costs. Pressed by inflation, they listen carefully arguments about the hidden costs of growth.

the sprawl that afflicts it.

While much has been written about the environmental, energy, and social consequences of sprawling suburban development;<sup>15</sup> far less attention has been given to the issue of how new development costs are funded. American local government law and civic culture has increasingly privatized development costs that had previously been carried as general societal expenses. Growth now occurs as local governments attempt to shift development costs away from themselves.<sup>16</sup> Increasingly, local governments combine their traditional land use regulatory powers with their authority to impose land development conditions. This practice has become known as requiring “exactions” as a condition of land use approval,<sup>17</sup> often demanding an array of developer on-site and off-site improvements, land dedications, and cash payments made to the locality. These up-front costs, reaching \$20,000 or more per residential unit,<sup>18</sup> are allocated to one or more participants in the development process rather than

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The new mood reflects a burgeoning sophistication on the part of citizens about the overall, long-term economic impact of development. Immediate economic gains from job creation, land purchases, and the construction of new facilities are being set against the public costs of schools, roads, water treatment plants, sewers, and the services new residents require.

WILLIAM K. REILLY, *THE USE OF LAND* 33-34 (1973).

15. See Robert W. Burchell & Naveed A. Shad, *The Evolution of the Sprawl Debate in the United States*, 5 *HASTINGS W.-NW. J. ENVTL. L. & POL'Y* 137, 141 (1999) (describing the consumption of exurban agricultural and other lands); William W. Buzbee, *Urban Sprawl, Federalism, and the Problem of Institutional Complexity*, 68 *FORDHAM L. REV.* 57, 72-75 (1999) (describing air pollution, water pollution and other environmental impacts of sprawl); Arnold W. Reitze, Jr., *A Century of Air Pollution Control Law: What's Worked; What Failed; What Might Work*, 21 *ENVTL. L.* 1549, 1572 (1991) (sprawl commuting patterns increase traffic and auto air pollution). Sprawl development patterns and the reliance on automobiles for home to work commuting have been blamed for the steadily growing commuting times experienced by suburban residents. One recent study concluded that Washington, D.C. drivers traveling at rush hour lost 84 hours being stuck in traffic in 2000. This was up from 24 hours per year in 1982. Katherine Shaver, *Wasting Time to Save Time*, *WASH. POST*, June 21, 2002, at B1. The economic implication of road congestion and delay are substantial. According to a study prepared by the Texas Transportation Institute, the Washington, D.C. region lost \$2.3 billion a year in lost time and other expenses due to traffic congestion. See Neil Irwin, *Clogged Roads Cost Area Firms Billions*, *WASH. POST*, June 21, 2002, at A1.

16. There is more than a small degree of hypocrisy in the insistence of existing residents demand that newcomers “pay their own way” when previous infrastructure costs had been paid by the community as a whole through debt financing repaid with general tax revenues. Describing this inconsistency Professor Jonathan C. Levine has written that,

[W]hen existing residents are called upon to pay for infrastructure that benefits newcomers principally, they rebel—despite the fact that their own infrastructure had been financed in precisely the same fashion. In this context [of higher property tax increases to service debt], the impact fee is viewed as an alternative financing mechanism that comes to resolve any inequities in the burdens that may be generated by such property tax hikes.

Jonathan C. Levine, *Equity in Infrastructure Finance: When are Impact Fees Justified?*, 70 *LAND ECON.* 210, 221 (1994).

17. See generally ALAN A. ALTSHULER & JOSE A. GOMEZ-IBANEZ, *REGULATION FOR REVENUE: THE POLITICAL ECONOMY OF LAND USE EXACTIONS* (1993).

18. A 1999 statewide study undertaken in California found that residential development fees alone ranged from a low of \$4,000 to a high of more than \$60,000 per unit. See DEP'T OF HOUSING & CMTY. DEV., *PAY TO PLAY—RESIDENTIAL DEVELOPMENT FEES IN CALIFORNIA CITIES AND COUNTIES, 1999*, at 1 (2001).

being absorbed by the community. Consequently, one of the most significant public policy questions confronting localities today is “who will pay the initial infrastructure and capital costs necessitated by new population growth?”<sup>19</sup>

Using the rhetoric of financial impact analysis,<sup>20</sup> local governments have required that builders, land developers, and, ultimately, home buyers pay development cash impact fees to fund a wide array of public costs attributable to new land development. Past funding patterns have changed as society and the courts have grown to accept the idea that new growth should absorb its own fiscal impacts. Not surprisingly, this emerging impact fee practice has been exceedingly popular with local governments and current residents, and it has dramatically accelerated over the last twenty years. On the other hand, the practice has also been strongly criticized by landowners, developers, and affordable housing advocates as unfairly increasing the cost of new construction, imposing an unfair “tax” and raising housing prices. Some have suggested that such fees actually constitute *de facto* growth controls with exclusionary implications.<sup>21</sup> Further, the construction industry has argued without significant success that emerging federal constitutional “Takings Clause” principles should strictly limit this rapidly-spreading exaction practice. The underlying social and legal attitudes have shifted to a point where existing suburban residents believe that impact fees are a legitimate means of assigning development costs. The culture of having communities collectively bear

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19. It has been asserted that the “costs of growth are little known, poorly understood and typically understated.” Eben V. Fodor, *The Real Cost of Growth in Oregon*, 18 POPULATION & ENV'T 373, 387 (1997). Fodor's analysis of seven public infrastructure costs associated with the construction of a typical single-family house in Eugene, Oregon in 1995—schools, sewer, storm drainage, roads, water service, parks and recreation and fire protection—set them at \$24,502. In 1995, the system development charges imposed in Eugene were only \$2,054, leaving the public to assume public costs of \$22,448 per house and totaling \$24.6 million for residential construction in that year alone. *Id.* at 386. The argument is that even when impact fees are charged to developers, they only capture a fraction of the public infrastructure costs associated with residential growth and do not account for other environmental and quality of life impacts. EBEN FODOR, BETTER NOT BIGGER 87 fig.5-5 (1999) [hereinafter FODOR, BETTER NOT BIGGER].

20. Some have drawn the analogy between the emerging land development exactions and the use of environmental impact analysis in environmental impact statements required by the National Environmental Policy Act and numerous state laws. See 42 U.S.C. §§ 4321-4370e (2005).

21. As growth controls become more prevalent in a metropolitan area, they cause population growth to be diverted to other less expensive and less exclusionary areas, often farther away from the city center. Professor William Fischel has argued that these practices exacerbate sprawl development patterns. See WILLIAM A. FISCHEL, DO GROWTH CONTROLS MATTER? 55 (1990). Growth retarding policies have also been identified as having beneficial economic impacts for existing homeowners when local governments either limit the supply of new housing or raise the entry costs or both. See Nicole Stelle Garnett, *Trouble Preserving Paradise?*, 87 CORNELL L. REV. 158, 177 (2001) (“existing owners can charge prospective homeowners the premium that they gain when the government limits new development”). *But see* VICKI BEEN, IMPACT FEES AND HOUSING AFFORDABILITY 35 (HUD Report, 2004) (evidencing of disproportionate effects on low and moderate income consumers or racial minorities is “thin” due to limited research).

public capital expenses has given way to a view of individual responsibility.

It is the increasing use of development impact fees which is the subject of this article. Part I will focus on the general subject of municipal finance with an analysis of the changing pattern of the sources of local government tax and non-tax revenue. Special consideration will then be given to the wide range of methods that local governments could use to finance capital improvements necessary for community development. This part will conclude that by mixing a number of different techniques, increasingly municipalities have shifted the costs of accommodating new development to the land development industry, land owners, and home purchasers. Operating out of financial necessity, this process has resulted in the integration of local government's land use planning and zoning efforts with municipal financial planning goals resulting in a system that can be said to "regulate for revenue."<sup>22</sup> In Part II, the evolution of the American land use exaction tradition will be examined. This part will conclude that rather than a recent innovation, exactions have existed in some form for over a century with impact fees being the most recent example of this tradition. Part III will analyze the characteristics, policy rationale and development implications of development impact fees. Available empirical research related to the device will be analyzed. This part will conclude that despite the widespread use of the impact fee, little empirical analysis has been published but that which exists confirms common sense assumptions about the economic impact of the fees. Part IV will examine the oversight given by both federal and state courts to rapidly expanding local government impact fees. This critique will analyze this litigation in three phases: the pre-*Nollan* period (pre-1987), the *Nollan/Dolan* era (1987-1994), and the post-*Dolan* (post-1994) time frame. This part will draw two main conclusions: 1) that impact fee policy has been influenced more directly by state legislative action and state court supervision than by federal constitutional rulings and 2) that as the legal and political culture has evolved, state courts have generally accepted impact fees as the expression of social attitudes on a fundamental question of public responsibility. This history concludes that development impact fees are truly products of the state law compromises balancing the competing interests in distributing development-related costs and increasing localities have deflected public responsibilities.

## PART I—LOCAL GOVERNMENT FINANCE AND THE FUNDING OF NEW MUNICIPAL INFRASTRUCTURE

### A. FUNDING THE COSTS OF NEW DEVELOPMENT— "WHO PAID FOR THE NEW ELEMENTARY SCHOOL?"

Public services, such as school buildings and fire stations, are most often provided by units of local government. However, in our daily lives,

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22. See generally ALTSHULER & GOMEZ-IBANEZ, *supra* note 17.

most citizens only have the vaguest idea of who provides their local public services and who pays for them. Bricks and mortar cost money, but it is not always clear who actually funds them. When a new school, road, or police station is built; most residents generally believe that these developments are paid for by “the government” with “tax money.” But which government and what money? Who is actually footing the bill? Conceivably, the federal government could fund the construction of local public facilities. In reality, however, this does not happen since most of these expenses are borne by local communities, sometimes with state assistance. In addition, it is often not clear to residents which unit of the local government is providing the service. This is due to the fact that the structure of local government often is not transparent to residents since it is composed of several entities operating within the same geographic area such as special service districts (that is, school, sewerage, water, and recreation) as well as general purpose local government units (that is, cities, counties, towns and villages). More significantly, few citizens comprehend the basic funding patterns of local government infrastructure and service provisions. Roads, schools, and fire stations mysteriously appear from time to time, with most people assuming that they were built, furnished and staffed by some level of “government,” yet with no clear concept of who actually paid for the expenses land, materials, and labor.

The details of local government fiscal questions, both in terms of taxing and spending, are vaguely understood by most residents, with most citizens merely hoping that someone else actually pays the cost. Ordinary local government budgeting matters are only the concern of the most intensely-interested citizen’s organizations or groups dedicated to government economy or policies of tax reduction. In most cases, such interest focuses on local government fiscal issues in a general, non-specific way. The frequently-heard call is for “tax relief,” and it is usually made in support of a reduction in the local real property taxes which have significantly increased in many areas due to rising property values. Even if an interested, anti-tax local resident knew that a particular new school or fire station was being budgeted by their local government, it would be very difficult for them to associate one planned construction project to their *general* real estate or sales tax burden. That is not to say that focused opposition cannot exist, but rather, it is not easy for citizens to disaggregate the costs of one school or library from their total tax burden. An exception to this can arise, however, when a specific project or category of projects requires explicit citizen approval as in the case of the issuance of bonds or an increase in local taxes dedicated to individual construction projects.<sup>23</sup> In these instances, citizens can and do mobilize around the specific construction project to either support or defeat it.

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23. The creation of state taxation policy can also be controversial and, on occasion, lead to serious political and functional paralysis. See Manuel Roig-Franzia, *A Tennessee Tangle Brings State to Halt—Deal to Raise Sales Tax Ends Tense Shutdown*, WASH. POST, July 4, 2002, at A1. Due to legislative inaction, the Tennessee state government was shut down for three days resulting in nearly half of its 45,000 state employees not coming to

B. WHERE DO LOCAL GOVERNMENTS OBTAIN FUNDS FOR THEIR SPENDING OR "HOW DID WE PAY FOR THE NEW ELEMENTARY SCHOOL?"

In the nineteenth century, local governments were commonly referred to as "municipal corporations," with the intended analogy being made to the private corporation. As mentioned above, the municipality's functions were set out in a governmental charter or were specified, either directly or indirectly, by state enabling legislation. Cities and counties initially defined their public functions in a way that balanced the expressed desires of their residents with the legal limitations inherent in their authorities. However, the descriptive analogy to the private corporation only shared a degree of parallelism. While the private firm could freely decide to raise or lower prices, drop unprofitable lines of business, embark on new business opportunities, lay off unneeded workers, and raise new funds for expansion in the capital markets, their municipal counterparts found themselves highly circumscribed by state law obligating them to provide certain public services and giving them carefully specified fiscal powers that could be employed to generate necessary revenues to fund its activities.<sup>24</sup> Political considerations associated with expected levels of public services also placed pressures on municipal corporations that were not experienced by private companies. Furthermore, municipal budgeting priorities could also be skewed by state and federal policies imposing "unfunded mandates" which demand that localities assume costs associated with programmatic preferences required by the "superior" level of government.<sup>25</sup>

Local governments are not like their state or federal counterparts: they have extremely limited freedom in developing their own fiscal policies.

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work, state universities canceling summer school classes, and dozens of motor vehicle registration offices being closed.

24. See generally David Gelfand, *Seeking Local Government Financial Integrity Through Debt Ceilings, Tax Limitations, and Expenditure Limits: The New York City Fiscal Crisis, the Taxpayers' Revolt, and Beyond*, 63 MINN. L. REV. 545 (1979) (describing the history of state law limiting or reducing real estate tax rates, imposing maximum levy or tax revenue limits, and expenditure increase limits).

25. The term "mandates" has been more broadly defined to include several different techniques used by the federal government to regulate states and localities. This list includes: direct orders to carry out federal policy, grant conditions, cross cutting requirements or linked compliance requirements, and partial and total preemptions of local action. See PAUL L. POSNER, *THE POLITICS OF UNFUNDED MANDATES* 4 (1998). This unidirectional federalism has been more graphically described in the academic literature as "shift and shaft federalism." See Stephen D. Gold & Sarah Ritchie, *State Policies Affecting Cities and Counties in 1991: Shifting Federalism*, PUBLIC BUDGETING AND FINANCE 23-46 (Winter 1992). The "unfunded mandate" problem also adversely affects state governments which must respond to federal mandates such as Medicare. It has been estimated that Medicaid, a federal health care program, has costs which have been growing at a double-digit rate and now account for 20% of the average state budget. See Dan Balz, *States' Budget Outlook Remains Bleak—Even Tougher Measures May Be Needed to Make Up for Revenue Shortfalls*, WASH. POST, July 16, 2002, at A5. State government also imposes these mandates on localities. DAVID R. BERMAN, *STATE-LOCAL RELATIONS: AUTHORITY, FINANCES, COOPERATION* 49-50 (Int'l City Mgmt. Ass'n, Mun. Yearbook 2002) [hereinafter BERMAN 2002].



Under the legal theory prevalent in many jurisdictions, local governments either derive their authority to act upon delegation from the state or find limits to their authority in statutory or constitutional provisions. Although the political and social traditions of different states result in varying levels of local autonomy, in general, state statutory and constitutional law imposes substantial restrictions upon local government financial management, including property assessment, taxation, debt-issuance, budgeting, accounting, auditing, and fiscal reporting.<sup>26</sup> As a result of this tradition, the power of local governments to tax is one of the most carefully circumscribed authorities.<sup>27</sup> Unlike a private corporation, local governments cannot freely raise “prices” of their general governmental services in response to higher costs. They must raise taxes or find stable intergovernment transfers to pay these expenses. More specifically, a county or city usually may not raise its sales or real estate tax rate or borrow money unless it closely follows state law procedures and substantive policies.<sup>28</sup> Often such a tax policy change or borrowing decision must

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26. Traditionally, state government has carefully overseen the taxing and debt issuance powers of local governments as an aspect of state supervision of local affairs. See OSBORNE M. REYNOLDS, JR., *LOCAL GOVERNMENT LAW* 354-59, 369-70 (2d ed. 2001). However, following the high number of local government financial defaults and other failures during the Great Depression of the thirties, state legislatures imposed an impressive array of financial controls on localities and in some states reserved the power to review and approve local budgets. More recently, important voter initiated “lid laws” have been adopted which impose property tax rate and revenue limits, limits on property assessment practices, and revenue rollbacks. See DONALD AXELROD, *BUDGETING FOR MODERN GOVERNMENT* 181-82 (1995).

27. Florida is an example of a state whose constitution strictly governs the power of the state and local governments to levy taxes. Article VII, § 1(a) of the Florida Constitution provides:

No tax shall be levied except in pursuance of law. No state ad valorem taxes shall be levied upon real estate or tangible personal property. *All other forms of taxation shall be preempted to the state except as provided by general law.* (emphasis added).

This section emphasizes the centralized control of local taxing power that the Florida Constitution vests in the state’s legislature. Another section of Article VII—§ 9(a)—specifically mandates that counties, school districts, and municipalities be legislatively authorized to levy ad valorem or property taxes. All other forms of taxation are preempted and reserved to the state unless authorized by general law, that is, state statute. The Florida courts have rigorously enforced this strict reading of legislative supremacy and the lack of implied local powers of taxation. See, e.g. *Collier County v. State*, 733 So. 2d 1012, 1014 (Fla. 1999) (holding if an “interim governmental services fee” is a “tax,” it is unconstitutional as unauthorized).

28. State legislatures control nearly every aspect of local government financial management including assessment practices, taxation forms, debt issuance, budgetary methods, accounting and auditing rules, and reporting to the state government. Some states have “truth-in-taxation” statutes demanding public disclosure of proposed tax increases. Most notably, state law often limits or prohibits tax rates and assessment increases. In some states, the total amount of tax revenue that can be lawfully collected is correlated to growth measures such as income, inflation or population. See BERMAN 2002, *supra* note 25, at 66. In addition, state taxation policy often restricts local government in defining its real estate tax base by granting exemptions to certain categories of land owners which has the effect of shrinking the local property tax base. In some municipalities, 60% or more of the potential property tax base has been exempted by state law. See John P. Thomas, *Financing County Government: An Overview*, INTERGOVERNMENTAL PERSPECTIVE 12 (Winter 1991). Major owners of local, tax exempt realty include governments, schools, charitable organi-

be preceded by public referenda—occasionally requiring favorable supermajorities—as a precondition of such a financial shift. Citizens, in the current era, have been particularly skeptical of proposed tax increases. This state-mandated legal structure has restricted the raising of conventional tax revenues and, as a result, has hindered the ability of local government units to acquire the tax-based funds needed to build new public facilities. Therefore, local governments have the worst of both worlds; the obligation to provide public services combined with the absence of lawful and effective means of raising needed revenues.

Since local government is the unit of government “closest” to most people and the one which provides the most extensive array of direct public services affecting the average citizen’s day-to-day life,<sup>29</sup> the various means that local governments employ to raise revenue must be identified. In general, the locality’s revenue stream is composed of three parts: 1) local taxes and other charges (general revenues); 2) local utility and other revenues;<sup>30</sup> and 3) intergovernmental transfers from the federal and state governments. In terms of national averages, in 2002 these three categories of revenue provided 55.1%, 8.4%, and 36.8% respectively of local government revenues.<sup>31</sup> Contrary to common opinion, most local government revenue is derived from sources within the locality itself—64.3% or nearly two-thirds of the total. This locally-generated, two-thirds proportion has been stable—virtually unchanged—since 1970.<sup>32</sup> Intergovernmental aid to local governments—the other one-third—has been a substantial and similarly-stable portion of local revenue. It is composed of two elements: 1) transfers from the state government and 2) transfers from the federal government. On average, state aid constitutes 30% of local revenues while federal assistance contributes a bit over 3%.<sup>33</sup> While

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zations, hospitals, and religious groups, but veterans and senior citizens also benefit from preferential exemptions.

29. Nationally, categories of local government spending has remained remarkably consistent over the twenty-two year period from 1979-2002 with municipal budgets being spent in the following proportions in 2002: public education (38.0%), highways (3.9%), welfare (3.5%), health and hospitals (7%), police and fire protection (7.1%), administration (4.6%), insurance trust (2%), utilities (10.5%), and others (23.5%). TAX FOUNDATION, *FACTS AND FIGURES ON GOVERNMENT FINANCE* 263 tbl. F-5 (38th ed. 2004) [hereinafter *FACTS AND FIGURES*].

30. In 2002, this category generated 8.4% of total local government revenue. *FACTS AND FIGURES*, *supra* note 29, at 268 tbl. F-8. A large number of states help to assist local government revenue needs with funds from a variety of sources including legalized gambling and lotteries, state-run liquor sales, and government electric and other utility businesses. As of 2004, forty states had lotteries, and in that year, Pennsylvania approved up to 61,000 slot machines to help raise revenue. See DAVID R. BERMAN, *STATE-LOCAL RELATIONS: AUTHORITY, FINANCES, COOPERATION* 53 (Int’l City Mgmt. Ass’n, Mun. Yearbook 2005).

31. *FACTS AND FIGURES*, *supra* note 29, at 268 tbl. F-8.

32. *Id.*

33. 2002 CENSUS, *supra* note 6, at 286 tbl. 431. The federal government’s share has varied significantly over the twentieth century from a low of 0.1% in 1927, to a high of 9.0% of local government revenues in 1978, leveling off to 4% in 2002. *FACTS AND FIGURES*, *supra* note 29, at 268. However, much of the money granted by states to local governments originated in the federal government and merely “passes through” the states.

the total intergovernmental contribution is substantial, it is overwhelmingly from state sources and not the federal government with a ten to one ratio. This degree of state support to localities varies greatly from jurisdiction to jurisdiction.<sup>34</sup>

Nationally, the largest component of the local government revenue stream (55.1% in 2002) is found in local general revenue sources—from both tax and non-tax “charge” sources. Taxes comprise the larger part of this category with ad valorem or real property taxes constituting nearly 75% of local government’s tax revenues.<sup>35</sup> As high as this percentage may appear to be, over the past fifty years this form of local tax has fallen in importance as income and sales taxes have grown to comprise a larger percentage of the municipal tax revenue base.<sup>36</sup> Even more striking is the significant *decline* in the relative importance of taxes, *of any kind*, in relation to governmental “charges and miscellaneous” sources of local government revenue. For example, in 1960, local taxes represented nearly 43.6% of locally-generated government revenue while by 2002 this percentage had dropped to 34.1%.<sup>37</sup> This phenomena may be attributable to state and local government taxation and expenditure limitations such as California’s Proposition 13, Missouri’s Hancock Amendment, and Michigan’s Headlee Amendment which all required voter approval of taxes above specified levels.<sup>38</sup>

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These intergovernmental transfers take the form of 1) categorical grants; 2) general fiscal assistance; 3) cost reimbursement; and 4) block grants.

34. Intergovernmental revenue transfers range widely throughout the nation accounting for a small part of local government revenues in New Hampshire (14.7%), Hawaii (18.4%), and Nebraska (19.5%) while representing a substantial component of local government revenue in New Mexico (52.8), West Virginia (44%), Wisconsin (44%), Michigan (42.1%), Idaho (41.4%), and Arkansas (40%). In the latter list of states having *high* percentages of intergovernmental transfer, the greater percentage is usually due to greater state government support, not federal aid. FACTS AND FIGURES, *supra* note 29, at 287 tbl.F-25.

35. There is a great deal of regional variation in the significance of real property taxes as the main component of local government tax revenues. For instance, in 1991, it constituted 98.2% of local taxes in New England while only 70.8% in the Far West. See GLENN W. FISHER, *THE WORST TAX? A HISTORY OF PROPERTY TAX IN AMERICA* 204 tbl. 11.2 (1996). One thing is certain; the property tax exists as one of the most controversial and unpopular taxes in the United States. See Richard L. Cole & John Kincaid, *Public Opinion and American Federalism: Perspectives on Taxes, Spending and Trust—An ACIR Update*, 30 *PUBLIUS* 189, 189-201 (2000).

36. FACTS AND FIGURES, *supra* note 29, at 270 tbl. F-10. As high as real property taxes’ 72.9% share of local taxes may seem, it represents one of the lowest percentage relied on by local governments in nearly a century. For instance, during the twenties, real estate taxes constituted as much as 97.3% of local taxes. This decline in real property taxation can be traced to the tax revolts of the Economic Depression of the early thirties when many property owners could not pay their taxes. Tax delinquency was as high as 26.3% in cities in 1933, and between 1932 and 1933, sixteen states and many localities enacted property tax limits. States compensated for the loss of real property revenue by passing law imposing sales and income taxes. See ARTHUR O’SULLIVAN ET AL., *PROPERTY TAXES AND TAX REVOLTS—THE LEGACY OF PROPOSITION 13-3* (1995).

37. FACTS & FIGURES, *supra* note 29, at 268 tbl.F-8.

38. DANIEL R. MANDELKER ET AL., *STATE AND LOCAL GOVERNMENT IN A FEDERAL SYSTEM* 347-56 (2002).

As taxes have fallen as a portion of municipal revenue, the “charges and miscellaneous” category of revenues has steadily risen. This should not be surprising since the “hard” costs of capital infrastructure provision must be paid by someone (the construction crew does not work for free!). The changing financial statistical pattern reveals that an important, yet gradual transformation in local government financial affairs has occurred over the last thirty years including: 1) a movement away from the earlier dependence on real property taxation; 2) a decrease in revenue-raising by way of measures termed “taxes;” and 3) an increased reliance on “non-tax” devices, such as development exactions, to fund public needs. Advancing this third theme, localities have re-characterized municipal costs as various forms of user charges and direct benefit assessments. At the same time, they have shifted an increasing range of building-related expenses to land developers by imposing a wide array of land use exactions. The undeniable trend is that development impact costs have been increasingly “privitized.”

C. WHAT ARE THE AVAILABLE TECHNIQUES FOR FINANCING  
THE INITIAL CAPITAL COSTS OF GROWTH?  
WHAT ARE THE OPTIONS?

When the new elementary school building appears in the community, its construction must be paid for in some way. The locality will build and operate this new structure in order to provide a required level of educational service to the residents in the vicinity of the school. Often this construction will be undertaken to meet service demands imposed by state, federal, or accreditation bodies. Not infrequently, it will be done so that the locality can successfully compete with other communities for new residents and to maintain an existing reputation for having “good or excellent schools” and thereby reinforce high real estate values.<sup>39</sup> The same is true with regard to other public services such as sewer and water treatment, roads, storm water management, streets, curbs, sidewalks, streetlights, recreation, public safety and fire, and solid waste disposal. The challenge for most local governments is to assemble and implement a lawful *and* politically-palatable assortment of revenue-raising techniques that will permit them to build and operate such facilities.<sup>40</sup> The mix of the funding options used by the community will vary over time according to the locality’s revenue needs, the legally-authorized fiscal tools of the

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39. See Charles M. Tiebout, *A Pure Theory of Local Expenditures*, 64 J. POL. ECON. 416, 416-24 (1956) (serving as the origin of the “Tiebout Hypothesis”).

40. Localities owning visible and marketable structures such as sports facilities have begun to sell the naming rights to a range of corporate entities. Such “naming rights” can generate significant municipal revenues. The rights for the new stadium in Denver, Colorado, were valued at \$89 million but their sale—and the resulting name change away from the Mile High Stadium—has been considered a controversial and undesirable step. Michael Janofsky, *What’s in a Stadium Name—Tradition or Money?*, N.Y. TIMES, Oct. 29, 2000, at A14.

local government, the political will of the elected leadership and, ultimately, the support of the local citizenry.

The range of potential capital funding mechanisms available to local governments under state law may actually be quite extensive. Local governments have been extremely creative in designing funding techniques, within available authority, for a wide range of capital improvements. These techniques have developed into municipal fiscal traditions over the years which offer a number of different approaches for funding public projects. Funds for local capital projects could be collected from one or more of the following list: 1) *intergovernmental transfers* from the federal and/or state government—grants, revenue sharing, and subsidies; 2) *gifts* from private corporate, foundation, or individual benefactors; 3) *taxes*—property, sales, income, special purpose, gasoline, excise, and real estate transfer or recording; 4) *bonds*—general obligation or revenue; 5) *special assessments*; 6) *user charges*; 7) *special taxing districts revenues*; and 8) *land use exactions*, including development impact fees. This mix of funding techniques represents an exhaustive listing, but not a realistic portrayal, of the actual alternative funding approaches in each locality. Rather than being provided with limitless possibilities of these devices, localities actually face a much more constrained range of funding options. There are a number of explanations for this fact. For example, 1) state law may not allow the local government to exercise the technique; 2) the method—such as gifts and transfers—may only be available in theory but not in fact; 3) the device may only be permitted as a funding method for certain kinds of public improvements but not others; 4) the particular technique may not be a “traditional” revenue-raising activity in the specific locality; or 5) there might be no political support or in fact, strong opposition to its adoption.<sup>41</sup> Therefore, the locality’s fiscal choices are influenced by authority, familiarity, and necessity.

Currently, localities fund the capital costs of responding to the impacts of new community growth with a blend of financial resources; sometimes relying upon the local government’s general revenues for certain community-wide improvements in combination with intergovernmental grants, user charges, special assessments, excise taxes,<sup>42</sup> on-site subdivision improvements, dedications, and in-lieu of payments, as well as cash develop-

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41. Some analysts of the current system of the local government regulation of community growth and development have criticized government for promoting and subsidizing growth and have not actually sought to recover the costs imposed by new growth. See FODOR, BETTER NOT BIGGER, *supra* note 19, at 108-09 fig. 6-2.

42. In some states, local governments are authorized to charge a development excise tax on “the business of subdividing land or developing property.” See Eric J. Strauss & Martin L. Leitner, *Financing Public Facilities With Development Excise Taxes: An Alternative to Exactions and Impact Fees*, 11 ZONING & PLANNING L. REP. 17, 19 (1988). Although this practice appears similar to impact fees in their police power, regulatory effect, they are considered purely revenue-raising tax measures. As tax measures, they are liberated from the demanding constitutional law requirements of proportionality of effect and earmarking and, as a consequence, these funds may be added to a community’s general fund with all of the other tax revenue. See William H. Ethier & Howard J. Weiss, *Development Excise Taxes: An Exercise in Cleverness and Imagination*, LAND USE LAW 3 (Feb. 1990).

ment impact fees.<sup>43</sup> As the statistical data have shown, the unmistakable trend in local government capital financing has been gradually moving towards a system of local government “non-financing” through increased reliance on cost-shifting to the developer and, indirectly, to the raw land owner and the construction consumer. When viewed in its totality, the current era of land development regulation actually is a period of shared, public/private partnership with the private sector assuming an ever-growing role providing land, physical improvements, and cash to offset the impacts of new growth. This development is consistent with a larger trend towards the increased privatization of other community services and functions in private homeowners associations and restricted access or gated communities.<sup>44</sup>

During the last two decades, the rhetoric and analytical techniques of environmental impact analysis have been adapted and applied to development exactions in two significant ways: 1) to analyze and identify the community capital improvement needs “caused” by new land development and 2) to assess a reasonable, proportionate share of developer responsibility for the costs associated with those needs. This pattern of cost shifting has a long standing twentieth century tradition. During this time, localities have steadily accelerated the integration of financial, cost-shifting objectives with their traditional police power regulatory goals in land use control. The evolution in American land use exactions culminating in the recent, cash development impact fee is the subject of the next section.

## PART II—USING REGULATORY CONDITIONS ON LAND DEVELOPMENT TO FUND COMMUNITY SERVICES: AN AMERICAN TRADITION

Modern American land use regulation was first adopted during the first quarter of the twentieth century. Authorized under the local government’s “police power” to regulate for the common good, zoning became commonplace following the U.S. Supreme Court’s 1926 decision in *Village of Euclid v. Ambler Realty Co.*<sup>45</sup> sustaining the practice against a facial constitutional attack. Zoning became a fundamental regulatory function of local government and one which shaped the future physical character and quality of life of the community. However, even at this

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43. In some cities, the development impact fee technique has been imposed as a condition for the construction of new office buildings under the name of “linkage” programs. These fees—arising in California, Massachusetts, New Jersey, Connecticut and Florida—have been charged to compensate for the loss of low income housing and to provide for public transportation, job training programs, and child care facilities. See generally Jane E. Schukoske, *Housing Linkage: Regulating Development Impact on Housing Costs*, 76 IOWA L. REV. 1011 (1991).

44. In 2005, the Community Associations Institute (CAI) estimated there were 274,000 association-governed communities containing 54.6 million people and that 1.25 million people serve on association boards. See COMMUNITY ASSOCIATIONS INSTITUTE, DATA ON U.S. COMMUNITY ASSOCIATIONS, <http://www.caionline.org/about/facts.cfm> (last visited Dec. 19, 2005).

45. 272 U.S. 365 (1926).

early point another tradition was being formed, one which combined the local government's regulatory powers with its duty to provide public services. Termed "regulation for revenue" by modern observers,<sup>46</sup> this methodology blended land use regulation with revenue-enhancing or cost-shifting objectives to establish a local governmental practice known as imposing "development exactions." This hybrid regulatory practice is now common and often is used to mitigate an extensive list of development effects. This land use exaction practice, rather than being a recent local government creation, has a long and well-supported tradition at the state and local level of government.

#### A. THE TRADITIONAL NATURE OF COMMUNITY LAND USE CONTROL AND EARLY AMERICAN EXACTION PRACTICES

The American tradition of governmental control over land use is an old one beginning in the early seventeenth century with the establishment of colonial towns. The social interest in having an orderly division of large parcels of land into smaller units has even more ancient antecedents.<sup>47</sup> Municipal land use controls have developed from this early colonial period to the present, culminating with modern zoning, subdivision regulation, and comprehensive planning, as well as environmental controls. Twentieth century land use control has also witnessed a parallel development of another aspect of land use control: a steady growth in the use of land development exactions to impose specific costs on land developers. This trend has accelerated in the last two decades and has resulted in the widespread use of subdivision land improvement and dedication requirements, impact fees, and linkage programs all having the effect of shifting development-related expenses from the community to the land developer.

Land use control has a lengthy history in America. Colonial communities, from the earliest times,<sup>48</sup> considered the locality's land base to be an important natural resource and one which should be carefully managed by town authorities. These colonial communities exercised regulatory

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46. See generally ALTSHULER & GOMEZ-IBANEZ, *supra* note 17.

47. Land subdivision practices have been considered an important topic of social regulation for thousands of years.

The Egyptians, as well as the Greeks, maintained orderly systems for the division of land and the development of communities. The Roman grid plan for laying out communities, borrowed from earlier systems, was adopted and used by other European communities, and it remains the underlying spacial framework for a number of cities in Europe. Variations of the rectangular survey were brought to the United States by Spanish, English and French settlers, and the grid patterns observable in the street plans of Manhattan and old Philadelphia.

ROBERT ANDERSON, 4 AM. LAW OF ZONING 3D 263 (1986). This penchant for order in land subdivision was also reflected in large scale Jeffersonian rectangular survey methods employed to measure and divide large portions of the America west of the original thirteen colonies.

48. See DAVID L. CALLIES ET AL., CASES AND MATERIALS ON LAND USE 2-3 (3d ed. 1999) (explaining English ordinances from the Elizabethan period regulating minimum residential building lot size, building height and window size).

control in a number of ways including regulating the location of dwellings, specifying the nature of permissible land use, prohibiting construction with unsafe and flammable materials, imposing uniform building height restrictions, requiring the fencing of agricultural parcels, and setting forth the timing of land development.<sup>49</sup> Rather than recognizing land ownership as an absolute individual right, colonial rules governed many aspects of development choice. In fact, some early town controls appear extremely modern foreshadowing anti-sprawl, infill policies.<sup>50</sup> Significantly, historical evidence exists indicating that colonial ordinances and royal directives during this early period demanded that land developers provide a number of physical improvements as a pre-condition for permission to build on a parcel of land.<sup>51</sup> This historical reference provides a lineage for modern land use exactions reaching back to colonial times.

Through the period leading up to the early twentieth century, American local governments were authorized to exercise broad police powers to protect the public health, safety, morals, and general welfare. They also employed their public nuisance authorities to abate the more serious threats to health and safety. Acting under their police power authority, local governments adopted a wide range of individual laws regulating a variety of specific land use problems including the separation of incompatible uses<sup>52</sup> and building bulk, height, and location restrictions.<sup>53</sup> This problem-specific system of land use control was gradually replaced by comprehensive zoning ordinances which were upheld in *Village of Euclid v. Ambler Realty Co.*<sup>54</sup> By the time of the *Euclid* decision, the zoning technique had spread rapidly across the nation with 654 cities and towns

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49. See generally John F. Hart, *Colonial Land Use Law and Its Significance for Modern Takings Doctrine*, 109 HARV. L. REV. 1252 (1996).

50. See JULIAN C. JUERGENSMEYER & THOMAS E. ROBERTS, *LAND USE PLANNING AND DEVELOPMENT REGULATION LAW* 44 (2003) (discussing 1632 Cambridge Massachusetts law prohibiting construction of structures in remote areas before development of closer vacant parcels).

51. See Jerry T. Ferguson & Carol D. Rasnic, *Judicial Limitations on Mandatory Subdivision Dedications*, 13 REAL EST. L.J. 250, 252 (1984). Colonial ordinances required the compulsory drainage of wetlands and often demanded the sharing of costs of these projects with neighbors. Further site improvements such as barberry removal, compelled development of urban land and mines, and fencing requirements were imposed by colonial governments. See Hart, *supra* note 49, at 1263-80.

52. *Pierce Oil Corp. v. Hope*, 248 U.S. 498, 499-500 (1919) (upholding ordinance excluding oil storage closer than three hundred feet from residences); *Hadacheck v. Sebastian*, 239 U.S. 394, 414 (1915) (upholding Los Angeles ordinance excluding existing brickyards from a residential area of the city); *Reinman v. Little Rock*, 237 U.S. 171, 180 (1915) (upholding ordinance excluding stables from a commercial district); *L'Hote v. New Orleans*, 177 U.S. 587, 600 (1900) (upholding New Orleans ordinance establishing areas of the city for prostitution).

53. See *Welch v. Swasey*, 214 U.S. 91, 107 (1909) (upholding Boston's building height limitations); see also *Eubank v. Richmond*, 226 U.S. 137, 145 (1912) (invalidating neighbor consent provision to establish building setback lines).

54. 272 U.S. 365 (1926).



having adopted a zoning ordinance.<sup>55</sup> This rapid adoption of zoning was facilitated by the preparation of a model state zoning enabling act by the United States Department of Commerce, which by 1926 had been enacted in forty-three states.<sup>56</sup> After the *Euclid* decision, zoning spread even faster and was considered to be an indispensable component of a modern locality's techniques necessary for the creation of a pleasant and harmonious community. The decades following *Euclid* saw an institutionalizing of zoning as the premier regulatory device to control community development.

## B. PRECURSORS OF MODERN LAND USE EXACTIONS

Zoning, by itself, initially imposed restrictions such as use and dimensional rules on land owners, and in so doing, it limited the land developer's discretion in selecting the size, use and form of new land development projects. With zoning, questions of building density, placement of structures in relation to roads, and the mixture of land uses would be determined by municipal ordinance and regulation. The designers of the early zoning systems made a crucial choice by making the process of building permit review the principal method for assuring compliance with substantive zoning rules. Now, the construction of new buildings would be unlawful without a building permit and this certificate would not be issued until it was determined that the proposed structure complied with all zoning rules. Permit-based pre-construction review gave localities the means of assuring compliance with mandatory setback, height limit, and use restrictions. In addition, it would serve as the point of certifying that other municipal demands—such as the contribution of development exactions—had been satisfied.

While zoning might restrict the range of land uses of a desired development, it did not force the landowner to contribute money, land, or improvements as a condition of obtaining zoning permission to proceed with a proposed project. These exactions were first implemented in conjunction with the twentieth century device of residential subdivision regulation and its precursors—official map acts<sup>57</sup> and benefit assessment

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55. Comprehensive zoning containing specified uses in designated city-wide zones was first adopted in New York City in 1916 and upheld by New York courts four years later in *Lincoln Trust Co. v. Williams Building Corp.*, 128 N.E. 209, 209 (1920).

56. JUERGENSMEYER & ROBERTS, *supra* note 50, at 24 n.1.

57. Official map acts permitted local government to provide for the exact location of future streets, parks, and other public facilities. Once streets were mapped, future land development would have to conform to the lay out of the streets. The siting of streets was considered so important during the early twentieth century that statutes were necessary to reserve precise road locations and for the installation of utilities and other services. Landowners were sometimes required to dedicate the land and, occasionally, improve the streets established by the official map. See JAMES KUSHNER, *SUBDIVISION LAW AND GROWTH MANAGEMENT* §1.04[1] (1999 and 2005 Supp.); Joseph Kucirek & J.H. Beuscher, *Wisconsin's Official Map Law*, 1957 WIS. L. REV. 176 (1957). These statutes had a mixed record of surviving constitutional takings scrutiny. See e.g., *Urbanizadora Versalles, Inc. v. Rivera Rios*, 701 F.2d 993 (1st Cir. 1983) (fourteen-year highway reservation); *Lomarch Corp. v. Mayor & Common Council*, 51 N.J. 108, 237 A.2d 881 (N.J. 1968) (one-year park

districts.<sup>58</sup> Residential land subdivision concerned local governments from the beginning. From the 1880s through the 1920s to respond to land development “booms,” many localities adopted land platting laws which were primarily concerned with making subdivided land sales more efficient.<sup>59</sup> These early platting laws only required that, prior to selling any building lots, the land developer file a development plat which would specifically describe individually numbered building lots as well as any applicable real covenants, easements, or other significant features of the development.<sup>60</sup> Once subdivision plats were filed with the locality, lots could be lawfully conveyed to individual purchasers describing them by way of lot numbers rather than by way of a conventional metes and bounds land description. This residential subdivision platting and registration practice simplified land description and title recording making the marketing of building lots less costly and easier to accomplish.<sup>61</sup>

This land subdivision method accomplished another significant purpose—it legally justified the imposition of development conditions. Under the reasoning of the day, the public recording of a subdivision plat became a legal requirement for the “privilege” of selling lots in a subdivi-

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reservation); *Miller v. Beaver Falls*, 82 A.2d 34, 37 (Pa. 1951) (three year park reservation). Where variance provisions are included to relieve hardship situations, courts are more supportive. See *Palm Beach County v. Wright*, 612 So. 2d 709 (Fla. Dist. Ct. App. 1993).

58. Benefit or special assessment districts have a long tradition in the United States extending as far back as 1690. Dean J. Misczynski, *Special Assessments*, in *WINDFALLS FOR WIPEOUTS: LAND VALUE CAPTURE AND COMPENSATION* 311 (Donald G. Hagman & Dean J. Misczynski eds. 1978). Special assessments are widely used and have been applied to finance a wide range of public improvements ranging from sidewalks, curbs and gutters, fire and medical rescue services, business improvements, security, street lights and paving, and sewers. These charges, although similar to impact fees, differ in that they are imposed only on existing landowners in a defined benefit zone, who often request the specific improvement and usually enjoy the benefits associated with the improvement directly. They are often assessed in proportion to a quantitative measure such as front footage, acreage or lot area. See generally EUGENE MCQUILLIN, *THE LAW OF MUNICIPAL CORPORATIONS* (3d rev. ed. 1987 & 2005 Supp.).

59. Not infrequently, “boom” time subdivisions were more illusory than real. See DANIEL J. BOORSTIN, *THE AMERICANS—THE DEMOCRATIC EXPERIENCE* 280 (1973).

60. Earlier subdivision regulation statutes passed in the late nineteenth century as “map or plat acts” required the public recordation of subdivision plats. The intent was to make the conveyancing of individual numbered and identified parcels more efficient and not reliant upon the traditional metes and bounds land descriptions. Land speculation in the twenties resulted in the platting of numerous subdivisions many of which had small lots and lacked or had incomplete streets and utilities. Many of these projects were abandoned by their developers and in the twenties and thirties became the responsibility of the localities through developer default. See generally JUERGENSMEYER & ROBERTS, *supra* note 50, at 264-65.

61. The desire to simplify land records and to prevent confusion in land description was an initial objective of subdivision regulation and one which continued as an important factor in later court decisions. The Wisconsin Supreme Court stated with regard to the practice of plat registration that,

[T]he legislature was attempting to provide for orderly urban development and to insure accurate and easy descriptions of land in the offices of the registers of deeds. One main purpose of such regulations was to avoid cluttering the books of the registers of deeds with metes and bounds descriptions of small tracts of land.

*Alan Realty Co. v. Fair Deal Inv. Co.*, 73 N.W.2d 517, 520 (Wis. 1955).

sion. Under this “right/privilege” distinction, since the land developer had voluntarily elected to employ the subdivision procedure, they were prevented from challenging a wide range of conditions which might be applied to the request.<sup>62</sup> Later, through this “privilege” rationale, municipalities would demand subdivision exactions including land dedication for streets as a condition for the “privilege” to subdividing residential land. The “privilege” characterization had another consequence—it allowed local governments broad discretion in approving or denying subdivision proposals. In this early time period, the residential subdivider was not responsible for providing any of the subdivision infrastructure such as streets, sidewalks, curbs, gutters, and drainage facilities.<sup>63</sup> Infrastructure requirements would be provided by the local government or funded by the lot purchasers themselves through lot special assessment schemes. Ironically, the community’s assumption of these subdivision infrastructure costs in the thirties, and the catastrophic economic consequences it later caused, would lead to the imposition of expanded subdivision land exactions just a few years later.

### C. LESSONS FROM THE ECONOMIC DEPRESSION OF THE 1930s

During the twenties, the suburban areas of the nation were under intense development pressure and huge land speculation was occurring. The rapid growth of Los Angeles County, California in this decade provides one vivid example. During the twenties alone, the net immigration into the county increasing 136% (from 936,000 to 2,208,000) which was greater than the total county immigration in the prior seventy years from 1850 to 1920.<sup>64</sup> Such an enormous influx of population, attracted by the reputation for an excellent climate and ample job opportunities, triggered an explosion in residential land subdivision farther into remote areas of the county.<sup>65</sup> Land development standards and the existing road system proved to be grossly inadequate to accommodate the huge influx. This extreme population growth pressure in Los Angeles, and in other parts of the nation, led to speculative land development which proved to be unsustainable. The drive to create even more residential communities led to the platting of thousands of residential subdivisions on the outer edge of existing American cities. These developments contained millions of lots

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62. See, e.g., *Ayres v. City Council*, 207 P.2d 1, 7 (Cal. 1949); *Ridgefield Land Co. v. City of Detroit*, 217 N.W. 58, 58-60 (Mich. 1928).

63. Even as late as the forties, some local governments continued the practice of subsidizing land subdividers by installing public improvements. A 1944 edition of the newsletter of the Municipal Finance Officers Association warned that,

[T]hese land merchandisers, in effect subsidized by the taxpayers, would then sell lots to people of moderate or small incomes at relatively high prices, and if the economy should go into a tailspin, soon or later there would be defaults on payments, mounting tax delinquencies, and more financial troubles such as municipalities experienced from 1929 to 1935.

MEL SCOTT, *AMERICAN CITY PLANNING SINCE 1890*, at 452 (1969).

64. *Id.* at 208.

65. In 1921, subdividers filed approximately 350 subdivision maps with the Los Angeles County Recorder. By 1923, the number of filings had grown to 1,434. *Id.* at 207.

many of which were small and of a largely unusable size often with inadequate or non-existent streets and utilities. Much of this prematurely subdivided land remained vacant and tax delinquent for many years after its platting thereby imposing huge municipal tax losses.<sup>66</sup>

Local government policy of not requiring the pre-funding of basic subdivision improvements during the first quarter of the twentieth century had several serious negative impacts that led to the imposition of development exactions. As mentioned previously, this municipal practice encouraged the premature subdivision of land that resulting in many suburban building lot markets being overfilled with surplus lots in excess of reasonable market demands. Without any effective regional growth policy, subdivided parcels would spring up farther and farther from the metropolitan center thereby causing early examples of suburban sprawl. Oversupply of platted, yet not improved, subdivision lots resulted in numerous failed projects which frequently became blighted areas causing new development to leapfrog over "these unusable, close-in subdivisions . . . leaving 'slums' of vacant lands."<sup>67</sup> Community development would thereafter occur in a disorderly, non-contiguous fashion that was often inconsistent with municipal or regional planning goals.

There were two significant adverse financial effects of the early twentieth century subdivision policy that would affect the future. First, developers often abandoned the under-sold, under-developed and under-improved subdivisions after an initial period of marketing success. This resulted in many real estate tax delinquencies with the ultimate ownership of the parcels reverting to local governments through tax foreclosure. Secondly, municipal bonds issued to secure financing for subdivision improvements often went into default during the thirties due to devastating economic effect of the Great Depression. Bond interest and principal repayments were set based on the assumption of the new homeowner's regular payment of special assessments tied to subdivision improvements. With the collapse of the suburban real estate market during the Depression, residential building lots did not sell resulting in the non-payment of the existing assessments, leading to substantial defaults

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66. The huge negative impact of "dead" subdivisions on their surrounding communities is demonstrated by the following description of the situation in Chicago and Cook County, Illinois.

In the southern portion of Cook County, lots subdivided in the 1890's were vacant still [by the 1940's], and many were tax delinquent. Twenty-two percent of the subdivision parcels in Chicago in 1945 had been delinquent for 10 years. In suburban Cook County, 40 percent of the parcels were chronically delinquent. The Chicago situation was not unique. Cleveland, in 1929, had 175,000 vacant lots in its registered total of 375,000 lots.

ROBERT ANDERSON, 4 AM. LAW OF ZONING 264-65 (3d ed. 1986).

67. JUERGENSMEYER & ROBERTS, *supra* note 50, at 264. To eliminate these empty spaces, eminent domain or condemnation authority was sometimes used to assemble land for construction. See *People ex rel. Gutknecht v. City of Chicago*, 111 N.E.2d 626 (Ill. 1953).

on municipal bonds.<sup>68</sup> The major bond defaults of the thirties adversely effected municipal debt financing for many years thereafter. Most importantly, they influenced the post-World War II local government development policies requiring land developers themselves to construct on-site infrastructure improvements as a condition of subdivision approval. They also led to the imposition of bonding and surety conditions to back up the construction promises made by the developers.<sup>69</sup>

#### D. SUBDIVISION REGULATION'S DESIGN STANDARDS

With the issuance of the Department of Commerce's 1928 model Standard City Planning Enabling Act,<sup>70</sup> most states passed enabling acts authorizing localities to impose subdivision controls.<sup>71</sup> After the adoption of these statutes, municipal subdivision approval began to incorporate municipal planning goals into the physical development of the subdivided parcels. No longer would subdivision control be principally concerned with the efficiency needs of residential land mass marketing, but rather localities began to require that subdivisions be designed with the community's functional and practical concerns in mind. The emphasis was now on the creation of design standards which would guide residential land development and would result in well-planned areas where the streets would be sufficient to carry the projected traffic and where other infrastructure and land would be provided. For example, § 14 of the model Standard City Planning statute provided,

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68. R. Marlin Smith, *From Subdivision Improvement Requirements to Community Benefit Assessments and Linkage Payments: A Brief History of Land Development Exactions*, LAW & CONTEMP. PROBS. 5-6 (Winter 1987).

69. Land improvements such as roads, sidewalks, curbs and gutters, and drainage facilities are often required as part of the regulation of residential subdivisions. However, these physical improvements are costly, and a developer might wish to begin selling lots in one part of a subdivision project prior to the completion of all the necessary site improvements in other parts. Assurance that the land developer will actually complete the required improvements—and not default on these required exactions—has led to the use of a number of guarantee devices providing the local government with financial security that the work be completed in the event of developer default. Surety bonds, cash or property escrows, letters of credit and subdivision improvement agreements are the most common examples of these devices. See PATRICK J. ROHAN, ZONING AND LAND USE CONTROLS § 45.03[4], at 8 (2003).

70. STANDARD STATE PLANNING ENABLING ACT, U.S. Dep't of Commerce (1928), included in the ALI MODEL LAND DEVELOPMENT CODE, app. B (Tentative Draft No. 1, 1988). This model act was produced as a companion to the Standard State Zoning Enabling Act, however there were competing model subdivision laws which were adopted by a number of states. See MODEL SUBDIVISION REGULATION ACT (A.E. Bettman); MUNICIPAL PLANNING ENABLING ACT (Bassett and Williams).

71. See ROBERT M. ANDERSON & BRUCE B. ROSWIG, PLANNING, ZONING, SUBDIVISION: A SUMMARY OF STATUTORY LAW IN THE 50 STATES 228, chart 13 (1966). In some jurisdictions the authority to regulate subdivisions and impose conditions is implied as a power of local planning and land use regulation under the powers delegated by the standard zoning enabling act. See generally *Flanders Lumber & Bldg. Supply Co. v. Town of Milton*, 258 A.2d 804 (Vt. 1969); *Y.D. Dugout Inc. v. Bd. of Appeals*, 255 N.E.2d 732 (Mass. 1970); *Kozesnik v. Township of Montgomery*, 131 A.2d 1 (N.J. 1957); *Homebuilders Ass'n v. City of Charlotte*, 442 S.E.2d 45 (N.C. 1994).

for the arrangement of streets in relation to other existing or planned streets and to the master plan, for adequate and convenient open spaces of traffic, utilities, access of fire fighting apparatus, recreation, light and air, and for avoidance of congestion of population, including minimum width and area of lots.<sup>72</sup>

Central to the subdivision regulation concept at this time was that this form of land development would be arranged so as to ensure adequate access to homes while also providing the residents with a safe and attractive living environment. The belief was that suburban, single-family detached housing would be the future choice of housing consumers who would increasingly rely on the automobile for transportation. Subdivisions would have to be planned and would have to provide the kinds facilities and services likely to be demanded by these single family housing purchasers. History has borne out these early assumptions regarding the housing preferences of successive generations of Americans.

Besides providing design standards for subdivision development, the early subdivision regulations of the late twenties through forties also began to incorporate land dedication requirements for public improvements within the residential subdivision itself. Under these rules, land developers were required to dedicate land to the local government for a range of purposes. However, the Standard Planning Act did not authorize the imposition of dedications of land or cash in-lieu of fees, and this omission led to uncertainty about their lawfulness.<sup>73</sup> Today, this mandatory practice requiring such land dedication is a form of development exaction. The early exactions were dedications for internal roads and sidewalks, usually necessary to provide access to the homes being constructed in the subdivision. These demands proved to be relatively uncontroversial due to their functional necessity and also because they benefited the subdivision lots and made them more salable.<sup>74</sup> It was also yet another device used to transfer the subdivision improvement costs to land developers and, by extension, to new home purchasers.<sup>75</sup> Through the pre-construction review process, land dedication requirements were then imposed as a condition of subdivision plat approval by the local government.<sup>76</sup> Al-

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72. STANDARD CITY PLANNING ENABLING ACT, U.S. Dep't of Commerce (1928).

73. In some states, the absence of specific enabling authority to impose land dedication and fee-in-lieu of requirements on the approval of proposed residential subdivisions led to state courts finding no implied authority to undertake the practice. *See, e.g., Hylton Enters. v. Bd. of Supervisors*, 258 S.E.2d 577 (Va. 1979) (narrow construction of local government authority in strict Dillon's Rule state). The practice of charging monetary fees-in-lieu of land dedication also fell subject to the same legal challenge as not being authorized by state enabling legislation. *See, e.g., City of Montgomery v. Crossroads Land Co.*, 355 So. 2d 363 (Ala. 1978) (no specific authority to require cash-in-lieu of payment for parkland); *Enchanting Homes, Inc. v. Rapanos*, 143 N.W.2d 618 (Mich. Ct. App. 1966) (lack of statutory authority); *Haugen v. Gleeson*, 359 P.2d 108 (Or. 1961) (unauthorized tax).

74. OSBORNE M. REYNOLDS, JR., *LOCAL GOVERNMENT LAW* 484 n.9 (2d ed. 2001).

75. *See* Thomas M. Pavelko, Note, *Subdivision Exactions: A Review of Judicial Standards*, 25 WASH. U. J. URB. & CONTEMP. L. 269, 272 (1983).

76. Julian C. Juergensmeyer & Robert M. Blake, *Impact Fees: An Answer to Local Governments' Capital Funding Dilemma*, 9 FLA. ST. U. L. REV. 415, 418 (1981).

though resisted at first, the subdivision land dedication rules were largely upheld in the courts, and they have become a standard feature of most communities' subdivision regulations.<sup>77</sup>

Significantly, the model act also specifically required a land developer to provide physical infrastructure such as streets, water mains, sewer lines, and other utilities *within the boundaries* of the subdivision as a condition of regulatory approval.<sup>78</sup> This statutory innovation created the precedent for developer-funded site improvements which would later translate into a wide range of land dedication and site improvements within the residential subdivision. Land developers were not only required to dedicate land for these features, but they also had to construct the improvements themselves. Due to the direct benefit these on-site improvements gave in response to a need generated by the new subdivision, challenges to these on-site land and physical improvement exactions were generally unsuccessful and the practice was upheld in the state courts.<sup>79</sup> After World War II, suburban localities experienced a surge in the demand for land suitable for development into new residential communities. The pent-up housing demand caused by World War II created immense pressures on these communities to provide for the educational and recreational needs of their new populations. In response, many localities, acting under their state subdivision regulation enabling legislation, added the requirement that residential developers dedicate land *within* their developments for these two purposes.<sup>80</sup> By this time, the idea had been firmly accepted that land developers could legally be required to provide for the infrastructure needs of the new residents being attracted to the new subdivisions and the extension of the subdivision regulation principle to the new purposes was not difficult for courts to accept.<sup>81</sup>

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77. See *Brous v. Smith*, 106 N.E.2d 503, 507 (N.Y. 1952). See generally, Michael M. Shultz & Richard Kelley, *Subdivision Improvement Requirements and Guarantees: A Primer*, 28 WASH. U. J. URB & CONTEMP. L. 3, 68 (1985).

78. THOMAS P. SNYDER & MICHAEL A. STEGMAN, *PAYING FOR GROWTH: USING IMPACT FEES TO FINANCE INFRASTRUCTURE* 22 (1986).

79. See, e.g., *Petterson v. City of Naperville*, 137 N.E.2d 371 (Ill. 1956) (curbs and gutters requirement); *Ridgefield Land Co. v. Detroit*, 217 N.W. 58 (Mich. 1928) (upholding mandatory land dedication for subdivision streets); *Allen v. Stockwell*, 178 N.W. 27 (Mich. 1920) (sidewalks); *Blevens v. City of Manchester*, 170 A.2d 121 (N.H. 1961); *Medine v. Burns*, 208 N.Y.S.2d 12 (N.Y. Special Term 1960) (sewers); *Brous*, 106 N.E.2d at 503 (upholding dedication of roads within the subdivision); *Zastrow v. Vill. of Brown Deer*, 100 N.W.2d 359 (Wis. 1960) (water mains).

80. See *Juergensmeyer & Blake*, *supra* note 76, at 416-18. The first case upholding the practice of requiring the dedication of subdivision land for park purposes was the New York case of *In re Lake Secor Development Co.*, 252 N.Y.S. 809 (N.Y. Sup. Ct. 1931). See also *Frank Ansuini, Inc. v. City of Cranston*, 264 A.2d 910 (R.I. 1970) (stating that a natural result of residential subdivision is the increased need for recreation space). However, some courts found school site dedication requirements to be unauthorized by enabling statute and void as *ultra vires* municipal acts. See, e.g., *Kelber v. City of Upland*, 318 P.2d 561 (Cal. Ct. App. 1957); *West Park Ave. v. Twp. of Ocean*, 224 A.2d 1 (N.J. 1966). See also *James P. Karp*, *Subdivision Exactions for Park and Open Space Needs*, 16 AM. BUS. L.J. 277 (1979).

81. In *Jordan v. Menomonee Falls*, 137 N.W.2d 442 (Wis. 1965), the Wisconsin Supreme Court upheld an ordinance which required the land developer to dedicate land for

The land dedication requirements for residential growth continued to multiply-extending to the land nearby or adjacent to the actual lots being developed. The earlier success of local governments in obtaining exactions for *on-site* subdivision land or improvements led to the extension of the concept to *off-site* improvements. For rapidly-growing municipalities, the logic of developer responsibility for these off-site impacts of residential development impact seemed clear. During the period spanning from 1965 through the end of the eighties, local government subdivision exaction practices requiring the construction of improvements on bordering, adjacent, or physically separate land met with a varied responses. For instance, when these off-site land exactions were designed to reduce the additional traffic burden caused by the new residential development, they were generally upheld.<sup>82</sup> However, if the land developer was charged for a disproportionate share of a community wide system upgrade, the demand could be found to be confiscatory and invalid.<sup>83</sup> In the early eighties, state courts began to fashion the legal rules that would govern the expanding exaction practices, at least until state legislatures would later enter the fray with statutes regulating the practice. With this, the seeds were sown for modern development impact analysis to consider a broader range of local needs affected by the construction of new housing and to convert these impacts into cash payments.

#### E. TRANSLATING LAND AND PHYSICAL IMPROVEMENTS INTO CASH PAYMENTS

Up to this point, municipal development exaction policy was literal in its approach: it required either the dedication of land or physical improvements to facilitate the new land development. Gradually, a transformation of exaction practice from the literal to the symbolic began to occur in the post-World War II era. Exaction practice began to convert

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school or park purposes or to pay a set sum of money in lieu of the land dedication. It reached this result by reasoning that,

The municipality by approval of a proposed subdivision plat enables the subdivider to profit financially by selling the subdivision lots as home building sites and thus realizing a greater price than could have been obtained if he had sold his property as unplatted lands. In return for this benefit the municipality may require him to dedicate part of his platted land to meet a demand to which the municipality would have been put but for the influx of people into the community to occupy the subdivision lots.

*Id.* at 448.

82. The California courts have long sustained off-site road improvements as a condition of developmental approval. *See, e.g., Ayres v. City Council*, 207 P.2d 1 (Cal. 1949) (ten-foot strip to widen an abutting highway); *Briar West, Inc. v. City of Lincoln*, 291 N.W.2d 730 (Neb. 1980) (seventeen-foot strip for widening of abutting street). The *Ayres* case led to a series of state decisions upholding exactions when there was a “reasonable relationship” to the needs created by the new development. This test of “nexus” was later specifically rejected by the United States Supreme Court in the case of *Dolan v. City of Tigard*, 512 U.S. 314 (1994), where it was found not to satisfy the demands of the Fifth Amendment’s Takings Clause.

83. *See Lake Intervale Homes v. Twp. of Parsippany-Troy Hills*, 147 A.2d 28 (N.J. 1957).



existing land dedication requirements into "in lieu of" cash payments made to the locality. Money began to be substituted for land and improvements.<sup>84</sup> "In lieu of" payments were invented to replace or substitute for the developer's obligation to dedicate subdivision land when the land to be given would be situated inconveniently, would be too small to serve the intended purpose, or for some other reason could not fulfill the need created by the subdivision.<sup>85</sup> These "in lieu of" payments were the first form of financial, conditional regulation on suburban growth and they constituted the forerunner of the cash impact fee common today.

This financial substitution policy is noteworthy since it represents an initial attempt to extract cash from developers for public improvements that would be constructed beyond the physical limits of the new subdivision itself. The "in-lieu of" fee idea begins the practice of charging new development, in financial terms, for its contribution for *off-site* community facilities when the need for the new facility is related to the population occupying the new residential subdivision.<sup>86</sup> Importantly, after several negative outcomes based upon the municipality's lack of delegated authority to impose "in lieu of" fees,<sup>87</sup> this technique was approved

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84. A curious analogy exists in the transformation of services required by feudal land tenures in Medieval England which underwent a similar change from specific performance of personal obligations into money rents. One example of this shift can be found in the military tenure that required that the land tenant annually provide the king a specified number of days of "knights service" each year. It has been reported that,

[W]ithin a hundred years after the Conquest, with England pacified, the king had begun to take money payment (scutage or shield money) in its stead and to employ mercenaries to fight foreign wars. At this point tenants by knight service lost their military function and were slowly transformed into country gentlemen.

JESSE DUKEMINIER & JAMES E. KRIER, *PROPERTY* 199 (5th ed. 2002).

85. An example of the in lieu of payment is provided in the following quotation:

Payment in lieu is employed when actual dedication or provision of land or improvements is not practical or feasible. For example, under a requirement to set aside 5 percent of a development's land area as open space, a five-acre subdivision would reserve one-quarter of an acre. Such a site might prove to be totally impractical for both the subdivision and the community. The alternatives were either to exempt smaller subdivisions from such requirements or to allow a payment to be made in lieu of dedication. This resulted in local governments requiring money in lieu of land dedication. The money exacted was to equal the value of the land that would have been dedicated.

JAMES C. NICHOLAS, ARTHUR C. NELSON & JULIAN C. JUERGENSMAYER, *A PRACTITIONER'S GUIDE TO DEVELOPMENT IMPACT FEES* 11 (1991). See also DAVID L. CALLIES, ROBERT H. FREILICH & THOMAS E. ROBERTS, *CASES AND MATERIALS ON LAND USE* 200 n.7 (2d ed. 1994); Fred Jacobsen & Jeff Redding, *Making Development Pay Its Way*, 55 N.C. L. REV. 407 (1977).

86. See *Associated Home Builders v. Walnut Creek, Inc.*, 484 P.2d 606 (Cal. 1971) (in lieu of fee for open space and recreation); *Jenad, Inc. v. Vill. of Scarsdale*, 218 N.E.2d 673 (N.Y. 1966) (in lieu of fee for recreational purposes). See also THOMAS P. SNYDER & MICHAEL A. STEGMAN, *PAYING FOR GROWTH: USING DEVELOPMENT FEES TO FINANCE INFRASTRUCTURE* 10, 17-18 (1986).

87. See generally *Kelber v. City of Upland*, 318 P.2d 561 (Cal. Ct. App. 1961); *Rosen v. Village of Downers Grove*, 167 N.E.2d 230 (Ill. 1960); *Coronado Dev. Co. v. City of McPherson*, 368 P.2d 51 (Kan. 1962); *Haugen v. Gleason*, 359 P.2d 108 (Or. 1961). A few more recent decisions also have invalidated the in-lieu of practice by characterizing it as an unauthorized tax. See generally *City of Montgomery v. Crossroads Land Co.*, 355 So. 2d 363

in judicial tests because of its “equivalence” to other mandatory subdivision requirements.<sup>88</sup> They have also been authorized by more recent state enabling legislation.<sup>89</sup> Today, these fees are commonly used to fund the acquisition and construction of off-site schools and park facilities and in some jurisdictions, street improvements, flood control, public resource access, and other public facilities.<sup>90</sup> The “in lieu of” fee concept, being adopted in the post-World War II decades, can be considered as one form of monetary exaction and setting the stage for future developer cash payments to localities as part of the land use regulatory process: an antecedent of modern impact fee practice.<sup>91</sup> In Canada, during the fifties, Ontario municipalities developed the concept of “development charges” as a means of requiring developer financial contributions for off-site capital facilities.<sup>92</sup>

Modern American land regulation has consistently and increasingly relied on land developers to build or fund basic improvements and infrastructure within property subdivisions they initiate, as well as requiring that they contribute to off-site capital improvements necessitated by their developments. While the practice began in a physical, literal way with on-site improvements and land interest dedications, it has now evolved to add cash payments, including development impact fees, to the long and complex list of local government infrastructure financing techniques. Local government-imposed land development exactions have existed as long as localities have used zoning and subdivision regulation practices. This essential technique is not new, but rather represents a continuing effort to shift the capital costs of providing needed public facilities to land devel-

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(Ala. 1978); *Town of Longboat Key v. Lands End Ltd.*, 433 So. 2d 574 (Fla. Dist. Ct. App. 1983); *see also Sanchez v. City of Santa Fe*, 481 P.2d 401 (N.M. 1971).

88. *See, e.g. Associated Home Builders v. City of Walnut Creek*, 484 P.2d 606, 613-14 (Cal. 1971); *Krughoff v. City of Naperville*, 54 N.E.2d 489 (Ill. App. Ct. 1976), *aff'd*, 369 N.E.2d 892 (Ill. 1977); *Jenad, Inc.*, 218 N.E.2d at 673; *Call v. City of West Jordan*, 606 P.2d 217 (Utah 1979); *Jordan v. Vill. of Menominee Falls*, 137 N.W.2d 442 (Wis. 1965).

89. *See, e.g., Colo. Rev. Stat. § 30-28-133(4)(a)* (authorizing park and school sites or fees reasonably necessary to serve the subdivision).

90. *See JAMES A. KUSHNER, 1 SUBDIVISION LAW AND GROWTH MANAGEMENT § 6:30* (2d ed. 2005).

91. *See Ira M. Heymann & Thomas K. Gilhool, The Constitutionality of Imposing Increased Community Costs on New Suburban Residents through Subdivision Exactions*, 73 *YALE L.J.* 1119, 1121-22 (1964).

92. David P. Amborski, *Impact Fees Canadian Style: The Use of Development Charges in Ontario*, in *DEVELOPMENT IMPACT FEES-POLICY RATIONALE, PRACTICE, THEORY AND ISSUES* 52 (Arthur C. Nelson ed., 1988). In describing this early Canadian practice, Professor Amborski summarized some of the salient features of the Ontario *Municipal Act* in the following terms,

[W]hen municipalities received contributions in relation to expenses anticipated due to the subdivision of lands, those funds should be used for expenditures that benefit the occupants of the land within the subdivision. It further stated that contributions received in this manner should be placed in a reserve account that is subject to the regulations placed in the act on those accounts. Basically, these regulations attempt to ensure accountability by having the funds earmarked so that they will be spent in the manner specified above.

*Id.* at 53-54.

opers and new residents.<sup>93</sup> It is the extension of this practice to development impact fees that will be the subject of the remaining analysis of this article.

### PART III—THE LAND DEVELOPMENT IMPACT FEE— THE MODERN FORM OF EXACTION

#### A. DEFINING THE IMPACT FEE

American municipal land use regulation has had a longstanding tradition of tying governmental approval of development projects with regulatory conditions imposing an increasing array of site improvements, land dedications, and financial charges. Interestingly, this history has assessed these development charges as an aspect of local government police power regulation and not as a direct form of business or consumer taxation. While this progression may be explained under a theory of regulatory “incrementalism,” it has had significant effects on the design of modern exaction programs, most notably land development impact fees. These fees, with their police power rather than tax-based lineage, are subjected to a series of constitutional and common law qualifying tests when they undergo judicial review.<sup>94</sup> This is an area where labels matter and the judicial categorization of a financial charge placed on land development as a tax, a special assessment, or a development impact fee can be determinative in determining lawfulness. In a particular state context, one of these devices may be authorized and available to the locality, while another technique may not.<sup>95</sup> Not surprisingly, local governments will fre-

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93. The application of municipal land use exactions has rapidly increased with the changing local government fiscal landscape and the shifting public attitudes regarding government and general taxation. David R. Berman wrote that,

[N]ationwide, the number of exactions (required improvements, property set-asides, fees and taxes) imposed on developers has increased greatly in the past two decades. To some extent, this increase reflects the notion that growth must pay for itself. In part, however, it has also stemmed from the financial difficulties of many localities. Just as the federal and state governments tried to cope with their economic problems by passing costs on to local governments, local governments have attempted to ease their economic difficulties—and the burden on current taxpayers—by passing costs on to developers. That developers have not offered more resistance may be attributable to the fact that they can, in turn, pass the costs on to residential or commercial buyers.

INT’L CITY MGMT. ASS’N, *State-Local Relations: Authority, Finances, Cooperation*, in THE MUNICIPAL YEARBOOK 2002, at 53 (2002).

94. Ironically, constitutional law imposes minimal constitutional constraints upon taxation devices—minimal due process or equal protection scrutiny—and no need to prove any semblance of rough proportionality as required in *Dolan v. City of Tigard*. See *Amador Valley Joint Union High School Dist. v. State Bd. of Equalization*, 583 P.2d 1281, 1292 (Cal. 1978).

95. The power of taxation is distributed to local governments across the nation in non-uniform ways. In some states such as Maryland, certain large jurisdictions such as Montgomery County are accorded broad power of taxation equal to that of the state. When the county’s impact fee policy was invalidated by the Maryland Court of Appeals as a revenue raising measure disguised as a regulatory fee, ample authority existed for the program to be reconstituted as an “excise tax.” See *E. Diversified v. Montgomery County*, 570 A.2d 850, 855 (Md. 1990). Such an excise tax was imposed on the act of developing property and

quently attempt to employ the label most likely to survive judicial scrutiny. However, they do not always use consistent terminology, and therefore, cash payments related to land development have been called many things.<sup>96</sup> Sometimes, localities will adopt a fee policy using one descriptive label, and later, they will redefine the technique in what they believe is a legally-defensible term when challenged in court. This ploy is met with mixed success since courts feel free to take a fresh look at the device under attack and to characterize it as they see fit. As always, the courts have the final say.

A development impact fee is the assessment by local government of financial charges upon the owner of new land development projects needed to offset capital expenditures made by the local government on infrastructure required to serve or made necessary by the new building.<sup>97</sup> Nelson and Moody have described it more succinctly as “really nothing more than an intervention by local officials to solve the problem of providing infrastructure to sustain development in rapidly growing areas.”<sup>98</sup> Most often, this fee is charged one time only, based upon a set schedule of administratively or legislatively-adopted rates and, usually, at the moment of development approval rather than later in the building process.<sup>99</sup> The range of impact fee purposes is potentially as broad as the range of public services accorded to new development and fees have been imposed for an ever-expanding range of purposes.<sup>100</sup> However, many jurisdictions limit their impact fee programs to cost categories for which they have specific authority and proportionate cost data sufficient to justify imposition of the fee. Impact fees are uniformly dedicated to the purpose of funding or capitalizing on the construction of new infrastructure systems or the expansion of existing ones and not for their operational or maintenance (O&M) expenses—<sup>101</sup>such O&M expenses being regarded

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was sustained in *Waters Land Ltd. P'ship v. Montgomery County*, 650 A.2d 712, 716 (Md. 1994).

96. See, e.g. *Home Builders Ass'n of Cent. Ariz.*, 930 P. 2d 993, 994 (Ariz. 1997) (water resource development fee); *San Remo Hotel L.P. v. City of San Francisco*, 41 P.3d 87, 104 (Cal. 2002) (housing replacement fee); *Country Joe, Inc. v. City of Eagan*, 548 N.W.2d 281 (Minn. Ct. App. 1996) (road unit connection charge); *City of N. Las Vegas v. Pardee Constr. Co.*, 21 P.3d 8, 8 (Nev. 2001) (water connection charge).

97. NICHOLAS, NELSON & JUERGENSMEYER, *supra* note 85, at 1.

98. ARTHUR C. NELSON & MITCH MOODY, *PAYING FOR PROSPERITY: IMPACT FEES AND JOB GROWTH* 16 (Discussion Paper, Brookings Institution Center On Urban and Metropolitan Policy 2003).

99. Arthur C. Nelson, *Development Impact Fees*, 54 J. AM. PLAN. ASS'N 3 (1988) (“single payments required to be made by builders or developers at the time of developmental approval and calculated to be the proportionate share of the capital cost of providing major facilities to that development”).

100. If appropriate enabling authority and local political will existed, impact fees could be imposed to provide for water treatment and supply, sewage collection and treatment, solid and/or hazardous waste treatment and storage, roads, bridges, mass transit, flood control, pollution control, schools, libraries, parks, open space and recreational facilities, sidewalks, affordable housing, and artwork. See JAMES A. KUSHNER, *SUBDIVISION LAW AND GROWTH MANAGEMENT* at 1 § 6:31, at 1 (2d ed. 2005).

101. It has been uniformly stated by analysts, courts, and legislatures that on-going operation and maintenance expenses are not to be paid for by impact fees and that the fees

as the proper subject of tax or user fee support.

These fees (*unlike* traditional, on-site development exactions) fund capital improvements made necessary by the new building which are physically situated off-site, that is, some distance from the new residential, and sometimes, industrial or commercial construction.<sup>102</sup> Nelson has described development impact fees as “scheduled charges applied to new development to generate revenue for the construction or expansion of capital facilities located outside the boundaries of the new development (off-site) that benefit the contributing development.”<sup>103</sup> One way to conceptualize the difference between traditional development exactions and development impact fees is to consider exactions as being tied to the specific site under development (project charges) while the impact fees are related to more system-wide service provision or infrastructure (system charges). A “project charge” might impose the cost of installing curbs and gutters within a residential subdivision while a “system charge” would provide the local government with funds to expand the treatment capacity of the municipal sewage treatment plant. It is this detachment from the actual location of land development that makes impact fees so controversial and so often subject to legal attack. Other, more comprehensive definitions of impact fees do exist.<sup>104</sup>

#### B. WHY IMPACT FEES ARE RAPIDLY BEING ADOPTED THROUGHOUT THE UNITED STATES

Attitudes regarding the desirability of community growth have changed significantly in the post-World War II period. Where once growth would be heralded as evidence of the health and the desirability of the community, now the approval of new single and multi-family developments is met with skepticism and concern about the deterioration of the locality's financial well-being and its general quality of life. In some

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are only to provide funding for capital improvement costs necessitated by development. This view apparently stems from the view that the funding of operation and maintenance should come from generally-derived tax revenues as a general operating cost of government. Implicit in this outlook is the idea that such a general community expense should not be charged to a limited segment of the locality's population through a focused impact fee on new development. See JUERGENSMEYER & ROBERTS, *supra* note 50, at 328-32.

102. It is also noteworthy that development impact fees are most frequently applied to residential or home construction. However, some systems of fee collection also impose these charges on other forms of land development—that is, commercial, industrial, and institutional—and therefore, attempt to consistently tax all forms of development which are causally related to new community infrastructure charges. See generally Fred Bosselman & Nancy Stroud, *Pariah to Paragon: Developer Exactions in Florida 1975-1985*, 14 STETSON L. REV. 528 (1985).

103. See NICHOLAS, NELSON & JUERGENSMEYER, *supra* note 85, at 1-2.

104. Blaesser and Kentopp have defined impact fees as a land use exaction: 1) in the form of a predetermined money payment; 2) assessed as a condition to the issuance of a building permit, an occupancy permit or plat approval; 3) pursuant to local government powers to regulate new growth and development and provide for adequate public facilities and services; 4) levied to fund large-scale, off-site public facilities, and services necessary to serve new development; and 5) in an amount which is proportionate to the need for public facilities generated by new development. See Brian Blaesser & Christine M. Kentopp, *Impact Fees: The Second Generation*, 38 WASH. U. J. URB. & CONTEMP. LAW 55, 64 (1990).

locations, this concern has been expressed in more extreme terms with calls for building and utility connection moratoria. In an increasing number of locales, the impact fee device is being adopted by local governments. In 2000, the General Accounting Office (GAO) surveyed local governments and discovered high rates of impact fees use. The study found 59.4% or 564 cities with populations in excess of 25,000 and 39% or 238 metropolitan area counties employed impact fees.<sup>105</sup> Indirect evidence (from state enabling legislation in twenty-five states, numerous newspaper reports of municipal controversies, website postings of interest groups and reported litigation) confirms this report and suggests that impact fees are prevalent and that their use is growing.<sup>106</sup> But why is this trend currently accelerating and why didn't the pre-existing funding patterns continue? Several distinct justifications for the modern adoption of development impact fee can be identified.

### 1. *Using Conventional Legal Theory—The Police Power “Harm Avoidance” Justification for Impact Fees*

Development impact fees have been imposed under the authority of a locality's police power. This broad, traditional source of authority encompasses a wide range of municipal functions that can be generally said to further public health, safety or the general welfare. As general as police power goals may sound, they authorize a wide variety of protective and programmatic action to further the well-being of the community. Not surprisingly, most local government land use regulation is legally justified under this harm-prevention rationale. When new land development is proposed, it presents a variety of “harms” as potential impacts. Unmitigated, these development effects could present serious adverse consequences for the locality. For instance, a new housing subdivision, by itself, could increase site runoff and increase loads on existing drainage

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105. U.S. GENERAL ACCOUNTING OFFICE, LOCAL GROWTH ISSUES—FEDERAL OPPORTUNITIES AND CHALLENGES 43 & 62 (2000). A Florida survey published in 1991 indicated that 52% of Florida's counties employed impact fees. FLORIDA ADVISORY COUNCIL ON INTERGOVERNMENTAL RELATIONS, 1991 FLORIDA IMPACT FEE REPORT.

106. In 1986, there were only three states—Arizona, California, and New Jersey—with state impact fee enabling legislation. By 1993, the number had grown to twenty jurisdictions with general state-wide law. Two others, Maryland and Tennessee, enacted law giving impact fee authority to enumerated counties. See Martin L. Leitner & Susan P. Schoettle, *A Survey of State Impact Fee Enabling Legislation*, 25 URB. LAW. 491, 492 nn.6-7 (1993). Finally, in 2002, the total had grown to twenty-four states. This total undoubtedly understates the prevalence of the practice since some states justify local impact fee practice under home rule or general planning and zoning authority. *Id.* at 507. In fact, Florida has a long litigation history of challenges to impact fees in the absence of specific enabling authority. See, e.g., *Contractors & Builders Ass'n v. City of Dunedin*, 329 So. 2d 314 (Fla. 1976). Alternatively, impact fees—often by other names—are imposed by way of negotiated land use approval practices. For instance, in Virginia, the land rezoning process is used as the vehicle for charging cash exactions offsetting the costs of new development. Under this practice, the land developer can offer “voluntary” cash “proffers” to the local government to support its rezoning request. As long as these proffers are “voluntary,” the Virginia courts have allowed the practice to continue. The Virginia General Assembly has restricted the availability of this technique to certain “high growth” localities. See VA. CODE ANN. § 15.2-2298 et seq.

structures, thereby overwhelming the capacity to properly handle the storm water generated by the subdivision. Numerous other examples of development impacts imposing community burdens exist. Requiring impact fees which fund the capital costs of public facilities needed to avoid or abate the adverse effects of new development can be viewed as a police power “harm” minimizing policy. By ensuring that there is adequate infrastructure in place to offset or avoid these negative development impacts, impact fees serve the main police power goal of maintaining community health, safety, and general welfare. In this way, the traditional police power harm minimizing rationale can be used to support impact fees.

## 2. *Achieving Economic Objectives at a Low Political Cost*

Throughout history, devising a revenue-raising policy has proved controversial and intensely political—sometimes spawning violent revolts.<sup>107</sup> In its most visible context, setting national tax policy in the United States consistently engenders strong political debate over the eternal questions of what conduct should be taxed, who should pay taxes, and in what amounts? At this level, setting tax policy involves highly charged political values. As with these national tax issues, local government tax policy for the funding of public investments such as roads, schools, and parks has also been a contested public issue in recent years, as evidenced by California’s Proposition 13 in 1978. In the last decade, local tax policy has raised significant and controversial political questions when it concerns the financing of public facilities necessitated by new community growth.

In earlier times, communities paid for growth-related costs with annually-generated general tax revenues and general obligation debt financing. The political landscape in the last two decades has significantly changed. With the reductions in intergovernmental subsidies of local government and the increasingly popular resistance to raising real property taxes and approving bond referenda, local governments have found it necessary to develop alternative methods of financing the capital costs of growth. Such methods must meet the three-part test of being 1) financially adequate; 2) legally defensible; and 3) acceptable to the local electorate as a political matter. Development impact fees, as they have evolved over the past two decades, fit this description. By adopting ordinances embracing development impact fee regimes, local governments si-

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107. In 1792, following Alexander Hamilton’s plan for building a strong federal government possessing significant revenue raising powers, Congress enacted an excise tax to be imposed on strong alcoholic beverages. This action triggered what became to be known as the “Whiskey Rebellion,” and this tax was especially offensive to farmers in western Pennsylvania who converted their grain to whiskey for sale since it imposed a tax equal to one-third the price of whiskey. See GLENN W. FISHER, *THE WORST TAX? A HISTORY OF THE PROPERTY TAX IN AMERICA* 35-36 (1996). The flames of the rebellion were fanned at protest meetings, the tarring and feathering of tax collectors, a mob attack on the house of a federal inspector and a march on Pittsburgh by up to 5,000 men. *Id.* In response, President George Washington called up 13,000 militiamen (triple the number at Valley Forge) and the rebellion was put down by the troops. *Id.* at 37.

multaneously achieve a series of attractive political objectives, and they do so without having to consider any potential objections from interest groups unrepresented in the existing voting populace. The major arguments in favor of the adoption of impact fees can be stated in the following terms.

### 3. *Pragmatic Considerations Underlying Impact Fees*

A variety of practical factors make the increasing modern reliance on impact fees understandable. *First*, by adopting development impact fees, the locality assures itself that there will be a continuing stream of capital-funding revenues that will permit the planning and building of needed infrastructure in a timely fashion correlated with the arrival of new population to the community. By obtaining this flow of impact fees, the local government can avoid the common problem of having new residential growth overload or “congest” existing public facilities such as public schools, libraries, and parks. With a steady supply of impact fee revenues, public facilities can be constructed in a more synchronized fashion with the demands of new residents, minimizing the need for the community to “play catch-up” after falling behind those growing needs. *Second*, localities will have less need to access the capital markets in order to borrow funds for this capital construction, thereby conserving their limited borrowing authority and reducing the future budgetary strain of debt service that would have been incurred to finance the improvements. *Third*, impact fees provide a dedicated source for funding public improvements that were not provided by conventional land use exactions. The expansion of a fire station or a drinking water treatment plant miles away from new development provides an example of this principle. The impact fee can provide funding for this kind of system-wide improvement necessitated by new growth. *Fourth*, these new fees can, in theory, be applied to all forms of new development—not just residential single-family home subdivisions. Impact fee programs could be designed for all categories of land uses and also for different forms of uses within the same category or group.<sup>108</sup> Such a well-constructed impact fee program would more accurately connect the fiscal impacts of development to its social costs, thereby avoiding imprecise average cost pricing problems.<sup>109</sup> *Fifth*, the timing of the collection of impact fees can be set at a point closer to the

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108. A case study from Rochester, Illinois, imposes a development impact fee for water and sewer capital costs on residential, educational and commercial land uses depending on the number of “interior plumbed fixtures” regardless of the land use category. See Bradford Townsend, *Development Impact Fees: A Fair Share Formula for Success*, 78 PUB. MGMT. 10 (1996). Other impact fee systems impose charges adjusted for future expected fiscal impact on the community. See Roger K. Dahlstrom, *Development Impact Fees: A Review of Contemporary Techniques for Calculation, Data Collection, and Documentation*, 15 N. ILL. U. L. REV. 557 (1995) (describing the Elgin, Illinois Fiscal Impact Land Use Model which generates fees that are demand, cost, and revenue sensitive).

109. See R. Marlin Smith, *From Subdivision Improvement Requirements, to Community Benefit Assessments: A Brief History of Land Development Exactions*, 50 LAW & CONTEMP. PROBS. 5, 15 (1987).



developer's actual sale of the finished residential unit, making the fee less onerous to the builder. Impact fee systems could be structured to impose the fee at the point of building permit issuance or even later, thereby relieving the land developer's need to finance the impact fee expense during construction. This timing advantage for the land developer could make the fee more palatable to developers. *Sixth*, impact fees may also constitute desirable policy because they represent a more efficient use of public infrastructure. If impact fees are carefully designed to reflect the cost of actually providing public services to new development, they may serve to impose the true marginal costs of using public facilities upon new growth. Further, by integrating these expenses into the cost of new housing, the housing market will tend to maximize overall social utility because the price of homes will more accurately reflect all of the positive and negative effects that residential growth brings to the community. *Seventh*, an impact fee program may actually make new growth possible when infrastructure capacity limits have been reached and a community has adopted a real or *de facto* development moratorium. By providing for a stable source of infrastructure capital, impact fees may actually eliminate a serious objection to new residential growth and serve as a growth-accommodating policy. In this way, they could also be viewed as development timing devices.

### C. ASSESSING THE ECONOMIC IMPLICATIONS OF DEVELOPMENT IMPACT FEES

Academic and professional studies have examined the general topic of the fiscal impacts of different forms of modern suburban growth.<sup>110</sup> Considerably less comprehensive analysis exists regarding the use and effects of the development impact fees. Some fundamental questions concerning the general economic effects concerning the use of impact fees remain largely unanswered. For example, do fees expand or contract the supply of developable land?<sup>111</sup> Are fees consistent with higher or lower levels of

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110. The most comprehensive assessment of the cost savings afforded by planned development considered the New Jersey State Development and Redevelopment Plan. The 1992 report concluded that New Jersey could save \$1.3 billion in infrastructure costs for roads, utilities and schools over a twenty year period if a state managed growth plan were followed rather than developing in the traditional sprawl form of land development. See ROBERT W. BURCHELL ET AL., *IMPACT ASSESSMENT OF THE NEW JERSEY INTERIM STATE DEVELOPMENT AND REDEVELOPMENT PLAN, REPORT II: RESEARCH FINDINGS* (1992). However, increased housing costs have been observed with growth controls. See William A. Fischel, *Do Growth Controls Matter: A Review of Empirical Evidence on the Effectiveness and Efficiency of Local Government Land Use Regulation*, in LINCOLN INST. FOR LAND POL'Y (1990); Jane H. Lillydahl & Larry D. Dingell, *The Effects of Growth Management on the Housing Market: A Review of Theoretical and Empirical Evidence*, 9 J. URB. AFF. 63 (1987).

111. Impact fees may actually increase the supply of developable land in a community and, as a consequence, enable more residential growth. The impact fees can provide the needed capital to fund infrastructure needs required by "adequate public facilities" planning. See VICKI BEEN, *IMPACT FEES AND HOUSING AFFORDABILITY* 8 (HUD Report 2004).

local employment in areas where they are used?<sup>112</sup> Perhaps the absence of this economic research reflects both the difficulty of data collection and the isolation of the effects and incidence of the fees. In recent years, however, the academic literature has just begun to examine seriously this technique both in theoretical terms and case study analyses. The emphasis of these studies has been in economic focus with considerable effort expended to the application of statistical methods to discern precise empirical patterns to explain the real world impact of these fees. These studies, drawn from localized data sets, have considered three interrelated questions: 1) what are the price effects of impact fees on new and existing home prices; 2) what is the incidence of the impact fees or who actually pays the additional cost imposed by the impact fee; and 3) does the use of local government impact fees result in greater economic efficiency in patterns of suburban growth?

### 1. *Housing Cost Price Effect Data*

Intuitively, one might assume that the imposition of development impact fees would result in developers attempting to pass the additional cost along to the housing consumer in the form of higher prices for new construction. The impact fee would merely represent an additional cost component. However, such pricing power would seemingly depend upon the competitiveness and profitability of an area's housing market, the availability of new homes in communities that do not impose impact fees (or have lower fee levels) and the ability of developers to force land sellers to capitalize or deduct all or some of the fee from the cost of the raw land sales price. Each of these factors could result in a diffusion of the impact fee with each of the market participants—the housing consumer, developer, and land owner—each absorbing part of the new additional cost. Research has provided limited insight into the potential effect that impact fees might have on housing price and supply.

The few empirical studies undertaken seem to indicate that fees are largely passed on to the consumer of new housing and often in excess of the actual amount of the impact fee itself. This phenomenon is referred to as “overshifting,” where the developer receives a bonus in excess of the cost of the development fee.<sup>113</sup> One study undertaken in the mid-nineties by Brett Braden, Don Coursey, and Jeannine Kannegiesser examined the price effects of impact fees in eight Chicago suburbs and found that new house prices rose more than the cost of the impact fee in

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112. One recent regression analysis of data from thirty-four Florida counties from 1993 to 1999 concerning the relationship of numerous factors on local economic development found “a significant positive association between impact fees collected per building permit in one year and job growth over the next two years.” NELSON & MOODY, *supra* note 98, at 15.

113. John Yinger, *The Incidence of Development Fees and Special Assessments*, 51 NAT'L TAX J. 23, 35 (1998).

six out of eight localities.<sup>114</sup> The range of price increases spanned from 70% to 210% of the actual cost of the impact fee.<sup>115</sup> The explanation of why developers are able to pass on the impact fee cost plus an additional increment appears to rest upon consumer willingness to pay for established, in-place services that will benefit them immediately in a predictable way. The price effect of impact fees on existing housing has also been studied, and it has been found that impact fees also had a positive effect on existing houses—not subject to the impact fees—increasing their value by at least the amount of the impact fees being charged to new home development. This price phenomenon reflected the fact that existing homes represented a potential substitute for newly-constructed homes and that rising prices would increase their prices as well. Some theorists have suggested that the existing house price increase might also reflect the market's perception that, with impact fees, the likelihood of future real estate tax rate increases will be reduced. It is hardly surprising that current property owners have an incentive to support the imposition of impact fees on new construction for the usual stated reasons and the desire to enjoy windfall capital gains.

Other studies reinforce these findings. For instance, in 1990, Singell and Lillydahl analyzed similar price impacts during 1983-85 in Loveland, Colorado, and found that an impact fee of \$1,182 was related to a new house price increase of \$3,800—over three times the cost of the fee.<sup>116</sup> They concluded that “the results imply that the buyers of new homes in Loveland, rather than land owners or developers, bear the burden of the impact fees.”<sup>117</sup> These results suggest developers “overshifting” as described above resulting in a tripling of the return on their “investment” in impact fees. Even more striking are the results of the analysis related to the price effects on existing housing in Loveland, Colorado during the period under study. Singell and Lillydahl found that the price of old or existing housing increased an average of \$7,000 when impact fees were imposed on new housing.<sup>118</sup> These findings indicate that existing homeowners derived significant indirect benefits from the assessment of impact fees on new construction.<sup>119</sup> In fact, existing housing prices rose \$7,000,

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114. BRETT M. BADEN, DON L. COURSEY & JEANNINE M. KANNEGIESSER, [THE HEARTLAND INSTITUTE], EFFECTS OF IMPACT FEES ON THE SUBURBAN CHICAGO HOUSING MARKET 36 (1999) (finding that in the period from 1995 to 1997 single family home impact fees in the eight Chicago communities ranged from \$2,223 to \$8,942.)

115. *Id.* At the low end of this range—70% cost increase—the builder must absorb the missing 30% or force the landowner's selling land for development to reduce their asking prices in order to capitalize the cost of the impact fees. The large price effects—210%—were not attributed to price gouging or strong market conditions, but were rather “probably due to the imposition of fees causing substantial uncertainty and delay costs, as well as other fee and regulatory costs. . . .” *Id.*

116. Larry D. Singell & Jane H. Lillydahl, *An Empirical Examination of the Effects of Impact Fees on the Housing Markets*, 66 LAND ECON. 82, 89 (1990).

117. *Id.*

118. *Id.*

119. *Id.* at 89. Theoretical research has confirmed this price effect increasing the value of developed land when impact fees are adopted. See Jan K. Brueckner, *Infrastructure, Financing and Urban Development: The Economics of Impact Fees*, 66 J. PUB. ECON. 383,

while new house prices increased by \$3,800 in the study.<sup>120</sup> Other empirical studies have reinforced the point that housing prices rise at least on par with the cost of the impact fee.<sup>121</sup> If these research findings are correct as a general matter, it is not hard to understand why existing residents support the imposition of impact fees on new development: they are beneficial by raising the capital value of the existing housing stock. There is also evidence that fees may also slow the rate of residential construction, thereby limiting the addition of new housing supply to the market.<sup>122</sup> These results support the idea that impact fees raise the cost of new housing construction to the consumer and indirectly increase the value of existing homes in a simultaneous fashion.<sup>123</sup>

## 2. *Who Actually Pays Impact Fees the Question of Incidence*

The incidence of a tax indicates who actually pays it and this issue has been the subject of research within the context of development impact fees.<sup>124</sup> The studies done in this area have focused on the price effects or trends for new and existing housing in jurisdictions imposing impact fees. The initial question posed by this research has been a determination of whether a local government's imposition of an impact fee affects the price of new and used housing in an area. Certainly, since the impact fee is imposed upon the land developer at some point in the development approval process, it can be said that the fee is nominally or literally paid by the developer. Also, since the development fee is an "up-front charge" in the building process, it represents an additional cost element in the construction of a unit of housing. However, once imposed, the impact fee may not stay where it is first charged. That is, the land developer may first attempt to shift the development fee "backwards" to the raw land seller through lower prices paid for land. In the alternative, the devel-

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405 (1997). Consequently, it is not difficult to comprehend yet another reason why development impact fees have become so widespread throughout the United States during the last two decades. They also raise the market value of homes owned by existing property owners in the locality.

120. Singell & Lillydahl, *supra* note 116, at 89.

121. Charles J. Delaney & Marc T. Smith, *Impact Fees and the Price of New Housing: An Empirical Study*, 17 J. AM. REAL EST. & URB. ECON. ASS'N 41, 54 (1989) (impact fees in Dunedin, Florida rose relative to other cities in Pinellas County, Florida); Andrejas Sakburskis & Mohammad Qadeer, *An Empirical Estimation of the Price Effects of Development Impact Fees*, 29 URB. STUD. 653, 667 (1992) (\$1.00 in impact fees caused lot prices to rise \$1.88 in Toronto, Canada). *But see* Marla Dresch & Steven M. Sheffrin, *Who Pays For Development Fees and Exactions?*, PUB. POL'Y INST. OF CAL. (1997) (inconsistent findings some showing no overshift).

122. Mark Skidmore & Michael Peddle, *Do Development Impact Fees Reduce the Rate of Residential Development?*, GROWTH AND CHANGE 383-400 (Fall 1998) (reducing the rate of residential construction between 29% and 31% from 1977 through 1992 in DuPage County, Illinois). *But see* Christopher J. Mayer & C. Tsuriel Somerville, *Land Use Regulation and New Construction*, 30 REG. SCI. & URB. ECON. 639 (2000) (little effect found on construction).

123. Charles J. Delaney & Marc T. Smith, *Pricing Implications of Development Exactions on Existing Housing Stock*, GROWTH AND CHANGE 12 (Fall 1989).

124. *See, e.g.*, Forrest E. Huffman et al., *Who Bears the Burden of Development Impact Fees?* 54 J. AM. PLAN. ASS'N 49, 49-55 (1988).

oper might attempt to transfer all or part of the impact fee “forward” to the housing consumer through higher prices that must be paid for a completed home. Studies have revealed that impact fee costs are shifted in both directions.

Research by John Yinger has rigorously analyzed the incidence issue and has concluded that development impact fees actually shift approximately a quarter of the burden of these fees onto the owners of undeveloped land with the size of this effect estimated to be varied.<sup>125</sup> Backward-shifting of the fees has proved controversial and has been discussed in other studies.<sup>126</sup> At the same time, the imposition of impact fees confers a small capital gain on existing homeowners.<sup>127</sup> This seems to be consistent with the conclusions of the Singell and Lillydahl study and earlier research.<sup>128</sup> Not surprisingly, new home purchasers will bear the rest of the impact fee burden in higher purchase prices, but they will be rewarded for shouldering this cost with a higher level of infrastructure serving their new homes and, potentially, higher resale values.<sup>129</sup> Finally, Yinger concludes that in a competitive housing construction market the fees do not impose any burden on the land developer.<sup>130</sup> The collective conclusion of this research indicates that fees are shared by all of the participants in the land development process but that the process of “shifting” is not well understood, necessitating more study.<sup>131</sup>

### 3. *Impact Fees as a Way to “Efficient Growth”*

Earlier community development practices have been criticized as being economically inefficient in that builders add housing to a locality without absorbing all, or even a majority, of the capital and other costs imposed

125. See generally Yinger, *supra* note 113. This phenomenon has been observed.

126. Keith R. Ihlanfeldt & Timothy M. Shaughnessy, *An Empirical Investigation of the Effects of Impact Fees on Housing and Land Markets*, 2 & 15 (Lincoln Institute of Land Policy Working Paper No. CP02A13 2002) (stating that undeveloped land values decline if the increase in the price of housing is insufficient to guarantee developers of new housing a competitive rate of return); see also William A. Fischel, *The Economics of Land Use Exactions: A Property Rights Analysis*, 50 LAW & CONTEMP. PROBS. 101 (1987); Andrew R. Watkins, *Impacts of Land Development Charges*, 75 LAND ECON. 415-424 (1999).

127. Yinger, *supra* note 113, at 37. If the existing homeowners also receive benefits from the infrastructure funded by impact fees paid by new home owners, the windfall to these existing residents would be even greater. In this research, Professor Yinger also concluded that special assessment, rather than development impact fees, appeared to be the fairer financing mechanism for infrastructure, and he notes that “special assessments are the most neutral policy: The burden fall entirely on new owners who receive all the benefit from the infrastructure.” *Id.* at 33.

128. See Huffman et al., *supra* note 124, at 52 (“if housing prices . . . rise because of impact fees, the price of existing homes that are close substitutes for new homes will also rise. That results in a windfall profit to owners of existing homes.”)

129. The Ihlanfeldt & Shaughnessy study estimated that this increase in the price of housing equals “the present value of the property tax savings expected by homeowners from the shift from property tax finance to the use of impact fees to pay for new public capital services.” Ihlanfeldt & Shaughnessy, *supra* note 126, at 16. This view assumes a remarkable and unrealistic degree of housing consumer awareness of future taxes and the ability to discount these future savings to present value.

130. Yinger, *supra* note 113, at 37.

131. See generally Watkins, *supra* note 126.

on the community by the new construction. In this view, builders, as economic actors, force negative economic externalities upon localities by requiring that the general community respond with general tax revenues to finance the infrastructure and the other adverse effects of new growth. Following this theory, it is assumed that, in economic terms, the act of land development is inefficient if it shifts negative effects or costs away to be borne by others who have not agreed to bear them. By avoiding these costs, land developers have benefited themselves and, in the short run, housing consumers by supplying the housing market with additional units at a sales price not fully reflecting their economic impact on the local community. The result of this phenomenon of not internalizing these costs is to provide housing to consumers at an artificially low price or to provide unjustified profits to builders or a little of both.

Land development may be considered “efficient” when the cost of infrastructure is included in the price charged to the consumer. Viewed in this light, it has been argued that development impact fees are justified as a method of properly assigning the costs of growth to those enjoying the benefits. Expressed in other terms, these fees demand a greater internalization of development costs, resulting in improvement in the economic efficiency in the provision of infrastructure. Some economic analysts have concurred with this view. Within an urban growth model, Jan K. Brueckner compared the traditional community cost sharing method of infrastructure financing with the approach taken by development impact fees. This research concluded that “the impact fee scheme . . . [is] the infrastructure financing method that leads the efficient growth path because impact fees force developers to take into account the infrastructure costs imposed by new residents. Impact fees thus align private and social incentives.”<sup>132</sup> The research results suggest that even though impact fees only result in the recovery of part of new development-related costs, they do more closely align the housing consumer with the costs of providing new services. As a result, impact fees may be viewed as enhancing economic efficiency. In addition, higher housing prices following the imposition of impact fees may actually reflect the fact that the housing consumer receives greater value in the property purchase through better infrastructure or reduced future local tax increases.

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132. Skidmore & Peddle, *supra* note 122, at 398 (describing Jan K. Brueckner, *Infrastructure, Financing and Urban Development: The Economics of Impact Fees* (Manuscript at the University of Illinois at Champaign-Urbana)).

PART IV—JUDICIAL SUPERVISION OF EXACTIONS  
AND IMPACT FEES

A. STATE COURTS IMPACT FEE POLICY DEVELOPMENT  
PRIOR TO THE *NOLLAN/DOLAN* DECISIONS

1. *Early State Law on Cost Shifting*

As land use control techniques developed throughout the twentieth century, police power authority was increasingly used to shift the economic costs of new residential growth to the land developer. Gradually, regulatory power was employed to require that land use projects contained physical improvements that were functionally sound, integrated into community-wide systems, and sufficient to serve the needs of the new residents who would live in the area.<sup>133</sup> This early stage, however, focused on physical requirements of land improvements such as streets, gutters, sidewalks, and water and sewer lines within the area being developed. Later, in the post-World War II period, these subdivision rules expanded requiring land dedication for schools, parks, and other public facilities. Since these land exactions were usually attached to the regulation of large scale land development, courts analyzed them as police power-based rules, and they were often approved by the state judiciary and legislatures.<sup>134</sup> By this time, the government approval of residential subdivisions had become dependent upon the land developer's agreement to provide internal physical improvements and to dedicate land for public purposes. The key element satisfying court review of these land and capital improvements was their direct relationship to the land being developed at the actual site. It was not difficult for courts to consider these costs to be attributable to or caused by the new land development and, therefore, a proper subject for regulation.

With this regulatory power firmly established in the local government's array of capital cost-shifting techniques, it did not take long for some of these land and physical improvement exactions to be converted into cash payments made to the local government. Consequently, required land dedications were often converted into a cash payment that was made "in lieu of" the otherwise inefficient land exaction. By the sixties, these "in lieu of" payments had been reviewed by numerous state courts and they had become common land use control techniques in the United States.<sup>135</sup> The acceptance of the "in lieu of" fees would set the stage for future cash impact fees that would provide for off-site system improvements that

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133. JUERGENSMEYER & ROBERTS, *supra* note 50, at 275. Even nineteenth century case law upheld the practice of charging new development for common improvements serving the buildings. *See, e.g., City of Fergus Falls v. Boen*, 80 N.W. 961, 961-62 (Minn. 1899) (upholding a per house connection charge offsetting costs of sewer pipes).

134. *See, e.g., Billings Props. Inc. v. Yellowstone County*, 394 P.2d 182, 185 (Mont. 1964) (recreational land); *Blevens v. City of Manchester*, 170 A.2d 121, 122 (N.H. 1961).

135. THOMAS P. SNYDER & MICHAEL A. STEGMAN, *PAYING FOR GROWTH: USING DEVELOPMENT FEES TO FINANCE INFRASTRUCTURE* 10, 17-18 (Washington: Urban Land Institute 1986).

would not be so closely tied to the actual parcel of land being developed. In reality, both of these techniques require cash transfers from the land developer to the local government to offset capital costs associated with new growth. Even at this early stage, both devices raised the concern of commentators that they could be abused and serve as illicit “entrance taxes” on new residents if not properly administered.<sup>136</sup>

The period of 1960-1980 resulted in tremendous population growth and land development in the United States. The “growth mandate” of the earlier part of this period was followed by a time when pro-growth attitudes of local government met intense citizen resistance. One of the more serious arguments raised against continued development was the increasing concern about the inadequacy of local public infrastructure. Overcrowded schools and overburdened sewer and water systems were viewed as the result of poorly planned, excessive community growth. Localities turned to development impact fees to shore up the financial shortages they were experiencing with higher costs to service ever-increasing levels of growth. Local governments first sought to impose these fees as modern extensions of the traditional, special assessments or following public utility models of municipal finance.<sup>137</sup> This view of financing capital improvements connected a specific physical improvement such as a sidewalk, curb and gutter, or sewer or water pipe connection to an exact parcel which was both benefited by the investment and burdened with a financial charge to liquidate its cost. This linear burden and benefit relationship had legally reinforced a wide range of financial special assessments over the years.<sup>138</sup> During this modern growth period, however, land use impact fees began to expand in their range of purposes until they reached physical improvements that spread well beyond the boundaries of the building lots subject to the fees. With possible spillover effects accruing to the community at large, some critics believed that the increasingly popular impact fees were actually stealth taxation devices redistributing wealth rather than preventing negative impacts caused by the new development.<sup>139</sup> Not surprisingly, the state courts were asked by

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136. See, e.g., Ira M. Heyman & Thomas K. Gilhool, *The Constitutionality of Imposing Increased Community Costs on New Subdivision Residents Through Subdivision Exactions*, 73 YALE L.J. 1119; John D. Johnston, Jr., *Constitutionality of Subdivision Exactions: The Quest for a Rationale*, 52 CORNELL L.Q. 871 (1967).

137. Some localities in California have adapted this traditional technique to provide funding for a proportionate share of public improvements such as fire stations by using a “facilities benefit assessment” to obtain funds from developers. This practice has been upheld in California in *J.W. Jones Cos. v. City of San Diego*, 157 Cal. App. 3d 745, 758 (1984). Arizona courts have allowed similar devices to be used to fund sewer line extensions under “special taxing district” authorities. See *Est. of Crain v. City of Williams*, 965 P.2d 76, 81 (Ariz. Ct. App. 1998).

138. Special assessments have a long history in the United States reaching back to the seventeenth century. See *People ex rel. Griffen v. Mayor of Brooklyn*, 4 N.Y. 419, 438 (1851). See also OSBORNE M. REYNOLDS, JR., LOCAL GOVERNMENT LAW 349-54 (2d ed. 2001).

139. See Frank Bosselman & Nancy Stroud, *Pariah to Paragon: Developer Exactions in Florida 1975-85*, 14 STETSON L. REV. 527, 529 (1985); John W. Reps & Jerry L. Smith, *Control of Urban Land Subdivision*, 14 SYRACUSE L. REV. 405 (1963); Benjamin J.



land developers and other pro-growth interests to restrict this emerging funding device found to be so attractive by local governments around the nation.

In this three decade period before United States Supreme Court intervention in the *Nollan* and *Dolan* decisions, state law was required to sort out the claims against impact fees and to determine their lawfulness. During this time, state courts frequently addressed three central questions regarding the legality of development fees. Even though cases contained a number of overlapping issues and were decided largely under a particular state's law, not federal law, they were principally concerned with the following inquiries: 1) were they police power-based regulatory actions or impermissible forms of local taxation; 2) were these charges properly authorized local government actions under statutory or constitutional law; and 3) even if authorized, were these fees "reasonable" exercises of the police power under state law constitutional law tests? Since the courts were evaluating local practices that grew from indigenous sources and followed no national pattern, it is not surprising that their decisions followed no consensus of opinion. The following patterns emerged through this formative period, and they reflect state judiciaries' attempt to balance competing claims to the legitimacy of a popular, yet contested, method of public finance.

a. The "Regulation" or "Taxation" Inquiry

A surprisingly large number of cases during this time period addressed the question of whether the cash charge was to be categorized as a police power regulation or as a form of taxation. While appearing as a rather formalistic objection to the local government's action, the regulation/taxation classification held great potency for challengers to impact fee practices. In *Regulation for Revenue*, Altschuler and Gomez-Ibanez noted a fundamental difference between these two financial techniques,

Governments may regulate and impose fees on the basis of their police power, but they may not impose taxes. A tax can be used for any purpose; no connection, in principle, need exist between the source of revenue and the purposes for which it is used. Fees, on the other hand, must be justified with reference to the cost of providing services to the payers or of mitigating harm to others that would otherwise be caused by the payers' activities.<sup>140</sup>

This distinction emphasizes the fact that taxes may be imposed following criteria unrelated to service costs or harm mitigation. Income and property taxes provide common examples of this phenomenon where the obligatory charges are set solely with reference to income or wealth levels. More importantly, the regulatory fee/tax dichotomy relates more directly to identifying proper sources of authority for each form of action. In

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Trichelo, *Subdivision Exactions: Virginia Constitutional Problems*, 11 U. RICH. L. REV. 21 (1976).

140. ALTSCHULER & GOMEZ-IBANEZ, *supra* note 17, at 51.

practice, state legislatures carefully limit the power of local governments to impose taxes much more restrictively than they do the allocation of planning and land use control power.<sup>141</sup> They also impose more onerous procedural demands such as super majority voting or citizen referendum requirements on the adoption of new taxes. Courts also have the tendency to interpret taxing authority in a narrower fashion, as well.<sup>142</sup>

Discerning the differences between invalid taxes and permissible regulatory fees has been difficult for courts to do with any defining principle or consistency. It has been even harder for them to articulate a coherent rationale for the distinctions they have drawn. Some cases like *S & P Enterprises, Inc. v. City of Memphis*<sup>143</sup> claim to examine the purpose for which the monies have been required by the local government. As commonly explained in cases such as this, if the objective of the fee was to raise general revenue for the community rather than to accomplish a police power regulatory purpose, the charge would be considered a tax.<sup>144</sup> For example, in the 1961 case of *Western Heights Land Corp. v. City of Fort Collins*, the Colorado Supreme Court ruled that levying a charge for water and sewer service on a square foot basis was not a “tax,” because it was not a revenue measure intended to defray general municipal expenses.<sup>145</sup> In other cases during this period, courts found that a regulatory

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141. See REYNOLDS, *supra* note 26, at 335-37 (“[T]he power [to tax] must be derived from the state, and a grant of it will be strictly construed, with doubts resolved against the existence of any particular aspect of the power.”). However, it should be noted that some jurisdictions accord local governments broad authority to impose certain kinds of taxes and, in addition, specifically exempt such taxes from the restrictive policies embodied by state impact fee legislation. See, e.g., *Centex Real Est. Corp. v. City of Vallejo*, 24 Cal. Rptr. 2d 48, 51 (Cal. Ct. App. 1993) (upholding Property Development Excise Tax as a valid tax “on the privilege of developing property” and not a development fee subject to state law on development fees); *Westfield-Palos Verdes Co. v. City of Rancho Palos Verdes*, 141 Cal. Rptr. 36, 44 (Cal. Ct. App. 1977) (upheld a \$500 tax per bedroom); *Associated Home Builders v. City of Newark*, 95 Cal. Rptr. 648, 648-50 (Cal. Ct. App. 1971) (upheld a business licensing tax at building permit stage in development process).

142. In *Daniels v. Borough of Point Pleasant*, 129 A.2d 265 (N.J. 1957), the court struck down a local ordinance substantially increasing (by 700%) the building permit fee on residential home construction. *Id.* at 267. The New Jersey Supreme Court struck down the fee ruling that without clear statutory power, a locality may not impose fees that exceed the cost of running the regulatory program as that would constitute use of the police power to defray the costs of government. *Id.* at 268. This rule has been extremely persuasive and it continues with modern cases. See, e.g., *Idaho Bldg. Contractors Ass’n v. City of Coeur D’Alene*, 890 P.2d 326 (Idaho 1995).

143. 672 S.W.2d 213 (Tenn. Ct. App. 1983).

144. *Id.* at 215. Not all taxes are held to be void. If the requisite municipal authority exists, a local government may lawfully impose a revenue-raising measure similar to an impact fee or other financial development charge. See, e.g., *Cherry Hills Farms, Inc. v. City of Cherry Hills*, 670 P.2d 778, 783 (Colo. 1983) (finding service fee to be a valid excise tax); *Towne Props., Inc. v. City of Fairfield*, 364 N.E.2d 289, 290 & 292 (Ohio 1977) (upholding a \$50 per unit recreation tax levied on dwelling units not requiring building permits); *Paul L. Smith, Inc. v. S. York County Sch. Dist.*, 403 A.2d 1034, 1937 (Pa. Commw. Ct. 1979) (upholding school privilege tax upheld). See William H. Ethier & Howard J. Weiss, *Development Excise Taxes: An Exercise in Cleverness and Imagination*, 42 LAND USE L. & ZONING DIG. 3 (1990).

145. See, e.g., *W. Heights Land Corp. v. City of Fort Collins*, 362 P.2d 155, 158 (Colo. 1961); *Contractors and Builders Ass’n of Pinellas County v. City of Dunedin*, 329 So. 2d 314, 318 (Fla. 1976); *Haugen v. Gleason*, 359 P.2d 108, 111 (Or. 1961) (in lieu of fees were

fee was present in instances when the local government classified the charge as such, when the fee was not in excess of the regulatory costs and when it segregated and spent the collected funds for a specific regulatory purpose.<sup>146</sup> Courts have struggled with this classification question, and they have looked for clear indicators pointing to circumstances when development fees were actually taxing devices serving to augment the general local governmental treasury.

b. Was There Lawful Authority to Impose Financial Charges on Development?

A central tenet of local government law states that these units of government may only act when they possess lawful authority to do so. This represents a serious restraint on local government initiative and a powerful means of attacking legally unjustified action. In addition, local units of government are traditionally considered to have no inherent governmental power. Therefore, when they act, they must be able to identify a legitimate source of their governing authority—usually in specific enabling statutes or the provisions of constitutional or statutory home rule law. Not surprisingly, early attempts to impose development impact fees were met with this kind of challenge—that they were unauthorized and, therefore, illegal government action. A few state courts struck down the new fees for lacking proper authorization.<sup>147</sup> At this juncture, few states had enacted legislation that explicitly allowed for impact fees, and therefore, local governments sought to identify less direct, implied sources of power from other statutory language and law. In a surprisingly large number of cases, the courts reinforced local efforts to charge impact fees by holding that the authority to do so was implied within other express powers such as local charters,<sup>148</sup> utility operation statutes,<sup>149</sup> home rule powers,<sup>150</sup> planning and zoning authority, or even generally within the

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held to be an unauthorized tax because they were not earmarked to benefit the subdivision providing them).

146. *Teter v. Clark County*, 704 P.2d 1171, 1180-81 (Wash. 1985).

147. *Home Builders Ass'n v. Riddel*, 510 P.2d 376, 379 (Ariz. 1973) (finding building permit fee found to be unauthorized by the state's constitution, statutes, or the local charter); *Hylton Enters. v. Bd. of Supervisors*, 258 S.E.2d 577, 581 (Va. 1979) (holding dedication and in-lieu of fees were not authorized by state law); *Hillis Homes, Inc. v. Snohomish County*, 650 P.2d 193, 196 (Wash. 1982) (holding that development fees were taxes and invalid for lack of statutory authority). *But see* N.J. Builders Ass'n v. Bernards Twp., 528 A.2d 555, 562 (N.J. 1987) (striking down a road impact fee because it exceeded state granted authority). Some modern cases continue this tradition and strike down impact fee ordinances as unauthorized under state enabling legislation. *See, e.g., Idaho Bldg. Contractors Ass'n v. City of Coeur D'Alene*, 890 P.2d 326 (Idaho 1995).

148. *See, e.g., City of Mesa v. Home Builders Ass'n*, 523 P.2d 57, 59 (Ariz. 1974) (deciding city's charter implies the authority to charge residential development tax).

149. *See, e.g., Home Builders Ass'n v. Provo City*, 503 P.2d 451, 452 (Utah 1972) (authorizing \$100 sewer connection charge by statute); *Coulter v. City of Rawlins*, 662 P.2d 888, 899 (Wyo. 1983) (finding sewer impact fee authority in power to construct and operate a sewer system).

150. *Krughoff v. City of Naperville*, 369 N.E.2d 892, 895 (Ill. 1977) (upholding school and park land and/or fee requirement as within city's home rule power); *Amherst Builders*

police power.<sup>151</sup> This general permissiveness actually led to the adoption of state statutes in more than a third of the states by the time the Supreme Court issued its ruling in the *Dolan* case.<sup>152</sup>

c. Determining the “Reasonableness” of Impact Fees

Once an impact fee was found to be authorized by state law and not to be a form of illegal taxation, state courts in the pre-*Nollan/Dolan* era applied another level of analysis to determine the legality of a charge—they examined its “reasonableness.” The courts’ pursuit of reasonableness reflected a range of concerns that were described in equitable, constitutional, or common law terms. At base, each of these early court decisions attempted to express a formula to fairly apportion land and infrastructure costs to new development when the benefits were not to be solely enjoyed by those paying the fees. In addition, when exactions and impact fees began to be used in a way that would combine contributions from numerous development projects to fund the capital cost of off-site, large-scale public facilities, courts were pressed to find a “reasonableness” limit.<sup>153</sup> Not surprisingly, the state courts reached widely varying positions on this question, some only requiring a weak correlation to the new building while others demanding a strict, nearly-linear connection. These judicial standards spanned a range of views, but they could be categorized into three central concepts: 1) the “specifically and uniquely attributable” test; 2) the “rational nexus” test; and 3) the “reasonable relationship” test.<sup>154</sup> In different ways, these three judicial formulations measured the connection between new land development and local government capital needs related to it. As always, the courts’ challenge was to devise a method for determining when excessive burdens were being imposed on new development. In this quest to identify a fair and lawful standard, state courts fashioned a sophisticated body of law that mediated the competing claims of the contending interest groups.

i. *The Specifically and Uniquely Attributable Test*

During the sixties, some state courts took a highly restrictive view concerning the legality of land use exactions. In *Pioneer Trust & Savings*

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Ass’n v. City of Amherst, 402 N.E.2d 1181, 1184 (Ohio 1980) (providing home rule authority the power to charge an impact fee).

151. Terry D. Morgan, *State Impact Fee Legislation: Guidelines for Analysis* (pts. 1 & 2), LAND USE L. & ZONING DIG. 3 (Mar. 1990), LAND USE L. & ZONING DIG. 3 (Apr. 1990).

152. Martin L. Leitner & Susan P. Schoettle, *A Survey of State Impact Fee Enabling Legislation*, 25 URB. LAW. 491, 492 n.6 (1993) (noting that in 1986 only three states had passed specific impact fee legislation while by 1993 the number had grown to seventeen).

153. Heymann and Gilhool recognized this “new” problem in 1964 and proposed a cost accounting methodology to fairly distribute the costs of financing new public facilities when there were a number of new development projects all contributing to the need for the common infrastructure. See generally, Heymann & Gilhool, *supra* note 91, at 1119-57.

154. Chief Justice Rehnquist’s majority opinion in *Dolan v. City of Tigard* outlined this three-part typology and, ultimately, selected the “reasonable relationship” test to be “closer to the federal constitutional norm than either of those [two other tests].” 512 U.S. 374, 389-91 (1994).

*Bank v. Village of Mount Prospect*,<sup>155</sup> the Supreme Court of Illinois announced the most exacting test when it struck down a local ordinance requiring developers to dedicate one acre of land for each sixty residential units for schools, parks and other public purposes. In this case, the land owner was required to provide the village with 6.7 acres for a school site.<sup>156</sup> Relying on the analytical framework provided in its 1960 decision in *Rosen v. Village of Downers Grove*,<sup>157</sup> the court announced that unless the local government could establish that the demand for the new public facilities was “specifically and uniquely attributable” to the proposed land development, the exaction would not only be “unreasonable” but would also “amount to a confiscation of private property.”<sup>158</sup> In this case, the Illinois Supreme Court was convinced that while the developers would worsen school crowding; the developers were being asked to bear disproportionate costs of remedying an already overfilled public school system in the village and that the need for the new school site was not “specifically and uniquely attributable” to the new residential project. By its explicit terms, the Illinois test demanded a rigorous review of land use exactions and a near-linear cause and effect relationship between growth and public infrastructure.<sup>159</sup> Any failure in demonstrating this direct proportionality to specifically created need would be met with invalidation.<sup>160</sup>

Immediately following the *Pioneer Trust* decision, several other state courts issued rulings of an equally limiting nature most often in cases requiring land dedications as a condition of development approval.<sup>161</sup> Most notably, in *Gulest Associates, Inc. v. Newburgh*, the New York intermediate appeals court struck down as an unreasonable police power regulation a recreational “in lieu of” fee that could not be shown to be tied to capital improvements that would directly benefit the residents of the residential subdivision who paid the fee.<sup>162</sup> This restrictive “direct benefit” rule would last only four years when the New York Court of Appeals overruled it in *Jenad, Inc. v. Village of Scarsdale*<sup>163</sup> and replaced it with a

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155. 176 N.E.2d 799 (Ill. 1961).

156. *Id.* at 800.

157. 167 N.E.2d 230 (Ill. 1960) (finding land dedication or \$325 per lot in lieu of fee for schools unrelated to the proposed development).

158. *Id.* at 802.

159. *Id.*

160. *Id.*

161. See, e.g., *Aunt Hack Ridge Estates, Inc. v. Planning Comm'n*, 273 A.2d 880 (Conn. 1970); *Gulest Assocs., Inc. v. Newburgh*, 209 N.Y.S.2d 729 (Sup. Ct. 1960), *aff'd*, 225 N.Y.S.2d 538 (1962); *McKain v. Toledo City Planning Comm'n*, 270 N.E.2d 370, 374 (Ohio 1971); *Frank Ansuini, Inc. v. Cranston*, 264 A.2d 910, 913 (R.I. 1970). While not explicitly adopting the language of the *Pioneer Trust* decision, the Supreme Court of New Hampshire subject both on-site and off-site land exactions to be unconstitutional. See *J.E.D. Assocs. v. Town of Atkinson*, 432 A.2d 12, 13 (N.H. 1981) (terming dedication requirement as an “an out and out plan of extortion”); *Robbins Auto Parts, Inc. v. City of Laconia*, 371 A.2d 1167, 1169 (N.H. 1977).

162. *Gulest Assocs., Inc.*, 209 N.Y.S.2d at 799.

163. 218 N.E.2d 673 (N.Y. 1966).

new test that would impose the least demand possible.<sup>164</sup> While the *Pioneer Trust* rule received a small following in the sixties and seventies, its inflexibility in the face of ever-expanding suburban growth and related public facility needs doomed it to the status of an historical exception. Its current vitality even in Illinois is unclear.<sup>165</sup>

ii. *Reasonable Relationship Test*

At the other end of the spectrum from *Pioneer Trust* was the reasonable relationship test which required that the needs created by the new land development merely have some “reasonable relationship” to the charge or the exaction which has been imposed. Not surprisingly, this test has been considered extremely deferential to local government exaction policy and has been associated with state court decisions approving of exactions with little direct cause and effect nexus shown. The earliest example of the reasonable relationship test can be found in the 1949 *Ayres v. City Council* decision of the California Supreme Court which upheld an off-site land dedication requirement for a street expansion as a condition of plat approval.<sup>166</sup> The court dismissed all suggestions that the land dedication would have community-wide benefits both at present and in the future, and it expansively ruled that the conditions that the city had imposed were both reasonable and necessary responses to the post-World War II growth problems.<sup>167</sup> This case provided the foundation for later rulings in California that upheld land dedication or in lieu of cash payment requirements even if the exaction did not solely benefit the new

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164. This test was characterized by the U.S. Supreme Court in *Dolan v. City of Tigard* as only requiring “very generalized statements as to the necessary connection between the required dedication and the proposed development. . . .” The Court found this standard to be “too lax to adequately protect [landowner’s] right to just compensation if her property is taken for a public purpose.” 512 U.S. 374, 389 (1994).

165. FRED P. BOSSELMAN & NANCY STROUD, LEGAL ASPECTS OF DEVELOPMENT EX-ACTIONS IN DEVELOPMENT EXACTIONS 74 (James E. Frank & Robert M. Rhodes eds., 1987) (noting that no state still follows the *Pioneer Trust* “specifically and uniquely attributable” test and that it “is now of historical interest only”); DANIEL R. MANDELKER, LAND USE LAW 9-21 (5th ed. 2003) (“[L]ater Illinois cases upheld in-lieu fees for parks and schools in cases that either distinguished or claimed to apply the *Pioneer* test”). *But see* N. Ill. Home Builders Ass’n v. DuPage County, 649 N.E.2d 384, 388-91 (Ill. 1995) (showing a rigorous review of local exactions under state statute which codifies the *Pioneer Trust* test). Some have argued that the statute actually establishes a more relaxed test similar than required by the Illinois Supreme Court in *Krughoff v. City of Naperville*, 369 N.E.2d 892 (Ill. 1977) and *Bd. of Educ. v. Sur. Devs., Inc.*, 347 N.E.2d 149 (Ill. 1975). *See* Mark W. Cordes, *Legal Limits on Development Exactions: Responding to Nollan and Dolan*, 15 N. ILL. L. REV. 513, 519 n.40 (1995).

166. 207 P.2d 1, 8 (1949).

167. *Id.* at 8. The California Supreme Court made numerous references to *Euclid v. Ambler Realty Co.*, 272 U.S. 365 (1926), in this case, and it did so in order to echo the deferential standard of review to be given to zoning as a form of police power regulation. Also, at this time some state courts held a view that land subdivision was a “privilege” and not a right. Consequently, under the “privilege” theory, local government held great power in deciding when and whether to recognize that privilege to develop land. *See, e.g.*, *Ridgefield Land Co. v. City of Detroit*, 217 N.W. 58 (Mich. 1928); *Brous v. Smith*, 106 N.E.2d 503, 506-07 (N.Y. 1952). *See also* Thomas M. Pavelko, Comment, *Subdivision Exactions: A Review of Judicial Standards*, 25 WASH. U. J. URB. & CONTEMP. L. 269, 283 (1983)

land development.<sup>168</sup> Most important to the court was the fact that the municipality was using its police powers to combat serious local problems.<sup>169</sup> Furthermore, in *Associated Home Builders v. City of Walnut Creek*,<sup>170</sup> the California high court also held that it was not necessary for the local government to establish that the need for the new public facilities was attributable to the proposed development.<sup>171</sup> An “incidental” benefit to the city as a whole would not make the exaction “improper.”<sup>172</sup>

The reasonable relationship test, with its undemanding features and its strong support for the achievement of community objectives, had been followed in a small number of other jurisdictions including New York, Minnesota, and Montana.<sup>173</sup> Clearly rejecting the *Pioneer Trust* doctrine’s demand for precision and proof of the nexus between new development and new community facilities, the “reasonable relationship” theory applied a considerably more relaxed approach to the question of a necessary connection, echoing the presumption of validity usually accorded to general zoning measures. If there was some relationship between a mandatory exaction and development effects or if the development contributed to the worsening of a public facilities problem, the required association had been shown.<sup>174</sup> Altshuler and Gomez-Ibanez have described this as the “anything goes” rule,<sup>175</sup> and in *Dolan*, the United States Supreme Court specifically rejected it as a model for establishing federal constitutional rights. Where *Pioneer Trust* sought to rein in exaction practice with the tight fitting collar of its “specifically and uniquely attributable” test, the very generalized nexus requirements in the “reasonable relationship” jurisdictions allowed the possibility of local governments shifting too much of the general community growth costs to specific new development projects. As might be expected, most states avoided both of the extremes in policy and gravitated towards a more sophisticated and sensitive middle ground—the “rational nexus” test announced by the Wisconsin Supreme Court in 1965 in *Jordan v. Village of Menomonee Falls*<sup>176</sup> and elaborated in a number of other state court opinions.

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168. See *supra* note 167.

169. *Id.*

170. 484 P.2d 606 (Cal. 1971).

171. *Id.* at 610.

172. *Id.*

173. See generally *Collis v. City of Bloomington*, 246 N.W.2d 19 (Minn. 1976); *Billings Props., Inc. v. Yellowstone County*, 394 P.2d 182 (Mont. 1964) (exemplifying legislative judgment that subdivisions of over twenty acres created the need for a park without individualized assessment); *Jenad, Inc. v. Scarsdale*, 218 N.E.2d 673 (N.Y. 1966). It was also applied to development impact fees in *California in Builders Ass’n of Santa Clara v. Sup. Ct.*, 529 P.2d 582, 584-85 (Cal. 1974).

174. *Grupe v. Cal. Coastal Comm’n*, 212 Cal. Rptr. 578 (Cal. Ct. App. 1985); *Holmes v. Planning Bd. of New Castle*, 433 N.Y.S.2d 587, 598 (N.Y. App. Div. 1980).

175. ALTSHULER & GOMEZ-IBANEZ, *supra* note 17, at 52.

176. 137 N.W.2d 442 (Wis. 1965).

*iii. The Rational Nexus Test*

During this period of substantial residential growth and sharply rising public infrastructure costs, the state courts represented the first line of challenge to development exactions and impact fees. Addressing questions of legality, these courts approached the problem of devising a “fair” or equitable limit to land use exactions from the many different perspectives affected by their own unique statutory, constitutional, and common law histories and traditions. Not surprisingly, a variety of legal approaches were employed by the many state courts dealing with the problem. Eventually, a centrist view—one not obviously favoring either land developers or local governments—became the benchmark and most states adopted it during the pre-*Dolan* period. This intermediate scrutiny analysis has been termed the “rational nexus” or, in some jurisdictions, the “dual rational nexus” test, and it requires that exactions “bear a rational nexus to the needs created by, and benefits conferred upon, the subdivision.”<sup>177</sup> The application of these two reinforcing elements varies from state to state, making it difficult to generalize about the nature of the test employed.

The Wisconsin Supreme Court’s 1965 decision in *Jordan v. Village of Menomonee Falls* has been heralded as the origin of this test.<sup>178</sup> In *Jordan*, the court considered the legality of an ordinance imposing a \$200 per lot in lieu of payment for schools, parks, and recreational facilities.<sup>179</sup> The developer paid the fee rather than dedicating land and then challenged both the local government’s authority to impose such fees and the constitutionality of the ordinance itself. The Wisconsin court first analyzed the practice and rejected *Pioneer Trust’s* demanding “specifically and uniquely attributable” doctrine as being unworkable and largely impossible to satisfy.<sup>180</sup> It then announced a rule of decision that contained two components intended to circumscribe exaction practice and make it conform to state constitutional law principle.<sup>181</sup> The first inquiry would be to determine whether there was a reasonable connection between the need for additional capital facilities and the population growth generated by

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177. *Longridge Builders, Inc. v. Planning Bd.*, 245 A.2d 336, 337 (N.J. 1969). There has been no agreement among writers or courts over whether these are two distinct tests or are one. See Cordes, *supra* note 33, at 520 n.41. Even the United States Supreme Court used the term “reasonable relationship” in its *Dolan* opinion when it referred to this test. 512 U.S. 374, 389 (1994).

178. 137 N.W.2d 442 (Wis. 1965). The term “rational nexus” was not actually used in the *Jordan* decision, but rather, it was expressed by the New Jersey Supreme Court four years later in *Longridge Builders*, 245 A.2d at 337. Since that time, the “rational nexus” label has been employed in several other state decisions. See, e.g., *Hollywood, Inc. v. Broward County*, 431 So. 2d 606 (Fla. Dist. Ct. App. 1983); *Howard County v. JJM, Inc.*, 482 A.2d 908, 920-21 (Md. 1984); *Arrowhead Dev. Co. v. Livingston County Road Comm’n*, 283 N.W.2d 865, 869 (Mich. 1979); *Batch v. Town of Chapel Hill*, 376 S.E.2d 22, 31 (N.C. 1989).

179. 137 N.W.2d 442, 448-49 (Wis. 1965).

180. *Id.*

181. *Id.*



the new project.<sup>182</sup> The second element required the local government to show that there was a rational nexus between the spending of the fees and the benefits accruing to the residential subdivision.<sup>183</sup> These two components were intended to be mutually reinforcing as a means of drawing the line between excessive cost shifting to developers and proper cost internalization.<sup>184</sup>

The rational nexus test soon found support in the high growth state of Florida where, in 1976, its supreme court upheld the imposition of impact fees for the expansion of water and sewer facilities. This opinion struggled with the essential definition of the lawful rational nexus.<sup>185</sup> As several years passed, the Florida courts specifically adopted the two-pronged, Wisconsin test that they would later describe as the “dual rational nexus test.” This test was explained in *Hollywood, Inc. v. Broward County* as follows:

In order to satisfy these requirements, the local government must demonstrate a reasonable connection, or rational nexus, between the need for additional capital facilities and the growth in population generated by the subdivision. In addition, the government must show a reasonable connection, or rational nexus, between the expenditures of the funds collected and the benefits accruing to the subdivision. In order to satisfy this latter requirement, the ordinance must specifically earmark the funds collected for use in acquiring capital facilities to benefit the new residents.<sup>186</sup>

This rational nexus or dual nexus judicial test was hardly uniform in its application from state to state.<sup>187</sup> However, this approach represented a more sophisticated attempt to verbalize a judicially-administrable standard that was sensitive to the needs of local governments, as well as the land development industry.

The rational nexus test has been adopted as the mainstream American test for land use exactions. In most states, the test contained the following common themes. First, a cost accounting element was required which correlated the fee charged with service needs attributable to the new development. This provision would protect new projects from being

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182. *Id.*

183. *Id.*

184. *Id.*

185. Attempting to provide a verbal formulation for the required relationship, the court stated that “raising expansion capital by setting connection charges, which do not exceed a pro rata share of reasonably anticipated costs of expansion, is permissible where expansion is reasonably required, if use of the money collected is limited to meeting the costs of expansion.” *Contractors & Builders Ass’n v. City of Dunedin*, 329 So. 2d 314, 320 (Fla. 1976).

186. *Hollywood, Inc.*, 431 So. 2d at 611-12. With the articulation of a two-pronged standard in *Dunedin*, the Florida appellate court rejected the more flexible “reasonable relationship” approach taken in California concluding that it could no longer be used in Florida. *Id.*

187. For descriptions of the evolution of the “rational nexus” test, see Lawrence Friedman & Eric W. Wodlinger, *Municipal Impact Fees in Massachusetts*, 88 MASS. L. REV. 131, 136-37 (2004) (advocating the dual rational test); R. Marlin Smith, *supra* note 189, at 5-30.

“taxed” for community needs that they did not create or to which they did not contribute. While it was also true that the linkage between cause and effect was expressed in differing terms,<sup>188</sup> all state courts sought to achieve the consistent goal of fashioning a test of proportionality which would limit development exactions to offset the burdens that the building would impose on the community. The Supreme Court of Utah in *Banberry Development Corp. v. South Jordan* provided relatively clear guidance on how an “equitable share” of capital costs should be evaluated when it identified five factors for judicial consideration.<sup>189</sup> These elements have been widely followed in other states. Recognizing the difficulty that local governments might have satisfying this demand, most courts did not require a mathematically-precise correlation in the apportionment of costs.

Second, the payment of impact fees must also have provided a benefit to the development paying the charge that is “reasonable” in relation to the fees paid. This element was designed to prevent impact fees from imposing substantial cross subsidies between a new development and other future building. Concerned that new construction causing the need for a small amount of community infrastructure would be required to contribute capital funds far in excess of the development’s impact, the courts fashioned a second “reasonable nexus” to examine the benefit received by this project. It was believed that the “benefit” requirement could prevent one new project from being forced to fund large capital improvements that would provide services to many users. As such, this feature demands a correlation between the benefits received and the amount charged.

Third, courts often required that the capital improvements funded by impact fees be a part of a comprehensive plan or planning process. This element connected the impact fee to pre-existing plans for community development and provided judges the ability to assess whether the fees were fairly priced and whether they reasonably related to the actual needs of the jurisdiction. As localities employed more detailed capital planning and budgeting techniques, reviewing courts had more confidence that impact fees and other exactions were actually correlated in a coherent way to the impact of new development. Such a procedure has even been held to satisfy the more exacting demands of the Illinois “spe-

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188. See generally *St. Johns County v. N.E. Fla. Builders Ass’n, Inc.*, 583 So. 2d 635, 637 (Fla. 1991) (is there a “reasonable connection”); *Collis v. City of Bloomington*, 246 N.W.2d 19, 24-26 (Minn. 1976) (“reasonable portion”); *Home Builders Ass’n v. City of Kansas City*, 555 S.W.2d 832, 835 (Mo. 1977) (exactions “to the extent” they create need); *Simpson v. City of N. Platte*, 292 N.W.2d 297, 301 (Neb. 1980) (rational nexus means “substantial” nexus); *Land/Vest Props., Inc. v. Town of Plainfield*, 379 A.2d 200, 204-05 (N.H. 1977) (“proportionality test”); *Longridge Builders, Inc. v. Planning Bd.*, 245 A.2d 336 (N.J. 1968) (“apportionment”); *Batch v. Town of Chapel Hill*, 376 S.E.2d 22, 32 (N.C. 1989) (“prorated portion”); *Banberry Dev. Corp. v. S. Jordan*, 631 P.2d 899, 903 (Utah 1981) (“their equitable share of the capital costs”).

189. 631 P.2d at 903-04.

cifically and uniquely attributable” test.<sup>190</sup> Consequently, the linkage of impact fees to coherent plans or impact assessment methods has worked to restrict the likelihood that development exactions will be imposed in an excessive and opportunistic manner.

Fourth, courts often required that impact fees be handled with special accounting practices. This resulted in these monies being kept segregated from other funds held by the local government in order to ensure that they would be used for the particular capital construction purposes for which they were collected. Such an earmarking of impact fees served to prevent their use as a source of general revenue for the locality. Furthermore, many states required that the impact fee funds be held for a finite period of time, and if not used in a timely fashion, they were to be refunded to the payor sometimes with interest. These financial management requirements imposed restrictions on impact fee practices in the states with the result being that these monies would actually be disbursed correctly or they would be given back to the land developer who had paid them.

As the prior discussion indicates, when the Supreme Court announced the *Nolan* decision in 1987 and the *Dolan* opinion later in 1994, it did so against a backdrop of nearly three decades of state court adjudication which had considered the lawfulness of emerging impact fee and exaction practices under state law principles. While some of these decisions rested upon state constitutional law ideas, it is noteworthy that federal constitutional protection of property rights was rarely mentioned in any of the decisions. Soon, the adequacy of these state law rules would be challenged under developing federal constitutional principles.

## B. ATTEMPTING TO EMPLOY FEDERAL CONSTITUTIONAL NORMS TO LIMIT IMPACT FEE PRACTICE

### 1. *Bringing Conditional Land Use Control Practices under Reinvigorated Federal Takings Analysis*

The use of land use exactions including cash impact fees became common during the eighties as many areas in the United States experienced significant growth pressures. Local governments, the providers of most of the fundamental public services needed by new residents, were confronted with an expanding and increasingly costly obligation to fund the construction of new roads, schools, recreational facilities, and libraries. This occurred at a time when shortages in the quantity and quality of basic infrastructure was predicted to reach crisis proportions by the year 2000.<sup>191</sup> Acting independently and without a uniform set of local govern-

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190. N. Ill. Home Builders Ass'n v. County of Du Page, 621 N.E.2d 1012, 1020 (Ill. App. Ct. 1993) (using Chicago Area Transit, or CAT, model and other models to estimate future travel demand attributable to new development).

191. See NAT'L INFRASTRUCTURE ADVISORY COMM., JOINT ECON. COMMITTEE, 98TH CONG., HARD CHOICES: SUMMARY REPORT OF THE NATIONAL INFRASTRUCTURE STUDY (1984) (showing shortfall in infrastructure funding from 1984 to 2000 estimated to be \$400

mental authority, these governments increasingly sought to shift these mounting capital expenses from the community at large to the land developers who were building the new homes and other buildings. The payment of these growth-related capital costs which previously had been borne as a community-wide development expense increasingly was paid with cash charges that focused on or targeted the builders of new residential units.<sup>192</sup> This shift took many forms including upgraded subdivision development requirements, buffer rules, and offsite improvement demands. However, the requirement of an up-front, cash payment to local governments to offset community-wide infrastructure costs became increasingly common. At first, these costs were described as “tap fees” or connection charges, but by the end of the eighties, cash impact fees were being imposed to land developers by a growing number of localities.

Impact fees represented not only a change in the method of financing local public facilities, but also a subtle effort by local governments to combine their police power-based regulatory powers with a device that would have a fiscal, revenue raising purpose. Described as “regulation for revenue” by Altshuler and Gomez-Ibanez,<sup>193</sup> the emergence of land development impact fees represented yet another form of land use exaction that would be challenged by developers and land owners in numerous court cases. While the impact fee was viewed as being financially necessary and as desirable policy by many local governments and their existing residents, the emerging cash exaction practice was simultaneously condemned by critics as a distortion of legitimate land use regulation.<sup>194</sup> This combining of revenue raising within land use regulation was resisted and criticized by the development community and property rights advocates as a blurring of governmental functions, an abuse of regulatory

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billion); *see also* RANDALL W. EBERTS, NAT'L COUNCIL ON PUB. WORKS IMPROVEMENT, AN ASSESSMENT OF THE LINKAGE BETWEEN PUBLIC INFRASTRUCTURE AND ECONOMIC DEVELOPMENT (1987) (recommending a way of financing needed improvements including development exactions).

192. Similar focused cash payments have been imposed as non-tax, special assessments on a range of other land users including local businesses. *See* Richard Briffault, *A Government for Our Time: Business Improvement Districts and Urban Governance*, 99 COLUM. L. REV. 365, 389-90 (1999). In theory, these special assessments are not considered to be taxes under state law and, as such, they are free from a number of constraints applicable to “taxes” under state constitutional and statutory law. *See* WILLIAM D. VALENTE ET AL., STATE AND LOCAL GOVERNMENT LAW 552 (5th ed. 2001).

193. *See generally* ALSHULER & GOMEZ-IBANEZ, *supra* note 17.

194. Some property rights advocates have asserted that the significant expansion of land use and environmental regulation during the last century has unfairly and excessively subordinated property ownership rights to the will of legislatures and government agencies. One scholarly critic has written that:

Government has misused the eminent domain power to take property from some for the benefit others. On a far vaster scale, it has misused the police power that was intended to protect individual rights, using it instead to violate rights. Claiming to be acting under that power, government regularly subordinates rights in the name of public goods and public benefits.

Steven J. Eagle, *The Birth of the Property Rights Movement*, 14 (Cato Institute, Policy Analysis No. 404 2001).

authority and an imposition of an illegal tax.<sup>195</sup> Arising at a time of heightened anti-government sentiment, these opponents of impact fee practice feared that granting local governments a wide latitude to impose such fees would actually encourage regulation as a pretext that would result in a smokescreen concealing the true revenue-enhancing objectives of government. Regulating for revenue, in this view, would actually convert zoning and land development regulation from being a harm-preventing enterprise to one that would confer financial benefits to the existing community by imposing common costs on the shoulders of the few.

This opposition to the charging of impact fees through land use exactions was characterized by these opponents as not only being unfair as a selective and illegal land development tax but, more importantly, as being an unconstitutional taking of the developer's property.<sup>196</sup> While some advocates chose to contest the use of impact fees in state court, employing state constitutional and statutory theories, others chose to rein in the emerging practice in federal court using federal constitutional ideas. During the eighties, when impact fees began to gain greater acceptance as a local government technique, property owner advocates found an increasingly sympathetic United States Supreme Court that was willing to reinterpret the contours of the Takings Clause of the Fifth Amendment to bolster property owner rights. While the main focus of this constitutional law approach was to restrict excessive regulation that made property less useful and less valuable in the private market, a related theme was the narrowing of conditional regulation, where governmental permission would be granted as long as the applicant transferred something of value to the local government. Advocates of this view argued that if excessive and devaluing regulation could work a "taking" of private property, then land use regulation that would impose a fee or charge as a condition of development approval would also violate the Fifth Amendment as well. The eighties and nineties witnessed an attempt to revive the Takings

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195. The illegal tax characterization is a significant legal issue because state law often restricts available methods of taxation, imposes super-majority requirements for adoption and requires uniformity of taxes across similar taxpayers. This fee/tax distinction is often difficult to discern and must be litigated in order to obtain resolution. *See, e.g.* *Sinclair Paint Co. v. State Bd. of Equalization*, 937 P.2d 1350, 1358 (Cal. 1997) (upholding fees on manufacturers contributing to lead contamination to combat lead poisoning); *City of Gary v. Ind. Bell Tel. Co.*, 732 N.E.2d 149, 156 (Ind. 2000) (upholding telecommunications providers right of way fee upheld as a valid charge for the private, commercial use of municipality's real estate); *President Riverboat Casino-Mo., Inc. v. Mo. Gaming Comm'n*, 13 S.W.3d 635, 640 (Mo. 2000) (finding admission fee on riverboat gambling to be a tax since they substantially exceeded administrative costs of collection for several years).

196. Similar devices were developed by local governments to deal with other serious local government problems. Employing the special assessment model where a defined category of properties within a jurisdiction would be subject to special charges earmarked for a fund that would be used to combat an important local condition such as a decaying downtown or business district. These assessments were challenged in state court using arguments that they represented illegal taxes or that they violated the uniformity principles found in most state constitutions. *See, e.g.*, *2d ROC-Jersey Assocs. v. Town of Morristown*, 731 A.2d 1, 12-13 (N.J. 1999) (upholding a Special Improvement District charge as a special assessment under New Jersey law).

Clause and to give modern meaning to Justice Holmes's obscure admonition in *Pennsylvania Coal Co. v. Mahon* that when government regulation had gone "too far" it would constitute an unconstitutional taking of property.<sup>197</sup> (Constitution in Exile cite)

## 2. *Sympathy for the Developer—Giving the Takings Clause New Life*

While the *Pennsylvania Coal* decision may today be considered an icon of an enhanced regulatory takings doctrine, by the late seventies the Fifth Amendment did not present much of an inhibition to local government land use control activities. These forms of regulation had drastically grown since the Supreme Court's 1926 *Euclid v. Ambler Realty Co.* decision validated the general practice of zoning against a due process attack.<sup>198</sup> In 1978, the Supreme Court decided the well known *Penn Central Transportation Co. v. City of New York* case that considered whether that city's landmarks preservation ordinance affected a taking of the railroad's property.<sup>199</sup> Penn Central had been thwarted in its attempt to secure permission to build a fifty-story office building above the existing edifice of the Grand Central Station in midtown Manhattan due to its landmark status under New York City law. Justice Brennan's majority opinion set forth the principal analytical framework for assessing regulatory taking claims that remains in place as the constitutional law standard today.<sup>200</sup> Within the context of the case, Justice Brennan established a flexible, multi-factor test for judging whether a government regulation had crossed the line and had become a taking of private property thereby requiring that "just compensation" be paid. This test required a consideration and balancing of three factors: 1) the nature of the government action at issue; 2) the degree of interference that the regulation imposed on the property owner's reasonable investment-backed expectations; and 3) the adverse economic impact of the rule.<sup>201</sup>

Applying this test to the facts at hand, the Court held in a six to three decision that the New York City landmark law did not take Penn Cen-

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197. *Pa. Coal Co. v. Mahon*, 260 U.S. 393, 415 (1922). Justice Stevens commented in *Tahoe-Sierra Preservation Council, Inc. v. Tahoe Reg'l Planning Agency*, 535 U.S. 302 (2002), that "it was Justice Holmes' opinion in [*Pennsylvania Coal*] that gave birth to our regulatory takings jurisprudence." *Id.* at 325. Even though the *Pennsylvania Coal* case has been identified as the origin of the modern regulatory takings doctrine, academic commentators have viewed it as part of the substantive due process tradition of the early twentieth century. See Robert Brauneis, *The Foundation of Our Regulatory Takings Jurisprudence: The Myth and Meaning of Justice Holmes's Opinion in Pennsylvania Coal Co. v. Mahon*, 106 *YALE L.J.* 613 (1996); Ronald H. Rosenberg & Nancy Stroud, *When Lochner Met Dolan: The Attempted Transformation of American Land Use-Law by Constitutional Interpretation*, 33 *URB. LAW.* 663, 667 (2001).

198. 272 U.S. 365, 396-97 (1926).

199. 438 U.S. 104, 138 (1978).

200. The recent holding in *Lingle v. Chevron U.S.A., Inc.* reaffirms the central importance of the *Penn Central* holding to regulatory takings theory. See 125 S. Ct. 2074, 2081-82 (2005) (identifying four Fifth Amendment takings categories and characterizing *Penn Central* as a "principal guideline.").

201. *Penn. Cent. Transp. Co.*, 438 U.S. at 124.

tral's property rights in violation of the Fifth Amendment.<sup>202</sup> Beyond the particular facts of the case, the *Penn Central* majority opinion was significant in that it announced a "soft" constitutional takings rule allowing judges to evaluate the legitimacy of regulations in a contextual, non-specific fashion allowing for a maximum amount of discretion in reaching judgment. Clearly, the *Penn Central* test did not mandate finding a taking of property in any specific situation, and the legacy of the case is that it has not been used to invalidate very many cases of regulatory overkill. In particular, the *Penn Central* holding merely provided general guidance for the consideration of those cases when a governmental regulator had gone "too far" and had imposed excessive losses on private owners.<sup>203</sup> However, with the *ad hoc* nature of the analysis and the flexible approach described in the majority opinion, *Penn Central* continued the longstanding tradition of subjecting social and economic regulation to a rather deferential form of judicial review.<sup>204</sup> With this case, the Supreme Court signaled its rekindled interest in the general field of land use control, as well as an emerging conflict between two competing points of view on the regulatory taking question.<sup>205</sup> Importantly, the decision had little to say about the phenomena of conditional regulation or municipal exactions. Those topics would be treated in later cases.

Following the *Penn Central* decision, regulatory taking claims continued to reach the United States Supreme Court and they would increasingly find a greater sympathy for the plight of the unfairly regulated landowner. In 1980, in *Agins v. City of Tiburon*, a California property owner, whose valuable five-acre parcel had been down-zoned to reduce substantially the permissible density for residential new home construction, petitioned the Court to consider a remedial issue related to a taking

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202. *Id.* at 104.

203. *Penn Central* continues as the essential Supreme Court regulatory taking formula in the absence of actual physical acquisition in total value or use obliteration. *See Lingle*, 125 S. Ct. at 2082.

204. Following the Supreme Court's decision in *Euclid*, the Court largely withdrew from zoning cases leaving the work of developing the law of zoning to the state courts. By the fifties and sixties, local government zoning decisions would be accorded considerable deference when challenged. *See* NORMAN WILLIAMS JR. & JOHN M. TAYLOR, *AMERICAN LAND PLANNING LAW* § 5.04 (1988). The low level due process scrutiny applied in *Euclid* had been applied in numerous state cases using principles presuming the constitutional validity of zoning regulation and applying the "fairly debatable" test for analyzing much decision making. While each state's law bore unique characteristics, they all relied on a generally permissive federal constitutional foundation.

205. In his dissent, Chief Justice Rehnquist expressed a considerably different view on the constitutionality of the New York City law. He believed that the Fifth Amendment's Takings Clause should operate to prevent certain severe regulatory burdens from being imposed on a limited number of property owners for the benefit of society in general. Expressing this idea, Rehnquist wrote that the "Fifth Amendment . . . was designed to bar Government from forcing some people alone to bear public burdens which, in all fairness and justice, should be borne by the public as a whole." *Penn Cent. Transp. Co.*, 438 U.S. at 148 (Rehnquist, J., dissenting) (quoting *Armstrong v. United States*, 364 U.S. 40, 49 (1960)). This outlook would find further expression in the *Nollan* and *Dolan* cases that would follow.

claim.<sup>206</sup> The California Supreme Court had ruled that a regulatory takings case could not be brought as an inverse condemnation case for compensation under the Fifth Amendment but that the exclusive remedy in such a case would be judicial invalidation of the offending regulation.<sup>207</sup> By ruling in this way, the California court treated the takings argument as a due process violation, and it denied a property owner the right to argue that an excessive police power regulation was actually an act of eminent domain.

Oddly, the United States Supreme Court ignored the certified question of constitutional remedy and framed the issue at hand as being whether the local zoning ordinance took Agins' property without paying just compensation—a pure regulatory takings claim. The remedial question would wait until another day for resolution.<sup>208</sup> However, the Court's treatment of the case took a more unusual turn when Justice Powell ruled that judicial review of the regulatory taking claim was premature since Agins had not sought a definitive statement or ruling as to the number of residential units that would be allowed under the revised Tiburon zoning ordinance.<sup>209</sup> He found that under these circumstances there was no "concrete controversy regarding the application of the specific zoning provisions."<sup>210</sup> With this finding of a lack of ripeness on the taking claim, it would seem as though the matter would have ended there, but it did not. Even though it did not need to do so, the Supreme Court's opinion then inexplicably announced a new two-pronged, substantive takings test that significantly differed from the standard set out just two years before in the *Penn Central* decision. Justice Powell wrote, "The application of a general zoning law to particular property effects a taking if the ordinance does not substantially advance legitimate state interests . . . or denies an owner economically viable use of his land."<sup>211</sup> This new test established two alternative grounds for finding unconstitutional land use regulation violating the Fifth Amendment. The Court then applied both prongs of this new test to the facts in *Agins* and concluded that the Tiburon ordinance had actually satisfied both elements.<sup>212</sup>

Although largely unheralded at the time, the *Agins* decision represents a significant step in the modern evolution of takings doctrine because it was considered to have transformed what had previously been considered a Fourteenth Amendment substantive due process argument into a Fifth Amendment takings violation. Justice Powell's opinion had introduced a novel "substantially advance legitimate state interests" prong as a judicial

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206. 447 U.S. 255, 257 (1980).

207. *Agins v. City of Tiburon*, 598 P.2d 25, 29 (Cal. 1979).

208. Seven years later in 1987, the United States Supreme Court would reach this issue and agree with the petitioner in *Agins* that compensation is a required remedy when a taking of property occurs. See *First English Evangelical Lutheran Church of Glendale v. County of Los Angeles*, 482 U.S. 304, 322 (1987).

209. *Agins*, 447 U.S. at 260.

210. *Id.*

211. *Id.* (citing *Penn. Cent. Transp. Co. v. City of N.Y.*, 438 U.S. 104, 138 n.36 (1978)).

212. *Id.* at 262-63.



decisional principle in takings cases,<sup>213</sup> and by so doing, it added important doctrinal support for a wider and more sweeping taking clause analysis. With the Supreme Court's growing interest in protecting landowner's rights in the eighties and nineties, this language from *Agins* soon had developed into a frequently-cited, shorthand definition of a regulatory taking: one focusing upon the legitimacy and rationality of the regulation at issue and not exclusively on the degree of its adverse economic impact.<sup>214</sup> In 2005, in *Lingle v. Chevron U.S.A., Inc.*, the Supreme Court recognized the doctrinal confusion that it had created in *Agins*, and it reversed course by ruling that its "substantially advances" inquiry "was derived from due process, not takings, precedents."<sup>215</sup> The Court effectively ended its use in pure regulatory takings cases. Curiously, the *Lingle* ruling continued the constitutional vitality of the *Agins* "substantially advances" test in limiting regulations imposing land use exactions.<sup>216</sup>

During the eighties, the Supreme Court changed personnel and began what Justice Stevens termed a "philosophical shift" in the Court that made it clear that "property owners have surely found a new friend."<sup>217</sup> The Court expressed greater receptivity to constitutional arguments against excessive land regulation and a striking sensitivity to the interests of property owners rather than regulators. In fact, in 1981, the call for a stricter form of constitutional review of land use control was made by an unlikely advocate in Justice William Brennan. In a case raising regulatory taking issues, Justice Brennan wrote that local regulators must observe the Fifth Amendment's limits of his or her authority. He said, "[a]fter all, if a policeman must know the Constitution, then why not a planner?"<sup>218</sup> Foreshadowing the Court's shift to a more conservative position on the taking issue, Justice Brennan's comment heralded a view that the Constitution's Just Compensation requirement was needed to control or disci-

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213. The first prong of Justice Powell's takings test cites the 1928 case of *Nectow v. City of Cambridge*, 277 U.S. 183 (1928), as its exclusive supporting precedent. A careful reading of *Nectow* reveals that it is a substantive due process "invalidation" decision—not a takings case. The Court in *Nectow* merely affirmed the lower court decision that the city's zoning district boundary was drawn at an irrational and illogical location and remanded it to the municipality for correction. *Id.* at 188-89. Justice Powell's opinion in *Agins* had the effect of elevating *Nectow*'s due process conclusion into a violation of the Fifth Amendment's taking clause—all done without explanation or support.

214. The *Agins* two-prong takings test has been consistently restated, without much analysis, in the line of Supreme Court decisions during the eighties and nineties. See *City of Monterey v. Del Monte Dunes at Monterey, Ltd.*, 526 U.S. 687, 704 (1999); *Lucas v. S.C. Coastal Council*, 505 U.S. 1003, 1016 (1992); *Keystone Bituminous Coal Ass'n v. DeBenedictis*, 480 U.S. 470, 485 (1987); *Nollan v. Cal. Coastal Comm'n*, 483 U.S. 825, 834 (1987). It has found its way into modern land use cases culminating with the *Del Monte Dunes* decision, where it was central to the jury's verdict that the city had taken the plaintiff's property. Academic writers have severely criticized this inclusion of a substantive due process element. See, e.g., ROGER A. CUNNINGHAM ET AL., *THE LAW OF PROPERTY* 519 (2d ed. 1993); JUERGENSMEYER & ROBERTS, *supra* note 50, at 405-06.

215. 125 S. Ct. 2074, 2083 (2005).

216. *Id.* at 2082-87.

217. *Dolan v. City of Tigard*, 512 U.S. 374, 405 (1994) (Stevens, J., dissenting).

218. *San Diego Gas & Elec. Co. v. City of San Diego*, 450 U.S. 621, 661 n.26 (1981).

pline “overzealous regulatory attempts.”<sup>219</sup> While the principal focus of this trend was on extreme forms of regulation limiting the range of economically-beneficial land uses and reducing the economic value of land, it would later shift to encompass development exactions as well. Considering local governments to have “monopoly” power over land regulation, property rights advocates would argue that the Taking Clause was needed to ensure that government would not achieve eminent domain goals through an abuse of the police power. Under this view, legitimate regulatory authority could be distorted by overbearing governmental conduct that would convert regulation into unfair “taxation” by bundling regulatory approval with expansive exactions that were unrelated to the projects under consideration. Throughout the remainder of the eighties, the Supreme Court would decide an expanding number of Fifth Amendment takings law cases refining the procedure and substance of this form of constitutional litigation.<sup>220</sup> And, in 1987, it would deal with the issue of the constitutionality of land use exactions in *Nollan v. California Coastal Commission*.

### 3. *Regulating for Revenue and Property: Constitutionalizing Land Use Exaction Practice*

Over the course of the twentieth century, land use control had become a significantly more complex regulatory enterprise than that described in the early zoning case of *Village of Euclid v. Ambler Realty*.<sup>221</sup> Change has manifested itself in many ways including increases in the number of governmental entities imposing restrictions on land development and an expansion in the purposes to be achieved. Beyond that, the form of regulation has changed as well, moving away from the purely prescriptive rules of *Euclid* to a more sophisticated regulatory regime seeking to customize regulatory burdens with obligatory conditions. This modern form of land use regulation imposed conditions containing exactions demanding that land developers convey something of value to the local government in order to obtain permission to proceed with their projects. While state legislation and constitutional law principles generally defined the parameters of acceptable land use exaction practice, an effort was made in the late eighties and early nineties to set federal constitutional limits to the regulatory activity taking place throughout the nation. As part of the attempt to have property rights accorded a higher level of constitutional law protection under the Fifth Amendment’s Takings Clause, advocates found a responsive Supreme Court in two cases: *Nollan v. California*

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219. *Id.*

220. *First English Evangelical Lutheran Church of Glendale v. County of Los Angeles*, 482 U.S. 304 (1987); *Keystone Bituminous Coal Ass’n v. DeBenedictis*, 480 U.S. 470 (1987); *MacDonald, Sommer & Frates v. Yolo County*, 477 U.S. 340 (1986); *Williamson County Regional Planning Comm’n v. Hamilton Bank*, 473 U.S. 172 (1985).

221. 272 U.S. 365 (1926).

*Coastal Commission*<sup>222</sup> and *Dolan v. City of Tigard*.<sup>223</sup> In both of these five to four decisions, the Court ruled for the property owner and articulated federal constitutional doctrine in a way that would, in theory, restrict land use exaction practices by establishing constitutionally-mandated norms.<sup>224</sup> Speaking in constitutional terms, these cases forcefully advanced the idea that regulatory conditions requiring private owners to give property to government as part of the land use control process would be carefully scrutinized under elevated standards of constitutional review. In addition, a reinvigorated Fifth Amendment Takings Clause would be employed in a prophylactic fashion to prevent local governments from using regulatory power in an extortionate fashion.

a. *Nollan v. California Coastal Commission (1987)*

The *Nollan* case presented a straightforward fact pattern of a family seeking to replace an extremely small and dilapidated beachfront cottage with a new, larger oceanfront home. The Nollans purchased a beachfront lot in Ventura County, California on condition that they would demolish an existing, 504-square foot dilapidated bungalow and replace it with a new structure.<sup>225</sup> In the usual case, the Nollans would only have had to comply with the local government's zoning or building ordinances in order to proceed with this reconstruction. However, this lot was located in California's coastal zone, and state law required that they apply for and obtain a coastal development permit from the California Coastal Commission.<sup>226</sup> The Nollans permit request proceeded smoothly at first, and they were granted the permit. The grant of the permit was subject to a condition that they grant an easement allowing the public to pass along the portion of their property bounded by the mean high-tide line on one side and their backyard seawall on the other.<sup>227</sup> In effect, this condition required that the Nollans convey a lateral easement to the state on the ocean side of their lot and behind their planned home.<sup>228</sup> This easement would make it easier for the public to walk across the beach and reach two state parks that were situated approximately a quarter of a mile away.<sup>229</sup> At this point in the controversy, the state coastal agency was attempting to impose the easement as a development exaction and making approval of the coastal development permit contingent on the Nollans' compliance.<sup>230</sup> The Nollans believed this state requirement to be unlawful and unfair.<sup>231</sup>

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222. 483 U.S. 825 (1987).

223. 512 U.S. 374 (1994).

224. *Id.*; *Nollan*, 483 U.S. at 825.

225. 483 U.S. at 827-28.

226. *Id.* at 828.

227. *Id.*

228. *Id.* at 829.

229. *Id.*

230. *Id.*

231. *Id.*

They unsuccessfully protested the easement dedication requirement before the Coastal Commission and later sued in California Superior Court, which ruled in their favor based upon non-constitutional, statutory grounds.<sup>232</sup> However, the Nollans' victory was short-lived. The California Court of Appeals reversed the trial court ruling, that (1) the Coastal Act required a "conditioned" permit for a building replacement proposal; (2) the requirement was constitutional as long as the project contributed, even indirectly, to the need for public beach access; and (3) there had not been an unconstitutional taking in the case since the condition merely diminished the value of the Nollans' lot, but it did not deprive them of all reasonable use of their property.<sup>233</sup> Dissatisfied with this result, the Nollans took their case to the U.S. Supreme Court raising only the unconstitutional taking issue.

In a five to four majority opinion, Justice Scalia ruled that the Coastal Commission's permit condition requiring the transfer of a lateral easement across the beach constituted a violation of the Fifth Amendment's ban on the taking of private property without just compensation.<sup>234</sup> To reach this conclusion, the Court employed the two-pronged takings test expressed in the *Agins v. City of Tiburon* decision.<sup>235</sup> Focusing on the substantive due process prong of this test, Justice Scalia held that a land use regulation violates the Fifth Amendment if it does not "substantially advance legitimate state interests."<sup>236</sup> California had advanced three justifications<sup>237</sup> as the state's purposes for the beachfront regulation.<sup>238</sup> However, the *Nollan* majority concluded that, although all three of these policy rationales were "legitimate state interests," the state's permit condition requiring the Nollans to donate a beachfront easement to the public failed to demonstrate even a reasonable relationship to the achievement of these purposes.<sup>239</sup> In the Court's estimate, the reasons given by the State of California justifying the exaction appeared to be

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232. *Id.* The Superior Court ruled that there was insufficient evidence in the administrative record for concluding that the proposed bungalow replacement would create a direct or a cumulative burden on public access to the ocean. *Id.*

233. *Nollan v. Cal. Coastal Comm'n*, 223 Cal. Rptr. 28, 30-31 (Cal. Ct. App. 1986).

234. *Nollan*, 483 U.S. at 841-42.

235. *Id.* at 834.

236. *Id.*

237. The majority opinion suggested that the permit requirement would be unconstitutional if the condition "utterly fails to further the end advanced as the justification for the prohibition." *Id.* at 837. This was the Court's conclusion in the *Nollan* case, making the regulatory exaction appear to be an opportunistic property grab by the State of California.

238. The Coastal Commission suggested three main purposes behind its coastal regulatory scheme: (1) protection of the public's ability to see the beach; (2) assisting the public in overcoming the "psychological barrier" to seeing the beach created by a developed shore front; and (3) preventing congestion on the public beaches. *Id.* at 835.

239. The Court found that the state failed to establish this fundamental relationship or "essential nexus." Justice Scalia found that the justifications given were sorely lacking. He wrote,

[i]t is quite impossible to understand how a requirement that people already on the public beaches be able to walk across the Nollans' property reduces any obstacles to viewing the beach created by the new house. It is also impossible to understand how it lowers any "psychological barrier" to using the

completely disconnected to the harm to be mitigated by the beachfront management scheme: it “utterly fails to further the end advanced as the justification for the prohibition.”<sup>240</sup> In this first land use exaction case, the Court demanded that such development conditions would require a heightened level of judicial review that would need to find an “essential nexus” or connection between the exacted property and the government’s regulatory purpose. Exaction cases would henceforth be treated as a different species of regulatory actions and the relaxed, rational basis scrutiny would not be sufficient to test their constitutionality.<sup>241</sup>

The *Nollan* opinion reflected a deep skepticism of state and local government land use regulation and for the regulators themselves. In the majority’s view, the exercise of legitimate police power authority, approved with great deference in the *Euclid* opinion, was now being misused as a pretext for the government’s forced acquisition of privately-owned easements and other property interests.<sup>242</sup> Under this view, regulatory misbehavior in the land use exaction context demanded a constitutional law response—careful judicial review under the hybrid substantive due process/takings standard announced in the *Agins* decision. *Nollan* announced a more searching form of judicial oversight that proposed to test the relationship between governmental means and ends with a heightened form of scrutiny. This new level of constitutional analysis would not only result in the invalidation of defective land use regulation, but it would impose the financial consequences of “just compensation” upon government when it violated these constitutional norms. Justice Scalia and his majority colleagues apparently believed that the doctrine set forth in *Nollan* would impose a federal constitutional barrier that would discipline this unfair form of regulatory taxation.<sup>243</sup> Left open for

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public beaches, or how it helps to remedy any additional congestion on them caused by construction of the Nollans’ new house.

483 U.S. at 838-39. In his estimation, demanding the exaction as part of the beachfront management process actually demonstrated an example of “out and out . . . extortion.” *Id.* at 837.

240. *Id.* at 838.

241. As Juergensmeyer and Roberts note,

*Nollan*’s revision or articulation of the *Agins-Nectow* “substantially advances” test insists that when the state conditions development permission on the owner dedicating property to public use it may only do so without paying compensation if the dedicated land is “reasonably necessary” to prevent or counteract anticipated adverse public effects of the proposed development. The word “substantially” is given emphasis by the Court to make it clear that low-level, rational basis scrutiny is insufficient to test the strength of the nexus.

JUERGENSMEYER & ROBERTS, *supra* note 50, at 407.

242. Numerous arguments were made calling for a heightened scrutiny of conditional land use regulation. At base, the most persuasive claims asked that local governments not overreach or abuse their monopolies over land use control. See Christopher J. St. Jeanos, *Dolan v. Tigard and the Rough Proportionality Test: Roughly Speaking, Why Isn’t a Nexus Enough?*, 63 *FORDHAM L. REV.* 1883, 1896 (1995).

243. Even after striking down the *Agins* “substantially advance” test in regulatory takings cases, the Supreme Court preserved this relational analysis in the land use exaction context. See *Lingle v. Chevron U.S.A., Inc.*, 125 S. Ct. 2074, 2087 (2005).

another day was the question of how strong the “essential nexus” between the regulatory objective and the exaction would have to be. That opportunity came seven years later in the case of *Dolan v. City of Tigard*.<sup>244</sup>

b. *Dolan v. City of Tigard* (1994)

Land use exaction practices received further constitutional scrutiny in the case of *Dolan v. City of Tigard*. In *Dolan*, the landowner planned to expand her small hardware store into a larger business on the same building site.<sup>245</sup> This otherwise ordinary business project would never have come to the Supreme Court’s attention but for the fact that the City of Tigard had adopted two city policies concerning floodplain and transportation management.<sup>246</sup> Tigard’s planning commission had approved reconstruction of the hardware store, but it added mandatory conditions requiring the Dolans to dedicate public easements for a greenway near the adjacent floodplain and for a pedestrian/bicycle path.<sup>247</sup> The land dedication requirement totaled about 7,000 square-feet of the 1.67 acre parcel or about ten percent of its area.<sup>248</sup> Believing this development condition to be unwarranted and unjustified, the Dolans began their appeal that would eventually take their case to the United States Supreme Court.

They first appealed the planning commission’s decision to the Oregon Land Use Board of Appeals (LUBA). This approach was not successful. The LUBA upheld the two dedication requirements by finding that a “reasonable relationship” existed between the impact of the proposed development and both land contributions.<sup>249</sup> The Oregon Court of Appeals affirmed the LUBA decision, finding that body had applied the correct test in analyzing the case.<sup>250</sup> The Oregon Supreme Court agreed, concluding that the “reasonable relationship” test had not been abandoned by the United States Supreme Court in the *Nollan* decision and that the conditions imposed upon the Dolans bore an essential nexus to the site and to the proposed building.<sup>251</sup> Undaunted, the Dolans filed a petition for *certiorari* which was granted, with the argument to occur during the 1993 to 1994 term.

Once again, a five to four decision of the Supreme Court considered the development exactions and ruled that the city’s practice violated the

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244. 512 U.S. 374 (1994).

245. *Id.* at 379.

246. *Id.* at 377-79.

247. *Id.* at 380.

248. *Id.* at 379-80.

249. *Dolan v. City of Tigard*, 20 Or. LUBA 411 (1991); *Dolan v. City of Tigard*, 22 Or. LUBA 617 (1992).

250. *Dolan v. City of Tigard*, 832 P.2d 853, 855 (Or. Ct. App. 1992).

251. *Dolan v. City of Tigard*, 854 P.2d 437, 443 (Or. 1993), *rev'd*, 512 U.S. 374 (1994).

Fifth Amendment's Takings Clause.<sup>252</sup> Writing for the majority,<sup>253</sup> Chief Justice Rehnquist held that since an "essential nexus" existed between the city's development exaction and legitimate state interests of flood control and the reduction of traffic congestion, the basic relational requirement of *Nollan* had been satisfied.<sup>254</sup> However, satisfying that relationship requirement was not enough. The major significance of the *Dolan* opinion was its discussion of the intensity of the required relationship between the city's development exactions and the impact of the proposed redevelopment project.<sup>255</sup> As Chief Justice Rehnquist noted,

[T]he second part of our analysis requires us to determine whether the degree of the exactions demanded by the city's permit conditions bear the required relationship to the projected impact of petitioner's proposed development.<sup>256</sup>

With this analysis, the Court refined its Fifth Amendment takings law to require a correlation between the land use exaction and the impact of the proposed project. This change remains the law today.<sup>257</sup> But how tight a fit did this have to be? This relationship, Chief Justice Rehnquist insisted, was merely to be one of "rough proportionality" and not one reflecting a mathematical, cause and effect precision. The rough proportionality test, drawn as it was from state land use law,<sup>258</sup> suggested limits to the amount of property exaction that could be constitutionally demanded in the development process. This new *Dolan* standard was intended to have a checking or restraining effect on state and local governments. The required measure of "nexus" was structured so as to prevent local government land use exactions from becoming *de facto* opportunities for taxing newcomers for the benefit of existing residents. The implicit meaning of this relational test was that any exaction or dedication requirement that did not bear such a "rough proportionality" would violate the Takings Clause and, consequently, would be unconstitutional.

c. The Impact of *Nollan* and *Dolan* on the Constitutional Law Theory of Land Use Exactions

With the decisions in *Nollan* and *Dolan*, the Supreme Court's majority attempted to bring the nationally-expanding practice of conditional land

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252. *Dolan*, 512 U.S. 374 (1994).

253. The majority in *Dolan* was composed of Chief Justice Rehnquist and Justices Kennedy, O'Connor, Scalia, and Thomas. *Id.* at 375.

254. *Id.* at 386.

255. *Id.* at 388.

256. *Id.*

257. See, e.g., *Hallmark Inns & Resorts, Inc. v. City of Lake Oswego*, 88 P.3d 284, 290 (Or. Ct. App. 2004).

258. *Dolan*, 512 U.S. at 388-91. Surveying the range of state practices, Chief Justice Rehnquist decided that a "reasonable relationship" test employed by a majority of the states would be adopted by the Court. In a summary fashion, he stated that this test "is closer to the federal constitutional norm than [other state positions]." *Id.* at 391. Because the term "reasonable relationship" sounded "confusingly similar" to the due process/equal protection standard, Rehnquist chose the label "rough proportionality" to describe the new federal standard. *Id.* at 325.

use regulation within the bounds of federal constitutional doctrine. It did so in ways that both set substantive legal standards and established procedures for government regulation. These decisions changed federal constitutional doctrine in ways that their supporters believed would restrict the exaction process by using federal supremacy as the means of achieving the result.<sup>259</sup> In imposing the new “rough proportionality” constraint upon exaction practices, the *Dolan* court managed to change, in a subtle way, the constitutional presumption of validity that police power-based land use regulation had enjoyed since the *Village of Euclid v. Ambler Realty* decision. Imbedded in a footnote, this reversal of traditional judicial deference to local government land use decisions was justified as being necessary to monitor difficult-to-monitor adjudicative decisions.<sup>260</sup> Local governments would now have to defend challenges to their exaction practices in the first instance by demonstrating that the *Dolan* test had been met. No longer would a regulatory measure that was found to be illogical, irrational, or excessive be merely struck as down as a denial of property without due process of law. Punishment for unlawful land use exactions would now be elevated to a higher plane of constitutional offense—a taking of property for which compensation must be paid. Another important implication sprang from this alteration of the traditional presumption of constitutionality; the burden of proving the required “rough proportionality” relationship was shifted from the challenging landowner to the defending municipality.<sup>261</sup> This change had practical as well as psychological impacts. An exaction lacking this required degree of nexus would be stricken as well as being found to be an unconstitutional taking. Furthermore, *Dolan* imposed procedural demands as well. Chief Justice Rehnquist insisted that in order to impose such exactions, municipalities must make “some sort of individualized determination that the required dedication is related both in nature and extent to the impact of the proposed development.”<sup>262</sup> At the very least, this part of the *Dolan* opinion required new governmental procedures designed to measure more accurately individual development impacts and to assign more proportional landowner burdens.

The *Nollan* and *Dolan* decisions stand as icons of federal court supremacy over state and local government under constitutional theory. Justified as a necessary counter-weight to what it considered to be abu-

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259. The Supreme Court’s opinion in *Dolan* triggered exaggerated responses from some commentators who expected the decision to devastate local government power to condition development in a way which that mitigate adverse impacts. See Matthew J. Cholewa & Helen L. Edmonds, *Federalism and Land Use after Dolan: Has the Supreme Court Taken Takings from the States?*, 28 URB. LAW. 401, 419 n.104 (1996).

260. *Dolan*, 512 U.S. at 391 n.8 (citing *Euclid* and *Nollan*). But see *id.* at 405 (Stevens, J., dissenting) (arguing that the Court “stumbled badly” by making this “serious error [of] abandoning the traditional presumption of constitutionality and imposing a novel burden of proof on a city implementing an admittedly valid land use plan”).

261. *Id.* at 395-96.

262. *Id.* at 391. The mechanisms employed by the city and the information relied upon to set the land exactions were found to be inadequate under this new approach.



sive and extortionate uses of the police power, the Rehnquist Court employed evolving Fifth Amendment norms to set new ground rules for a wide range of land use and environmental regulation. These “new rules” would require a higher level of precision and justification in governmental regulatory behavior.<sup>263</sup> This constitutional line-drawing, as it related to the features of conditional regulation, was clearly intended to stress the primacy of federal constitutional norms limiting state and local land use regulation. Implicitly, it also suggested the inadequacy of state law to deal effectively and fairly with the subject. Federal law was, therefore, believed to be necessary to serve as the benchmark of lawful regulatory practices, the ultimate legal standard needed to police “runaway” governments.<sup>264</sup>

With these two opinions, the Court also apparently believed that it was sending a message to state courts regarding the minimum standards they should demand of state and local government exactions. In 1994, the Supreme Court appeared ready to embark upon an expansionist course of supervising and managing state land use control law to assure compliance with federal constitutional doctrine. As the prior section has demonstrated, by that time, state courts and legislatures had already fashioned land use exaction law for nearly three decades. In the decade following *Dolan*, state court decisions considering impact fees would reflect the two conclusions: 1) state law was more than adequate in setting legal limits to development exaction; and 2) states were largely satisfied with the results of their own law, not needing the encouragement of the U.S. Supreme Court. Today, state law remains as the main source of policy and legal guidance for impact fee practices. It has evolved at the sub-federal level through a familiar process of public policy development. In the end, the Supreme Court’s venture into the area of conditional regulation would

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263. Later litigation would attempt to extend the *Dolan* principal of “rough proportionality” to pure forms of regulation that did not have connections to development exactions. See *Spinell Homes, Inc. v. Municipality of Anchorage*, 78 P.3d 692, 702-03 (Alaska 2003) (rejecting application in attack on subdivision requirements); *Wonders v. Pima City*, 89 P.3d 810, 815-16 (Ariz. Ct. App. 2004) (native plant preservation law not an exaction); *Hensler v. City of Glendale*, 876 P.2d 1043 (Cal. 1994) (rejecting application in rent control context); *Manocherian v. Lenox Hill Hosp.*, 643 N.E.2d 479, 479-80 (N.Y. 1994) (rent control application). Ultimately, the United States Supreme Court expressed no interest in extending *Nollan/Dolan* analysis to “mere regulations” with Justice Kennedy’s dicta in *City of Monterey v. Del Monte Dunes at Monterey, Ltd.*, 526 U.S. 687, 703 (1999) (showing rough proportionality test of *Dolan* is “inapposite” to a case involving a permit denial).

264. The use of Fifth Amendment Takings Clause doctrine as an interventionist device limiting government regulation may have actually peaked with the *Dolan* decision. See *Parking Ass’n of Ga., Inc. v. City of Atlanta*, 515 U.S. 1116 (1995), *cert. denied*, 515 U.S. 1178 (1995) (denying certiorari despite dissent by Justices Thomas and O’Connor); *Eastern Enters. v. Apfel*, 524 U.S. 498, 540 (1998) (questioning the continued vitality of the *Agins* “substantially advance” prong of the Takings test and whether the Takings Clause is implicated in a requirement to pay money by Justice Kennedy); *City of Monterey v. Del Monte Dunes at Monterey, Ltd.*, 526 U.S. 687 (1999); *Lingle v. Chevron U.S.A., Inc.*, 125 S. Ct. 2074, 2084 (2005) (stating that the *Agins* “substantially advance” test “is not a valid method discerning whether private property has been taken for purposes of the Fifth Amendment.”).

generally be seen as a symbolic gesture with the states remaining in control of their own policy.

C. IMPACT FEE LITIGATION FOLLOWING THE SUPREME COURT'S  
RULINGS IN *NOLLAN* AND *DOLAN*

1. *The Effect of the U.S. Supreme Court's Nollan/Dolan Rulings*

With the announcement of the *Dolan v. City of Tigard* decision in June of 1994, property rights advocates had reason to believe that the Supreme Court had taken an interest in the plight of the land developer and had chosen to express federal constitutional norms that would rein in what they believed were extremely burdensome development exactions. Speaking with the force of the Takings Clause of the Fifth Amendment in its ruling, the Court's majority had articulated a new federal constitutional standard for conditional regulation that possessed substantive aspects as well as procedural ones. A "rough proportionality" standard, derived from the state law "rational nexus" principle, was defined as a mandatory, substantive constitutional benchmark while an individualized determination of each exaction was required to satisfy the necessary procedural demand. By pulling conditional land use regulation within the confines of the Takings Clause, the Court sought to assume a hierarchical control over state and local regulation—policing the police power with federal constitutional norms. Casting aside any possible federalism concerns that might respect state legislative policy choices,<sup>265</sup> the *Dolan* majority chose to express itself with an agitated rhetoric aimed at extortionate regulation.<sup>266</sup>

The immediate effect of the decision was to place a degree of doubt into the minds of local government officials and a dash of hope into the hearts of property rights advocates.<sup>267</sup> However, in the end, the *Nollan/Dolan* principles did not override and dominate a well-developed body of state statutory and constitutional law, and federal litigation did not become the crucible for determining the legality of impact fee practices.<sup>268</sup>

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265. Cholewa & Edmonds, *supra* note 243, at 402-03.

266. There are extreme cases like *Walz v. Town of Smithtown*, 46 F.3d 162 (2d Cir. 1995), where a local government demanded a fifteen-foot easement across private property for a roadway expansion project in exchange for connecting a house to public water supply. In that case, the Second Circuit upheld a jury award of \$102,000 that was granted to remedy the locality's action. *Id.*

267. See, e.g., Mark W. Cordes, *Legal Limits on Development Exactions: Responding to Nollan and Dolan*, 15 N. ILL. U. L. REV. 513, 514-15 (1995); Craig R. Habicht, *Dolan v. City of Tigard: Taking a Closer Look at Regulatory Takings*, 45 CATH. U. L. REV. 221, 231 (1995); Sam D. Starritt & John H. McClanahan, *Land Use Planning and Takings: the Viability of Conditional Exactions to Conserve Open Space in the Rocky Mountain West after Dolan v. City of Tigard*, 30 LAND & WATER L. REV. 415, 420 (1995); Kim I. Stollar, *How Much is Enough Assessing the Impact of Dolan v. City of Tigard*, 46 CASE W. RES. L. REV. 193, 194 (1995); Jonathan M. Block, Note, *Limiting the Use of Heightened Scrutiny to Land Use Exactions*, 71 N.Y.U. L. REV. 1021, 1030-31 (1996).

268. The federal courts have not been frequently used as the venue for impact fee litigation either before or after the *Dolan* decision in 1994. See *Home Builders Ass'n of Miss., Inc. v. City of Madison*, 143 F.3d 1006, 1011-13 (5th Cir. 1998) (reasoning impact fees were

State courts continued to play their traditional role of judging the lawfulness of land use controls, and state legislatures increasingly acted to pass legislation permitting impact fees. The review of the decade of state case law decisions following the *Dolan* ruling reflects the nature of the judicial review that met the expanding and increasingly prevalent practice of municipal development impact fees.<sup>269</sup>

## 2. Overview of a Decade of Litigation

With two major decisions of the nation's highest court announcing a new and increasingly demanding level of constitutional review of local government land use and environmental exactions, it is worthwhile to determine how the state courts responded to the rules and the rhetoric used by the Supreme Court. How did these two holdings in the *Nollan* and *Dolan* cases affect the ways that state courts viewed the legality of development impact fees? Was the Fifth Amendment constitutional mandate expressed in this decade of cases a driving force in state law development concerning exactions? Did these two cases convince state courts in impact fee challenge cases to shift the traditional burden of proof obligations to local governments and away from the contesting landowner? Did the heightened "rough proportionality" scrutiny and individualized assessment become the norm in state litigation? Examining the ten years following the 1994 *Dolan* decision, an analysis of state cases reveals a number of surprising patterns.

In the period under review, state courts issued a total of 106 opinions directly considering the lawfulness of cash fees required as a condition of development approval.<sup>270</sup> This number considered reported case decisions from all levels of the state judiciary—from trial courts to state su-

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"taxes" under state law and the Tax Injunction Act bars federal court subject matter jurisdiction); *Blanche Road Corp. v. Bensalem Twp.*, 57 F.3d 253, 263 (3d Cir. 1995) (holding in a § 1983 action, impact fees imposed on commercial development were properly required and were not "in fact motivated by bias, bad faith or improper motive"); *Shell Island Inv. v. Town of Wrightsville Beach*, 900 F.2d 255 (4th Cir. 1990) (upholding decision that water and sewer tap fees were not arbitrarily or unreasonably imposed, did not violate equal protection, and were not unlawful taxes under state law); *Nat'l Ass'n of Homebuilders v. Chesterfield County*, 907 F. Supp. 166, 168 (E.D. Va. 1995) (validating cash proffer policy validated without applying *Dolan* test); *Garneau v. City of Seattle*, 897 F. Supp. 1318, 1325-26 (W.D. Wash. 1995) (holding *Nollan/Dolan* should not be applied to cash exactions in an ordinance requiring landlords to provide displaced tenants relocation assistance because the law did not demand real property).

269. Perhaps it is not surprising to discover that impact fee ordinances are prevalent in some of the jurisdictions experiencing the greatest level of state court litigation. For instance, in the state of Washington, as of November, 2004, seventy-seven cities, towns and counties had adopted at least one form of development impact fee. In some locales, as many as one general impact fee and four specialized fees are imposed simultaneously. See Municipal Research & Services Center of Washington, List of Jurisdictions with Impact Fee Provisions, at <http://www.mrsc.org/Subjects/Planning/impact.aspx> (last modified Nov. 2004).

270. Identifying impact fee cases is a complex task since local governments employ varying terminology for their cash exactions. (Footnote listing all of the case decisions considered.) The actual period under consideration spanned from January 1, 1994 through September 30, 2004—a bit more than ten years.

preme courts. This number of reported cases reflected an average of approximately ten case decisions per year since 1994. Additional research indicates that the annual rate of case decisions did not increase during the three years prior to 1994, when the average annual number of cases was eleven, suggesting that the *Dolan* holding did not trigger an avalanche of litigation challenging impact fees, but rather that case decisions followed a stable long term pattern. During the study period, at least one decision was registered in thirty-five states or 70% of the nation, and these were found in all parts of the nation. However, the national distribution of the reported cases revealed a clustering of cases in a small number of high-growth states: California (16, or 15%), Washington (13, or 12%), New Jersey (6, or 5.6%), Florida (5, or 4.7%), and Texas (5, or 4.7%). These five states produced over 42% of all of the decisions under review. This appears to reflect a pattern of the coexistence of high growth demands, the imposition of impact fees and the use of litigation to challenge the authority to use the fees or their administration. The majority of the remaining states in this group had either one or two reported cases during this ten year period, indicating a much less frequent resort to court suit as a means of resolving conflicts. Not surprisingly, the fifteen states not reporting any cases during this period were those with relatively small populations and, for the most part, below average rates of growth.<sup>271</sup> It is noteworthy that the total of 106 cases represented opinions of all levels of state court adjudication. However, over 43% of the opinions in the sample were produced by the state's highest court, indicating that impact fee litigation has been highly contested by well-financed parties willing to frequently appeal "up the chain," ultimately receiving the decision of the state supreme court.

### 3. *Assessing State Jurisprudence on Impact Fees Since Dolan v. City of Tigard*

Analyzing impact fee cases presents difficulties in classification. Local governments employ a wide variety of terms to describe financial charges or fees imposed upon land development, including in lieu of fees,<sup>272</sup>

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271. These states were: Alabama, Arkansas, Hawaii, Iowa, Kentucky, Louisiana, Mississippi, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, West Virginia, and Wyoming. All of these states, except Arkansas and New Mexico, experienced population growth during the 1990-2000 period below the average growth rate for the United States (13.1%). See U.S. Census 2000—State & County Quickfacts, at <http://www.census.gov/main/www/cen2000.html>.

272. *San Remo Hotel L.P. v. City & County of San Francisco*, 41 P.3d 87, 91 (Cal. 2002) (upholding large in lieu of payment for demolition of single room occupancy low cost housing); *Twin Lakes Dev. Corp. v. Town of Monroe*, 801 N.E.2d 821, 822 (N.Y. 2003) (upholding recreation in lieu of fee).

mitigation fees,<sup>273</sup> water and sewer connection charges,<sup>274</sup> excise taxes,<sup>275</sup> privilege tax,<sup>276</sup> low income housing replacement fees,<sup>277</sup> linkage fees,<sup>278</sup> standby fees,<sup>279</sup> and transportation utility fees.<sup>280</sup> However, focusing on those cases where government imposes charges to offset the fixed capital costs of public facilities attributable to new residential and non-residential development, a number of legal issues have frequently been litigated. The review of these cases reflects the wide variety of issues arising under the laws of the different states.

#### a. Authority to Charge Impact Fees

Early attempts to impose development impact fees were often challenged as being *ultra vires* or beyond the authority of the local government charging them. This traditional form of attack on local government authority was to be expected since most states did not explicitly delegate the power to charge impact fees to their localities through specific enabling acts.<sup>281</sup> While courts found creative ways to identify sources of implied authority,<sup>282</sup> the clear modern trend has been to look to state

273. *Castle Homes & Dev., Inc. v. City of Brier*, 882 P.2d 1172, 1173 (Wash. Ct. App. 1994) (traffic impact mitigation fees); *see also* Thomas W. Ledman, *Local Government Environmental Mitigation Fees: Development Exactions, The Next Generation*, 45 FLA. L. REV. 835 (1993).

274. *Ford v. Georgetown County Water & Sewer Dist.*, 532 S.E.2d 873, 875 (S.C. 2000).

275. *Centex Real Est. Corp. v. City of Vallejo*, 24 Cal. Rptr. 2d 48, 51 (Cal. Ct. App. 1993); *Cherry Hill Farms, Inc. v. City of Cherry Hills Vill.*, 670 P.2d 779, 782 (Colo. 1983); *Waters Landing L.P. v. Montgomery County*, 650 A.2d 712, 716 (Md. 1994).

276. *Home Builders Ass'n of Middle Tenn. v. Maury County*, No. M1999-0238-COA-KK3-CT, 2000 WL 1231374, at \*4 (Tenn. Ct. App. Aug. 31, 2000) (holding that development can be taxed as a privilege and for revenue raising purposes).

277. *Town of Coventry Zoning Bd. of Review v. Omni Dev. Corp.*, 814 A.2d 889, 899 (R.I. 2003); *San Telmo Assoc. v. City of Seattle*, 735 P.2d 673 (Wash. 1987) (holding an unauthorized tax). *But see* *Holmdel Builders Ass'n v. Twp. of Holmdel*, 583 A.2d 277, 279-80 (N.J. 1990) (upholding fees on new construction satisfying low income housing responsibilities under *Mt. Laurel* principle).

278. *Commercial Builders v. City of Sacramento*, 941 F.2d 872, 876 (9th Cir. 1991) (upholding low income housing linkage fee if it pays for a social cost reasonably related to new construction); *San Remo Hotel L.P. v. City & County of San Francisco*, 41 P.3d 87 (Cal. 2002) (upholding linkage payment for demolition of low cost housing); *Blue Jeans Equities W. v. City & County of San Francisco*, 4 Cal. Rptr. 2d. 114 (Cal. Ct. App. 1992) (upholding transit fee to offset the higher costs of peak period ridership valid charge and not a regulatory taking); *Russ Bldg. P'ship v. City & County of San Francisco*, 246 Cal. Rptr. 21 (Cal. Ct. App. 1987); *Sintra Inc. v. City of Seattle*, 829 P.2d 765, 773 n.7 (Wash. 1992) (holding demolition fee for low income housing not subject to *Nollan* essential nexus test because fee is cash and not land). *See generally* Jane E. Schukoske, *Housing Linkage: Regulating Development Impact on Housing Costs*, 76 IOWA L. REV. 1011 (1991).

279. *McMillan v. N.W. Harris County Mun. Util. Dist. No. 24*, 988 S.W.2d 337, 338 (Tex. App.—Houston [1st Dist.] 1999); *Samis Land Co. v. City of Soap Lake*, 23 P.3d 477, 488 (Wash. 2000).

280. *State v. City of Port Orange*, 650 So. 2d 1 (Fla. 1994).

281. Authority was sometimes lacking to impose exactions for land or for in lieu of payments as part of the land subdivision process. *See, e.g., Hylton Enters. v. Bd. of Supervisors*, 258 S.E.2d 577, 581 (Va. 1979). *But see* *Divan Builders, Inc. v. Planning Bd.*, 334 A.2d 30, 40-41 (N.J. 1975) (upholding fee for off-site improvements).

282. Multiple sources of implied powers have been identified. Professors Juergensmeyer and Roberts note that

impact fee statutes for the power and for the framework for implementing an impact fee policy. Nearly half of the states have enacted some form of impact fee legislation or law that has been held to permit the charging of impact fees.<sup>283</sup> While these statutes vary widely in terms of their geographic coverage and the purposes for which fees may be charged, they frequently provide highly specific guidance for the implementation of an impact fee program including capital planning and budgeting requirements, financial accounting, and refund provisions, as well as a codified rational nexus element.<sup>284</sup>

Since the *ultra vires* attack holds a traditional basis for striking down a local government effort to impose fees, numerous litigants have used it with mixed results. When this critique has been successful, courts have found that local government programs have been inconsistent with state enabling statutes. A prime example can be found in *Southern Nevada Homebuilders Association v. City of North Las Vegas* where the Nevada Supreme Court ruled that a local ordinance requiring a fee for fire and emergency medical services (EMS) was not an authorized impact fee.<sup>285</sup> The Nevada impact fee statute was interpreted to allow only fees for a list of five kinds of public services which did not include fire and EMS.<sup>286</sup> Sometimes localities have the authority to impose impact fees but only within a circumscribed geographical base. For example, in *Nolte v. City of Olympia*, the Washington Court of Appeals held that while a city could impose water and sewer impact fees within its boundaries, it lacked the power to charge them in extraterritorial locations under its regulatory au-

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Of those states without authorization or enabling statutes which have considered the issue, most have found authority in home rule power, planning and consistency requirements, or on the theory that impact fees are land use regulations and that a local government with general land use regulatory authority may enact them as part of that power.

JUERGENSMEYER & ROBERTS, *supra* note 50, at 359. Sometimes this power is found in the authority to operate a utility system or as part of plat approval responsibility. *See, e.g.,* *Burke v. Town of Schererville*, 739 N.E.2d 1086, 1092-93 (Ind. Ct. App. 2000); *Homebuilders Ass'n of Charlotte v. City of Charlotte*, 442 S.E.2d 45, 50 (N.C. 1994). *See* Morgan, *supra* note 151, at pts. 1 & 2, LAND USE L. & ZONING DIG. 3 (Mar. 1990), LAND USE L. & ZONING DIG. 3 (Apr. 1990).

283. *See* Stuart Meck ed., *GROWING SMART LEGISLATIVE GUIDEBOOK* (Stuart Meck ed., 2002). The following list identifies the states with Impact Fee Enabling Acts and the year of their initial adoption: Texas (1987), Maine (1988), California (1989), Vermont (1989), Nevada (1989), New Jersey (1989), Illinois (1989), Virginia (1990), West Virginia (1990), Washington (1990), Georgia (1990), Pennsylvania (1991), Oregon (1991), Arizona (1991), New Hampshire (1991), Indiana (1991), Maryland (1992), Rhode Island (1992), Idaho (1992), New Mexico (1993), Wisconsin (1994), and Colorado (2001). ARTHUR C. NELSON & MITCH MOODY, *PAYING FOR PROSPERITY: IMPACT FEES AND JOB GROWTH 2* (Brookings Institution Center on Urban and Metropolitan Policy, June 2003).

284. *See, e.g.,* *Homebuilder's Ass'n of Cent. Ariz. v. City of Scottsdale*, 930 P.2d 993, 998 (Ariz. 1997); *Cherokee County v. Greater Atlanta Homebuilders Ass'n*, 566 S.E.2d 470, 472 (Ga. Ct. App. 2002) (considering only state impact fee statute); *Larson v. City of Sullivan*, 92 S.W.3d 128, 134 (Mo. Ct. App. 2003) (finding authority found for sewer tap fee in statute authorizing sewer systems).

285. 913 P.2d 1276, 1278-79 (Nev. 1996) (statutory language defining "capital improvement" limited to drainage, sanitary sewers, storm sewers, streets, and water projects only).

286. *Id.* at 1278-80.

thority.<sup>287</sup> The state's impact fee statute was read as the exclusive source of power and it was interpreted narrowly.<sup>288</sup> Other courts have ruled that when a state impact fee statute exists, it is the sole source of local government authority, thereby negating any theory of implied powers. As a consequence, any fees enacted outside of the unique authority are void.<sup>289</sup>

Some courts determine that there is an absence of local government power after undertaking a conventional Dillon's Rule analysis of authority and refusing to find implied powers. The case of *Home Builders Association of Central Arizona v. City of Apache Junction*<sup>290</sup> is one example where the Arizona appeals court struck down the city's attempt to charge school impact fees as not being permitted under the state's development fee statute, which allowed fees for "necessary public services."<sup>291</sup> The court reasoned that since cities did not have authority over or responsibility for public school matters "necessary public services" did not include funding public schools.<sup>292</sup> School impact fees have been particularly controversial and courts have been unwilling to stray beyond the precise permission accorded by state legislation.<sup>293</sup> Road improvement charges do not fare much better without clear legislative authority. In *Country Joe, Inc. v. City of Eagan*,<sup>294</sup> the Minnesota Supreme Court concluded that a city's road unit connection charge was not valid as an implied authority under the state's municipal planning law and that it was not a valid impact fee due to the disproportionate cost assigned by the city to the builder.<sup>295</sup> System development charges for water have also been struck under Dillon's Rule analysis in New Hampshire when the supreme court found the charge not to be a "toll" which was permissible under state law.<sup>296</sup> Also, when fees have been imposed for forbidden purposes or for services that are generally enjoyed by all citizens, the charge may be voided.<sup>297</sup> While other authority challenges have resulted in decisions affirming local government power, the absence of a clear source of municipi-

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287. 982 P.2d 659, 665-60 (Wash. Ct. App. 1999).

288. *Id.*

289. *See, e.g.*, *Simonsen v. Town of Derry*, 765 A.2d 1033, 1036 (N.H. 2000).

290. 11 P.3d 1032 (Ariz. Ct. App. 2000).

291. *Id.* at 1038-39.

292. *Id.* at 1039.

293. *See, e.g.*, *Bd. of County Comm'rs v. Bainbridge, Inc.*, 929 P.2d 691, 695 (Colo. 1996) (addressing a statute fixing the time and holding the amount of lawful school fees and the county cannot add a second fee later in the development process).

294. 560 N.W.2d 681, 688-87 (Minn. 1997).

295. *Id.* at 685-86 (reserving the issue of whether impact fees were authorized under state law but concluding that even if they were, the amount assessed was unlawful and an unauthorized "tax").

296. *Bd. of Water Comm'rs of Laconia Water Works v. Mooney*, 660 A.2d 1121, 1125 (N.H. 1995) ("a fee imposed to offset the cost of improvements designed to meet the needs occasioned by present and future growth does not fit within this definition [of a toll]").

297. *Richmond v. Shasta Comty. Servs. Dist.*, 116 Cal. Rptr. 2d 343, 350 (Cal. Ct. App. 2002) (holding fire suppression charge violates state constitutional provision forbidding fees for general services to citizens); *Hydropress Envtl. Servs., Inc. v. Twp. of Upper Mt. Bethel*, 836 A.2d 912, 919-20 (Pa. 2003) (holding wastehauler fees for repair of roads struck as not within impact fee authority or any other power).

pal authority makes impact fee programs susceptible to an invalidating attack.<sup>298</sup>

b. Classification as a Tax or a Regulatory Fee

In the litigation surrounding municipal impact fees, the exact terms used to define the fee charged can mean the difference between upholding a local program and striking it down as being unauthorized. This kind of challenge appears to be the most common form of attack that is leveled against impact fees. Since impact fees require the payment of money from a land developer to the local government, they have been frequently characterized as “taxes” by litigants. The use of this approach is explained by the fact that local government taxation power is often highly limited or regulated under state statutory or constitutional law. Often the assertion that a charge should be classified as a tax really seeks to void the fee because under state law the locality does not possess this form of taxing power.<sup>299</sup> Alternatively, if the municipality does possess taxation authority, arguments can be raised that certain procedural formalities have not been followed in their adoption.<sup>300</sup> Most commonly, the adoption of new taxes requires voter approval or passage of a local ordinance by a super majority while impact fee programs have only been instituted by simple ordinance change or by administrative action only. Impact fee challengers have also attacked local policy based on alleged deficiencies grounded on the state constitutional law principles of 1) taxation based on land value<sup>301</sup> and 2) uniformity in taxation—a form of equal protection complaint.<sup>302</sup> Ironically, if a fee is found to be a lawfully imposed tax,

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298. *N. Ill. Home Builders Ass'n v. County of Du Page*, 649 N.E.2d 384, 892-93 (Ill. 1995); *Burke v. Town of Schererville*, 739 N.E.2d 1086, 1091-92 (Ind. Ct. App. 2000).

299. *Collier County v. State*, 733 So. 2d 1012, 1018-19 (Fla. 1999) (finding interim governmental services fee was unauthorized tax and must be authorized by general law). “Under Massachusetts law, towns do not have the power to tax,” but they can impose impact fees. In *Greater Franklin Developers Association, Inc. v. Town of Franklin*, 730 N.E.2d 900, 901-02 (Mass. App. Ct. 2000), the appeals court struck down a town’s school impact fees by finding that it was an impermissible or forbidden tax rather than a valid municipal fee. In other states, a locality may not have the authority to impose an impact fee but may lawfully charge a cost-based fee. See *City of N. Las Vegas v. Pardee Contr. Co.*, 21 P.3d 8, 10-11 (Nev. 2001).

300. *Grunow v. Twp. of Frankenmuth*, No. 226094, 2002 WL 31376376, at \*1 (Mich. Ct. App. 2002) (finding voter approval under Headlee Amendment); *Larson v. City of Sullivan*, 92 S.W.3d 128, 131 (Mo. Ct. App. 2003) (finding a voter requirement for new taxes under Hancock Amendment). *But see*, *Home Builders Ass'n of Middle Tenn. v. Maury County*, No. M1999-C2383-COA-R3-CV, 2000 WL 1231374, at \*4 (Tenn. Ct. App. Aug. 31, 2000) (imposing privilege tax on new construction and not an impact fee); *City of Huntington v. Bacon*, 473 S.E.2d 743, 751 n.7 (W. Va. 1996) (noting that the Board of Education argued that a municipal service fee was a tax and not a use fee since it was insulated by state statute from paying taxes).

301. *McMillan v. Tex. Natural Res. Conservation Comm'n*, 983 S.W.2d 359, 364-65 (Tex. App.—Austin 1998, pet denied) (holding that standby fee alleged to violate sections 1 & 20 of Article VIII of Texas Constitution requiring that *ad valorem* taxes on real property must be “in proportion to . . . value” and not “greater than . . . fair cash market value”).

302. *N. Ill. Home Builders Ass'n*, 649 N.E.2d at 394-95 (holding transportation fee does not violate the uniformity clause of the Illinois Constitution); *Bldg. Indus. Ass'n of Cleve-*



it will not be subject to any Takings Clause analysis, and it may be charged in all parts of the jurisdiction without proof of any special benefit to particular parcels.<sup>303</sup>

In the cases under review, the “taxation” critique was made in a surprisingly large number of reported cases. This continued the trend identified in the pre-*Dolan* period. However, the decisions did not indicate any clear pattern in results, with half of the impact fees being classified as regulatory devices<sup>304</sup> while the other half were characterized as “taxes.”<sup>305</sup> However, making the regulatory fee/tax determination is a difficult task, and courts have not used a uniform framework for making this important decision. The most uncomplicated approach focuses on determining what is the “primary purpose” of the impact fee scheme—regulation or revenue raising.<sup>306</sup> In *Trimen Development Co. v. King County*,<sup>307</sup> the Washington Supreme Court applied this test and ruled that a park development fee imposed upon plat approval was not a tax by concluding that the primary purpose of the fee payment was regulatory. Although it undoubtedly provided funds to the locality, the court found that the fee’s true purpose was to carry out the legitimate regulatory purpose of the local subdivision ordinance—the provision of open space and recreation for new residents.<sup>308</sup> Other courts look to the distribution of the benefits provided by the fees finding taxes to exist when those bene-

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land v. City of Westlake, 660 N.E.2d 501, 504, 506 (Ohio App. 1995) (applying non-uniform tax on real property only to new construction violating Section 2, Article XII of the Ohio Constitution).

303. See *Volusia County v. Aberdeen at Ormond Beach, L.P.*, 760 So. 2d 126, 135 (Fla. 2000).

304. *Home Builders Ass’n of Cent. Ariz.*, 902 P.2d 1347, 1350 (Ariz. Ct. App. 2000); *City of Zephyrhills v. Wood*, 831 So. 2d 223, 225 (Fla. Dist. Ct. App. 2002); *Joy Mgmt. Co. v. Oakland County*, No. 203060, 1998 WL 1988945, at \*1 (Mich. Ct. App. 1998); *Larson v. City of Sullivan*, 92 S.W.3d 128, 131-33 (Mo. Ct. App. 2003); *Ford v. Georgetown County Water & Sewer Dist.*, 532 S.E.2d 873, 875 (S.C. 2000); *J.K. Constr., Inc. v. W. Carolina Reg’l Sewer Auth.*, 519 S.E. 561, 564 (S.C. 1999); *McMillan*, 983 S.W.2d at 364; *Trimen Dev. Co. v. King County*, 877 P.2d 187, 182 (Wash. 1994); *Bacon*, 473 S.E.2d at 751-53.

305. *Collier County v. State*, 733 So. 2d 1012, 1018 (Fla. 1999); *Idaho Bldg. Contractors Ass’n v. City of Coeur D’Alene*, 890 P.2d 326, 329 (Idaho 1995); *Greater Franklin Dev. Ass’n v. Town of Franklin*, 730 N.E.2d 900, 903 (Mass. App. Ct. 2000); *Grunow*, 2002 WL 31376376, at \*1, \*3; *City of Billings v. State Dep’t of Revenue*, 891 P.2d 1149, 1153-54 (Mont. 1995); *Phillips v. Town of Clifton Park Water Auth.*, 730 N.Y.S.2d 565, 567 (N.Y. App. Div. 2001); *Douglas County Contractors Ass’n v. Douglas County*, 929 P.2d 253, 257-58 (Nev. 1996); *Bldg. Indus. Ass’n of Cleveland*, 660 N.E.2d at 504; *Henderson Homes, Inc. v. City of Bothell*, 877 P.2d 176, 179-80 (Wash. 1994).

306. The primary purpose label has been used for many years but often in an unrevealing fashion. In *State v. Jackman*, the Wisconsin Supreme Court expressed this view in the following fashion. It said, “[T]he primary purpose of a tax is to obtain revenue for the government, while the primary purpose of a fee is to cover the expense of providing a service or of regulation and supervision of certain activities.” 211 N.W.2d 480, 485 (Wis. 1973). See also *Hillis Homes, Inc. v. Snohomish County*, 650 P.2d 193, 195 (Wash. 1982) (“If the fees are merely tools in the regulation of land subdivision, they are not taxes. If, on the other hand, the primary purpose of the fees is to raise money, the fees are not regulatory, but fiscal, and they are taxes”).

307. 877 P.2d 187, 192 (Wash. 1994) (citing *Hillis Homes* for this rule).

308. *Id.*

fits spill over to enhance other land and people who do not pay them.<sup>309</sup> The transfer of impact fee revenues to improve existing recreational facilities for the general public has proved fatal in some instances where courts have termed such a cross subsidy to be a tax.<sup>310</sup> The Ohio Appeals Court in the *Building Industry Association* case stated that

While it is laudable to seek such a recreational program for the city and its residents, costs associated with that program should be borne by all residents, not merely those purchasing new construction, for the benefits of such a program run to all residents.<sup>311</sup>

The principle concern in these cases has been the prevention of the financial abuse of newcomers to a community. The New York Supreme Court expressed this concern by flatly stating that

. . . [T]he law does not permit a municipality to charge “newcomers” an impact fee to cover expansion costs of an existing water facility absent a demonstration that such a fee is necessitated by the particular project (as opposed to future growth and development in that municipality generally) or a demonstration that such a newcomer would be primarily or proportionately benefited by the expansion.”<sup>312</sup>

This court was particularly motivated by the desire to stop a municipal “welcome stranger” philosophy that would result in the imposition of the burden of capital improvements upon a discrete group of residents in spite of the fact that benefits would be enjoyed by all.<sup>313</sup>

Some state courts have developed multi-factor tests to assist them in the separation of taxes from regulatory fees.<sup>314</sup> One such approach uses the concepts derived from traditional special assessments law focused on costs and benefits.<sup>315</sup> Other state courts employ far more complex schemes that ultimately search for the same “special benefit” aspect of

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309. See *Home Builders Ass’n of Cen. Ariz.*, 902 P.2d at 1360. This case noted that Development fees are generally considered regulatory fees if they are reasonably related to the needs created by the new development and are used to benefit the land on which they are imposed. On the other hand, they are considered taxes if the fees are not related to the new development and are used to benefit other property.

*Id.* at 1350.

310. *Bldg. Indus. Ass’n of Cleveland*, 660 N.E.2d at 504.

311. *Id.* at 505.

312. *Philips v. Town of Clifton Park Water Auth.*, 730 N.Y.S.2d 565, 567 (N.Y. App. Div. 2001).

313. *Id.* at 568.

314. See *Collier Cty v. State*, 733 So.2d 1012, 1017 (Fla. 1999).

315. *Id.* (citing *Lake County v. Water Oak Management Corp.*, 695 So. 2d 667, 669 (Fla. 1997)). *Collier County* recited a two-pronged test that considered: 1) was the property burdened by the assessment deriving a “special benefit” from the service provided by the fee; and 2) was the assessment for the services properly apportioned. For a similar analogy to special assessments, see *Ford v. Georgetown City Water & Sewer District*, 532 S.E.2d 873, 875 (S.C. 2000) (“taxes are imposed on all property for the maintenance of government while assessments are placed only on the property to be benefited”).

special assessment law.<sup>316</sup> The South Carolina Supreme Court announced such a five-part test in *J.K. Construction, Inc. v. Western Carolina Regional Sewer Authority* that sought to ensure that the fee would be used to primarily benefit those who paid it in a system that could not easily be a camouflaged general taxation program.<sup>317</sup> The Missouri courts follow another five-part test which considers the timing, the incidence, and the amount of the fee, as well as the nature of the service provided by the charge.<sup>318</sup> The Massachusetts Supreme Judicial Court stated a three-part test that also places emphasis on the whether the fee provides focused, special benefits for “particular services” funded by the payment and also whether the fee is paid by choice as a voluntary act.<sup>319</sup> In the end, this inquiry of determining whether an impact fee is actually a tax has the potential of disciplining the use of the device in much the same way as the *Nollan/Dolan* tests of “essential nexus” and “rough proportionality.”<sup>320</sup> This point demonstrates that the state courts have developed a number of judicial tools to sort out the acceptable from the unacceptable local government financial tactics.

### c. The Administration of an Impact Fee Program

With impact fees being widely authorized under the state enabling statute and judicial opinions, a number of cases have considered questions relating to the administration of the impact fee program at the local level of government. A few cases have examined the methodology that localities must use to design and implement an impact fee system that would satisfy constitutional demands. This is most true in the area of road or transportation impact fees where the amount of money at issue is large and where many existing drivers, in addition to the new residents, will use the roadway improvements. In *F&W Associates v. County of Somerset*, the New Jersey court noted that the rational nexus test could only be satisfied for a traffic impact fee “only after a comprehensive study . . . of such factors as existing road facilities, current zoning, projected population growth, and existing commercial uses in the area.”<sup>321</sup> As occurs in many such situations, the locality hired a transportation consultant to

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316. See *J.K. Constr., Inc. v. W. Carolina Reg'l Sewer Auth.*, 519 S.E.2d 561, 564-65 (S.C. 1999).

317. *Id.* The test approved in *J.K. Construction* required that: 1) the fee primarily benefits those paying it with a special benefit or service provided by the fee; 2) the fee's proceeds be dedicated solely to capital projects; 3) the fee revenue generated will not exceed the cost of the improvement; 4) uniform collection of the fee upon those subject to it; and 5) the government intended the fee to be a charge, not a tax. *Id.*

318. *Larson v. City of Sullivan*, 92 S.W.3d 128, 131-32 (Mo. Ct. App. 2003) (citing *Keller v. Marion County Ambulance Dist.* 820 S.W.2d 301, 304 (Mo. 1991)).

319. *Greater Franklin Developers Ass'n v. Town of Franklin*, 730 N.E.2d 900, 902-03 (Mass. App. Ct. 2000) (citing test from *Emerson College v. Boston*, 462 N.E.2d 1095, 1105 (Mass. 1984)); see also *Bolt v. City of Lansing*, 587 N.W.2d 264, 269 (Mich. 1998) (similar to *Emerson College* test).

320. Compare *Nollan v. Cal. Coastal Comm'n*, 483 U.S. 829, 837 (1987), with *Dolan v. City of Tigard*, 512 U.S. 374, 391 (1994).

321. 648 A.2d 482, 487 (N.J. Super. 1994).

conduct the study, which was adopted by its planning commission as part of the town's master plan.<sup>322</sup> Using this "exacting study," the court found that the causal nexus between the new development and the needed road improvements had been measured with precision as part of a "rigorous process designed to achieve a fair allocation of increased traffic costs."<sup>323</sup> Holding the methodology and the computation of the fee up to an "arbitrary and capricious standard," the court approved the system supported with such a well developed basis.<sup>324</sup>

Other cases reflect approval of the use of outside transportation consultants and detailed modeling techniques, and some state impact fee statutes expressly require that the need for improvements "shall be based upon generally accepted traffic engineering practices."<sup>325</sup> Oddly, in most cases there is little discussion of the methods used to design and assign other kinds of impact fees.<sup>326</sup> Often they are the product of planning staff recommendations. When the impact fee program is well organized and carefully explained, some courts appear reluctant to get closely involved in second guessing technical judgments.<sup>327</sup> For example, the Ohio Supreme Court had the opportunity to review the methodology for roadway improvements in *Home Builders Ass'n of Dayton and the Miami Valley v. City of Beavercreek* yet it chose to announce a rule limiting judicial reconsideration of the analytical methods.<sup>328</sup> Perhaps wishing to avoid review of contested methodological choices, the Ohio court stated that it must only determine whether the chosen methodology is "reasonable based on the evidence presented."<sup>329</sup> It then found such a decision to be factual in nature, thereby affirming the trial court's determination that the roadway assessment methodology was reasonable.<sup>330</sup> The Utah Supreme Court refused to force elected officials to explain how they determined the "reasonableness" of impact fees after staff had disclosed the basis for calculations.<sup>331</sup>

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322. *Id.* at 484. The study recommended the establishment of a transportation improvement district in order to fund road improvements on a comprehensive basis. It also provided a formula for calculating each development's pro-rata share of the cost of the roads based on the number of trips generated by that new development each day.

323. *Id.* at 488.

324. *Id.*

325. *See* N. Ill. Home Builders Ass'n, Inc. v. County of DuPage, 649 N.E.2d 384, 391 (Ill. 1995) (discussing Road Improvement Impact Fee statute); *Castle Homes & Dev., Inc. v. City of Brier*, 882 P.2d 1172, 1173 (Wash. Ct. App. 1994).

326. Some cases just describe in narrative form this methodology perhaps as a way of demonstrating its non-arbitrary character. *See, e.g., Homebuilders Ass'n of Metro. Portland v. Tualatin Hill Park & Recreation Dist.*, 62 P.3d 404, 412-13 (Or. Ct. App. 2003).

327. *Krupp v. Breckenridge Sanitation Dist.*, 19 P.3d 687, 694-95 (Colo. 2001) (discussing while a municipal charge must be reasonably related to the overall cost of the service, mathematical exactitude is not required and the particular mode adopted to assess the fee is generally a matter of legislative discretion); *Everett Sch. Dist. No. 2 v. Mastro*, 1999 WL 674782, \*6 (Wash. Ct. App. Aug. 30, 1999) (using averages for determining number of school children from apartments is acceptable under state statute).

328. 729 N.E.2d 349, 357-58 (Ohio 2000).

329. *Id.* at 357.

330. *Id.* at 352.

331. *Home Builders Ass'n v. City of N. Logan*, 983 P.2d 561, 564 (Utah 1999).

A significant number of cases discuss procedural issues related to the adoption and operation of an impact fees as well as to litigation challenging such a program.<sup>332</sup> These cases reflect the fact that these fees are regularly being charged throughout the United States and numerous operational and legal questions arise.<sup>333</sup> The range of issues that have been litigated relate to filing challenges to the setting of fees,<sup>334</sup> the establishment of vested rights to be exempt from new impact fees,<sup>335</sup> application of impact fees to a project after receiving preliminary plat approval,<sup>336</sup> burden of proof that adopted school impact fees do not exceed the cost of the facility to be built,<sup>337</sup> waiver of right to challenge calculation of impact fees,<sup>338</sup> determining whether state land use vesting statute applies to transportation impact fees after preliminary plat approval,<sup>339</sup> waiver of right to appeal school impact fees “agreed to” by failing to exhaust administrative remedies,<sup>340</sup> statute of limitations for state law,<sup>341</sup> section 1983 claims,<sup>342</sup> whether city council members can rely on staff expertise for the calculation of impact fees<sup>343</sup> and are not required to do the basic fact gathering and analysis in setting impact fees,<sup>344</sup> standing rules for challenging validity of impact fee ordinance and seeking refund of fees already paid,<sup>345</sup> eligibility for refund of unlawful,<sup>346</sup> rescinded<sup>347</sup> impact fees, application of service fees to government land<sup>348</sup> and homeowner’s recovery of impact fees that have been paid by a developer.<sup>349</sup> Civil procedure and impact fee statutes do not anticipate all of these practical and

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332. See, e.g., *Util. Cost Mgm’t v. Indian Wells Valley Water Dist.*, 36 P.3d 2, 4 (Cal. 2001).

333. *KMSC, LLC v. County of Ada*, 67 P.3d 56, 63 (Idaho 2003).

334. *Util. Cost Mgmt.*, 36 P.3d at 4 (showing statute of limitations for filing challenge to new water service fee).

335. *MBL Assocs. v. City of S. Burlington*, 776 A.2d 432, 433, 436 (Vt. 2001); *Bohemia Mill Pond v. New Castle County Planning Bd.*, No. 01A-03-007 HLA, 2001 WL 1221685, at \*12 (Del. Super. Ct. Oct. 1, 2001).

336. *Pavlina v. City of Vancouver*, 94 P.3d 366, 367 (Wash. Ct. App. 2004).

337. *Gomes v. Ukiah Unified Sch. Dist.*, No. 4104744, 2004 WL 2092022, at \*1 (Cal. Ct. App. Sept. 20, 2004).

338. *KMST, LLC*, 67 P.3d at 63.

339. *New Castle Invs. v. City of LaCenter*, 989 P.2d 569, 570 (Wash. Ct. App. 1999).

340. *W. Coast, Inc. v. Snohomish County*, 16 P.3d 30, 33-34 (Wash. Ct. App. 2000).

341. *Burke v. Town of Schererville*, 739 N.E.2d 1086, 1093 (Ind. Ct. App. 2000); *L.A. Dev. v. City of Sherwood*, 977 P.2d 392, 394-95 (Or. Ct. App. 1999).

342. *Paul v. City of Woonsocket*, 745 A.2d 169, 171 (R.I. 2000).

343. *Home Builders Ass’n v. City of N. Logan*, 983 P.2d 561, 564 (Utah 1999).

344. *Home Builders Ass’n v. City of Am. Fork*, 973 P.2d 425, 431 (Utah 1999).

345. *Raintree Homes, Inc. v. Vill. of Long Grove*, 807 N.E.2d 439, 447-48 (Ill. 2004); *Bldg. Indus. Ass’n of Lancaster County v. Manheim Twp.*, 710 A.2d 141, 144 (Pa. Commw. Ct. 1998); *Metro. Builders Ass’n of Greater Milwaukee v. Town of Pewaukee*, 524 N.W.2d 648 (Wis. Ct. App. 1994).

346. *Imperial Gardens, Inc. v. Town of Wallkill*, 644 N.Y.S.2d 528, 530 (N.Y. App. Div. 1996).

347. *Cardillo v. Fla. Keys Aqueduct Auth.*, 654 So. 2d 1062, 1063 (Fla. Dist. Ct. App. 1995).

348. *Bd. of Educ. v. Sandy City Corp.*, 94 P.3d 234, 239-40 (Utah 2004).

349. *City of Billings v. State*, 891 P.2d 1149, 1150 (Mont. 1995); *Michaud v. City of Woonsocket*, 657 A.2d 1072 (R.I. 1995).

consequential questions, thereby making it highly likely that similar cases will be filed and decided in the future.

d. Adoption of *Nollan/Dolan* Principles

Probably the most interesting questions to be answered from a review of post-*Dolan* state court litigation are: 1) how has the federal constitutional law of *Nollan* and *Dolan* been incorporated by state courts; and 2) how does the state rational nexus test actually work in practice? These questions lie at the heart of the analysis of impact fee law since they ask fundamental questions concerning the level of “connectedness” between new development and specific capital facilities costs. They present the crucial inquiry of determining in what circumstances the individual can be treated separately from the community. In reverse, impact fee policy actually reflects the degree to which a community collectively assumes the financial responsibilities for building public infrastructure.

i. Consideration of *Nollan* and *Dolan* Decisions

In the *Nollan* and *Dolan* opinions, the Supreme Court took aim at the growing practice of conditional land use regulation requiring the land developer to transfer property interests to the government as a requirement for obtaining project approval.<sup>350</sup> In the *Nollan* case, the Court confronted what it considered an egregious misuse of public power, which transformed normally legitimate police power exercises into extortionate demands from a government unit that would use its regulatory authority in place of compensation.<sup>351</sup> To remedy the perceived problem of regulatory leveraging, the *Nollan* Court ruled that an “essential nexus” must be established between a permit condition and the public reason for the condition.<sup>352</sup> Also, the decision eschewed judicial deference to these kinds of land use decisions.<sup>353</sup> Henceforth, courts would be required to closely and carefully examine the government regulation to determine if it “substantially” advanced a legitimate government interest.<sup>354</sup> Burdens of proof would be shifted as well.<sup>355</sup> In the field of conditional land use control which demands that the applicant contribute property interests to the public, *Nollan* appeared to call for a “heightened scrutiny” into the relationship between regulatory means and ends—a more rigorous test into real motives for regulating.<sup>356</sup> This case directed reviewing courts to

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350. *Nollan v. Ca. Coastal Comm’n*, 483 U.S. 829, 827 (1987); *Dolan v. City of Tigard*, 512 U.S. 374, 386 (1994).

351. *Nollan*, 483 U.S. at 836-37.

352. *Id.* at 837.

353. *Id.* at 838.

354. *Id.* at 836 n.3.

355. *Dolan*, 512 U.S. at 391 n.8.

356. *Id.* at 836 n.3 (“substantially advance[s] ‘legitimate state interests.’”). Justice Brennan did not agree with the Fifth Amendment-based heightened scrutiny view expressed in footnote 3 and thought that a “minimum rationality” principle of substantive due process analysis was both traditional and the superior approach. Just how high the level of scrutiny and when it must be applied has remained a topic of scholarly speculation. See Jonathan M.

view land use exaction cases more critically and to question superficial justifications.

*Dolan* took this matter one step further by delving into the degree of the “essential nexus,” which Justice Rehnquist defined as “rough proportionality,” as being necessary to validate a land exaction.<sup>357</sup> Once again, the Supreme Court was concerned with abusive practices being undertaken in the name of public improvement and a distorted use of the local government’s police power.<sup>358</sup> Importantly, the Court placed the burden of proving this level of connection on the regulating government by way of “some sort of individualized determination that the required dedication is related both in nature and extent to the impact of the proposed development.”<sup>359</sup> This procedural element emphasized the Court’s belief that governments needed to explicitly justify their regulatory demands—especially when a land exaction was involved.<sup>360</sup>

Following the *Dolan* decision in 1994, state courts were confronted with litigation testing the federal constitutionality of impact fees.<sup>361</sup> One of the first questions that they confronted was the determination of the full reach or extent of the Supreme Court’s ruling.<sup>362</sup> This decision possessed great potential to reorganize local government practices. Major interpretive questions loomed. Was the *Dolan* case to be considered a broadly sweeping opinion dealing with all kinds of development exactions or did it have a narrow focus extending only to the easement exaction demanded under the specific facts of the case? The state courts addressed this fundamental question in several ways. Several decisions focused on the character of the property being exacted and determined that *Dolan*’s demands only applied to forced dedications of land, considering these to be the equivalent of literal government occupation.<sup>363</sup> These courts read the case in the narrowest way possible, intending to limit its effect to nearly identical fact patterns.<sup>364</sup> The Kansas Supreme Court took this position in *McCarthy v. City of Leawood* where it summarily concluded that there was nothing in *Dolan* suggesting that its rule would apply to conditional regulation based on payment of money.<sup>365</sup> The Maryland Court of Appeals reached the same result with little discussion of

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Block, *Limiting the Use of Heightened Scrutiny to Land-Use Exactions*, 71 N.Y.U. L. REV. 1021, 1044 n.154 (1996).

357. 512 U.S. at 386, 391. The Court considered this to be the “outer limits” of what the local government could achieve through the use of regulatory land use control devices.

358. *Id.* at 385.

359. *Id.* at 395.

360. *Id.* at 391.

361. See, e.g., *McCarthy v. City of Leawood*, 894 P.2d 836, 844 (Kan. 1995); *Waters Landing Ltd. P’ship v. Montgomery County*, 650 A.2d 712, 713 (Md. 1994).

362. See *Krupp v. Breckenridge Sanitation Dist.*, 19 P.3d 687, 698 (Colo. 2001); *McCarthy*, 894 P.2d at 845.

363. See *McCarthy*, 894 P.2d at 845.

364. See *Waters Landing Ltd. P’ship*, 650 A.2d at 724.

365. 894 P.2d 836, 845 (Kan. 1995) (“The landowners cite no authority for the critical leap which must be made from a fee to a taking of property.”).

the significance of the difference between land and money.<sup>366</sup>

Other courts took the position that broadly applicable development fees would be subject “to a lesser standard of judicial scrutiny” than required by *Nollan* and *Dolan* because they believed fees to be less objectionable.<sup>367</sup> Finally, in 1999 the Supreme Court decided *City of Monterey v. Del Monte Dunes, Ltd.*,<sup>368</sup> and the reach of the *Dolan* requirements received some clarification. In addressing the question of whether *Dolan*’s “rough proportionality” test should be applied to evaluate the constitutionality of a regulatory denial, the Court said, “we have not extended the rough-proportionality test of *Dolan* beyond the special context of exactions—*land-use decisions conditioning approval of development on the dedication of property to public use*”(emphasis added).<sup>369</sup> This reference from *Del Monte Dunes* would suggest that the *Dolan* rules only apply to exactions requiring the actual dedication of land. Some state courts have cautiously read this to partially limit the scope of *Dolan* to the cash exaction context.<sup>370</sup> However, this question is as much a matter of debate as it is a legal fact.<sup>371</sup>

Although the cash/land dichotomy has had a modest effect in restricting the impact of *Dolan*’s constitutional directive, another aspect of the case has been more important and limiting. When viewed as a case evaluating the legality of an individually-designed and negotiated development condition, *Dolan* can be seen as an attempt to harness constitutional law to stop local governments from exercising monopoly control power over development approval when the applicant must “contribute” property or money to the regulator.<sup>372</sup> Under this approach, *Dolan*’s procedural and substantive requirements were aimed at restraining extortionate governmental deal making when government could impose its will in individual, ad hoc transactions occurring in low visibility situations. Under this view, restraining the excessive and unchecked exercise of government power was the policy core of the ruling.

One case to characterize *Dolan* in this fashion was the Supreme Court of California’s 1996 decision in *Ehrlich v. City of Culver City*.<sup>373</sup> In *Ehr-*

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366. *Waters Landing Ltd. P’ship*, 650 A.2d at 724. The Maryland high court ruled that, “In contrast [to *Dolan*], . . . [the county] imposed the development impact tax by legislative enactment. . . and furthermore, the tax does not require landowners to deed portions of their property to the County.” *Id.*

367. *Home Builders Ass’n of Cen. Ariz. v. City of Scottsdale*, 930 P.2d 993, 1000 (Ariz. 1997) (stating that fees are “a considerably more benign form of regulation”); *Loyola Marymount Univ. v. Los Angeles Unified Sch. Dist.*, 53 Cal. Rptr. 2d 424, 434 (Cal. Ct. App. 1996).

368. 526 U.S. 687 (1999).

369. *Id.* at 702 (emphasis added).

370. *Krupp v. Breckenridge Sanitation Dist.*, 19 P.3d 687, 698 (Colo. 2001).

371. See JUERGENSMEYER & ROBERTS, *supra* note 50, at 368 (noting four schools of thought among commentators). A number of states treat land and money exactions in the same way. See, e.g., *Town of Flower Mound v. Stafford Estates Ltd. P’ship*, 135 S.W.3d 620, 633 (Tex. 2004); *Benchmark Land Co. v. City of Battle Ground*, 14 P.3d 172, 173, 175 (Wash. Ct. App. 2000).

372. See *Ehrlich v. City of Culver City*, 911 P.2d 429, 439 (Cal. 1996).

373. *Id.* at 439.



*lich*, the owner of a private tennis club closed the club and applied for a rezoning of his site that would accommodate condominiums.<sup>374</sup> The city granted a development permit on condition that the owner pay a “recreation fee” to mitigate the loss of the tennis facility and also pay a fee to install art in public places.<sup>375</sup> The California court rejected the idea that the *Nolan/Dolan* rules were only to apply to land exactions since the harm from regulatory leveraging would occur with cash payments as well.<sup>376</sup> *Ehrlich* typified this situation as one in which a locality can impose “land use conditions in individual cases, authorized by a permit scheme, which by its nature allows for both the discretionary deployment of the police power and an enhanced potential for its abuse.”<sup>377</sup> The upshot of the *Ehrlich* decision was that if a monetary charge were to be classified as *ad hoc* or discretionary, it would be subject to the searching constitutional review required by *Dolan* while uniform, legislatively mandated fees would only be evaluated by a weaker “reasonable relationship” test.<sup>378</sup> Later California cases<sup>379</sup> have followed this position as have a number of decisions from several other states.<sup>380</sup>

A clear pattern in the case decisions following *Dolan* has been that legislatively designed impact fees will not be subjected to the rigors of the United States Supreme Court’s heightened scrutiny regime.<sup>381</sup> Usually expressed in a comparative form with adjudicatory fees, the legislatively imposed, standardized fee is marked by an absence of administrative discretion in its application or computation.<sup>382</sup> The Oregon appeals court has defined it as “a generally applicable development fee imposed on a broad range of specific, legislatively determined subcategories of property through a scheme that leaves no meaningful discretion either in the imposition or in the calculation of the fee.”<sup>383</sup> The basic assumption underlying this preference for legislative programs is that such efforts will achieve significant public purposes in a uniform way and will distribute development costs in an open and fair fashion.<sup>384</sup> Individual, one-sided

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374. *Id.* at 433-34.

375. *Id.* at 435 (stating that the recreation fee was \$280,000 and the art fee was \$33,200).

376. *Id.*

377. *Id.* at 439.

378. *Id.* at 441-42.

379. *San Remo Hotel L.P. v. City & County of San Francisco*, 41 P.3d 87, 105-07 (Cal. 2002) (applying only reasonable relationship analysis because the fee was applied through a generally applicable legislation and no *Dolan* heightened scrutiny); *Krupp v. Breckenridge Sanitation Dist.*, 19 P.3d 687, 692 (Colo. 2001) (holding that mandatory plant investment fee imposed by sanitary district was “legislatively established” and not subject to *Nollan/Dolan*); *Home Builders Ass’n of N. California v. City of Napa*, 108 Cal. Rptr. 2s 60 (Cal. Ct. App. 2001).

380. *See, e.g., Waters Landing Ltd. P’ship*, 650 A.2d at 723.

381. *See Home Builders Ass’n of Metro. Portland v. Tualarin Hills Park & Recreation Dist.*, 62 P.3d 404, 409 (Or. Ct. App. 2003).

382. *Id.*

383. *Id.* (citing *Rogers Mach., Inc. v. Wash. County*, 45 P.3d 966, 983 (Or. Ct. App. 2002)).

384. Juergensmeyer and Roberts explain this phenomenon in the following terms: Where a dedication requirement is a part of legislation generally applicable to all development, courts are reluctant to review the condition with de-

“negotiation” would not be involved.

Perhaps this view is aspirational or naïve, but it is widely held by state courts.<sup>385</sup> This formula for avoiding federal constitutional law mandates has been repeated by state courts in all parts of the nation including Arizona,<sup>386</sup> Colorado,<sup>387</sup> Minnesota,<sup>388</sup> Maryland, and California.<sup>389</sup> The conclusion that may be drawn from this analysis is that the classification of an impact fee as either legislative or adjudicative is highly significant. This categorization will determine the nature of the constitutional analysis that a court will perform upon judicial review. Adjudicative or discretionarily imposed fees will be subjected to the full rigor of *Nollan/Dolan* analysis while legislative or non-discretionary fees will undergo state constitutional review usually under a form of rational nexus evaluation. As Professor Mandelker correctly notes, courts have upheld impact fees under both kinds of review.<sup>390</sup>

## ii. *Judicial Review of Impact Fees under State Constitutional Principles*

With most local governments adopting legislative impact fee policies or being able to conduct negotiated exaction programs without incurring the challenge of litigation, the number of cases analyzing such fees under federal constitutional principles is surprisingly small. During the ten years under review, however, there have been a slightly larger category of judicial decisions arising under state law principles of fairness defined by impact fee statutes or state constitutional doctrines. Increasingly, the impact fee statutes incorporate rational nexus tests for impact fee regimes that have the effect of codifying state constitutional norms making the statute the central focus of court’s analysis.<sup>391</sup> Also, reviewing courts appear to be satisfied with the legislature’s work.<sup>392</sup> In no case reviewed has a state court held that a state impact fee statute violates the state

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mandating scrutiny. If, for example, all residential development must convey an easement of five feet for sidewalk use or if all commercial property must pay a set transportation fee per square foot of development, the public can debate the propriety of the charge and the legislative process may be assumed to protect persons from unfairness.

JUERGENSMEYER & ROBERTS, *supra* note 50, at 409. Not surprisingly, some landowners complain about the unfairness of uniform, legislatively determined impact fees, and they demand an “individualized assessment.” See, e.g., *Twin Lakes Dev. Corp. v. Town of Monroe*, 801 N.E.2d 821, 824 (N.Y. 2003) (unsuccessful demand).

385. See *Krupp v. Breckenridge Sanitation Dist.*, 19 P.3d 687, 692 (Colo. 2001); *Homebuilders Ass’n of Metro. Portland*, 62 P.3d at 999-1000; .

386. *Home Builders Ass’n of Cen. Ariz. v. City of Scottsdale*, 930 P.2d 993, 999-1000 (Ariz. 1997).

387. *Krupp*, 19 P.3d at 692 (imposing mandatory plant investment fee by sanitary district was “legislatively established” and not subject to *Nollan/Dolan*).

388. *Arcadia Dev. Corp. v. City of Bloomington*, 552 N.W.2d 281, 286 (Minn. Ct. App. 1996).

389. *Ehrlich v. City of Culver City*, 911 P.2d 429, 439 (Cal. 1996).

390. DANIEL R. MANDELKER, *LAND USE LAW* 9-26 (5th ed. 2003).

391. *Home Builders Ass’n of Cen. Ariz.*, 930 P.2d at 999 (applying reasonable relationship test of *Dolan* already codified into Arizona statute).

392. See *id.* at 999-1000; *Krupp*, 19 P.2d at 692.

constitutional requirements. In addition, very few decisions have struck down impact fees for constitutional, or any other, reasons.<sup>393</sup>

Although the states express the rational nexus or dual rational nexus test in differing terms, it generally can be described with two statements: 1) the impact fee cannot exceed government capital costs which are reasonably related or attributable to the new building; and 2) the developer paying impact fees must receive a benefit from the infrastructure.<sup>394</sup> Most cases analyzing this test focus on the first element.<sup>395</sup> Some cases give only the most superficial look to the question of cause and effect proportionality accepting only the most rudimentary justifications.<sup>396</sup> Others are tolerant of perceived good-faith efforts to respond to serious growth-induced deficiencies in public facilities even with little established connection to a particular parcel of land.<sup>397</sup> A number of courts just appear to give the localities the benefit of the doubt in matters of impact fee program design, accepting the government's explanations even if they have modestly disparate impacts.<sup>398</sup>

In California, the supreme court chose not to apply its "heightened scrutiny" review first announced in its 1996 *Ehrlich* case but rather a considerably weaker "reasonable relationship" inquiry to uphold a low and moderate income housing linkage program enacted by San Francisco ordinance.<sup>399</sup> The justification for this deferential form of review was the complete lack of discretion built into the ordinance.<sup>400</sup> One curious side effect of attempts to avoid the rigors of *Nollan/Dolan* review appears to

393. See, e.g., *Volusia Cty v. Aberdeen at Ormond Beach, L.P.*, 760 So. 2d 126, 137 (Fla. 2000) (holding school impact fee unconstitutional as applied to age restricted mobile home park community with binding restrictive covenants); *Town of Flower Mound v. Stafford Estates Ltd. P'hip*, 135 S.W.3d 620, 645 (Tex. 2004) (striking requirement to pay for street improvement not related to new development); *City of Olympia v. Drebeck*, 83 P.3d 443, 444 (Wash. Ct. App. 2004) (striking and remanding traffic impact fee for recalculation so as to be "reasonably related" to project impact); *Vintage Constr. Co. v. City of Bothell*, 922 P.2d 828, 829 (Wash. Ct. App. 1996) (striking park in lieu of fee struck due to no individualized consideration). With an annual, national average of ten state case decisions raising any possible impact fee issue, the volume of litigation is extremely small considering the prevalence of impact fee practice.

394. See *SOLD, Inc. v. Town of Gorham*, No. Civ.A. CV-02-362, 2003 WL 22250339, at \*11-12 (Me. Super. Ct. Sept. 26, 2003); *Twin Lakes Dev. Corp. v. Town of Monroe*, 801 N.E. 2d 821, 825 (N.Y. 2003).

395. See *SOLD, Inc.*, 2003 WL 22250339, at \*11-12.

396. *Id.*

397. *Twin Lakes Dev. Corp.*, 801 N.E.2d at 825 (exhibiting extremely undemanding review while supposedly applying *Nollan/Dolan* criteria).

398. *Krupp v. Breckenridge Sanitation Dist.*, 19 P.3d 687, 695 (Colo. 2001) (holding that reasonable relationship test was satisfied when impact fees for triplex were 80% higher than the fee for the duplex); *Wellington River Hollow, LLC v. King County*, 54 P.3d 213, 219-20 (Wash. Ct. App. 2002) (using county-wide averages from four of ten districts upheld); *Cherokee County v. Greater Atlanta Homebuilders Ass'n*, 566 S.E.2d 470, 474 (Ga. Ct. App. 2002) (holding that the limited fee area/border benefited area); .

399. *San Remo Hotel L.P. v. City & County of San Francisco*, 41 P.3d 87, 105-07 (Cal. 2002) (applying only reasonable relationship analysis because the fee was applied through a generally applicable legislation and no *Dolan* heightened scrutiny); *Loyola Marymount Univ. v. Los Angeles Unified Sch. Dist.*, 53 Cal. Rptr. 2d 424 (Cal. Ct. App. 1996) (holding that development fees were not subject to *Dolan* heightened scrutiny).

400. *Id.* at 104-05.

be a movement toward less flexible, context-considering regulatory programs.

Some state supreme courts approach the subject of evaluating impact fee programs in a methodical way. In the *City of Beavercreek* case, the Ohio Supreme Court established a rule of decision and then applied it to review a roadway improvement impact fee ordinance.<sup>401</sup> Not surprisingly, the court selected the dual rational nexus test approved by the United States Supreme Court in *Dolan*.<sup>402</sup> Sounding like a referee standing between two boxers, the court explained that the appropriate test should be one that “balances the interests of the city and developers . . . without unduly restricting local government.”<sup>403</sup> It defined the task of judicial review as determining whether a “reasonable relationship” existed to justify each of the two elements.<sup>404</sup> The role for judicial review was described as making factual findings about the two factors at issue.<sup>405</sup> In rendering its own judgment, the Ohio Supreme Court relied to a great extent on evaluation of the evidence made at the trial court level and did not conduct its own appraisal of the information considered below.<sup>406</sup> In *Beavercreek*, the “reasonable relationship” test resulted in rather deferential appellate review.<sup>407</sup>

Other state courts—such as Florida’s—have more experience with applying the dual rational nexus review. A recent decision of the Florida Supreme Court demonstrates the effect of the two-prong test in a situation where the local government does not provide a particularly strong justification for a school impact fee.<sup>408</sup> In *Volusia City v. Aberdeen at Ormond Beach L.P.*, the developer paid a fee of approximately \$1,000 per lot for a new mobile home park that was to be lawfully age restricted, thereby prohibiting children.<sup>409</sup> The court struck down the school fee, finding that it failed both parts of the rational nexus test: the mobile homes would not produce any children to be educated, and their owners would not receive any direct benefit from paying the fee.<sup>410</sup> The city’s justifications for the application of impact fees seemed particularly weak in comparison to the complete failure of each mobile home unit to generate children in need of education.<sup>411</sup> Other states with long experience in

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401. *Home Builders Ass’n of Dayton & the Miami Valley v. City of Beavercreek*, 729 N.E.2d 349, 397 (Ohio 2000).

402. *Id.* at 356.

403. *Id.* at 355.

404. *Id.* at 357.

405. *Id.*

406. *Id.* at 356-58.

407. *Id.* at 357-58.

408. *Volusia County v. Aberdeen at Ormond Beach L.P.*, 760 So. 2d 126, 130 (Fla. 2000).

409. *Id.* at 136.

410. *Id.*

411. The twin reasons given by the city were: Aberdeen benefits from school construction since they can serve as emergency shelters and they may serve as sites for adult education. *Id.* The more tangential benefits of supporting high-quality education in a community was not seriously considered either by the city or the court.

considering impact fees use earlier case decisions as a referential guide for new litigation.<sup>412</sup>

In summary, the state courts have become comfortable with the application of their own impact fee enabling statutes and state constitutional provisions to render decisions in challenges to land development fees. Slowly, they are developing a jurisprudence that focuses inward on state law and policy. The impact of the *Nollan/Dolan* case line appears to have been confined to an extremely narrow set of circumstances—adjudicated or individually-negotiated impact fees—and these cases do not commonly occur. In addition, there is essentially no successful state litigation pushing for heightened scrutiny or upgraded impact fee procedures. The rhetoric of *Nollan* and *Dolan* suggesting rigorous judicial review under exacting constitutional standards has failed to materialize. The states have dominated this area of public policy, and they appear to be satisfied with the responsibility.

### CONCLUSION

All evidence points to the rapid spread of land development impact fees throughout the nation making it a prevalent means of funding new growth. As local governments become pressed to provide an ever-increasing list of costly services to their citizens while at the same finding their financial resources to be squeezed, impact fees will continue to be an attractive supplement for much-needed revenue. Systemwide infrastructure needs are capital intensive, and they are continually expanding. Residents now urge their elected officials to adopt impact fees when the locality has not yet done so. Without having to face the opposition of future residents who do not currently live or vote in the locality, these officials find impact fees an irresistible policy option. With continuing political support, local governments are likely to continue funding their capital expansion with impact fees, and they will attempt to expand these targeted charges to a growing list of municipal services. Contrary to the complaint of opponents, the twin forces of economic need and political reality make impact fees likely to be a fixed element of modern land development landscape in the future.

American political culture has gradually changed, making the privatizing of previously public expenditures acceptable to the majority of suburban residents. This shift, which makes mandatory private funding a substitute for public expenditure, further limits public or community responsibilities to citizens and eliminates the implicit public subsidy that has previously been given to less expensive housing. The privatization movement represents an important transition, raising profound questions about the nature of the social duty of local governments. It also raises

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412. *Home Builders Ass'n v. City of Am. Fork*, 973 P.2d 425, 427 (Utah 1999) (mentioning *Banberry* factors); *Home Builders Ass'n v. City of N. Logan*, 983 P.2d 561, 562 (Utah 1999) (referencing to procedural and substantive guidelines established in *Banberry Dev. Corp. v. S. Jordan City*, 631 P.2d 899, 903-04 (Utah 1981)).

questions concerning social and economic exclusion from suburban America. As the impact fee practice expands, state and local government must carefully consider the economic and social impacts related to it. States must closely monitor the conduct of their localities and develop accurate research data evaluating the ramifications of this significant local government policy. Having solid baseline data as well as impact analysis would seem indispensable to any policy evaluation. Furthermore, legislatures must fine-tune impact fee use to ensure that it is fair in its application and that it properly accomplishes state-wide housing and other development goals. All-in-all, states must be more active participants in establishing growth policies so that a broad range of values will be recognized when important local policies are adopted.

What role exists for the United States Supreme Court in this policy area? The Court has expressed its concern that local government exaction practices will run afoul of developing constitutional Fifth Amendment values. Through the *Nollan*, *Dolan*, and other Takings Clause decisions, it has enunciated a strong legal policy against extortionate regulatory demands in the name of land use control. These decisions have espoused a view that regulation should not “go too far” so as to destroy property utility and value and that regulatory conditions not impose cost burdens that should not be imposed on the individual owner. These are laudable policy goals in the abstract. However, they have little usefulness or relevance in designing sophisticated growth policy. In the end, the Supreme Court has not really “led” the state and local governments to new standards of constitutional behavior, but rather it has used elevated rhetoric to reign in particularly oppressive municipal behavior. The states have dominated the development of programmatic rules and constitutional norms in the area of land use impact fees, and this pattern will likely continue. Time will tell whether the United States Supreme Court will attempt to “reconstitutionalize” this debate.



# **WHAT HAVE WE LEARNED FROM ENERGY EFFICIENCY FINANCING PROGRAMS?**

**Sara Hayes, Steven Nadel, Chris Granda, and Kathryn Hottel**

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## FOREWARD

This report is part of a series being issued to facilitate improved energy efficiency financing programs that substantially increase the implementation of energy efficiency projects in the residential and commercial sectors. The goal of this series is to provide a set of tools that make it easier for states, municipalities, utilities, and private lenders to learn from past experience and offer effective energy efficiency programs going forward—programs that can provide capital to increase the pace of residential and commercial building energy efficiency implementation. The work was undertaken under contract with Argonne National Laboratory, with funding from the U.S. Department of Energy.

This particular report is designed to summarize the results and lessons learned from energy efficiency finance programs that have moved beyond the initial start-up phase; it is written for energy efficiency program planners and implementers. Also in the series are (1) *Energy Efficiency Finance 101: Understanding the Marketplace*, an introduction to the field of energy efficiency finance, designed for those who are new to the field or for those who want a quick “refresher;” and (2) a forthcoming more in-depth look at on-bill financing and ways to address some of the unique opportunities and challenges of this financing approach.

We hope you find this series useful and we welcome your feedback on it, and other steps ACEEE should consider for encouraging increased use of energy efficiency finance.

Steven Nadel  
Executive Director  
American Council for an Energy-Efficient Economy

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## **PROGRAM KEY**

Sacramento Municipal Utility District Residential Loan Program (SMUD)  
Southern California Gas Company Home Energy Upgrade Financing (SoCal Home)  
California—Sempra On-Bill Financing (Sempra)  
Connecticut Home Energy Solutions (CT Home)  
Connecticut Light & Power Commercial & Industrial Financing (CL&P CI)  
Connecticut Light & Power Small Business Energy Advantage Program (CT SB)  
How\$mart—Efficiency Kansas (KS \$mart)  
Maryland Home Energy Loan Program (MHELP)  
Massachusetts—MassSAVE HEAT Loan Program (Mass HEAT)  
Minnesota—Sustainable Agriculture Loan Program (MN Ag)  
Minnesota—Center for Energy and Environment Home Energy Loan Program (MN CEE)  
Nebraska—Dollar & Energy Savings Loans (NE \$ES)  
Nebraska—Smart Savings Through Retrofit Technologies (SmartSTART)  
Green Jobs—Green New York (GJGNY)  
New York Energy \$mart (NY \$mart)  
New York—Residential Loan Fund Program (NY RLF)  
Oregon—State Energy Loan Program (OR SELP)  
Oregon—Clean Energy Works (OR CEW)  
Pennsylvania—Keystone HELP (PA HELP)  
Texas LoanStar (TX LStar)  
Vermont Home Performance with Energy Star (VT EStar)  
Efficiency Vermont Agricultural Services (VT Ag)  
Efficiency Vermont Lighting Plus Program (VT Light)  
Wisconsin Focus on Energy Loan Program (WI Focus)

## EXECUTIVE SUMMARY

The building sector consumes about 74% of the electricity used in the United States (EIA 2011a). ACEEE and others have found that electricity consumption can be cost-effectively reduced by about 20–30% in the next 10–15 years (Eldridge et al. 2010; Granade et al. 2009). These savings would reduce annual electricity consumption in the residential and commercial building sector by over 695 billion kWh annually (EIA 2009). These savings are enough to power the entire western United States (including Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington, and Wyoming) for a year (EIA 2011b). This reduction would mean a reduction in electricity bills for American consumers and businesses by over \$78 billion per year.<sup>1</sup> Similarly, natural gas consumption can be cost-effectively reduced by approximately 22% in the near term (Eldridge et al. 2010). This would save over 1,795 billion cubic feet of natural gas annually, which equates to over \$20 billion per year of reduced energy bills for consumers.<sup>2</sup> This is more than enough to offset the natural gas consumed to heat hot water by every household in the U.S. (EIA 2005). These numbers don't account for the corollary energy benefits of improved building efficiency such as improved occupant comfort and safety.

Loan programs are a mechanism used to help achieve energy savings in the building sector by providing financing to pay for energy efficiency retrofits. While several programs have many years of experience and have issued thousands of loans, this market has yet to come to scale. There is a lack of information, uniformity, and standards that make it difficult for private lenders to evaluate the risk these types of loans present. The lack of uniformity also makes it difficult to package these small loans into larger portfolios for sale to larger financial institutions on the secondary market. Without access to private capital there will be limited funding for efficiency retrofits—and the associated jobs, energy and cost savings, and environmental benefits will not be realized.

This report is a first step toward scaling up efficiency financing. Our research summarizes the results of a survey of efficiency loan programs throughout the nation. The quantitative results of our research focused on data such as loan terms, interest rates, default rates, application approval rates, participation rates, and loan amounts. All of this information is reported in the body of the report and summarized in tables in Appendix A. We also looked at funding sources, finding that these programs are being funded by a range of sources. In some states funding was provided by the state via a legislative mandate or collected via a charge on utility rates. Some programs are privately funded by participating financial institutions. In many cases program funding is a combination of both public and private sources. For example, public funding may be used to buy down interest rates for loans provided by private institutions such as banks and credit unions.

The programs surveyed with the largest origination budgets (i.e., the total dollar amount of loans issued during the life of the program) were the Sacramento Municipal Utility District (SMUD) (\$447.4 million), Southern California Home (\$300 million), and Texas LoanStar (\$296.3 million) programs. Further we found that:

- Only one program required all loans to be secured though most programs do require a credit review and many offer a secured loan product.
- Default rates were very low ranging from 0–3% (cumulative).
- Loan application approval rates averaged approximately 76% though there was a wide range across programs with several programs reporting approval of 100% of applicants.
- Most programs do not base project approval on measureable energy savings though most have pre-approved measures. Some programs link the loan repayment to energy savings by requiring that savings exceed loan repayment amount. This can effectively limit the types of measures that will qualify for approval as all programs have repayment time limits.

<sup>1</sup> Based on a price of electricity of 11 cents per kilowatt hour

<sup>2</sup> Based on a price of natural gas of \$11.20 per thousand cubic feet of gas

- Participation rates are generally low across programs. The percentage of total customers in the classes served by programs compared to the total number of program participants reveals that only two of the programs surveyed had rates that exceeded 3% of the customers targeted by the programs and more than half of the programs had participation rates below 0.5%. These two were SMUD and Connecticut Light & Power's Commercial & Industrial Financing (CL&P CI) and Small Business Energy Advantage (CT SB) programs.

We found that very little data on energy savings data is available. Although energy savings are rarely reported, those that we were able to find fall within a similar range of 12–17% of annual energy use for the eligible customer class served by the utility or utilities participating in the program. Table A5 in Appendix A provides reported savings data.

Based on our research we were able to make some general observations. Key findings include:

- Most programs are not penetrating the market of potential customers;
- Some residential programs have high rates of application decline;
- Residential loan program participants tend to be “reactive;”
- Project bottlenecks sometimes occur due to burdensome and inflexible program requirements;
- Minimum program size can attract additional lenders;
- Good loan terms don't assure the success of a program;
- The housing market crash has tightened the lending market;
- Some programs with interest rate buy-down have found the costs to be high; and
- There is a lack of uniform criteria for evaluating credit of small businesses and institutions.

A key purpose of efficiency loan financing programs is to maximize the energy savings achieved with the program's limited resources. Energy savings can be maximized when programs implement a large number of projects (“broad participation”) and when each project achieves significant energy savings (“deep retrofits”). No single program design element can guarantee the success of a program. Program characteristics that may play a role include program design, eligible measures, audit requirements, points of access by customers to program, incentives, length of program duration, utilization of one-stop contracting, sophistication and extent of marketing strategy (including use of trade ally and neighborhood partners), trustworthiness and credibility of program sponsor, skills and sophistication of program contractors, and quality assurance procedures, to name a few. In order to expand the scope of these programs to a larger audience, we make several recommendations to achieve broad participation in these programs such as:

- Budget for and invest in ongoing marketing of the program;
- Simplify the loan application process;
- Offer attractive loan terms;
- Design the program for a target audience; and
- Consider on-bill financing

In order to maximize energy savings we make several recommendations for achieving “deep retrofits” including:

- Require whole house energy audit to educate consumers about all cost-effective options;
- Package loan programs with utility incentives and rebates;
- Require additional complementary measures to reach beyond the “reactive” market;
- Tier program benefits (such as loan terms) to incentivize greater energy savings; and
- Train participating contractors to ensure the credibility of the program and the achievement of energy savings.

Additional detailed results including appendices summarizing our quantitative results and individual program summaries are included in the full report.

## INTRODUCTION

The building sector consumes about 74% of the electricity used in the United States (EIA 2011a). ACEEE and others have found that electricity consumption can be cost-effectively reduced by about 20–30% in the next 10–15 years (Eldridge et al. 2010, Granade et al. 2009). These savings would reduce annual electricity consumption in the residential and commercial building sector by over 695 billion kWh annually. These savings are enough to power the entire western United States (including Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington, and Wyoming) for a year (EIA 2011b). This reduction would mean a reduction in electricity bills for American consumers and businesses by over \$78 billion per year.<sup>3</sup> Similarly, natural gas consumption can be cost-effectively reduced by approximately 22% in the near term (Eldridge et al. 2010). This would save over 1,795 billion cubic feet of natural gas annually, which equates to over \$20 billion per year of reduced energy bills for consumers.<sup>4</sup> This is more than enough to offset the natural gas consumed to heat hot water by every household in the U.S. (EIA 2005). These numbers don't account for the corollary energy benefits of improved building efficiency such as improved occupant comfort and safety.

Loan programs are a mechanism used to help achieve energy savings in the building sector by providing financing to pay for energy efficiency retrofits. Although Fannie Mae offers an “energy improvement” mortgage and the Department of Housing and Urban Development and the Federal Housing Administration all offer efficiency financing products, there is no widely used national energy efficiency loan program, making state programs particularly important. States across the U.S. have implemented efficiency loan programs with varying degrees of success. While several programs have many years of experience and have issued thousands of loans, this market has yet to come to scale.

Byrd (2011) found that the three biggest obstacles inhibiting large-scale implementation of energy efficiency loan programs are:

- a lack of data with which to predict delinquency and default rates;
- the small, pilot-level stage of most programs; and
- a lack of uniform loan term and underwriting criteria.

This lack of information, uniformity, and standards makes it difficult for private lenders to evaluate the risk these types of loans present. The lack of uniformity also makes it difficult to package these small loans into larger portfolios for sale to larger financial institutions on the secondary market. Without access to private capital there will be limited funding for efficiency retrofits—and the associated jobs, energy and cost savings, and environmental benefits will not be realized.

Because capital is scarce for energy efficiency finance programs, most use either utility or government funding for the loans, or they rely on small banks and credit unions. While this approach has had some success, large scale implementation is not likely. Small firms do not have the balance sheet capacity to scale up a program to reach a volume that would attract larger banks and institutions, trapping them at the pilot stage. The local lender may issue \$20 million in loans, or perhaps a collection of firms will issue \$50 million, but when they reach capacity there is no secondary market in which to sell the loans. Thus, there is no way to recapitalize for additional lending. Further, local firms employ underwriting and loan terms that often do not conform to the standards used by national banks and institutions. The fragmented universe of local lenders is limiting the secondary market, while local lenders remain the only option to tap private capital, a conundrum that is preventing the market from scaling beyond pilot programs (see Byrd 2011 for more discussion of this issue).

This report is a first step toward scaling up efficiency financing. Our research summarizes the results of a survey of efficiency loan programs throughout the nation. The research compiled includes data on default rates, loan terms, loan amounts, interest rates, underwriting criteria, and many other variables. These

<sup>3</sup> Based on a price of electricity of 11 cents per kilowatt-hour

<sup>4</sup> Based on a price of natural gas of \$11.20 per thousand cubic feet of gas

results are followed by a discussion of many of the challenges that have arisen for existing programs, highlighting potential pitfalls that can be avoided. The discussion is followed by a set of recommendations based on successful elements of programs with significant experience. This report will be useful to policymakers as well as program planners and operators. These recommendations and “best practices” can be incorporated during the design and development of new efficiency financing programs to make existing programs more effective.

Our results, a discussion of our observations, and our recommendations follow. These are presented with program planners and financiers in mind and with the specific focus on achieving greater energy savings through deep retrofits and broad program participation. The recommendations or “best practices” are intended to serve as a guide for states or utilities to replicate. Appendix A contains more detailed tables showing our results. Appendix B contains individual program summaries.

## **METHODOLOGY**

Research for this report began with a discussion and high-level research of loan programs that finance energy efficiency retrofits. Based on these findings, several programs were identified and selected for further study. The programs selected are representative of a range of program approaches including those with enough experience for program results to have been reported as well as a few newly implemented programs. We conducted detailed research on these programs, including interviews with experts involved with each program (when possible). The programs included in this report are not exhaustive of all programs in all states, but were selected based on the criteria above. The results, discussion, and recommendations presented in the remainder of this report are based on the results of this research.

## **QUANTITATIVE RESULTS**

Table 1 lists some of the basic terms included in the loans for the programs surveyed. These results are listed as averages according to program type, either residential or commercial/industrial/public (C/I/P). These averages are based on survey results from 16 residential programs and 11 C/I/P programs. Our results indicate that interest rates are somewhat higher for residential borrowers (5.3%) than C/I/P borrowers (2.8%). It is important to note that the interest rates reported here are customer rates that may be the result of a subsidized buy-down from a higher market rate. Residential borrowers, on average, are permitted to pay back their loans over a longer time period (11 years for residential versus 8 for C/I/P); however, these are averages of the maximum years allowed and a payback period of 3–5 years for a residential loan is common in practice. Program participants in both C/I/P and residential programs are borrowing only a fraction of the maximum amounts available for a loan. In the residential sector the average loan amount is \$9,100 while the average maximum amount available is \$29,900. In the commercial sector the average loan amount is \$73,900 while the maximum amount available is \$327,600.<sup>5</sup> Tables A1 and A2 in Appendix A provide additional detail by program.

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<sup>5</sup> These averages exclude the TX LStar program, which would increase these numbers to \$216,000 and \$911,700, respectively.

**Table 1: Averages for Basic Terms of Surveyed Loan Programs**

	Interest rate	Loan Amount	Loan Range	Maximum Loan Amount	Maximum Loan Amount Range (not average)	Maximum Loan Repayment Term	Maximum Loan Repayment Term Range (not average)
Residential	5.3%	\$9,100	\$5,000–\$12,500	\$29,900	\$13,000–\$100,000	11 years	5–20 years
Commercial/ Industrial/ Public	2.8%	\$73,900	\$3,950–\$560,000	\$327,000	\$7,500–\$750,000	8 years	2–15 years

Funding for the loan programs surveyed comes from a range of sources. In some states funding was provided by the state via a legislative mandate or collected via a charge on utility rates. Some programs are privately funded by participating financial institutions. In many cases program funding is a combination of both public and private sources. For example, public funding may be used to buy down interest rates of loans provided by private institutions such as banks and credit unions.

The programs surveyed with the largest origination budgets (i.e., the total dollar amount of loans issued during the life of the program) are the Sacramento Municipal Utility District (\$447.4 million), Southern California Home (\$300 million), and Texas LoanStar (\$296.3 million) programs. All three of these programs have been established for more than 15 years each. There is no standard program size, but annual origination budgets for the largest programs were around \$20–27 million. Annual origination budgets for residential programs surveyed ranged from \$1–2 million to the low \$20s (million). Some programs that were just getting started appear to have a “ramp up” period where initial loan funding is much lower than this range. Table A3 in Appendix A provides additional details from our funding research by program.

**Table 2: General Funding of Loan Programs Surveyed**

	Funding Sources	Average Annual Origination Budget	Total Lifetime Origination Budget
Residential Programs Surveyed	Of 18 programs at least 8 used or sought private funding.	\$11 million	\$16,000–447.4 million

Loan programs manage risks differently. Some approaches include requiring secured loans and stringent credit requirements. We analyzed these factors as well as program application approval rates, default rates, and program participation rate. Some key results include:

- Only one program required that all loans are secured though most programs do require a credit review.
- Default rates were very low ranging from 0–3% (cumulative).
- Loan application approval rates averaged approximately 76% though there was a wide range across programs with several programs reporting approval of 100% of applicants.
- Most programs do not base project approval on measureable energy savings though most have pre-approved measures. Some programs link the loan repayment to energy savings by requiring that savings exceed loan repayment amount. This can effectively limit the types of measures that will qualify for approval as all programs have repayment time limits.
- Participation rates are generally low across programs. The percentage of total customers in the classes served by programs compared to the total number of program participants reveals that



only two of the programs surveyed had rates that exceeded 3% of the customers targeted by the programs and more than half of the programs had participation rates below 0.5%.

Table 3 summarizes these results. Tables A4 and A5 in Appendix A provide additional detail by program.

**Table 3: Factors Related to Loan Approval for Surveyed Programs**

Basis for Application Approval	Secured or Unsecured?	Repayment Tied to Energy Savings?	Application Approval Rate	Default Rate	Total Number of Loans Closed During Life of Program
Of 12 programs, 10 review an applicant's credit rating.	Of 18 programs, only 1 requires that all loans must be secured. 5 have some form of secured loans.	Of 14 programs, only 4 tie loan approval to energy savings resulting from the project.	Average of 76% (ranging from 40–100%)	0–3%	Ranging from 4–84,000

Very little data on energy savings were reported; however, we are able to make two tentative observations. First, in programs that estimate projected energy savings, these estimates may value efficiency measures using one of several approaches. Energy savings may be based on a fixed number of years where, for example, all measures, regardless of type, are assumed to produce savings for 12 years. Alternatively programs may assign an expected “life” for the measure based on the type of measure. This approach may mean that residential measures are assumed to produce energy savings for 15 years while commercial measures are assumed to achieve savings for 10 years. Finally, programs may evaluate each measure individually and assign an expected lifetime for the energy savings generated by the measure.

The second observation we can make is that even though energy savings are rarely reported, those that we were able to find fall within a similar range of 12–17% of annual energy use for the eligible customer class served by the utility or utilities participating in the program. The exception to this was a Vermont program that focuses solely on lighting, which reported savings of 5%. Table A5 in Appendix A provides reported savings data.

Appendix B summarizes additional program-specific information.

## DISCUSSION AND OBSERVATIONS

This discussion includes some general observations and lessons learned based on the experience and feedback we collected from the programs surveyed.

**Energy savings data is not made available by most programs**—Most programs surveyed don't measure or track energy savings that result from financed efficiency projects. In the New Hampshire SmartStart program, repayment of the loan is based on energy savings, but the program sponsors do not try to quantify the actual savings from the energy efficiency measures installed. Some programs that do track energy savings don't maintain the data in a format that can be shared and understood by those outside the program. Furthermore, even when a program did track savings data, in some cases requests for that information were refused due to confidentiality issues. One explanation for the lack of energy savings data was the existence of a disconnect between the entity monitoring energy savings (a utility) and the entity tracking financing data (a lender).

**Most programs are not penetrating the market of potential customers**—The two programs with the highest participation rates are the SMUD program with 16% of residential customers and the Connecticut Light & Power Commercial and Industrial and Small Business Energy Advantage programs with 8.2% of C/I/P customers. The SMUD and Connecticut programs have been operating for over a decade. The

Nebraska Dollar & Energy Savings Loans \$ES program has reached 2.7% of residential and C/I/P customers in the state after more than 20 years of operation while in comparison the Kansas How \$mart program has reached 1.3% of commercial and residential customers after just 3 years of operation. All other programs for which we received information have participation rates of 0.5% or less.

Where possible, we looked at the number of customers served by utilities in each program and compared this with the total number of program participants to determine a participation rate for each program. This approach does not account for “eligibility” of customers. Most programs have eligibility requirements such as credit rating or debt-to-income ratio. Most residential programs are also targeting homeowners and renters cannot participate. These types of requirements can reduce the number of “eligible” participants and therefore the participation rates reported by some programs may be higher than what we have calculated here. Our calculation did not consider program design beyond the class of customer targeted. For example, if the program is targeting the residential sector we based our calculation on the total number of residential customers served by the participating utility. We acknowledge that there is room to debate the best approach for calculating a program participation rate, but we believe our approach shows that across surveyed programs there is a pattern of very low market penetration by these programs.

This observation implies that energy efficiency financing programs alone are not the “silver bullet” that will solve all energy efficiency challenges or meet every individual’s needs. Achieving the full potential of efficiency improvements available in the buildings sector will likely require additional complementary services and approaches.

***Some residential programs have high rates of application decline***—Residential loan programs typically require the homeowner to submit an application applying for funds. The loan program administrator reviews this application and generally qualifies the applicant for the program or denies the application. The basis by which an application is approved or denied varies by program. The approach used by the majority of residential programs surveyed is to base this decision on the credit rating of the homeowner (primarily by using a Fair Isaac Corporation or FICO score) and perhaps the homeowner’s debt-to-income ratio. While approval rates can reflect differences in program design/philosophy, respondents for several programs reported that application acceptance rates were lower than desired. For example, in the Green Jobs–Green New York (GJGNY) program there is a requirement that program applicants must submit two full years of utility bills. This requirement has proved to be an obstacle for many applicants and has resulted in a high rate of application decline. The Maryland Home Energy Loan Program (MHELP) program has also had high rates of application decline. In the MHELP program the application process is administered by AFC First Financial (a financial institution) and the cause of the high decline rate is unknown to Maryland Energy Administration program staff.

In contrast, some programs have built in flexibility that allows the program staff to adjust or interpret program requirements. For example, the Oregon State Energy Loan Program (OR SELP) program allows staff to make determinations as to what it means for a loan to be “secured.” The application decline rate for this program is very low, in part because program staff work closely with applicants and encourage withdrawal if an application doesn’t meet requirements. In the Efficiency Kansas How \$mart (KS How\$mart) program, 100% of applications are accepted because the utility-administered program accepts any applicant who has paid her utility bills. Table A4 lists some of the factors that are considered by various programs when an application is reviewed as well as the application approval rates for the same programs.

***Residential loan program participants tend to be “reactive”***—Respondents suggested that residential loan programs tend to capture the reactive market (i.e., homeowners who are “reacting” to an immediate need such as a broken furnace). For example, in the Connecticut Home Energy Solutions (CT Home) program it was reported that 79% of the projects financed were heating, ventilation, and air conditioning (HVAC) replacements only (with no insulation). This is viewed as a significant problem because many of these replacements would have arguably happened without the program financing. Some programs have attempted to avoid this problem by requiring complementary work. For example, the MHELP program initially required duct sealing and insulation if a new furnace was purchased; however, this requirement was abandoned in Maryland because it was seen to be holding up projects.

**Project bottlenecks may occur due to burdensome and inflexible program requirements**—Multiple respondents raised this concern, citing slow loan processing, delays, and complicated paperwork and requirements. In the MHELP program, the Maryland Energy Administration (MEA) and the program administrator, AFC First Financial (AFC), each had qualification processes that contractors were required to complete in order to participate in the program. Initially only 10 contractors qualified for the entire state. MEA later agreed to use AFC-approved contractors, which doubled the amount of approved contractors. The program now has about 100 qualified contractors.

**Minimum program size can attract lenders**—Our research indicates that there is no common dollar amount used to fund efficiency loan programs and the total dollar amount of loans financed varies across programs, ranging from several million dollars per year to over \$25 million per year. We don't have enough evidence to say whether there is a de minimus level of funding after which a program "has legs," though we did receive feedback indicating that once a program reaches a certain scale it will attract the interest of a greater number of lenders willing to partner with a program. This was the case in the Mass HEAT program, which now attracts the interest of multiple lenders per week. Opinions of experts we consulted vary on where this threshold lies, but estimates ranged from \$25 million per year to more than \$100 million per year.

**Programs must be "sold" to borrowers**—Some programs with lower than market interest rates reported low numbers of project applications. Consumers don't seem to take advantage of the opportunities provided by a loan program simply because it's a "good deal." The reasons behind consumer behavior are beyond the scope of this survey; however, program administrators have observed that marketing makes a significant positive difference in the number of applications received. Multiple respondents indicated that packaging programs for ease of use by consumers is also a very important factor affecting whether the program will be used by a wide pool of borrowers. In addition to marketing and packaging, respondents indicated that one-on-one counseling on a project-basis is helpful.

**Impacts of the housing market crash**—In spite of the recent U.S. housing market meltdown, default rates across commercial and residential loan programs have been extremely low, ranging from 0–3% across the programs surveyed. Regardless of the low number of defaults, market conditions have impacted programs. One respondent explained that in the last four years the credit environment has changed and lenders' assumptions also had to change. He clarified that with unsecured financing normally home values don't come into play; however, given the current market it is something that should be reviewed and considered. The respondent described the emergence of "strategic defaulters," which is a situation where a homeowner abandons a home when the mortgage is "under water" (i.e., the mortgage balance is greater than the current market value of the home). In this case the program administrator had to develop measures to identify these borrowers (or potential borrowers) and mitigate this increased risk.

Another aspect of efficiency loan programs affected by the recent changes in the U.S. housing market impacts the ability of a lender to secure a loan. Securing a loan by granting the lender a claim to the value of the property owned by the borrower is a method used by some lenders; however, a secured loan requires that the homeowner has equity in the home. The nationwide decline in home prices has left many homeowners with little or no equity in their homes. This is likely to reduce eligible program participants. Table A4 lists whether surveyed programs offer secured or unsecured loans.

**Some programs with interest rate buy-down have found the costs to be high**—Some programs leverage public funding by buying down interest rates for loans funded by private institutions.

In the CT HOME program, a 0% interest rate has been highly attractive to residents; however, the interest rate buy-down to achieve the 0% rate was reported as being "exorbitantly expensive." In the New York Residential Loan Fund (NY RLF) program, the interest rate reduction approach was also reported as being very costly. In New York an alternative financing program, GJGNY, has been established as a revolving loan fund to complement the NY RLF interest rate buy-down and provide alternative access to low-interest financing to support energy efficiency upgrades.

As an alternative to interest rate buy-down, some newer programs establish loan loss reserves. A loan loss reserve is a pool of money, some fraction of the total dollar amount of outstanding loans, that is set aside and essentially functions as insurance in the case of a default. This lowers risk to the lender, which in turn means the lender can offer lower interest rates. The Pennsylvania Home Energy Loan Program has a 10% loan loss reserve. The state of Maryland is starting a new program using a loan loss reserve approach and the state of Vermont is exploring the use of funds from the Regional Greenhouse Gas Initiative (RGGI) to serve as a loan loss reserve.<sup>6</sup>

***There is a lack of uniform criteria for evaluating credit of small businesses and institutions***—While large corporations may have a credit rating, for myriad small businesses and other firms, there is no uniform metric like FICO scores. The lack of uniform criteria complicates underwriting for C/I/P programs. Credit analysis and underwriting involves a more specific review of each business and project, with business appraisals sometimes necessary. Criteria frequently considered are the number of years the applicant has been in business and utility bill payment history.

## RECOMMENDATIONS

A key purpose of efficiency loan financing programs is to maximize the energy savings achieved with the program's limited resources. Energy savings can be maximized when programs implement a large number of projects ("broad participation") and when each project achieves significant energy savings ("deep retrofits"). It is important to keep in mind that no single program design element can guarantee the success of a program. As previously mentioned, good loan terms and interest rates alone do not seem to be enough. Additional program characteristics that may play a role include program design, eligible measures, audit requirements, points of access by customers to program, incentives, length of program duration, utilization of one-stop contracting, sophistication and extent of marketing strategy (including use of trade ally and neighborhood partners), trustworthiness and credibility of program sponsor, skills and sophistication of program contractors, and quality assurance procedures, to name a few.

The following section discusses some of the program elements that our research indicates may foster broad participation and deep retrofits. At the end of the section we highlight three "model" programs that have implemented many of the program elements recommended in this report. These three short case studies include the Sacramento Municipal District Residential Loan Program (SMUD), Connecticut Light and Power's Commercial & Industrial and Small Business Energy Advantage Programs, and Oregon's Clean Energy Works program.

### Broad Participation

Many finance programs have reported lower than desired program participation rates. In addition, our review of participation rates shows that most programs have been unsuccessful at penetrating potential markets. The two programs with the highest participation rates are the SMUD and CL&P Small Business programs. The OR CEW program and the KS HowSmart programs were implemented more recently, but have had quick ramp-up periods. These programs informed the guidance below.

In addition to reaching many people, a concurrent "broad participation" goal across many programs is to remove financial barriers for customers who would otherwise not have the means to invest in efficiency measures. While this may be the intent behind many programs, most banks continue to review applications using typical financial industry criteria. For example, many banks use the exact same criteria used for standard home loans and do not consider the impact of the energy savings on ability to repay a loan. This approach, to some extent, will prevent the program from serving individuals who can't otherwise access financing through a standard home loan.

<sup>6</sup> See Freehling (2011) for additional discussion of this approach.

Our results suggest that a combination of five key elements can help to ensure that program participation is maximized and that resources are distributed to participants that will benefit most. These five elements are described below.

1. **Marketing**—There are a number of programs that offer zero or below market interest rates; however, the great financial terms of the program alone are not enough to “sell” it. Respondents indicated that investment in ongoing marketing efforts throughout the life of a program can make a significant difference in program participation. Marketing can raise public awareness of the opportunity provided by the financing mechanism and legitimize the program in the eyes of the target audience. In Oregon the CEW program has included a significant marketing effort. Marketing efforts have included utility mailers, targeted e-mails, radio, and print ads. The CEW effort led with messages related to comfort (such as, “Cold in the winter, hot in the summer? We can help!”) and economics (such as “lower your home energy use with no upfront costs”). Homes are also recruited through social marketing targeted to neighborhoods through open houses, door hangers, and information tables at local events. A program representative indicated that these marketing efforts have been crucial to achieving participation goals and maintaining public interest in the program.
2. **Simplified process**—The application process should be simple and straightforward. Programs should make it easy for potential applicants to apply for funding and participate in the program. Respondents indicated that complex and slow application processes can cause interest in the program to wane. Processes that are perceived as administrative burdens may cause potential applicants to abandon the program. Even fairly straightforward administrative requirements can cause obstacles. One respondent reported that the requirement of a notary witness to the applicant’s signature on the loan application was an obstacle for a rural program.

In addition to a simple and straightforward application process, program administrative requirements should minimize the amount of time and effort a program participant must expend. For example, some programs approve loans almost instantly while a contractor is still in the home. A program can provide all necessary assistance that a participant might need, a “one-stop shop” that assists participants with all aspects of the program from application through home audit, review of proposed measures, contractor selection, and evaluation of savings. This is the approach of the Oregon Clean Energy Works program, which exceeded its participation goals in the first phase of the program. A major aim of CEW was to streamline the entire home upgrade process from energy assessment through financing and installation. According to a program administrator, CEW met this goal by offering a fully guided, bundled service. Upfront costs were eliminated and confusion with contractors was greatly reduced. Participants could apply online and received intensive hand-holding from “Energy Advocates” with credible technical expertise. CEW placed a strong focus on being consumer friendly, providing excellent service, and using the highest quality vetted contractors. Programs must be designed to find the right balance between providing these services to customers and increased operating budgets, which could raise the fees associated with the loan.

3. **Attractive loan terms**—As previously mentioned, current economic conditions have lowered interest rates and made the terms of private loans increasingly attractive. Private loans will generally not specify what types of efficiency measures make sense for a given building and don’t educate the program participant about which options will be most cost-effective. The terms of an efficiency financing loan therefore should be comparable, if not better, in order to be as attractive as a private sector loan. Many programs use funds to buy lower interest rates for customers that apply to loans offered by private lenders. While this can attract participation it can also be expensive. Program administrators must balance the benefits of lower interest rates against program budget concerns.

Programs can also help attract participation by offering repayment terms that are longer and by requiring that the monthly repayment amount is equal to or less than the monthly savings from the efficiency investments. Some programs (including Kansas HowSmart and New Hampshire

SmartSTART) set the loan repayment amount to an amount that is less than the total energy bill savings generated by the project. This creates a positive cashflow for the customer and makes the program more attractive when compared to a standard loan. It should be noted that this approach can be a tradeoff since deeper retrofits with payback periods longer than the terms of the loan may not be eligible for financing.

Finally, any fees associated with the loan should be minimal to make the program attractive to potential participants.

4. Design for a target audience—In the current economy, interest rates available through a private loan are at historic lows. Private loans are also likely to allow greater flexibility in terms of what kinds of home improvements can be financed (as compared to efficiency loans). In many cases home and business owners have existing relationships with banks through which they pay their mortgages and taking a second loan is a relatively simple process. In cases where home and business owners already have access to comparable financing resources via the private sector, the efficiency loan financing program can end up competing for participants with private lenders. A better use of the limited resources of efficiency loan financing programs is to target potential participants who don't already have opportunities for achieving the energy savings offered by the efficiency financing program. This approach can maximize a program's limited resources and impact. Potential target participants may include low-income individuals, individuals with marginal credit ratings, and small to mid-sized businesses.

Methods by which a program might be structured to target a specific group could include issuing loan guarantees for the target group to lower a private lender's risk or for the organization administering the program to function as a lender. The Efficiency Vermont Agricultural Services (VT Ag) program guarantees the loans made to farmers, which also results in a 100% application approval rate. In some cases utilities act as lenders. When a utility is the lender it can base application approval on whether the customer is paying the utility bill as opposed to a credit review. This can result in a significantly higher approval rate for program applicants than more traditional methods. The Kansas How\$mart program is an example of a residential program where the approval rate approaches 100% because approval is based on a customer's good standing with the utility. The Efficiency Vermont Lighting Plus Program (VT Light) was designed for a very specific target audience and was retired after three years due to market saturation.

5. On-bill financing—Efficiency loan programs are often administered by financial institutions. This approach creates two separate bills whereby a program participant pays a utility bill as well as a second bill for reducing the utility bill. Combining the utility bill and the loan repayment has the potential to create a clear link between energy use and savings, enabling a program participant to relate a reduction in energy consumption with the investments made through the loan program. One method for combining energy consumption charges with efficiency financing loan repayment is to have the utility administer the loan repayment via the utility bill. This approach is known as "on-bill financing." In an on-bill program a utility will collect payment for the loan, but the capital for the loans can come from a variety of sources such as the government, the utility, or private lenders. On-bill financing can leverage existing relationships the utilities have with customers and combine available rebates with loan financing at a single point for program participants. Examples of on-bill financing programs include CL&P SBEA, OR CEW, KS How\$mart, and Sempra.

## Deep Retrofits

As previously discussed, energy savings data are not available for most efficiency loan programs. This lack of data makes it challenging to draw conclusions about what variables result in "deep" energy savings. Mindful of this limitation, we have observed a range of program features designed to maximize energy savings for each project. Although we cannot fully evaluate the effectiveness of these program features, we do have anecdotal evidence based on feedback from survey respondents to suggest which approaches are working and which have been ineffective. We have identified five features that programs are using to target deep retrofits. These are discussed below.

1. Whole house energy audit—A number of residential programs require a whole house energy audit to identify potential efficiency measures. These audits are performed by trained professionals and generally address multiple systems. The audit is essentially a list of opportunities for improving the efficiency of the home that the homeowner may not have been aware of. As previously mentioned, a number of respondents indicated that a high percentage of program applicants are “reactive,” turning to the financing program only when something breaks or needs replacing. The home energy audit can educate the homeowner about additional efficiency opportunities specific to her home.

Some programs require the homeowner to pay for the home energy audit, though the charge may be reduced or effectively negated via discounts or rebates provided if the homeowner implements one or more of the recommended measures. The KS \$mart, MHELP, GJGNY, CEW, Mass HEAT, and Sempra loan programs are examples of programs that offer free or reduced cost whole house energy audits.

2. Package offers—Many utilities offer rebates, coupons, and other discounts to customers for the purchase of higher efficiency products such as light bulbs and appliances. Some loan financing programs take advantage of these offers to leverage the benefits to program participants by packaging these opportunities and offering them in conjunction with the loan program. SMUD, MHELP, Pennsylvania HELP, Mass HEAT, and Sempra program are examples of this.

In contrast some programs have had to compete against these offers. In New Hampshire the SmartSTART program meets many of our recommended criteria for program design; however, the state also offers financial incentives for efficiency improvements that cannot be used in combination with the loan program. Businesses must opt to take either the financial incentives (cash upfront) or a loan. Participants have overwhelmingly opted for the cash upfront while the loan program has languished, closing only eight loans in nearly ten years.

3. Require additional complementary measures—As previously noted, many efficiency loan program participants are “reactive.” While the home energy audit can educate a program participant about additional measures it doesn’t guarantee that those measures will be adopted. The purchase of new technology to replace broken or malfunctioning equipment will almost always result in efficiency improvements simply because of technological advances and improving efficiency standards; however, systems that function inefficiently in the home can undermine the savings that come with a new appliance. In order to maximize energy savings, projects should make cost-effective efficiency upgrades to systems as well as components. This issue arose in the Connecticut Home program where approximately 80% of projects were HVAC unit replacements without upgrades to the insulation of the HVAC systems (often a cost-effective upgrade).

In order to achieve additional energy savings, some programs have required complementary measures. In the MHELP program there was initially a requirement for duct sealing and insulation if a new furnace was purchased as part of the program; however, this approach was abandoned as it was perceived to be the cause of reduced customer participation. The MHELP program no longer requires the additional measures, but now offers a tiered interest rate (see below). While additional measures have trade-offs (such as increasing the complexity of the program), they should be considered as a method for upgrading whole “systems” and therefore achieving deeper energy savings.

4. Tier benefits—In order to achieve deep retrofits, programs can be designed so that benefits to participants increase according to the level of energy savings a project achieves. One such method is to offer lower interest rates for projects that achieve deeper energy savings. In the MHELP program, participants receive a 9.99% interest rate for replacement of equipment; however, participants can qualify for a 6.99% interest rate if they include upgrades to insulation and duct sealing as part of the project. In the Pennsylvania HELP program, interest rates are significantly lower (2.99% versus 7.99%) if air sealing and insulation are included as part of the project.

5. Train participating contractors—Licensed contractors may be unfamiliar with current technologies and approaches for improving the energy efficiency of a home or business. This can result in poor workmanship that doesn't actually achieve anticipated energy savings. This undermines the goals of the loan program and can damage the reputation of the program while indebting a homeowner or business without providing the anticipated energy benefits. Some programs require that program participants use only approved contractors that have obtained a specific license or certification to guarantee a minimum proficiency. MHELP, Pennsylvania HELP, SMUD, Southern California Home, and Oregon CEW are examples of programs that include such a requirement.

## CASE STUDIES

### CALIFORNIA—Sacramento Municipal Utility District (SMUD) Residential Loan Program

The Sacramento Municipal Utility District Residential Loan Program has the highest participation rate and the largest number of loans of any program we surveyed.

**How They Did It:** Since 1977, SMUD has offered its Residential Loan Program to help customers improve energy efficiency. Operating under its current business model since 1991, SMUD is a contractor-driven, point-of-sale financing program for residents looking to replace aging systems and equipment with more efficient alternatives.

Since October of 1990, over 84,000 loans have closed under the program, with a participation rate of approximately 16% among the utility's residential customers. The high participation rate in the SMUD residential program may very well be attributed to its customer-friendly evaluation and application process. Marketing revolves around informing targeted customers of contractors vetted by SMUD and trained to assess home energy performance at the subsidized rate of \$99 per inspection. Through whole house energy inspections, customers are informed of any possible upgrades and presented with options for both implementation and financing right in their homes.

Once they have collected information and can make specific recommendations, contractors simplify the application process by sitting down with customers and helping to fill out all necessary paperwork. After all completed forms are turned in and creditworthiness is determined, approval normally takes only a day or two.

Both secured and unsecured loans are offered with attractive loan terms, depending on the nature of projects covered and type of dwelling. The average secured loan term is a maximum of 10 years, with an average interest rate of 8.75%. For unsecured loans, the average term is a maximum of 3 years, at a 10.75% interest rate. The total average loan amount per recipient for both varieties of loan is \$9,100. Applicant creditworthiness is based on both a SMUD account payment record and an outside credit report.

**Program Description:** This is a contractor-driven, point-of-sale financing program. Secured loans cover improvements related to HVAC, windows, and renewable energy projects and unsecured loans include building insulation, duct testing, duct sealing, and other envelope improvements. Installation must be performed by a SMUD-approved contractor.

**Underwriting Criteria:** SMUD does not use a minimum FICO score, rather it assesses the applicant's FICO score along with other credit information and bill payment history. There is a maximum debt-to-income ratio of 0.4, though, unless the applicant's income is very large. The borrower must have a satisfactory payment record as a prerequisite to qualify for any new SMUD loan. SMUD will also obtain a credit report from an outside agency to help determine creditworthiness. Where appropriate, SMUD may require additional financial statements or records for the loan evaluation process.

Contact name: Nadine Espinosa

Contact phone: 916-732-5472

Contact e-mail: [nespino@smud.org](mailto:nespino@smud.org)

Web site: <http://www.smud.org/en/rebates/Pages/index.aspx>



## Program Information

Lead implementing organization	Sacramento Municipal Utility District
Financial services partner(s)/subcontractor(s)	None
Sector(s)	Residential
Geographic area served	Sacramento County, CA
Program start date	1977; 1991 under current business model
Program end date	Still operating
Is financing under this program secured or unsecured?	Both
Program budget since inception	NA
Program budget by program year (millions)	1990 = \$7.38      2005 = \$32.48 1995 = \$48.57      2010 = \$18.97 2000 = \$21.72      March 2011 = \$3.09
Sources of capital	Utility

## Financing Statistics

Loans closed, number, and \$ amount	1977–1989 = 52,090 1990 = 5,955 1995 = 8,904 2000 = 3,683 2005 = 4,324 2010 = 2,012 2011 (through March) = 340	\$496.4 million in 1987– March 2011
Loans denied, number, and \$ amount	1996 = 597 2000 = 954 2005 = 893	NA
Avg. loan term	10-year max for secured; 3-year max for unsecured	
Avg. loan APR (if variable, please provide)	8.75% for secured loans; 10.75% for unsecured loans. Previously had only one interest rate for all loan types.  1990 = 7.92%      2005 = 7.50% 1995 = 8.50%      2010 = 8.50% 2000 = 9.85%      March 2011 = 8.75%	
Avg. program financing recipient loan \$ amount	\$9,100	
Avg. program financing participant project annual energy savings	NA	
Estimated average life of project energy savings (years)	NA	

**CONNECTICUT—Connecticut Small Business Energy Advantage Program (CT SB) and Connecticut Light & Power C&I Financing (CL&P CI)**

The Connecticut Light & Power programs targeting the small business and commercial sectors (CT Small Business Energy Advantage and Commercial and Industrial Financing programs) have an 8.2% participation rate, which is the highest rate of any program targeting these sectors and the second highest participation rate of all programs surveyed.

**How They Did It:** In conjunction with the Connecticut Energy Efficiency Fund, Connecticut Light & Power offers its commercial and industrial customers financing options through the Commercial and Industrial (C&I) Financing and Small Business Energy Advantage (SBEA) programs. These programs offer interest rate buy-downs for customers who implement eligible energy-saving measures, keeping rates low. The

average loan interest rate is 10.5–15% prior to buy-down—the buy-down brings the interest rate to 0%. This is an extremely attractive loan term to customers, given the typically high costs of equipment upgrades.

Loans must be used for the upgrading or replacement of existing equipment and systems. Loans range from \$2,000 to \$250,000, with subsidized low-interest financing eligible on the first \$100,000. The balance of the project can be financed separately at market rates, or may be covered through a separate small business program for qualifying customers. For larger commercial and industrial customers, the average loan amount is between \$25,000 and \$50,000. For smaller business, the average loan amount is around \$8,000.

The use of on-bill financing, which allows customers to easily see the benefits of their investments and simplify payment, is likely another factor that has contributed to the 8.2% participation rate.

Furthermore, customers are offered the chance to have a fully-trained, CL&P-approved contractor conduct an energy assessment of their facilities at no cost to them. Contractors provide customers with a comprehensive proposal outlining all measures that could increase energy efficiency, as well as an estimate of costs and energy savings. This valuable marketing tool simplifies the process and helps customers understand full energy savings potential, rather than simply making a reactive adjustment to one piece of equipment or system. As many customers lack the time, resources, or in-house expertise needed for in-depth analysis of energy use, this is a good method for targeting smaller businesses in particular.

### Connecticut Small Business Energy Advantage Program (CT SB)

**Program Description:** Program is for small commercial and industrial businesses. CL&P customers with an average monthly demand of less than 200 kW are eligible. There is a pre-approved list of contractors to provide energy assessments and installation of energy efficiency measures. Program offers 0% interest and on-bill financing for credit-qualifying customers.

**Underwriting Criteria:** Customer must have at least 6 months of utility payment history (in business for at least 6 months because they need at least that much credit and usage history), and must be under 60 days in arrears.

Contact name: Anne Marie Jensen

Contact phone: 860-832-4959

Contact e-mail: [jenseap@nu.com](mailto:jenseap@nu.com) [mailto:](#)

Web site: <http://ctenergyloan.com/index.php>

<http://www.cl-p.com/Home/SaveEnergy/Rebates/HomeEnergySolutions.aspx>

#### Program Information

Lead implementing organization	Connecticut Light & Power
Financial services partner	None
Sector	Commercial, industrial, and municipal
Geographic area served	Areas of Connecticut served by CL&P
Program start date	2003
Program end date	Still operating
Is financing under this program secured or unsecured?	Unsecured
Program budget since inception	\$20 million
Program budget by program year	Approximately \$1 million per year for interest rate buy-down
Sources of capital	Utility

## Financing Statistics

Loans closed, number, and \$ amount	2463 (loans outstanding)	\$15 million
Loans denied, number, and \$ amount	4%	NA
Avg. loan term	Less than 3 years	
Avg. loan APR	0%	
Avg. program financing recipient loan \$ amount	\$8,000	
Avg. program financing participant project annual energy savings	19,000 kWh	
Estimated average life of project energy savings (years)	12 years	

**Connecticut Light & Power C&I Financing (CL&P CI)**

**Program Description:** Interest rate buy-down program for commercial and industrial customers who implement eligible electric energy savings measures. Loans must be used for the upgrading or replacement of existing equipment with high-efficiency equipment. The loan limits are \$2,000 to \$250,000, with subsidized low-interest financing on the first \$100,000.

**Underwriting Criteria:** A minimum of 3 years in business.

Contact name: Gentiana Darragjati

Contact phone: 860-832-4971

Contact e-mail: [darrag@nu.com](mailto:darrag@nu.com)

Web site: <http://www.cl-p.com/Business/SaveEnergy/Financing.aspx>

## Program Information

Lead implementing organization	Connecticut Light & Power	
Financial services partner	Univest Capital Inc.	
Sectors	Commercial & industrial	
Geographic area served	Areas of Connecticut served by CL&P	
Program start date	2009	
Program end date	Still operating	
Is financing under this program secured or unsecured?	Secured	
Program budget since inception	NA	
Program budget by program year	Approximately \$250,000 annually for interest rate buy-downs	
Sources of capital	Third party	

## Financing Statistics

Loans closed, number, and \$ amount	66	NA
Loans denied, number, and \$ amount	NA	NA
Avg. loan term	3–5 years	
Avg. loan APR	10.5–15.5% (before the interest rate buydown)	
Avg. program financing recipient loan \$ amount	\$25,000 to \$50,000	
Avg. program financing participant project annual energy savings	70,000 kWh	
Estimated average life of project energy savings	10 to 12 years	

## OREGON—Clean Energy Works (OR CEW)

The Oregon Clean Energy Works program is a good model for achieving program participation goals—in just a few years it has grown substantially.

**How they did it:** Launched as a pilot program in June 2009, OR CEW provides long-term, low-interest financing to homeowners for whole-home energy upgrades. At the onset of the program a participation goal of 500 loans in the first year was established. As of February 2011, the program had met this goal and had to turn away applicants. The high success rate of the pilot program can likely be attributed to a variety of strategic choices. For one, expert “Energy Advocates” and pre-selected contractors conduct all inspections, allowing for all customer questions and concerns to be addressed immediately. These experts receive training and are monitored by the program to avoid negative customer experiences and protect the reputation of the program. Customers are helped throughout the process of determining which improvements to make, how to file all paperwork, and how to get the proper financing for their projects. In addition, the program is structured with an “on-bill” financing option that allows customers to pay back loans through their utility bills. This approach leverages the existing relationship between the customer and the utility company and helps the customer to link the loan repayment directly to a reduction in energy costs.

In addition, the OR CEW program targeted very specific customers by pre-screening to find the homeowners who were most likely to act quickly and the homes most likely to achieve high energy savings. Customers were screened based on a minimum required credit score and a history of utility bill payment. Depending on the projects undertaken and the type of dwelling, loans were offered at attractive rates from 3.99% to 5.99%, with a term of up to 20 years. Average loan size has been around \$12,500, with monthly payments of approximately \$70.

**Program Description:** On-bill financing program for whole-home energy upgrades designed to reduce energy use 10–30%. Program systematically reduced barriers to residential energy efficiency adoption—upfront costs, project complexity, and consumer hesitation in selecting contractors. The loan product was developed based on modeled savings, historic measure costs, and assumptions regarding how many projects would be completed in each category. The program managers were able to roughly estimate the savings associated with different levels of investment.

**Underwriting Criteria:** Credit score and utility history

Contact name: Andria Jacob

Contact phone: 503-823-7616

Contact e-mail: [andria.jacob@portlandoregon.gov](mailto:andria.jacob@portlandoregon.gov)

Web site: <http://www.cleanenergyworksportland.org/> (See also ACEEE, 2011)

### Program Information

Lead implementing organization	City of Portland Bureau of Planning and Sustainability
Financial services partner(s)/subcontractor(s)	Enterprise Cascadia/Energy Trust of Oregon/Local Utilities /Nonprofits
Sector(s)	Residential
Geographic area served	Portland, Oregon
Program start date	June 2009
Program end date	Still operating/expanding
Is financing under this program secured or unsecured?	Unsecured—loans are currently due upon property sale, but may be changed to stay with meter
Program budget since inception	\$8 million for pilot (500 loans); \$20 million additional awarded in 2010
Program budget by program year	NA
Sources of capital	Federal stimulus funds, city resources, foundation-related investments & grants

## Financing Statistics

Loans closed, number, and \$ amount	500	
Loans denied, number, and \$ amount	NA	NA
Avg. loan term	20 years	
Avg. loan APR	4–6%	
Avg. program financing recipient loan \$ amount	\$12,500	
Avg. program financing participant project annual energy savings	Electricity savings of 700,000 kWh; natural gas savings of 180,000 therms; household utility bill savings of \$312,000 (totals for 500 projects)	
Estimated average life of project energy savings (years)	30 years (expected combined measure life)	

## CONCLUSION

This report is a first step toward helping to “scale up” efficiency financing in the building sector. Our research has identified a number of challenges the market is currently facing including:

- Most programs are not penetrating the market of potential customers;
- Some residential programs have high rates of application decline;
- Residential loan program participants tend to be “reactive;”
- Project bottlenecks sometimes occur due to burdensome and inflexible program requirements;
- Minimum program size can attract additional lenders;
- Good loan terms don’t assure the success of a program;
- The housing market crash has tightened the lending market;
- Some programs with interest rate buy-down have found the costs to be high; and
- There is a lack of uniform criteria for evaluating credit of small businesses and institutions.

Based on these observations and our research we were able to make a number of recommendations for consideration as design elements in an efficiency loan program in order to maximize the impact of limited resources by achieving broad program participation and deep efficiency retrofits. Our recommendations to achieve broad participation in the program are:

- Budget for and invest in ongoing marketing of the program;
- Simplify the loan application process;
- Offer attractive loan terms;
- Design the program for a target audience; and
- Consider on-bill financing

In order to maximize energy savings by achieving “deep retrofits” we recommend:

- Require whole house energy audit to educate consumers about all cost effective options;
- Package loan programs with utility incentives and rebates;
- Require additional complementary measures to reach beyond the “reactive” market;
- Tier program benefits (such as loan terms) to incentivize greater energy savings; and
- Train participating contractors to ensure the credibility of the program and the achievement of energy savings.

As a follow-up to this work, ACEEE is now conducting a more in-depth analysis of on-bill financing programs, focusing in particular on barriers to these programs and ways to address these barriers. We are focusing on these programs because they offer the potential for higher participation rates as indicated by the fact that half of the programs with high participation rates in this current study are on-bill finance programs.

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For specific program contacts and Web sites, see Appendix B.



## APPENDIX A—ADDITIONAL TABLES

**Table A1: Basic Terms of Surveyed Residential Loan Programs**

Program	State	Interest Rate	Average Loan Amount	Maximum Loan Amount	Maximum Loan Term (Years)
Sacramento Municipal Utility District Residential Loan Program (SMUD)	California	8.75% (secured) 10.75% (unsecured)	\$9,100	\$30,000 \$5,000	10 3
Southern California Gas Company Home Energy Upgrade Financing (SoCal Home)	California	13–15%; utility/state programs 7.5–13%	\$10,000	\$20,000	12
Connecticut Home Energy Solutions (CT Home)	Connecticut	0% (>\$7k); 3% (<\$7k)	\$11,200	\$20,000	10
How\$mart—Efficiency Kansas (KS \$mart)	Kansas	3% (can range from 0–8%)	\$5,600	\$20,000	15
Maryland Home Energy Loan Program (MHELP)	Maryland	7%	\$8,200	\$20,000	10
MassSAVE HEAT Loan Program (Mass HEAT)	Massachusetts	0%	\$4,200–8,200	\$25,000	7
Center for Energy and Environment Home Energy Loan Program (MN CEE)	Minnesota	0% for 3 years or less; 4.99% for 3–10 years	\$7,360	\$20,000	10
Dollar & Energy Savings Loans Residential (NE \$ES)	Nebraska	3.5–5%	\$9,000	\$100,000 (single-family or duplex) \$250,000 (multi-family)	15
Green Jobs—Green New York (GJGNY)	New York	3.6%	\$8,200	\$13,000	15
New York Energy \$mart (NY \$mart)	New York	4–6.5% less than lender's standard rate	\$11,000	\$20,000; \$5,000,000 for multifamily	10
Residential Loan Fund Program (NY RLF)	New York	Floor of 3%; buy-down of 4%	NA	\$20,000 (\$30,000 for ConEd customers)	10
State Energy Loan Program (OR SELP)	Oregon	6–7.5%	\$16,000 (includes renewables)	No maximum	15
Clean Energy Works (OR CEW)	Oregon	4–6%	\$12,500	\$30,000	20
Keystone HELP (PA HELP)	Pennsylvania	7%	\$5,000	\$35,000	10
Vermont Home Performance with Energy Star (VT EStar)	Vermont	3.5%	\$8,000	\$15,000	5
Wisconsin Focus on Energy Loan Program (WI Focus)	Wisconsin	9.99%	NA	\$20,000	10



**Table A2: Basic Terms of Surveyed Commercial, Industrial and Private Loan Program**

<b>Program</b>	<b>State</b>	<b>Interest Rate</b>	<b>Average Loan Amount</b>	<b>Maximum Loan Amount</b>	<b>Maximum Loan Term (Years)</b>
Sempra On-Bill Financing (Sempra)	California	0%	\$29,500	\$250,000; \$1,000,000 for state accounts	10
Connecticut Light & Power Commercial & Industrial Financing (CL&P CI)	Connecticut	0%; raised to 7%	\$25,000–\$50,000	\$250,000	5
Connecticut Light & Power Small Business Energy Advantage Program (CT SB)	Connecticut	0%	\$8,000	\$100,000	<3
Sustainable Agriculture Loan Program (MN Ag)	Minnesota	3%	NA	\$40,000 (individual) \$160,000 (joint)	7
Smart Savings Through Retrofit Technologies (SmartSTART)	New Hampshire	5.64%	\$10,000	NA	5
Dollar & Energy Savings Loans Commercial (NE \$ES)	Nebraska	2.5–5%	NA	\$750,000	15
Green Jobs–Green New York (GJGNY)	New York	3.6%	\$8,200	\$26,000	15
State Energy Loan Program (OR SELP)	Oregon	6–7.5%	\$560,000 (includes renewables)	No maximum	15
Texas LoanStar (TX LStar)	Texas	3%	\$1,500,000	\$5,000,000	10
Efficiency Vermont Agricultural Services (VT Ag)	Vermont	0–2%	\$5,400	\$7,500	4
Efficiency Vermont Lighting Plus Program (VT Light)	Vermont	0%	\$3,950	NA	2

**Table A3: Funding of Programs Surveyed**

<b>Program</b>	<b>Funding Sources</b>	<b>Administrative Budget</b>	<b>Total Lifetime Origination Budgets</b>
SMUD	Utility	\$1.9–2.94 million (offset by fees)	\$447.4 million (Oct 1990–Mar 2011)
SoCal Home	Private funding, loans sold to Fannie Mae	NA	\$300 million (1995–2011)
Sempra	Utility	NA	\$15.5 million (2006–Mar 2011)
CT Home	Private funding, loans sold to Fannie Mae	\$4.5 million	\$10.1 million
KS \$mart	Funding is through a company's access to leveraged debt and federal stimulus money	NA	\$3.2 million (Aug 2007–Mar 2011)
MHELP	Federal stimulus money	\$500,000 (first 4–5 months; averaging \$10,000 per month)	\$16,000 (Jan 2011–Mar 2011)
Mass Heat	Privately funded by 48 Massachusetts institutions	NA	\$75 million (2006–2009)
MN CEE	Government-funded, additional capital from Dept. of Commerce and CEE	NA	\$9.2 million (1993–June 2011)
NE \$ES	Oil overcharge funds and state energy office	\$36 million revolving pool to leverage loans through private lenders	\$218.5 million (1990–Mar 2011)
GJGNY	Launched with money legislated by state. Federal bond funding (QECCB) and public benefit funds.	\$112 million to launch; \$21 million from QECCB; \$20 million per year from public benefit fund	\$1.03 million (2011); additional \$3.07 million pending
NY RLF	Private institutions issue loans. NYSERDA provides interest rate buy-down.	NA	\$2.24 million
NY \$mart	Public benefits charge; private lenders	NA	\$27 million (2007)
OR SELP	State bonds	NA	\$183.7 million (1980–early 2011)
OR CEW	Local government, foundations and federal grant	\$28 million (may include loans)	\$6.25 million
PA HELP	State treasury	NA	\$37 million (2006–2009)
TX LStar	Petroleum violation escrow funds	\$98.6 million original investment to launch	\$296.3 million (1988–June 2011)
VT Light	Capital from private lenders, interest rate buy-down from program budget	\$4.1 million in 2010	\$59,212 (2010)
VT EStar	Private lenders and public benefits charge	NA	\$257,000 (2007)

**Table A4: Risk Management Approaches of Surveyed Programs**

Program	Basis for Application Approval	Secured or Unsecured?	Project Approval Tied to Energy Savings?	Application Approval Rate	Default Rate	Number of Loans Closed
SMUD	Credit rating, good standing with utility, debt to income ratio	Both	No	65–70%	0.04–4%	84,000 (Oct 1990–Mar 2011)
SoCal Home	Credit rating, debt to income (Fannie Mae guidelines)	Unsecured	No	65–70%	NA—outperforms credit cards by 2–3 times	30,600 (1995–2011)
Sempra	Active utility account and >2 years in good standing	Unsecured	No—but the length of the loan term is	NA	0.5%	686 (2006–Mar 2011)
CT Home	Credit rating	Unsecured	No	61%	NA	1,117 (2009–Mar 2011)
CL&P CI	Credit rating and at least 3 years in business	Secured	NA	43%	NA	66 (2010)
CT SB	Utility bill must be in good standing for at least 6 months	Unsecured	NA	96%	<1%	1,400 (2010); 9,000 approximate (avg 1,000/year 2003–2011)
KS \$mart	Utility bill must be in good standing	Unsecured—nonpayment may result in utility disconnect	Yes—monthly payments must be less than 90% of energy savings	100%	0% as of 2008	540 (2007–Mar 2011)
MHELP	Credit rating and debt to income ratio	Unsecured	No	40%	0%	2 (early 2011)
Mass HEAT	Varies with lender	Both	NA	87%	<0.5%	10,000
MN CEE	No income guidelines	Unsecured	No	NA	NA	1,246 (1993–June 2011)
NE \$ES	NA	Both	No—but measures must meet payback timing requirements	Not tracked	0.1%	26,328
SmartSTART	Credit rating and good relationship with utility	Unsecured	Yes—repayment is 75% of savings	NA	NA	8 (2002–2011)
GJGNY	Fannie Mae guidelines and 2 years of utility bills	Unsecured	Yes—savings to investment ratio of 1	60%		126 (Nov 2010–Mar 2011)

<b>Program</b>	<b>Basis for Application Approval</b>	<b>Secured or Unsecured?</b>	<b>Project Approval Tied to Energy Savings?</b>	<b>Application Approval Rate</b>	<b>Default Rate</b>	<b>Number of Loans Closed</b>
NY RLF	Varies with lender	Both	No	NA	NA	411 (Dec 2009–Mar 2011)
OR SELP	Ability to secure the repay the loan	Secured with flexibility (not necessarily a lien)	Possibly—assessment of ability to repay loan conducted on a case-by-case basis	Almost 100%	0.044% (1980–2008); 3% (post 2008)	>700 (1980–Mar 2011)
OR CEW	Credit score and utility history	Unsecured	Yes	NA	NA	500 (June 2009–Feb 2011)
PA HELP	Credit score and debt to income ratio	Both	No	65%	0.5%	6,000
VT Ag	None	Unsecured, but guaranteed	NA	100%	2.5% (1 loan)	40 (2003–2010)
VT Light	None	Unsecured, but guaranteed	No	100%	0%	4 (2010)

**Table A5: Savings and Participation Rates for Surveyed Programs**

<b>Program(s)</b>	<b>State</b>	<b>Eligible Customer Class (Residential, Commercial, Industrial, Public or All)</b>	<b>Total Program Participants</b>	<b>Participation Rate</b>	<b>Average Annual Electricity Consumption per Eligible Customer</b>	<b>Average Annual Electricity Savings per Program Participant</b>	<b>Percent of Electricity Savings Achieved by Program Participants</b>
SMUD	CA	R	84,000	16.0%	9 MWh	NA	NA
CL&P CI and CL&P SB	CT	C and I	2,529	8.2%	111 MWh	19 MWh	17%
CT Home	CT	R	1,117	0.1%	9 MWh	NA	NA
KS \$mart	KA	R and C	540	1.3%	15 MWh	1.8 MWh	12%
Mass HEAT	MA	R	10,000	0.4%	7 MWh	NA	NA
MHELP	MD	R	2	0.0%	12 MWh	NA	15%
MN CEE	MN	R	1,246	0.1%	10 MWh	NA	NA
NE \$ES	NE	A	26,328	2.7%	29 MWh	NA	NA
SmartSTART	NH	C and I	8	0.0%	68 MWh	NA	NA
GJGNY	NY	R	126	0.0%	7 MWh	1.2 MWh	17%
OR SELP	OR	A	700	0.1%	27 MWh	NA	NA
OR CEW	OR	R	500		12 MWh	1.4 MWh	12%
PA HELP	PA	R	6,000	0.1%	10 MWh	NA	NA
TX LoanStar	TX	P	205	NA	NA	641 MWh	NA
VT Light	VT	C	4	NA	40 MWh	2.1 MWh	5%

## APPENDIX B: PROGRAM SUMMARIES AND CASE STUDIES

This appendix contains program summaries for most of the programs surveyed as part of this study.

### CALIFORNIA

Southern California Gas Company Home Energy Upgrade Financing (SoCal Home)

Contact name: Tim McFarland

Contact phone: 714-695-3309

Contact e-mail: [Tmcfarland@viewtechfinancialservices.com](mailto:Tmcfarland@viewtechfinancialservices.com)

Web site: <http://www.sdge.com/residential/homelmpFinance.shtml>

#### Program Information

Lead implementing organization	Viewtech Financial Services
Financial services partner(s)/subcontractor(s)	Fannie Mae
Sector(s)	Residential
Geographic area served	Southern California
Program start date	1995
Program end date	Still operating
Is financing under this program secured or unsecured?	Unsecured
Program budget since inception	NA
Program budget by program year	NA
Sources of capital	Viewtech administers the program. Fannie Mae purchases the loans made by Viewtech.

**Program Description:** This loan was developed to provide homeowners with an unsecured financing option for specified energy-efficient home improvements. Preapproved contractors help customers fill out application and communicate with Viewtech. Upon completion of approved projects payment is wired to the contractor.

#### Financing Statistics

Loans closed, number, and \$ amount	30,600	\$300 million
Loans denied, number, and \$ amount	NA	NA
Avg. loan term	10 year with average payoff in 48 months	
Avg. loan APR, (if variable, please provide)	12.99–14.99% open market rates. Utility/state programs have rates from 7.5%—12.99%.	
Avg. program financing recipient loan \$ amount	\$10,000	
Avg. program financing participant project annual energy savings	NA	
Estimated average life of project energy savings (years)	NA	

#### Underwriting Criteria:

- 640 FICO scores and above
- 50% or less DTI ratio
- No Bankruptcies, foreclosures, repossessions in the last 7 years
- No unpaid judgments, charge-offs, collections exceeding \$2500

**CALIFORNIA**

Sempra On-Bill Financing

Contact name: Frank Spasaro

Contact phone: 800-644-6133

Contact e-mail: [fpsasaro@semprautilities.com](mailto:fpsasaro@semprautilities.com)

Web site: <http://www.socalgas.com/for-your-business/rebates/zero-interest.shtml>

<http://www.sdge.com/business/rebatesincentives/programs/onbillfinancing.shtml>

**Program Information**

Lead implementing organization	Sempra Energy Utility, Southern California Gas & Electric, and San Diego Gas and Electric
Financial services partner	NA
Sectors	Commercial, industrial, agricultural, owners of multi-unit housing and public entities
Geographic area served	Southern California/San Diego region
Program start date	Late 2006
Program end date	Still operating
Is financing under this program secured or unsecured?	Unsecured
Program budget since inception	NA
Program budget by program year	NA
Sources of capital	Utility customers

**Program Description:** Offers eligible customers 0% financing for qualifying energy-efficient business improvements. Institutions are eligible for up to \$250,000 with up to a 10 year payback. State entities are eligible for up to \$1 million. Non-institutions are eligible for up to \$100,000 with a 5 year maximum payback. Repayment is limited to no more than the useful equipment life. Free energy audits are available for qualified projects. Loans are unsecured, but defaults can lead to utility shut off.

**Financing Statistics**

Loans closed, number, and \$ amount	686 (through 3/11)	\$15.5 million
Loans denied, number, and \$ amount	NA	NA
Avg. loan term	Up to 10 years	
Avg. loan APR	0%	
Avg. program financing recipient loan \$ amount	\$29,500	
Avg. program financing participant project annual energy savings	Not tracked	
Estimated average life of project energy savings (years)	NA	

**Underwriting Criteria:** The business must have a SoCalGas account active for two consecutive years, and that account must be in good standing. There is no “minimum years in business” requirement.

**CONNECTICUT**

Connecticut Home Energy Solutions (CT Home)

Contact name: Steven Bruno, Diane del Russo

Contact phone: 860-832-4942

Contact e-mail: [brunosj@nu.com](mailto:brunosj@nu.com)Web site: <http://www.cl-p.com/Home/SaveEnergy/Rebates/HomeEnergySolutions.aspx>**Program Information**

Lead Implementing Organization	Connecticut Light & Power; United Illuminating
Financial services partner(s)/subcontractor(s)	AFC Financial
Sector(s)	Residential
Geographic area served	Connecticut
Program start date	2009
Program end date	Still operating
Is financing under this program secured or unsecured?	Unsecured
Program budget since inception	\$3.4 million
Program budget by program year	NA
Sources of capital	AFC Through Fannie Mae

**Program Description:** This was a pilot for financing residential whole-house retrofits. An authorized contractor performed energy assessments, making on-the-spot improvements such as caulking, and sealing of critical air leaks. Depending on eligibility, rebates were provided for appliances, HVAC systems and insulation. Financing was introduced to Home Energy Solutions vendors to help promote installation of next tier weatherization.

**Financing Statistics**

Loans closed, number, and \$ amount	842	\$8.5 million
Loans denied, number, and \$ amount	NA	NA
Avg. loan term	10 years	
Avg. loan APR	Interest rate on loans subsidized to 0% interest for 85% of loans	
Avg. program financing recipient loan \$ amount	Estimated at \$5,000	
Avg. program financing participant project annual energy savings	NA	
Estimated average life of project energy savings (years)	NA	

**Underwriting Criteria:** Credit rating



**KANSAS**

Efficiency Kansas How\$mart Program

Contact name: Michael Volker

Contact phone: 785-625-1476

Contact e-mail: [mvolker@mwenergy.com](mailto:mvolker@mwenergy.com)

Web site: <http://www.mwenergy.com/howsmart.aspx>

**Program Information**

Lead implementing organization	Midwest Energy
Financial services partner(s)/subcontractor(s)	Efficiency Kansas
Sector(s)	Residential, commercial and public
Geographic area served	Most of the western half of Kansas
Program start date	August 2007
Program end date	Still operating
Is financing under this program secured or unsecured?	Unsecured—however nonpayment results in utility disconnect. Midwest also registers the obligation with the county
Program budget since inception	NA
Program budget by program year	NA
Sources of Capital	Midwest Energy

**Program Description:** All customers are eligible. Audits are free for those that go through the program and complete projects. If recommendations are not followed, a \$200 fee for the audit is assessed after 6 months. Based on recommendations from the audit the customer selects a contractor. When the work is complete Midwest Energy pays the contractor and adds the loan repayment charge to the customer’s bill. Charges must be less than 90% of estimated monthly savings. There is no formal credit check, but utility bills must be current. Funds are from Midwest Energy, although Midwest may access “Efficiency Kansas” funding to provide a low cost source allowing low interest rates to be passed on to customers. Midwest Energy accesses stimulus funds through the Efficiency Kansas program for about 80% of all investment with the remainder of funding from Midwest’s ordinary sources. Prior to Efficiency Kansas, Midwest accessed some funding from the Kansas Housing Resources Corporation.

**Financing Statistics**

Loans closed, number, and \$ amount	540	\$3.2 Million
Loans denied, number, and \$ amount	None	None
Avg. loan term	Residential: 15 years Commercial: 10 years	
Avg. loan APR	Variable. Funding has been as low as 0% for some projects to as high as 8%. Current funding rates are 3% for most residential loans and 6.6% for most commercial loans.	
Avg. program financing recipient loan \$ amount	\$5,600	
Avg. program financing participant project annual energy savings	1,800 kWh per year 270 therms per year	
Estimated average life of project energy savings (years)	Savings are modeled over life of investment, generally 15 years for residential, 10 for commercial, and 7 for commercial lighting applications.	

**Underwriting Criteria:** Efficiency Kansas and Midwest Energy have no income restrictions or underwriting criteria. Any Kansas homeowner or landlord with an existing home or small business can apply. The customer must have a current account balance for at least 12 months.

**MASSACHUSETTS**

MassSAVE HEAT Loan Program (Mass HEAT)

Contact name: Birud Jhaveri

Contact phone: 781-441-3456

Contact e-mail: [Birud.Jhaveri@nstar.com](mailto:Birud.Jhaveri@nstar.com)Web site: <http://www.masssave.com/residential/heating-and-cooling/find-incentives/incentive-details-heat-loan-program>**Program Information**

Lead implementing organization	NStar (also National Grid)
Financial services partner(s)/subcontractor(s)	48 financial institutions
Sector(s)	Residential
Geographic area served	Massachusetts
Program start date	2006
Program end date	Ongoing, with significant expansion in 2011
Is financing under this program secured or unsecured?	Both
Program budget since inception	\$75 million in financing
Program budget by program year	NA
Sources of capital	Private

**Program Description:** The HEAT Loan Program provides customers with a loan from participating lenders to assist with the installation of qualified energy efficient improvements in their homes. The loans are available for up to \$25,000 (depending on the utility). To apply for the loan, the customer must own a 1–4 family residence and obtain a MassSAVE Home Energy Assessment. The loan can be used for improvements such as:

- Attic, wall and basement insulation
- High efficiency heating systems
- High efficiency domestic hot water systems
- Solar hot water systems
- 7-Day digital programmable thermostats
- ENERGY STAR® qualified replacement windows

**Financing Statistics**

Loans closed, number, and \$ amount	10,000 since 2006 4,200 in 2010	\$75 million
Loans denied, number, and \$ amount	NA	NA
Loan term	Maximum 7 years	
Avg. loan APR	0%	
Avg. program financing recipient loan \$ amount	\$4,200-\$8,200	
Avg. program financing participant project annual energy savings	NA	
Estimated average life of project energy savings (years)	NA	

**Underwriting Criteria:** There are no standardized underwriting criteria for the HEAT Loan Program, each local lender uses its own criteria, and there are over 35 participating firms.

**MARYLAND**

Maryland Home Energy Loan Program (MHELP)

Contact name: Terry Daly

Contact phone: 301-738-6280

Contact e-mail: [loans@mdcleanenergy.org](mailto:loans@mdcleanenergy.org)

Web site: [http://mdcleanenergy.org/programs\\_and\\_incentives/clean\\_energy\\_home\\_owner\\_loan\\_program](http://mdcleanenergy.org/programs_and_incentives/clean_energy_home_owner_loan_program)

NOTE: The Maryland Home Energy Loan Program is a very new program and when the initial research for this report was done only two loans had been closed. These two loans were used in the average calculations provided in the body of the report and the information reported below. We have since received an update on the status of this program which as of the beginning of August 2011 has closed a total of 23 loans for a total of \$176,481 and an average loan amount of \$7,673.

**Program Information**

Lead implementing organization	Maryland Energy Administration and Maryland Clean Energy Center
Financial services partner(s)/subcontractor(s)	AFC First Financial
Sector(s)	Residential
Geographic area served	Maryland
Program start date	January 20, 2011
Program end date	Still operating
Is financing under this program secured or unsecured?	Unsecured
Program budget since inception	\$500,000 (4-5 month budget). Could be increased; looking at private funds.
Program budget by program year	NA
Sources of capital	Federal stimulus funding

**Program Description:** Loans are available for up to \$20,000. Measures typically include insulation and HVAC equipment upgrades but are not limited to these improvements. Property must be a primary residence and located in the state in order to be eligible. Single-family detached homes and townhouses are eligible. Condominiums and coops are unable to participate. AFC First receives the application and handles approval, funding and servicing. The program has a tiered interest rate depending on the measures included in the project.

**Financing Statistics**

Loans closed, number, and \$ amount	2 (11 approved)	\$16,400
Loans denied, number, and \$ amount	37 out of 50	NA
Avg. loan term	10 years	
Avg. loan APR	9.99% for equipment upgrades; 6.99% with energy audit, insulation and duct sealing	
Avg. program financing recipient loan \$ amount	\$8,200	
Avg. project cost for participants	\$9,650	
Avg. program financing participant project annual energy savings	15% is what they are seeing on audit, but they only have 2 closed loans.	
Estimated average life of project energy savings (years)	NA	

**Underwriting Criteria:** Credit rating and debt to income ratio.

**NEW HAMPSHIRE**

Smart Savings Through Retrofit Technologies (SmartSTART)

Contact name: Craig Snow

Contact phone: 603-536-8673

Contact e-mail: [snowc@nhec.com](mailto:snowc@nhec.com)Web site: <http://www.nhec.com/>**Program Information**

Lead implementing organization	New Hampshire Electric Coop, also offered by Public Service of New Hampshire
Financial services partner(s)/subcontractor(s)	None
Sector(s)	Commercial and industrial
Geographic area served	Covers approx. 80% of state
Program start date	2002
Program end date	Still operating
Is financing under this program secured or unsecured?	Unsecured
Program budget since inception	NA
Program budget by program year	NA
Sources of capital	Utility

**Program Description:** New Hampshire Electric Co-Op's SmartSTART Program is a no-money-down option to have energy efficient products installed in New Hampshire businesses. The cost of the improvements is repaid based on 75% of the estimated energy bill savings. If the customer moves and the efficiency measures stay, the obligation to pay for the measures passes to the next customer at that meter. The SmartSTART program has mostly been used for lighting upgrades, but can also be used for weatherization, air sealing, insulation, and other efficiency measures. Program approval is based on the customer's good standing with the utility. There is no credit review required.

**Financing Statistics**

Loans closed, number, and \$ amount	8	NA
Loans denied, number, and \$ amount	NA	NA
Avg. loan term	5 year maximum	
Avg. loan APR, (if variable, please provide)	5.64%	
Avg. program financing recipient loan \$ amount	\$10,000 (estimated)	
Avg. program financing participant project annual energy savings	NA	
Estimated average life of project energy savings (years)	NA	

**Underwriting Criteria:** Credit rating and good standing with the utility.

**NEW YORK**

Green Jobs—Green New York (GJGNY)

Contact name: John Ahearn

Contact phone: 518-862-1090 x3519

Contact e-mail: [mja@nyserda.org](mailto:mja@nyserda.org)Web site: [http://www.getenergysmart.org/SingleFamilyHomes/Existing\\_Building/HomeOwner/Financing.aspx#](http://www.getenergysmart.org/SingleFamilyHomes/Existing_Building/HomeOwner/Financing.aspx#)**Program Information**

Lead implementing organization	New York State Energy Research & Development Authority (NYSDERA)
Financial services partner(s)/subcontractor(s)	Energy Finance Solutions (EFS) for residential loan origination; tbd for small, commercial and multifamily
Sector(s)	Residential (1-4 family), multifamily, and small commercial/not-for-profit
Geographic area served	New York
Program start date	November 15, 2010 for residential; spring 2011 for multifamily and small commercial
Program end date	Still operating
Is financing under this program secured or unsecured?	Unsecured residential loans; TBD for other loans.
Program budget since inception	\$112 million from legislation with program launch. Additional \$21 million in federal stimulus being used to lower interest rates.
Program budget by program year	NA
Sources of capital	Legislation, federal stimulus and private

**Program Description:** Loans are available for the installation of eligible energy efficiency measures in owner-occupied 1–4 family homes. NYSEDA established underwriting criteria with EFS originating the loans which NYSEDA purchases at closing. Initial interest rate is 3.49% with ACH payment; 3.99% with automatic payment by check. Maximum loan amounts available are \$13,000 for residential, \$26,000 for small commercial, and \$500,000 for multifamily. A Comprehensive Home Assessment must be performed by a certified contractor. Borrowers must work with the contractor to decide what improvements should be made. Improvements must have a savings to investment ratio of at least 1.

**Financing Statistics**

Loans closed, number, and \$ amount	126	\$1,026,441
Loans denied, number, and \$ amount	325	NA
Avg. loan term	11.6 years	
Avg. loan APR	75% at 3.49% and 25% at 3.99% interest rate for 3.62% overall rate	
Avg. program financing recipient loan \$ amount	\$8,194	
Avg. program financing participant project annual energy savings	1,194 kWh and 48 MMBTU	
Estimated average life of project energy savings (years)	NA	

**Underwriting Criteria:** The New York legislature passed the Green Jobs—Green New York (GJGNY) Act in 2009. Prior, financing was available through Fannie Mae Energy Loans, which required a minimum 640 FICO score to qualify. Apparently, 30% of applications were rejected. Financing through the GJGNY platform attempts to lower the rate using alternative underwriting criteria.

In November 2010, NYSERDA replaced its Fannie Mae Energy Loan with two tiers of underwriting standards for unsecured loans, up to 15 years, from \$3,000 to \$13,000 with an initial interest rate of 3.99%. Tier 1 loans adhere to the Fannie Mae Energy Loan criteria historically used in New York, while Tier 2 requires reliable utility bill payment and good standing on outstanding mortgage obligations. Both tiers apply a minimum debt-to-income ratio of 0.5.

**NEW YORK**

New York Energy \$mart

Contact name: John Ahearn

Contact phone: 518-862-1090 x3519

Contact e-mail: [mja@nyserda.org](mailto:mja@nyserda.org)Web site: None. See instead: <http://www.nyserda.org/resloanfunds.asp>**Program Information**

Lead implementing organization	NYSERDA
Financial services partner	Private lenders
Sector	Residential—single and multi-family
Geographic area served	Customers of specified utilities (excludes Long Island and NY Power Authority and municipal utility districts)
Program start date	July 1998
Program end date	Still operating
Is financing under this program secured or unsecured?	Both
Program budget since inception	NA
Program budget by program year	NA
Sources of capital	Utility public benefits charge

**Program Description:** The program provides an interest rate reduction off of a participating lender's normal interest rate for a term up to 10 years. Projects in existing 1–4 family homes may include heating, insulation, windows and appliances. All other sectors may include renovation or new construction projects that install energy-efficient measures such as lighting, air conditioning, motors, and renewable energy technologies. The participating bank receives an up-front lump sum payment of the subsidy from NYSERDA within 30 days after closing documents for the full term of the loan.

**Financing Statistics**

Loans closed, number, and \$ amount	369 (2007)	\$27 million
Loans denied, number, and \$ amount	NA	NA
Avg. loan term	Up to 10 years	
Avg. loan APR	4–6.5% less than lender's normal market rate	
Avg. program financing recipient loan \$ amount	\$11,000; \$20,000 maximum (single family)	
Avg. program financing participant project annual energy savings	NA	
Estimated average life of project energy savings (years)	NA	

**NEW YORK**

Residential Loan Fund (NY RLF)

Contact name: Joseph DeRosa

Contact phone: 518-862-1090 x3487

Contact e-mail: [jgd@nyserdera.org](mailto:jgd@nyserdera.org)Web site: <http://www.nyserdera.org/resloanfund.asp>**Program Information**

Lead implementing organization	NYSERDA
Financial services partner	Network of participating loan fund lenders (currently 36 lenders)
Sector	Residential—existing 1 to 4 family homes
Geographic area served	The six SBC-participating investor-owned utilities in NYS (statewide minus Long Island and municipal utilities)
Program start date	November, 2009
Program end date	Still operating
Is financing under this program secured or unsecured?	Secured or unsecured, at the option of the lender and the borrower
Program budget since inception	NA
Program budget by program year	NA
Sources of capital	NYSERDA and private lenders

**Program Description:** Fund provides low-interest financing through a network of Participating Residential Loan Fund Lenders to support the installation of qualified energy efficiency improvements in existing 1–4 family homes. The Residential Loan Fund provides an Interest Rate Reduction up to 4%, but may be adjusted to maintain a minimum program interest rate of 3%.

**Financing Statistics**

Loans closed, number, and \$ amount	411 (Dec 2009–Mar 2011)	Approximately \$2.2 million
Loans denied, number, and \$ amount	NA	NA
Avg. loan term	Up to 10 years	
Avg. loan APR	Minimum is 3%	
Avg. program financing recipient loan \$ amount	Loans up to \$20,000, except up to \$30,000 in Consolidated Edison territory	
Avg. program financing participant project annual energy savings	NA	
Estimated average life of project energy savings (years)	NA	

**Underwriting Criteria:** Typically, each participating lender will issue loans according to its own underwriting criteria. There are 36 participating lenders.



**OREGON**

GreenStreet Lending Program  
 Contact name: Energy Trust of Oregon  
 Contact phone: 866-790-2121  
 Contact e-mail: [info@energytrust.org](mailto:info@energytrust.org)  
 Web site: <http://www.greenstreetloan.com/>

**Program Information**

Lead implementing organization	Energy Trust of Oregon
Financial services partner	Umpqua Bank
Sector(s)	Residential and commercial
Geographic area served	Customers of PGE, Pacific Power, NW Natural or Cascade Natural Gas
Program start date	2008
Program end date	Ongoing
Is financing under this program secured or unsecured?	Both options are available
Program budget since inception	NA
Program budget by program year	NA
Sources of capital	Private bank

**Program Description:** Program offers financing options to help residential and commercial consumers carry out energy efficiency improvements. Residential loans include unsecured home improvement loans and home equity loans. Small businesses and owners of multifamily residential property are eligible for commercial real estate improvement loans and business term loans. The loans have no fees or closing costs and can be used for efficient heating and cooling systems, water heating systems, insulation, windows, solar energy systems, air and duct sealing, lighting, appliances, and exterior doors and windows.

**Financing Statistics**

Loans closed, number, and \$ amount	>125 (late 2008-May 2011)	NA
Loans denied, number, and \$ amount	NA	NA
Avg. loan term	NA	
Avg. loan APR	NA	
Avg. program financing recipient loan \$ amount	Res: \$1,000-\$50,000 Small Business: \$5,000-\$200,000	
Avg. program financing participant project annual energy savings	NA	
Estimated average life of project energy savings (years)	NA	

**OREGON**

Small-Scale Energy Loan Program (SELP)

Contact name: Kathy Estes

Contact phone: 503-378-4040

Contact e-mail: [Kathy.estes@state.or.us](mailto:Kathy.estes@state.or.us)Web site: <http://egov.oregon.gov/energy/loans/selphm.shtml>**Program Information**

Lead implementing organization	Oregon Department of Energy
Financial services partner	Directly to borrower
Sectors	Residential, commercial, industrial, public, and non-profit
Geographic area served	Statewide
Program start date	1980
Program end date	Still operating
Is financing under this program secured or unsecured?	Secured—they decide what that means. Could be letter of credit, income stream, etc. Savings defray debt service, but do not count as security.
Program budget since inception	Enterprise fund, self-supporting.
Program budget by program year	NA
Sources of capital	Sale of bonds

**Program Description:** The program promotes energy conservation and renewable resource development by offering low-interest loans. Loans may be used for projects that save energy, produce energy from renewable resources, use recycled materials, or use alternative fuels. Created by a voter authorization for the sale of bonds. The sale of bonds is made on a periodic basis and, occasionally, may be done accommodate a particularly large loan request. There is no legal maximum loan. Size ranges from \$20,000 to \$20 million (there is no maximum loan amount). Terms vary, but are generally set to match the term of the bonds that funded the loans.

**Financing Statistics**

Loans closed, number, and \$ amount	1980–2009: 690 2009: 14	\$183.7 million \$26 million
Loans denied, number, and \$ amount	NA	NA
Avg. loan term	5–15 years	
Avg. loan APR	Residential and commercial rates: 6–7.5%	
Avg. program financing recipient loan \$ amount	\$20,000–20 million for projects	
Avg. program financing participant project annual energy savings	They always do proposed energy savings and work with project to get an estimate. They are in the process of implementing an energy tracking program that will compare actual and expected savings.	
Estimated average life of project energy savings (years)	NA	

**Underwriting Criteria:** The underwriting criteria for this program are not credit score driven, and they will look at the whole picture with credit score as one factor. In addition to a “decent” credit score, the applicant must have good payment history (utility, mortgage, anything that would show up in a credit report), and the debt-to-income should be below 40–45%. C&I projects are very project-specific, but the normal range is 1.25–1.5 debt service coverage ratio, plus a business appraisal will be conducted similar to other lending programs for businesses. The program issues loans conservatively because of the funding source and return requirements.

**PENNSYLVANIA**

Keystone HELP—Energy Efficiency Loan Program (PA HELP)

Contact name: Tessa Shin

Contact phone: 888-232-3477 or 610-433-7486 x2692

Contact e-mail: [tshin@afcfirst.com](mailto:tshin@afcfirst.com)

Web site: <http://www.keystonehelp.com/index.php>

**Program Information**

Lead implementing organization	Pennsylvania Department of Environmental Protection, Pennsylvania Treasury Department, and Pennsylvania Housing Finance Agency
Financial services partner(s)/subcontractor(s)	AFC First Financial
Sector(s)	Residential
Geographic area served	Pennsylvania
Program start date	February 2009, Revised in 2010
Program end date	Still operating
Is financing under this program secured or unsecured?	Both
Program budget since inception	\$40 million in loans at one point—seeking to sell a \$25 million portfolio
Program budget by program year	NA
Sources of capital	Pennsylvania Treasury sponsored using its balance sheet to fund loans

**Program Description:** Low rate, low payment financing program for energy efficiency home improvements and geothermal heat pump systems. Homeowners who own and make qualifying improvements to their one- or two-unit primary residence located in the state and whose combined annual household income does not exceed \$150,000 are eligible to apply for loans under this program. Eligible applicants may receive only one loan during each fiscal year, but they may apply for additional loans in future years, as long as the additional projects comply with the published guidelines current at the time of application.

**Financing Statistics**

Loans closed, number, and \$ amount	6,000+	\$45.8 million
Loans denied, number, and \$ amount	NA	NA
Avg. loan term	10 years	
Avg. loan APR	7%	
Avg. program financing recipient loan \$ amount	\$5,000	
Avg. program financing participant project annual energy savings	NA	
Estimated average life of project energy savings (years)	NA	

**Underwriting Criteria:** Consumers are eligible for HELP loans down to a FICO score of 640, though a 680 FICO is required to obtain the maximum loan volume of \$15,000. Besides income verification, the only other underwriting criteria is that individuals with lower FICO scores have a maximum debt-to-income ratio of 45% and those with higher FICO scores have a maximum debt-to-income ratio of 50%. The average FICO score is 767 and the average debt to income ratio is 36%.

**TEXAS**

Texas LoanStar Program (TX LStar)

Contact name: Eddy Trevino

Contact phone: 512-463-1876

Contact e-mail: [eddy.trevino@cpa.state.tx.us](mailto:eddy.trevino@cpa.state.tx.us)Web site: <http://seco.cpa.state.tx.us/lr>**Program Information**

Lead implementing organization	State Energy Conservation Office
Financial services partner(s)/subcontractor(s)	None
Sector(s)	Public entities, including state, public school, colleges, university, and non-profit hospital facilities
Geographic area served	Texas
Program start date	1989
Program end date	Still operating
Is financing under this program secured or unsecured?	NA
Program budget since inception	NA
Program budget by program year	\$126 million/\$21 million annual loan allocation/\$98.6 million revolving loan amount
Sources of capital	Petroleum violation escrow funds from federal government

**Program Description:** Low-interest loans for Energy Cost Reduction Measures (ECRMs). Measures include, but are not limited to: HVAC, lighting, and insulation. Funds can be used for retrofitting existing equipment or, in the case of new construction, to finance the difference between standard and high efficiency equipment. Projects are repaid through energy cost savings. Maximum loan amount of \$5 million.

**Financing Statistics**

Loans closed, number, and \$ amount	1989–2007: 191 2009: 5 2010: 4	>\$240 million >\$22 million \$7 million
Loans denied, number, and \$ amount	NA	NA
Avg. loan term	5.7 years; 10 year maximum	
Avg. loan APR	3%	
Avg. program financing recipient loan \$ amount	NA	
Avg. program financing participant project annual energy savings	\$252 million cumulative energy savings	
Estimated average life of project energy savings (years)	NA	

**Underwriting Criteria:** This program does not have any underwriting criteria, the only requirement is that it is a state agency buildings or public higher education building.

**VERMONT**

Efficiency Vermont Lighting Plus Program (VT Light)

Contact name: Rich Fleury

Contact phone: 888-921-5990 x1189

Contact e-mail: [rfleury@veic.org](mailto:rfleury@veic.org)

Web site: NA

**Program Information**

Lead implementing organization	Efficiency Vermont
Financial services partner(s)/subcontractor(s)	Opportunities Credit Union/RISE Engineering
Sector(s)	Commercial
Geographic area served	Rutland/Chittenden/Southern Vermont/ Saint Albans — demand constrained areas of Vermont
Program start date	September 2007
Program end date	March 2011
Is financing under this program secured or unsecured?	Guaranteed by Efficiency Vermont
Program budget since inception	Approximately \$16 million for entire Lighting Plus budget including financing
Program budget by program year	2007—<500K (Startup and pilot phase) 2008—\$7.5 Million 2009—\$4.1 Million 2010—\$4.1 Million 2011—Approx. \$1.9 Million
Sources of capital	Capital came from Credit Union partners. Interest rate incentives came from the program budget

**Program Description:** Turn-key lighting retrofit services targeting small and medium sized customers in Vermont that are located in demand constrained areas. Program discontinued in 2011 due to market saturation. In 2007 no financing was necessary because Lighting Plus program paid for 100% of the cost of installing the lighting measures. Starting in 2008 incentives were reduced and negotiated for each project so that remaining investment by customer would be earned back within one year through energy savings. Subsidized financing was offered for the customer investment amount..

**Financing Statistics**

Loans closed, number, and \$ amount	4	\$24,677
Loans denied, number, and \$ amount	0	NA
Avg. loan term	2 years	
Avg. loan APR	0%	
Avg. program financing recipient loan \$ amount	\$3,950	
Avg. program financing participant project annual energy savings	32,056 kWh	
Estimated average life of project energy savings (years)	NA	

**Underwriting Criteria:** This program does not really have any underwriting criteria because the loans are guaranteed by Efficiency Vermont.

**VERMONT**

Efficiency Vermont—Agricultural Services (VT Ag)

Contact name: Jennifer Osgood

Contact phone: 802-658-6060 x1314

Contact e-mail: [josgood@veic.org](mailto:josgood@veic.org)Web site: [www.encyvermont.com](http://www.encyvermont.com)**Program Information**

Lead implementing organization	Efficiency Vermont
Financial services partner(s)/subcontractor(s)	Opportunities Credit Union
Sector(s)	Agricultural
Geographic area served	Vermont
Program start date	2003
Program end date	Still operating
Is financing under this program secured or unsecured?	Efficiency Vermont will guarantee loan if needed
Program budget since inception	No specific budget allocated
Program budget by program year	NA
Sources of capital	Energy Efficiency Charge on all electric bills in the state of Vermont for administrative costs. Capital comes from commercial sources.

**Program Description:** Provides loans to Vermont farmers interested in completing energy efficiency improvements on farms. Credit union administers loan and Efficiency Vermont provides technical assistance and interest rate buy-down. Program has 100% application approval rate.

**Financing Statistics**

Loans closed, number, and \$ amount	40	\$217,221
Loans denied, number, and \$ amount	0	0
Avg. loan term	2–4 years	
Avg. loan APR	0–2%	
Avg. program financing recipient loan \$ amount	\$5,400	
Avg. program financing participant project annual energy savings	NA	
Estimated average life of project energy savings (years)	NA	

**Underwriting Criteria:** This program does not really have any underwriting criteria because the loans are guaranteed by Efficiency Vermont

**WISCONSIN**

Focus on Energy Home Performance & Efficient Heating and Cooling Loan Program (WI Focus)

Contact name: Nancy O'Brien

Contact phone: 800-969-9322 x237

Contact e-mail: [efs@energyfinancesolutions.com](mailto:efs@energyfinancesolutions.com) or [nancyo@weccusa.org](mailto:nancyo@weccusa.org)

Web site: <http://www.focusonenergy.com/Residential/> and

<http://www.energyfinancesolutions.com/main/homeownerswione/title/%3EWisconsin>

**Program Information**

Lead implementing organization	Focus on Energy
Financial services partner(s)/subcontractor(s)	Energy Finance Solutions (EFS)
Sector(s)	Residential
Geographic area served	Wisconsin (specific utilities only, see list here: <a href="http://www.focusonenergy.com/files/Document_Management_System/Misc/participatingutilities_list.pdf">http://www.focusonenergy.com/files/Document_Management_System/Misc/participatingutilities_list.pdf</a> )
Program start date	1995
Program end date	Still operating
Is financing under this program secured or unsecured?	Unsecured
Program budget since inception	NA
Program budget by program year	NA
Sources of capital	Government and private lender

**Program Description:** Loans up to \$10,000 available with no fees or closing costs and 100% of installation costs can be financed. The approval process is very quick (30 minutes or less). Applicants must have a minimum credit score of 640. Eligible measures include heating and cooling system, water heating, insulation and air sealing. The program requires the use of pre-approved contractors. Customers using financing cannot also receive cash-back rewards for the same measures from Focus on Energy

**Financing Statistics**

Loans closed, number, and \$ amount	NA	NA
Loans denied, number, and \$ amount	NA	NA
Avg. loan term	3, 5, 7 or 10 years	
Avg. loan APR	9.99%	
Avg. program financing recipient loan \$ amount	Up to \$10,000	
Avg. program financing participant project annual energy savings	NA	
Estimated average life of project energy savings (years)	NA	

**Underwriting Criteria:**

Tier I: Minimum FICO score of 640, a maximum debt to income ratio of 50%, no bankruptcies within the last 7 years and no judgments/collections/tax liens in excess of \$2,500.

Tier II: This was intended to increase eligibility/participation for those who do not meet Tier I. Additional requirements are included for utility bill payment and mortgage payment history:

- No minimum FICO score, but there is a maximum D-to-I ratio of 55%;
- If the applicant has a 680 FICO score or higher, the D-to-I ratio can rise up to 70%;
- There can be no bankruptcy in the last 5 years;
- There can be no outstanding judgments/collections/tax liens in excess of \$2,500.
- The utility bill must be current for 2 consecutive months during each of the last two years;

- There can be no utility or mortgage payments more than 60 days late in the last 2 years;  
and
- Applicant must be current on mortgage payments for the last 12 months.





## Local Governments and Public School Systems by Type and State: 2007

Geographic area	General purpose						Special purpose				
	Total	Total	County <sup>1</sup>	Subcounty			Total	Special districts	Public school systems		
				Total	Municipal	Town or township			Total	School districts	Dependent public school systems <sup>2</sup>
1	2	3	4	5	6	7	8	9	10	11	
<b>United States</b>	89,476	39,044	3,033	36,011	19,492	16,519	50,432	37,381	14,561	13,051	1,510
Alabama	1,185	525	67	458	458	-	660	529	131	131	-
Alaska	177	162	14	148	148	-	15	15	54		54
Arizona	645	105	15	90	90	-	540	301	253	239	14
Arkansas	1,548	577	75	502	502	-	971	724	247	247	-
California	4,344	535	57	478	478	-	3,809	2,765	1,102	1,044	58
Colorado	2,416	332	62	270	270	-	2,084	1,904	180	180	-
Connecticut	649	179	-	179	30	149	470	453	166	17	149
Delaware	338	60	3	57	57	-	278	259	19	19	-
District of Columbia	2	1	-	1	1	-	1	1	2		2
Florida	1,623	477	66	411	411	-	1,146	1,051	95	95	-
Georgia	1,439	689	154	535	535	-	750	570	180	180	-
Hawaii	19	4	3	1	1	-	15	15	1		1
Idaho	1,240	244	44	200	200	-	996	880	116	116	-
Illinois	6,994	2,833	102	2,731	1,299	1,432	4,161	3,249	912	912	-
Indiana	3,231	1,666	91	1,575	567	1,008	1,565	1,272	293	293	-
Iowa	1,954	1,046	99	947	947	-	908	528	380	380	-
Kansas	3,931	2,084	104	1,980	627	1,353	1,847	1,531	316	316	-
Kentucky	1,346	537	118	419	419	-	809	634	175	175	-
Louisiana	526	363	60	303	303	-	163	95	69	68	1
Maine	850	504	16	488	22	466	346	248	299	98	201
Maryland	256	180	23	157	157	-	76	76	39		39
Massachusetts	861	356	5	351	45	306	505	423	332	82	250
Michigan	2,893	1,858	83	1,775	533	1,242	1,035	456	730	579	151
Minnesota	3,526	2,729	87	2,642	854	1,788	797	456	341	341	-
Mississippi	1,000	378	82	296	296	-	622	458	167	164	3
Missouri	3,723	1,378	114	1,264	952	312	2,345	1,809	536	536	-
Montana	1,273	183	54	129	129	-	1,090	758	332	332	-
Nebraska	2,659	1,077	93	984	530	454	1,582	1,294	288	288	-
Nevada	198	35	16	19	19	-	163	146	17	17	-
New Hampshire	545	244	10	234	13	221	301	137	174	164	10

New Jersey	1,383	587	21	566	324	242	796	247	625	549	76
New Mexico	863	134	33	101	101	-	729	633	96	96	-
New York	3,403	1,604	57	1,547	618	929	1,799	1,119	716	680	36
North Carolina	963	648	100	548	548	-	315	315	173		173
North Dakota	2,699	1,730	53	1,677	357	1,320	969	771	198	198	-
Ohio	3,702	2,334	88	2,246	938	1,308	1,368	700	668	668	-
Oklahoma	1,880	671	77	594	594	-	1,209	642	567	567	-
Oregon	1,546	278	36	242	242	-	1,268	1,034	234	234	-
Pennsylvania	4,871	2,628	66	2,562	1,016	1,546	2,243	1,728	515	515	-
Rhode Island	134	39	-	39	8	31	95	91	36	4	32
South Carolina	698	314	46	268	268	-	384	299	85	85	-
South Dakota	1,983	1,291	66	1,225	309	916	692	526	166	166	-
Tennessee	928	439	92	347	347	-	489	475	136	14	122
Texas	4,835	1,463	254	1,209	1,209	-	3,372	2,291	1,082	1,081	1
Utah	599	271	29	242	242	-	328	288	40	40	-
Vermont	733	296	14	282	45	237	437	144	293	293	-
Virginia	511	324	95	229	229	-	187	186	135	1	134
Washington	1,845	320	39	281	281	-	1,525	1,229	296	296	-
West Virginia	663	287	55	232	232	-	376	321	55	55	-
Wisconsin	3,120	1,923	72	1,851	592	1,259	1,197	756	444	441	3
Wyoming	726	122	23	99	99	-	604	549	55	55	-

- Represents zero.

<sup>1</sup> Excludes areas corresponding to counties but having no organized governments.

<sup>2</sup> Systems operated by a state, county, municipal, or township government. These are not included in total of local government.

Source: U.S. Census Bureau, 2007 Census of Governments.

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**Department of Energy**  
Washington, DC 20585

## **Guidelines for Pilot PACE Financing Programs**

**May 7, 2010**

This document provides best practice guidelines to help implement the Policy Framework for PACE Financing Programs announced on October 18, 2009.<sup>1</sup> Property Assessed Clean Energy (PACE) financing programs allow state and local governments, where permitted by state law, to extend the use of land-secured financing districts to fund energy efficiency and renewable energy improvements on private property.<sup>2</sup> PACE programs attach the obligation to repay the cost of improvements to the property, not to the individual borrower. After consultation within the federal government and with other stakeholders, the Department of Energy has prepared the following Best Practices to help ensure prudent financing practices during the current pilot PACE programs.

These best practice guidelines are significantly more rigorous than the underwriting standards currently applied to land-secured financing districts. Especially in light of the exceptionally challenging economic environment and recovering housing market, the following best practice guidelines for pilot PACE financing programs are important to provide an extra layer of protection to both participants who voluntarily opt into PACE programs, and to lenders who hold mortgages on properties with PACE tax liens. These best practice guidelines may evolve over time as we learn more about the performance of PACE programs and are able to identify new best practices.<sup>3</sup> All pilot PACE financing programs are strongly encouraged to follow these best practice guidelines. This document is divided into two sections: Program Design Best Practice Guidelines and Assessment Underwriting Best Practice Guidelines.

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<sup>1</sup> The Policy Framework for PACE Financing Programs is available here:  
[http://www.whitehouse.gov/assets/documents/PACE\\_Principles.pdf](http://www.whitehouse.gov/assets/documents/PACE_Principles.pdf).

<sup>2</sup> For more information on PACE programs, please visit:  
<http://www1.eere.energy.gov/wip/solutioncenter/financialproducts/PACE.html>. PACE programs are paid through a tax lien on the property. Lien priority is a matter of state law, and these best practices do not (and cannot) preempt state law.

<sup>3</sup> These best practice guidelines are primarily for the residential market. Different standards may be appropriate in non-residential markets.

## **Program Design Best Practice Guidelines:**

Local governments should consider the following program design features to increase the reliability of energy and economic performance for the benefit of program participants, mortgage holders, and investors.

### **1. Expected Savings-to-Investment Ratio (SIR) Greater Than One<sup>4</sup>**

The primary rationale for PACE programs is to pursue a legally-defined “public purpose”, which generally includes environmental, health, and energy independence benefits.<sup>5</sup> Although traditional land-secured assessment districts do not require projects to “pay for themselves”, PACE financing should generally be limited to cost effective measures to protect both participants and mortgage holders until PACE program impacts become more widely understood.

The financed package of energy improvements should be designed to pay for itself over the life of the assessment. This program attribute improves the participant’s debt-to-income ratio, increasing the participant’s ability to repay PACE assessments and other debt, such as mortgage payments. Local governments should consider three program design features to ensure that the expected SIR is greater than one:<sup>6</sup>

- An energy audit and modeling of expected savings to identify energy efficiency and renewable energy property improvement measures that are likely to deliver energy and dollar savings in excess of financed costs over the assessment term. Local governments should limit investment to those identified measures.

---

<sup>4</sup> SIR = [Estimated savings over the life of the assessment, discounted back to present value using an appropriate discount rate] divided by [Amount financed through PACE assessment]

Savings are defined as the positive impacts of the energy improvements on participant cash flow. Savings can include reduced utility bills as well as any payments for renewable energy credits or other quantifiable environmental and health benefits that can be monetized. Savings should be calculated on an annual basis with an escalator for energy prices based either on the Energy Information Agency (EIA) U.S. forecast or a substantiated local energy price escalator.

<sup>5</sup> Specific public purposes are defined by the state’s enabling legislation, which may vary somewhat between states. Existing legislation is available here:

<http://www.dsireusa.org/incentives/index.cfm?EE=1&RE=1&SPV=0&ST=0&searchtype=PTFAuth&sh=1>

<sup>6</sup> These program options are not mutually exclusive and programs should consider deploying them in concert. In addition, these measures could be coordinated with the proposed HOMESTAR’s Silver and Gold guidelines. More Information on HOMESTAR is available here:

<http://www.whitehouse.gov/the-press-office/fact-sheet-homestar-energy-efficiency-retrofit-program>

- In lieu of audits, programs may choose to limit eligibility to those measures with well-documented energy and dollar savings for a given climate zone. There are a number of energy efficiency and renewable energy investments that are most likely to yield a SIR of greater than one for most properties in a region.
- Encourage energy efficiency before renewable energy improvements. The economics of renewable energy investments can be enhanced when packaged with energy efficiency measures. The SIR should be calculated for the entire package of investments, not individual measures.

## **2. The Term of the Assessment Should Not Exceed the Useful Life of the Improvements**

This best practice guidelines document is intended to ensure that a property owner's ability to repay is enhanced throughout the life of the PACE assessment by the energy savings derived from the improvements. It is important to note that the useful life of the measure often exceeds the assessment term.

## **3. Mortgage Holder of Record Should Receive Notice When PACE Liens Are Placed**

Mortgage holders should receive notice when residential property owners fund improvements using a PACE assessment.<sup>7</sup>

## **4. PACE Lien Non-Acceleration Upon Property Owner Default**

In states where non-acceleration of the lien is standard for other special assessments, it should also be standard for PACE assessments. After a foreclosure, the successor owners are responsible for future assessment payments. Non-acceleration is an important mortgage holder protection because liability for the assessment in foreclosure is limited to any amount in arrears at the time; the total outstanding assessed amount is not due in full.

## **5. The Assessment Should Be Appropriately Sized**

PACE assessments should generally not exceed 10% of a property's estimated value (i.e. a property value-to-lien ratio of 10:1). In addition, because of the administrative requirements of administering PACE programs, assessments should generally not be issued for projects below a minimum cost threshold of approximately \$2500. These measures ensure that improvements are "right-sized" for properties and for the administrative costs of piloting PACE programs. PACE programs may also choose to set the maximum assessment relative to median home values.

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<sup>7</sup> A different standard may apply to non-residential properties.

## **6. Quality Assurance and Anti-Fraud Measures**

Quality assurance and anti-fraud measures are essential protections for property owners, mortgage holders, investors, and local governments. These measures should include:

- Only validly licensed auditors and contractors that adhere to PACE program terms and conditions should be permitted to conduct PACE energy audits and retrofits. Where feasible or necessary, auditors and contractors should have additional certifications appropriate to the installed measures.
- Inspections should be completed on at least a portion of participating properties upon project completion to ensure that contractors participating in the PACE program are adequately performing work.
- If work is not satisfactorily completed, contractor payment should be withheld until remedied. If not satisfactorily remedied, programs should disqualify contractors from further PACE-related work.
- Property owners should sign-off before payment is issued for the work.

## **7. Rebates and Tax Credits**

The total amount of PACE financing should be net of any expected direct cash rebates for the energy efficiency or renewable energy improvements chosen. However, other non-direct cash incentives can be more difficult to manage. For example, calculating an expected income tax credit can be complicated, as not all participants will have access to the tax credit and there will be time lags between project completion and tax credit monetization. Programs should therefore consider alternative structures for financing this gap, including assignment of rebates and tax credits to repay PACE assessments, short-term assessment additions, and partnering with third party lenders that offer short-term bridge financing. At the minimum, programs should provide full disclosure to participants on the implications and options available for monetizing an income tax credit.

## **8. Participant Education**

PACE may be an unfamiliar financing mechanism to program participants. As such, it is essential that programs educate potential participants on how the PACE model works, whether it is a property owner's most appropriate financing mechanism, and the opportunities and risks PACE program participation creates for property owners. Programs should clearly explain and provide disclosures of the following:

- How PACE financing works

- Basic information on other financing options available to property owners for financing energy efficiency and renewable energy investments, and how PACE compares
- All program fees and how participants will pay for them
- Effective interest rate including all program fees, consistent with the Good Faith Estimate (GFE) of the Real Estate Settlement Procedure Act (RESPA) and the early and final disclosure of the Truth in Lending Act (TILA).
- PACE assessment impact on escrow payments (if applicable)
- Risk that assessment default may trigger foreclosure and property loss
- Information on transferring the assessment at time of sale
- Options for and implications of including tax credits in the financed amount

## **9. Debt Service Reserve Fund**

For those PACE programs that seek third party investors, including investors in a municipal bond to fund the program, an assessment reserve fund should be created to protect investors from late payment or non-payment of PACE assessments.

## **10. Data Collection**

Pilot programs should collect the data necessary to evaluate the efficacy of PACE programs. Examples of typically collected data would include: installed measures, investment amount, default and foreclosure data, expected savings, and actual energy use before and after measures installation. To the extent possible, it's important that programs have access to participant utility bills, ideally for 18 months before and after the improvements are made. The Department of Energy will provide more detailed information on collecting this data, obtaining permission to access utility bills, and how to report program information to enable a national PACE performance evaluation.

### **Assessment Underwriting Best Practices Guidelines:**

Local governments should design underwriting criteria to reduce the risk of default and impairment to the property's mortgage holders. Many best practices for reducing these risks are included in the previous section. In addition, underwriting criteria for individual assessments should include the following:

#### **1. Property Ownership**

- Check that applicant has clear title to property and that the property is located in the financing district.



- Check the property title for restrictions such as details about power of attorney, easements, or subordination agreements.

## 2. Property-Based Debt and Property Valuation

- Estimated property value should be in excess of property owner’s public and private debt on the property, including mortgages, home equity lines of credit (HELOCs), and the addition of the PACE assessment, to ensure that property owners have sufficient equity to support the PACE assessment. Local governments should be cautious about piloting the PACE model in areas with large numbers of “underwater” mortgages.
- To avoid placing an additional tax lien on properties that are in distress, have recently been in distress, or are at risk for distress, the following should be verified:
  - There are no outstanding taxes or involuntary liens on the property in excess of \$1000 (i.e. liens placed on property for failure of the owner to comply with a payment obligation).  
Property is not in foreclosure and there have been no recent mortgage or other property-related debt defaults.
- Programs should attain estimated property value by reviewing assessed value. This is typically used in assessment districts. If assessed value appears low or high, programs should review comparable market data to determine the most appropriate valuation. If programs believe the estimated value remains inaccurate or there is a lack sufficient comparable market data to conduct an analysis, they should conduct a desktop appraisal.<sup>8</sup>

## 3. Property Owner Ability to Pay

PACE programs attach the obligation to repay the cost of improvements to the property (not to the individual borrower). The standard underwriting for other special assessments only consists of examining assessed value to public debt, the total tax rate, and the property tax delinquency rate. However, we deem certain precautions important due to the current vulnerability of mortgage lenders and of the housing market in many regions. These precautions include:

- A Savings-to-Investment Ratio (SIR) greater than one, as described above, to maintain or improve the property owner’s debt-to-income ratio.
- Property owner is current on property taxes and has not been late more than once in the past 3 years, or since the purchase of the house if less than three years.<sup>9</sup>

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<sup>8</sup> A desktop appraisal involves a licensed appraiser estimating the value of a property without a visual inspection. These appraisals cost approximately \$100.

<sup>9</sup> Applicants that have purchased the property within 3 years have recently undergone rigorous credit analyses that compensate for the short property tax payment history.

- Property owner has not filed for or declared bankruptcy for 7 years.

These best practice guidelines will evolve over time with continued monitoring of the performance of pilot PACE financing programs.



# **Economic Impacts from the Boulder County, Colorado, ClimateSmart Loan Program: Using Property-Assessed Clean Energy (PACE) Financing**

Marshall Goldberg and Jill K. Cliburn  
*MRG & Associates*

Jason Coughlin  
*National Renewable Energy Laboratory*

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## List of Acronyms

CSLP	ClimateSmart Loan Program (Boulder County, Colo.)
DOE	U.S. Department of Energy
FHFA	Federal Housing Finance Agency
IMPLAN	Impact Analysis for Planning Model
HELOC	home equity line of credit
I-O	input-output (economic analysis)
PV	photovoltaic (rooftop solar electric system)
TAA	Trade Adjustment Assistance Program

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## Executive Summary

This report examines the economic impacts (including job creation) from the Boulder County, Colorado, ClimateSmart Loan Program (CSLP), an example of Property-Assessed Clean Energy (PACE) financing. The CSLP was the first test of PACE financing on a multi-jurisdictional level (involving individual cities as well as the county government). It was also the first PACE program to comprehensively address energy efficiency measures and renewable energy, and it was the first funded by a public offering of both taxable and tax-exempt bonds. The first phase of the residential CSLP financed about \$9.8 million in residential energy retrofits, most of which were completed in 2009. This report focuses on 598 project invoices and \$9.0 million in project spending.

The report provides a program overview and economic impact analysis of program spending and energy savings using an input-output (I-O) model. The report also provides a qualitative assessment of factors that affected the resulting economic impacts, and profiles some program participants and contractors. The analysis focuses on Boulder County benefits but also includes an assessment of associated statewide economic benefits.

Results of the analysis indicate that:

- CSLP spending in Boulder County alone contributed to 85 short-term jobs, more than \$5 million in earnings, and almost \$14 million in economic activity in the county.
- CSLP spending supported another 41 short-term jobs throughout the state but outside of Boulder County, \$2 million in additional earnings, and almost \$6 million in additional economic activity statewide.
- Assuming the program were extended with the same annual funding and participation, the 5- and 10-year trajectory of economic impacts would forecast additional benefits and sustained job opportunities.
- Reduced energy use saved participants a combined total of about \$125,000 during the first year on their electric and gas utility bills.

Total CSLP costs for Phase 1, including the development of a risk-management reserve fund, loan fees, loans, and other costs, totaled about \$13 million. Short-term, in-county benefits alone exceed this investment. Statewide economic benefits enhance the program value.

From a qualitative perspective, there are indications that declining program implementation costs (including interest rates and costs related to the reserve fund, as well as marketing and administrative fine-tuning) would improve economic results in future CSLP funding cycles.

Program design decisions, including one that brought in a high percentage of out-of-town contractors, resulted in many of the economic benefits leaking from the local economy. Yet the program had a variety of objectives, including not only creating local jobs but also reducing greenhouse gas emissions from a range of measures. Some products and skill sets needed to meet these objectives were not readily available in the county. Further, the CSLP aimed to prime the pump for green jobs development in the county and statewide. By far, the greatest number of jobs gained (57% of in-county jobs) were related to solar photovoltaic (PV) projects. However, the

first-year energy savings from PV are relatively small compared to the upfront cost of a PV installation, which is designed for long-term (30-year), fuel-free operation.

The qualitative assessment reveals that the CSLP spurred significant energy retrofit spending beyond that reflected on loan applications. Many residents attended CSLP informational sessions to learn more about potential home improvements, but then ended up financing those improvements through channels other than the CSLP, such as home equity lines of credit (HELOC), cash, or in the case of PV systems, leasing the system from a solar company. Cash spending and alternatively financed spending probably increased the total of all program-related spending by 20% or more. Most of this spending escaped documentation because it encompasses many possibilities, from the PV system that was purchased using home-equity lending to the replacement of leaky windows with those of a better quality, that did not meet loan qualification standards. Additionally, there were expenditures for retrofit-related paint jobs and cosmetic improvements, as well as major home remodels inspired by the availability of low-interest financing for at least part of the job. The relationship of these expenditures to the CSLP program was confirmed by surveys of CSLP workshop registrants and energy project contractors. CSLP program participants profiled in this report shed extra light on how the availability of PACE financing spurred the market for energy efficiency and renewables.

The Boulder County ClimateSmart program is one of only a handful of local PACE financing programs that reached implementation before the Federal Housing Finance Agency (FHFA) effectively placed a moratorium on such programs in July 2010. The CSLP proceeded with implementing a commercial PACE program, but it suspended the residential program, which was poised for Phase 2 implementation. The findings of this study show that continuing the CSLP would have additional benefits well beyond the increased cost-effectiveness from administrative and marketing lessons learned. These benefits include:

- Significant, long-term utility bill savings for participants.
- Job creation for Boulder County every year, including more than 90 jobs in 2020 alone if the program were continued to that year.
- An increase in overall economic activity in the county every year for the duration of the program. Countywide economic output in 2020 alone would increase by approximately \$15 million.
- Expansion of statewide economic impacts and the likelihood that a growing market for energy efficiency and renewables could attract higher-value manufacturing and related job benefits to the state.

Arguably, programs like the CSLP “prime the pump” establish a market for energy efficiency and renewable energy products that could be manufactured profitably in-state, creating much greater job impacts and economic benefits.

# 1 Introduction

The Boulder County, Colorado, ClimateSmart Loan Program (CSLP) was the first test of Property-Assessed Clean Energy (PACE) financing on a multi-jurisdictional level (involving individual cities as well as the county government). It was also the first PACE program to comprehensively address energy efficiency measures and renewable energy, and it was the first funded by a public offering of both taxable and tax-exempt bonds. Initiated in 2009, the first phase of the CSLP included two rounds of residential project financing and resulted in about \$9.8 million in project loans. Associated program costs and fees and funding of a reserve account for the bonds added \$3.2 million, for a total of about \$13 million in Phase 1 program spending. This makes it the second largest PACE financing program in operation through mid-2010, second to Sonoma County, California (\$32.8 million).

The 2008 ballot measure that funded the CSLP authorized Boulder County to issue up to \$40 million in bonds, including \$14 million in tax-exempt bonds. The tax-exempt bonds were intended for low-income-qualified projects. Subsequently, the county sponsored two bond issues for Phase 1 residential financing. County administrators planned a second phase of the program to begin by mid-2010 for additional residential and commercial financing. However, due to a freeze on residential PACE programs nationwide that was imposed by federal mortgage agencies, Boulder County suspended residential CSLP financing indefinitely. As it was not directly affected by the freeze, the \$12 million commercial program moved forward. Boulder County's first commercial CSLP round closed in August 2010.

The CSLP is one of several programs under a countywide Sustainable Energy Plan, which has key goals in (1) reducing greenhouse gas emissions, (2) improving the environment, (3) saving energy, and (4) providing direct and indirect economic benefits. This study focuses on economic benefits, specifically those from Phase 1 of the residential CSLP. It looks at 598 energy home improvement loans that together comprise just over \$9 million in energy efficiency and renewable energy spending through program loans<sup>1</sup> and asks questions such as: How much money was spent in the county and in the state in order to meet home retrofit needs for materials and labor? What was the total related energy bill savings? How did direct and indirect investment in energy efficiency and renewable energy measures generate jobs? What kinds of jobs and where? How might the respending of energy bill savings and related business income result in additional economic benefits and jobs of all kinds?

Though it is specific to the Boulder County experience, this study also sheds light on how the PACE financing model creates economic benefits and how these benefits could be increased. It highlights the drivers of green jobs development locally, statewide, and nationally. It also spotlights common challenges, from the need for longer test periods that would allow administrators to work out program kinks, to the need for innovative ways to promote local contractors when PACE communities are part of large, interdependent metro areas.

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<sup>1</sup> The economic analysis for this report drew upon available participant invoice data, which was available for just over \$9 million in CSLP lending. This analysis does not include spending on loan fees or required reserves. A small number of customers delayed spending their approved loan dollars, and their spending was not included in this analysis.

Although this study is not a process evaluation, some aspects of program implementation that bear on the economic impacts of the CSLP program are discussed. In this way, the study presents this ClimateSmart program as a useful model for future community-based, energy-related financing programs.

### **1.1 PACE Financing 2007-2010**

Property-Assessed Clean Energy (PACE) financing, or the creation of energy financing districts, is a tool that local governments may use to give residents and business owners access to financing on terms that are well-suited to energy efficiency and renewable energy building improvements. Local governments—including cities, counties, and other entities with taxing authority—may issue bonds that generally have no recourse and provide financing with little or no money down, to be repaid through a 15- to 20-year assessment on each participant’s property taxes. If a property owner sells a PACE-assessed home or business, the assessment stays with the property, with responsibility passing to the next owner until the debt is paid.

Thus, PACE addresses three major barriers to energy efficiency and renewable energy (solar PV) investment:

1. Lack of capital. PACE financing programs usually require low fees and no money down for qualified participants.
2. Lack of long-term commitment. Because homeowners in the United States tend to move every seven years or less, they like the fact that PACE assessments are transferable to new property owners.<sup>2</sup>
3. Lack of quality assurance. PACE programs typically address this barrier by offering energy audits or workshops to educate consumers, and they typically place some requirements for quality assurance on participating contractors.

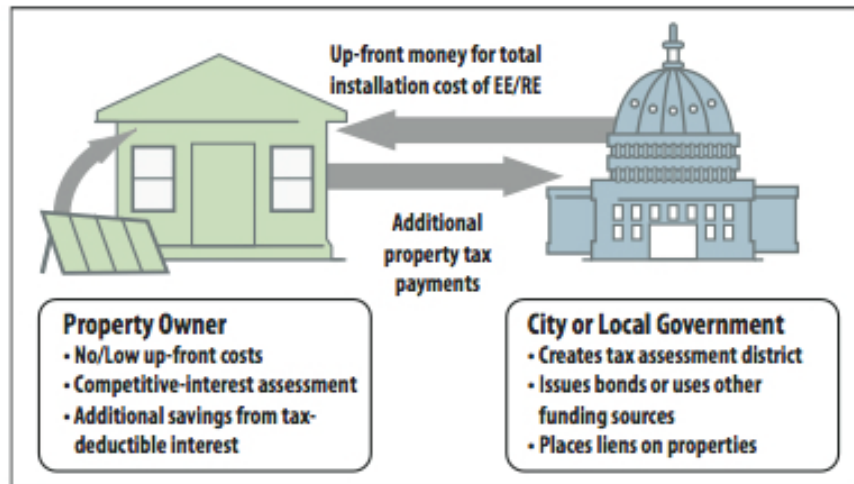
The idea of land-secured financing districts is not new. Such districts support a myriad of local improvements. As with PACE districts, some of these assess costs only upon the beneficiaries. For example, assessments may finance individual hook-ups to city water, to replace individual wells. Property-assessed financing is not legally a loan, though many PACE programs (including Boulder County’s) use the term “loan” because it is widely recognized shorthand for debt financing.

The first PACE program in the United States was proposed by the City of Berkeley, California, in 2007 and pilot-tested in 2008 as a way to finance residential solar projects. The concept caught on quickly. By mid-year 2010, 22 states and the District of Columbia had legislation in place to enable PACE programs. About a dozen local programs had started, from Annapolis, Maryland, to Milwaukee, Wisconsin, and Yucaipa, California. The U.S. Department of Energy (DOE) began providing technical assistance and outreach to a number of grant recipients of American Recovery and Reinvestment Act (ARRA) funding.

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<sup>2</sup> While the PACE lien legally transfers to the next homeowner, it may be subject to negotiation at the time of sale.

However, federal housing regulators, including the Federal Housing Finance Agency (FHFA) and the Office of the Comptroller of the Currency, expressed safety and soundness concerns with the PACE concept. In July 2010, FHFA released a statement directing the federally backed lenders Fannie Mae, Freddie Mac, and the Federal Home Loan Banks to undertake actions to address safety and soundness concerns in PACE jurisdictions (i.e., adjust underwriting criteria for borrowers in PACE jurisdictions). The FHFA’s primary complaint was that most PACE programs gave the energy-related property assessments primary lien status, meaning that the tax assessment would be repaid before the mortgage in the case of a foreclosure. The agency also expressed concern about the stringency of underwriting standards and consumer protections in residential PACE financing programs.



**Figure 1. Basic PACE financing process. Source: NREL 2010**

The result of the FHFA decision was an indefinite moratorium on nearly all residential PACE programs nationwide. A few residential PACE programs have continued to offer financing, as have certain commercial PACE programs, such as one in Boulder County. As of fall 2010, initiatives that prescribe secondary liens on PACE projects, such as one in Maine, were also in effect. The option for secondary liens has not caught on, as there is no secondary market for bonds tied to this type of investment.

A federal legislative remedy stalled in Congress in fall 2010. Several PACE program sponsors and advocacy groups have brought lawsuits, which are currently pending against FHFA. Some local energy program sponsors have announced plans to keep working on solutions, reviving PACE or working with alternative local financing strategies.<sup>3</sup>

<sup>3</sup> PACE Financing Sources:

B. Speer and R. Koenig, Property-Assessed Clean Energy (PACE) Financing of Renewables and Efficiency, NREL Energy Analysis Fact Sheet Series on Financing Renewable Energy Projects, National Renewable Energy Laboratory, July 2010. ([www.nrel.gov](http://www.nrel.gov)).

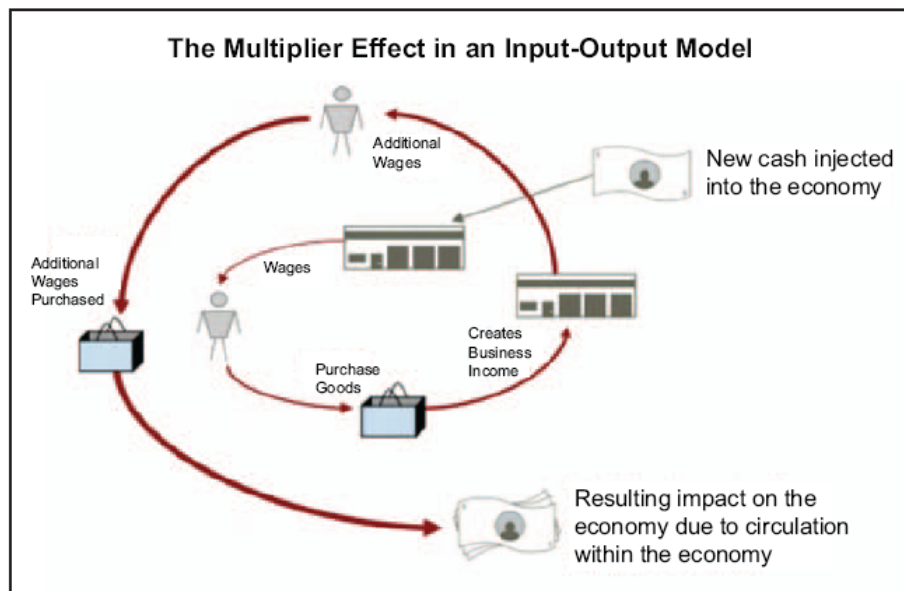
M. Zimring, I. Hoffman, and M. Fuller, Pace Status Update, Clean Energy Financing Policy Brief, Lawrence Berkeley National Laboratory Environmental Energy Technologies Division, August 2010. ([www.eetd.lbl.gov](http://www.eetd.lbl.gov)).

J. Farrell, New Rules Project, PACE Presentation: Overview, Update, and Future, for the Southwest Renewable Energy Conference, Santa Fe, New Mexico, September 2010. ([www.newrules.org](http://www.newrules.org)).

## 1.2 Assessing PACE Economic Benefits

The Boulder County ClimateSmart program made national news when voters passed the program's first bond measure. The implementation of the residential program in Spring through Fall 2009 also won national recognition for its speed to market and widespread reach, encompassing 40 residential measures and attracting participation from 300 contractors. When CSLP launched, Boulder County unemployment was rising. According to county economic development staff, the ratio of applicants to job openings—which for years never averaged more than 10 to 1—surged past 20 to 1 in early 2009. Local policymakers hoped the CSLP could address many goals, including job creation.

This economic analysis will be limited by a number of factors. First, this is by definition a study of early results from a first-time effort. The market for a first-time program typically includes many early adopters, and their behavior differs from that of all homeowners. In addition, the energy bill savings used in this analysis, which were based on usage during the first year after the improvements were made, are likely to differ from average savings over future years. This is because it takes some time for customers to perceive and respond (i.e., adjust habits) to changes such as increased comfort, lower bills, etc. Also by definition, this study is focused on the homeowners who followed through the entire program process and used program financing for specific home improvements. Yet the program spurred other improvements that ultimately used alternative financing or cash. Those program-inspired investments had economic impacts that were not specifically documented. This analysis does not quantify every economic impact, but it provides a framework for understanding the range of impacts and how they might occur.



**Figure 2. The recirculation of dollars spent on energy efficiency or renewable energy measures is known as the multiplier effect.**

In short, jobs and growth in economic activity are related to spending and the circulation of money in the economy. The full impacts on jobs, earnings, and economic activity of investments in CSLP energy measures and the resulting energy bill savings are captured by evaluating the impacts for each change in spending. Note that dollars spent on energy efficiency-related home

improvements create much greater economic benefits and more local jobs than do dollars spent to pay utility bills and build power plants. Figure 2 summarizes the way these dollars circulate from local energy program spending and the resulting benefits. Additional background on economic modeling and specific inputs from the Boulder County CSLP will be discussed in Section 2 of this report, Economic Analysis.

### **1.3 Program Attributes that Affected Outcomes**

Only a handful of PACE programs completed funding rounds by mid-2010, and each of these programs had different goals, target markets, and program implementation plans. The differences and similarities among these programs are discussed in the appendix of this report and summarized in Table A1. Readers of this report should bear in mind that each local PACE program or related financing program yields unique economic results, as well as more universally applicable lessons.

Boulder County's program, conceived in 2008, was unique in its emphasis on climate protection. Economic development was only one of four goals:

- Reduced greenhouse gas emissions
- Reduced environmental impacts, such as air pollution and water use
- Energy savings, with accompanying bill savings in all sectors
- Economic benefits, including green jobs creation.

In Boulder, program planners wanted to encourage a broader range of measures, in part, to improve the average cost per unit of greenhouse gas reduction. The list of qualifying improvements included air sealing and ventilation; insulation, space heating and cooling; water heating; lighting and daylighting; energy efficient windows and doors; reflective roofs; pool equipment; landscaping (e.g., strategically planted trees), and installation of solar PV, solar water heating, small wind turbines, wood/pellet stoves, and much more. Program planners particularly wanted to balance interest in solar PV against low-cost/high-savings measures such as air sealing.

Boulder's emphasis on public education affected the program outcome, as residents were presented with several options for achieving energy savings—besides using PACE financing. CSLP applicants were required to attend an introductory workshop. There, they learned about technologies, program procedures, and the availability of technical support. For example, Boulder County offered a subsidized energy audit, as well as free phone counseling to help customers prioritize investments.

The CSLP addressed the goal of local jobs development, primarily by creating a market for energy efficiency and renewable energy measures that could spur local businesses of many types. Program administrators worked closely with contractors who volunteered their time to help promote the program and support educational workshops. The program paid workshop trainers, but there was mutual benefit for all contractors who pitched in. Press coverage for the program was strong in local newspapers, including photos and interviews with Boulder-area contractors. One paper named the loan program team their "People of the Year" for 2009, giving front-page

coverage to the program and its jobs-development goals.<sup>4</sup> Yet in many ways, program designers opted for simplicity and speed to market, rather than fine-tuned jobs-development strategies. For example, the program only required that participating contractors be licensed in the communities they served. About 300 contractors from across the Denver area ultimately received at least one payment from the program, and of these, more than 40% were from outside of Boulder County (see map on page 40). The number of out-of-county contractors was partly justified by the breadth of qualifying measures. It also was an indication of business appetite for this type of program. One Boulder County contractor who was interviewed (see sidebar below) suggested that contractors in the energy retrofit business need to go wherever the work is—in this case, anywhere within the Denver metro area. Nevertheless, the open invitation to contractors resulted in many energy retrofit dollars leaving Boulder County.

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<sup>4</sup> White, Pamela, “2009 Boulder County People of the Year: Team ClimateSmart,” *Boulder Weekly*, December 24, 2009.



## ***The Long View—Bestway Insulation***

Debbie Weingardt, who owns and manages Bestway Insulation in Lafayette (Boulder County), said she has seen too many workers come and go since her business opened in 1976. “I was excited about the [CSLP], but I’d learned long ago to be cautious about growing my business too fast,” Weingardt said.

She estimated as much as a quarter of her \$2 million annual revenue in 2009 came from the CSLP, and she added employees to handle the work. Altogether, the business has 25 full-time employees. But Weingardt said that some of the job impact from CSLP might be hidden by two factors: first, her business is affected by the ebb and flow of several incentive programs in the region, and second, she prefers to add hours for existing employees before she commits to hiring anyone new.

Weingardt says she makes a commitment to her employees, including paying for training from the Building Performance Institute and counseling good workers on how to advance their careers from labor to sales and management jobs. She has promoted many employees over the years, she said. Weingardt has also struggled to keep workers on when the fates turn. “I’ve been known for trying to keep employees on until it almost bankrupts me,” she said, recalling at least one time when she took out a loan in order to meet payroll. “It’s hard to not have consistency in this business,” she said. Boulder’s ClimateSmart Loan Program had the greatest single impact of any of these programs, she said. When the freeze on ClimateSmart started to take effect, Bestway let four workers go, Weingardt said. But following new leads, Bestway began sending trucks to Fort Collins (north of Boulder County), which has just launched a new energy efficiency rebate program.

According to Weingardt, the challenges of building the energy efficiency industry and a green-jobs economy are hard to meet when small companies like hers must keep changing their business plans in order to succeed. She said that she has participated on several state and local committees to advise on green jobs development, where her message has been to stress the need for multi-year programs, to open the pipeline from solid job training to secure employment.



***Photo by Dennis Schroeder, NREL/PIX 17963***

The involvement of many contractors (a simple ratio of about one contractor for every two homes served) spread the benefits of the CSLP thin, so that most companies would not see a big change in their volume of work. Some contractors reported that they appreciated the extra hours for their workers but did not feel justified in hiring new employees because of the CSLP. Other contractors, notably in solar businesses, reported a marked surge in business, which triggered new hires. These impacts are discussed in greater detail in Section 3 of this report, Qualitative Assessment.

The bottom line is that, Phase 1 of the CSLP produced significant jobs-development benefits. Section 2 of this report details how the program created more than 85 jobs from in-county spending alone and at least 126 jobs statewide. Boulder County leaders embraced a secondary goal to reach out beyond the county line and contribute to PACE start-ups statewide. County staff advised leaders in Eagle, Pitkin, and Gunnison counties in Colorado, as they approved their own PACE programs. In this light, the benefits that flowed out of Boulder County had far-reaching effects that could be widely shared.

#### **1.4 CSLP Implementation Steps**

Before analyzing its impacts, it is useful to review how Phase 1 of the Boulder County CSLP worked. Program guidelines allowed for:

- Fifteen- (15-) year loans
- Minimum borrowing: \$3,000 per home
- Maximum borrowing: For open loans (using taxable bonds), up to 20% of the actual value of the property, or \$50,000, whichever is less. For income-qualified loans (using tax- exempt bonds), up to \$15,000. For Phase 1 residential projects, interest rates ranged from 5.2% to 6.8% depending on the type of bond and the issue.

Because Boulder County intended to take its project-finance bonds to market, it had to prequalify projects and bundle them together. This led to a multi-step process:

1. Participant attends Home Energy 101 Workshop. The workshop reviews the process, the 40 qualified measures, and the costs and the benefits of making such improvements.
2. Participant obtains two or more bids and submits a preliminary online application.
3. County prequalifies the participant, who then completes a detailed application and submits it with a \$75 fee.
4. Participant awaits the aggregated bond issue and notification that the work may proceed.
5. Once the bond is issued and the homeowner receives notice that work may proceed, the contractor or multiple contractors complete work on each home.
6. Contractor submits the final invoice, permit/inspection paperwork, and the participant's approval, for full payment from the county.
7. Participant receives notice of additional payment due on the next property tax bill, and will continue payments through property taxes for 15 years or until the property (and responsibility for tax payments) changes hands.

Program participants paid a \$75 application fee and other fees (approximately 4%) added to their principle. The fees covered the cost of issuing the bond, the cost for program and administration staff, and other program costs. The total budget for CSLP Phase 1 was about \$800,000, plus \$2.4 million was set aside as a reserve fund to help secure the bonds. Participant fees covered all these costs, so the program could be self-sustaining.

Program economic impacts depended most upon participants' bottom-line spending and on energy savings that could be respent. However, two surveys—one of program participants and one of program contractors—suggest that some aspects of the process and of program costs may have affected outcomes. For example, relatively strict program rules, such as the early application for the exact amount to be financed, and fees, which could be proportionally high on smaller jobs, led some applicants to seek alternative financing. It is also likely that CSLP program publicity and public education triggered community-wide energy efficiency improvements that are not reflected in this relatively short-term and narrowly focused study.

## ***A Homeowner's Perspective***

Megan Kram bought her first home in Boulder three years ago, knowing that it needed some work. Kramer is single, keeps a busy schedule, and asserts that she has “pretty basic” maintenance skills. She heard about the Boulder ClimateSmart loan program from a friend, who emailed her an invitation to a free workshop on the program. Kram’s furnace was overdue for replacement, and the workshop confirmed her thoughts about the benefits of wall insulation. The house had “practically no insulation to start with,” she said. Kram had wanted new energy-efficient windows, too, but the price tag was daunting. She made a spreadsheet with columns and rows listing the estimates that she’d gotten from different contractors, plus estimates of what she expected in tax credits or as a rebate from the utility. Her headings were meaningful to her: “Stuff I’m for sure going to do,” “Windows...,” “Nicer windows,” and “Monthly Cost.”

“I decided I could pay about \$50 per month, though I understood it would all come through on the annual property tax bill,” Kram said. She liked the idea that she would not have to pay the investment off entirely if she decided to sell the house in less than 15 years. “I would say I’m very likely to move within that time,” she said. It seemed fair to her that the future owner would share in the costs and continuing benefits of the improvements. She was a little disappointed by the ClimateSmart program-related fees, but the interest rate, at 6.75%, was attractive. She also liked the responsiveness of contractors who were in the program. “The job was easily done. It took half a day for the furnace and half a day for the insulation,” she recalled. Her decision to keep the equivalent monthly payments low prompted Kram to chose replacement windows that were not qualified as high-efficiency. She used personal financing to have them installed. “My old windows were so leaky that even a normal window replacement is a huge improvement. I’m sure there will be energy savings there, too,” she said.

Other PACE programs around the country have also reported that PACE-related outreach may trigger improvements, whether or not PACE is the ultimate source for financing. In addition, nonqualifying improvements, made along with PACE improvements, affect the community economic impacts in ways that are difficult to track. Such effects are discussed in the Qualitative Analysis section of this report.



**Left: Kram used a simple spreadsheet to facilitate her home improvement projects. Right: Kram upgraded the look of her home at the same time she financed invisible energy improvements. Photos from MRG & Associates**

## 2 Economic Analysis

The central goal of this study is to analyze employment and other economic impacts of the Boulder County residential ClimateSmart Loan Program (CSLP), an example of Property-Assessed Clean Energy (PACE) financing. The economic analysis used to achieve this goal focuses primarily on CSLP dollars spent. The analysis utilizes an analytic tool called an input-output (I-O) model, which identifies relevant interactions among all sectors of the local and statewide economies. For example, the model shows how homeowner spending on attic insulation or solar panels spurs business on the local level among vendors and contractors, as well as up the supply chain, among suppliers and manufacturers. To the extent that these products are installed by local contractors or purchased from local manufacturers or retail vendors, there is additional benefit to the local economy. The I-O model also identifies other impacts as described below.

Subsequently, Section 3 of this report will go beyond the quantitative analysis provided here. Section 3 includes an assessment of factors that could not be quantified but could affect the total long-term economic impacts of the CSLP or of similar PACE programs.

### 2.1 Methodology

To capture the full economic impacts of the Boulder County PACE program, the economic analysis evaluates three separate effects (i.e., direct, indirect, and induced) for each expenditure. The sum of these effects yields the total effect resulting from a single expenditure.

1. The direct effect refers to the onsite or immediate effect produced by expenditures. In the case of installing energy efficiency upgrades in a home, the direct effect is the onsite expenditures and jobs of the construction or trade contractors hired to carry out the work.
2. The indirect effect refers to the increase in economic activity that occurs when a contractor or vendor receives payment for goods or services delivered and he or she is able to pay others who support the business. This includes the equipment manufacturer or wholesaler who provides the products (solar panels, insulation, heating system, windows, etc.). It also includes the bank that provides financing to the contractor, the vendor's accountant, and the owner of the building where the contractor maintains its local offices, and so on.
3. The induced effect results from the spending of worker earnings associated with direct and indirect spending related to energy efficiency expenditures. This includes spending on food, clothing, housing, transportation, recreation, and other goods and services that workers typically purchase with their paychecks.

Moreover, the installation of energy efficiency measures usually reduces electricity and/or natural gas use in a home and enables the household to meet power, heating, cooling, and lighting needs at a lower total cost. This lower cost of home operation makes more money available for individuals and families to spend or invest in the local economy.

## 2.2 Analyzing the Spending from the CSLP

To analyze the spending on CSLP energy efficiency upgrades (including renewable energy technologies), actual expenditures are matched with appropriate Boulder County- and Colorado-specific industry multipliers.<sup>5</sup> The multipliers reflect the direct, indirect, and induced impacts supported by a \$1 million expenditure (change in final demand) for goods or services purchased from a given industry sector.

This analysis includes all changes in consumer and business spending that occur during the actual construction or installation for program measures as well as the ongoing spending of resulting energy bill savings. The impacts from the construction or installation are relatively short-term. That is, the impacts are limited primarily to the period of time during which the actual upgrades and spending occur. In this analysis, the initial construction-related impacts occur over approximately a one-year period from June-July 2009 through June-July 2010. The spending of energy bill savings and resulting reduction in utility revenues happens each year for the life of the measures, typically 20 to 30 years.

Much of the short-term job creation from energy efficiency programs is derived from payments made to in-county contractors and businesses, versus out-of-county contractors and businesses. When in-county contractors or businesses receive money for goods and services, more of the money stays in the local economy. Local contractors usually hire more local residents to work for them, and they typically spend more money in the local area on goods and services (indirect effects). Out-of-county spending—paying contractors or purchasing goods or services from businesses outside the county—is commonly referred to as monetary leakage. A monetary leakage provides little benefit to the local area. One exception might be when local residents are employed by the out-of-county businesses or when some of their products are locally manufactured.

Ongoing job creation is derived in large part from the difference between jobs within the utility and fuel supply sectors and jobs that are supported by the spending of energy bill savings in other sectors of the economy. For example, when residents pay their utility bills, most of the money leaves the local area to purchase fuels, maintain power plants, and support utility operations in general. On the other hand, when residents have savings from lower utility bills, they are able to spend some of those savings in the local area by purchasing goods and services and supporting a variety of local businesses.

This analysis is based on a detailed assessment of CSLP-related customer spending, using data available for 598 residential energy retrofit projects. It includes not only those dollars loaned to Boulder County residents through property tax bond financing but also additional spending by program participants, as documented on the invoices. Table 2.1 shows the actual financing directly for measure expenditures (i.e., not related to loan fees, reserve accounts, or other costs) totaling just over \$9 million. These expenditures account for 71% of the \$12.7 million in total spending related to these measures. To the extent that information on energy-related rebates from the state and utility companies was documented, it is included in the analysis. Similarly, where

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<sup>5</sup> In this study we have adapted industry multipliers derived from the 2008 IMPLAN model for the analysis. See Minnesota IMPLAN Group, Hudson, WI, [www.implan.com](http://www.implan.com).

information was available on participant spending that was alternatively financed (for example, project add-ons paid for with cash), it was also included in the analysis.

Additional residential projects were completed under the CSLP program (for a final loan total of about \$9.8 million), but documentation was not available in time to be included for this analysis.

**Table 2.1. Climate Smart Loan Program 2009-2010 Residential Summary Data**

Category	Boulder County	Outside Boulder County	Total
Program Participants (projects)	598		
Participant Loans (for measure costs only) <sup>a</sup>	\$9,007,868		
Total Measures Installed	1,207		
Total Expenditures (for measures installed) <sup>b</sup>	\$12,691,542		
Participating Contractors	171	124	295
Payments for Work Completed	\$10,072,036	\$2,619,506	\$12,691,542
Utility Bill Savings (first-year total) <sup>c</sup>	\$124,197		
Utility Bill Savings (average per participant)	\$208		

<sup>a</sup> Loan amounts are for approved measure-related costs only. They do not include fees or other associated costs included in final loan amounts.

<sup>b</sup> Total Investment includes all program participant spending (including rebates for PV) on energy measures and additional work (spending) completed but not covered by the loan or rebate. It also includes all sales tax paid to Boulder County.

<sup>c</sup> Utility bill savings are based on average participant savings of 1,786 kWh for electricity and 74.9 therms for natural gas. The savings reflect analysis of participants' Xcel Energy electric and gas utility bills by Boulder-based Symbiotic Engineering. Dollar savings were derived by MRG & Associates using current Xcel rate schedules.

Just over \$10 million (79%) of the documented efficiency and renewable energy investments (i.e., payments to contractors and vendors) were spent within Boulder County.<sup>6</sup>

Typically, 85%-90% of energy efficiency and renewable energy installations are completed by local contractors and dealers. As discussed in Section 1, the profile of participating businesses for the Boulder County CSLP was much different. Only 171 (58%) of the 295 contractors studied for this analysis were located in Boulder County. The rest were from various locations throughout the Denver metro area.

Similarly, the I-O model would typically assume that all in-county contractors' employees would live in Boulder County. However, Boulder County data reveal that at least 30% of in-county contractors' employees live and spend most of their earnings elsewhere, possibly because the multi-county Denver area is so contiguous and offers many affordable housing options outside of Boulder County.<sup>7</sup> There are more local than nonlocal residents employed by local contractors, and all workers (local and nonlocal) spend money locally while working; these are mitigating conditions that would, on balance, increase local economic benefits associated with the program.

<sup>6</sup> A detailed breakout of spending by measure is included in the next section of this report.

<sup>7</sup> This estimate is an average, based on responses to an online survey of program contractors conducted in August 2010. Anecdotal evidence from interviews with program contractors located in Boulder County in June and July 2010 suggests that in many instances the percentage of employees living in Boulder County is significantly higher.

However, quantifying such impacts is beyond the scope of this analysis. A qualitative assessment is offered in Section 3 of this report.

For purposes of estimating current and future energy bill savings, the analysis assumes that energy prices remain at 2010 levels. This is partly due to the difficulty of accurately predicting future energy prices, but also because it is simpler to match energy prices within an I-O model based upon fixed price relationships. Many analyses would typically apply a 2%-5% annual energy<sup>8</sup> cost escalation rate. The utility bill savings noted in Table 2.1 reflect average savings by all participants. Due to the limited amount of information available from the utility bill analysis, no distinction has been made (nor were adjustments made) for the types of measures installed, measure cost, energy saving potential, or payback periods, or for participant homes that added square footage (or other measures)—all conditions that could result in net increased energy use.

Some participants had higher utility bills when compared with their previous bills, but most participants experienced significant reductions in energy use and utility bills.<sup>9</sup> An examination of possible reasons for this is included in Section 3 of this report, Qualitative Assessment. Considering historical price increases in electricity and natural gas, the utility bill savings expressed here are conservative estimates. There is little doubt that utility prices will continue to rise and that resulting energy bill savings will increase over time.

Finally, it should be noted that the full effects of the Boulder PACE program are not accounted for, due to the conditions and impacts discussed further in Section 3. For example, there is no documentation of county residents who did not receive CSLP financing but made alternatively financed energy improvements using information they received from the CSLP program, yet there is evidence that their spending was significant. As another example, the CSLP program staff spent time and budget on program design and first-year implementation, making notes for future-year improvements. Future program benefits would likely be greater than those reported here.

### **2.3 Macroeconomic Impacts**

The economic analysis for the Boulder County CSLP was carried out by evaluating the net changes in energy expenditures brought about by the investments in energy efficiency and renewable energy (primarily solar PV). Section 1 of this report describes the types of program measures that would qualify for financing and the process for obtaining financing. Actual participant investments and utility bill savings data were used to estimate both local and statewide impacts. The change in spending generates a net impact for Boulder County and for the state as a whole.

Table 2.2 summarizes the investments for each measure during the 2009-2010 period of analysis, as well as the local contractor share and sales tax generated.

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<sup>8</sup> Average electric and gas utility bill savings for Xcel customers who participated in the Boulder County CSLP were provided by Tim Hillman, senior energy engineer at Symbiotic Engineering, in December 2010. Symbiotic Engineering is currently analyzing participant utility bills for Boulder County from other utilities in the county.

<sup>9</sup> According to the preliminary analysis completed by Symbiotic, 20% of natural gas customers and 25% of electricity customers had increased energy consumption.



**Table 2.2 ClimateSmart Loan Program 2009-2010 Residential Summary Data by Measure**

Measure Category	CSLP Loans <sup>a</sup>	Total Investment <sup>b</sup>	Local Contractor Share <sup>c</sup>	Local Sales Tax Generated <sup>d</sup>
Photovoltaics	\$3,247,740	\$6,801,922	\$6,248,104	\$125,840
Windows/Doors	\$2,213,237	\$2,270,722	\$1,277,905	\$42,008
Insulation	\$883,702	\$897,644	\$517,104	\$16,606
Roofing	\$496,859	\$504,016	\$273,970	\$9,324
Air/Water Heaters	\$1,738,110	\$1,757,210	\$1,364,442	\$32,508
Solar Hot Water Heaters	\$411,558	\$442,829	\$374,833	\$8,192
Landscaping	\$16,663	\$17,198	\$15,678	\$318
<b>Total</b>	<b>\$9,007,868</b>	<b>\$12,691,542</b>	<b>\$10,072,036</b>	<b>\$234,798</b>

<sup>a</sup> Loan amounts are for measure-related costs only. They do not include fees or other associated costs included in final loan amounts.

<sup>b</sup> Total Investment includes all program participant spending (including rebates for PV) on energy measures and additional work (spending) completed but not covered by the loan or rebate. It also includes all sales tax paid. The values are based on a detailed review of program expenditure data supplied by the County of Boulder.

<sup>c</sup> Local Contractor Share represents only the portion of Total Investment paid to Boulder County contractors.

<sup>d</sup> Local Sales Tax is based on Total Investment and Boulder County sales/use tax rate.

As the table indicates, spending on PV systems totaled \$6.8 million. This was the single largest measure in terms of dollars spent, accounting for almost 54% of total investments. Windows and doors were second, accounting for about 18%, followed by air and water heaters at about 14%. Another four measure categories accounted for the remaining 15% of participant investments.

With this measure data, we were able to analyze the macroeconomic impacts. The first of the three impacts evaluated here is the net contribution to the employment base as measured by full-time equivalent jobs. The second impact is the net gain in wage and salary compensation, measured in millions of 2010 dollars. The final category of impact is the net contribution to output (i.e., economic activity), also measured in millions of 2010 dollars. In other words, once the gains and losses are sorted out for each measure, the analysis provides the net benefit of the measure in terms of the overall economy.

The following table summarizes the economic impacts of the investments by measure type. Unlike utility bill savings, which continue to provide benefits for the life of the energy efficiency measure, installation (or construction) impacts are considered one-time or short-term impacts. In other words, the installation-related impacts noted below occur when the actual work is being done and for a short time afterwards. Similarly, the impacts only account for spending that occurs in Boulder County or in the state as a whole. To the extent that equipment or products such as solar panels, roofing, or insulation are manufactured and/or purchased out of the county or state, the expenditures (or a portion of them) are treated as monetary leakages, providing no benefit to the region being analyzed.

**Table 2.3. Summary of Macroeconomic Impacts for Installation by Measure**

Measure Category	Net Job Gain	Change in Wage and Salary Compensation (Millions)	Change in Output (Millions)
<b>Boulder County – from in-county spending only</b>			
Photovoltaics	49	\$2.7	\$8.3
Windows/Doors	12	\$0.8	\$1.8
Insulation	6	\$0.5	\$0.8
Roofing	3	\$0.2	\$0.4
Air/Water Heaters	12	\$0.8	\$1.9
Solar Hot Water Heaters	3	\$0.2	\$0.5
Misc. Landscaping	0	\$0.0	\$0.0
<b>Total</b>	<b>85</b>	<b>\$5.1</b>	<b>\$13.7</b>
<b>State of Colorado – from in-state spending only</b>			
Photovoltaics	61	\$3.2	\$10.0
Windows/Doors	25	\$1.4	\$3.7
Insulation	12	\$0.8	\$1.6
Roofing	6	\$0.4	\$0.8
Air/Water Heaters	18	\$1.1	\$2.7
Solar Hot Water Heaters	4	\$0.2	\$0.7
Misc. Landscaping	0	\$0.0	\$0.0
<b>Total</b>	<b>126</b>	<b>\$7.1</b>	<b>\$19.5</b>

Notes: Dollar figures are in millions of 2010 dollars. Net jobs represent actual full-time equivalent (for one year) job totals. All totals reflect direct, indirect, and induced impacts. Totals for the State of Colorado include the totals for Boulder County.

Some aspects of this table are worth noting before focusing on the overall impacts in more detail. The first is that impacts from the installation phase are all positive, resulting in \$13.7 million in economic activity in Boulder County and \$19.5 million for the state as a whole in 2009-2010. At the same time, the total investments by program participants supported 85 jobs in Boulder County, just under 7 jobs per million dollars of investment in 2009-2010. For the state as a whole, program investments supported 126 jobs, more than 9 jobs per million dollars of investment. Wage and salary earnings increased by \$5.1 million in Boulder County and \$7.1 million for the state as a whole during this time. These job impacts represent a small portion (less than 0.1%) of the county's total employment in 2009. Still, with the county in recession in 2009, every job—be it a new job, one that is retained, or extra hours added to keep a worker full-time—was a welcome addition.<sup>10</sup> The differences between county and state impacts are likely due to the fact that (1) not all contractors were located in Boulder County, and (2) the larger share of each dollar spent leaves the county but stays within the state.

<sup>10</sup> According to the Bureau of Labor Statistics, employment was estimated at 152,804 in Boulder County at the end of 2009. Unemployment was 6.4%, which was historically high for the county. See U.S. Bureau of Labor Statistics News Release, U.S. Dept. of Labor, Oct. 19, 2010 and Bureau of Labor Statistics, U.S. Dept. of Labor, County Employment and Wages, Fourth Quarter 2009, July 20, 2010, [www.bls.gov/cew/](http://www.bls.gov/cew/).

The results in Tables 2.2 and 2.3 are not intended to be precise forecasts. The totals offer reasonable insights into the benefits of the energy efficiency and renewable energy investments, but due to the small level of spending relative to that studied in most I-O analyses, even modest changes in the assumptions could change the results in individual sectors.

Analysis of the annual utility bill savings alone for one year found that this level of spending (\$124,197) resulted in no net gain in jobs and a very slight gain in economic activity for both the county and the state as a whole. This is due primarily to the relatively low level of utility bill savings during the first year. It should be noted that some measures, such as solar PV, are long-term investments. Their savings accumulate over the full 30-year life of the investment. Similarly, the calculation of average utility bill savings used for this analysis was adversely impacted by participants who increased the square footage of their homes, enhanced living spaces, or made lifestyle changes. In some instances, the measures were installed to increase comfort (reduce drafts, provide better lighting, etc.) or to improve aesthetics. Also, first-year energy use may reflect a period of homeowner experimentation. Some might have tested different thermostat settings, for example, to find out for themselves how to balance newfound comfort against energy savings. A more detailed assessment of qualitative impacts is included in Section 3 of this report.

### ***Sustainable Careers***

Jeff Cope sat at the reception desk at Bella Energy, a Louisville (Boulder County) solar integrator, looking a little big for his chair. Cope, who held the title of Solar Advisor for Inside Sales, actually handled all kinds of tasks, from answering phones and receiving FedEx packages to providing sales help and sketching preliminary solar designs. At the time of this interview, Cope said he was happy to have a job in solar, as he was in fact a displaced semiconductor industry engineer. He took the job in early 2010. Bella Energy had been growing, largely because of business from the CSLP. In Fall 2009, Bella sales activity, including onsite sales visits, had about doubled thanks to ClimateSmart. At least half of the company's residential projects and one-third of total gross revenues were coming from ClimateSmart program leads. Since the moratorium on residential PACE financing, Bella's residential sales have slowed, but the company is refocusing on the commercial solar market, for which Boulder County still has an active CSLP. Bella hired Cope in anticipation of work in that market.

Cope's career path supports the argument that solar jobs can make a difference. His former employer was an electronic chip manufacturer in Richmond, Virginia, which closed after foreign competitors applied questionable trade practices. Cope qualified for Trade Adjustment Assistance (TAA), including retraining, from the U.S. Department of Labor. "I wanted to move into a green tech industry, and solar fit the bill," he explained. He moved to Colorado at his own expense but received TAA support for retraining at Solar Energy International, a 20-year-old solar training center in Carbondale, Colorado. Cope said he is never bored in his job, even though it would not seem to require a master's degree in engineering. "I don't expect to stay in my current role, though I am sure I will be in the solar industry," he said. He credits his after-hours role as a new parent for giving him the drive to make this career work. "I want to get this clean energy transition going for the next generation," he said.

### ***Sustainable Careers (Cont.)***

Bella Solar looks for employees with good educations. Most of the employees have college degrees, and the average wage is about \$40,000 per year, according to John Shaw, commercial sales director. With supportive policies and local programs like CSLP, Cope and his solar employer see strong prospects for growth in coming years.



**Jeff Cope took a solar job in Boulder County after his computer-industry job had been moved offshore.**  
*Photo from MRG & Associates*

#### **2.4 Macroeconomic Impacts Projected Through 2020**

The following tables provide an estimate of the net impacts from the CSLP program, assuming it were to continue for the next 10 years through 2020 (or a similar 10-year period). This analysis assumes similar annual participation levels and investment patterns and the same level of per-participant utility bill savings (i.e., the same level of energy savings experienced by current participants and no increase in utility rates) for each year noted. The analysis looks at nine sectors.

The tables show how each of the industry sectors is affected in each of two benchmark years, 2015 and 2020. The impacts shown are not cumulative. The total impact, year on year, indicates that jobs created would be sustained, with some additional job growth as the program continues. For example, total annual jobs in Boulder County increase from a base of 85 in 2010 to 88 in 2015 and then to 93 in 2020. Although the impacts are small, relative to the larger economy, this is only because the scale of investment for the CSLP is small, relative to the entire county economy.<sup>11</sup>

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<sup>11</sup> In 2009, the gross domestic product (GDP) for the State of Colorado was estimated to be \$252.7 billion for all industries. See, Gross Domestic Product by State, Bureau of Economic Analysis, U.S. Dept. of Commerce, Regional Economic Accounts, [www.bea.gov/regional/gsp/](http://www.bea.gov/regional/gsp/).

**Table 2.4. Macroeconomic Impacts of the Boulder CSLP by Sector in One Future Year (2015)**

<b>Sector</b>	<b>Net Job Gain</b>	<b>Change in Wage and Salary Compensation (Millions)</b>	<b>Change in Output (Millions)</b>
<b>Boulder County – from in-county spending only</b>			
Agriculture	0	\$0.0	\$0.0
Mining	0	\$0.0	\$0.0
Construction	33	\$3.1	\$5.7
Manufacturing	0	\$0.0	\$0.1
Retail and Wholesale Trade	45	\$1.6	\$6.8
Transportation, Communication, and Utilities	(0)	(\$0.0)	(\$0.0)
Finance, Insurance, and Real Estate	0	\$0.0	\$0.1
Services	5	\$0.2	\$0.8
Government	4	\$0.2	\$0.5
<b>Total</b>	<b>88</b>	<b>\$5.3</b>	<b>\$14.0</b>
<b>State of Colorado – from in-state spending only</b>			
Agriculture	0	\$0.0	\$0.0
Mining	0	\$0.0	\$0.0
Construction	52	\$4.5	\$8.7
Manufacturing	0	\$0.0	\$0.1
Retail and Wholesale Trade	63	\$2.2	\$8.9
Transportation, Communication, and Utilities	(3)	(\$0.1)	(\$0.5)
Finance, Insurance, and Real Estate	2	\$0.1	\$0.5
Services	9	\$0.4	\$1.4
Government	4	\$0.2	\$0.6
<b>Total</b>	<b>128</b>	<b>\$7.2</b>	<b>\$19.8</b>

Notes: Analysis assumes the CSLP program is up and running through 2015 or a similar five-year period. Dollar figures are in millions of 2010 dollars. The numbers in parentheses reflect losses that are projected to occur in that sector. Net jobs represent actual full-time equivalent (for one year) job totals in 2015 (noncumulative). All totals reflect direct, indirect, and induced impacts. Totals for the State of Colorado include the totals for Boulder County. Individual totals may not add up due to independent rounding.

**Table 2.5. Macroeconomic Impacts of the Boulder CSLP by Sector in One Future Year (2020)**

<b>Sector</b>	<b>Net Job Gain</b>	<b>Change in Wage and Salary Compensation (Millions)</b>	<b>Change in Output (Millions)</b>
<b>Boulder County – from in-county spending only</b>			
Agriculture	0	\$0.0	\$0.0
Mining	0	\$0.0	\$0.0
Construction	33	\$3.1	\$5.7
Manufacturing	1	\$0.1	\$0.3
Retail and Wholesale Trade	47	\$1.7	\$7.0
Transportation, Communication, and Utilities	(1)	(\$0.1)	(\$0.3)
Finance, Insurance, and Real Estate	1	\$0.0	\$0.2
Services	9	\$0.4	\$1.3
Government	4	\$0.2	\$0.5
<b>Total</b>	<b>93</b>	<b>\$5.5</b>	<b>\$14.7</b>
<b>State of Colorado – from in-state spending only</b>			
Agriculture	0	\$0.0	\$0.0
Mining	0	\$0.0	\$0.0
Construction	52	\$4.5	\$8.7
Manufacturing	1	\$0.1	\$0.3
Retail and Wholesale Trade	64	\$2.2	\$9.1
Transportation, Communication, and Utilities	(6)	(\$0.3)	(\$1.3)
Finance, Insurance, and Real Estate	3	\$0.1	\$0.6
Services	13	\$0.5	\$2.0
Government	4	\$0.2	\$0.6
<b>Total</b>	<b>132</b>	<b>\$7.3</b>	<b>\$20.1</b>

Notes: Analysis assumes the CSLP program is up and running through 2020 or a similar 10-year period. Dollar figures are in millions of 2010 dollars. The numbers in parentheses reflect losses that are projected to occur in that sector. Net jobs represent actual full-time equivalent (for one year) job totals during 2020 (noncumulative). All totals reflect direct, indirect, and induced impacts. Totals for the State of Colorado include the totals for Boulder County. Individual totals may not add up due to independent rounding.

The analysis indicates that three industries in particular benefit the most from the program in each of the years noted. These are the retail and wholesale trade sectors, the construction sectors and the service sectors. The trade and service sectors are winners largely for two reasons. First, they benefit from the actual investments in the energy efficiency measures made in each of the years. Second, they benefit from the higher level of goods and services sold as program participants spend their energy bill savings elsewhere in the economy.

The construction sector benefits primarily because special trade contractors and others are involved in installing the new renewable systems and making the efficiency upgrades. The construction sector alone pulls in about one-third of the net job increases. Using the annual installation investments as a benchmark for evaluation, it might be noted that about 95% of the net job impacts are from the efficiency investments made in that year. The remaining impacts are the result of spending of utility bill savings by program participants.

As might be expected, the energy industries incur some overall losses in jobs, compensation, and output. But this result must be tempered somewhat as the industries themselves are undergoing internal restructuring. For example, as the electric and natural gas utilities engage in more energy efficiency services and other alternative energy investment activities, they will undoubtedly employ more people from the business services, engineering, and construction sectors.

Therefore, the negative employment impacts should not necessarily be seen as job losses; they might rather be more appropriately seen as a redistribution of jobs in the overall economy and future occupational tradeoffs.

Explained differently, while the electric utilities may lose traditional jobs (due to selling less energy), they would gain many of those jobs back if they moved aggressively into the energy efficiency business, thereby absorbing some of the job gains realized in other sectors, such as the construction and service sectors. In effect, if they expand their participation in the energy efficiency market, their job totals can increase relative to the estimates based on a more conventional definition of an electric or natural utility as solely an energy supplier.

Electric and natural gas utilities are very capital-intensive (i.e., they require greater total assets for each dollar of revenue generated by the utility, relative to other industries). Thus, as the revenues of the utilities decrease under the CSLP and other efficiency programs, the amount of capital investment will also decrease (i.e., fewer new power plants and pipelines are built), lowering the industry's value added and output contribution to the larger economy. As the analysis indicates, this impact is tempered by the investments in efficiency and spending of energy bill savings. The full impact of these investments and the annual savings (in technologies such as PV noted earlier) are not realized until the investments are paid off.

## **2.5 Economic Analysis Conclusions**

Based on the analysis presented in this section, it is clear that Boulder County and the State of Colorado benefited from the residential ClimateSmart Loan Program (CSLP). The PACE financing mechanism set the stage for job growth, increased economic activity throughout the economy, and positioned both to reap even larger benefits in the future. In addition to the county and statewide benefits, the aggressive commitment to energy efficiency provided the opportunity for program participants to reduce their energy bills.

Participant spending in Boulder County alone contributed to 85 short-term jobs, over \$5 million in earnings, and almost \$14 million in economic activity in Boulder County. Participant utility bill savings totaled about \$125,000 for the current year. For the state as a whole, program spending supported another 41 short-term jobs outside of Boulder County, \$2 million in earnings, and almost \$6 million in economic activity. Viewed in the long term, analysis of an ongoing CSLP program with similar participation levels results in significantly greater savings. The economic impacts noted here and discussed in this section, above, occur in a context that is more fully described in Section 3, Qualitative Assessment. For overall CSLP conclusions and their more general implications for PACE programs, see the discussion in Section 4.



### 3 Qualitative Assessment of CSLP

#### 3.1 Purpose and Approach

The economic analysis presented previously tracks spending and jobs development that can clearly be traced to Boulder County ClimateSmart-financed spending. Anecdotal reports from this and other PACE programs suggest there are other influences that may be significant as well. For example, reports from PACE programs nationwide concur that economic activity inspired by a local PACE program, but ultimately using other forms of financing, may be significant.

Boulder CSLP administrators, including Ann Livingston, Boulder County Sustainability Coordinator, and Susie Strife, the ClimateSmart program manager, recognized many qualitative influences on the overall program outcome. Contractors and program participants who were interviewed for this report, as well as participants in two online surveys about CSLP, confirmed that there were influences and outcomes that a standard economic analysis would miss. It is beyond the scope of this study to draw detailed conclusions about such influences, but this section provides a qualitative assessment.

The research approach for the qualitative assessment of CSLP included:<sup>12</sup>

- Interviews with CSLP administrators and Phase 1 program data
- Interview with Will Toor, County Commissioner and program policymaker
- Interviews with contractors and trade allies of two solar firms, two weatherization firms, and two green-building associations
- Interviews with five program participants
- Interview with Boulder Daily Camera news reporter and review of coverage from the Camera, the Boulder Weekly, and other media
- Review of results from a July 2009 survey of 325 CSLP workshop registrants, utilizing Survey Monkey online service
- Review of results from an August 2010 survey of about 120 program contractors, utilizing Survey Monkey online service. About 13% of those surveyed responded. This response, given the sample size, was of limited use, but it helped to confirm trends.

The subjects of interviews and participants in surveys represented locations throughout Boulder County. In addition, this assessment draws on observations from other PACE programs around the country, if they dramatically follow or differ from the trends observed here.

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<sup>12</sup> Personal interviews occurred in Boulder County in July 2010.

## ***Climate Smart Neighborhoods***

When Boulder County and City leaders started planning a PACE financing program, Ron Flax, an architect at Rodwin Architecture in Boulder, started to think about how affordable financing for energy improvements might trigger a transformation for middle-class neighborhoods. He called Boulder’s 1960s subdivisions “an energy disaster.” Besides, the homes are small, so their prime locations on tree-lined streets close to parks, schools, shopping, and other Boulder attractions makes them ripe for investors who might just as soon tear them down and build mini-mansions instead. Flax said he knew that risk well, because he has lived in one of those old 1,100 square-foot houses himself, with his wife and two school-aged kids. When the ClimateSmart Loan Program came along, he sharpened his pencil and prepared to make his place on Elm Avenue a model of small-home sustainability.

Flax’s plan quickly grew to include a deluxe menu of energy-saving possibilities. Recognizing his passion for saving energy, Flax said, “At least I hoped this demonstration would inspire others to go beyond a typical window or furnace upgrade.” He invested in a total of \$69,000 in energy improvements—and nearly as much again in nonqualifying remodeling. He used a home equity loan to finance nonenergy measures. To finance the energy measures, he took Boulder’s income-qualified low-interest financing to the maximum \$15,000 allowed. He also obtained a zero-interest loan from a nonprofit, Partnership for Sustainability, to finance the PV system. Tax credits, including a \$1,500 tax credit for combined energy efficiency measures and a 30% tax credit for a PV system and ground source heat pump helped lower the total investment cost. In addition, Flax gave himself permission to use \$10,000 out of savings. “A personal energy education research grant,” he explained.

From a design perspective, Flax intended the home to look like the kind of place a family might aspire to live, rather than a place that is “good enough.” He opened up the living room, added a new study, and dressed up the front of the house with a welcoming porch. The addition added only a little floor space, but it changed the dynamic of the home, so Flax’s wife could have a home office and so that the living space felt more relaxed.



**The Flax home is a demonstration project, using the ClimateSmart program as a starting point for developing livable, sustainable smaller homes. *Photo from MRG & Associates***

### ***Climate Smart Neighborhoods (Cont.)***

The home includes many energy improvements, from state-of-the-art crawlspace insulation and a ground-source heat pump to super-E windows. Initially, the home scored an energy efficiency (HERS) rating of 190; afterwards, it scored a 5. The estimated annual energy cost before improvements was \$2,100, and the estimated annual energy cost afterward is \$160.

Flax represents an example of a CSLP participant spending much more than the program loan application suggests. In his case, ClimateSmart financed \$15,000 of a \$114,000 project. Flax hired numerous contractors and completed some parts of the project himself.

Flax said, “After people make one investment in their homes, all kinds of good things can start to happen.” That includes adding more improvements, keeping up the property, and simply looking at one’s home in a different light. Flax hopes that a revived loan program might support widespread promotion of the idea that living simply in Boulder can mean living very well.

### **3.2 Categorical Discussion of Trends**

Taken alone, none of the research approaches above would have been adequate to draw specific conclusions about program influences and outcomes. However, taken together, they indicate four consistent and significant trends:

- Spending on energy improvements inspired by CSLP, but financed differently
- Spending on nonqualifying improvements inspired by CSLP
- Impacts of the economic climate on participants and outcomes
- Impacts of program design and anticipated changes.

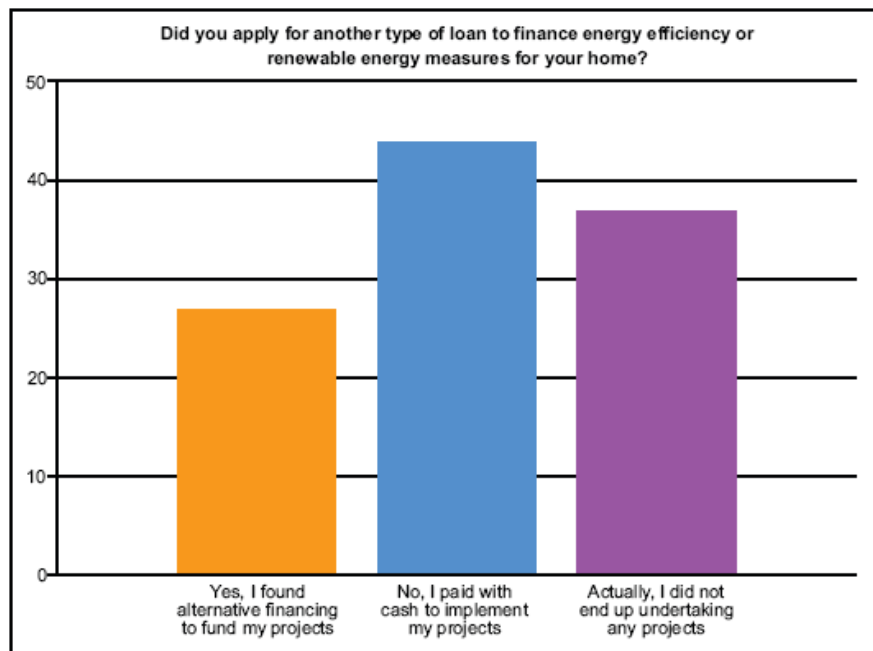
Each of these trends is discussed below.

#### ***A. Spending on Energy Improvements Inspired by CSLP, but Financed Differently***

Data from contractor receipts (discussed in the Economic Analysis section above) indicated some spending on improvements that were concurrent with CSLP-financed improvements but were financed separately. The impact analysis model accounted for that spending and its direct and indirect impacts.

However, some CSLP participants used multiple contractors to complete different parts of their projects. It is difficult to quantify economic impacts from additional improvements that were not financed by the CSLP and were not completed by the same contractors. Some improvements might have been do-it-yourself jobs using materials from the local home store and pocket money. Others might have been major improvements financed through home equity loans and other means. The Boulder County PACE program gathered only clues about the magnitude and kinds of energy-related improvements the program inspired through its marketing but did not finance.

In July 2009, program administrators surveyed registrants for Phase 1 CSLP workshops and captured 325 responses from those who eventually obtained PACE financing and those who did not. This was an online survey through the Survey Monkey service. Due to its informal nature, the survey has limited usefulness today. Still, it shed some light on customer response to PACE compared to financing alternatives. Respondents included about 106 individuals who reported that in the end, they did not use CSLP financing. Of these, about one-third (36) said they decided not to complete energy efficiency or renewable energy projects at that time. Another two-thirds (70) said they did proceed, but used alternative financing. Roughly two-thirds of those paid cash, and one third of them used different kinds of loans.



**Figure 3. Responses to a survey question addressed to those who registered for a CSLP workshop, but ultimately did not use program financing.**

The use of cash was significant, though it is fair to guess that cash spending was not nearly as great per job as spending that was supported by some type of loan. (The survey did not ask those who declined to use CSLP for spending figures.)

A follow-up question, aimed at those who used alternative loans, asked what type of loans these respondents used. The overwhelming response was the home equity line of credit (HELOC).

The evidence of extra spending through cash or home equity loans on energy upgrades matches observations by PACE program sponsors nationwide. Besides cash used for small jobs, the HELOC is the most common financing mechanism for energy home improvements.<sup>13</sup> This form

<sup>13</sup> For a discussion of pros and cons of many kinds of residential energy project financing, see M. Fuller, C. Kunkel, and D. Kammen, “Guide to Energy Efficiency and Renewable Energy Financing Districts for Local Governments,” Renewable and Appropriate Energy Laboratory, September 2009.

of credit is extremely convenient—often as easy as writing a check. For customers who already had HELOC accounts, there were no additional fees, and that was appealing, as well. However, a HELOC by definition requires strong equity in the home, and it requires full repayment before the home could be sold. It is not a perfect substitute for PACE financing.

Some CSLP participants who were interviewed for this report used HELOC financing to expand their overall project list, hiring different contractors than those selected for CSLP-financed work. For two such participants, the CSLP income-qualified rates were too attractive to pass up, but the loan ceiling at \$15,000 left them with projects to finance. Two participants reported that HELOC covered window replacements and repairs that were likely to save energy, though these projects did not meet CSLP standards. In addition, solar contractors who were interviewed said some of their customers chose HELOC over the CSLP because CSLP-financed contracts had to be arranged to meet a short bond-issue deadline. The migration to HELOC financing was not necessarily a problem. If ClimateSmart outreach drove people to seek whatever financing that suited them for energy improvements, then, in effect, it expanded the market and increased spending for energy efficiency and renewable energy improvements.

Another electronic survey completed in August 2010 was aimed at CSLP contractors. This survey also was informal and had a small response (13%). Despite its limitations, it confirmed several important trends, including the trend to use HELOC or other alternative financing for CSLP-inspired work. One question asked contractors what percentage of their revenues in 2009 was financed through CSLP lending and what percentage they thought was inspired by CSLP, though ultimately using alternative financing. Contractors indicated that about 16% of their 2009 revenues came from jobs financed by CSLP and 15% came from jobs inspired by CSLP, but using alternative financing. Given the small number of respondents, it would be wrong to assume that total spending related to CSLP was nearly double the value of program loans. However, this survey response, in addition to the other information discussed previously, underscores the likelihood that CSLP triggered spending on energy-related home improvements to a much greater degree than the value of CSLP loans suggests.

### ***B. Spending on Nonqualifying Improvements Inspired Under CSLP***

The discussion above suggests the likelihood that CSLP triggered significant spending on energy-related improvements beyond those financed by the program. In addition, some spending undoubtedly went to nonqualifying, nonenergy home improvements. This spending also had economic impacts, and should be considered a benefit of green jobs development programs.

Examples of spending that escape documentation on CSLP invoices include, among others, project-related fix-up and spruce-up measures, such as roofing repairs needed before a solar PV installation, repainting a house after a window replacement job, new curtains or drapes, new flooring, or a utility room remodel after installation of a new furnace. All interviewed participants said they felt proud of their homes after CSLP work was done, and this showed in small ways, from adding a plant on the porch to partially finishing a garage. This type of spending is difficult to document, but it is real.

The case of Ron Flax (see preceding sidebar), who spent \$15,000 that was financed by ClimateSmart, plus more money on energy and nonenergy improvements to a total of more than

\$114,000, is a rare one. Still, it illustrates how CSLP and similar PACE financing programs can trigger additional nonqualifying spending.

### **C. Impacts of the Economic Climate on Participants and Outcomes**

This first phase of the Boulder County ClimateSmart Loan Program took place during the depths of a national and regional recession. This affected homeowner attitudes about spending, and it affected contractor response to CSLP financing opportunities.

How did the economy affect participant willingness to spend money on their homes? Did the prospect of financing home improvements through PACE (whereby the debt remains with the house) increase or decrease interest in the CSLP program in 2009? It is beyond the scope of this research to answer these questions, but they are relevant questions. During 2009, average home prices in Boulder County fell for the first time since the late 1980s, but mid-range home value did not plummet. Any housing market slowdown triggers some investment in home improvements, as homeowners feel destined to stay in their homes longer. Conversely, recessionary times add to homeowner anxiety about taking on debt and increasing property tax bills.

When CSLP launched in Spring 2009, statewide unemployment (reflecting the job market where many Boulder residents worked) had risen to 8.5%.<sup>14</sup> According to the Boulder Economic Council, Colorado lost 100,000 jobs in 2009. County economic development staff said the ratio of applicants to job openings in Boulder County, which for years never averaged more than 10 to 1, surged past 20 applicants per job in early 2009. Unemployment rates in Boulder County remained below the national average, but they were high by local historical standards.

Even as bad economic news toughened the market, it made businesses that provide energy improvements hungrier. The fact that more than 300 contractors from throughout the Denver metro area participated in the CSLP indicates their eagerness to compete. Motivated contractors played an important role in driving energy-related investments in some 600 homes.

On the August 2010 contractor survey described previously, respondents said they increased their workforce by an average of almost two employees between Fall 2008 and Fall 2009. A few respondents cut workers during that time, but others increased their workforces by 20%-50%. Interviews with contractors indicated that some were reluctant to hire new employees but added hours for their existing employees. This was in dramatic contrast to the general job scene in the area in 2009.

A study from Sonoma County, California, focused on the comparison of construction employment in Sonoma County, where a large PACE program was underway, to that in nearby counties in 2009. That study showed construction jobs increasing in Sonoma County by 8.4%, while construction jobs in nearby counties fell off or stayed about the same.<sup>15</sup>

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<sup>14</sup> Boulder Economic Council, Personal Communications, August 2010. See also, [www.bouldereconomiccouncil.org](http://www.bouldereconomiccouncil.org).

<sup>15</sup> "Growth in Construction Economic Activity in Sonoma County and the Sonoma County Energy Independence Program," November 2009, [www.sonomacountyenergy.org](http://www.sonomacountyenergy.org).

Anecdotal information suggests a similar, though not as dramatic, trend for the Boulder County program. One difference was that a high proportion of the contractors participating in the Boulder County CSLP were from outside of the county, and that diluted the local economic impact.

#### ***D. Impacts of Program Design and Anticipated Changes***

PACE financing programs nationwide have been much discussed, but, perhaps surprisingly, few have been implemented. Only about a dozen local programs were underway in 2010, and about half of them were suspended before they actually provided financing to home improvement projects. Boulder County's CSLP was one of only a handful of programs that reached full-scale implementation. Program administrators were incorporating their "lessons learned" from Phase 1 implementation into a new Phase 2 round of residential lending, but those improvements were never tested.

Several elements of Phase 1 program design affected economic outcomes. Comments on these, including how they affected future Phase 2 plans, include:

1. The decision to open contractor participation to all comers, so long as they were licensed within their resident and operating jurisdictions, had a strong impact on the program. More than 40% of participating contractors were from outside of Boulder County. CSLP administrators did not plan to restrict contractor participation in Phase 2, either, but they intended to refine promotional strategies, to support local contractors.
2. CSLP administrators could not predict exact interest rates and fees of future loans because they depended on bond sales that would occur during program implementation—yet the interest rates declined from the first to the second round in Phase 1, and were likely to decline again. Administrators said they hoped to see interest rates in the range of 4.5%, compared to a high of 6.8% in Phase 1 (unsubsidized). Fees were also expected to decline. These lower costs would improve marketing effectiveness and the cost-effectiveness of energy efficiency and renewable energy improvements.
3. One issue cited by many respondents to the July 2009 workshop registrant survey was that contractors had to "front" the cost of the work until completion. Reportedly, some small contractors could not carry this risk and withdrew their bids when they learned that they would not be paid until the job was fully completed. The program's approach to aggregating projects, selling bonds, and then reimbursing contractors probably would not have changed in Phase 2. Most PACE programs nationwide have used a similar approach. However, this approach does favor larger companies that can cover front-end expenses for their work.
4. The August 2010 contractor survey strongly suggests that contractors would have to cut back on employee hours because this program, like all PACE-related programs, had been suspended. Eighty-eight percent (88%) of respondents said yes, they would experience lost revenues and lost jobs. Anecdotally, contractors who were interviewed roundly complained of the need to constantly adjust their marketing as well as employment plans in light of policy-driven program changes. Consistent implementation of the CSLP almost certainly would result in greater efficiencies within these contractor businesses. For example, the need for worker training related to program rules and paperwork would

be reduced. Administrative procedures could be streamlined. Marketing approaches could be fine-tuned instead of abandoned.

5. CSLP administrators also anticipated improving program implementation efficiencies. They reported that their Phase 1 experience gave them many ideas for administrative and outreach improvements.

By improving efficiencies through Phase 2 CSLP evolution, administrators believed they could free resources for new efforts. For instance, the Boulder County Sustainability Program staff had designed a new program to spark interest in comprehensive energy home improvement projects, which could then be financed by CSLP. The program focused on creating a one-stop shop for energy home improvement services so as to shorten the time and frustration between the energy audit and completed measures. It was launched with modifications in Fall 2010, minus the PACE financing component.

### **3.3 Qualitative Assessment Conclusions**

The qualitative assessment of CSLP provides strong evidence that total spending on energy- and nonenergy-related home improvements significantly exceeds that which was documented on homeowner invoices and analyzed in Section 2 of this report. Such undocumented spending likely includes qualifying measures that were not financed with PACE and nonqualifying measures. The latter includes, among other things, new windows that are not Energy Star-rated, roof improvements related to a PV installation and cosmetic improvements.

The HELOC seemed especially popular as a non-PACE financing alternative. Other non-PACE financing reportedly used by those who participated or considered participating in CSLP includes bank or credit union financing, solar company in-house financing, and credit cards. Many home improvements inspired by the program were just paid for in cash.

While participants reported that they were happy to use PACE financing, many seemed reluctant to take on too much tax-assessed debt, concerned it could raise their property taxes too high. Alternative financing options helped them to diversify risks associated with this new PACE concept.

The total economic impact of alternatively financed, CSLP-related improvements is unknown. Going roughly by the number of CSLP survey participants who reported using alternative financing, the spending that was documented on CSLP invoices would have to be increased by 20% or more. Contractors who provided survey information estimated an even greater amount of non-PACE spending. Certainly, the economic impacts discussed in Section 2 are a low-end estimate of total PACE-related impacts from Boulder County's Phase 1 CSLP program.

Another conclusion involves the trajectory of the CSLP. The mortgage regulators' challenge stopped PACE residential financing early on. Boulder County's model had been field tested for about a year. It succeeded, but it almost certainly would have had even greater economic benefits after successive rounds. This is not to say that marketing might not have grown harder instead of easier. Phase 1 may have addressed a pent-up demand. Administrative staff and contractors who were interviewed reported that anticipation for Phase 2 workshops seemed less dramatic than it did for Phase 1, with fewer people signing up in advance. At the same time, it is clear that marketing and administrative improvements were in the works, and one of the strongest



impediments to the program—high fees related to setting up a reserve fund—would have been reduced over time.

### ***Climate Smart Neighborhoods***

Rick Schwolsky, who lives with his wife and teen in a newer subdivision on the edge of Boulder, enjoyed participating in the ClimateSmart Loan Program from two angles. First, he had always wanted to add solar PV to his home, but he worried that his family might not stay in their home long enough to enjoy the payback. PACE financing meant that if he did sell, the new owner would pay his or her share of the system cost. Second, Schwolsky wanted to satisfy his professional curiosity about how a PACE program works. As editor of the online EcoHome Magazine, Schwolsky is a professional in the green building business. He looked forward to sharing his experience, from the energy audit through the 4.2-kW PV system interconnection, with his readers.

“The reality was, ClimateSmart made it so easy. There was no down payment. We didn’t pay until the system was installed, and the contractor (Boulder-based Namaste Solar) handled most of the paperwork,” he said. The installation took a total of 10 days, including the interconnection, though there was a delay in scheduling the project, because the CSLP had to aggregate projects, so they tended to happen all at once. Schwolsky found that the \$26,000 project, minus utility incentives and tax credits, ended up adding about the same cost as it saves until the end of the 15-year term on the loan, after which the solar power will be practically free.

Schwolsky said the total loan cost covered some unexpected energy efficiency improvements, too. “We had some problems with door seals, air leaks—fortunately nothing big,” he said. The experience reminded him of the difference between theoretical discussions of energy savings and really achieving them. “I found that I was nervous. I waited until the second round of financing, figuring they’d have worked out any kinks in the program.” Now Schwolsky hopes to see PACE programs nationwide renewed. “It takes a long time to get the word out and to gain homeowners’ trust,” he said.



**Rick Schwolsky said his family sometimes stops to glimpse the new solar panels that are barely visible on their house. *Photo from MRG & Associates***

One program design decision stands out for its influence on local economic impacts. The relatively open invitation to contractors probably diluted the local jobs development impacts of this program.

One question for PACE program administrators in Boulder County and nationwide is how PACE—or similar financing programs—might be used more effectively to build a clean energy economy. Initially, some contractors and many of the materials they use are likely to come from outside the local area—but perhaps that is part of the process of building a green economy.

For example, solar PV module and balance-of-system manufacturing is just beginning to be established in the United States. One assumes that these high-value elements in the economic model would establish in-state or locally more frequently as the market for them appears more stable. Certainly the track record for established PACE programs is too short to have affected the upstream end of the clean energy value chain so far.

Yet it is important to return to the observation that Phase 1 of the CSLP had significant impacts, not only from directly financing, but also from starting a local conversation about home energy retrofits. Homeowners may ultimately choose PACE financing, an alternative type of loan, or cash to pay for their energy improvements, but the news in Boulder County was that they made their choices and installed improvements. CSLP provided information on how to make smart energy efficiency or renewable energy investments, including addressing the upfront cost barrier.

PACE proved itself in Boulder County through Phase 1 of the residential ClimateSmart Loan Program. The economic benefits that came, despite recessionary pressures throughout Colorado, were impressive and program administrators indicated willingness and strong capabilities to build the program through successive phases, thereby supporting even greater economic results.

### ***Financing for Mainstream Solar Customers***

For Steve Schoo, marketing and communications director for Boulder-based solar integrator Independent Power Systems (IPS), the loss of Boulder County's ClimateSmart residential loan program meant a return to old ways of doing business. "We've had a strong reputation in this community. We've had customers with name recognition, whose testimonials mean a lot," Schoo said. On that basis, the 14-year-old company, which has been in Boulder for about four years, built a business mostly with customers that Schoo calls "serious solar supporters."

The promise of ClimateSmart was that IPS could reach a wider audience. As the program started to pick up, IPS heard from more people who were not just scientists, architects, community leaders, and the like. A new tier of customers had started to call, Schoo said. ClimateSmart brought in homeowners of ordinary means who wanted to add a few solar panels along with other energy-based improvements. "On average, we started doing smaller jobs, but there were more and more of them," Schoo said. He also noticed a welcome change in his marketing pitch. "It was a very positive message...ClimateSmart marketing was geared to helping individual homeowners make improvements, which in turn make Boulder a better, more sustainable place to live," Schoo said.

IPS played a lead role in promoting the ClimateSmart loans. Schoo and other IPS staffers put in many volunteer hours to help pass the November 2008 bond measure that funded the program.

They attended forums; they put up yard signs and answered phones. Then, when the first round of funding was announced, they donned ClimateSmart T-shirts and helped run the workshops that customers were required to attend. That experience was rewarding, Schoo said, because until that time, different kinds of contractors—whether heating system installers, insulation contractors or solar companies—seldom came together. ClimateSmart encouraged them to discuss among themselves how to define a complete home energy improvement plan, which would eventually benefit all energy-related contractors.

The news that federal mortgage policymakers had stopped PACE programs (including Boulder’s ClimateSmart loans) came abruptly in June, when IPS was just gearing up to promote solar improvements through another round of financing. Schoo said he expected the continuing recession to have some effect on this next round, but that the effect could be countered by the marketing inertia—such as word of mouth advertising—from the earlier rounds of the program. At the time of this interview in July 2010, Schoo was rolling out an “old” marketing theme—promoting solar as a way to fight expected utility rate increases. Until that campaign took hold, he figured the company would stay busy through the summer converting “at least a dozen” remaining leads initiated during the CSLP into jobs using conventional financing. However, when asked for numbers, Schoo faced an awakening. He had not assessed his leads for a few weeks, so he called an assistant on the office phone. He waited for her to tally numbers, and then his face dropped. “Wow. It’s that bad?” he sighed. “So everyone else cancelled?” He confirmed that all but a few of his leads had already called to say they were reconsidering getting into solar, since the CSLP had been stalled.



**Figure 4. A solar subdivision in Boulder includes IPS solar installations.**  
*Photo from MRG & Associates*

## 4 Summary Conclusions and Observations

The preceding sections of this report, Economic Analysis and Qualitative Assessment, each offer conclusions. This section summarizes the conclusions and offers observations on overall program impacts and lessons learned.

Many aspects of the economic analysis described in this report also offer lessons for any local energy home-improvement campaign that spurs significant investments in energy efficiency and renewables. Strong interest in PACE financing, including Boulder County's choice of that model, is based on its appeal to a wide and diverse audience. The workshops that were required for applicants to the CSLP drew a total attendance of more than 3,000 Boulder County residents. Interviews with participating contractors confirmed that this level of public interest in saving energy and installing solar energy systems was previously unheard of in Boulder. Yet once a homeowner makes a decision to invest and secures the necessary financing, the spending creates economic benefits, whether financed through PACE or through another method of financing. For this reason, this study offers lessons for a range of local energy-retrofit programs.

### 4.1 Results of Input-Output Analysis

The analysis of economic impacts in this report is based on a detailed assessment of CSLP-related customer spending, using invoice data for 598 residential energy retrofits. The total CSLP-financed spending evaluated in this study added up to more than \$9.0 million. Additional residential projects valued at \$0.8 million were completed under the CSLP program, but documentation on these projects was not available, so they were not included in the analysis.

Additional program loan fees, substantial reserve account funding, and other costs were relatively high (approaching 30% of total program costs) in the first (start-up) phase of the program. Costs for the second round of Phase 1 financing were lower than costs for the first round, and CSLP staff believes that these costs would continue to decline. They were not included in the economic impact study.

Where documentation was available on participant spending that was alternatively financed (for example, project add-ons paid for with cash), it was included in the analysis. In addition, the CSLP triggered additional spending that was not well documented. This spending was not included in the economic analysis, though a qualitative assessment of additional spending is discussed below.

The primary analytic tool used to evaluate the economic impacts was an I-O model, which identifies relevant interactions among all sectors of the local and statewide economies. Results of the analysis indicate that CSLP spending in Boulder County alone contributed to 85 short-term jobs, more than \$5 million in earnings, and almost \$14 million in economic activity in Boulder County. These results alone more than justify the county's investment in the program. Program spending supported another 41 short-term jobs outside of Boulder County, \$2 million in additional earnings, and almost \$6 million in additional economic activity statewide. Viewed in the long term, analysis of an ongoing CSLP program with similar participation levels would result in increased total savings and sustained job impacts.

In addition, participant utility bill savings totaled about \$125,000 for the current year. The long-term economic benefits of some measures—especially solar PV—are hardly reflected in this first-year energy savings, as they accumulate over the 20- or 30-year life of the measure and increase if (and this is not assumed in this analysis) energy costs increase year after year.

The relative strength of economic benefits in the statewide market is rather unusual. This occurred because more than 40% of contractors participating in this program were located outside Boulder County. Further, many of the in-county contractors in this study had employees that live and spend most of their earnings outside the county.

This effect is explained largely by a program-design decision to welcome all contractors who were licensed to operate in the communities they served. This made implementation simpler, and it also helped to achieve some noneconomic program goals. For example, it increased the likelihood that residents would install relatively uncommon measures for which there were limited numbers of in-county contractors. Administrators hoped this would help achieve greater greenhouse gas emissions reduction goals. They also hoped it would trigger new, competitive businesses, thereby gradually achieving local economic development goals, as well as spreading benefits throughout the Denver metro area and statewide.

For the state as a whole, program investments supported 126 jobs, more than 9 jobs per million dollars of investment. Wage and salary earnings increased by \$5.1 million in Boulder County and \$7.1 million for the state as a whole in the short term. If the CSLP were continued at the same level of participation and with the same profile of contractor participation for 5 or 10 years into the future, these benefits would clearly multiply.

A longer-term 10-year CSLP program could create a shift in the profile of participating contractors to yield more local benefits, as well as a shift in the industry profile of the state to include more manufacturing related to energy efficiency and renewable energy retrofits. Currently, many of the high-value (and job-creating) products used in these retrofits, such as solar PV panels, are manufactured outside Boulder County—and, in fact, outside the state. Colorado is one of several states that has an economic and energy policy commitment to establishing in-state clean energy industries. Arguably, programs like the CSLP “prime the pump,” establishing a market for energy efficiency and renewable energy products that could be manufactured profitably instate, creating much greater job impacts and economic benefits.

## **4.2 Qualitative Assessment**

The most significant theme is that CSLP spurred considerably more spending than the loan-related project invoices suggest. As mentioned earlier, some invoices included charges for improvements that were not financed by CSLP. These were included in the economic analysis. However, those invoices missed work that was done on CSLP homes by other contractors or done by the homeowners themselves for qualifying and nonqualifying improvements.

Additionally, some projects were inspired by effective program outreach, even though they used alternative financing. A survey of CSLP workshop registrants indicated that more than 20% did not use CSLP financing but went ahead with retrofit projects. They reported that they used cash and other types of financing, especially HELOC. A separate survey of CSLP contractors suggested that even greater additional spending came from alternatively financed, CSLP-inspired

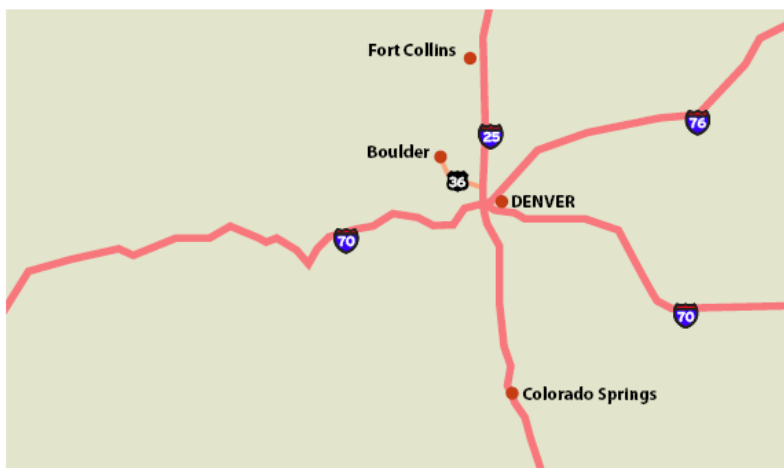
projects. Based on information from both surveys and interviews, we conclude that additional CSLP-inspired spending would likely increase total documented spending by 20% or more. This would, in turn, increase program economic impacts.

The general finding of additional non-PACE spending was confirmed anecdotally by other PACE programs nationwide.<sup>16</sup> It may be a measure of success of the PACE model, as homeowners seem well aware of the need to choose the most appropriate financing for their needs, once PACE has triggered an initial, serious interest in making energy improvements.

Other useful observations are included in the qualitative assessment, many related to the aspects of program design that affected economic impacts. Primary among these was the guideline that led to a high percentage of out-of-county contractors (discussed previously). It was also clear that the program was increasing in cost-effectiveness prior to its early suspension.

The benefits of continuing a program of this nature and building on its success were already clear to CSLP administrators, contractors, residents, and other supporters, when the program was suspended. This report finds strong evidence to support their belief. The Boulder County ClimateSmart program, based on the PACE financing model, yielded quantitative and qualitative economic benefits that would in all likelihood increase over time.

**Colorado Map Showing Boulder and Denver**



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<sup>16</sup> "Jumping on the PACE Financing Train," Panel Session at ASES National Solar Conference, May 2010, Phoenix, Ariz., moderated by A. Heinemann, DSIRE, NC Solar Center.

## Appendix 1

### Boulder County ClimateSmart Loan Program in Context

Of the first dozen PACE programs nationwide, six had funding rounds before federal mortgage regulators put all programs on hold. These were Babylon, New York; Berkeley, California; Boulder County, Colorado; Milwaukee, Wisconsin (a small pilot); Palm Desert, California; and Sonoma County, California. Each of these offered a different program design that was suited to different goals and market conditions. As a result, the economic impacts of each program differ as well. Boulder County PACE administrators adapted some elements of other early PACE programs to their program design; they also created innovations to address their specific goals. It is important to consider program differences and similarities before attempting to apply economic-impact results from one program onto others, whether existing or planned.

Table A1 below summarizes some PACE programs and their innovations.

**Table A1. Comparison of Four PACE Programs Underway by Spring 2010**

	<b>Berkeley, CA</b> <b>BerkeleyFirst</b> <a href="http://ci.berkeley.ca.us/contentdisplay.aspx?id=26580">ci.berkeley.ca.us/contentdisplay.aspx?id=26580</a>	<b>Boulder County, CO</b> <b>ClimateSmart Loan</b> <a href="http://climatesmartloanprogram.com">climatesmartloanprogram.com</a>	<b>Babylon, NY</b> <b>Long Island Green Homes</b> <a href="http://lgreenhomes.com">lgreenhomes.com</a>	<b>Sonoma County, CA</b> <b>Energy Independence</b> <a href="http://sonomacountyenergy.org">sonomacountyenergy.org</a>
<b>Funding Mechanism</b>	Micro-bonds Involving 3rd-party investor.	Public tax and tax-exempt bond offerings. Bonding capacity dedicated by the cities of Boulder and Longmont, plus Boulder County; relatively low interest rates depend on bond market.	Initially Municipal Waste Revolving Fund for reducing CO <sub>2</sub> (\$2 million); private funding thereafter; Very low (3%) interest rates initially.	County unallocated reserve funds from Treasury and Water Authority maximizes flexibility; future bonds may be sold to institutional investors 7% interest rate reported.
<b>Eligible Properties for Implemented Round(s)</b>	Residential, Commercial	Residential (initial), Commercial	Residential	Residential, commercial, industrial
<b>Eligible Measures</b>	Solar PV	Energy efficiency and renewables, including solar PV, water heating, small wind, efficient woodstoves	Energy efficiency (PV if home meets Energy Star for new homes standard)	Energy efficiency, renewables, water conservation
<b>Spending and Participants to Date</b>	\$1.5 million allocated but not entirely spent 13 installations in pilot; total 38 projects through Fall 2009	\$40 million authorized for residential and commercial About \$13 million dedicated to Phase 1 Residential (600+ homes)	\$3.19 million authorized through mid-2010; \$2 million from Solid Waste Fund (366 homes)	Provided \$32.8 million funding through mid-2010 for about 1,050 projects; Commercial program currently active
<b>Collection Mechanism</b>	Property tax bill, senior lien	Property tax bill, senior lien	Separate monthly assessment, transfer to property tax bill if late	Property tax bill, senior lien
<b>General Process</b>	Application, construction, payment	Workshop, quotes, application, bond sale, construction, payment	Application, audit, construction, payment	Application, audit, construction, payment
<b>Unique Attributes</b>	Private funding does not affect local government balance sheet. Basic efficiency measures prerequisite.	Bonds secured by lien plus a moral obligation from local government. Does not affect local government balance sheet Special rates to low-income applicants.	Had to relate energy waste to solid waste guidelines.	Aiming for 10% energy savings per home In litigation with FHMA to support PACE; Funding has little outside risk.

## **U.S. Department of Energy - Energy Efficiency and Renewable Energy Weatherization & Intergovernmental Program**

### **Status Update – Pilot PACE Financing Programs**

*July 2010*

The DOE and Obama Administration is making a broad portfolio of investments in energy efficiency to create jobs and help homeowners save money. There are many innovative financing approaches that are already being deployed or under development by grantees, stakeholders, and the Administration that deliver significant energy savings for homeowners without exposing lenders to undue risk. We look forward to working with Recovery Act grantees to develop promising retrofit financing programs that will help consumers across the country, while generating valuable data on the effectiveness of these programs that will help inform future decisions.

#### **What is the status of the Department's Pilot PACE Financing Programs?**

Over the past several months, financial regulators including FHFA, FDIC and the OCC have expressed concerns about pilot PACE financing programs. On May 5th, 2010, Fannie Mae and Freddie Mac sent a letter stating that their Uniform Securities Instruments prohibit loans that have a senior lien priority to a mortgage.

[May 5th Fannie Mae Lender Letter](#) 

[May 5th Freddie Mac Lender Letter](#) 

In response to these concerns, DOE and Administration officials have met repeatedly with Fannie Mae, Freddie Mac, and the financial regulators as well as PACE stakeholders across the country. In addition, the DOE issued updated guidance for pilot PACE financing programs on May 7th, 2010.

[May 7th DOE Guidelines for Pilot PACE Financing Programs](#) 

In the course of these meetings, the DOE and Administration has offered commitments to work on new more stringent underwriting criteria, improved consumer protections, and additional measures to significantly reduce the risk and financial exposure to mortgage holders. Despite these efforts, the FHFA issued a statement codifying their concerns on July 6th, 2010. In addition, the banking regulators have made clear that they will oppose any program in which PACE assessments are in the senior lien position (OCC issued a bulletin on July 6th, 2010). This is true even of the limited scope of pilot programs that the DOE had planned to fund.

[July 6th FHFA Statement on PACE](#) 

[July 6th OCC Bulletin on PACE](#)

#### **What is the status of property owners that have already received PACE financing with a senior lien priority given the Fannie Mae and Freddie Mac lender letters and statements from financial regulators?**

The DOE and Administration has strongly supported clear reassurances that property owners with existing PACE assessments will not be harmed. The FHFA statement is a major step forward on that issue.

[July 6th FHFA Statement on PACE](#) 

#### **What is the status of Recovery Act grantees intending to use funds to support PACE financing programs with a senior lien priority given the Fannie**




## **Mae and Freddie Mac lender letters and statements from financial regulators?**

The DOE and Administration continue to support pilot PACE financing programs. Recovery Act grantees are not expressly prohibited from using funds to support viable PACE financing programs, however the practical reality is that residential PACE financing programs with a senior lien priority face substantial implementation challenges in the current regulatory environment. In light of the clear opposition from the regulators for PACE financing programs with a senior lien priority, prudent management of the Recovery Act compels DOE and Recovery Act grantees to consider alternatives to programs in which the PACE assessment is given a senior lien priority.

One such option is PACE assessments that are subordinate to first mortgages. This is a structure that is being piloted in Maine and may offer some promise in other states as well. Along with offering other financing approaches, DOE will work with grantees and other PACE stakeholders to explore whether such an approach is feasible and appropriate in their communities. DOE will work with grantees to establish appropriate criteria and standards for such approaches to PACE financing.

In addition, DOE continues to support Recovery Act grantees to identify promising approaches to retrofit financing, including, but not limited to, the following:

- **[Loan Loss Reserve Supported Unsecured Revolving Loan Funds](#)**
- **[Qualified Energy Conservation Bonds](#)**   
(DOE Guidance on Usage of ARRA Funds to Support QECB Issuance is Forthcoming)
- **[On-Bill Utility Financing Programs](#)**
- **[Commercial Property Assessed Clean Energy \(PACE\) Primer](#)**  
(subject to financial regulatory intervention)

DOE will be actively engaging all Recovery Act grantees impacted by the recent developments with pilot PACE financing programs to determine the most effective way to leverage existing or planned program infrastructure to incorporate additional financing tools. However, Recovery Act grantees should feel free to request Technical Assistance through their DOE Project Officer or the following link to the [DOE Technical Assistance Center](#).

DOE will provide further updates and clarification as deemed necessary to assist Recovery Act grantees in implementing effective energy retrofit financing programs.

In the interim, Recovery Act grantees will find helpful resources and background information on additional financing products at the [DOE Financial Products Solutions Center](#).

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## **Policy Framework for PACE Financing Programs**

The following Policy Framework has been developed by the White House and the relevant agencies as a policy framework for Property Assessed Clean Energy (PACE) financing programs. Today, the Vice President is announcing support for the use of federal funds for pilot programs of PACE financing to overcome barriers for families who wish to invest in energy efficiency and renewable energy improvements.

The innovative PACE approach attaches the obligation to repay the cost of improvements to the property, not the individual borrower, creating a way to pay for the improvements if the property is sold. This Policy Framework provides important safeguards for the relevant parties, including homeowners and mortgage lenders. The Policy Framework applies to federal funding of PACE programs and also is designed to serve as a resource for state, local, and tribal governments who seek to carry out PACE activities without federal funding.

The Department of Energy (DOE) is announcing funding for model PACE projects, which will incorporate this Policy Framework's principles for PACE program design. Under the State Energy Program, DOE has received approximately \$80 million of applications for PACE-type programs to provide upfront capital. Additional PACE programs are encouraged through a Funding Opportunity Announcement, released today, for competitive grants under the Energy Efficiency Conservation Block Grant Program. These pilot programs will be accompanied by a significant research effort, so that the federal government can assess the efficacy of PACE as a funding source for energy retrofits and evaluate the effectiveness of the homeowner and lender protections set forth in this Policy Framework.

### **The Promise of PACE Financing**

By making energy efficiency investments easier, less expensive, and more effective, PACE can help to increase the amount invested in energy efficiency. Specifically, PACE programs streamline financing of energy efficiency investments in three key ways. First, property assessments provide a secure, well-established payback mechanism that will lead to lower borrowing costs. The security of the payback mechanism often makes it possible for PACE financing to be offered with no money down requirement. Second, the economies of scale from making PACE financing available to a large group of borrowers can reduce overhead and transaction costs. Finally, effective administration of PACE programs at the local-government level will create more consumer confidence in the economic value of energy efficiency investments.

### **PACE Financing Initiatives: Overview**

Land-secured financing districts (also known as special tax or special assessment districts) are a familiar tool in municipal finance. In a typical assessment district a local government issues bonds to fund projects with a public purpose such as streetlights, sewer systems or underground utility lines. Property owners that benefit from the improvement then repay the bond through property assessments, secured by a property lien and paid as a part of the property taxes.

If appropriately designed and implemented, extension of this finance model to energy improvements may allow property owners to pay for efficient enhancements with expected monthly payments that are less than expected utility bill savings.

### **How it works**

This local-government energy financing structure would allow property owners to “opt-in” to attach up to 100% of the cost of energy improvements to their property tax bill. In the event of nonpayment of the assessment, the local government has the ability to foreclose on the delinquent property in the same manner as for nonpayment of taxes, or it may choose to wait for another party to initiate foreclosure. Importantly, as a protection for mortgage lenders on the property, liability for the assessment in foreclosures should be limited to any amount in arrears at that time, and the full costs of the improvement are not accelerated or due in full. The assessment runs with the property at law and successor owners are responsible for remaining balances.

Tying payment to the property solves credit and collateral issues for energy efficiency and renewable energy loans, reduces up-front costs to a minimum payment or zero, and allows for both the payment and the value of the retrofit to be transferred from one owner to the next. Local governments should establish a reserve fund to backstop late assessment payments, helping assure that investors in energy efficiency and renewable energy loans are paid on time. The use of reserve funds also reduces risk to the first mortgage lender and other private lien-holders, because initial losses to those who fund energy efficient and renewable energy loans are paid out of the reserve fund. Municipalities could also share this risk with contractors through a variety of conditional contract mechanisms.

In certain settings, an alternative financing approach would be for homeowners to pay for energy improvement retrofits through their utility bills. There is value going forward in evaluating these different mechanisms and discovering where each may be most effective. Results may vary geographically or with the market role of local utilities.

## **Existing PACE Programs**

PACE programs that are planned or underway include: Albuquerque, NM; Athens, OH; Austin, TX; Babylon, NY; Berkeley, CA (which pioneered the concept); Boulder, CO; Palm Desert, CA; San Diego, CA; San Francisco, CA; and Santa Fe, NM; and at the state level in California, Connecticut, Maryland, Oregon, Texas, Vermont, Virginia, and Wisconsin. If only 15 percent of residential property owners nationwide took advantage of clean energy community financing, the resulting emissions reductions would contribute 4 percent of the savings needed for the U.S. to reach 1990 emissions levels by 2020. Over time, with appropriate policy development that addresses the interests of the various stakeholders, including the definition of allowable energy efficiency and renewable energy investments, it may also be possible to extend the model to multifamily housing and commercial buildings.

## **Implementation: The Federal Role**

As states and local governments have implemented PACE programs, they have begun to develop practices for homeowner and lender protection. Federal funding using ARRA resources provides an opportunity to encourage innovation and improvement in the PACE financing model. A federal role to encourage PACE pilot programs will facilitate the collection of data, objectively measure and evaluate the performance of PACE programs, and speed the adoption of more uniform and universal best practices that include robust and effective homeowner and lender protections.

Clear home improvement standards, accompanying federal and other public funds, will address the risk of substandard home improvements and improve overall contractor quality. For both homeowners and lenders, the programs should be structured to address risks that could arise given that property tax assessments under PACE usually take priority over private liens in the event of foreclosure. Where appropriate, conditions will be placed on DOE's ARRA funding to address these homeowner and lender concerns.

## **Research on Pilot Programs**

PACE collaborations offer a unique opportunity for the federal government to coordinate and aggregate much-needed, program-specific data such as energy consumption and savings obtainable, investment cash flows achievable, effects on property valuation, risks associated with community-financed retrofit programs, and the effects of new homeowner and mortgage lender protections. Where possible, research can also assess benefits from PACE programs such as reductions to greenhouse gases and economic impacts on community spending and job creation. Utility bills from before and after a retrofit are crucial for measuring energy savings, and support from utilities will be important in providing this information, subject to appropriate privacy safeguards.

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As an integral part of Federal support for pilot PACE programs, the Department of Energy will support substantial research about key aspects of PACE programs, including: the energy and financial returns of energy efficiency and renewable energy retrofits; the effectiveness of homeowner protections; and the effectiveness of safeguards for mortgage and energy lenders.

## **Funding**

Under the State Energy Program, DOE has received approximately \$80 million of applications that could potentially use a PACE financing structure, out of \$3.2 billion in total funding. The Department of Energy is also issuing a Funding Opportunity Announcement of \$454 million under its Competitive Energy Efficiency and Conservation Block Grant program. This "Retrofit Ramp-Up" program will pioneer innovative models, including PACE loans, for rolling out energy efficiency to hundreds of thousands of homes and businesses in a variety of communities. In the Funding Opportunity Announcement, DOE encourages applications for PACE programs, which would be implemented consistent with this Policy Framework and contribute to research efforts about the effectiveness of such programs.

## **Challenges**

As discussed above, federal agencies can play an important role in developing and publicizing measures that address important homeowner and lender protection issues. The Office of Management and Budget will work with the National Economic Council and key federal agencies on additional guidance (not formal rulemaking) for federal grant programs that fund PACE programs. Because PACE programs are still quite new, such as the new federally-funded pilots, best practices may evolve rapidly, and so some aspects of today's Policy Framework may not apply in all situations.

### **Homeowner Protection**

Effective consumer protection is a crucial first line of defense against defaults that would harm both homeowners and lenders. PACE programs should help assure that energy retrofits are designed to pay for themselves within a reasonable period, and that homeowners are protected against fraud or substandard work.

1. *Savings to Investment Ratio.* As has long been the case for DOE's single-family weatherization program, the "savings to investment ratio" for PACE program assessments should be greater than one. This "pay for itself" principle means that the expected average monthly utility savings to homeowners should be greater than the expected monthly increase in tax assessments due to the PACE energy efficiency or renewable energy

- improvements. Improvements should be made where there is a positive net present value, so that expected total utility bill savings are estimated to be greater than expected total costs (principal plus interest). In some instances, tax credits or other subsidies are available to support investments. If so, then the present value of the expected savings to consumers should be greater than the present value of the increase in assessments once those subsidies are included.
2. *Financing Should be for High-Value Investments.* Financing should be limited to investments that have a high return in terms of energy efficiency gains. In some cases, investments can be limited to a set of projects that have well-documented efficiency gains for most houses in a climate zone, such as sealing ducts or installing insulation. In other cases, investments will be based on the results of an authorized energy audit that identifies the energy efficiency gains for a particular house for a particular retrofit. Ensuring that loans are made for these high-value investments will protect homebuyers and mortgage lenders, and maximize the impact of PACE on improving energy efficiency.
  3. *Assuring that the Retrofit is Constructed as Intended.* First, the scope of the retrofit should be determined by a list of presumptively-efficient projects or based on an energy audit, conducted by a qualified auditor or inspector. Second, validly licensed contractors or installers should do the actual home improvements. Third, there should be an after-the-fact quality assurance program. Qualified raters should do reviews upon completion, for the portion of houses needed to assure program quality, to assure that correct work was performed and is up to standards. If the property owner or local government administering the contract is not satisfied with a retrofit or if the follow-up rating shows that the work was not completed in a commercially reasonable manner, the contractor should be required to fix the work. If that does not solve the problem, then just as with any construction project, payment to the contractor can be withheld until such a time as the work is done satisfactorily or the homeowner can seek other redress. In circumstances where a project is not completed to standards, the contractor should be disqualified from further work under the PACE program – a strong incentive to complete work correctly.

This approach provides important incentives and safeguards for all of the relevant parties. For homeowners, the “pay for itself” principle assures that the expected savings exceed the investment, and the protections afforded for proper projects and work address concerns about inappropriate or substandard work. For mortgage and other lenders, these safeguards reduce the risk that overly-expensive, substandard, or uneconomic projects will be undertaken, protecting the value of the house that serves as collateral for the loan.

Furthermore, PACE programs must comply with applicable federal and state consumer laws and include adequate disclosures to and training for homeowners participating in the program. For instance, local governments implementing PACE programs must disclose the risks to participating property owners, including risks related to the default and foreclosure that could result from failure to pay assessments. Along with training and certification standards to be established by DOE and the Department of Housing and Urban Development (HUD), effective anti-fraud measures should be implemented. To avoid “copy cat” programs that offer PACE-like programs without these protections, local, state and federal consumer protection enforcement agencies should target mortgage fraud scams and “copy cat” programs.

### **Lender and Borrower Protection**

If poorly designed, PACE programs could increase risk to mortgage lenders, which in turn could lead to higher interest rates for homeowners. Because local property taxes usually take priority over private liens, including mortgages, mortgage lenders face an increased risk of non-payment if a PACE borrower becomes delinquent on payment.

Because of the importance of the housing finance market, and the need to understand and address any risks posed to homeowners and mortgage lenders, the federal government is supporting PACE loans at this time at the pilot and demonstration level. Federal agencies including DOE, HUD, and Treasury have worked together to understand how best to encourage energy efficiency and renewable energy loans while also creating effective rules and practices to prevent losses in the mortgage market. Over time, a variety of approaches might best address the need to ensure a well-functioning mortgage market by protecting the rights of pre-existing lien holders, perhaps including a national-level guarantee fund alongside or in place of local government-level reserve funds. Experience with pilot PACE programs can inform policy in the longer-term.

As noted earlier, effective consumer protection is a crucial first line of defense against default. The “pay for itself” test also helps lenders, because the long-term value of the house may well be improved by energy efficiency investments that make living in the house more affordable. Additional protections come from the year-by-year nature of the property tax lien if a borrower defaults. For instance, if a homeowner defaults on an eight-year assessment after two years, in most programs only any unpaid property taxes would be collected to cure the default, not the remaining six year balance. This benefit of PACE financing, which should be standard in all PACE programs, is that the entire amount financed will not be accelerated, understanding, however, that the additional tax burden may impact the property value upon default. Another important protection is that the scope of home efficiency enhancements paid through property taxes is limited – property taxes would not be expanded to uses other

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than energy improvements to the home that have a savings-to-investment ratio of greater than one.

Beginning immediately, this Policy Framework supports additional measures to further limit risk to mortgage lenders:

1. *Assessment Reserve Fund.* A reserve fund should be established at the local-government level, to protect the energy investor against late payment or non-payment of the assessment. This reserve fund means that the value of mortgage lenders' collateral should not be reduced by any failure by the homeowner to pay the PACE assessment.
2. *Length of Time.* The length of time for a homeowner to repay the PACE assessments should not exceed the life expectancy of the energy efficient improvements.
3. *Size of Financing Relative to the House Value.* As a general matter, PACE assessments should not exceed a certain percentage of appraised value of the home, generally 10%.
4. *Clear title.* Applicants must prove they are the legal owners of a property, unanimous approval of property-holders is required, and the title should be clear of easements or subordination agreements that conflict with the assessment.
5. *PACE Financing only where no current default.* Participation in the program should not be allowed unless: (i) property taxes are current; (ii) no outstanding and unsatisfied tax liens are on the property; (iii) there are no notices of default or other evidence of property-based debt delinquency for the lesser of the past three years or the property owner's period of ownership; and (iv) the property is current on all mortgage debt.
6. *No Negative Equity Financing.* PACE loans to borrowers who are "underwater" – whose mortgage and other debt on the property is greater than the current value of the house – raise particular risks because such loans are especially likely to default with less than full payment to private lienholders. PACE programs should require a current estimate of appraised value, and outstanding property-based debt cannot be less than the value of the property.
7. *Vulnerable Areas.* Local governments should be cautious in using the PACE model in areas experiencing large home price declines, where large numbers of "underwater" loans may exist. PACE programs in such areas should proceed only after careful attention to local real estate conditions and programmatic safeguards to avoid contributing to additional borrower defaults.



8. *Escrow.* To reduce the risk of non-payment of property assessments, homeowners should escrow payments for PACE programs in the common situations where they already escrow other property tax assessments.

## **Conclusion**

As the innovative PACE programs proceed, state and local governments should work closely with federal agencies to collect and aggregate performance data on the efficacy of consumer and lender safeguards, as well as energy efficiency and renewable energy results, to ensure constant improvement and wide scale program success.

In sum, PACE programs have the potential to increase the accessibility and affordability of energy saving measures, consequently lowering energy bills to residents and reducing the environmental footprints of participating localities. If programs are not properly constructed, however, the programs could potentially create risk for homeowners and lenders. Adoption of best practices, including strong contracting standards in the selection of those doing the retrofits, will help deliver the type of market transformation we need to see retrofitting scale up and achieve our goals. Existing programs have taken steps to design property and project criteria for eligibility, as well as quality assurance measures, that mitigate risk without unnecessarily limiting accessibility. Going forward, reporting to the Department of Energy about the performance of these programs will be important as feedback to improve these innovative programs over time. PACE programs should be conformed and tied to well understood, national scale procedures that will improve the quality and quantity of retrofits, and reduce costs.



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This tool is for illustrative and educational purposes only. You will receive your actual rate and term once you have applied for a loan.

<sup>1</sup> Maximum loan terms presented are based on the state you select, loan type and amount you wish to borrow. The available terms may vary beyond what is presented in this tool. In most cases, lines of credit are open-ended and do not have a maximum term.

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