

September 12, 2012

Via Electronic Mail

Mr. Alfred M. Pollard
General Counsel
Federal Housing Finance Agency
Eighth Floor, 400 Seventh Street, SW
Washington, DC 20024
(Comments/RIN 2590-AA53)

RE: Comments of Berkeley Law's Center for Law, Energy & the Environment on the Federal Housing Finance Agency's Proposed Rule re: Enterprise Underwriting Standards and Mortgage Assets Affected by PACE Programs (RIN 2590-AA53)

Dear Mr. Pollard,

The Center for Law, Energy & the Environment at UC Berkeley School of Law respectfully submits these comments in response to the Proposed Rule published by the Federal Housing Finance Agency ("FHFA"), "Mortgage Assets Affected by PACE Programs," RIN 2590-AA53, 77 Fed. Reg. 3959 (Jan. 26, 2012).

Property-Assessed Clean Energy ("PACE") programs allow local governments to finance renewable energy systems and energy and water efficiency retrofits for their residents by using longstanding property assessment powers. Because Fannie Mae and Freddie Mac (together, the regulated "Enterprises") guarantee or own approximately half of all residential mortgages nationwide, this rule will have a significant impact on residential PACE programs across the nation.

In our view, there is serious question as to whether the Agency's Proposed Rule would survive judicial review on the record as it currently stands. A reviewing court would be troubled, in our opinion, by the failure of the Agency to consider important material in the record or to elaborate its justifications for rejecting important arguments that favor the third risk-mitigation alternative.

A more legally defensible decision would be to adopt the third risk-mitigation alternative as the Final Rule: allow the Enterprises to consent to first-lien PACE obligations that satisfy the key underwriting standards set forth in H.R. 2599, the PACE Assessment Protection Act of 2011. We urge FHFA to carefully consider the existing evidence of economic and community benefits from PACE programs, and adopt the third risk-mitigation alternative as its Final Rule.



I. Introduction

The Center for Law, Energy & the Environment (“CLEE”) is an academic research center at UC Berkeley School of Law. CLEE’s mission is to develop pragmatic law and policy solutions to the most pressing environmental and energy issues at the state, national and local levels. CLEE also serves an important convening and consensus-building role, bringing together environmental and energy law policymakers, legal practitioners, business leaders, non-profits, students, and academic experts to develop solutions to environmental and energy challenges.

One of CLEE’s priority research areas is advancing the transition to renewable energy in California and nationwide. CLEE recently published reports on meeting the California Governor’s goals for securing 12,000 megawatts of distributed generation by 2020, the statewide benefits of net metering, and legal uses of California’s cap-and-trade auction proceeds.

CLEE has reviewed the comment letters submitted in this rulemaking to-date, the empirical studies cited by these commenters, and H.R. 2599, the bi-partisan “PACE Assessment Protection Act of 2011.” CLEE urges FHFA to adopt the third risk-mitigation alternative as set forth in its Proposed Rule.

II. Background

Property Assessed Clean Energy (PACE) is a bipartisan state and local government program that allows property owners to obtain upfront funding for energy efficiency retrofits from their local government, and repay these costs over a period of years through annual assessments on their property tax bill. If a homeowner sells his or her property, the PACE assessment and property improvements transfer to the new owner.

Residential and commercial buildings account for almost 39 percent of total U.S. energy consumption and 38 percent of U.S. carbon dioxide (CO₂) emissions.¹ Therefore, retrofitting buildings to reduce energy consumption is a critical step in addressing climate change, with the added benefits of cutting utility bills, reducing reliance on fossil fuels, and creating local jobs.

Residential PACE programs—at issue in this rulemaking—solve two of the most substantial barriers to homeowners installing energy-saving upgrades: significant up front capital and uncertainty as to the period of homeownership. Since 2009, twenty-seven states and the District of Columbia have enacted PACE programs.

Residential PACE programs nationwide have been effectively halted due to public pronouncements by FHFA and the enterprises it manages, Fannie Mae and Freddie Mac (hereinafter “the Enterprises”).² In a July 6, 2010 Statement, FHFA stated that the first liens created by residential PACE programs posed “significant risk” to lenders, servicers, and

¹ U.S. Department of Energy (DOE), 2008 Buildings Energy Data Book at 31, 38, 50. Prepared for the DOE Office of Energy Efficiency and Renewable Energy by D&R International (2008).

² The FHFA Statement and this rulemaking affect residential properties only. Mortgages on commercial properties are not purchased by Fannie Mae and Freddie Mac and are unaffected by this rulemaking.

mortgage security holders.³ FHFA directed that the Enterprises “undertake prudential actions to protect their enterprises,” including ensuring that loan covenants require approval/consent for any PACE loans, and tightening borrower debt-to-income ratios. Following FHFA’s statement, in August 2010, Fannie Mae and Freddie Mac announced to lenders that they would not purchase any mortgages originated on or after July 6, 2010 which were secured by properties encumbered by a PACE lien.⁴ FHFA issued a Directive on February 28, 2011, instructing the Enterprises to “continue to refrain from purchasing mortgage loans secured by properties with outstanding first-lien PACE obligation.”⁵ These actions effectively thwarted residential PACE programs throughout the country.

Several parties nationwide filed lawsuits challenging these Agency actions, including the State of California, several California counties, municipalities, and the Sierra Club.⁶ Co-plaintiff Sonoma County moved for a preliminary injunction requiring FHFA to institute a notice and comment period regarding its July 2010 letter, in order to comply with the Administrative Procedure Act (“APA”). A Northern District of California court granted the California plaintiffs’ request for a preliminary injunction requiring FHFA, without changing its current policy, to proceed with a public notice and comment process concerning its PACE pronouncement.⁷ In an August 8, 2012 summary judgment order, the Northern District of California court held that FHFA must follow the notice and comment process, as FHFA’s statements and directives on PACE obligations amounted to substantive rulemaking.⁸

On June 15, 2012, FHFA released its Proposed Rule. The Proposed Rule would maintain FHFA’s prior position on PACE programs, and provides that:

1. The Enterprises shall immediately take such actions as are necessary to secure and/or preserve their right to make immediately due the full amount of any obligation secured by a mortgage that becomes, without the consent of the mortgage holder, subject to a first-lien PACE obligation;
2. The Enterprises shall not purchase any mortgage that is subject to a first-lien PACE obligation; and
3. The Enterprises shall not consent to the imposition of a first-lien PACE obligation on any mortgage.⁹

³ FHFA Statement on Certain Energy Retrofit Loan Programs (July 6, 2010), available at <http://www.fhfa.gov/webfiles/15884/PACESTMT7610.pdf>.

⁴ Freddie Mac, Bulletin: Mortgages Secured By Properties With An Outstanding Property Assessed Clean Energy (PACE) Obligation (Aug. 31, 2010), available at <http://www.freddie.com/sell/guide/bulletins/pdf/bl11020.pdf>.

⁵ Letter from Alfred M. Pollard, FHFA (Feb. 28, 2011) to General Counsels of Fannie Mae and Freddie Mac Re: PACE Programs. On file with author.

⁶ The California cases have been consolidated.

⁷ *People of State of California ex rel. Harris v. Federal Housing Finance Agency*, 2011 U.S. Dist. LEXIS 96235 (N.D. Cal. Aug. 26, 2011).

⁸ See *People of State of California v. Federal Housing Finance Agency*, Order Granting Plaintiffs’ Cross-Motion for Summary Judgment, Docket No. 168, Document 194, at *38 (Aug. 9, 2012).

⁹ Federal Housing Finance Agency, Mortgage Assets Affected by PACE Programs, RIN 2590-AA53, 77 Fed. Reg. 3959, 36107 (Jan. 26, 2012) [hereinafter “FHFA Proposed Rule”].

FHFA also set forth three “risk-mitigation alternatives,” described by the Agency as “alternative means of mitigating the financial risks that first-lien PACE programs would otherwise pose to the Enterprises.” The three alternatives are:

1. Repayment of the PACE obligation is irrevocably guaranteed by a qualified insurer, with guarantee triggered by any default or foreclosure.
2. The PACE lien satisfies protective standards set by FHFA, including limiting the PACE obligation to no greater than \$25,000 or 10% of the fair market value of the underlying property, whichever is lower; combined loan-to-value ratio of no more than 65%; borrower’s debt-to-income ratio no greater than 35%; borrower’s FICO credit score not lower than 720; and the Enterprises are to treat a home purchaser’s prepayment of an existing first-lien obligation as an element of the purchase price in determining loan amounts and applying underwriting criteria.
3. The Enterprises may consent to first-lien PACE obligations that satisfy the key underwriting standards set forth in H.R. 2599, the PACE Assessment Protection Act of 2011. These standards require, among other provisions¹⁰:
 - **Minimum equity.** Homeowners must have at least 15% equity in the home;
 - **Limited size.** PACE assessments are capped at 10% of the value of the home;
 - **Past performance criteria.** Homeowners must be current and on-time with tax and mortgage payments;
 - **Audit and evaluation.** Projects require an approved energy audit to ensure that only cost-effective energy efficiency projects are undertaken, and that any improvements funded by PACE are expected to be affixed to the property for the useful life of the improvement based on measures approved by the Department of Energy;
 - **Clear title.** There may be no liens, bankruptcy, or defaults on the property;
 - **Non-acceleration.** PACE assessments may not accelerate upon foreclosure;
 - **Savings-to-investment ratio.** The total energy and water cost savings during the useful lives of the improvements must be expected to exceed the total cost of to the property owner and property owner’s successors; and
 - **Time limit.** The maximum term of the PACE assessment may be no longer than the shorter of (a) 20 years from inception, or (b) the weighted average expected useful life of the PACE improvement(s).

A substantial majority of the comment letters submitted in this rulemaking at the Advance Notice stage are supportive of PACE programs and urge that FHFA rescind its Directive.¹¹ Many of the comments favor of the third risk-mitigation alternative, adopting H.R. 2599’s underwriting standards.

¹⁰ PACE Assessment Protection Act of 2011, H.R. 2599, 112th Cong., 1st Sess. (2011), available at <http://www.gpo.gov/fdsys/pkg/BILLS-112hr2599ih/pdf/BILLS-112hr2599ih.pdf>.

¹¹ These comments can be viewed at <http://www.fhfa.gov/Default.aspx?page=89> (1/26/2012 “Mortgage Assets Affected by PACE Programs”).

III. Legal Standard Under the Administrative Procedure Act

Any regulations issued by FHFA pursuant to its general regulatory authority must comply with the APA's requirements for notice and comment.¹² In addition, the Agency must satisfy the "arbitrary and capricious" standard upon judicial review, which requires the Agency to consider all evidence at its disposal, consider alternatives to a flat ban on the program, and demonstrate a rational connection between the facts it found and the choice it made.¹³ While courts generally offer significant deference to an agency's technical expertise, they do review closely whether the agency properly analyzed the evidence and alternatives presented.

The Supreme Court explained the APA's standard of review in *Motor Vehicle Manufacturers' Association of the United States v. State Farm Mutual Automobile Insurance Company*, 463 U.S. 29 (1983). In *State Farm*, the Supreme Court found that the agency in question, the National Highway Traffic Safety Administration (NHTSA), had been too quick to dismiss the safety benefits of automatic seatbelts and failed to consider the alternative of requiring air bags, alone. The Court held that the agency acted arbitrarily and capriciously in revoking the requirement that new motor vehicles be equipped with passive restraints to protect the safety of the occupants, and the agency failed to present an adequate basis and explanation for rescinding this requirement.¹⁴ The Court stated that the agency must examine the relevant data and articulate a satisfactory explanation for its action including a "rational connection between the facts found and the choice made."¹⁵

Pursuant to the APA's requirements, FHFA must solicit and consider existing evidence on the potential risks and benefits of PACE. The Agency cannot rely on unsupported assumptions that PACE poses financial risks to the Enterprises. This is especially important in light of the evidence that homeowners who receive PACE funding for qualified improvements have been found to be less likely to default on their mortgages than other borrowers, and that homes with energy efficiency upgrades sell for a premium over homes without such improvements.¹⁶

In addition, FHFA must consider all relevant alternatives to a flat ban of PACE programs nationwide. Pursuant to *State Farm*, the Agency does not have discretion to ignore apparently reasonable courses of action without offering a satisfactory explanation and engaging in analysis. FHFA must assess the three risk-mitigation alternatives presented in its Proposed Rule, as well as other viable options for minimizing any alleged risks to the Enterprises caused by PACE programs, such as operating pilot programs in select cities nationwide in order to gather additional relevant data.¹⁷ As articulated below, we believe the most reasonable course of action is adopting the third risk-mitigation alternative.

¹² 12 U.S.C. § 4526(b); 5 U.S.C. § 553(c).

¹³ See 5 U.S.C. §706(2)(A); *Motor Veh. Mfrs. Ass'n v. State Farm Ins.*, 463 U.S. 29, 44 (1983).

¹⁴ *State Farm*, 463 U.S. at 41-43.

¹⁵ *Id.* at 43 (citing *Burlington Truck Lines v. United States*, 371 U.S. 156, 168 (1962)).

¹⁶ This evidence is explained in Part V of these comments.

¹⁷ See FHFA Proposed Rule, 77 Fed. Reg. at 36109.

IV. Legal Precedent for PACE as a Land-Secured Assessment District

A number of states have PACE-specific laws that allow municipalities to create special assessment districts for the purpose of financing homeowners' upfront costs for energy efficiency improvements. Special assessments, however, are not a new concept. Most states, including California, had statutes in place prior to the development of PACE that allow municipalities to create special assessment districts for the purpose of improving local infrastructure and protecting community health.¹⁸ As of 2007, there were 37,000 special assessment districts in the United States.¹⁹

The FHFA Statement, which effectively halted PACE programs throughout the country, stated that: "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."²⁰ In its Advance Notice of Proposed Rulemaking ("ANPR"), FHFA again distinguished PACE liens from traditional assessments by stating that PACE liens are "voluntary - homeowners opt in."²¹ And in its Proposed Rule, FHFA states that PACE programs are different because they involve a "single property," rather than a community-wide benefit that homeowners cannot opt out of.²²

Contrary to FHFA's statements, PACE utilizes a form of municipal financing that has been in existence for more than a century, and the size, duration, and community-wide benefits provided by PACE programs are firmly in line with long-standing local assessment powers. Special assessment districts have a long tradition in the United States extending back at least 100 years.²³ Special assessments have been applied to finance a wide array of public improvements ranging from sidewalks, curbs, sewers, seismic upgrades on private property, septic upgrades, business improvements, security improvements, and street lights. In addition, state statutory frameworks frequently structure assessment districts to have priority lien status over preexisting mortgages.²⁴

¹⁸ See, e.g., Cal. Gov't Code §§ 53311-53368.3 (West 2008); Cal. Pub. Res. Code §§ 26500-26654 (West 1997) (geologic hazard abatement districts); Improvement Act of 1911, Cal. Sts. & High. Code §§ 5000-5026; 5180-5182; 5341-5344; 5450-5488; 5600-5602; 5896.1-5896.17 (2009); Consolidated Local Improvements Law, Nev. Rev. Stat. Ann. §§271.010 -271.025; 271.040-271.050; 271.265 (2010).

¹⁹ See U.S. Census Bureau, Local Governments and Public School Systems by State: 2007, available at <http://www.census.gov/govs/cog/GovOrgTab03ss.html>. Data from 2007 is the latest available; 2012 data is currently being collected.

²⁰ Press Release, Federal Housing Finance Agency, FHFA Statement on Certain Energy Retrofit Loan Programs (July 6, 2010) [hereinafter "FHFA PACE Statement"], available at <http://www.fhfa.gov/webfiles/15884/PACESTMT7610.pdf>.

²¹ Federal Housing Finance Agency, Mortgage Assets Affected by PACE Programs, Advance Notice of Proposed Rulemaking, 77 Fed. Reg. 3959, 3960 (Jan. 26, 2012).

²² FHFA Proposed Rule at 36105.

²³ See *German Sav. & Loan Soc'y v. Ramish*, 138 Cal. 120 (1902) (upholding priority of assessment lien for street improvements over preexisting mortgage).

²⁴ See, e.g., Cal. Gov't Code §§ 53311-53317.5 (West 2005); Cal. Pub. Res. Code §§ 26500-26654 (West 1997) (geologic hazard abatement districts); Improvement Act of 1911, Cal. Sts. & High. Code §§ 5000-5026; 5180-5182; 5341-5344; 5450-5488; 5600-5602; 5896.1-5896.17 (2009); Consolidated Local

Moreover, it was the FHFA and Enterprises’ practice to allow these special assessments to proceed and take first-lien status over preexisting mortgages, without the need for rigorous underwriting criteria. The Department of Energy (DOE) Guidelines for Pilot PACE Financing Programs, written in 2010 prior to FHFA’s pronouncement on PACE, expressly set out to provide underwriting criteria for PACE financing that would be “significantly more rigorous than the underwriting standards currently applied to land-secured financing districts.”²⁵ H.R. 2599 expands upon these DOE guidelines and best practices. Therefore, the Agency’s rejection of PACE programs—even with H.R. 2599’s underwriting criteria—is a notable departure from its prior acceptance of land-secured financing districts.

Similarly, the duration of the assessment does not make PACE programs more risky than other traditional land-secured assessments, which can range from ten to fifty years. H.R. 2599’s underwriting standards limit the duration of PACE programs to no more than twenty years or the weighted average expected useful life of the PACE improvement or improvements, whichever is shorter.²⁶ Many existing state programs codify this time limit.²⁷ In addition, PACE assessments run with the property, and properly structured PACE legislation, such as California’s PACE law, does not accelerate the entirety of the PACE financing in the event of default. Only delinquent assessment payments would become due immediately, and the remainder of the assessment would be passed on to next homeowner. Given these restrictions—required by alternative three—PACE improvements should pose no more risk to lenders and loan servicers than other traditional, historically accepted tax assessments that have first lien status. In fact, properly structured PACE programs should actually decrease risk to the Enterprises because they are designed to reduce net costs to the homeowner.

FHFA’s attempt to distinguish PACE assessments by stating that they “do not have the traditional community benefits associated with taxing initiatives” is likewise unavailing.²⁸ PACE programs provide similar local, community-wide benefits that other public-purpose tax liens do for services such as sewers, streets, and lighting. Energy and water efficiency upgrades and local renewable energy generation provide local community benefits such as:

- Reduced energy consumption;
- Increased water conservation from water efficiency upgrades;
- Reduced air pollution and particulate matter produced by fossil-fuel power plants, which provides community-wide health and environmental benefits;
- Reduced greenhouse emissions, which may assist cities in meeting GHG-reduction goals;

Improvements Law, Nev. Rev. Stat. Ann. §§271.010 -271.025; 271.040-271.050; 271.265 (2010); Or. Rev. Stat. Ann. §§ 223.001; 223.114 -223.117; 223.230; 223.235 (2011).

²⁵ U.S. Department of Energy, Guidelines for Pilot PACE Financing Programs (2010) at 1 [hereinafter DOE PACE Guidelines], available at http://www1.eere.energy.gov/wip/pdfs/arra_guidelines_for_pilot_pace_programs.pdf.

²⁶ H.R. 2599 at 18.

²⁷ See, e.g., California Assembly Bill 811 (Cal. Stats. 2008, ch. 159), Cal. Streets & Hwys Code § 5898.12.

²⁸ FHFA PACE Statement.

- Creation of new jobs in renewable energy, installation, and energy efficiency within the community itself;
- Lower energy and utility bills, especially where net-metering is available; and
- Increased energy grid security, benefitting the community by minimizing disruptions caused by transmission line or power plant outages.

Finally, the “opt-in” component of PACE programs is simply immaterial, as many land-secured assessments are voluntary. Examples include the City of Torrance, California, which funded voluntary seismic retrofits,²⁹ and the Massachusetts Community Septic Program, which encouraged homeowners to voluntarily upgrade their septic systems by applying for local government financing.³⁰ Many of the comments submitted in this rulemaking describe other voluntary or “opt-in” land-secured assessments that pre-date FHFA’s current rejection of PACE programs. Indeed, it seems counterintuitive that the Agency points to this feature as a negative characteristic of PACE programs, as it later states that PACE programs’ “rapid proliferation” increases the magnitude of risk that they present to the Enterprises. Because these programs are voluntary or “opt-in,” they may attract more informed property owners whom FHFA admits may be less likely to default on their PACE obligations and mortgage payments. In addition, the “opt-in” feature protects homeowners and lenders by allowing those who benefit from lower energy bills to incur the cost of the improvements, and by structuring the improvements to have a savings-to-investment ratio greater than one.

In sum, PACE has the same characteristics as traditional land-secured assessment districts in the United States. Longstanding local government authority provides that communities may create such assessment districts in order to finance health, environmental, or property-related improvements. The PACE underwriting standards set forth in H.R. 2599, as well as the “best practices” articulated in DOE’s PACE Guidelines, are designed to ensure that PACE programs preserve local government authority to control local energy and water resources, air quality, and job creation, while reducing risk to FHFA and the Enterprises it regulates. This guidance should be carefully considered by FHFA before maintaining its blanket prohibition on PACE programs, especially in light of the existing positive evidence from PACE and the absence of negative data showing any “unacceptable level of risk” posed by these programs.

V. Relevant Data on Home Values and Default Rates Demonstrates that PACE Programs Provide Economic Benefits to Homeowners and Mortgage Holders, Rather Than Create Any Increased Risk

In its 2010 statements and Advance Notice of Proposed Rulemaking, FHFA repeatedly comments that PACE programs “pose unusual and difficult risk management challenges,” and “[PACE] programs present significant safety and soundness concerns.” However, FHFA lacks concrete data that demonstrates this increased risk. Rather, the data before us shows that PACE

²⁹ California Office of Emergency Services, Bay Area Regional Earthquake Preparedness Project, Seismic Retrofit Incentive Programs: A Handbook for Local Governments, Part Six 47-48 (1992), available at <http://abag.ca.gov/bayarea/eqmaps/incentives/>.

³⁰ Massachusetts Department of Environmental Protection, Community Septic Management Program (2005), available at <http://www.mass.gov/dep/water/wastewater/onsite.htm#comm>.

programs have lower than average default rates, and that homes with energy efficiency upgrades or renewable energy systems sell for a premium over homes without such upgrades. To the extent FHFA considers this evidence inconclusive, it should work with DOE and other interested stakeholders to test its currently unsupported hypothesis by allowing PACE programs to proceed with H.R. 2599's underwriting criteria in place. To simply assume that PACE programs pose this risk without any data to support this conclusion contravenes the very purpose of the APA's notice and comment process.

First, data shows that homeowners who install energy efficiency improvements or renewable energy generators are likely to increase the value of the property, benefitting lenders, loan servicers, local communities and homeowners. Relevant studies include:

- A 2011 Lawrence Berkeley National Laboratory assessment of 72,000 homes showing an average \$17,000 sales price premium for homes with photovoltaic systems³¹;
- A 2011 study published in the *Journal of Sustainable Real Estate* finding that homes with ENERGY STAR ratings sell for \$8.66 more per square foot than comparable homes without this rating³²; and
- A July 2012 UCLA and UC Berkeley report finding an estimated a 9% price premium for ENERGY STAR certified California homes relative to similar homes that are not certified.³³
- An August 2012 study in the *European Economic Review* surveyed a large sample of homes in the San Diego and Sacramento, California areas to compare the sales value of homes with solar panels relative to comparable homes without solar panels. The study found that solar panels are capitalized at roughly a 3.5% premium, after controlling for flexible neighborhood price trends. This corresponds to a predicted \$22,554 increase in price for the average home sale with solar panels installed.³⁴

In contrast to this data and analysis, there is no data cited in the Advance Notice of Proposed Rulemaking or Proposed Rule that supports the position that PACE projects may decrease home values.

Second, most PACE programs are designed to save homeowners money by reducing utility bills by a greater amount than is spent on the PACE assessment. Indeed, alternative three in this rulemaking would require this. Thus, these homeowners will be in a better position to pay off their mortgages if this alternative is adopted. The data currently available shows that a

³¹ Ben Hoen, et. al., *An Analysis of the Effects of Residential Photovoltaic Energy Systems on Home Sales Prices in California*, Lawrence Berkeley National Laboratory (April 2011), available at <http://newscenter.lbl.gov/news-releases/2011/04/21/bright-spot-for-solar/>.

³² Bryan Bloom, et. al., *Valuing Green Home Designs: A Study of Energy Star Homes*, 3 *Journal of Sustainable Real Estate*, No. 1 at 109 (2011), available at http://www.costar.com/uploadedFiles/JOSRE/JournalPdfs/06.109_126.pdf.

³³ Matthew Kahn and Nils Kok, *The Value of Green Labels in the California Housing Market*, UC Berkeley and UCLA (July 2012), available at http://www.corporate-engagement.com/files/publication/KK_Green_Homes_071912.pdf.

³⁴ Dastrup, et.al., *Understanding the Solar Home Price Premium: Electricity Generation And "Green" Social Status*, *European Economic Review* 56 (2012) 961-973.

positive correlation exists between homes with energy efficiency improvements and lower default and delinquency rates.

Data submitted to PACENow from PACE programs in Sonoma County (CA), Boulder County (CO), and Babylon (NY) shows that of 2,723 properties with PACE liens there have been 24 defaults, translating to a default rate of .88 percent.³⁵ In comparison, the national percentage of mortgage loans in foreclosure at the end of the fourth quarter 2011 was 4.38 percent.³⁶ Sonoma County's letter in this rulemaking describes its program data in more detail, and shows that year after year, PACE assessment mortgage and tax delinquency rates were significantly lower than the County's overall mortgage and tax delinquency rates.

Finally, in addition to evidence showing property value increases and lower default rates, PACE programs also provide economic benefits to local communities and the United States. One study by EcoNorthwest concluded that \$4 million in total PACE project spending can generate \$10 million in gross economic output, \$1 million in combined Federal, State and Local tax revenue, and 60 jobs.³⁷ Another study conducted in 2011 by the DOE on the economic impacts of the Boulder County Climate Smart (PACE) Loan Program found that \$9 million spent on energy efficiency or renewable energy projects on 598 homes contributed, statewide, to more than \$7 million in earnings, approximately \$20 million in total economic activity, and the creation of roughly 125 short-term jobs.³⁸

In short, PACE programs are designed to increase a property's value and to reduce risks to homeowners and lenders. In addition, these programs provide valuable community health, environmental and economic benefits. While we may need more data to assess the effect of energy efficiency upgrades across wide markets and different residential price points, the data we currently have on home values and quantitative risk to the Enterprises supports the continuation of PACE programs. A reasonable approach would be to allow these programs to continue as they are, or to require programs to adopt the underwriting standards set forth in H.R. 2599 for an additional layer of protection against any real or perceived risk.

VI. Conclusion

Climate change and dependence on fossil fuels are two of the most pressing and complex issues of our time. These challenges will not be easily overcome, especially without innovative approaches to reducing energy consumption. Residential PACE programs are a promising tool to reduce energy consumption and provide community health and economic benefits.

³⁵ PACENow Comment Letter to FHFA (March 25, 2012) at 9, available at http://www.fhfa.gov/webfiles/23780/348_PACENow.pdf.

³⁶ Mortgage Bankers Association, *Press Release: Delinquencies and Foreclosures Decline in Latest MBA Mortgage Delinquency Survey* (Feb. 16, 2012), available at <http://www.mortgagebankers.org/NewsandMedia/PressCenter/79827.htm>.

³⁷ EcoNorthwest, *Economic Impact Analysis of PACE* (April 2011), available at <http://pacenow.org/wp-content/uploads/2012/08/EcoNorthwest-Economic-Analysis-of-PACE1.pdf>.

³⁸ U.S. Department of Energy, National Renewable Energy Laboratory, "Economic Impacts from the Boulder County, Colorado, ClimateSmart Loan Program: Using Property-Assessed Clean Energy Financing," July 2011, available at <http://www.nrel.gov/docs/fy11osti/52231.pdf>.

Berkeley Law's Center for Law, Energy & the Environment maintains that FHFA, through the third risk-mitigation alternative, can ensure that eligibility requirements for homeowners in residential PACE programs conform to standards that extend additional protection to mortgage lenders and the Enterprises. This additional layer of protection may not even be necessary, as the data before us demonstrates that some PACE programs actually reduce risk to lenders and mortgage holders. Nevertheless, the underwriting standards set forth in H.R. 2599 should mitigate any concerns that FHFA had with previous PACE programs.

Finally, we encourage FHFA to meet with DOE and other interested stakeholders to set a methodology for data collection and reporting by participating states and municipalities. Thank you for this opportunity to comment on FHFA's Proposed Rule.

Sincerely,

A handwritten signature in black ink, appearing to read "Jayni Foley Hein". The signature is fluid and cursive, with the first name "Jayni" being the most prominent.

Jayni Foley Hein
Executive Director
Center for Law, Energy & the Environment
UC Berkeley School of Law

Attachments [Note: Additional materials cited have been submitted under separate cover.]

INDEX OF AUTHORITIES FOR COMMENTS IN RIN 2590-AA52

Listed in order of citation

1. U.S. Department of Energy (DOE), 2008 Buildings Energy Data Book. Prepared for the DOE Office of Energy Efficiency and Renewable Energy by D&R International (2008).
2. FHFA Statement on Certain Energy Retrofit Loan Programs (July 6, 2010), available at <http://www.fhfa.gov/webfiles/15884/PACESTMT7610.pdf>.
3. Freddie Mac, Bulletin: Mortgages Secured By Properties With An Outstanding Property Assessed Clean Energy (PACE) Obligation (Aug. 31, 2010), available at <http://www.freddiemac.com/sell/guide/bulletins/pdf/bl11020.pdf>.
4. Letter from Alfred M. Pollard, FHFA (Feb. 28, 2011) to General Counsels of Fannie Mae and Freddie Mac Re: PACE Programs. On file with author.
5. *People of State of California ex rel. Harris v. Federal Housing Finance Agency*, 2011 U.S. Dist. LEXIS 96235 (N.D. Cal. Aug. 26, 2011).
6. *People of State of California v. Federal Housing Finance Agency*, Order Granting Plaintiffs' Cross-Motion for Summary Judgment, Docket No. 168, Document 194, at *38 (Aug. 9, 2012).
7. Federal Housing Finance Agency, Mortgage Assets Affected by PACE Programs, RIN 2590-AA53, 77 Fed. Reg. 3959 (Jan. 26, 2012).
8. PACE Assessment Protection Act of 2011, H.R. 2599, 112th Cong., 1st Session (2011), available at <http://www.gpo.gov/fdsys/pkg/BILLS-112hr2599ih/pdf/BILLS-112hr2599ih.pdf>.
9. 12 U.S.C. § 4526(b).
10. 5 U.S.C. § 553(c).
11. 5 U.S.C. §706(2)(A).
12. *Motor Veh. Mfrs. Ass'n v. State Farm Ins.*, 463 U.S. 29 (1983).



13. Cal. Gov't Code §§ 53311-53317.5 (West 2005).
14. Cal. Pub. Res. Code §§ 26500-26654 (West 1997).
15. Improvement Act of 1911, Cal. Sts. & High. Code §§ 5000-5026; 5180-5182; 5341-5344; 5450-5488; 5600-5602; 5896.1-5896.17 (West 2009).
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2008 BUILDINGS ENERGY DATA BOOK



U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy

This version is dated: March 2009

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2008 Buildings Energy Data Book

March 2009

Prepared for the
Buildings Technologies Program
Energy Efficiency and Renewable Energy
U.S. Department of Energy

by
D&R International, Ltd.

under contract to
National Energy Technology Laboratory

Chapter 1 contains energy consumption, expenditures, environmental impacts, and economic data related to the Buildings Sector. There is also some data from the former Quad Equivalents chapter. A new data section, Embodied Energy of Building Assemblies, contains data on energy used during the life-cycle of building materials.

The following pieces of information give some insight into general trends in the Buildings Sector:

- Electricity energy consumption in the sector is increasing. Natural gas and petroleum energy consumption are declining.
- Less than 2 percent of annual Buildings Sector energy consumption is from renewable energy, each year from 1997 through 2030.
- In 2006, the Residential Sector consumed 37 percent of all electricity produced in the United States. The Commercial Sector consumed 36 percent.
- Space heating is the largest energy end-use in the Buildings Sector. In 2006, it was 34 percent of *site* energy and 20 percent of primary energy.
- From 2006 through 2030, space heating, lighting, and space cooling are the top three energy end-uses (as a percentage of primary energy). Water heating and electronics are the next top two end-uses.
- Aggregate energy expenditures will have doubled from 1980 to 2030; the increase is 28 percent from 2006 to 2030.
- Electricity expenditures make up 67 percent of total Buildings Sector energy expenditures in 2006; in 2030, electricity expenditures are up to 70 percent.
- From 2006 to 2030, Buildings Sector electricity expenditures increase 34 percent to a total of \$353 billion. Natural gas increases 19 percent to a total of \$112 billion. Petroleum increases 5.5 percent to a total of \$36 billion.
- The average price of electricity in the Residential Sector in 2006 was 10.4 cents per kWh; 9.5 cents per kWh for the Commercial Sector.
- Space heating, lighting, and space cooling are the top three energy end-use expenditures.
- New buildings construction is \$785 billion in 2006. Building improvements and repairs is \$438 billion.

- Carbon dioxide emissions by utilities generating, transmitting, and distributing electricity drives the Buildings Sector carbon dioxide emissions.
- The Buildings Sector percentage of carbon dioxide emissions increases from 38 percent in 2006 to 43 percent in 2030. Emissions in 1980 were 33 percent.
- World carbon dioxide emissions increased 1.9 percent per year from 1990 through 2005. Emissions are projected to increase 2.1 percent per year from 2005 to 2010.

Year	Natural Gas		Petroleum (1)		Coal		Renewable(2)		Electricity		TOTAL (2)	Growth Rate 2006-Year			
	Quads	%	Quads	%	Quads	%	Quads	%	Sales	Losses			Total		
1980	7.52	28%	3.04	11%	0.15	0.6%	0.87	3.3%	4.35	10.51	14.86	56.2%	26.43	100%	-
1990	7.22	24%	2.36	8%	0.15	0.5%	0.74	2.4%	6.01	13.92	19.93	65.6%	30.41	100%	-
2000	8.35	22%	2.32	6%	0.10	0.3%	0.63	1.7%	8.02	18.26	26.28	69.8%	37.68	100%	-
2006	7.42	19%	1.93	5%	0.09	0.2%	0.58	1.5%	9.05	19.70 (3)	28.75	74.2%	38.77	100%	-
2010	7.99	19%	1.95	5%	0.09	0.2%	0.62	1.5%	9.67	20.71	30.38	74.0%	41.04	100%	1.4%
2015	8.46	20%	2.00	5%	0.09	0.2%	0.61	1.4%	10.22	21.59	31.81	74.0%	42.97	100%	1.1%
2020	8.77	19%	2.01	4%	0.09	0.2%	0.61	1.3%	10.92	23.04	33.96	74.7%	45.45	100%	1.1%
2025	8.98	19%	1.99	4%	0.09	0.2%	0.61	1.3%	11.68	24.44	36.11	75.6%	47.78	100%	1.1%
2030	9.11	18%	1.97	4%	0.09	0.2%	0.61	1.2%	12.50	25.82	38.32	76.5%	50.10	100%	1.1%

Note(s): 1) Petroleum includes distillate and residual fuels, liquefied petroleum gas, kerosene, and motor gasoline. 2) Includes site -marketed and non-marketed renewable energy. 3) 2006 site -to-source electricity conversion = 3.18.

Source(s): EIA, State Energy Data 2005: Consumption, February 2008, Tables 8-12, p. 18-22 for 1980-2005; and EIA, Annual Energy Outlook 2008, Mar. 2008, Table A2, p. 117-119 for 2006-2030 and Table A17, p. 143-144 for non-marketed renewable energy.

Year	Wood (2)		Solar Thermal (3)		Solar PV (3)		GSHP (4)		Total	Growth Rate 2006-Year
	Quads	%	Quads	%	Quads	%	Quads	%		
1980	0.858		0.000		0.000		0.000		0.858	-
1990	0.609		0.056		0.000		0.003		0.668	-
2000	0.559		0.024		0.000		0.017		0.599	-
2006	0.538		0.038		0.001		0.003		0.581	-
2010	0.570		0.043		0.004		0.004		0.621	1.7%
2015	0.547		0.052		0.004		0.006		0.609	0.5%
2020	0.533		0.059		0.006		0.008		0.607	0.3%
2025	0.520		0.066		0.010		0.011		0.607	0.2%
2030	0.508		0.073		0.016		0.014		0.611	0.2%

Note(s): 1) Does not include renewable energy consumed by electric utilities (including hydroelectric). 2) Includes wood and wood waste, municipal solid waste, and other biomass used by the commercial sector to cogenerate electricity. 3) Includes only solar energy. 4) GHP = Ground-coupled heat pumps.

Source(s): EIA, State Energy Data 2005: Consumption, February 2008, Tables 8-12, p. 18-22 for 1980-2000; and EIA, Annual Energy Outlook 2008, Mar. 2008, Table A17, p. 143-144 for 2006-2030; Annual Energy Outlook 2006, Feb. 2006, Table A17 p. 159; EIA, Annual Energy Outlook 2005, Jan. 2005, Table A17 p.163; EIA; Annual Energy Outlook 2004, Jan. 2004, Table A18 p. 157; EIA, Annual Energy Outlook 2002, Dec. 2001, Table A18 p.148 For 1999-2004 Solar

Year	Buildings			Industry	Transportation	Total	Total Consumption (quads)
	Residential	Commercial	Total				
1980(1)	27.4%	18.3%	45.7%	36.0%	18.3%	100%	57.9
1990	22.4%	17.5%	40.0%	38.9%	21.1%	100%	76.1
2000	21.1%	17.7%	38.8%	36.1%	25.2%	100%	97.2
2006	20.9%	18.0%	38.9%	32.7%	28.4%	100%	99.5
2010	21.5%	18.1%	39.7%	32.2%	28.1%	100%	103.3
2015	21.0%	19.0%	40.0%	31.6%	28.4%	100%	107.3
2020	21.1%	19.8%	40.9%	30.9%	28.2%	100%	110.8
2025	21.1%	20.6%	41.6%	30.5%	27.9%	100%	114.5
2030	21.2%	21.2%	42.4%	29.6%	28.0%	100%	118.0

Note(s): 1) Renewables are not included in the 1980 data.

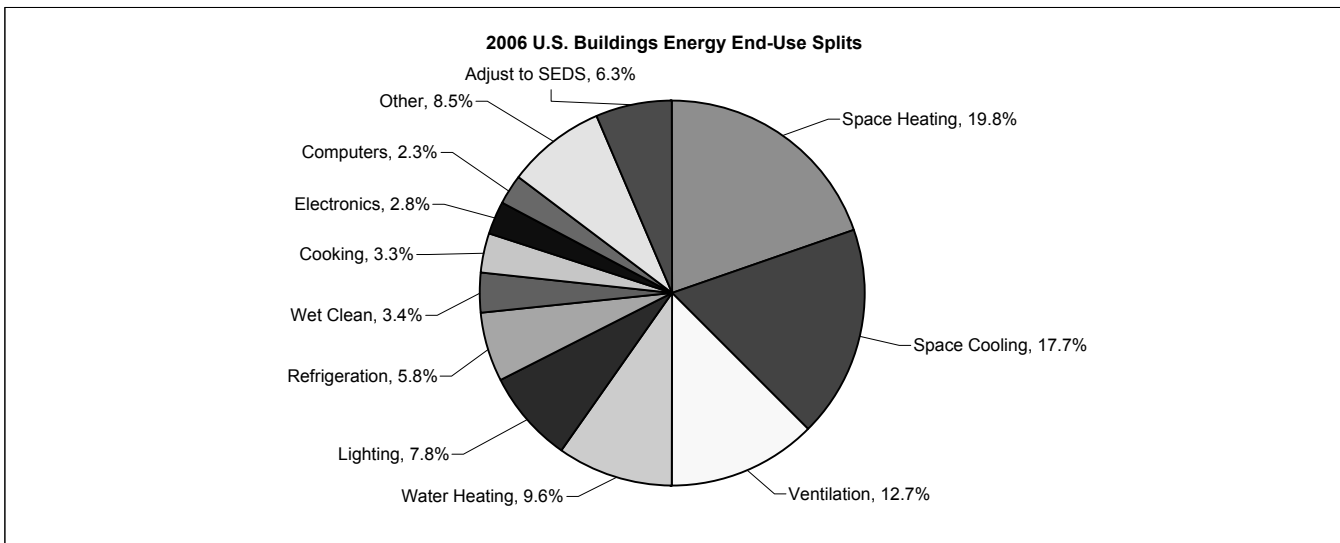
Source(s): EIA, State Energy Data 2005: Consumption, February 2008, Tables 8-12, p. 18-22 for 1980-2005; and EIA, Annual Energy Outlook 2008, Mar. 2008, Table A2, p. 117-119 for 2006-2030 data and Table A17, p. 143-144 for non-marketed renewable energy.

1.1.4 2006 U.S. Buildings Energy End-Use Splits, by Fuel Type (Quadrillion Btu)

	Natural Fuel		Other		Renw.	Site	Site		Primary	Primary	
	Gas	Oil (1)	LPG	Fuel(2)	En.(3)	Electric	Total	Percent	Electric (4)	Total	Percent
Space Heating (5)	4.31	0.84	0.23	0.18	0.41	0.53	6.50	34.1%	1.69	7.66	19.8%
Lighting						2.16	2.16	11.3%	6.86	6.86	17.7%
Space Cooling	0.02					1.54	1.56	8.2%	4.89	4.91	12.7%
Water Heating	1.63	0.15	0.06		0.04	0.58	2.45	12.9%	1.85	3.72	9.6%
Electronics (6)						0.96	0.96	5.0%	3.04	3.04	7.8%
Refrigeration (7)						0.70	0.70	3.7%	2.23	2.23	5.8%
Cooking	0.45		0.03			0.27	0.75	3.9%	0.85	1.33	3.4%
Wet Clean (8)	0.07					0.38	0.46	2.4%	1.22	1.30	3.3%
Ventilation (9)						0.35	0.35	1.8%	1.10	1.10	2.8%
Computers						0.28	0.28	1.5%	0.89	0.89	2.3%
Other (10)	0.27	0.02	0.23	0.05	0.13	0.82	1.52	8.0%	2.60	3.30	8.5%
Adjust to SEDS (11)	0.67	0.23				0.48	1.37	7.2%	1.54	2.43	6.3%
Total	7.42	1.24	0.55	0.23	0.58	9.05	19.06	100%	28.75	38.77	100%

Note(s): 1) Includes distillate fuel oil (1.12 quad) and residual fuel oil (0.9 quad). 2) Kerosene (0.12 quad) and coal (0.09 quad) are assumed attributable to space heating. Motor gasoline (0.05 quad) assumed attributable to other end-uses. 3) Comprised of wood space heating (0.41 quad), biomass (0.13 quad), solar water heating (0.03 quad), geothermal space heating (less than 0.01 quad), and solar photovoltaics (PV) less than 0.01 quad). 4) Site -to-source electricity conversion (due to generation and transmission losses) = 3.18. 5) Includes furnace fans (0.21 quad). 6) Includes color television (1.05 quad) and other office equipment (0.64 quad). 7) Includes refrigerators (1.24 quad) and freezers (0.49 quad). Includes commercial refrigeration. 9) Includes clothes washers (0.11 quad), natural gas clothes dryers (0.07 quad), electric clothes dryers (0.81 quad) and dishwashers (0.3 quad). Does not include water heating energy. 8) Commercial only; residential fan and pump energy use included proportionately in space heating and cooling. 10) Includes residential small electric devices, heating elements, motors, swimming pool heaters, hot tub heaters, outdoor grills, and natural gas outdoor lighting. Includes commercial service station equipment, ATMs, telecommunications equipment, medical equipment, pumps, emergency electric generators, combined heat and power in commercial buildings, and manufacturing performed in commercial buildings. 11) Energy adjustment EIA uses to relieve discrepancies between data sources. Energy attributable to the residential and commercial buildings sector, but not directly to specific end-uses.

Source(s): EIA, Annual Energy Outlook 2008, Mar. 2008, Tables A2, p. 117-119, Table A4, p. 122-123, Table A5, p. 124-125, and Table A17, p. 143-144; EIA, National Energy Modeling System (NEMS) for AEO 2008, Mar. 2008; BTS/A.D. Little, Electricity Consumption by Small End-Uses in Residential Buildings, Aug. 1998, Appendix A for residential electric end-uses; BTS/A.D. Little, Energy Consumption Characteristics of Commercial Building HVAC Systems, Volume II: Thermal Distribution, Auxiliary Equipment, and Ventilation, Oct. 1999, p. 1-2 and 5-25 - 5-26; EIA, Annual Energy Outlook 1998, Dec. 1997, Table A5, p. 108-109 for 1995 ventilation; BTP/Navigant Consulting, U.S. Lighting Market Characterization, Volume I, Sept. 2002, Table 8-2, p. 63; and EIA, Supplement to the AEO 2008, April 2008, Table 22.

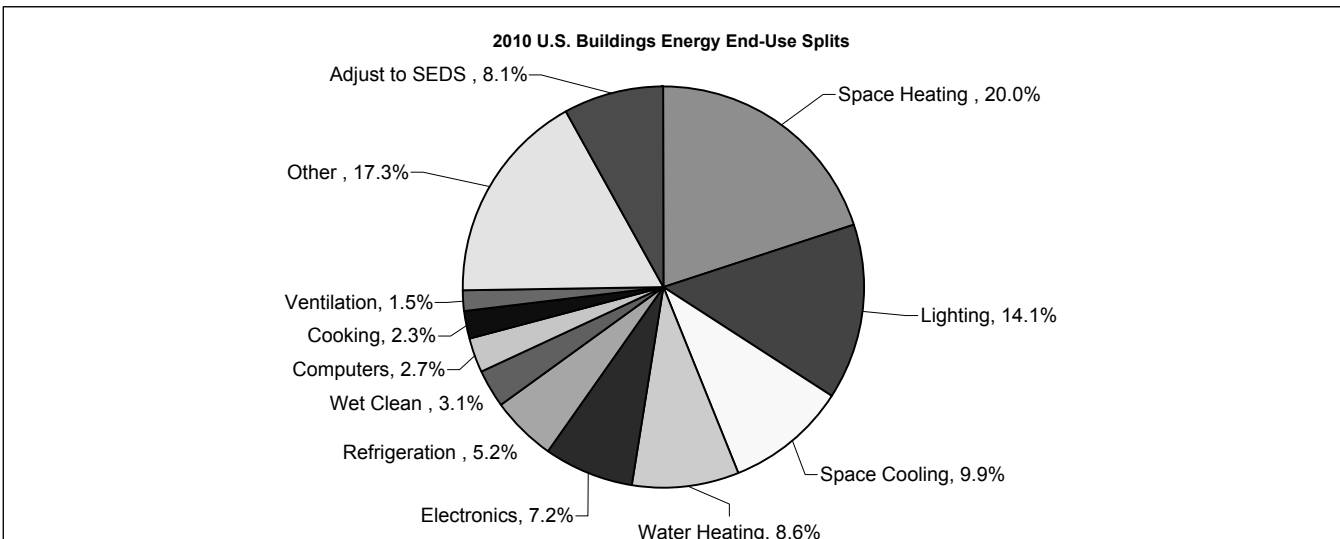


1.1.5 2010 U.S. Buildings Energy End-Use Splits, by Fuel Type (Quadrillion Btu)

	Natural Gas		Fuel Oil (1)		LPG	Other Fuel(2)		Renw. En.(3)	Site Electric	Site		Primary Electric (4)	Primary	
	Gas	Oil (1)	Fuel(2)	En.(3)		Total	Percent			Total	Percent			
Space Heating (5)	4.86	0.89	0.24	0.19	0.44	0.50	7.13	35.1%	1.59	8.21	20.0%			
Lighting						1.29	1.29	6.3%	5.78	5.78	14.1%			
Space Cooling	0.02					0.19	0.21	1.0%	4.04	4.06	9.9%			
Water Heating	1.62	0.14	0.05		0.04	0.54	2.39	11.7%	1.69	3.54	8.6%			
Electronics (6)						1.84	1.84	9.0%	2.96	2.96	7.2%			
Refrigeration (7)						0.68	0.68	3.4%	2.14	2.14	5.2%			
Wet Clean (8)	0.07					0.94	1.02	5.0%	1.19	1.27	3.1%			
Computers						0.35	0.35	1.7%	1.10	1.10	2.7%			
Cooking	0.47		0.03			0.38	0.88	4.3%	0.46	0.96	2.3%			
Ventilation (9)						0.15	0.15	0.7%	0.60	0.60	1.5%			
Other (10)	0.29	0.02	0.25	0.05	0.13	2.02	2.76	13.6%	6.35	7.09	17.3%			
Adjust to SEDS (11)	0.66	0.19				0.80	1.64	8.1%	2.50	3.34	8.1%			
Total	7.99	1.23	0.57	0.24	0.62	9.67	20.33	100%	30.38	41.04	100%			

Note(s): 1) Includes distillate fuel oil (1.13 quad) and residual fuel oil (0.10 quad). 2) Kerosene (0.08 quad) and coal (0.09 quad) are assumed attributable to space heating. Motor gasoline (0.05 quad) assumed attributable to other end-uses. 3) Comprised of wood space heating (0.44 quad), biomass (0.13 quad), solar water heating (0.05 quad), geothermal space heating (less than 0.01 quad), and solar photovoltaics (PV) less than 0.01 quad). 4) Site -to-source electricity conversion (due to generation and transmission losses) = 3.14. 5) Includes furnace fans (0.20 quad). 6) Includes color television (1.23 quad). 7) Includes refrigerators (1.89 quad) and freezers (0.25 quad). Includes commercial refrigeration. 8) Includes clothes washers (0.09 quad), natural gas clothes dryers (0.07 quad), electric clothes dryers (0.80 quad) and dishwashers (0.29 quad). Does not include water heating energy. 9) Commercial only; residential fan and pump energy use included proportionately in space heating and cooling. 10) Includes residential smallelectric devices, heating elements, motors, swimming pool heaters, hot tub heaters, outdoor grills, and natural gas outdoor lighting. Includes commercial service station equipment, ATMs, telecommunications equipment, medical equipment, pumps, emergency electric generators, combined heat and power in commercial buildings, and manufacturing performed in commercial buildings. 11) Energy adjustment EIA uses to relieve discrepancies between data sources. Energy attributable to the residential and commercial buildings sector, but not directly to specific end-uses.

Source(s): EIA, Annual Energy Outlook 2008, Mar. 2008, Tables A2, p. 117-119, Table A4, p. 122-123, Table A5, p. 124-125, and Table A17, p. 143-144; EIA, National Energy Modeling System (NEMS) for AEO 2008, Mar. 2008; and EIA, Supplement to the AEO 2008, April 2008, Table 22.

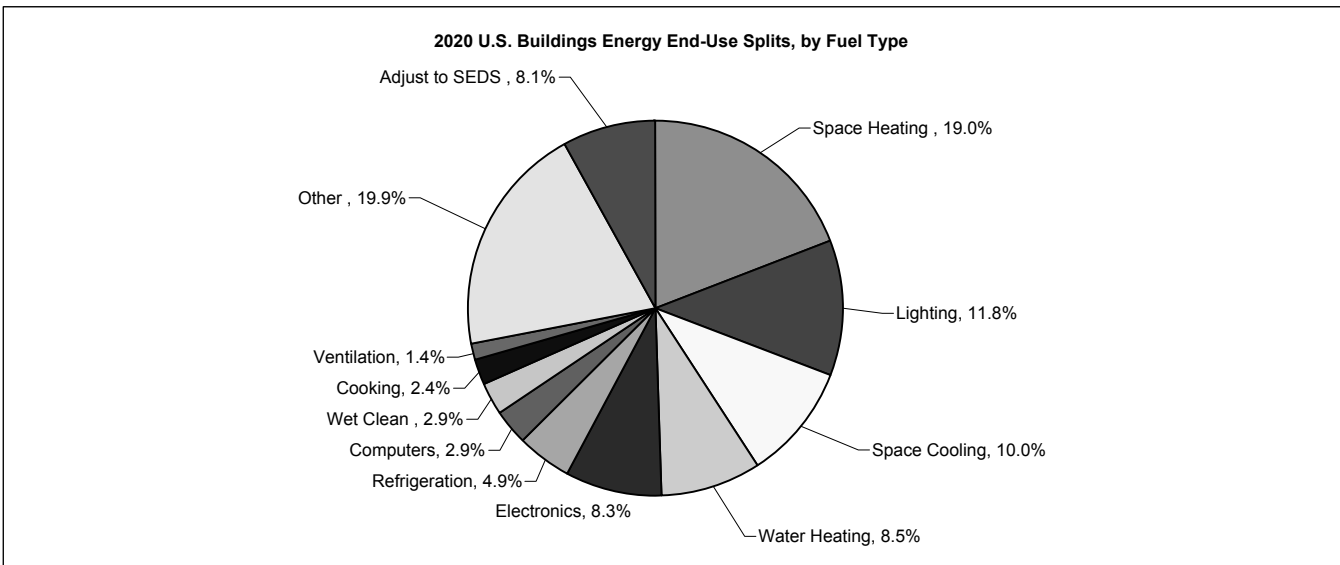


1.1.6 2020 U.S. Buildings Energy End-Use Splits, by Fuel Type (Quadrillion Btu)

	Natural Fuel		Other		Renw.	Site	Site		Primary	Primary	
	Gas	Oil (1)	LPG	Fuel(2)	En.(3)	Electric	Total	Percent	Electric (4)	Total	Percent
Space Heating (5)	5.23	0.90	0.24	0.19	0.41	0.54	7.51	33.5%	1.68	8.65	19.0%
Lighting						1.73	1.73	7.7%	5.37	5.37	11.8%
Space Cooling	0.02					1.46	1.48	6.6%	4.53	4.55	10.0%
Water Heating	1.80	0.13	0.05		0.06	0.58	2.62	11.7%	1.81	3.85	8.5%
Electronics (6)						1.22	1.22	5.4%	3.79	3.79	8.3%
Refrigeration (7)						0.71	0.71	3.2%	2.21	2.21	4.9%
Computers						0.42	0.42	1.9%	1.31	1.31	2.9%
Wet Clean (8)	0.08					0.39	0.47	2.1%	1.22	1.30	2.9%
Cooking	0.54		0.03			0.16	0.73	3.3%	0.50	1.08	2.4%
Ventilation (9)						0.21	0.21	0.9%	0.65	0.65	1.4%
Other (10)	0.38	0.02	0.30	0.05	0.14	2.62	3.51	15.6%	8.14	9.03	19.9%
Adjust to SEDS (11)	0.72	0.19				0.88	1.80	8.0%	2.74	3.66	8.1%
Total	8.77	1.25	0.61	0.25	0.61	10.92	22.41	100%	33.96	45.45	100%

Note(s): 1) Includes distillate fuel oil (1.14 quad) and residual fuel oil (0.10 quad). 2) Kerosene (0.08 quad) and coal (0.09 quad) are assumed attributable to space heating. Motor gasoline (0.05 quad) assumed attributable to other end-uses. 3) Comprised of wood space heating (0.40 quad), biomass (0.13 quad), solar water heating (0.06 quad), geothermal space heating (0.01 quad), and solar photovoltaics (PV) less than 0.01 quad). 4) Site -to-source electricity conversion (due to generation and transmission losses) = 3.11. 5) Includes furnace fans (0.23 quad). 6) Includes color television (1.33 quad). 7) Includes refrigerators (1.93 quad) and freezers (0.29 quad). Includes commercial refrigeration. 8) Includes clothes washers (0.09 quad), natural gas clothes dryers (0.08 quad), electric clothes dryers (0.84 quad) and dishwashers (0.30 quad). Does not include water heating energy. 9) Commercial only; residential fan and pump energy use included proportionately in space heating and cooling. 10) Includes residential small electric devices, heating elements, motors, swimming pool heaters, hot tub heaters, outdoor grills, and natural gas outdoor lighting. Includes commercial service station equipment, ATMs, telecommunications equipment, medical equipment, pumps, emergency electric generators, combined heat and power in commercial buildings, and manufacturing performed in commercial buildings. 11) Energy adjustment EIA uses to relieve discrepancies between data sources. Energy attributable to the residential and commercial buildings sector, but not directly to specific end-uses.

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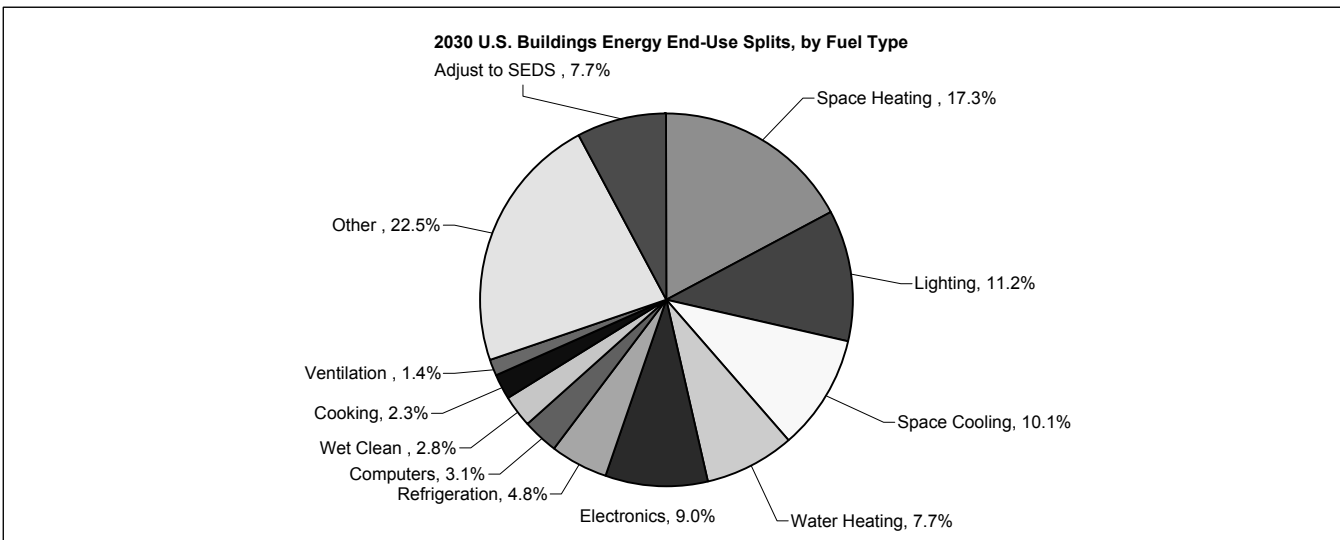


1.1.7 2030 U.S. Buildings Energy End-Use Splits, by Fuel Type (Quadrillion Btu)

	Natural Fuel		LPG	Other Renw.		Site	Site		Primary Electric (4)	Primary	
	Gas	Oil (1)		Fuel(2)	En.(3)	Electric	Total	Percent		Total	Percent
Space Heating (5)	5.30	0.84	0.23	0.19	0.39	0.56	7.51	30.9%	1.71	8.67	17.3%
Lighting						1.83	1.83	7.5%	5.61	5.61	11.2%
Space Cooling	0.02					1.65	1.67	6.9%	5.06	5.08	10.1%
Water Heating	1.82	0.12	0.04		0.07	0.59	2.65	10.9%	1.81	3.87	7.7%
Electronics (6)						1.47	1.47	6.0%	4.50	4.50	9.0%
Refrigeration (7)						0.78	0.78	3.2%	2.40	2.40	4.8%
Computers						0.51	0.51	2.1%	1.56	1.56	3.1%
Wet Clean (8)	0.08					0.43	0.51	2.1%	1.31	1.40	2.8%
Cooking	0.59		0.03			0.17	0.80	3.3%	0.54	1.16	2.3%
Ventilation (9)						0.23	0.23	1.0%	0.71	0.71	1.4%
Other (10)	0.62	0.02	0.34	0.05	0.15	3.30	4.47	18.4%	10.11	11.28	22.5%
Adjust to SEDS (11)	0.67	0.19				0.97	1.84	7.6%	2.99	3.85	7.7%
Total	9.11	1.17	0.64	0.25	0.61	12.50	24.28	100%	38.32	50.09	100%

Note(s): 1) Includes distillate fuel oil (1.45 quad) and residual fuel oil (0.12 quad). 2) Kerosene (0.11 quad) and coal (0.10 quad) are assumed attributable to space heating. Motor gasoline (0.05 quad) assumed attributable to other end-uses. 3) Comprised of wood space heating (0.38 quad), biomass (0.13 quad), solar water heating (0.07 quad), geothermal space heating (less than 0.01 quad), and solar photovoltaics (PV) 0.02 quad. 4) Site-to-source electricity conversion (due to generation and transmission losses) = 3.07. 5) Includes furnace fans (0.25 quad). 6) Includes color television (1.69 quad) and other office equipment (2.81 quad). 7) Includes refrigerators (2.10 quad) and freezers (0.34 quad). Includes commercial refrigeration. 8) Includes clothes washers (0.08 quad), natural gas clothes dryers (0.08 quad), electric clothes dryers (0.91 quad) and dishwashers (0.33 quad). Does not include water heating energy. 9) Commercial only; residential fan and pump energy use included proportionately in space heating and cooling. 10) Includes residential small electric devices, heating elements, motors, swimming pool heaters, hot tub heaters, outdoor grills, and natural gas outdoor lighting. Includes commercial service station equipment, ATMs, telecommunications equipment, medical equipment, pumps, emergency electric generators, combined heat and power in commercial buildings, and manufacturing performed in commercial buildings. 11) Energy adjustment EIA uses to relieve discrepancies between data sources. Energy attributable to the residential and commercial buildings sector, but not directly to specific end-uses.

Source(s): EIA, Annual Energy Outlook 2008, Mar. 2008, Tables A2, p. 117-119, Table A4, p. 122-123, Table A5, p. 124-125, and Table A17, p. 143-144; and EIA, National Energy Modeling System for AEO 2008, Mar. 2008



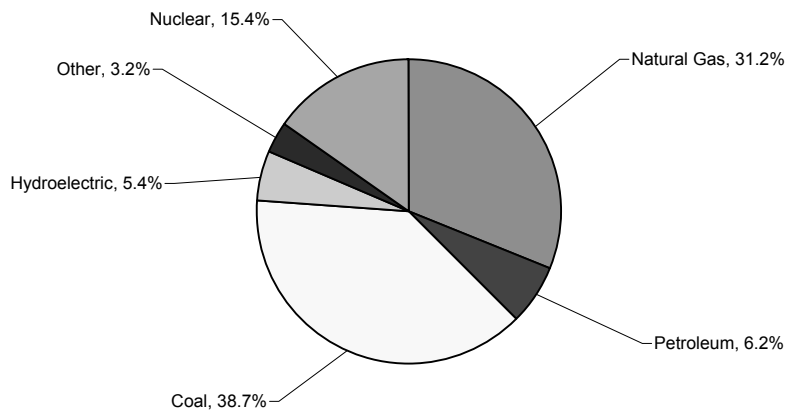
1.1.8 Shares of U.S. Buildings Generic Quad (Percent) (1)

	<u>Natural Gas</u>	<u>Petroleum</u>	<u>Coal</u>	<u>Renewables (2)</u>			<u>Nuclear</u>	<u>Total</u>
				<u>Hydroelectric</u>	<u>Other</u>	<u>Total</u>		
1980	37%	18%	29%	7%	4%	10%	6%	100%
1990	31%	11%	35%	6%	4%	10%	13%	100%
2000	32%	8%	37%	5%	3%	8%	14%	100%
2006	31%	6%	39%	5%	3%	9%	15%	100%
2010	32%	6%	38%	5%	4%	10%	15%	100%
2015	31%	6%	38%	5%	5%	10%	14%	100%
2020	29%	5%	39%	5%	6%	11%	15%	100%
2025	28%	5%	41%	5%	6%	11%	15%	100%
2030	26%	5%	43%	5%	6%	11%	15%	100%

Note(s): 1) A generic quad is primary energy apportioned between the various primary fuels according to their relative consumption.

2) Electric imports included in renewables. 3) Independent rounding.

Source(s): EIA, State Energy Data 2005: Consumption, Feb. 2008, Tables 8-12, p. 18-22 for 1980-2000; and EIA, Annual Energy Outlook 2008, Mar. 2008, Table A2, p. 117-119 for 2006-2030 consumption and Table A17, p. 143-144 for non-marketed renewable energy.

2006 Share of U.S. Buildings Generic Quad**1.1.9 Buildings Share of U.S. Electricity Consumption (Percent)**

	<u>Buildings</u>			<u>Industry</u>	<u>Transportation</u>	<u>Total</u>	<u>Delivered Total (quads)</u>
	<u>Residential</u>	<u>Commercial</u>	<u>Total</u>				
1980	34%	27%	61%	39%	0%	100%	7.15
1990	34%	31%	65%	35%	0%	100%	9.26
2000	35%	34%	69%	31%	0%	100%	11.67
2006	37%	36%	72%	27%	0%	100%	12.49
2010	37%	36%	73%	27%	0%	100%	13.20
2015	36%	38%	74%	26%	0%	100%	13.85
2020	36%	39%	75%	25%	0%	100%	14.54
2025	36%	40%	77%	23%	0%	100%	15.26
2030	37%	41%	78%	22%	0%	100%	16.05

Note(s): 1) Buildings accounted for 81% (or \$272 billion) of total U.S. electricity expenditures.

Source(s): EIA, State Energy Data 2005: Consumption, Feb. 2008, Tables 8-12, p. 18-22 for 1980-2000; and EIA, Annual Energy Outlook 2008, Mar. 2008, Table A2, p. 137-139 for 2006-2030 consumption, Table A3, p. 120-121 for 2006 expenditures.

1.1.10 Buildings Share of U.S. Natural Gas Consumption (Percent)

	Site Consumption				Primary Consumption			U.S. Natural Gas
	<u>Buildings</u>	<u>Industry</u>	<u>Electric Gen.</u>	<u>Transportation</u>	<u>Buildings</u>	<u>Industry</u>	<u>Transportation</u>	<u>Total (quads)</u>
1980	37%	41%	19%	3%	48%	49%	3%	20.38
1990	37%	43%	17%	3%	47%	49%	3%	19.75
2000	35%	40%	22%	3%	50%	47%	3%	23.80
2006 (1)	33%	35%	29%	3%	54%	43%	3%	22.30
2010	33%	35%	29%	3%	55%	43%	3%	23.93
2015	35%	35%	28%	3%	55%	42%	3%	24.35
2020	37%	35%	25%	3%	56%	41%	3%	24.01
2025	38%	36%	23%	3%	56%	41%	3%	23.66
2030	39%	36%	22%	3%	56%	41%	3%	23.39

Note(s): 1) Buildings accounted for 58% (or \$97 billion) of total U.S. natural gas expenditures.

Source(s): EIA, State Energy Data 2005: Consumption, Feb. 2008, Tables 8-12, p. 18-22 for 1980-2000; and EIA, Annual Energy Outlook 2008, Mar. 2008, Table A2, p. 117-119 for 2006-2030 consumption, Table A3, p. 120-121 for 2006 expenditures.

1.1.11 Buildings Share of U.S. Petroleum Consumption (Percent)

	Site Consumption				Primary Consumption			U.S. Petroleum
	<u>Buildings</u>	<u>Industry</u>	<u>Electric Gen.</u>	<u>Transportation</u>	<u>Buildings</u>	<u>Industry</u>	<u>Transportation</u>	<u>Total (quads)</u>
1980	9%	28%	8%	56%	14%	31%	56%	34.2
1990	7%	25%	4%	64%	10%	26%	64%	33.6
2000	6%	24%	3%	67%	8%	25%	67%	38.4
2006	5%	25%	2%	69%	6%	25%	69%	40.1
2010	5%	24%	1%	70%	6%	24%	70%	40.5
2015	5%	23%	1%	71%	6%	23%	71%	41.8
2020	5%	22%	1%	72%	6%	22%	72%	42.2
2025	5%	21%	1%	73%	6%	22%	73%	42.8
2030	4%	21%	1%	73%	6%	21%	73%	44.0

Note(s): 1) Buildings accounted for an estimated 7.3% (or \$30 billion) of total U.S. petroleum expenditures.

Source(s): EIA, State Energy Data 2005: Consumption, Feb. 2008, Tables 8-12, p. 18-22 for 1980-2000; and EIA, Annual Energy Outlook 2008, Mar. 2008, Table A2, p. 117-119 for 2006-2030 consumption, Table A3, p. 120-121 for 2006 expenditures.

1.1.12 Buildings Share of U.S. Petroleum Consumption (Million Barrels per Day)

	Buildings			Industry	Transportation	Total
	<u>Residential</u>	<u>Commercial</u>	<u>Total</u>			
1980	1.31	0.92	2.22	5.30	9.57	19.33
1990	0.96	0.64	1.60	4.50	10.89	18.59
2000	1.08	0.56	1.63	5.07	13.05	21.39
2006	0.69	0.43	1.12	4.81	13.02	20.07
2010	0.71	0.39	1.10	4.67	13.36	20.23
2015	0.72	0.42	1.14	4.63	14.00	20.90
2020	0.73	0.43	1.15	4.48	14.34	21.13
2025	0.72	0.44	1.16	4.41	14.66	21.39
2030	0.72	0.44	1.16	4.45	15.19	21.96

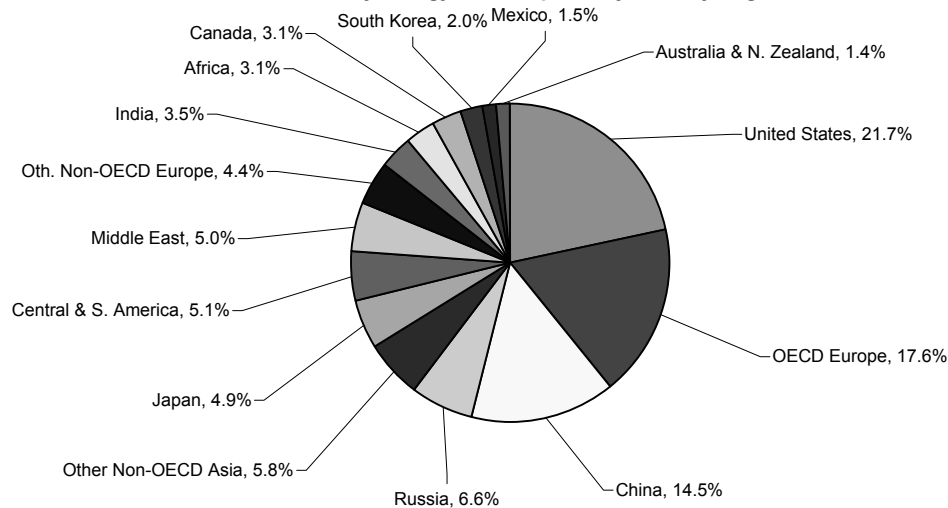
Source(s): EIA, Annual Energy Review 2007, June 2008, Table 5.13a for 1980-2005 buildings, Table 5.13b for 1980 to 2005 industry, Table 5.13c for 1980-2005 transportation, and Table 5.13d for 1980-2005 electricity generators; and EIA, Annual Energy Outlook 2008, Mar. 2007, Table A2, p. 117-119 for 2006-2030 consumption; EIA, State Energy Data 2005: Consumption, Feb. 2008, Tables 8-12, p. 18-22 for 1980-2005.

1.1.13 World Primary Energy Consumption and Population, by Country/Region

Region/Country	Energy Consumption (Quad)				Population (million)				Annual Growth Rate			
	1990		2005		1990		2005		1990-2005		2005-2010	
	Value	%	Value	%	Value	%	Value	%	Energy	Pop.	Energy	Pop.
United States	84.7	21.7%	100.1	103.3	254	297	4.6%	311	1.1%	1.0%	0.6%	0.9%
OECD Europe	69.9	17.6%	81.4	83.9	497	536	8.2%	547	1.0%	0.5%	0.6%	0.4%
China	27.0	6.7%	67.1	87.3	1,155	1,313	20.2%	1,352	6.3%	0.9%	5.4%	0.6%
Russia	39.0	9.7%	30.3	32.7	148	144	2.2%	140	-1.7%	-0.2%	1.5%	-0.6%
Other Non-OECD Asia	12.5	3.1%	26.6	30.5	743	984	15.1%	1,060	5.2%	1.9%	2.8%	1.5%
Japan	18.4	4.6%	22.6	22.4	124	128	2.0%	128	1.4%	0.2%	-0.2%	0.0%
Central & S. America	14.5	3.6%	23.4	27.7	360	454	7.0%	483	3.2%	1.6%	3.4%	1.2%
Middle East	11.3	2.8%	22.9	26.4	137	193	3.0%	213	4.8%	2.3%	2.9%	2.0%
Oth. Non-OECD Europe	28.3	7.1%	20.4	22.4	200	198	3.0%	199	-2.2%	-0.1%	1.9%	0.1%
India	8.0	2.0%	16.2	19.4	849	1,134	17.4%	1,220	4.8%	1.9%	3.7%	1.5%
Africa	9.5	2.4%	14.4	16.5	636	922	14.2%	1,032	2.8%	2.5%	2.8%	2.3%
Canada	11.1	2.8%	14.3	15.7	28	32	0.5%	34	1.7%	0.9%	1.9%	1.2%
South Korea	3.8	0.9%	9.3	10.3	43	48	0.7%	49	6.1%	0.7%	2.1%	0.4%
Mexico	5.0	1.2%	6.9	7.4	84	104	1.6%	110	2.2%	1.4%	1.4%	1.1%
Australia & N. Zealand	4.4	1.1%	6.3	6.6	20	24	0.4%	26	2.4%	1.2%	0.9%	1.6%
Total World	347.3	100%	462.2	512.5	5,278	6,512	100%	6,903	1.9%	1.4%	2.1%	1.2%

Source(s): EIA, International Energy Outlook 2008, June 2008, Table A1, p. 83 and Table A14, p. 97.

World Primary Energy Consumption, by Country/Region



1.2.1 Building Energy Prices, by Year and Major Fuel Type (\$2006 per Million Btu)

	Residential Buildings				Commercial Buildings				Building Avg. (3)
	Electricity	Natural Gas	Petroleum (1)	Avg.	Electricity	Natural Gas	Petroleum (2)	Avg.	
1980	33.86	7.77	15.66	16.35	34.62	7.16	12.17	17.19	16.68
1990	32.78	8.04	12.49	17.32	30.27	6.71	8.49	17.32	17.32
2000	28.12	8.90	13.45	16.85	25.07	7.64	9.43	16.46	16.69
2006	30.52	13.40	19.68	21.78	27.75	11.50	14.75	20.75	21.33
2010	31.37	12.15	20.05	21.56	27.89	10.59	15.48	20.69	21.19
2015	30.04	11.20	17.90	20.19	25.52	9.68	13.29	18.93	19.63
2020	30.20	11.39	18.09	20.45	25.64	9.91	13.64	19.25	19.91
2025	30.33	11.94	18.95	21.04	25.71	10.47	14.24	19.67	20.41
2030	30.63	12.91	20.14	22.00	26.17	11.43	15.22	20.47	21.28

Note(s): 1) Residential petroleum products include distillate fuel, LPG, and kerosene. 2) Commercial petroleum products include distillate fuel, LPG, kerosene, motor gasoline, and residual fuel. 3) In 2005, buildings average electricity price was \$29.16/10⁶ Btu or (\$0.10/kWh), average natural gas price was \$12.655/10⁶ Btu (\$13.03/1000 CF), and petroleum was \$17.94/10⁶ Btu (\$1.94/gal.). Averages do not include wood or coal prices.

Source(s): EIA, State Energy Data 2005: Prices and Expenditures, Feb. 2008, Tables 2-3, p. 24-25 for 1980-2005 and prices for note, Tables 8-9, p. 18-19 for 1980-2005 consumption; EIA, Annual Energy Outlook 2008 Mar. 2008, Table A2, p. 117-119, Table A3, p. 120-121, Table A12, p. 138, and Table A13, p. 139 for 2006-2030 consumption and prices; and EIA, Annual Energy Review 2007, June 2008, Appendix D, p. 377 for price deflators.

1.2.2 Building Energy Prices, by Year and Fuel Type (\$2006)

	Residential Buildings				Commercial Buildings			
	Electricity (¢/kWh)	Natural Gas (¢/therm)	Distillate Oil (\$/gal)	LPG (\$/gal)	Electricity (¢/kWh)	Natural Gas (¢/therm)	Distillate Oil (\$/gal)	Residual Oil (\$/gal)
1980	11.55	77.68	1.46	2.10	11.81	71.63	1.33	1.93
1990	11.18	80.38	1.34	1.59	10.33	67.12	0.73	1.18
2000	9.59	89.00	1.45	1.61	8.55	76.39	0.78	1.21
2006	10.41	133.99	1.98	2.49	9.47	115.03	1.29	2.02
2010	10.70	121.52	2.16	2.39	9.52	105.95	1.51	2.11
2015	10.25	112.02	2.07	1.98	8.71	96.75	1.19	1.79
2020	10.30	113.94	2.08	1.98	8.75	99.06	1.19	1.84
2025	10.35	119.35	2.11	2.10	8.77	104.67	1.29	1.92
2030	10.45	129.12	2.18	2.26	8.93	114.32	1.38	2.08

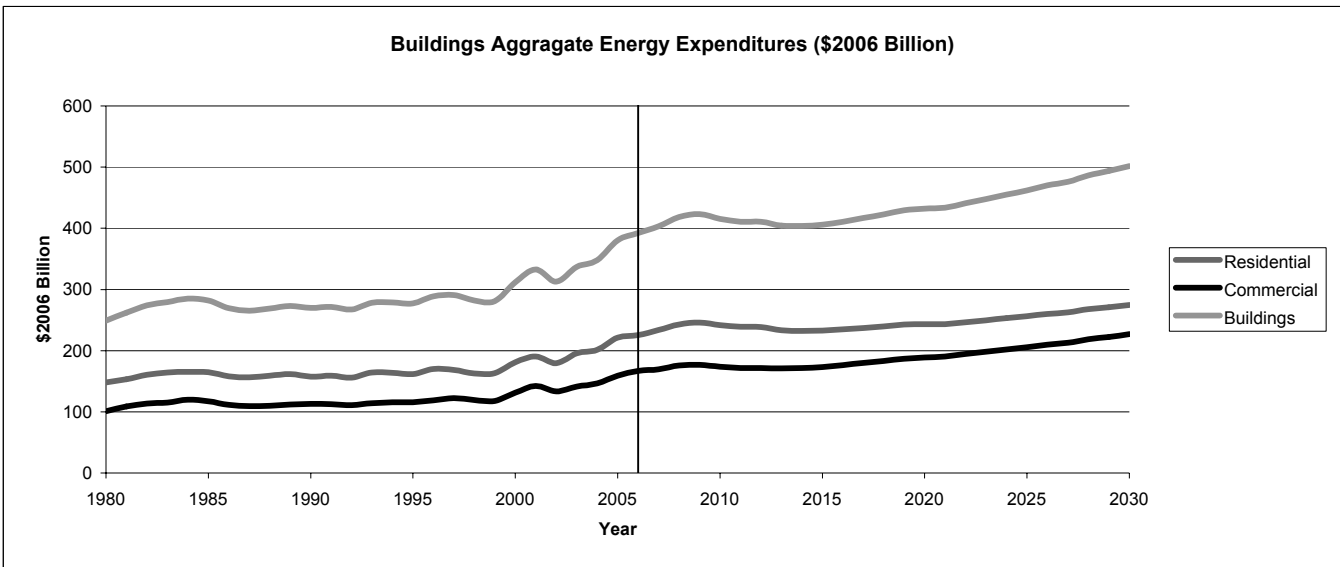
Source(s): EIA, State Energy Data 2005: Prices and Expenditures, Feb. 2008, p. Tables 2-3, p. 24-25 for 1980-2005; EIA, Annual Energy Outlook 2008, Mar. 2008, Table A3, p. 120-121 for 2006-2030 and Table G1, p. 215 for fuels' heat content; and EIA, Annual Energy Review 2007, June 2008, Appendix D, p. 377 for price deflators.

1.2.3 Buildings Aggregate Energy Expenditures, by Year and Major Fuel Type (\$2006 Billion) (1)

	Residential Buildings				Commercial Buildings				Total Building Expenditures
	Electricity	Natural Gas	Petroleum (2)	Total	Electricity	Natural Gas	Petroleum (3)	Total	
1980	82.9	37.7	27.4	148.0	66.0	19.1	15.7	100.7	248.7
1990	103.3	36.3	17.6	157.2	86.6	18.1	8.1	112.8	270.0
2000	114.4	45.4	21.0	180.8	99.2	24.9	7.1	131.2	312.0
2006	140.8	60.3	24.5	225.6	123.1	33.6	10.0	166.7	392.2
2010	155.2	60.2	26.3	241.7	131.9	32.3	9.8	173.9	415.5
2015	150.9	57.8	23.9	232.6	132.6	31.9	8.9	173.3	405.9
2020	158.7	60.4	24.1	243.2	145.3	34.4	9.2	188.9	432.2
2025	167.7	63.8	24.9	256.3	158.1	38.0	9.7	205.8	462.1
2030	180.0	68.7	26.0	274.7	173.3	43.2	10.4	226.9	501.6

Note(s): 1) Expenditures exclude wood and coal. 2006 U.S. energy expenditures were 1.14 trillion. 2) Residential petroleum products include distillate fuel oil, LPG, and kerosene. 3) Commercial petroleum products include distillate fuel oil, LPG, kerosene, motor gasoline, and residual fuel.

Source(s): EIA, State Energy Data 2005: Prices and Expenditures, Feb. 2008, p. 24-25 for 1980-2005; EIA, Annual Energy Outlook 2008, Mar. 2008, Table A2, p. 117-119 and Table A3, p. 120-121 for 2006-2030; and EIA, Annual Energy Review 2007, June 2008, Appendix D, p. 377 for price deflators.



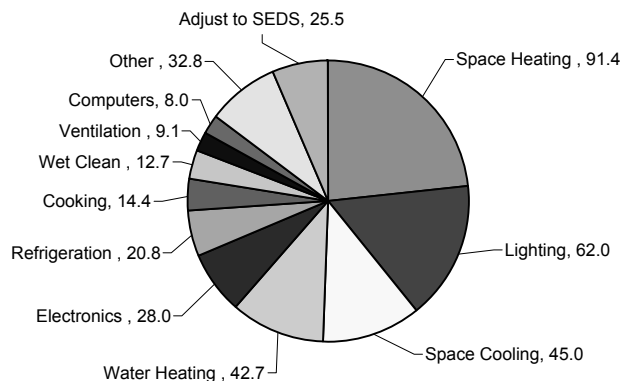
1.2.4 2006 Buildings Energy End-Use Expenditure Splits, by Fuel Type (\$2006 Billion) (1)

	Natural	Petroleum					Coal	Electricity	Total	Percent
	Gas	Distil.	Resid.	LPG	Oth(2)	Total				
Space Heating (3)	55.5	12.6	1.0	5.3	1.4	20.2	0.2	15.5	91.4	23.3%
Lighting								62.0	62.0	15.8%
Space Cooling	0.2							44.8	45.0	11.5%
Water Heating (4)	20.8	2.6		1.3		3.9		18.1	42.7	10.9%
Electronics (5)								28.0	28.0	7.1%
Refrigeration (6)								20.8	20.8	5.3%
Cooking	5.6			0.7		0.7		8.1	14.4	3.7%
Wet Clean (7)	1.0							11.7	12.7	3.2%
Ventilation (8)								9.1	9.1	2.3%
Computers								8.0	8.0	2.0%
Other (9)	3.1	0.3		5.1	1.0	6.5		23.2	32.8	8.4%
Adjust to SEDS (10)	7.7	3.3				3.3		14.5	25.5	6.5%
Total	93.9	18.7	1.0	12.4	2.4	34.5	0.2	263.8	392.4	100%

Note(s): 1) Expenditures include coal and exclude wood. 2) Includes kerosene space heating (\$1.2 billion) and motor gasoline other uses (\$1.0 billion). 3) Includes furnace fans (\$1.7 billion). 4) Includes residential recreation water heating (\$1.3 billion). 5) Includes color televisions (\$10.1 billion) and other electronics (\$17.9 billion). 6) Includes refrigerators (\$18.3 billion) and freezers (\$2.5 billion). 7) Includes clothes washers (\$1.1 billion), natural gas clothes dryers (\$1.0 billion), electric clothes dryers (\$7.7 billion) and dishwashers (\$2.9 billion). 8) Commercial only; residential fan and pump energy use included proportionately in space heating and cooling. 9) Includes residential small electric devices, heating elements, motors, swimming pool heaters, hot tub heaters, outdoor grills, and natural gas outdoor lighting. Includes commercial services station equipment, ATMs, telecommunications equipment, medical equipment, pumps, lighting, emergency electric generators, manufacturing performed in commercial buildings. 10) Expenditures related to an energy adjustment EIA uses to relieve discrepancies between data sources. Energy attributable to the residential and commercial buildings sectors, but not directly to specific end-uses.

Source(s): EIA, Annual Energy Outlook 2008, Mar. 2008, Table A2, p. 117-119, Table A3, p. 120-121 for prices, Table A4, p. 122-123 for residential energy consumption, and Table A5, p. 124-125 for commercial energy consumption; EIA, National Energy Modeling System for AEO 2008, Mar. 2008; EIA, State Energy Data 2005: Prices and Expenditures, Feb. 2008, p. 24-25 for coal prices; EIA, Annual Energy Review 2007, June 2008, Appendix D, p. 377 for price deflators; BTS/A.D. Little, Electricity Consumption by Small End-Uses in Residential Buildings, Aug. 1998, Appendix A for residential electric end-uses; BTS/A.D. Little, Energy Consumption Characteristics of Commercial Building HVAC Systems, Volume II: Thermal Distribution, Auxiliary Equipment, and Ventilation, Oct. 1999, p. 1-2, 5-25 and 5-26 for commercial ventilation; and BTP/Navigant Consulting, U.S. Lighting Market Characterization, Volume I, Sept. 2002, Table 8-2, p. 63 for commercial lighting.

2006 Buildings Primary Energy End-Use Expenditures Splits (\$2006 Billion)



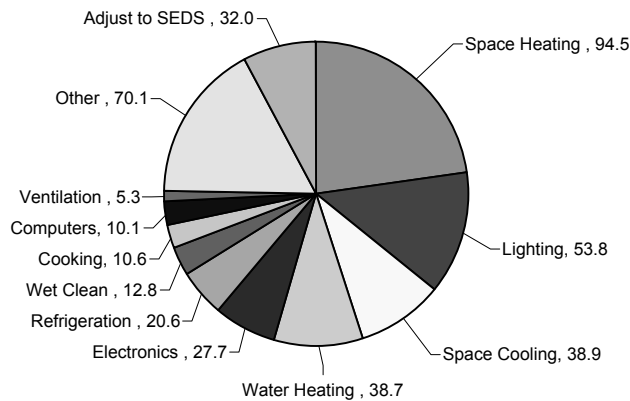
1.2.5 2010 Buildings Energy End-Use Expenditure Splits, by Fuel Type (\$2006 Billion) (1)

	Natural Gas	Petroleum					Coal	Electricity	Total	Percent
		Distil.	Resid.	LPG	Oth(2)	Total				
Space Heating (3)	57.1	13.4	1.0	6.0	1.5	21.9	0.2	15.4	94.5	22.8%
Lighting								53.8	53.8	13.0%
Space Cooling	0.2							38.6	38.9	9.4%
Water Heating	18.9	2.3		1.2		3.5		16.3	38.7	9.3%
Electronics (4)								27.7	27.7	6.7%
Refrigeration (5)								20.6	20.6	5.0%
Wet Clean (6)	0.9							11.9	12.8	3.1%
Cooking	5.3			0.8		0.8		4.5	10.6	2.5%
Computers								10.1	10.1	2.4%
Ventilation (7)								5.3	5.3	1.3%
Other (8)	2.3	0.3		5.7	1.1	7.0		60.8	70.1	16.9%
Adjust to SEDS (9)	7.0	2.8				2.8		22.2	32.0	7.7%
Total	91.7	18.7	1.0	13.8	2.6	36.1	0.2	287.0	415.0	100%

Note(s): 1) Expenditures include coal and exclude wood. 2) Includes kerosene space heating (\$1.3 billion) and motor gasoline other uses (\$1.1 billion). 3) Includes furnace fans (\$2.0 billion). 4) Includes color televisions (\$12.3 billion). 5) Includes refrigerators (\$18.1 billion) and freezers (\$2.5 billion). 6) Includes clothes washers (\$1.0 billion), natural gas clothes dryers (\$0.9 billion), electric clothes dryers (\$8.0 billion) and dishwashers (\$2.9 billion). 7) Commercial only; residential fan proportionately in space heating and cooling. 8) Includes residential small electric devices, heating elements, motors, swimming pool heaters, hot tub heaters, outdoor grills, and natural gas outdoor lighting. Includes commercial services station equipment, ATMs, telecommunications equipment, medical equipment, pumps, lighting, emergency electric generators, manufacturing performed in commercial buildings. 10) Expenditures related to an energy adjustment EIA uses to relieve discrepancies between data sources. Energy attributable to the residential and commercial buildings sectors, but not directly to specific end-uses.

Source(s): EIA, Annual Energy Outlook 2008, Mar. 2008, Table A2, p. 117-119, Table A3, p. 120-121 for prices, Table A4, p. 122-123 for residential energy consumption, and Table A5, p. 124-125 for commercial energy consumption; EIA, National Energy Modeling System for AEO 2008, Mar. 2008; EIA, State Energy Data 2005: Prices and Expenditures, Feb. 2008, p. 24-25 for coal prices; EIA, Annual Energy Review 2007, June 2008, Appendix D, p. 377 for price deflators.

2010 Buildings Energy End-Use Expenditure Splits, by Fuel Type (\$2006 Billion)



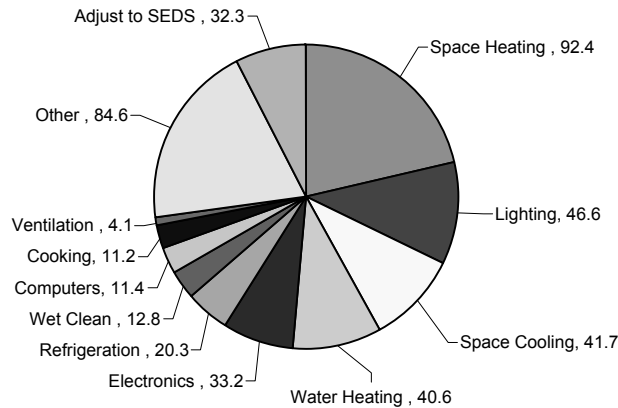
1.2.6 2020 Buildings Energy End-Use Expenditure Splits, by Fuel Type (\$2006 Billion) (1)

	Natural	Petroleum					Coal	Electricity	Total	Percent
	Gas	Distil.	Resid.	LPG	Oth(2)	Total				
Space Heating (3)	57.5	11.2	0.8	5.7	1.4	19.1	0.2	15.7	92.4	21.4%
Lighting								46.6	46.6	10.8%
Space Cooling	0.2							41.5	41.7	9.7%
Water Heating (4)	19.6	1.8		1.1		2.9		18.1	40.6	9.4%
Electronics (5)								33.2	33.2	7.7%
Refrigeration (6)								20.3	20.3	4.7%
Wet Clean (7)	0.9							11.9	12.8	3.0%
Computers								11.4	11.4	2.6%
Cooking	5.7			0.8		0.8		4.7	11.2	2.6%
Ventilation (8)								4.1	4.1	1.0%
Other (9)	2.8	0.3		6.6	1.0	7.9		73.9	84.6	19.6%
Adjust to SEDS (10)	7.2	2.6				2.6		22.6	32.3	7.5%
Total	93.8	15.9	0.8	14.3	2.4	33.4	0.2	304.0	431.3	100%

Note(s): 1) Expenditures include coal and exclude wood . 2) Includes kerosene space heating (\$1.4 billion) and motor gasoline other uses (\$1.0 billion). 3) Includes furnace fans (\$2.2 billion). 5) Includes color televisions (\$12.9 billion). 6) Includes refrigerators (\$17.6 billion) and freezers (\$2.8 billion). 7) Includes clothes washers (\$0.8 billion), natural gas clothes dryers (\$0.9 billion), electric clothes dryers (\$8.2 billion) and dishwashers (\$2.9 billion). 8) Commercial only; residential fan and pump energy use included proportionately in space heating and cooling. 9) Includes residential small electric devices, heating elements, motors, swimming pool heaters, hot tub heaters, outdoor grills, and natural gas outdoor lighting. Includes commercial services station equipment, ATMs,telecommunications equipment, medical equipment, pumps, lighting, emergency electric generators, manufacturing performed in commercial buildings. 10) Expenditures related to an energy adjustment EIA uses to relieve discrepancies between data sources. Energy attributable to the residential and commercial buildings sectors, but not directly to specific end-uses.

Source(s): EIA, Annual Energy Outlook 2008, Mar. 2008, Table A2, p. 117-119, Table A3, p. 120-121 for prices, Table A4, p. 122-123 for residential energy consumption, and Table A5, p. 124-125 for commercial energy consumption; EIA, National Energy Modeling System for AEO 2008, Mar. 2008; EIA, State Energy Data 2005: Prices and Expenditures, Feb. 2008, p. 24-25 for coal prices; EIA, Annual Energy Review 2007, June 2008, Appendix D, p. 377 for price deflators

2020 Buildings Energy End-Use Expenditure Splits, by Fuel Type (\$2006 Billion)



1.2.7 2030 Buildings Energy End-Use Expenditure Splits, by Fuel Type (\$2006 Billion) (1)

	Natural	Petroleum					Coal	Electricity	Total	Percent
	Gas	Distil.	Resid.	LPG	Oth(2)	Total				
Space Heating (3)	66.3	11.8	0.9	5.8	1.6	20.2	0.2	16.5	103.1	20.6%
Lighting								50.1	50.1	10.0%
Space Cooling	0.2							47.9	48.1	9.6%
Water Heating (4)	22.5	1.9		1.1		2.9		19.2	44.6	8.9%
Electronics (5)								40.9	40.9	8.2%
Refrigeration (6)								22.7	22.7	4.5%
Wet Clean (7)	1.1							13.1	14.2	2.8%
Cooking	7.1			0.9		0.9		5.2	13.2	2.6%
Computers								14.0	14.0	2.8%
Ventilation (8)								4.2	4.2	0.8%
Other (9)	4.6	0.3		8.1	1.1	9.5		94.0	108.2	21.7%
Adjust to SEDS (10)	7.7	2.8				2.8		25.5	36.0	7.2%
Total	109.6	16.8	0.9	15.9	2.7	36.3	0.2	353.3	499.4	100%

Note(s): 1) Expenditures include coal and exclude wood . 2) Includes kerosene space heating (\$1.3 billion) and motor gasoline other uses (\$1.1 billion). 3) Includes furnace fans (\$2.4 billion). 5) Includes color televisions (\$16.9 billion). 6) Includes refrigerators (\$19.3 billion) and freezers (\$3.4 billion). 7) Includes clothes washers (\$0.8 billion), natural gas clothes dryers (\$1.1 billion), electric clothes dryers (\$9.0 billion) and dishwashers (\$3.3 billion). 8) Commercial only; residential fan and pump energy use included proportionately in space heating and cooling. 9) Includes residential small electric devices, heating elements, motors, swimming pool heaters, hot tub heaters, outdoor grills, and natural gas outdoor lighting. Includes commercial services station equipment, ATMs, telecommunications equipment, medical equipment, pumps, lighting, emergency electric generators, manufacturing performed in commercial buildings. 10) Expenditures related to an energy adjustment EIA uses to relieve discrepancies between data sources. Energy attributable to the residential and commercial buildings sectors, but not directly to specific end-uses.

Source(s): EIA, Annual Energy Outlook 2008, Mar. 2008, Table A2, p. 117-119, Table A3, p. 120-121 for prices, Table A4, p. 122-123 for residential energy consumption, and Table A5, p. 124-125 for commercial energy consumption; EIA, National Energy Modeling System for AEO 2008, Mar. 2008; EIA, State Energy Data 2005: Prices and Expenditures, Feb. 2008, p. 24-25 for coal prices; EIA, Annual Energy Review 2007, June 2008, Appendix D, p. 377 for price deflators.

1.2.8 Implicit Price Deflators (2000 = 1.00)

Year	Implicit Price Deflator	Year	Implicit Price Deflator	Year	Implicit Price Deflator
1980	0.54	1990	0.82	2000	1.00
1981	0.59	1991	0.84	2001	1.02
1982	0.63	1992	0.86	2002	1.04
1983	0.65	1993	0.88	2003	1.06
1984	0.68	1994	0.90	2004	1.09
1985	0.70	1995	0.92	2005	1.13
1986	0.71	1996	0.94	2006	1.17
1987	0.73	1997	0.95		
1988	0.76	1998	0.96		
1989	0.79	1999	0.98		

Source(s): EIA, Annual Energy Review 2007, June 2008, Appendix D, p. 377.

1.3.1 Estimated Value of All U.S. Construction Relative to the GDP (\$2006)

- 2006 estimated value of all U.S. construction is \$1.77 trillion (including renovation; heavy construction; public works; residential, commercial, and industrial new construction; and non-contract work).
- Compared to the \$13.2 trillion U.S. gross domestic product (GDP), all construction holds a 13.4% share.
- In 2006, residential and commercial building renovation (valued at \$438 billion) and new building construction (valued at \$785 billion) is estimated to account for over 69% (approximately \$1.22 trillion) of the \$1.77 trillion.

Source(s): National Science and Technology Council, Construction & Building: Interagency Program for Technical Advancement in Construction and Building, 1999, p. 5; DOC, 1997 Census of Construction Industries: Industry Summary, Jan. 2000, Table 7, p. 15; DOC, Annual Value of Construction Put in Place, August 2008; DOC, Expenditures for Residential Improvements and Repairs by Property Type, Table S2, August 2008; and EIA, Annual Energy Review 2007, June 2008, Appendix D, p. 377 for price deflators and GDP.

1.3.2 Value of New Building Construction Relative to GDP, by Year (\$2006 Billion)

	Value of New Construction Put in Place			GDP	Bldgs. Percent of Total U.S. GDP
	Residential	Commercial (1)	All Bldgs. (1)		
1980	154.4	148.7	303.0	6,013	5.0%
1985	198.5	210.4	408.9	7,053	5.8%
1990	194.1	211.7	405.8	8,286	4.9%
1995	221.8	190.0	411.7	9,357	4.4%
2000	312.2	291.9	604.1	11,437	5.3%
2006	489.6	283.3	784.7	13,187	6.1%

Note(s): 1) New buildings construction differs from Table 1.3.2 by excluding industrial building construction.

Source(s): DOC, Current Construction Reports: Value of New Construction Put in Place, C30, Aug. 2003, Table 1 for 1980-1990; DOC, Annual Value of Private Construction Put in Place, August 2008 for 1995-2006; DOC, Annual Value of Public Construction Put in Place, August 2008 for 1995-2006; DOC, Expenditures for Residential Improvements and Repairs by Property Type, July 2007; and EIA, Annual Energy Review 2007, June 2008, Appendix D, p. 377 for GDP and price deflators.

1.3.3 Value of Building Improvements and Repairs Relative to GDP, by Year (\$2006 Billion) (1)

	Value of Improvements and Repairs			GDP	Bldgs. Percent of Total U.S. GDP
	Residential	Commercial	All Bldgs.		
1980	99.9	N.A.	N.A.	6,013	N.A.
1985	137.2	130.4 (2)	267.7	7,053	3.8%
1990	164.8	132.6 (3)	297.4	8,286	3.6%
1995	158.1	140.6	298.7	9,357	3.2%
2000	178.2	122.8	301.0	11,437	2.6%
2006	228.2	209.7	437.9	13,187	3.3%

Note(s): 1) Improvements includes additions, alterations, reconstruction, and major replacements. Repairs include maintenance.
2) 1986. 3) 1989.

Source(s): DOC, Expenditures for Residential Improvements and Repairs by Property Type, Quarterly, May 2005 for 1980-1990; DOC, Expenditures for Residential Improvements and Repairs by Property Type, Table S2, August 2008 for 1995-2006; DOC, Current Construction Reports: Expenditures for Nonresidential Improvements and Repairs: 1992, CSS/92, Sept. 1994, Table A, p. 2 for 1986-1990 expenditures; DOC, 1997 Census of Construction Industries: Industry Summary, Jan. 2000, Table 7, p. 15; DOC, Annual Value of Private Construction Put in Place, July 2008 for 1995-2006; and EIA, Annual Energy Review 2007, June 2008, Appendix D, p. 377 for GDP and price deflators.

1.3.4 2003 U.S. Private Investment into Construction R&D

Sector	Percent of Sales	Building Technology	Percent of Sales
Average Construction R&D (1)	1.2		
Heavy Construction	2.0	Appliances	2.0
Special Trade Construction	0.2	Lighting	1.2
		HVAC	1.5
U.S. Average of All Private R&D (2)	3.2	Fans, Blowers, & Air Cleaning Equipment	1.6
Manufacturing Average	3.1	Lumber and Wood Products	0.3
Service Industry Average	3.3	Commercial Building Operations	2.2

Note(s): 1) Includes all construction (e.g., bridges, roads, dams, buildings, etc.).

Source(s): National Science Foundation, Research and Development in Industry: 2003, Table 27, p. 76-77; and Schonfeld & Associates, R&D Ratios & Budgets, June 2003, p. 219-222.

1.3.5 1997/1998 International Investment into Construction and Energy R&D

	Construction Percent of Private R&D to Total Private R&D	Gas, and Water Percent of Private R&D to Total Private R&D	Mining Percent of Private R&D to Total Private R&D
United States	0.2	0.2	0.1
Canada	0.3	2.7	2.9
Germany	0.3	0.3	0.5
France	1.0	3.0	1.8
Italy	0.3	1.7	0.0
Japan	2.1	0.9	0.0
United Kingdom	0.4	1.4	1.4
Russian Federation	0.9	0.5	3.3
Sweden	0.6	0.8	1.1
Finland	0.8	1.6	0.7

Source(s): National Science Foundation, Science & Engineering Indicators -- 2002, Volume 1, Jan. 2002, Table 4-16, p. 4-53.

1.3.6 FY2003-2005 Green Building R&D, as Share of Federal Budget and by Organization

Budget Function	Percent of U.S. Federal Budget	Organization	Average Annual Funding (\$1,000s)
National Defense	57.2%	DOE	123,170
Health	23.1%	EPA	25,317
Other energy, general science, natural resources, and environment	8.0%	NSF	22,940
Space research and technology	6.3%	PIER (1)	11,100
Transportation	1.5%	DOC-NIST	7,500
Agriculture	1.5%	NYSERDA	5,800
Veterans' benefits and services research	0.7%	HUD	5,000
Green building	0.2%	GSA	3,000
<u>Other functions (2)</u>	<u>1.6%</u>	ASHRAE	2,400
Total	100%		

Note(s): 1) PIER = Public Interest Energy Research 2) Includes education, training, employment, and social services; income security; and commerce.

Source(s): U.S. Green Building Council, Green Building Research Funding: An Assessment of Current Activity in the United States, 2006, Chart 1, p. 3, Chart 2, p. 3.

1.3.7 Buildings Design and Construction Trades, by Year

	Employees, in thousands			Number of Residential Builder Establishments with Payrolls, in thousands (2)			
	Architects	Construction (1)		New Construction	Remodeling	Both	Total (3)
1980	N.A.	3,065	1982	14.4	21.7	57.5	93.6
1990	N.A.	3,861	1987	38.4	32.8	48.1	119.3
2000 (4)	215	5,183	1992	36.3	43.3	51.0	130.6
2003	180	6,735	1997	46.6	33.6	52.1	134.1
2004	207	6,976	2002	95.4	28.0	47.7	167.4
2005	235	7,336					
2006	221	7,689					

Note(s): 1) Does not include industrial building or heavy construction (e.g., dam and bridge building). In 1999, 76% of the employment shown is considered for production. The entire U.S. construction industry employs an estimated 10 million people, including manufacturing. 2) In 2000, NAHB report having 200,000 members, one-third of which were builders. 3) Excludes homebuilding establishments without payrolls, estimated by NAHB at an additional 210,000 in 1992. 4) NAHB reports that 2,448 full-time jobs in construction and related industries are generated from the construction of every 1,000 single-family homes and 1,030 jobs are created from the construction of every 1,000 multi-family units.

Source(s): DOC, Statistical Abstract of the U.S. 2001, May 2002, Table 593, p. 380 for 2000 architect employment, Table 609, p. 393; Statistical Abstract of the U.S. 2004-2005, December 2004, Table 597, p. 385 for 2003 architect employment, Table 602 for 2005 architect employment, Table 613, p. 400; DOC, 1992 Census of Construction Activities: U.S. Summary, CC92-I-27, Jan. 1996, p. 27-5 for construction employees; DOC, 1997 Economic Census: Construction - Industry Summary, EC97C23IS, Jan. 2000, Table 2, p. 8 for industrial builders; DOC, 1997 Economic Census: Construction - Single-Family Housing Construction, EC97C-2332A, Nov. 1999, Table 10, p. 14 for 1997 builder establishments; DOC, 2002 Economic Census: Construction - New Single-Family Housing Construction, EC02-231-236115, Dec. 2004, New Housing Operatives, ECO2-231-236118, Dec. 2004, Residential Remodelers, EC02-231-236119, Dec. 2004, Industrial Building Construction, 231-236210, Dec. 2004; NAHB, Housing Economics, May 1995, Table 2, p. 14 for 1982-1992 builder establishments; National Science and Technology Council, Construction & Building: Federal Research and Development in Support of the U.S. Construction industry for construction employees in Note 1; NAHB, Housing at the Millennium: Facts, Figures, and Trends, May 2000, p. 21 for Note 2; and NAHB, 1997 Housing Facts, Figures and Trends, 1997, p. 35 for Note 3, and p. 13 for Note 4.; DOC, Statistical Abstract of the U.S. 2008, May 2008, table 612, p. 401 for 2003-2006 construction employment and Table 598, p. 388 for 2006 Architects Employed

1.3.8 Heating, Cooling, and Ventilation Equipment Trades, by Year (Thousand Employees)

Industry	1980	1985	1990	1995	2000	2003
Air-Conditioning and Refrigeration Equipment (incl. warm-air furnaces): SIC 3585						
- Total Employment	118.4	122.8	126.9	136.3	150.2	109.1
- Production Workers	81.6	87.2	92.4	102.4	111.6	76.7
Plumbing, Heating, and Air-Conditioning Contractors: SIC 171						
- Total Employment	532.8	605.1	649.2	736.5	928.5	844.9
- Construction Workers	400.4	447.3	476.7	542.4	687.2	630.4
Wholesalers of Hardware, Plumbing and Heating Equipment: SIC 507						
- Total Employment	242.7	254.1	283.8	288.2	318.3	230.5

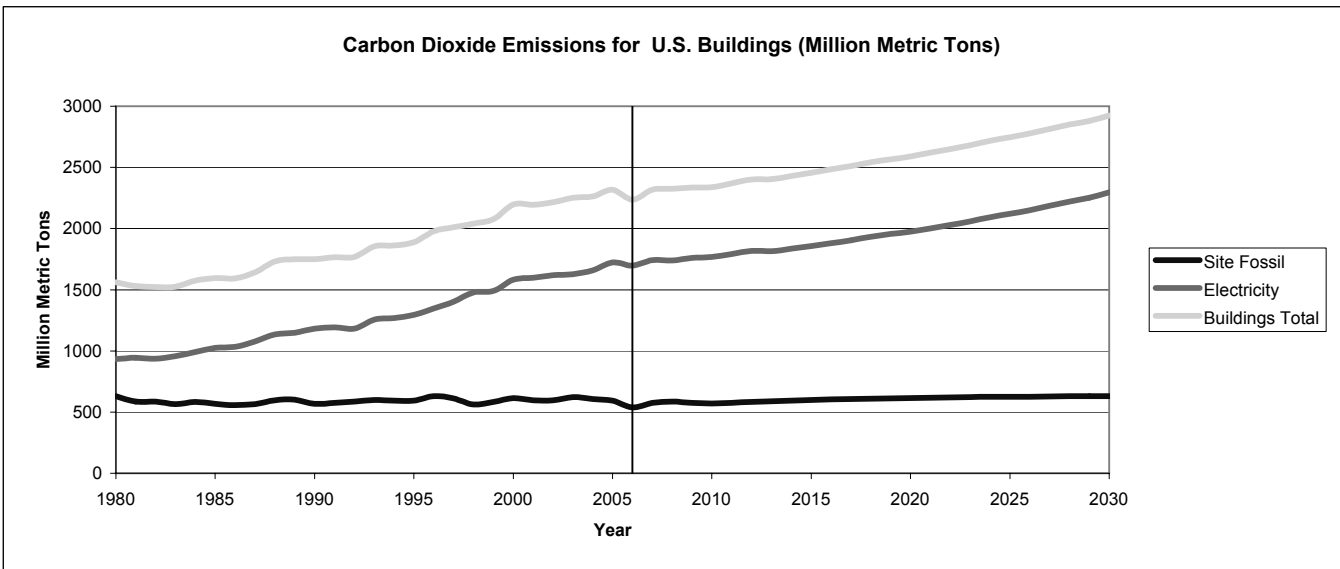
Source(s): ARI, Statistical Profile of the Air-Conditioning, Refrigeration, and Heating Industry (from U.S. Bureau of Labor Statistics), April 2001, Table 3, p. 10, Table 4, p. 11, Table 5, p. 13, Table 6, p. 14, and Table 8, p. 16 for 1980 to 1990 data; ARI, Statistical Profile of the Air-Conditioning, Refrigeration and Heating Industry, October 2004, Table 3, p. 9, Table 4, p. 10, Table 5, p. 12, Table 6, p. 13 and Table 8, p. 15 for 1995 to 2003 data.

1.4.1 Carbon Dioxide Emissions for U.S. Buildings, by Year (Million Metric Tons) (1)

	Buildings				U.S.		Buildings % of Total U.S.	Buildings % of Total Global
	Site Fossil	Electricity	Total	Growth Rate 2006-Year	Total	Growth Rate 2006-Year		
1980	630	933	1562	-	4723	-	33%	8.5%
1990	567	1183	1749	-	5012	-	35%	8.2%
2000	615	1581	2197	-	5847	-	38%	9.2%
2006	538	1698	2236	-	5890	-	38%	7.9%
2010	570	1768	2338	1.1%	6011	0.5%	39%	7.5%
2015	598	1858	2456	1.0%	6226	0.6%	39%	7.2%
2020	616	1974	2589	1.1%	6384	0.6%	41%	7.0%
2025	625	2121	2745	1.1%	6571	0.6%	42%	6.9%
2030	630	2295	2925	1.1%	6851	0.6%	43%	6.9%

Note(s): 1) Excludes emissions of buildings-related energy consumption in the industrial sector. Emissions assume complete combustion from energy consumption and exclude energy production activities such as gas flaring, coal mining, and cement production. 2) Carbon emissions calculated from EIA, Assumptions to the AEO 2008 and differs from EIA, AEO 2008, Table A18. Buildings sector total varies by 0.7% for year 2006 from EIA, AEO 2008. 3) U.S. buildings emissions approximately equal the combined carbon emissions of Japan, France, and the United Kingdom.

Source(s): EIA, Emissions of Greenhouse Gases in the U.S. 1985-1990, Sept. 1993, Appendix B, Tables B1-B5, p. 73-74 for 1980; EIA, Emissions of Greenhouse Gases in the U.S. 2003, Dec. 2004, Tables 7-11, p. 29-31 for 1990 and 2000; EIA, Assumptions to the Annual Energy Outlook 2008, April 2008, Table 2, p. 10 for carbon coefficients; EIA, AEO 2008, Mar. 2008, Table A2, p. 137-139 for 2005-2030 energy consumption and Table A18, p. 164 for 2005-2030 emissions; EIA, International Energy Outlook 2008, June 2008, Table A10, p. 93 for 2005-2030 global emissions; and EIA, International Energy Annual 2006, July 2006, Table H1, www.eia.doe.gov for 1980-2000 global emission.



FEDERAL HOUSING FINANCE AGENCY



STATEMENT

For Immediate Release
July 6, 2010

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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.

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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.

Bulletin

NUMBER: 2010-20

TO: Freddie Mac Sellers and Servicers

August 31, 2010

SUBJECT: MORTGAGES SECURED BY PROPERTIES WITH AN OUTSTANDING PROPERTY ASSESSED CLEAN ENERGY (PACE) OBLIGATION

This *Single-Family Seller/Servicer Guide* (“Guide”) Bulletin provides guidance to our Seller/Servicers regarding Freddie Mac’s purchase of Mortgages secured by properties with a Property Assessed Clean Energy (PACE) or PACE-like obligation.

BACKGROUND

In our Industry Letter dated May 5, 2010, *First Lien Mortgages and Energy Efficient Loans*, Freddie Mac reminded Seller/Servicers that an energy-related lien may not be senior to any Mortgage delivered to Freddie Mac. We also indicated that we would provide additional guidance regarding our requirements on energy retrofit lending programs in the future, should they move beyond the experimental stage.

On July 6, 2010, the Federal Housing Finance Agency (FHFA) issued a Statement on Certain Energy Retrofit Loan programs, such as PACE programs (“the FHFA Statement”). The FHFA Statement advised that First Liens offered by most PACE programs “pose unusual and difficult risk management challenges for lenders, servicers and mortgage securities investors,” and change customary lending priorities.

The FHFA Statement further provides that First Liens created by PACE programs raise safety and soundness concerns. Other regulators share these concerns. For example, a Bulletin issued July 6, 2010 by the Office of the Comptroller of the Currency (OCC 2010-25) states, “This lien infringement raises significant safety and soundness concerns that mortgage lenders and investors must consider.”

Freddie Mac supports the goal of encouraging responsible financing of energy efficient and renewable energy home improvements, and we believe this goal may be achieved without altering the lien priority status of first Mortgages or other underwriting requirements. To the extent necessary to mitigate greater risks associated with PACE and PACE-like programs, Freddie Mac will take additional actions. These actions could include adjusting loan-to-value and debt-to-income ratios for Mortgages secured by properties located in jurisdictions that permit such programs.

REQUIREMENTS

The requirements of this Bulletin apply to PACE obligations that provide for First Lien priority.

Mortgages secured by properties subject to PACE obligations that provide for First Lien priority

Freddie Mac will not purchase Mortgages secured by properties subject to PACE obligations that provide for First Lien priority. Seller/Servicers are responsible for monitoring State and local laws to determine whether a jurisdiction has a PACE program that provides for First Lien priority.

Mortgages secured by properties subject to PACE obligations originated before July 6, 2010 that provide for First Lien priority

For Mortgages with Freddie Mac Settlement Dates before **July 6, 2010** that are secured by properties subject to PACE obligations originated before **July 6, 2010** that provide for First Lien priority, Freddie Mac will waive the Uniform Security Instrument requirement that these obligations be subordinate to the First Lien. Otherwise, our requirements regarding Mortgages secured by properties subject to PACE obligations that provide for First Lien priority remain unchanged.

Refinance of Mortgages secured by properties subject to PACE obligations originated before July 6, 2010 that provide for First Lien priority

To mitigate the risk posed by PACE obligations that provide for First Lien priority over the Mortgage, we are implementing additional requirements with respect to the refinance of Mortgages with Freddie Mac Settlement Dates before July 6, 2010 that are secured by properties subject to PACE obligations originated before July 6, 2010 that provide for First Lien priority.

For such Mortgages (except when refinanced under Freddie Mac's Relief Refinance MortgagesSM offering as described below), Freddie Mac will require that Borrowers who have sufficient equity pay off the existing PACE obligation in full as a condition to obtaining a new Mortgage. In addition, Sellers must qualify the Borrower using the steps below that are designed to mitigate Freddie Mac's exposure and minimize Borrower hardship:

- Sellers must first attempt to refinance the Mortgage either as:
 - A cash-out refinance Mortgage under the requirements of Guide Section 24.6, *Requirements for Cash-Out Refinance Mortgages*, or
 - A "no cash-out" refinance Mortgage under the requirements of Guide Section 24.5, *Requirements for "no cash-out" refinance Mortgages*, except that pay-off of the PACE obligation will be permitted in the same manner that secondary financing that is used in its entirety to purchase the subject property may be paid off

Proceeds from the cash-out refinance Mortgage or the "no cash-out" refinance Mortgage must be used to pay off the PACE obligation in full.

- If the Mortgage does not meet the requirements for a cash-out refinance Mortgage or a "no cash-out" refinance Mortgage, as described above, with sufficient proceeds to pay off the PACE obligation in full, the Seller may then underwrite the Mortgage under Freddie Mac's Relief Refinance MortgageSM – Open Access offering under the requirements of Guide Chapter B24, *Freddie Mac Relief Refinance MortgagesSM – Open Access*, with the PACE obligation remaining in place. In underwriting under such offering, it will not be necessary to include the PACE obligation in the calculation of the total loan-to-value ratio; however, the PACE obligation must be included in the monthly debt payment-to-income ratio.

Special delivery requirements

For Relief Refinance Mortgages - Open Access when the PACE obligation remains in place, in addition to complying with the special delivery requirements provided in Chapter B24, the Seller must deliver special characteristics code "H28."

GUIDE REVISIONS

Applicable Guide sections will be updated in a future Bulletin to reflect these changes.

CONCLUSION

If you have any questions, please contact your Freddie Mac representative or call (800) FREDDIE.

Sincerely,

A handwritten signature in black ink, appearing to read "Patricia J. McClung". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Patricia J. McClung
Vice President
Offerings Management



Federal Housing Finance Agency

1700 G Street, N.W., Washington, D.C. 20552-0003

Telephone: (202) 414-3800

Facsimile: (202) 414-3823

www.fhfa.gov

February 28, 2011

Timothy J. Mayopoulos, Esq.
General Counsel
Fannie Mae
3900 Wisconsin Avenue, N.W.
Washington, DC 20016

Robert E. Bostrom, Esq.
General Counsel
Freddie Mac
8200 Jones Branch Drive
McLean, VA 22102-3110

RE: PACE Programs

Mr. Mayopoulos and Mr. Bostrom:

In response to inquiries regarding the status of the Conservator's outstanding directives regarding so-called Property Assessed Clean Energy (PACE) programs, I wanted to provide the following additional guidance.

Subsequent to the Conservator's July 6 statement to the Enterprises, the Enterprises issued on August 31, 2010, additional lender requirements (Lender Letters) to address the risks posed by first-lien PACE programs. The Conservator reaffirms that PACE programs that provide for first-lien priority over mortgage loans present significant risks to certain assets and property of the Enterprises— mortgages and mortgage-related assets— and pose unusual and difficult risk management challenges for the Enterprises.

Accordingly, pursuant to 12 USC 4617 and in furtherance of the Conservator's duty to preserve and conserve assets of the Enterprises, you are directed as follows:

1. The Enterprises shall continue to refrain from purchasing mortgage loans secured by properties with outstanding first-lien PACE obligations and carefully monitor through their seller-servicers any programs that create such first-lien obligations.
2. The Enterprises shall continue to operate in accordance with the Lender Letters and shall undertake other steps as may be necessary to protect their safe and sound operations from these first-lien PACE programs.

If you have any questions, you may contact me at 202 414 3788. With all best wishes, I am

Sincerely,

A handwritten signature in black ink, appearing to read 'Alfred M. Pollard', is written over a horizontal line.

Alfred M. Pollard



Caution

As of: Sep 11, 2012

PEOPLE OF THE STATE OF CALIFORNIA, ex rel. KAMALA D. HARRIS, ATTORNEY GENERAL, Plaintiff, v. FEDERAL HOUSING FINANCE AGENCY; EDWARD DeMARCO, in his capacity as Acting Director of FEDERAL HOUSING FINANCE AGENCY; FEDERAL HOME LOAN MORTGAGE CORPORATION; CHARLES E. HALDEMAN, Jr., in his capacity as Chief Executive Officer of FEDERAL HOME LOAN MORTGAGE CORPORATION; FEDERAL NATIONAL MORTGAGE ASSOCIATION; and MICHAEL J. WILLIAMS, in his capacity as Chief Executive Officer of FEDERAL NATIONAL MORTGAGE ASSOCIATION, Defendants SONOMA COUNTY and PLACER COUNTY, Plaintiff and Plaintiff-Intervener, v. FEDERAL HOUSING FINANCE AGENCY; EDWARD DeMARCO, in his capacity as Acting Director of FEDERAL HOUSING FINANCE AGENCY; FEDERAL HOME LOAN MORTGAGE CORPORATION; CHARLES E. HALDEMAN, Jr., in his capacity as Chief Executive Officer of FEDERAL HOME LOAN MORTGAGE CORPORATION; FEDERAL NATIONAL MORTGAGE ASSOCIATION; and MICHAEL J. WILLIAMS, in his capacity as Chief Executive Officer of FEDERAL NATIONAL MORTGAGE ASSOCIATION, Defendants. SIERRA CLUB, Plaintiff, v. FEDERAL HOUSING FINANCE AGENCY; and EDWARD DeMARCO, in his capacity as Acting Director of FEDERAL HOUSING FINANCE AGENCY, Defendants. CITY OF PALM DESERT, Plaintiff, v. FEDERAL HOUSING FINANCE AGENCY; FEDERAL NATIONAL MORTGAGE ASSOCIATION; and FEDERAL HOME LOAN MORTGAGE CORPORATION, Defendants.

No. C 10-03084 CW, No. C 10-03270 CW, No. C 10-03317 CW, No. C 10-04482 CW

UNITED STATES DISTRICT COURT FOR THE NORTHERN DISTRICT OF CALIFORNIA

2011 U.S. Dist. LEXIS 96235

August 26, 2011, Decided

August 26, 2011, Filed

SUBSEQUENT HISTORY: Stay granted by, in part *County of Sonoma v. Fed. Hous. Fin. Agency, 2011 U.S. Dist. LEXIS 112945 (N.D. Cal., Sept. 30, 2011)*

Motion to strike denied by, Stay granted by *County of Sonoma v. Fed. Hous. Fin. Agency, 2011 U.S. App. LEXIS 26124 (9th Cir. Cal., Dec. 20, 2011)*

PRIOR HISTORY: *In re Property Assessed Clean Energy Programs Litig.*, 764 F. Supp. 2d 1345, 2011 U.S. Dist. LEXIS 12669 (J.P.M.L., 2011)

COUNSEL: [*1] For People of the State of California, ex rel., Edmund G. Brown, Jr., California Attorney General (4:10-cv-03084-CW), Plaintiffs: Kenneth P. Alex, LEAD ATTORNEY, Janill L. Richards, California State Attorney General's Office, Oakland, CA; Sandra Goldberg, CA Attorney General's Office, Oakland, CA.

For Federal Housing Finance Agency, Defendant: Asim Varma, LEAD ATTORNEY, Arnold and Porter, Washington, DC; Scott Michael Border, Arnold and Porter LLP, Washington, DC.

For Edward DeMarco, in his capacity as Acting Director of Federal Housing Finance Agency, Defendant: Scott Michael Border, Arnold and Porter LLP, Washington, DC.

For Federal Home Loan Mortgage Corporation, Defendant: Heather B. Hoesterey, Reed Smith LLP, San Francisco, CA; Henry Falkner Reichner, PRO HAC VICE, Reed Smith LLP, Philadelphia, PA.

For Charles E. Haldeman, Jr., in his capacity as Chief Executive Officer of Federal Home Loan Mortgage Corporation, Defendant: Heather B. Hoesterey, Reed Smith LLP, San Francisco, CA; Henry Falkner Reichner, PRO HAC VICE, Reed Smith LLP, Philadelphia, PA.

For Federal National Mortgage Association, Defendant: Randall W. Edwards, LEAD ATTORNEY, Flora F Vigo, Thomas Patrick Brown, O'Melveny [*2] & Myers LLP, San Francisco, CA; Jeffrey W. Kilduff, O'Melveny Myers LLP, Washington, DC.

For Michael J. Williams, in his capacity as Chief Executive Officer of Federal National Mortgage Association, Defendant: Randall W. Edwards, LEAD ATTORNEY, Thomas Patrick Brown, O'Melveny & Myers LLP, San Francisco, CA; Flora F Vigo, Attorney at Law, San Francisco, CA; Jeffrey W. Kilduff, O'Melveny Myers LLP, Washington, DC.

For United States Department of Justice, Interested Party: Patrick George Nemeroff, LEAD ATTORNEY, Federal Programs Branch, United States Department of Justice, Civil Division, Washington, DC.

For County of Sonoma (4:10-cv-03270-CW), Plaintiff: Phyllis Crockett Gallagher, LEAD ATTORNEY, Office of The County Counsel, County of Sonoma, Santa Rosa, CA.

For County of Placer, Intervenor Pla: Valerie Diane Flood, LEAD ATTORNEY, Placer County Counsel, Auburn, CA.

For Federal Housing Finance Agency, Edward DeMarco, in his capacity as Acting Director of Federal Housing Finance Agency, Defendants: Asim Varma, Arnold and Porter, Washington, DC; Howard N. Cayne, Arnold & Porter LLP, Washington, DC; Scott Michael Border, Arnold and Porter LLP, Washington, DC; Stephen E. Hart, Federal Housing [*3] Finance Agency, Washington, DC.

For Federal Home Loan Mortgage Corporation, Charles E. Haldeman, Jr., in his capacity as Chief Executive Officer of Federal Home Loan Mortgage Corporation, Defendants: Heather B. Hoesterey, Reed Smith LLP, San Francisco, CA; Henry Falkner Reichner, PRO HAC VICE, Reed Smith LLP, Philadelphia, PA.

For Federal National Mortgage Association, Michael J Williams, in his capacity as Chief Executive Officer of Federal National Mortgage Association, Defendants: Flora F Vigo, Randall W. Edwards, Thomas Patrick Brown, O'Melveny & Myers LLP, San Francisco, CA; Jeffrey W. Kilduff, O'Melveny Myers LLP, Washington, DC.

For United States Department of Justice, Interested Party: Patrick George Nemeroff, LEAD ATTORNEY, Federal Programs Branch, United States Department of Justice, Civil Division, Washington, DC.

For People of the State of California ex rel. Edmund G. Brown Jr., Attorney General, Amicus: Janill L. Richards, CA State Attorney General's Office, Oakland, CA.

For Sierra Club (4:10-cv-03317-CW), Plaintiff: Gloria Diantha Smith, Sierra Club, San Francisco, CA; Travis Michael Ritchie, Sierra Club Environmental Law Program, San Francisco, CA.

For Federal Housing Finance [*4] Agency, Defendant: Asim Varma, LEAD ATTORNEY, Arnold and Porter, Washington, DC; Scott Michael Border, Arnold and Porter LLP, Washington, DC.

For Edward DeMarco, in his capacity as Acting Director of Federal Housing Finance Agency, Defendant: Scott Michael Border, Arnold and Porter LLP, Washington, DC.

For Federal Home Loan Mortgage Corporation, Defendant: Heather B. Hoesterey, Reed Smith LLP, San Francisco, CA.

For United States Department of Justice, Interested Party: Patrick George Nemeroff, LEAD ATTORNEY, Federal Programs Branch, United States Department of Justice, Civil Division, Washington, DC.

For City of Palm Desert (4:10-cv-04482-CW), Plaintiff: Mitchell Edward Abbott, LEAD ATTORNEY, Richards Watson & Gershon, Los Angeles, CA; David G. Alderson, Richards Watson Gershon, Los Angeles, CA.

For Federal Housing Finance Agency, Defendant: Scott Michael Border, LEAD ATTORNEY, Arnold and Porter LLP, Washington, DC; Asim Varma, Arnold and Porter, Washington, DC; Howard N. Cayne, Arnold & Porter LLP, Washington, DC; Stephen E. Hart, Federal Housing Finance Agency, Washington, DC.

For Federal National Mortgage Association, Defendant: Randall W. Edwards, O'Melveny & Myers LLP, San Francisco, [*5] CA.

For Federal Home Loan Mortgage Corporation, Defendant: Heather B. Hoesterey, Reed Smith LLP, San Francisco, CA.

For United States Department of Justice, Interested Party: Patrick George Nemeroff, LEAD ATTORNEY, Federal Programs Branch, United States Department of Justice, Civil Division, Washington, DC.

JUDGES: CLAUDIA WILKEN, United States District Judge.

OPINION BY: CLAUDIA WILKEN

OPINION

ORDER GRANTING IN PART AND DENYING IN PART DEFENDANTS' MOTIONS TO DISMISS (Docket Nos. 49, 41, 74, 18, and 13), AND GRANTING IN PART AND DENYING IN PART SONOMA COUNTY'S MOTION FOR A PRELIMINARY

INJUNCTION (Docket No. 33)

California, Sonoma and Placer Counties, the City of Palm Desert and the Sierra Club have sued the Federal Housing Finance Agency (FHFA), the Federal National Housing Association (Fannie Mae), the Federal Loan Mortgage Corporation (Freddie Mac) and their directors. 1 The lawsuits challenge actions by the FHFA, Fannie Mae and Freddie Mac which have allegedly blocked government programs financing energy conservation. 2 Plaintiffs seek declaratory and injunctive relief, alleging violations of the Administrative Procedures Act (APA), the National Environmental Policy Act (NEPA), various state laws and the *Constitution's Tenth Amendment* [*6] and Spending Clause.

1 By stipulation, the claims against Defendants Charles E. Halderman, Jr. and Michael J. Williams, who were sued in their official capacities as Chief Executive Officers for Fannie Mae and Freddie Mac, have been dismissed. No. C 10-03084, Docket No. 83; No. C 10-03270, Docket No. 93.

2 Three similar cases have been filed in federal district courts in Florida and New York: *The Town of Babylon v. Federal Housing Finance Agency, et al.*, 2:10-cv-04916 (E.D.N.Y.); *Natural Resource Defense Council, Inc. v. Federal Housing Finance Authority, et al.*, 1:10-cv-07647-SAS (S.D.N.Y.); and *Leon County v. Federal Housing Finance Agency, et al.*, 4:10-cv-00436-RH (N.D.Fla.). The Babylon and Natural Resource Defense Council actions have been dismissed, and notices of appeal have been filed.

Defendants have moved to dismiss all claims. 3 Plaintiffs jointly oppose. Sonoma County also moves for a preliminary injunction. Defendants' motions to dismiss are GRANTED IN PART. Sonoma County's motion for a preliminary injunction is GRANTED IN PART.

3 Unless noted otherwise, citations to the record refer to the California action, C 10-03084.

BACKGROUND

The present actions arise from disputes about certain [*7] federally funded, state and locally administered initiatives known as Property Assessed Clean Energy (PACE) programs. The Department of Energy

substantially funds PACE programs, as part of the American Recovery and Reinvestment Act of 2008. Through these programs, state and local governments finance energy conservation improvements with debt obligations secured by the retrofitted properties. As a related benefit, the programs are intended to create jobs.

In the Housing and Economic Recovery Act of 2008 (HERA), Public Law 110-289, 122 Stat. 2654, Congress established the FHFA to regulate and oversee Fannie Mae and Freddie Mac (collectively, the Enterprises), as well as the Federal Home Loan Banks (Banks), which largely control the country's secondary market for residential mortgages. The HERA amended the Federal Housing Enterprises Financial Safety and Soundness Act of 1992, *12 U.S.C. § 4501 et seq.* (Safety and Soundness Act). The Safety and Soundness Act outlines the regulatory and oversight structure for the Enterprises and the Banks, denominated the regulated entities. *12 U.S.C. § 4502(20)*. As amended by the HERA, the Safety and Soundness Act vests in the FHFA the authority to act [*8] as a conservator and receiver for the Enterprises and the Banks. *12 U.S.C. §§ 4511(b); 4617(a)*. Since September 6, 2008, both Enterprises have been in FHFA conservatorship. *Id.*

The parties disagree about the nature of the debt obligations created by PACE programs, and the extent to which the obligations create risks for secondary mortgage holders, such as the Enterprises. Defendants contend that PACE programs, in particular those that result in lien obligations that take priority over mortgage loans, make alienation of the encumbered properties more difficult, and thus pose risk to the security interests of entities that purchase the mortgages for investment purposes. Plaintiffs allege that Defendants' actions have thwarted PACE programs. They claim that (1) Defendants disregarded statutorily imposed procedural requirements in adopting policies about the PACE debt obligations, (2) Defendants' determinations were substantively unlawful because they were arbitrary and capricious, and (3) Defendants mischaracterized the legal nature of the obligations, contrary to state law, deeming them loans rather than traditional public assessments.

The actions Defendants took are as follows. In a letter [*9] dated June 18, 2009, addressed to banking and creditor trade groups, as well as associations for mortgage regulators, governors and state legislators, the FHFA asserted in general terms that the PACE program

posed risks to homeowners and lenders. On September 18, 2009, Fannie Mae issued a "Lender Letter" to its mortgage sellers and servicers in response to questions about PACE programs, providing a link to the FHFA's June 18, 2009 letter. First Amended Complaint (FAC), Ex. A.

On May 5, 2010, Fannie Mae and Freddie Mac both issued letters to their mortgage sellers and servicers, again addressing concerns about PACE programs. FAC, Ex. B.

On July 6, 2010, the FHFA issued a statement that the PACE programs "present significant safety and soundness concerns that must be addressed by Fannie Mae, Freddie Mac and the Federal Home Loan Banks." FAC, Ex. C. The FHFA stated that first liens created by PACE programs were different from "routine tax assessments," and posed significant risks to lenders, servicers, and mortgage securities investors. *Id.* The FHFA "urged state and local governments to reconsider these programs" and called "for a pause in such programs so concerns can be addressed." *Id.* [*10] The FHFA directed Fannie Mae, Freddie Mac and the Banks to undertake "prudential actions," including reviewing their collateral policies to assure no adverse impact by PACE programs. *Id.* Although Defendants have taken the position that the FHFA issued the statement in its capacities as conservator and as regulator, the statement itself does not say so, or cite any statutory or regulatory provision.

On August 31, 2010, Fannie Mae and Freddie Mac, citing the FHFA's July 2010 statement, announced to lenders that they would not purchase mortgages originated on or after July 6, 2010, which were secured by properties encumbered by PACE obligations. Declaration of Scott Border, Exs. 20 & 21.

At the Court's request, on February 8, 2011, the United States submitted a Statement of Interest in these lawsuits.

On February 28, 2011, the FHFA's General Counsel sent a letter to General Counsel for Fannie Mae and Freddie Mac, reaffirming that debts arising from PACE programs pose significant risks to the Enterprises. Defendants' Notice of New Authority, Ex. A. The FHFA invoked its statutory authority as conservator and directed that the "Enterprises shall continue to refrain from purchasing mortgage [*11] loans secured by properties

with outstanding first-lien PACE obligations." *Id.* In addition, the letter ordered that the "Enterprises shall continue to operate in accordance with the Lender Letters and shall undertake other steps necessary to protect their safe and sound operations from these first-lien PACE programs." *Id.*

LEGAL STANDARD

Dismissal is appropriate under *Rule 12(b)(1)* when the district court lacks subject matter jurisdiction over the claim. *Fed. R. Civ. P. 12(b)(1)*. Federal subject matter jurisdiction must exist at the time the action is commenced. *Morongo Band of Mission Indians v. Cal. State Bd. of Equalization*, 858 F.2d 1376, 1380 (9th Cir. 1988). A federal court is presumed to lack subject matter jurisdiction until the contrary affirmatively appears. *Stock W., Inc. v. Confederated Tribes*, 873 F.2d 1221, 1225 (9th Cir. 1989).

Dismissal under *Rule 12(b)(6)* for failure to state a claim is appropriate only when the complaint does not give the defendant fair notice of a legally cognizable claim and the grounds on which it rests. *Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 555, 127 S. Ct. 1955, 167 L. Ed. 2d 929 (2007). A complaint must contain a "short and plain statement of the claim showing that the pleader [*12] is entitled to relief." *Fed. R. Civ. P. 8(a)*. In considering whether the complaint is sufficient to state a claim, the court will take all material allegations as true and construe them in the light most favorable to the plaintiff. *NL Indus., Inc. v. Kaplan*, 792 F.2d 896, 898 (9th Cir. 1986). However, this principle is inapplicable to legal conclusions; "threadbare recitals of the elements of a cause of action, supported by mere conclusory statements," are not taken as true. *Ashcroft v. Iqbal*, 556 U.S. 662, 129 S. Ct. 1937, 1949-50, 173 L. Ed. 2d 868 (2009) (citing *Twombly*, 550 U.S. at 555).

DISCUSSION

I. Subject Matter Jurisdiction

A. Article III Standing

Although Defendants did not initially raise the issue, the United States argues in its Statement of Interest that Plaintiffs do not have Article III standing and, therefore, the Court does not have subject matter jurisdiction to consider their claims. "If the court determines at any time that it lacks subject-matter jurisdiction, the court must

dismiss the action." *Fed. R. Civ. P. 12(h)(3)*. To establish constitutional standing, a plaintiff must satisfy three requirements--(1) injury in fact; (2) causation; and (3) redressability. *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 560, 112 S. Ct. 2130, 119 L. Ed. 2d 351 (1998). [*13] The party invoking federal jurisdiction bears the burden of establishing that it has Article III standing. *Steel Co. v. Citizens for a Better Environment*, 523 U.S. 83, 103-104, 118 S. Ct. 1003, 140 L. Ed. 2d 210 (1998). On a motion to dismiss, a plaintiff need only show that the facts alleged, if proved, would confer standing. *Central Delta Water Agency v. United States*, 306 F.3d 938, 947 (9th Cir. 2002).

The United States does not argue that Plaintiffs do not allege "injury in fact," and the Court finds that they do. Rather, the United States asserts that Plaintiffs cannot satisfy the causation requirement because the Enterprises took the position that PACE debt obligations were incompatible with their uniform security instruments in their May 5, 2010 letters, before the FHFA issued its July 6, 2010 statement. The United States argues that Plaintiffs have alleged no facts suggesting that the Enterprises would have altered their position if the FHFA had not issued its July statement.

With respect to redressability, the United States asserts that it is mere speculation that if the FHFA changed its policy on the PACE program, individuals would be able to obtain mortgages, or refinance existing mortgages, on properties encumbered [*14] by PACE-related debt obligations. The United States further argues that it is speculative that the notice and comment process would change the FHFA's and the Enterprises' position with respect to PACE programs.

Plaintiffs claim procedural as well as substantive injury. "A showing of procedural injury lessens a plaintiff's burden on the last two prongs of the Article III standing inquiry, causation and redressability." *Salmon Spawning & Recovery Alliance v. Gutierrez*, 545 F.3d 1220, 1226 (9th Cir. 2008). The Supreme Court has explained that

a litigant to whom Congress has accorded a procedural right to protect his concrete interests . . . can assert that right without meeting all the normal standards for redressability and immediacy. When a litigant is vested with a procedural right,

that litigant has standing if there is some possibility that the requested relief will prompt the injury-causing party to reconsider the decision that allegedly harmed the litigant.

Massachusetts v. EPA, 549 U.S. 497, 517-18, 127 S. Ct. 1438, 167 L. Ed. 2d 248 (2007) (internal quotation marks and citations omitted). Where a plaintiff asserts that an agency has failed to follow procedural requirements in considering the environmental impact [*15] of its action, for purposes of redressability, "[i]t suffices that . . . the [agency's] decision could be influenced by the environmental considerations that [the relevant statute] requires an agency to study." *Citizens for Better Forestry v. USDA*, 341 F.3d 961, 976 (9th Cir. 2003) (alterations and emphasis in original, internal quotation marks omitted); *Natural Resources Defense Council, Inc. v. EPA*, 638 F.3d 1183, 1189 n.3 (9th Cir. 2011); *Salmon Spawning*, 545 F.3d at 1226-27; *Sierra Forest Legacy v. United States Forest Service*, 652 F. Supp. 2d 1065, 1078 (N.D. Cal. 2009). In contrast, "a plaintiff alleging a substantive violation must demonstrate that its injury would likely be redressed by a favorable court decision." *Salmon Spawning*, 545 F.3d at 1228.

With regard to causation, Plaintiffs have alleged a sufficient connection between Defendants' actions and the thwarting of PACE programs and their anticipated benefits. To hold otherwise would suggest that Congress imposed procedural requirements that have no meaningful effect. See *Citizens for Better Forestry*, 341 F.3d at 973.

Although the FHFA's July 2010 statement was issued after Fannie Mae and Freddie Mac's May 2010 announcements [*16] to their sellers and servicers, the FHFA had publicized its concerns in the prior, June 2009, letter. Fannie Mae, in turn, cited that letter as it raised caution about PACE programs in its September 2009 Lender Letter. In addition, Fannie Mae's and Freddie Mac's August 31, 2010 announcements that they would not purchase PACE-encumbered mortgages originated on or after July 6, 2010, were issued in response to the FHFA's statement.

Further, Plaintiffs' claims of procedural violations are redressable. If the statutorily mandated procedures were followed, Plaintiffs' interests could be protected by a resulting change in the FHFA, Fannie Mae and Freddie

Mac's policy, spurring lenders to renew financing of PACE-encumbered properties. Plaintiffs have alleged that, prior to the July 2010 statement, PACE programs were operational and PACE participants were able to refinance their mortgages. They further allege that, after the FHFA's July 2010 statement and the Enterprises' announcements, the programs faltered and participants became unable to refinance or transfer their properties without paying off the PACE debt in full. FAC ¶ 35. Accepting the allegations as true, the financing and benefits [*17] previously afforded by PACE programs could be renewed as a result of new information gleaned through the notice and comment and environmental review processes and a resulting change in Defendants' position and related marketplace practices.

Although Plaintiffs' substantive claims are subject to greater scrutiny with regard to Article III standing requirements, the causation and redressability requirements are adequately plead. The alleged reaction of the marketplace to Defendants' actions and the rapid demise of PACE programs establish a sufficient causal connection between Defendants' actions and Plaintiffs' purported injury. Redressability is sufficiently alleged because, if the FHFA's policy were set aside as arbitrary and capricious, it is likely that financing streams would be renewed.

This case is distinguishable from *Levine v. Vilsack*, 587 F.3d 986 (9th Cir. 2009), a case upon which the United States relies to argue that Plaintiffs' claims are not redressable. In *Levine*, the plaintiffs brought suit against the Secretary of Agriculture, alleging that the agency's interpretive rule excluding poultry from the Humane Methods of Slaughter Act (HMSA) was arbitrary and capricious under [*18] the APA. The plaintiffs sought to block the inhumane slaughter of poultry under the HMSA, but the statute lacked an enforcement provision. *Id.* at 989. Plaintiffs' goal would be achieved only if the Secretary proceeded to add poultry to the list of protected species under the Federal Meat Inspection Act, a separate statute which was not at issue in the case. *Id.* at 993-95. The court reasoned that it was speculative whether the Secretary would do so and whether resulting regulations would make the slaughter of poultry more humane. *Id.* at 996-97.

The present actions differ because further action by a federal agency would not be required to achieve Plaintiffs' goals. Plaintiffs have alleged that PACE

encumbrances were treated like tax assessments until the FHFA took the actions it did. Plaintiffs adequately allege that a change in the FHFA's policy would lead to a return previous marketplace practices.

Accordingly, Plaintiffs' claims sufficiently allege the injury in fact, causation and redressability necessary to establish standing at this stage of the litigation.

B. Statutory Preclusion of Judicial Review

Defendants argue that, pursuant to *Federal Rule of Civil Procedure 12(b)(1)*, the present [*19] actions should be dismissed for lack of subject matter jurisdiction. Specifically, Defendants assert that three statutory provisions--*12 U.S.C. §§ 4617(f), 4635(b), and 4623(d)*--preclude judicial review of Plaintiffs' claims for relief.

The courts have long recognized a presumption in favor of judicial review of administrative actions. *Love v. Thomas*, 858 F.2d 1347, 1356 (9th Cir. 1988) (citing *Block v. Community Nutrition Inst.*, 467 U.S. 340, 349-51, 104 S. Ct. 2450, 81 L. Ed. 2d 270 (1984)). The presumption may be overcome by various means, including "specific language or specific legislative history that is a reliable indicator of congressional intent" or "by inference of intent drawn from the statutory scheme as a whole." *Block*, 467 U.S. at 349.

Although "great weight" is ordinarily given to an agency's interpretation of a statute it is charged with enforcing, "that deference does not extend to the question of judicial review, a matter within the peculiar expertise of the courts." *Love*, 858 F.2d at 1352 n.9.

The Court considers whether any of the three provisions preclude its authority to hear Plaintiffs' claims.

1. *Section 4617(f)*

Section 4617(a) authorizes the appointment of the FHFA as conservator or receiver for a [*20] regulated entity under certain circumstances. *12 U.S.C. § 4617(a)*. As conservator, the FHFA immediately succeeds to "all rights, titles, powers, and privileges of the regulated entity, and of any stockholder, officer, or director of such regulated entity" with respect to the entity and its assets. *12 U.S.C. § 4617(b)(2)(A)*. The FHFA may take over assets and operate the entity subject to its conservatorship, collect all obligations and money due,

perform all functions of the regulated entity in its name consistent with the FHFA's appointment as conservator, and preserve and conserve the entity's assets and property. *12 U.S.C. § 4617(b)(2)(B)(i)-(iv)*.

Section 4617(f) limits judicial review of such actions, stating that "no court may take any action to restrain or affect the exercise of powers or functions of the Agency as a conservator or a receiver." *12 U.S.C. § 4617(f)*. There is little case law interpreting *Section 4617(f)*. However, the parties recognize that the language in the provision is similar to *12 U.S.C. § 1821(j)*, which limits judicial review of actions taken by the Federal Deposit Insurance Corporation (FDIC) in its capacity as a conservator or receiver. *Sahni v. American Diversified Partners*, 83 F.3d 1054, 1058-59 (9th Cir. 1996). [*21] That provision states that "no court may take any action," except at the request of the FDIC Board of Directors by regulation or order, "to restrain or affect the exercise of powers or functions of the [FDIC] as a conservator or a receiver." *12 U.S.C. § 1821(j)*.

The Ninth Circuit has stated, "The bar imposed by § 1821(j) does not extend to situations in which the FDIC as receiver asserts authority beyond that granted to it as a receiver." *Sharpe v. FDIC*, 126 F.3d 1147, 1155 (9th Cir. 1997) (citing *National Trust for Historic Preservation v. FDIC*, 995 F.2d 238, 240, 301 U.S. App. D.C. 338 (D.C. Cir. 1993), judgment vacated, 5 F.3d 567, 303 U.S. App. D.C. 315 (D.C. Cir. 1993), reinstated in relevant part, 21 F.3d 469, 305 U.S. App. D.C. 375 (D.C. Cir. 1994)). In *Sharpe*, the Ninth Circuit held that the FDIC, in breaching a contract, did not act within its statutorily defined receiver powers to disaffirm or repudiate contracts; the court was permitted to review the plaintiffs' breach of contract claim against the FDIC.

The FHFA contends that it issued its July 2010 statement and February 2011 letter as conservator of the Enterprises. Plaintiffs respond that Defendants' actions amount to substantive rule-making, and that rule-making is not a part of the FHFA's [*22] role as conservator. The FHFA has directed Fannie Mae and Freddie Mac prospectively to refrain from purchasing any mortgage loan secured by property with an outstanding PACE obligation. This appears to amount to substantive rule-making.

Distinct from the FHFA's powers as a conservator or receiver, it has supervisory and regulatory authority over Fannie Mae, Freddie Mac and the Federal Home Loan

Banks, the regulated entities. See *12 U.S.C. § 4511(b)*; *§ 4513b*; *§ 4513(a)(1)(A), (B)(i)-(v)*.

Therefore, the Court must next consider whether the FHFA's rule-making is pursuant to its authority as a conservator, or to its supervisory or regulatory authority. The Ninth Circuit has explained that, "in interpreting a statute, the court will not look merely to a particular clause in which general words may be used, but will take in connection with it the whole statute (or statutes on the same subject) and the objects and policy of the law." *Morrison-Knudsen Co., Inc. v. CHG Int'l, Inc.*, 811 F.2d 1209, 1219 (9th Cir. 1987) (internal quotation marks omitted). In *Morrison-Knudsen*, the Ninth Circuit declined to hold that the Federal Savings and Loan Insurance Corporation's authority to adjudicate creditor [*23] claims was in keeping with the ordinary functions of a receiver. *Id. at 1217*. The Ninth Circuit found that the language in the relevant statute failed to enumerate, and the statutory scheme did not support, the power to adjudicate creditor claims. *Id. at 1218-20*.

Here, it is clear from the statutory scheme overall and other provisions of *section 4617* that Congress distinguished between the FHFA's powers as a conservator and its authority as a regulator, and did not intend that the former would subsume the latter.

Specific provisions of *section 4617* include the phrase, "The agency may, as conservator . . .," in reference to the FHFA's authority in that role, while other provisions addressing the FHFA's regulatory powers do not contain analogous language. Compare *12 U.S.C. § 4617(b)(1)* and *(2)(C)* with *§ 4617(b)(2)(A), (B), (G), (H), (I)(i)(I)* and *(J)*⁴ and *§ 4617(b)(4)*. *Section 4617(b)* indicates that Congress intended to enumerate the FHFA's powers and duties as a conservator, while delegating other duties to the FHFA's regulatory authority. The statute does not identify substantive rulemaking as a conservatorship power.

4 Although *section 4617(b)(2)(J)* is worded as a broad, catchall provision, [*24] given the overall scheme of *section 4617*, it would be incorrect to find that *section 4617(b)(2)(J)* authorizes the FHFA to do anything and everything, including engaging in rule-making, as a conservator.

The cases upon which Defendants rely to assert that the FHFA's powers as a conservator are "sweeping" and "broad," such that its July 2010 statement and February

2011 letter escape judicial review, are inapposite. The cases address FHFA actions typical of the ordinary day-to-day functions of an agency acting as conservator or receiver. See e.g., *Freeman v. FDIC*, 56 F.3d 1394, 312 U.S. App. D.C. 324 (D.C. Cir. 1995) (holding that, pursuant to *12 U.S.C. § 1821(j)*, the court was precluded from taking any action that might restrain the FDIC from conducting a nonjudicial foreclosure sale of assets acquired from a failed bank); *National Trust*, 995 F.2d at 239-41 (holding that a lawsuit to enjoin the FDIC's sale to liquidate assets was precluded by *§ 1821(j)*); *Hindes v. FDIC*, 137 F.3d 148, 160 (3rd Cir. 1998) (precluding an order voiding FDIC action in its corporate capacity, which triggered a state agency to close a bank and appoint the FDIC as receiver); *Telematics International, Inc. v. NEMLC Leasing Corp.*, 967 F.2d 703, 707 (1st Cir. 1992) [*25] (precluding plaintiff from attaching a certificate of deposit held by a bank because the attachment would impede the FDIC from attaching the asset); *Save Our Wetlands, Inc. v. State of La., Landmark Lands Co.*, 1996 U.S. Dist. LEXIS 5579, 1996 WL 194924, *2-3 (E.D. La.) (stating that disposition of a failed institution's assets is a power of a receiver, and a challenge to title of a property directly affects the receiver's function); *Pyramid Constr. Co., Inc. v. Wind River Petroleum, Inc.*, 866 F. Supp. 513, 518-19 (D. Utah 1994) (precluding an order to rescind the Resolution Trust Corporation's sale of a parcel and force transfer of that parcel from one private party to another); *Furgatch v. Resolution Trust Corp.*, 1993 WL 149084, *2 (N.D. Cal.) (precluding injunction against a bank and trustee to prevent a foreclosure sale because it would indirectly enjoin a foreclosure by the RTC in its role as conservator).

Substantive rule-making is not appropriately deemed action pursuant to the FHFA's conservatorship authority. The FHFA's policy-making with respect to PACE programs does not involve succeeding to the rights or powers of the Enterprises, taking over their assets, collecting money due or operating their business. [*26] Given the presumption in favor of judicial review, *section 4617(f)* does not preclude review of the July 2010 statement and February 2011 letter.

2. *Section 4623(d)*

The FHFA argues that its July 2010 statement was exempt from judicial review pursuant to *12 U.S.C. § 4623(d)*, which restricts judicial review of any action

taken under *section 4616(b)(4)*.⁵ *Section 4616(b)(1) through (4)* describes supervisory actions that the FHFA Director may take with respect to "significantly undercapitalized" regulated entities. *Section 4616(b)(4)* authorizes the Director to require a "significantly undercapitalized" regulated entity "to terminate, reduce, or modify any activity that the Director determines creates excessive risk to the regulated entity." The Safety and Soundness Act establishes a tiered system of classification of the capitalization of the regulated entities; "significantly undercapitalized" is the second lowest of the four tiers. See *12 U.S.C. § 4614(a) and (b)(1)(C)*.

⁵ Defendants assert that Title *12 U.S.C. sections 4623(d) and section 4635(b)* preclude judicial review of the July 2010 statement, as alternative arguments to their contention that *section 4617(f)* bars review. The FHFA issued [*27] its February 2011 letter after the parties completed briefing on Defendants' motions to dismiss, and the Court permitted supplemental briefing to address the February 2011 letter. Defendants did not argue that *12 U.S.C. §§ 4635(b) and February 2011 letter*. They took the position that *section 4617(f)* precluded review of the February 2011 letter because it was issued expressly in the FHFA's capacity as conservator of Fannie Mae and Freddie Mac. Docket No. 105 and 107. Accordingly, the Court does not address *12 U.S.C. §§ 4635(b) or 4623(d)* with respect to the February 2011 letter.

It is not clear that the FHFA acted pursuant to *section 4616(b)(4)* because it could have done so only if it found that Fannie Mae, Freddie Mac and the Federal Home Loan Banks were significantly undercapitalized. Defendants have not shown that the FHFA imposed such a classification. Because a regulated entity may be placed into FHFA conservatorship on grounds apart from its capital classification, it is not possible to infer from Fannie Mae or Freddie Mac's conservatorship that they were classified as significantly undercapitalized. Nothing in the July 2010 statement refers to *section 4616(b)(4)*, or makes reference [*28] to undercapitalization. Thus, *section 4623(d)* does not limit the Court's jurisdiction to hear Plaintiffs' claims.

3. *Section 4635(b)*

The FHFA contends that it issued its July 2010

statement pursuant to its enforcement authority⁶ and, thus, under *12 U.S.C. § 4635(b)*, the action is beyond the Court's purview. *Section 4635(b)* bars judicial review of the "issuance or enforcement of any notice or order" under *12 U.S.C. § 4624(b) and (c)*. *Sections 4624(b) and (c)* authorize the FHFA to issue orders to "make temporary adjustments to the established standards for an enterprise or both enterprises" and to "require an enterprise, under such terms and conditions as the Director determines to be appropriate, to dispose of or acquire any asset . . ." *12 U.S.C. § 4624(b)-(c)*.

⁶ Again, Defendants do not appear to argue that the February 2011 letter was issued under this authority.

Neither *sections 4624(b) nor (c)* applies to the July 2010 statement. The statement was directed to the regulated entities, not solely the Enterprises. The statement does not refer to *section 4624(b)* or any established standard that the FHFA sought to adjust. Defendants now assert that the relevant standard that the FHFA sought [*29] to modify is set forth in *12 C.F.R. § 1252.1*, a regulation mandating the Enterprises to comply with the portfolio holdings criteria established in their respective Senior Preferred Stock Purchase Agreements with the Department of Treasury. However, the July 2010 statement did not adjust the Stock Purchase Agreements; those agreements simply addressed the amount of mortgage assets that the Enterprises must hold in their portfolios. Finally, *section 4624(c)* does not avail Defendants because the July 2010 statement did not order the acquisition or disposal of assets. Thus, if anything, the statement appears to fall under the authority of *section 4624(a)*, which provides that the FHFA Director "shall, by regulation, establish criteria governing the portfolio holdings of the enterprises . . ." This would seem to support Plaintiffs' argument that the FHFA's action amounted to substantive rule-making.

Accordingly, *12 U.S.C. § 4635(b)* does not restrict this Court's jurisdiction over Plaintiffs' claims.

In sum, none of the three statutory provisions upon which Defendants rely--*12 U.S.C. § 4617(f)*, *12 U.S.C. § 4623(d)* or *12 U.S.C. § 4635(b)*--applies to the FHFA's policy on PACE financing. Plaintiffs' [*30] actions are not precluded on these grounds.

II. Motion to Dismiss for Failure to State a Claim

A. Administrative Procedures Act

Plaintiffs allege that the FHFA's policy statements⁷ on PACE obligations failed to comply with the notice and comment requirements of, and was arbitrary and capricious in violation of, the APA, 5 U.S.C. §§ 553, 706(2)(D).

⁷ Plaintiffs assert that the February 2011 letter, as well as the July 2010 statement, are unlawful under the APA; Defendants' supplemental briefing did not address the APA issues as they relate to the February 2011 letter. The Court assumes that the APA analysis of the July 2010 statement applies equally to the February 2011 letter.

1. Judicial review under the APA

To invoke judicial review of agency action under the APA, Plaintiffs must demonstrate prudential standing. This standing requirement is distinct from Article III standing, in that it is a "purely statutory inquiry" to determine "whether a particular plaintiff has been granted a right to sue by the statute under which he or she brings suit." *City of Sausalito v. O'Neill*, 386 F.3d 1186, 1199 (9th Cir. 2004). "For a plaintiff to have prudential standing under the APA, 'the interest sought [*31] to be protected by the complainant [must be] arguably within the zone of interests to be protected or regulated by the statute . . . in question.'" *Nat'l Credit Union Admin. v. First National Bank & Trust Co.*, 522 U.S. 479, 488, 118 S. Ct. 927, 140 L. Ed. 2d 1 (1998) (alteration in original). The test requires that "we first discern the interest 'arguably . . . to be protected' by the statutory provision at issue; we then inquire whether the plaintiff's interests affected by the agency action in question are among them." *Id.* at 492. To satisfy the zone of interest test, "there does not have to be an 'indication of congressional purpose to benefit the would-be plaintiff.'" *Id.* A plaintiff is outside a provision's zone of interest where "the plaintiff's interests are so marginally related to or inconsistent with the purposes implicit in the statute that it cannot reasonably be assumed that Congress intended to permit the suit." *Clarke v. Securities Industry Ass'n*, 479 U.S. 388, 399, 107 S. Ct. 750, 93 L. Ed. 2d 757 (1987). The test is not "especially demanding." *Id.* at 399.

With regard to the first factor in the zone of interest test, the parties agree that the paramount goal of the Safety and Soundness Act is to protect the stability and

ongoing operation [*32] of the residential mortgage market.

California and the municipalities are arguably within the Safety and Soundness Act's zone of interests because the housing mortgage market operates alongside a system of laws and assessments that California and the municipalities have erected. Although Congress has not expressed a specific purpose to benefit state and local governments through the Safety and Soundness Act, California and the municipalities' interests are affected by the Act and are consistent with its purposes. The governmental Plaintiffs share an interest in a safe and sustainable secondary mortgage market and suffer as a result of a faltering mortgage market. Defendants' actions, pursuant to the Act, have allegedly reversed the longstanding treatment of local assessments in mortgage lending, thwarted California and the municipalities' PACE programs, and curtailed access to mortgages for residents who participate in the programs. Although there is a potential for disruption inherent in allowing every party adversely affected by Defendants' actions to seek judicial review, California and the municipalities are well-positioned to represent the public interest reliably without undermining [*33] the Act's objectives. See *Clarke*, 479 U.S. at 397 n.12 (stating that the ability of a plaintiff to serve as a "reliable private attorney general" is relevant to the zone of interest test.)

The Sierra Club, however, bears a significantly less direct relationship to the mortgage market. The environmental interests the Sierra Club asserts, even taking account of the Act's public interest provision, are too attenuated from the Act's central purpose to find prudential standing under the APA for the organization on that basis.

Defendants also argue that Plaintiffs have failed to allege a final agency action. Under the APA, judicial review is only permissible for final agency action. 5 U.S.C. § 704. "For an agency action to be final, the action must (1) 'mark the consummation of the agency's decisionmaking process' and (2) 'be one by which rights or obligations have been determined, or from which legal consequences will flow.'" *Oregon Natural Desert Ass'n v. United States Forest Service*, 465 F.3d 977 (9th Cir. 2006). To determine whether the consummation prong of the test has been satisfied, the court must make a pragmatic consideration of the effect of the action, not its label. *Id.* at 982, 985. [*34] The finality requirement is

satisfied when an agency action imposes an obligation, denies a right, or fixes some legal relationship as a consummation of the administrative process. *Id.* at 986-87. "An agency action may be final if it has a 'direct and immediate . . . effect on the day-to-day business' of the subject party." *Id.* at 987 (alteration in original).

The FHFA presented its July 2010 statement as the consummation of a decision-making process that involved "careful review" and "over a year of working with federal and state government agencies." FAC, Ex. A, at 10. The statement was designed to "pause" PACE programs nation-wide. See *id.* The day the statement was issued, the FHFA's counsel sent it to the California Attorney General. The statement had a legal effect because it immediately imposed on the regulated entities obligations to take certain prudential actions. Fannie Mae and Freddie Mac promptly responded on August 31, 2010, publishing announcements to industry lenders that they would no longer purchase mortgage loans originated on or after July 6, 2010, secured by properties with an outstanding PACE obligation. The Act authorizes the FHFA Director to take enforcement action [*35] against regulated entities to police their lawful operation. See e.g., 12 U.S.C. § 4631(a)(1). Thus, the present case is distinguishable from *Fairbanks North Star Borough v. Army Corps of Engineers*, 543 F.3d 586, 593-97 (2008), and *Hindes*, 137 F.3d at 162-63. The July 2010 statement indicated the FHFA's final stance on PACE obligations, and the February 2011 letter reiterated that policy, thus demonstrating a final agency action by the FHFA subject to review under the APA.

2. Notice and comment requirement

Title 12 U.S.C. § 4526(b) provides that any regulations issued by the FHFA Director pursuant to the agency's general regulatory authority shall comply with the APA's requirements for notice and comment. "Interpretative rules," however, are exempt from the APA's notice and comment requirements. 5 U.S.C. § 553(b)(3)(A). This exemption is narrowly construed. *Flagstaff Medical Center, Inc. v. Sullivan*, 962 F.2d 879, 885 (9th Cir. 1992). Likewise, the notice and comment requirements are not imposed on orders that result from an agency adjudication. *Yesler Terrace Community Council v. Cisneros*, 37 F.3d 442, 448 (9th Cir. 1994).

An interpretive rule is one "issued by an agency to advise the [*36] public of the agency's construction of the statutes and rules which it administers." *Erringer v.*

Thompson, 371 F.3d 625, 630 (9th Cir. 2004) (citing *Shalala v. Guernsey Mem'l Hosp.*, 514 U.S. 87, 88, 115 S. Ct. 1232, 131 L. Ed. 2d 106 (1995)). "Because they generally clarify the application of a law in a specific situation, they are used more for discretionary fine-tuning than for general law making." *Flagstaff*, 962 F.2d at 886. On the other hand, substantive rules, sometimes referred to as legislative rules, "create rights, impose obligations, or effect a change in existing law pursuant to authority delegated by Congress." *Erringer*, 371 F.3d at 630. "There is no bright-line distinction between interpretative and substantive rules." *Flagstaff*, 962 F.2d at 886. A court need not accept an agency's characterization of its rule at face value. *Hemp Industries Ass'n v. DEA*, 333 F.3d 1082, 1087 (9th Cir. 2003).

That the FHFA's policy amounted to substantive rulemaking is supported by the FHFA's handling of another issue: Guidance it recently proposed to issue with respect to private transfer fee covenants. On August 16, 2010, the FHFA published a notice and request for comments in the Federal Register concerning the proposed [*37] Guidance that the regulated entities "should not deal in mortgages on properties encumbered by private transfer fee covenants" because "[s]uch covenants appear adverse to liquidity, affordability and stability in the housing finance market and to financially safe and sound investments." 75 Fed. Reg. 49932 (Aug. 16, 2010). In this analogous instance, the FHFA apparently deemed it appropriate to comply with the APA notice and comment requirements.

The Court finds that the FHFA's policy on PACE obligations amounts to substantive-rulemaking, not interpretive rule-making that would be exempt from the notice and comment requirement.

Defendants also argue that the APA's notice and comment requirements do not apply because the July 2010 statement was an order resulting from an adjudication. Yesler explains that "adjudications resolve disputes among specific individuals in specific cases [and] . . . have an immediate effect on specific individuals (those involved in the dispute)." 37 F.3d at 448 (parenthetical in original). "Rulemaking, in contrast, is prospective, and has a definitive effect on individuals only after the rule subsequently is applied." *Id.* The FHFA's policy does not refer to [*38] a specific homeowner seeking a mortgage, or to a group of PACE participants. It is a prospective, generally applicable

directive. Accordingly, it would be inappropriate to apply the adjudication exemption from the APA's notice and comment requirements to the actions of which Plaintiffs complain.

3. Arbitrary and capricious action--discretionary act exemption

In addition to their procedural claim under the APA, Plaintiffs allege a substantive claim that the FHFA's policy is arbitrary and capricious. Under the APA, a claim for arbitrary and capricious action is exempt from judicial review when the challenged action is "committed to agency discretion by law." 5 U.S.C. § 701(a)(2). In the Ninth Circuit there are two circumstances in which judicial review is foreclosed by § 701(a)(2).

The first of these of circumstances is that in which a court would have no meaningful standard against which to judge the agency's exercise of discretion and there thus is no law to apply. The second such circumstance is that in which the agency's action requires a complicated balancing of a number of factors which are peculiarly within [the agency's] expertise, including the prioritization of agency resources, [*39] likelihood of success in fulfilling the agency's statutory mandate, and compatibility with the agency's overall policies.

Newman v. Apfel, 223 F.3d 937, 943 (9th Cir. 2000)(internal quotation marks and citations omitted, alteration in original).

In section 4526(b), the Safety and Soundness Act expressly adopts the requirements of the APA with respect to its regulatory actions, giving rise to a presumption of judicial oversight. 12 U.S.C. § 4526(b). See *Newman*, 223 F.3d at 943 ("[T]he APA embodies a 'basic presumption of judicial review.'"). That the FHFA has "wide discretion" does not establish that it may justify its choices on "specious grounds." *Id.* The Ninth Circuit has "emphasized that § 701(a)(2) stakes out 'a very narrow exception.'" *Id.* (citing *Citizens to Preserve Overton Park v. Volpe*, 401 U.S. 402, 410, 91 S. Ct. 814, 28 L. Ed. 2d 136 (1971)).

In *Newman*, the Ninth Circuit approved judicial review of Social Security regulations defining the

statutory terms, "reliable" and "currently available" information. 223 F.3d at 943. When certain information was deemed reliable and currently available, pursuant to the regulation, a different method of calculating Supplemental Security Income benefits would apply. *Id.* at 939. [*40] The plaintiff claimed that the regulation's definitions of the terms "reliable" and "currently available" were arbitrary and capricious. The Ninth Circuit agreed, after holding that the claim was subject to judicial review. The court reasoned that the definition and application of the two statutory terms, and of the terms "arbitrary" and "capricious," did not defy "meaningful review" or involve a complicated balancing of a number of factors "peculiarly within the agency's expertise." *Id.* at 943.

The same reasoning applies to the present case. Plaintiffs' claims would require the Court to determine whether the FHFA's decision to treat debt obligations arising from PACE programs as assessments, rather than loans, was arbitrary and capricious. Under this limited review, the claims do not oblige the Court to evaluate whether the FHFA arrived at the correct conclusion, as a matter of policy.

The FHFA action challenged here is unlike the agency actions disputed in cases in which courts have found review precluded. See e.g., *Lincoln v. Vigil*, 508 U.S. 182, 113 S. Ct. 2024, 124 L. Ed. 2d 101 (1993) (agency's allocation of a lump-sum appropriation); *Heckler v. Chaney*, 470 U.S. 821, 831, 105 S. Ct. 1649, 84 L. Ed. 2d 714 (agency's decision not to institute enforcement [*41] proceedings); *Center for Policy Analysis on Trade and Health v. Office of the United States Trade Representative*, 540 F.3d 940, 947 (9th Cir. 2008) (political question regarding committee membership). The FHFA's obligation to consider the impact of the PACE programs in a manner that is not arbitrary or capricious does not involve a complicated political calculus or the balancing of multiple factors so peculiarly within the agency's expertise that judicial review is unwarranted.

In sum, the FHFA's July 2010 statement and February 2011 letter are not insulated from judicial review for arbitrariness by the discretionary act exemption.

B. NEPA Claims

California, Sonoma County, Palm Desert and the

Sierra Club assert claims for violation of the NEPA based on the FHFA's failure to consider the environmental impact of its actions.⁸ Defendants move to dismiss the NEPA causes of action for failure to state a claim.

8 The parties' supplemental briefing did not address the NEPA issues with regard to the February 2011 letter, which reaffirmed the FHFA's July 2010 statement. The Court's NEPA analysis of the July 2010 statement applies equally to the February 2011 letter.

The NEPA requires federal agencies [*42] to prepare a detailed Environmental Impact Statement (EIS) for all "major Federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332(2)(C); *Ka Makani 'O Kohala Ohana, Inc. v. Water Supply*, 295 F.3d 955, 959 (9th Cir. 2002). In the alternative, an agency may prepare a more limited environmental assessment (EA) concluding in a "Finding of No Significant Impact." *San Luis Obispo Mothers for Peace v. Nuclear Regulatory Com'n.*, 449 F.3d 1016, 1020 (9th Cir. 2006).

"Because NEPA does not contain a separate provision for judicial review, we review an agency's compliance with NEPA under the Administrative Procedure Act . . ." *Ka Makani*, 295 F.3d at 959. This Court earlier held that Plaintiffs, other than the Sierra Club, satisfied the zone of interest test under the APA with respect to the Safety and Soundness Act. The Court must now consider whether Plaintiffs are within the zone of interest sought to be protected by the NEPA. See *Ashley Creek Phosphate Co. v. Norton*, 420 F.3d 934, 939 (9th Cir. 2005).

"NEPA's purpose is to protect the environment." *Citizens for Better Forestry*, 341 F.3d at 976. The statute's "twin aims" are to place upon a federal agency [*43] "the obligation to consider every significant aspect of the environmental impact of a proposed action" and "ensure that the agency will inform the public that it has indeed considered environmental concerns in its decisionmaking process." *Baltimore Gas and Elec. Co. v. Natural Resource Defense Council, Inc.*, 462 U.S. 87, 97, 103 S. Ct. 2246, 76 L. Ed. 2d 437 (1983). All Plaintiffs in the present actions asserting NEPA claims, including the Sierra Club, plainly seek to protect the environment and, as a result, the zone of interest requirement is satisfied.

Defendants next contend that the adoption of the

FHFA's PACE policy was not a major federal action significantly altering the quality of the human environment because Plaintiffs' alleged environmental injury is not "fairly traceable" to the policy. However, in making this argument Defendants incorrectly rely on Lujan's discussion of Article III standing, 504 U.S. at 561, rather than authority addressing prudential standing under the APA. Plaintiffs have adequately alleged that the FHFA's policy has decimated PACE programs and significantly impacted the environment by depriving California and its citizens of opportunities to improve water and energy conservation.

Nor [*44] does *Northcoast Environmental Center v. Glickman*, 136 F.3d 660 (9th Cir. 1998), demonstrate that Plaintiffs have failed to satisfy the "major federal action" requirement. Northcoast presented a challenge to an inter-agency program that involved activities that did not have an "actual or immediately threatened effect," because they implicated setting guidelines and goals for research, management strategies and information sharing, rather than specific activities with a direct impact. *Id.* at 669-70. Here, however, Plaintiffs do not challenge such a broad program involving activities preliminary to discrete agency action.

Relying on *National Wildlife Federation v. Espy*, 45 F.3d 1337, 1343 (9th Cir. 1995), Defendants also argue that the FHFA's adoption of its PACE policy was not a major federal action because it did not alter an environmental status quo, as required to trigger obligations under the NEPA. Defendants' reliance on National Wildlife Federation is unavailing. In that case, the court found that the contested agency action did not alter the environmental status quo because the grazing of a certain wetland parcel was occurring before the agency transferred the parcel and the transfer [*45] would simply allow a continuation of the grazing. *Id.* at 1343-44. Here Plaintiffs allege that the FHFA's policy changed the status quo by thwarting financing for PACE-encumbered properties, thus curtailing energy conservation efforts that were ongoing beforehand. The policy, by the terms of the July 2010 statement, aimed to place PACE programs on "pause," and changed the status quo by blocking these emerging environmental conservation efforts, through the direction of marketplace practices.

For purposes of this motion, Plaintiffs sufficiently allege that the FHFA's policy entailed a major federal

action under the NEPA.

Finally, Defendants contend that environmental review would serve no purpose because the FHFA is statutorily precluded from altering its safety and soundness determinations based on environmental concerns. The NEPA gives way when a competing statute creates an "irreconcilable and fundamental conflict." *Flint Ridge Development Co. v. Scenic Rivers Ass'n of Oklahoma*, 426 U.S. 776, 788, 96 S. Ct. 2430, 49 L. Ed. 2d 205 (1976).

The FHFA's dual obligations to ensure that the regulated entities operate safely and soundly and in the public interest do not indicate that the agency's consideration of the environmental [*46] impact resulting from its actions with regard to the PACE programs is precluded. Notably, the NEPA does not mandate results, but simply requires a process by which the agency considers environmental impact and informs the public of its decision-making process.

Defendants argue that the FHFA was required to act without regard to environmental concerns due to the national housing crisis. The FHFA, however, admittedly engaged in a year-long review, consulting with various stakeholders. Thus, Defendants cannot be heard to argue that the urgency of the crisis and the FHFA's statutory duties created an insurmountable conflict with NEPA's requirements. Cf., *Flint Ridge*, 426 U.S. at 791 (finding an irreconcilable conflict because the relevant statute required a time frame that did not permit NEPA compliance).

Department of Transportation v. Public Citizen is not on point. There the Supreme Court found that an agency's EIS was not required to include the environmental impact of Mexican motor carriers entering the United States because the agency had no authority to prevent the carriers from cross-border operations. 541 U.S. 752, 767, 124 S. Ct. 2204, 159 L. Ed. 2d 60 (2004). Here, however, there is no categorical bar to the FHFA's [*47] authority to consider environmental impacts. *Grand Council of the Crees v. Federal Energy Regulatory Commission*, 198 F.3d 950, 339 U.S. App. D.C. 203 (D.C. Cir. 2000), is inapposite because it did not address the Safety and Soundness Act.

Because Plaintiffs have satisfied the zone of interest test and alleged a major federal action that has altered the environmental status quo, and because environmental

considerations are not precluded by the Safety and Soundness Act, Plaintiffs have stated cognizable claims for violation of the NEPA.

C. Tenth Amendment Commerce Clause

Placer County claims that the FHFA violated the Constitution's Tenth Amendment Commerce Clause by interfering with the county's taxation and assessment powers. Even if the FHFA interfered with Placer County's authority, the FHFA's actions are not barred by the federal Commerce Clause. It is well established that Congress may impede a State's power to tax, where the enactment is a proper exercise of its constitutional authority. *McCulloch v. Maryland*, 17 U.S. (4 Wheat.) 316, 436, 4 L. Ed. 579 (1819). In a recent case affirming a dismissal of a Tenth Amendment challenge to a federal banking regulation, the Supreme Court stated, "Regulation of national banking [*48] operations is a prerogative of Congress under the Commerce and Necessary and Proper Clauses." *Watters v. Wachovia Bank, N.A.*, 550 U.S. 1, 22, 127 S. Ct. 1559, 167 L. Ed. 2d 389 (2007). Placer County's response that state and local laws authorizing PACE programs do not attempt to regulate banks is unavailing because its Tenth Amendment claim challenges the FHFA's action pursuant to the Safety and Soundness Act.

Furthermore, Placer County concedes that its claim does not arise from a theory that a federal program commandeered the legislative process of the States by directly compelling them to enact and enforce a federal regulatory program. Yet it cites no authority for the proposition that a federal agency's action that indirectly interferes with a state or local sovereign's assessment powers may form the basis for a Tenth Amendment claim. Accordingly, Placer County's Tenth Amendment claim is dismissed. Leave to amend is not warranted because Placer County's theory is not cognizable.

D. Spending Clause

Where Congress grants money pursuant to its powers under the Constitution's Spending Clause, any conditions imposed on receipt of the funds must be unambiguously authorized by Congress. *Pennhurst State School and Hosp. v. Halderman*, 451 U.S. 1, 17, 101 S. Ct. 1531, 67 L. Ed. 2d 694 (1981). [*49] Placer County alleges that the FHFA violated the Spending Clause by placing conditions on PACE programs without clear authorization from Congress to do so. Defendants,

however, correctly point out that the FHFA's policy does not impose any terms, let alone ambiguous requirements, for States and counties to receive federal funds to support their PACE programs. Rather, the policy directed the regulated entities to undertake "prudential actions" with respect to the programs. A requirement that makes a program more costly or difficult to operate, without imposing a substantive condition not clearly required by Congress, does not give rise to a Spending Clause violation. See *Winkelman ex rel. Winkelman v. Parma City School Dist.*, 550 U.S. 516, 533-34, 127 S. Ct. 1994, 167 L. Ed. 2d 904 (2007). Therefore, Placer County's Spending Clause claim is dismissed without leave to amend.

E. Claim for Declaratory Relief

Plaintiffs seek declaratory relief in the form of an order stating that, under California law, debt obligations created by their PACE programs are assessments, not loans. The Court will resolve the asserted substantive claims, but a claim for declaratory relief is not a means for a party independently to seek court interpretations [*50] of legal terms. Plaintiffs' claim for declaratory relief is dismissed without leave to amend.

III. State Law Claims

Plaintiffs' state law claims are subject to dismissal due to various deficiencies in their allegations that Defendants point out. However, because the claims are clearly preempted by federal law, the Court dismisses them without leave to amend for that reason. Federal preemption arises under the *Supremacy Clause of the United States Constitution* and applies in the following three circumstances:

First, Congress may state its intent through an express preemption statutory provision. Second, in the absence of explicit statutory language, state law is preempted where it regulates conduct in a field that Congress intended the Federal Government to occupy exclusively . . . Finally, state law that actually conflicts with federal law is preempted.

Kroske v. U.S. Bank Corp., 432 F.3d 976, 981 (9th Cir. 2005) (citing *English v. General Elec. Co.*, 496 U.S. 72, 78-79, 110 S. Ct. 2270, 110 L. Ed. 2d 65 (1990)).

In general, there is a presumption against federal preemption. See *id.* Here, the presumption against federal preemption does not apply because there is a history of a significant federal presence in the area of regulating [*51] the safety and soundness of the Enterprises. See *Silvas v. E*Trade Mortgage Corp.*, 514 F.3d 1001, 1005 (9th Cir. 2008). Federal preemption based on an actual conflict arises "where it is impossible for a private party to comply with both state and federal requirements, or where state law stands as an obstacle to the accomplishments and execution of the full purposes and objectives of Congress." *English*, 496 U.S. at 79 (internal citations removed). Congress has established the FHFA to serve as the primary regulatory authority supervising the Enterprises and the Federal Home Loan Banks. Exposure to state law claims would undermine the FHFA's ability to establish uniform and consistent standards for the regulated entities, and thwart its mandate to assure their safe and sound operation. If Plaintiffs' state claims were not preempted, liability based on these claims would create obstacles to the accomplishment of the policy goals set forth in the Safety and Soundness Act.

Plaintiffs argue, in the alternative, that a ruling on the federal preemption defense is premature. They suggest that the FHFA must make a factual showing that PACE-encumbered mortgages pose an actual obstacle to the purpose [*52] and goals of the Safety and Soundness Act. Plaintiffs do not cite any authority for requiring such a showing, and it would defeat the purpose of conflict preemption, which is to preserve the supremacy of federal law in an area that Congress intended to occupy. See *Fidelity Federal Savings and Loans Ass'n. v. de la Cuesta*, 458 U.S. 141, 169-70, 102 S. Ct. 3014, 73 L. Ed. 2d 664 (1982). Accordingly, preemption does not depend on such a showing.

Plaintiffs' state law claims are preempted by federal law and are dismissed without leave to amend.

IV. Preliminary Injunction

Sonoma County has moved for a preliminary injunction, which California has supported as *amicus curiae*. Sonoma County requests that the status quo be restored by setting aside Defendants' policies regarding PACE debt obligations. At the Court's request, the parties filed supplemental briefing on the balance of hardships that might result from a narrower injunction directing the FHFA merely to initiate the notice and comment process,

without changing its current policies.

"A plaintiff seeking a preliminary injunction must establish that he is likely to succeed on the merits, that he is likely to suffer irreparable harm in the absence of preliminary relief, that [*53] the balance of equities tips in his favor, and that an injunction is in the public interest." *Winter v. Natural Res. Def. Council, Inc.*, 555 U.S. 7, 19, 129 S. Ct. 365, 172 L. Ed. 2d 249 (2008). Alternatively, "a preliminary injunction could issue where the likelihood of success is such that serious questions going to the merits were raised and the balance of hardships tips sharply in plaintiff's favor," so long as the plaintiff demonstrates irreparable harm and shows that the injunction is in the public interest. *Alliance for the Wild Rockies v. Cottrell*, 632 F.3d 1127, 1131 (9th Cir. 2011) (citation and internal quotation and editing marks omitted). The court may employ a sliding scale when considering a plaintiff's likelihood of success on the merits and the likelihood of irreparable harm. *Id.* "Under this approach, the elements of the preliminary injunction test are balanced, so that a stronger showing of one element may offset a weaker showing of another." *Id.*

Sonoma County has not demonstrated a likelihood that it will prevail on the merits to obtain the sweeping relief it initially requested. Nor does the balance of hardships tip sharply in its favor with regard to that relief. However, Sonoma County has established [*54] a likelihood that it will succeed in its efforts to require the FHFA to comply with the APA's notice and comment requirements. The balance of hardships tips sharply towards Sonoma County in that the FHFA has failed to mention any prejudice that would result if it were to proceed with the notice and comment process, as long as it was not required to change its policy in the meantime. Thus, the Court GRANTS Sonoma County's motion for a preliminary injunction requiring the FHFA, without changing its current policy, to proceed with the notice and comment process relating to its policy on

PACE-related debts.

CONCLUSION

Plaintiffs have Article III standing, and the provisions of the Safety and Soundness Act do not preclude judicial review of Plaintiffs' claims. Plaintiffs, except for the Sierra Club, may pursue their claims for violations of the APA. The Sierra Club's APA claims are dismissed without leave to amend. Plaintiffs have satisfied the requirements necessary to pursue claims for violation of the NEPA. Placer County's claims under the *Tenth Amendment* and the Spending Clause and Plaintiffs' claims for declaratory relief are dismissed without leave to amend. Plaintiffs' state law claims [*55] are preempted by federal law and are dismissed without leave to amend. Thus, Defendants' motions to dismiss are GRANTED IN PART AND DENIED IN PART. C 10-03084, Docket No. 49; C 10-03270, Docket Nos. 41 and 74; C 10-03317, Docket No. 18; C 10-04482, Docket No. 13.

Sonoma County's motion for a preliminary injunction is GRANTED IN PART. C 10-03270, Docket No. 33. The Court will, by a separate order, require the FHFA, without withdrawing its July 2010 statement or its February 2011 letter, to proceed with the notice and comment process with regard to those directives. The County shall submit a proposed form of order after submitting it to Defendants for approval as to form.

IT IS SO ORDERED.

Dated: August 26, 2011

/s/ Claudia Wilken

CLAUDIA WILKEN

United States District Judge

United States District Court
For the Northern District of California

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IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA

PEOPLE OF THE STATE OF
CALIFORNIA, ex rel. KAMALA D.
HARRIS, ATTORNEY GENERAL,

Plaintiff,

v.

FEDERAL HOUSING FINANCE AGENCY;
EDWARD DeMARCO, in his capacity
as Acting Director of FEDERAL
HOUSING FINANCE AGENCY; FEDERAL
HOME LOAN MORTGAGE CORPORATION;
CHARLES E. HALDEMAN, Jr., in his
capacity as Chief Executive
Officer of FEDERAL HOME LOAN
MORTGAGE CORPORATION; FEDERAL
NATIONAL MORTGAGE ASSOCIATION;
and MICHAEL J. WILLIAMS, in his
capacity as Chief Executive
Officer of FEDERAL NATIONAL
MORTGAGE ASSOCIATION,

Defendants.

No. C 10-03084 CW
No. C 10-03270 CW
No. C 10-03317 CW
No. C 10-04482 CW

ORDER GRANTING
PLAINTIFFS' MOTION
FOR SUMMARY
JUDGMENT, Docket
No. 158, AND
DENYING
DEFENDANTS' CROSS-
MOTION FOR SUMMARY
JUDGMENT, Docket
No. 168.

_____ /

United States District Court
For the Northern District of California

1 SONOMA COUNTY and PLACER COUNTY,

2 Plaintiff and
3 Plaintiff-Intervener,

4 v.

5 FEDERAL HOUSING FINANCE AGENCY;
6 EDWARD DeMARCO, in his capacity
7 as Acting Director of FEDERAL
8 HOUSING FINANCE AGENCY; FEDERAL
9 HOME LOAN MORTGAGE CORPORATION;
10 CHARLES E. HALDEMAN, Jr., in his
11 capacity as Chief Executive
12 Officer of FEDERAL HOME LOAN
13 MORTGAGE CORPORATION; FEDERAL
14 NATIONAL MORTGAGE ASSOCIATION;
15 and MICHAEL J. WILLIAMS, in his
16 capacity as Chief Executive
17 Officer of FEDERAL NATIONAL
18 MORTGAGE ASSOCIATION,

19 Defendants.

20 SIERRA CLUB,

21 Plaintiff,

22 v.

23 FEDERAL HOUSING FINANCE AGENCY;
24 and EDWARD DeMARCO, in his
25 capacity as Acting Director of
26 FEDERAL HOUSING FINANCE AGENCY,

27 Defendants.

28 CITY OF PALM DESERT,

Plaintiff,

v.

FEDERAL HOUSING FINANCE AGENCY;
FEDERAL NATIONAL MORTGAGE
ASSOCIATION; and FEDERAL HOME
LOAN MORTGAGE CORPORATION,

Defendants.

1 California, Sonoma and Placer Counties, the City of Palm
2 Desert and the Sierra Club have sued the Federal Housing Finance
3 Agency (FHFA), its director, the Federal National Housing
4 Association (Fannie Mae) and the Federal Loan Mortgage Corporation
5 (Freddie Mac).¹ The lawsuits challenge actions by the FHFA,
6 Fannie Mae and Freddie Mac which have thwarted certain federally
7 funded, state and locally administered initiatives known as
8 Property Assessed Clean Energy (PACE) programs.² Through PACE
9 programs, state and local governments finance energy conservation
10 property improvements with debt obligations secured by the
11 retrofitted properties. The programs are intended to foster the
12 use of renewable energy, energy and water efficiency, and the
13 creation of jobs. Congress has allocated substantial federal
14 funding to support the expansion of PACE programs nation-wide, and
15 the executive branch of the federal government has engaged in
16 extensive inter-agency coordination efforts to advance the
17 implementation of PACE programs.
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20 ¹ The claims against Defendants Charles E. Halderman, Jr. and
21 Michael J. Williams, who were sued in their official capacities as
22 Chief Executive Officers for Fannie Mae and Freddie Mac, were
23 previously dismissed. No. C 10-03084, Docket No. 83; No. C 10-
03270, Docket No. 93.

24 ² Three similar cases have been filed in federal district
25 courts in Florida and New York: The Town of Babylon v. Federal
26 Housing Finance Agency, et al., 2:10-cv-04916 (E.D.N.Y.); Natural
27 Resource Defense Council, Inc. v. Federal Housing Finance
28 Authority, et al., 1:10-cv-07647-SAS (S.D.N.Y.); and Leon County
v. Federal Housing Finance Agency, et al., 4:10-cv-00436-RH (N.D.
Fla.). All three actions have been dismissed, and appeals are
pending.

1 Plaintiffs allege that Defendants have violated the
2 Administrative Procedures Act (APA) and the National Environmental
3 Policy Act (NEPA).³ The parties dispute the nature of the debt
4 obligations created by PACE programs, and the extent to which the
5 obligations create risks for secondary mortgage holders, such as
6 Fannie Mae and Freddie Mac, collectively referred to as the
7 Enterprises. The FHFA has taken the position that PACE programs
8 that result in lien obligations which take priority over mortgage
9 loans complicate and make more expensive alienation of the
10 encumbered properties and, thus, pose risk to the security
11 interests of entities that purchase the mortgages for investment
12 purposes. Plaintiffs claim that (1) Defendants disregarded
13 statutorily imposed procedural requirements in adopting rules
14 about the PACE debt obligations; (2) Defendants' rules were
15 substantively unlawful because they were arbitrary and capricious;
16 and (3) the rule-making process failed to comply with
17 environmental laws.
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19
20 Plaintiffs have jointly moved for summary judgment on all
21 claims. Defendants have opposed the motion and cross-moved for
22 summary judgment. Having considered all of the parties'
23 submissions and oral argument, the Court grants Plaintiffs' motion
24 for summary judgment that Defendants failed to comply with the
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26
27 ³ The Court previously dismissed Plaintiffs' claims under
28 various state laws and the Constitution's Tenth Amendment and
Spending Clause.

1 APA's notice and comment requirement and denies Defendants' cross-
2 motion for summary judgment.

3 BACKGROUND

4 In 2008, California approved legislation to allow cities and
5 counties to create PACE programs, through which property owners
6 may enter into contracts for assessments to finance the
7 installation of energy efficiency or renewable energy improvements
8 that are permanently fixed to residential (including multi-
9 family), commercial, industrial, or other real property.⁴ AB 811,
10 Ch. 159, Stats. 2008. In many, but not all, PACE programs,
11 property owners repay the assessments with their property taxes,
12 and the liens associated with the assessments are given priority
13 over previously-recorded private liens, such as mortgages.
14

15 Also in 2008, Congress enacted the Housing and Economic
16 Recovery Act of 2008 (HERA), Public Law 110-289, 122 Stat. 2654.
17 Through this law, Congress established the FHFA to regulate and
18 oversee the Enterprises, as well as the Federal Home Loan Banks
19 (FHL Banks), which together largely control the country's
20 secondary market for residential mortgages. The HERA amended the
21 Federal Housing Enterprises Financial Safety and Soundness Act of
22 1992, 12 U.S.C. § 4501 et seq. (Safety and Soundness Act). That
23 Act outlines the regulatory and oversight structure for the
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27 ⁴ In 2009, the state legislature expanded the law,
28 authorizing PACE financing for water efficiency improvements.
AB 474, Ch. 444, Stats. 2009.

1 Enterprises and the FHL Banks. 12 U.S.C. § 4502(20). As amended
2 by the HERA, the Safety and Soundness Act vests in the FHFA the
3 authority to act as a conservator and receiver for the Enterprises
4 and the FHL Banks, together referred to as the regulated entities.
5 12 U.S.C. §§ 4511(b); 4617(a).

6 The Safety and Soundness Act also establishes a tiered system
7 of classification of the capitalization of the regulated entities.
8 As of June 30, 2008, James B. Lockhart III, then director of the
9 FHFA, classified the Enterprises as undercapitalized, pursuant to
10 his discretionary authority under the statute. Pls.' Second
11 Request for Judicial Notice, Ex. 6 at 2. On September 7, 2008,
12 Lockhart placed the Enterprises in FHFA conservatorship. Id.

13 On February 17, 2009, Congress approved the American Recovery
14 and Reinvestment Act of 2009 (Recovery Act), Public Law 111-5, 123
15 Stat. 115, which, among other things, allocated eighty billion
16 dollars to projects related to energy and the environment.

17 Plaintiffs' Excerpts of Administrative Record (Plaintiffs'
18 Excerpts), Docket No. 182, Exhibit B, White House Middle Class
19 Task Force and White House Council on Environmental Quality,
20 "Recovery Through Retrofit" Report, October 2009 (Retrofit
21 Report), at 2. The Act provided state and local governments with
22 an "unprecedented opportunity to expand investments in energy
23 retrofits and develop community-based programs on a large scale."
24

25 Id.
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1 The California Energy Commission was charged with
2 administering and distributing the Recovery Act funds allocated to
3 the state. According to Karen Douglas, the Chair of the
4 Commission from February 2009 to February 2011, the federal
5 Department of Energy (DOE) allocated \$49.6 million in Recovery Act
6 funds for an Energy Efficiency and Conservation Block Grant
7 Program. PACE programs, among other projects, were eligible for
8 block grant funding.
9

10 The DOE also allocated to the Energy Commission \$226 million
11 in Recovery Act funds for the State Energy Program (SEP). The DOE
12 encouraged states to develop energy strategies that align with the
13 national goals of increasing jobs, reducing the United States' oil
14 dependence through increases in energy efficiency and the
15 deployment of renewable energy technologies, promoting economic
16 vitality through an increase in "green jobs," and reducing
17 greenhouse gas emissions. On February 10, 2010, the Energy
18 Commission awarded thirty million dollars in SEP funding to five
19 municipal PACE programs. The awards for these PACE programs were
20 expected to leverage \$370 million, create 4,353 jobs, save over
21 336 million kilowatt-hours of energy, and avoid emissions of
22 187,264 tons of greenhouse gases over the contract period.
23
24 Douglas Dec. at ¶ 12.

25
26 High level federal and state officials participated in
27 efforts to advance the PACE program nation-wide. Beginning in May
28 2009, the White House Council on Environmental Quality (CEQ) and

1 the Office of the Vice President facilitated an interagency
2 process, involving eleven departments and agencies and six White
3 House Offices,⁵ to develop recommendations for federal action to
4 increase green job opportunities and boost energy savings by
5 retrofitting homes for energy efficiency. Retrofit Report at 5.

6 In a letter dated June 18, 2009, Director Lockhart advised
7 banking and creditor trade groups, as well as associations for
8 mortgage regulators, governors and state legislators, of "an
9 emerging trend in state and local financing for residential energy
10 efficiency home improvements." He explained the FHFA's belief
11 that the programs "will help improve our use of resources and, in
12 the long term, keep down the costs of home ownership," but that
13 "such programs must be carefully crafted to avoid unintended
14 consequences for homeowners and lenders." Plaintiffs' Excerpts,
15 Ex. A.

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18 On October 12, 2009, then California Attorney General Edmund
19 G. Brown, Jr., contacted Lockhart regarding his June 18, 2009
20 letter. The Attorney General emphasized that under California law
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22 _____
23 ⁵ The following departments and agencies participated: Office
24 of the Vice President, Department of Agriculture, Department of
25 Commerce, Department of Education, Department of Energy,
26 Department of Housing and Urban Development, Department of Labor,
27 Department of Treasury, Environmental Protection Agency, Equal
28 Employment Opportunity Commission, General Services Administration
and Small Business Administration, as well as Council of Economic
Advisers, Domestic Policy Council, National Economic Council,
Office of Management and Budget, Office of Public Engagement and
Intergovernmental Affairs and Office of Science and Technology
Policy from the Executive Office of the President.

1 the debt obligations were properly treated as assessments, and
2 asserted that "proper PACE program design" could overcome the
3 FHFA's concerns. Plaintiffs' Excerpts, Ex. C.

4 In October of that year, the White-House-led interagency
5 effort culminated in the release of a report entitled, "Recovery
6 Through Retrofit," announcing a federal proposal to expand PACE
7 programs. On October 18, 2009, the White House released its
8 "Policy Framework for PACE Financing Programs." Varma Dec., Ex.
9 20. The framework provided guidance to federally supported pilot
10 and demonstration level PACE programs.

11 With respect to homeowner protections, the framework
12 encouraged the voluntary adoption of three measures to ensure that
13 PACE-financed energy retrofits would pay for themselves within a
14 reasonable time, and that homeowners would be protected against
15 fraud or substandard work. First, the framework called for
16 "savings to investment ratios" for PACE program assessments to be
17 greater than one; that is, the expected average monthly utility
18 savings to homeowners should be greater than the expected monthly
19 increase in tax assessments due to the PACE energy efficiency or
20 renewable energy improvements. Second, the framework recommended
21 that PACE financing be limited to investments that have a high
22 return in terms of energy efficiency gains. Third, the framework
23 advised that PACE programs should ensure that the retrofits would
24 be constructed as intended. That is, the scope of the retrofit
25 should be determined by a list of presumptively efficient projects
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1 or should be based on an energy audit; licensed contractors or
2 installers should carry out the home improvements; and PACE
3 programs should institute a quality assurance protocol to verify
4 that the home improvements are completed and satisfy required
5 standards.

6 The framework also announced parameters to limit risks to
7 mortgage lenders. These elements of the framework recommended a
8 reserve fund established at the local level to protect against
9 late payments or non-payments of the assessment; a requirement
10 that the length of time for a homeowner to repay the PACE
11 assessments should not exceed the life expectancy of the energy
12 efficient improvements; a general limitation on the amount of PACE
13 financing to ten percent of the appraised value of the home;
14 assurances of clear title to the property, current property taxes
15 and mortgage payments, and an absence of outstanding or
16 unsatisfied tax liens, notices of default or other property-based
17 debt delinquencies; and an absence of existing mortgages or other
18 debt on the property in an amount that exceeds the value of the
19 property. Finally, the framework called for the imposition of
20 escrow payments for PACE assessments and precautions in
21 establishing PACE programs in areas experiencing large declines in
22 home prices.

23 On October 29, 2009, FHFA Acting Director Edward DeMarco
24 replied to the letter Attorney General Brown had sent to Lockhart.
25 Plaintiffs' Excerpts, Ex. D. DeMarco's letter did not mention the
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1 White House Retrofit Report or policy framework released earlier
2 that month, but stated that the FHFA was working with other
3 federal departments and agencies to identify and promote best
4 practices so as to align improved energy efficiency, consumer
5 protection, and prudent lending goals. Id.

6 On February 16, 2010, the FHFA produced a document entitled,
7 "Market and Legal Issues Related to Energy Loan Tax Assessment
8 Programs (ELTAPs)/PACE (Property Assessed Clean Energy) Programs."
9 Varma Dec., Ex. 43. In the document, the FHFA discussed a number
10 of deficiencies in PACE programs, including the absence of any
11 national model for appropriate lending standards for PACE and
12 ELTAP programs, the creation of unnecessary market disruptions by
13 first liens, the absence of retrofit standards, complications
14 arising from the reliance of PACE programs on subsidies, such as
15 tax credits and utility firm rebates, to generate energy savings,
16 and, finally, the existence of alternatives to ELTAP, through
17 established leasing programs for residential solar energy systems.
18 The FHFA explained that the priority of PACE liens over mortgage
19 liens increased uncertainty and created difficulties in
20 determining the value of holdings impacted by PACE encumbrances.
21 Id. at 3.

22 The FHFA described the following scenario to explain that, in
23 a property sale triggered by an unpaid assessment, the mortgage
24 lender becomes the guarantor of the PACE assessment. Id. at 5.
25 In the event of the sale of a homeowner's property for a
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1 delinquent PACE lien, other liens, including the first mortgage,
2 are eliminated. When a homeowner becomes delinquent on the
3 payment of property tax assessments, the mortgage lender would
4 receive notice and would have to pay the arrearage to prevent a
5 tax sale and avoid losing its lien on the security property. The
6 lender would have to pay the PACE lien assessment for the same
7 reason. If the mortgage lender was not in control of the sale of
8 the property, the lender could lose its entire monetary interest
9 in the property; there would be no incentive in a tax sale to
10 garner more than the amount of the tax arrearage. Further, the
11 amount of the tax arrearages would be uncertain.

12
13 In addition, subsequent purchasers of a PACE-encumbered
14 property could discount their purchase offers to account for the
15 total assessments owed, affecting the lender's ability to recoup
16 the property value.

17
18 The FHFA noted that some municipalities required priority
19 liens for PACE and ELTAP loans. Id. at 3. The FHFA stated, "The
20 eighteen states that have authorized programs should engage with
21 the federal government in pilot programs that test various models
22 (including those without first liens and those that employ greater
23 private sector administration both of lending and energy
24 retrofitting)." Id. at 8. However, Defendants acknowledge that
25 Barclays Capital has explained to PACE advocates that bonds backed
26 by PACE liens without first-lien priority likely would be rated
27 "as non-investment grade and therefore will have limited buyer
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1 appeal while also demanding high interest rates." Varma Dec., Ex.
2 22.

3 On March 5, 2010, Freddie Mac sent a confidential letter to
4 the FHFA, highlighting the growing number of states approving
5 legislation to enable the establishment of PACE programs,
6 generally relying on a priority lien to secure the improvements.⁶
7 Freddie Mac reiterated its concerns about such programs. Varma
8 Dec., Ex. 26. The letter, copies of which were sent to DeMarco,
9 FHFA General Counsel Alfred Pollard and other agency executives,
10 discussed the first lien position of the assessments and explained
11 that the size of the loans could be substantial. Freddie Mac
12 further explained that, because the liens could be placed after
13 the first mortgage lien was created, the mortgage holder may not
14 be aware that its lien has been subordinated until it or the local
15 entity initiates foreclosure. In addition, Freddie Mac expressed
16 concern that the lack of required underwriting standards, along
17 with the failure to set loan-to-value limits, was likely to result
18 in many borrowers obtaining loans that they were unable to repay.
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21 Freddie Mac stated that no uniform set of best practices
22 existed to mitigate the risks it faced as a result of the
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24 ⁶ Freddie Mac noted that such laws had been approved in
25 California, Colorado, Florida, Hawaii, Illinois, Louisiana,
26 Maryland, Nevada, New Mexico, New York, North Carolina, Ohio,
27 Oklahoma, Oregon, Texas, Vermont, Virginia and Wisconsin, and
28 similar legislation had been introduced in Arkansas, Arizona,
Iowa, Maine, Michigan, Nebraska, New Hampshire, Rhode Island,
South Carolina, Washington and West Virginia.

1 programs, despite months of efforts it had undertaken, in
2 collaboration with the FHFA and other agencies, to develop such
3 standards. Accordingly, Freddie Mac requested FHFA approval to
4 take the following measures: (1) reinforce existing contractual
5 rights under the Freddie Mac Single-Family Seller/Servicer Guide
6 and the Freddie Mac/Fannie Mae Uniform Security Instrument;
7 (2) establish new due diligence requirements for servicers; and
8 (3) restrict Freddie-Mac-approved seller/servicers from financing
9 energy loans that would subordinate existing Freddie Mac
10 mortgages. Freddie Mac stated that the measures were warranted
11 given the proliferation of PACE programs, and were consistent with
12 the FHFA's goal as conservator to maintain Freddie Mac's assets
13 and minimize its losses during conservatorship.

14
15 On May 5, 2010, Fannie Mae and Freddie Mac both issued
16 letters to their mortgage sellers and servicers, again addressing
17 concerns about PACE programs.

18
19 On May 7, 2010, the DOE issued "Guidelines for Pilot PACE
20 Financing Programs," providing "best practices guidelines to
21 implement the Policy Framework for PACE Financing Programs
22 announced on October 18, 2009." Plaintiffs' Excerpts, Ex. H;
23 Varma Dec., Ex. 41. The best practices called for local
24 governments to consider the following requirements: (1) the
25 expected savings-to-investment ratio should be greater than one;
26 (2) the term of the assessment should not exceed the useful life
27 of the improvements; (3) the mortgage holder of record should
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1 receive notice when PACE liens are placed; (4) PACE liens should
2 not accelerate upon property owner default; (5) the assessments
3 should not exceed ten percent of a property's estimated value;
4 (6) quality assurance and anti-fraud measures should be
5 implemented, such as the use of validly licensed auditors and
6 contractors only; (7) rebates and tax credits should be considered
7 in determining the appropriate financing structure; (8) education
8 programs for PACE program participants should be carried out;
9 (9) a debt service reserve fund should be established; and
10 (10) data should be collected. The DOE also announced best
11 practices for underwriting PACE assessments. The DOE called for
12 (1) verification of property ownership, specifically, clear title,
13 location of the property in a financing district, and other
14 restrictions; (2) proper evaluation of existing property-based
15 debt and the worth of the property; and (3) a determination of the
16 property owner's ability to pay.
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19 In a May 24, 2010 letter, the DOE sought clarification from
20 the FHFA regarding Fannie Mae and Freddie Mac's May 5, 2010 lender
21 letters. The DOE requested from the FHFA "as soon as practicable
22 guidelines and parameters that experimental pilot PACE financing
23 programs should follow so that their operations can proceed
24 without encountering adverse action by the Government Sponsored
25 Entities (GSEs) under your conservatorship." Plaintiffs'
26 Excerpts, Ex. M. The DOE sought "specific criteria the financial
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1 regulatory community believes is necessary to enable these
2 experimental pilot PACE financing programs to proceed." Id.

3 On July 6, 2010, the FHFA issued a statement that the PACE
4 programs "present significant safety and soundness concerns that
5 must be addressed by Fannie Mae, Freddie Mac and the Federal Home
6 Loan Banks." The FHFA stated that first liens created by PACE
7 programs were different from "routine tax assessments," and posed
8 significant risks to lenders, servicers, and mortgage securities
9 investors. The FHFA "urged state and local governments to
10 reconsider these programs" and called "for a pause in such
11 programs so concerns can be addressed." The FHFA directed Fannie
12 Mae, Freddie Mac and the FHL Banks to undertake "prudential
13 actions," including reviewing their collateral policies to assure
14 no adverse impact by PACE programs. Although Defendants take the
15 position that the FHFA issued this statement in its capacity as
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1 conservator as well as that of regulator, the statement itself did
2 not say so, or cite any statutory or regulatory provision.⁷

3 On August 31, 2010, Fannie Mae and Freddie Mac, citing the
4 FHFA's July 2010 statement, announced to lenders that they would
5 not purchase mortgages originated on or after July 6, 2010, which
6 were secured by properties encumbered by PACE obligations.

7
8 On February 28, 2011, after the hearing on Defendants' motion
9 to dismiss the present actions but before the Court issued its
10 order, the FHFA's General Counsel sent a letter to General Counsel
11 for Fannie Mae and Freddie Mac, reaffirming that debts arising
12 from PACE programs pose significant risks to the Enterprises. The

13 ⁷ On August 16, 2010, the FHFA issued proposed guidance
14 regarding private transfer fee covenants. 75 Fed. Reg. 49932.
15 The proposed guidance would have advised the Enterprises not to
16 purchase or invest in any mortgages encumbered by private transfer
17 fee covenants or securities backed by such mortgages and
18 discouraged the FHL Banks from purchasing or investing in such
19 mortgages or securities or holding them as collateral for
20 advances. The FHFA did not adopt this guidance in final form.
21 After receiving several thousand comments on it, the FHFA decided
22 to address the issue through a regulation, rather than guidance.
23 76 Fed. Reg. 6702. On February 8, 2011, the FHFA proposed a
24 regulation narrower in scope than the proposed guidance. The
25 proposed regulation would have prohibited the regulated entities
26 from dealing in mortgages on properties encumbered by certain
27 types of private transfer fee covenants, rather than any such
28 covenant. The final rule, adopted March 16, 2012, prohibits
regulated entities from purchasing, investing or otherwise dealing
in any mortgages on properties encumbered by private transfer fee
covenants, securities backed by such mortgages, or securities
backed by the income stream from such covenants, except for
private transfer fee covenants that require payment of a fee to a
covered association, such as homeowner and condominium
associations, and that limit use of such transfer fees exclusively
to purposes which provide a direct benefit to the real property
encumbered by the private transfer fee covenant. 12 C.F.R.
§§ 1228.1 and 1228.2; 77 Fed. Reg. 15566-01.

1 FHFA invoked its statutory authority as conservator and directed
2 that the "Enterprises shall continue to refrain from purchasing
3 mortgage loans secured by properties with outstanding first-lien
4 PACE obligations." In addition, the letter ordered that the
5 "Enterprises shall continue to operate in accordance with the
6 Lender Letters and shall undertake other steps necessary to
7 protect their safe and sound operations from these first-lien PACE
8 programs."
9

10 FHFA General Counsel Pollard attested that the FHFA received
11 input from the Enterprises and PACE stakeholders, as well as
12 federal financial institution regulators, regarding the risks
13 posed by PACE programs. According to Pollard, the FHFA found that
14 the DOE best practices guidelines were an unsatisfactory response
15 to its concerns because they did not proscribe the use of priority
16 liens, they continued to allow collateral-based lending, and there
17 was no enforcement mechanism to ensure that PACE programs
18 throughout the country complied with the DOE guidelines. Pollard
19 did not attest that the FHFA had considered alternatives to its
20 blanket prohibition against the purchase of PACE-encumbered
21 mortgages or that it had considered the impact on the public
22 interest of blocking the PACE programs, other than minimizing
23 risks for the Enterprises. Nor have Defendants presented evidence
24 that the FHFA weighed the costs associated with the risk exposure
25 produced by PACE programs against the economic benefits of
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1 allowing PACE programs to continue to expand and build a market
2 for residential energy conservation projects.

3 LEGAL STANDARD

4 Summary judgment is properly granted when no genuine and
5 disputed issues of material fact remain, and when, viewing the
6 evidence most favorably to the non-moving party, the movant is
7 clearly entitled to prevail as a matter of law. Fed. R. Civ. P.
8 56; Celotex Corp. v. Catrett, 477 U.S. 317, 322-23 (1986);
9 Eisenberg v. Ins. Co. of N. Am., 815 F.2d 1285, 1288-89 (9th Cir.
10 1987).

11 The moving party bears the burden of showing that there is no
12 material factual dispute. Therefore, the court must regard as
13 true the opposing party's evidence, if supported by affidavits or
14 other evidentiary material. Celotex, 477 U.S. at 324; Eisenberg,
15 815 F.2d at 1289. The court must draw all reasonable inferences
16 in favor of the party against whom summary judgment is sought.
17 Matsushita Elec. Indus. Co. v. Zenith Radio Corp., 475 U.S. 574,
18 587 (1986); Intel Corp. v. Hartford Accident & Indem. Co., 952
19 F.2d 1551, 1558 (9th Cir. 1991).

20 Material facts which would preclude entry of summary judgment
21 are those which, under applicable substantive law, may affect the
22 outcome of the case. The substantive law will identify which
23 facts are material. Anderson v. Liberty Lobby, Inc., 477 U.S.
24 242, 248 (1986).
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DISCUSSION

I. Statutory Preclusion of Judicial Review

Defendants argue that they are entitled to summary judgment because 12 U.S.C. §§ 4617(f) and 4623(d) preclude judicial review of Plaintiffs' claims for relief.

The courts have long recognized a presumption in favor of judicial review of administrative actions. Love v. Thomas, 858 F.2d 1347, 1356 (9th Cir. 1988) (citing Block v. Community Nutrition Inst., 467 U.S. 340, 349-51 (1984)). The presumption may be overcome by various means, including "specific language or specific legislative history that is a reliable indicator of congressional intent," or "by inference of intent drawn from the statutory scheme as a whole." Block, 467 U.S. at 349. Although "great weight" is ordinarily given to an agency's interpretation of a statute it is charged with enforcing, "that deference does not extend to the question of judicial review, a matter within the peculiar expertise of the courts." Love, 858 F.2d at 1352 n.9.

A. Section 4617(f)

Section 4617(a) authorizes under certain circumstances the discretionary or mandatory appointment of the FHFA as conservator or receiver for a regulated entity. 12 U.S.C. § 4617(a). As conservator, the FHFA immediately succeeds to "all rights, titles, powers, and privileges of the regulated entity, and of any stockholder, officer, or director of such regulated entity" with respect to the entity and its assets. 12 U.S.C. § 4617(b)(2)(A).

1 It may take over assets and operate the regulated entity; conduct
2 all business of the regulated entity; collect all obligations and
3 money due; perform all functions of the regulated entity in its
4 name which are consistent with the FHFA's appointment as
5 conservator or receiver; preserve and conserve the entity's assets
6 and property; and provide by contract for assistance in fulfilling
7 any function, activity, action, or duty as conservator or
8 receiver. 12 U.S.C. § 4617(b)(2)(B)(i)-(v). In addition, the
9 FHFA's specifically enumerated powers as conservator authorize it
10 to take such action as may be "necessary to put the regulated
11 entity in a sound and solvent condition." 12 U.S.C.
12 § 4617(b)(2)(D)(i)-(ii).

14 Section 4617(f) limits judicial review of such actions,
15 stating that "no court may take any action to restrain or affect
16 the exercise of powers or functions of the Agency as a conservator
17 or a receiver." 12 U.S.C. § 4617(f).

19 Distinct from the FHFA's powers as a conservator or receiver,
20 it has supervisory and regulatory authority over the regulated
21 entities. See 12 U.S.C. §§ 4511(b); 4513b; 4513(a)(1)(A) and
22 (B)(i)-(v). It is clear from the statutory scheme overall and
23 other provisions of § 4617 that Congress distinguished between the
24 FHFA's powers as a conservator and its authority as a regulator,
25 and did not intend that the former would be limitless and subsume
26 the latter. Although Congress intended to ensure the FHFA's
27 ability to act freely as a conservator by preempting judicial
28

1 review under § 4617(f), as well as granting far-reaching powers,
2 the FHFA must show that it was acting as a conservator, rather
3 than a regulator. The appropriate characterization of the FHFA's
4 actions is a matter of degree.

5 Defendants contend that the FHFA issued its July 2010
6 statement and February 2011 letter as conservator of the
7 Enterprises. Defendants assert that the directives were a
8 business decision by the FHFA intended to minimize the
9 Enterprises' credit losses while in conservatorship. Plaintiffs
10 respond that the FHFA's actions amount to substantive rule-making,
11 which can only be done in the FHFA's role as regulator, rather
12 than as conservator. For the reasons discussed below, the Court
13 agrees with Plaintiffs.
14

15 The FHFA directed Fannie Mae, Freddie Mac and the FHL Banks
16 prospectively to refrain from purchasing a class of mortgage
17 loans, namely, those secured by property with an outstanding PACE
18 first lien. These directives did not involve succeeding to the
19 rights or powers of the Enterprises, taking over their assets,
20 collecting money due or operating their businesses, in keeping
21 with the FHFA's conservatorship authority.
22

23 Specific provisions of § 4617 include the phrase, "The agency
24 may, as conservator . . .," in reference to the FHFA's authority
25 in that role, while other provisions addressing the FHFA's
26 regulatory powers do not contain analogous language. Compare 12
27 U.S.C. § 4617(b)(1) and (2)(C) with § 4617(b)(2)(A), (B), (G),
28

1 (H), (I)(i)(I) and (J)⁸ and § 4617(b)(4). This supports that
2 Congress intended to enumerate the FHFA's powers and duties as a
3 conservator, while delegating other duties to the FHFA's
4 regulatory authority.

5 In Morrison-Knudsen Co., Inc. v. CHG International, Inc., 811
6 F.2d 1209 (9th Cir. 1987), the Ninth Circuit declined to hold that
7 the Federal Savings and Loan Insurance Corporation's authority to
8 adjudicate creditor claims was in keeping with the ordinary
9 functions of a receiver. The Ninth Circuit found that the
10 language in the relevant statute failed to enumerate, and the
11 statutory scheme did not support, a receivership power to
12 adjudicate creditor claims. Id. at 1218-20. Similarly here, the
13 Safety and Soundness Act does not enumerate, and its statutory
14 scheme does not support, the FHFA's authority as conservator to
15 establish broad, prospective rules regarding classes of mortgages
16 that are eligible for purchase by the regulated entities.

17
18
19 In other cases upon which Defendants rely, federal agencies
20 undertook the ordinary day-to-day functions of an entity acting as
21 conservator or receiver to wind up the affairs of the failed
22 financial institutions. See e.g., Ward v. Resolution Trust Corp.,
23 996 F.2d 99, 104 (5th Cir. 1993) (finding that the district court
24 was without jurisdiction to enjoin the sale of certain real
25

26 ⁸ Although § 4617(b)(2)(J) is a broad, catchall provision,
27 given the overall statutory scheme, it should not be read to
28 authorize the FHFA to do anything and everything, including
engaging in rule-making, as a conservator.

1 property because disposing of the assets of the failed bank was a
2 "routine 'receivership' function"); In re Landmark Land Co. of
3 Okla., Inc., 973 F.2d 283, 290 (4th Cir. 1992) (holding that the
4 Resolution Trust Corporation (RTC),⁹ as a conservator, had
5 authority, beyond the reach of the district court's injunctive
6 power, to call a meeting of the shareholders to elect new
7 management).

8
9 Defendants also cite Barrows v. Resolution Trust Corporation,
10 39 F.3d 1166 (1st Cir. 1994).¹⁰ There, the First Circuit held that
11 § 1821(j)¹¹ barred a district court from ordering the RTC, the
12 appointed receiver, to make certain loans to which the plaintiff
13 claimed he was entitled. Id. at *3. Barrows held that the RTC's
14 directive blocking a failed financial institution from extending a
15

16
17 ⁹ Through the Financial Institutions Reform, Recovery, and
18 Enforcement Act (FIRREA), Congress authorized the RTC "to take all
19 actions necessary to resolve the problems posed by a financial
20 institution in default." Gross v. Bell Sav. Bank PaSA, 974 F.2d
21 403, 406 (1992) (citing H.R. Rep. No. 101-54). Defendants cite
22 Kuriakose v. Federal Home Loan Mortgage Corporation, 674 F. Supp.
23 2d 483, 493 (S.D.N.Y. 2009), for the proposition that the courts
24 applying § 4617(f), may turn to precedent relating to the nearly
25 identical anti-injunction statute under the FIRREA.

26
27 ¹⁰ Barrows is an unpublished per curiam opinion referred to in
28 the Federal Reporter at 39 F.3d 1166, in a "Table of Decisions
Without Reported Opinions."

29
30 ¹¹ The parties agree that the language in § 4617(f) is similar
31 to that in 12 U.S.C. § 1821(j), which limits judicial review of
32 actions taken by the Federal Deposit Insurance Corporation
33 (FDIC) in its capacity as a conservator or receiver. Sahni v.
34 American Diversified Partners, 83 F.3d 1054, 1058-59 (9th Cir.
35 1996).

1 loan was an action of a conservator to preserve and conserve the
2 assets and property of the failed institution.

3 Defendants contend that, under Barrows, the FHFA's action
4 with respect to the PACE programs was akin to a business decision
5 preventing the institution from making a particular investment, as
6 necessary to conserve and preserve the assets of the Enterprises
7 while in conservatorship. The directives that the FHFA issued to
8 the Enterprises and the FHL Banks differ from the receiver's
9 decision in Barrows because the former broadly and prospectively
10 prohibited all three of the regulated entities from the purchase
11 of an entire class of mortgages, while the latter involved a
12 receiver's decision not to make a particular loan. Barrows does
13 not establish that the FHFA was acting as a conservator here.
14

15 The FHFA's directives here resemble an FHFA rule regarding
16 private transfer fee covenants. A property owner or another
17 private party may attach private fee covenants to real property,
18 providing for payment of a transfer fee to an identified third
19 party upon each resale of the property. Id. 76 Fed. Reg. 6702-
20 02, *6703. The fee typically is stated as a fixed amount or as a
21 percentage of the property's sales price and often exists for a
22 period of ninety-nine years. Id. As described above, the FHFA
23 initially sought public comment on proposed guidance to the
24 Enterprises and the FHL Banks that they should not purchase or
25 invest in mortgages on properties encumbered by private transfer
26 fee covenants. 75 Fed. Reg. 49932-01 at *49932. After receiving
27
28

1 extensive comments regarding the proposed guidance, the FHFA
2 decided to address the subject by regulation rather than through
3 guidance and filed a notice of proposed rule-making. 76 Fed. Reg.
4 6702-02, *6703. Among other concerns raised in its notice of
5 proposed rule-making, the FHFA pointed out the risk that private
6 transfer fees may not benefit homeowners or may not be disclosed
7 adequately, thus impeding the transferability, marketability and
8 valuation of the encumbered properties. Id. at *6703-04.
9

10 The FHFA then proposed a narrower regulation, received
11 further comment, and adopted, on March 16, 2012, a final rule
12 prohibiting the regulated entities, except in certain
13 circumstances, from purchasing, investing or otherwise dealing in
14 any mortgages on properties encumbered by private transfer fee
15 covenants, securities backed by such mortgages, or securities
16 backed by the income stream from such covenants, and barring the
17 FHL Banks from accepting such mortgages or securities as
18 collateral. 12 C.F.R. § 1228; 77 Fed. Reg. 15566-01 (March 16,
19 2012).
20

21 Because private transfer fee covenants and PACE first liens
22 are analogous, the fact that the FHFA followed notice and comment
23 rule-making procedures when regulating the former makes it
24 reasonable to infer that it was acting as a regulator when it
25 issued its directives about the latter.
26

27 Furthermore, the FHFA's directives applied to the FHL Banks,
28 as well the Enterprises. The fact that they bound all three

1 regulated entities, rather than just the entities in
2 conservatorship, supports the conclusion that the FHFA was acting
3 as a regulator, rather than a conservator.

4 The FHFA's February 2011 letter, asserting that it was acting
5 as a conservator, was created during the pendency of this
6 litigation and was addressed to general counsel for the
7 Enterprises. The letter is a post-hoc effort by the FHFA to
8 characterize its July 6, 2010 statement.

9
10 Contrary to Defendants' argument, National Trust for Historic
11 Preservation v. FDIC, 21 F.3d 469 (D.C. Cir. 1994), does not
12 establish that the FHFA has discretion to decide whether it acts
13 in its capacity as conservator or as regulator. There, the D.C.
14 Circuit held that the FDIC had discretion to determine whether it
15 acted in its capacity as a receiver or its capacity as a corporate
16 insurer. Id. at 471. It does not follow that Congress intended
17 the FHFA to have similar discretion because the scope of the
18 FHFA's powers as regulator is different from, and substantially
19 greater than, the FDIC's authority as a corporate insurer.
20 Furthermore, even if the FHFA had discretion to act as a
21 conservator or regulator with respect to a given issue, the FHFA
22 may not decide arbitrarily to act in different capacities for two
23 decisions that are substantially similar.
24

25
26 Given the presumption in favor of judicial review, to invoke
27 § 4617(f), Defendants bear the burden to establish that the FHFA
28 was acting as conservator, to restore or protect the solvency of

1 the Enterprises. Defendants have not carried this burden.

2 Section 4617 does not preclude judicial review here.

3 B. Section 4623(d)

4 Defendants also argue that their actions in connection with
5 the PACE programs are exempt from judicial review pursuant to 12
6 U.S.C. § 4623(d). This provision restricts judicial review of any
7 action taken under § 4616(b)(4). Section 4616(b)(1) through (4)
8 describes supervisory actions that the FHFA Director may take with
9 respect to "significantly undercapitalized" regulated entities.
10

11 Section 4616(b)(4) authorizes the Director to require a
12 "significantly undercapitalized" regulated entity "to terminate,
13 reduce, or modify any activity that the Director determines
14 creates excessive risk to the regulated entity." As noted
15 earlier, the Safety and Soundness Act establishes a tiered system
16 of classification of the capitalization of the regulated entities;
17 "significantly undercapitalized" is the second lowest of the four
18 tiers. See 12 U.S.C. § 4614(a) and (b)(1)(C).
19

20 Defendants have not produced evidence that prior to, or even
21 contemporaneously with, the July 2010 statement or the February
22 2011 letter, the Enterprises were categorized as significantly
23 undercapitalized within the meaning of § 4614. Nothing in the
24 July 2010 statement refers to § 4616(b)(4), or makes reference to
25 undercapitalization.
26

27 Furthermore, on October 9, 2008, the FHFA had issued a press
28 release announcing that the FHFA Director "had determined that it

1 [was] prudent and in the best interests of the market to suspend
2 capital classifications of Fannie Mae and Freddie Mac during the
3 conservatorship, in light of the United States Treasury's Senior
4 Preferred Stock Purchase Agreement." Pls.' Second Request for
5 Judicial Notice, Ex. 6 at 2. The FHFA explained, "The Director
6 has the authority to make a discretionary downgrade of the capital
7 adequacy classification should certain safety and soundness
8 conditions arise that could impact future capital adequacy. This
9 classification requirement serves no purpose once an Enterprise
10 has been placed into conservatorship." Id. at 2-3.

11
12 Neither Defendants' interrogatory responses nor Pollard's
13 declaration establishes that, at the time of the FHFA's
14 directives, the Enterprises had been categorized as significantly
15 undercapitalized based on their "negative core capital," "negative
16 total equity" or their positions below the "Requirement Minimum
17 Capital." The responses and the declaration only show that,
18 looking back at the financial metrics, the FHFA believes that the
19 Enterprises at the relevant time met the statutory definition of
20 "significantly undercapitalized."
21

22 Thus, the FHFA has not presented evidence that it acted
23 pursuant to its conservatorship powers authorized under
24 § 4616(b)(4). Section 4623(d) does not limit the Court's
25 jurisdiction to hear Plaintiffs' claims.
26
27
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1 In sum, neither § 4617(f) nor § 4623(d) of Title 12 of the
2 United States Code bars judicial review of Defendants' directive
3 on PACE financing.

4 II. Administrative Procedures Act

5 Plaintiffs allege that Defendants' rule on PACE obligations
6 failed to comply with the notice and comment requirements of, and
7 was arbitrary and capricious in violation of, the APA, 5 U.S.C.
8 §§ 553, 706(2)(D).
9

10 A. Requirements for judicial review under the APA

11 To invoke judicial review of agency action under the APA,
12 Plaintiffs must demonstrate prudential standing. Prudential
13 standing is a "purely statutory inquiry," rather than a
14 constitutional test, and determines "whether a particular
15 plaintiff has been granted a right to sue by the statute under
16 which he or she brings suit." City of Sausalito v. O'Neil, 386
17 F.3d 1186, 1199 (9th Cir. 2004). "For a plaintiff to have
18 prudential standing under the APA, 'the interest sought to be
19 protected by the complainant [must be] arguably within the zone of
20 interests to be protected or regulated by the statute . . . in
21 question.'" Nat'l Credit Union Admin. v. First National Bank &
22 Trust Co., 522 U.S. 479, 488 (1998) (alteration in original). The
23 test requires that "we first discern the interest 'arguably . . .
24 to be protected' by the statutory provision at issue; we then
25 inquire whether the plaintiff's interests affected by the agency
26 action in question are among them." Id. at 492. A plaintiff is
27
28

1 outside a provision's zone of interest where "the plaintiff's
2 interests are so marginally related to or inconsistent with the
3 purposes implicit in the statute that it cannot reasonably be
4 assumed that Congress intended to permit the suit." Clarke v.
5 Securities Industry Ass'n, 479 U.S. 388, 399 (1987).

6 The governmental Plaintiffs satisfy the requirements for
7 prudential standing. The parties agree that the paramount goal of
8 the Safety and Soundness Act is to protect the stability and
9 ongoing operation of the residential mortgage market, and the
10 interests of the state and municipalities depend on its stability.
11 California and its municipalities have created a system of state
12 and local laws and assessments, and they establish budgets that
13 hinge on a functional real estate market. A healthy mortgage
14 market is a foundational element of the real estate market.
15 Although Congress has not expressed a specific purpose to benefit
16 state and local governments through the Safety and Soundness Act,
17 the governmental Plaintiffs share an interest in a safe and
18 sustainable secondary mortgage market and suffer as a result of a
19 faltering mortgage market. Defendants' contention that Plaintiffs
20 have improperly sued under a theory of parens patriae is not
21 persuasive because the governmental Plaintiffs are representing
22 their own state and municipal interests, not the interests of
23 particular residents. The governmental Plaintiffs are within the
24 zone of interests of the Safety and Soundness Act.
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1 Under the APA, judicial review is only permissible for final
2 agency action. 5 U.S.C. § 704. Defendants contend that the
3 FHFA's actions amounted to informal, non-final guidance. "For an
4 agency action to be final, the action must (1) 'mark the
5 consummation of the agency's decisionmaking process' and (2) 'be
6 one by which rights or obligations have been determined, or from
7 which legal consequences will flow.'" Ore. Natural Desert Ass'n
8 v. U.S. Forest Serv., 465 F.3d 977 (9th Cir. 2006). To determine
9 whether the consummation prong of the test has been satisfied, the
10 court must make a pragmatic consideration of the effect of the
11 action, not its label. Id. at 982, 985. The finality requirement
12 is satisfied when an agency action imposes an obligation, denies a
13 right, or fixes some legal relationship as a consummation of the
14 administrative process. Id. at 986-87. "An agency action may be
15 final if it has a 'direct and immediate . . . effect on the day-
16 to-day business' of the subject party." Id. at 987 (alteration in
17 original).

18
19
20 In its July 2010 statement, the FHFA adopted the view that
21 PACE programs that establish first liens are inconsistent with
22 requirements contained in Fannie Mae's and Freddie Mac's Uniform
23 Security Instruments. FAC, Ex. A, at 10. The FHFA announced that
24 mortgages with such encumbrances were not suitable for purchase by
25 the regulated entities. Its statement affirmed that the prior
26 lender letters issued by Fannie Mae and Freddie Mac, alerting
27 sellers and servicers that first liens run contrary to their
28

1 Uniform Security Instruments, would "remain in effect." The FHFA
2 arrived at this conclusion after "careful review" and "over a year
3 of working with federal and state government agencies." Indeed,
4 the FHFA expressly conveyed its intent to "pause" PACE programs
5 that include first liens. See id. The statement had a legal
6 effect because it immediately imposed on the regulated entities
7 obligations to take certain actions and it could reasonably be
8 read to provide a basis for an enforcement action should the
9 entities have chosen to continue purchasing mortgages encumbered
10 by PACE liens. The Safety and Soundness Act authorizes the FHFA
11 Director to take enforcement action against regulated entities to
12 police their lawful operation. See e.g., 12 U.S.C. § 4631(a)(1).
13 The FHFA's July 2010 statement constituted a final action.
14

15 B. Notice and comment requirement

16 Any regulations issued by the FHFA Director pursuant to the
17 agency's general regulatory authority shall comply with the APA's
18 requirements for notice and comment. 12 U.S.C. § 4526(b).
19

20 "Interpretative rules" are exempt from the notice and comment
21 requirements. 5 U.S.C. § 553(b)(3)(A). The interpretive rule
22 exemption is narrowly construed. Flagstaff Medical Center, Inc.
23 v. Sullivan, 962 F.2d 879, 885 (9th Cir. 1992). A court need not
24 accept an agency's characterization of its rule. Hemp Industries
25 Ass'n v. DEA, 333 F.3d 1082, 1087 (9th Cir. 2003). "There is no
26 bright-line distinction between interpretative and substantive
27 rules." Flagstaff, 962 F.2d at 886.
28

1 An interpretive rule is one "'issued by an agency to advise
2 the public of the agency's construction of the statutes and rules
3 which it administers.'" Erringer v. Thompson, 371 F.3d 625, 630
4 (9th Cir. 2004) (citing Shalala v. Guernsey Mem'l Hosp., 514 U.S.
5 87, 88 (1995)). "Because they generally clarify the application
6 of a law in a specific situation, they are used more for
7 discretionary fine-tuning than for general law making."
8 Flagstaff, 962 F.2d at 886.

9
10 "If the rule cannot fairly be seen as interpreting a statute
11 or a regulation," and if it is enforced, it is not an interpretive
12 rule. Catholic Health Initiatives v. Sebelius, 617 F.3d 490, 494
13 (9th Cir. 2010). "To fall within the category of interpretive,
14 the rule must derive a proposition from an existing document whose
15 meaning compels or logically justifies the proposition. The
16 substance of the derived proposition must flow fairly from the
17 substance of the existing document." Id. (internal quotation
18 marks omitted). If the relevant statute or regulation consists of
19 "vague or vacuous terms--such as 'fair and equitable,' 'just and
20 reasonable,' 'in the public interest,' and the like--the process
21 of announcing propositions that specify applications of those
22 terms is not ordinarily one of interpretation, because those terms
23 in themselves do not supply substance from which the propositions
24 can be derived." Id. at 494-95.

25
26
27 Substantive rules, sometimes referred to as legislative
28 rules, "create rights, impose obligations, or effect a change in

1 existing law pursuant to authority delegated by Congress."
2 Erringer, 371 F.3d at 630. The Ninth Circuit explains that
3 substantive rules have the "force of law," while interpretive
4 rules do not, and has adopted a three-part test for determining
5 whether a rule has the "force of law":

- 6 (1) when, in the absence of the rule, there would not
7 be an adequate legislative basis for enforcement
8 action;
- 9 (2) when the agency has explicitly invoked its
10 general legislative authority; or
- 11 (3) when the rule effectively amends a prior
12 legislative rule.

12 Erringer, 371 F.3d at 630 (citing Hemp Indust., 333 F.3d at 1087).

13 Plaintiffs argue that the FHFA's directives against PACE
14 programs with a first lien feature constitute a substantive rule
15 because (1) they announced a "flat ban" against such encumbrances
16 and thus amounted to general-lawmaking; (2) they had the force of
17 law and created a basis for enforcement; (3) they were issued
18 pursuant to statutory authority; and (4) they changed a prior
19 policy.
20

21 Plaintiffs rely on Catholic Health Initiatives, 617 F.3d at
22 490. There, a non-profit charitable corporation and its
23 affiliated non-profit hospitals challenged a rule describing
24 "reasonable costs" related to the care of Medicare beneficiaries.
25 In general, malpractice, workers' compensation and other liability
26 insurance premiums are considered by the Department of Health and
27 Human Services (HHS) to be part of a hospital's "reasonable costs"
28

1 incurred in providing services to Medicare beneficiaries and, as
2 such, are reimbursable. Id. at 491. The Secretary of HHS had
3 issued a Provider Reimbursement Manual containing guidelines and
4 policies to implement Medicare regulations setting forth
5 principles for determining the reasonable cost of provider
6 services. A provision in the manual disallowed reimbursements for
7 insurance premiums paid to certain off-shore insurance
8 corporations, known as "captives," often established by health
9 care providers, where the corporations' investments failed to
10 comply with certain requirements, such as a ten percent limit on
11 equity investments and other restrictions. Id. at 492. Assuming
12 without deciding that the manual's investment limitations were an
13 "extension" of and consistent with the reasonable cost provisions
14 of the Medicare Act and its regulations, the court concluded that
15 the limitations did not represent an interpretation of the statute
16 or its regulations. Id. at 496. The court noted that it might
17 have been "a closer case if the Secretary's Manual had indicated
18 that premiums paid to financially unstable captive offshore (or
19 domestic) insurance companies do not represent 'reasonable costs.'
20 But [the provision] embodies a 'flat' rule, and the 'flatter' a
21 rule is, the harder it is to conceive of it as merely spelling out
22 what is in some sense latent in the statute or regulation." Id.
23 at 496 n.6. The manual's investment requirements were "simply too
24 attenuated" from the reasonable cost provisions of the Medicare
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1 Act to represent an interpretation of the statutory terms. Id. at
2 496.

3 The "safe and sound" operation of the Enterprises' business
4 is likewise a vague phrase. The FHFA's July 2010 statement gives
5 substance to the duties of the regulated entities to conduct their
6 operations in a "safe and sound" manner because the statutory
7 language alone does not compel a rule barring the purchase of all
8 mortgages with PACE first liens. The FHFA's statement that PACE
9 first liens "present significant safety and soundness concerns,"
10 such that mortgages encumbered by them are not suitable for
11 purchase, is a categorical ban. The rule is flat in the sense
12 that it is a bright-line standard.

13
14 Without the FHFA's July 2010 pronouncement it is unlikely
15 that the agency would have a basis for an enforcement action
16 against the regulated entities because the safety and soundness
17 duty is vague and non-specific.

18
19 This case is distinguishable from Erringer, where the Ninth
20 Circuit held that the Medicare Act contained a standard of
21 approval for Medicare beneficiaries' claims and that HHS
22 guidelines issued to claims-processing contractors were
23 interpretive. In Erringer, a class of Medicare beneficiaries
24 challenged rules issued by the Secretary of HHS giving criteria to
25 contractors in creating Local Coverage Determinations (LCDs). The
26 Secretary issued National Coverage Determinations (NCDs),
27 excluding certain items and services from Medicare coverage that
28

1 were not "reasonable and necessary" under the Secretary's
2 interpretation. The contractors generally relied on the NCDs in
3 processing claims. However, the contractors were required to
4 create and use LCDs to determine what claims were covered under
5 Medicare, and at what amounts, when no NCD applied to a claim.
6 The beneficiaries argued that the Secretary's criteria governing
7 the creation of LCDs should be subject to the APA's notice and
8 comment requirement. The Ninth Circuit reasoned that the
9 guidelines were interpretive because, even without them, the
10 contractors would have an over-arching duty to provide Medicare
11 coverage that was reasonable and necessary.
12

13 The holding that the Secretary's general guidelines for the
14 creation of the LCDs were interpretative does not establish that
15 the specific directives made by the FHFA here were interpretive.
16 As noted earlier, the requirement that the regulated entities
17 operate in a safe and sound manner is a non-specific mandate; it
18 is a less precise requirement than Medicare contractors' statutory
19 duty to provide coverage for treatments that are reasonable and
20 necessary to cure disease and alleviate illness. A given medical
21 diagnosis or condition is bound to compel certain reasonable and
22 necessary treatment as determined by medical professionals. In
23 comparison to the guidelines for approving Medicare claims, the
24 FHFA's directives barring the purchase of mortgages encumbered by
25 PACE first liens is not compelled by the statutory mandate that
26
27
28

1 the FHFA ensure that the regulated entities operate in a safe and
2 sound manner.

3 Furthermore, as the Court previously noted in connection with
4 its conclusion that the FHFA acted as a regulator, here the FHFA's
5 handling of its rule-making pertaining to private transfer fee
6 covenants supports a finding that the FHFA's PACE directives
7 amounted to substantive rule-making. The FHFA utilized the notice
8 and comment process with respect to its proposed rule restricting
9 the regulated entities from purchasing mortgages on properties
10 encumbered by private transfer fee covenants because such
11 covenants were deemed to undermine the safety and soundness of
12 their investments. 75 Fed. Reg. 49932 (Aug. 16, 2010). In that
13 analogous instance, the FHFA deemed it appropriate to comply with
14 the APA notice and comment requirements.
15

16 The FHFA's directives on PACE obligations amount to
17 substantive rule-making, not an interpretation of rules that would
18 be exempt from the notice and comment requirement. The notice and
19 comment process must be followed.
20

21 C. Arbitrary and capricious action

22 In addition to their procedural notice and comment claim
23 under the APA, Plaintiffs allege a substantive claim that the
24 FHFA's directives are arbitrary and capricious. Under § 706(2)(A)
25 of the Act, "an agency action may be found unlawful by a reviewing
26 court and set aside, if it is found to be arbitrary, capricious,
27 an abuse of discretion or otherwise not in accordance with law."
28

1 5 U.S.C. § 706(2)(A). Plaintiffs have stated that, if the Court
2 rules that the FHFA violated the APA by failing to carry out the
3 notice and comment process, as the Court has done above, it need
4 not reach their claim that the directives were arbitrary and
5 capricious. See Sprint Corp. v. FCC, 315 F.3d 369, 377 (D.C. Cir.
6 2003).

7
8 The Court notes that the FHFA has begun the notice and
9 comment process pursuant to the preliminary injunction that the
10 Court granted earlier in this case. On January 26, 2012, the FHFA
11 issued an Advance Notice of Proposed Rulemaking seeking comment on
12 whether the restriction set forth in the July 2010 statement and
13 the February 2011 letter should be maintained. 77 Fed. Reg. 3958.
14 The FHFA received 33,000 comments in response to the notice. 77
15 Fed. Reg. 36086. On June 15, 2012, the FHFA issued a Notice of
16 Proposed Rulemaking and Proposed Rule concerning underwriting
17 standards for Fannie Mae and Freddie Mac related to PACE programs.
18 Id. The ninety-day comment period ends on September 13, 2012.

19
20 Docket No. 193. In turn, the FHFA is required to issue a
21 regulation within a reasonable time. Thus, on Plaintiffs'
22 suggestion, the Court declines to rule on the arbitrariness of the
23 FHFA's directives.

24 III. NEPA Claims

25
26 As with their claim of arbitrariness under the APA,
27 Plaintiffs assert that the Court need not resolve the merits of
28 their NEPA claim if the Court holds that the FHFA was required to

1 pursue the notice and comment process prior to issuing its
2 directives as to the PACE loans. Given the Court's order that the
3 ongoing notice and comment process continue, the Court declines to
4 resolve the NEPA claim in this case.

5 CONCLUSION

6 Plaintiffs' motion for summary judgment is granted with
7 respect to their notice and comment claim under the APA, and
8 Defendants' cross-motion for summary judgment on the claim is
9 denied. For the reasons explained above, the Court finds it
10 unnecessary to rule on the remaining claims under the APA and the
11 NEPA.

12 Accordingly, the FHFA shall complete the notice and comment
13 process and publish a final rule to consummate that process. The
14 parties shall attempt to agree to an appropriate deadline for
15 publication of the final rule and notify the Court of that date,
16 or, if the parties cannot agree, Plaintiffs shall submit an
17 administrative motion, pursuant to the Northern District of
18 California's Local Rule 7-11, for the Court to impose a deadline.
19 Defendants shall respond in accordance with the Local Rule. The
20 Court retains jurisdiction of this action as necessary to ensure
21 compliance with this order.

22 IT IS SO ORDERED.

23 Dated: 8/9/2012

24
25 
26 CLAUDIA WILKEN
27 United States District Judge
28

Proposed Rules

Federal Register

Vol. 77, No. 17

Thursday, January 26, 2012

This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

DEPARTMENT OF ENERGY

10 CFR Part 900

RIN 1901-AB18

Coordination of Federal Authorizations for Electric Transmission Facilities

AGENCY: Office of Electricity Delivery and Energy Reliability, Department of Energy.

ACTION: Notice of extension of public comment period.

SUMMARY: This document announces that the period for submitting comments on the proposed rule for the coordination of Federal Authorizations for Electric Transmission Facilities has been extended until February 27, 2012.

DATES: DOE will accept comments, data, and information regarding the proposed coordination rule published December 13, 2011 (76 FR 77432) until February 27, 2012.

ADDRESSES: Any comments submitted must be identified as comments on the "Proposed 216(h) Regulations". Comments may be submitted using any of the following methods:

- *Federal eRulemaking Portal:* <http://www.regulations.gov>. Follow the instructions for submitting comments.
- *Email:* Brian.Mills@hq.doe.gov.

Include "Proposed 216(h) Regulations" in the subject line of the message.

- *Mail:* Brian Mills, Office of Electricity Delivery and Energy Reliability (OE-20), U.S. Department of Energy, 1000 Independence Avenue SW., Washington, DC 20585.

FOR FURTHER INFORMATION CONTACT:

Brian Mills, Office of Electricity Delivery and Energy Reliability (OE-20), U.S. Department of Energy, 1000 Independence Avenue SW., Washington, DC 20585, Phone (202) 586-8267, email Brian.Mills@hq.doe.gov, or Lot Cooke, Attorney-Advisor, U.S. Department of Energy, Office of the General Counsel, GC-76, 1000 Independence Avenue SW., Washington, DC 20585, Phone (202) 586-0503, email Lot.Cooke@hq.doe.gov.

SUPPLEMENTARY INFORMATION: On December 13, 2011, DOE published a proposed rule in the **Federal Register** (76 FR 77432) to amend its regulations for the timely coordination of Federal authorizations for proposed interstate electric transmission facilities pursuant to section 216(h) of the Federal Power Act (FPA). The proposed rule provided for the submission of comments by January 27, 2012. A commenter noted the significant interest of its members in the rulemaking and requested an extension of the comment period given the holidays and the need for its members to complete projects and reports for calendar year 2011.

DOE has determined that an extension of the public comment period is appropriate based on the foregoing reasons and is hereby extending the comment period. DOE will consider any comments received by February 27, 2012.

Issued in Washington, DC, on January 20, 2012.

Patricia A. Hoffman,

Assistant Secretary, Office of Electricity Delivery and Energy Reliability.

[FR Doc. 2012-1662 Filed 1-25-12; 8:45 am]

BILLING CODE 6450-01-P

FEDERAL HOUSING FINANCE AGENCY

12 CFR Part 1254

RIN 2590-AA53

Mortgage Assets Affected by PACE Programs

AGENCY: Federal Housing Finance Agency.

ACTION: Advance notice of proposed rulemaking; request for comments; Notice of intent to prepare environmental impact statement; request for scoping comments.

SUMMARY: The Federal Housing Finance Agency ("FHFA") hereby issues this Advance Notice of Proposed Rulemaking ("ANPR") concerning mortgage assets affected by Property Assessed Clean Energy ("PACE") programs and Notice of Intent ("NOI") to prepare an environmental impact statement ("EIS") under the National Environmental Policy Act ("NEPA") to address the potential environmental impacts of FHFA's proposed action.

The United States District Court for the Northern District of California issued a preliminary injunction ordering FHFA "to proceed with the notice and comment process" in adopting guidance concerning mortgages that are or could be affected by PACE programs. Specifically, the California District Court ordered FHFA to "cause to be published in the **Federal Register** an Advance Notice of Proposed Rulemaking relating to the statement issued by FHFA on July 6, 2010, and the letter directive issued by FHFA on February 28, 2011, that deal with property assessed clean energy (PACE) programs."

In response to and compliance with the California District Court's order, FHFA is seeking comment on whether the restrictions and conditions set forth in the July 6, 2010 Statement and the February 28, 2011 Directive should be maintained, changed, or eliminated, and whether other restrictions or conditions should be imposed. FHFA has appealed the California District Court's order to the U.S. Court of Appeals for the Ninth Circuit (the "Ninth Circuit"). Inasmuch as the California District Court's order remains in effect pending the outcome of the appeal, FHFA is proceeding with the publication of this ANPR and NOI pursuant to that order. The Ninth Circuit has stayed, pending the outcome of FHFA's appeal, the portion of the California District Court's Order requiring publication of a final rule. FHFA reserves the right to withdraw this ANPR and NOI should FHFA prevail in its appeal, and may in that situation continue to address the financial risks FHFA believes PACE programs pose to safety and soundness through means other than notice-and-comment rulemaking.

DATES: Written comments must be received on or before March 26, 2012.

ADDRESSES: You may submit your comments, identified by regulatory information number (RIN) 2590-AA53, by any of the following methods:

- *Federal eRulemaking Portal:* <http://www.regulations.gov>: Follow the instructions for submitting comments. If you submit your comment to the *Federal eRulemaking Portal*, please also send it by email to FHFA at RegComments@fhfa.gov to ensure timely receipt by FHFA. Please include "RIN 2590-AA53" in the subject line of the message.

- *Email*: Comments to Alfred M. Pollard, General Counsel may be sent by email to RegComments@fhfa.gov. Please include “RIN 2590-AA53” in the subject line of the message.

- *U.S. Mail, United Parcel Service, Federal Express, or Other Mail Service*: The mailing address for comments is: Alfred M. Pollard, General Counsel, Attention: Comments/RIN 2590-AA53, Federal Housing Finance Agency, Eighth Floor, 400 Seventh Street SW., Washington, DC 20024.

- *Hand Delivered/Courier*: The hand delivery address is: Alfred M. Pollard, General Counsel, Attention: Comments/RIN 2590-AA53, Federal Housing Finance Agency, Eighth Floor, 400 Seventh Street SW., Washington, DC 20024. The package should be logged at the Seventh Street entrance Guard Desk, First Floor, on business days between 9 a.m. and 5 p.m.

FOR FURTHER INFORMATION CONTACT:

Alfred M. Pollard, General Counsel, (202) 649-3050 (not a toll-free number), Federal Housing Finance Agency, Eighth Floor, 400 Seventh Street SW., Washington, DC 20024. The telephone number for the Telecommunications Device for the Hearing Impaired is (800) 877-8339.

SUPPLEMENTARY INFORMATION:

I. Comments

FHFA invites comments on all aspects of this ANPR and NOI. Commenters should identify by number, the question each of their comments addresses. Copies of all comments will be posted without change, including any personal information you provide, such as your name and address, on the FHFA Web site at <https://www.fhfa.gov>. In addition, copies of all comments received will be available for examination by the public on business days between the hours of 10 a.m. and 3 p.m. at the Federal Housing Finance Agency, Eighth Floor, 400 Seventh Street SW., Washington, DC 20024. To make an appointment to inspect comments, please call the Office of General Counsel at (202) 649-3804.

II. Background

A. FHFA’s Statutory Role and Authority as Regulator

FHFA is an independent federal agency created by the Housing and Economic Recovery Act of 2008 (HERA) to supervise and regulate the Federal National Mortgage Association (Fannie Mae), the Federal Home Loan Mortgage Corporation (Freddie Mac), (together, the Enterprises), and the Federal Home Loan Banks (the “Banks”). FHFA is the exclusive supervisory regulator of the Enterprises and the Banks. Both

Enterprises are presently in conservatorship under the direction of FHFA as Conservator. 12 U.S.C. 4501 *et seq.* Congress established FHFA in the wake of a national crisis in the housing market. A key purpose of HERA was to create a single federal regulator with all of the authority necessary to oversee Fannie Mae, Freddie Mac, and the Banks. 12 U.S.C. 4511(b)(2).

Fannie Mae and Freddie Mac operate in the secondary mortgage market. Accordingly, they do not directly lend funds to home purchasers, but instead buy mortgage loans from original lenders, thereby providing funds those entities can use to make additional loans. The Enterprises hold in their own portfolios a fraction of the mortgage loans they purchase. The Enterprises also securitize a substantial fraction of the mortgage loans they purchase, packaging them into pools and selling interests in the pools as mortgage-backed securities. Traditionally, the Enterprises guarantee nearly all of the mortgage loans they securitize. Together, the Enterprises own or guarantee more than \$5 trillion in residential mortgages.

FHFA’s “Director shall have general regulatory authority over each [Enterprise] * * *, and shall exercise such general regulatory authority * * * to ensure that the purposes of this Act, the authorizing statutes, and any other applicable law are carried out.” 12 U.S.C. 4511(b)(2). As regulator, FHFA is charged with ensuring that the Enterprises operate in a “safe and sound manner.” 12 U.S.C. 4513(a). FHFA is statutorily authorized “to exercise such incidental powers as may be necessary or appropriate to fulfill the duties and responsibilities of the Director in the supervision and regulation” of the Enterprises. 12 U.S.C. 4513(a)(2). FHFA’s Director is authorized to “issue any regulations or guidelines or orders as necessary to carry out the duties of the Director * * *.” *Id.* 4526(a). FHFA’s regulations are subject to notice-and-comment rulemaking under the Administrative Procedure Act.

B. FHFA’s Statutory Role and Authority as Conservator

HERA also authorizes the Director of FHFA to “appoint the Agency as conservator or receiver for a regulated entity * * * for the purpose of reorganizing, rehabilitating or winding up [its] affairs.” *Id.* 4617(a)(1), (2). On September 6, 2008, FHFA placed Fannie Mae and Freddie Mac into conservatorships. FHFA thus “immediately succeed[ed] to all rights, titles, powers, and privileges of the

shareholders, directors, and officers of the [Enterprises].” *Id.* 4617(b)(2)(B).

In its role as Conservator, FHFA may take any action “necessary to put the regulated entity into sound and solvent condition” or “appropriate to carry on the business of the regulated entity and preserve and conserve the assets and property of the regulated entity.” *Id.* 4617(b)(2)(D). The Conservator also may “take over the assets of and operate the regulated entity in the name of the regulated entity,” “perform all functions of the entity” consistent with the Conservator’s appointment, and “preserve and conserve the assets and property of the regulated entity.” *Id.* 4617(b)(2)(A), (B). The Conservator may take any authorized action “which the Agency determines is in the best interests of the regulated entity or the Agency.” *Id.* 4617(b)(2)(J). “The authority of the Director to take actions [as Conservator] shall not in any way limit the general supervisory and regulatory authority granted” by HERA. 12 U.S.C. 4511(c).

C. Issues Relating to PACE Programs That Are Relevant to FHFA’s Supervision and Direction of the Enterprises

PACE programs provide a means of financing certain kinds of home-improvement projects. Specifically, PACE programs permit local governments to provide financing to property owners for the purchase of energy-related home-improvement projects, such as solar panels, insulation, energy-efficient windows, and other products. Homeowners repay the amount borrowed, with interest, over a period of years through “contractual assessments” added to their property tax bill. Over the last three years, more than 25 states have passed legislation authorizing local governments to set up PACE-type programs. Such legislation leaves most program implementation and standards to local governmental bodies and provides no uniform requirements or enforcement mechanisms.

In most, but not all, states that have implemented PACE programs, the liens that result from PACE program loans have priority over mortgages, including pre-existing first mortgages.¹ In such programs, the PACE lender “steps ahead” of the mortgage holder (e.g., a Bank, Fannie Mae, or Freddie Mac) in

¹ In at least four states—Maine, New Hampshire, Oklahoma, and Vermont—legislation provides that the PACE lien does not subordinate a first mortgage on the subject property. FHFA understands that under legislation now pending in Connecticut, PACE programs in that state also would not subordinate first mortgages.

priority of its claim against the collateral, and such liens “run” with the property. As a result, a mortgagee foreclosing on a property subject to a PACE lien must pay off any accumulated unpaid PACE assessments (*i.e.*, past-due payments) and remains responsible for the principal and interest payments that are not yet due (*i.e.*, future payments) on the PACE obligation. Likewise, if a home is sold before the homeowner repays the city or county, the purchaser of the home assumes the obligation to pay the remainder. The mortgage holder is also at risk in the event of foreclosure for any diminution in the value of the property caused by the outstanding lien or the retrofit project, which may or may not be attractive to potential purchasers. Also, the homeowner’s assumption of this new obligation may itself increase the risk that the homeowner will become delinquent or default on other financial obligations, including any mortgage obligations.²

Typically, PACE programs serve as a channel through which private-sector capital flows through the local government to the homeowner-borrower (or the homeowner-borrower’s contractors). While PACE programs vary in the particular mechanisms they use to raise capital, in many instances private investors provide the capital by purchasing bonds secured by the payments that homeowner-borrowers make on their PACE obligations. From the capital provider’s perspective, one advantage of channeling the funding through a local government, rather than lending directly to the homeowner-borrower or channeling the funds through a private enterprise, is that the local government is able to use the property-tax assessment system as the vehicle for repayment. Because of the “lien-priming” feature of most PACE programs, the capital provider effectively “steps ahead” of all other private land-secured lenders (including mortgage lenders) in priority, thereby minimizing the financial risk to the capital provider while downgrading the priority of first and second mortgages, and of any other property-secured financial obligation.

Proponents of PACE programs have analogized the obligations to repay PACE loans to traditional tax assessments. However, unlike traditional tax assessments, PACE loans are voluntary—homeowners opt in,

²In many PACE programs, the allowable amount of a loan is based on assessed property value and may not consider the borrower’s ability to repay. States have considered permitting loan levels of 10% to 40% of the assessed value of the underlying property.

submit applications, and contract with the city or county’s PACE program to obtain the loan. Each participating property owner controls the use of the funds, selects the contractor who will perform the energy retrofit, owns the energy retrofit fixtures and must repair the fixtures should they become inoperable, including during the time the PACE loan remains outstanding. Each locality sets its own terms and requirements for homeowner and project eligibility for PACE loans; no uniform national standards exist. Nothing in PACE requires that local governments adopt and implement nationally uniform financial underwriting standards, such as minimum total loan-to-value ratios that take into account either: (i) Total debt or other liens on the property; or (ii) the possibility of subsequent declines in the value of the property. Many PACE programs also do not employ standard personal creditworthiness requirements, such as limits on FICO score or total debt-to-income ratio, although some include narrower requirements, such as that the homeowner-borrower be current on the mortgage and property taxes and not have a recent bankruptcy history.

Some local PACE programs communicate to homeowners that incurring a PACE obligation may violate the terms of their mortgage documents.³ Similarly, some cities and counties provide forms that participants can use to obtain the lender’s consent or acknowledgment prior to participation.⁴

State legislation authorizing PACE programs gained notoriety in 2008. As PACE programs were being considered by more states, FHFA began to evaluate their implementations and potential impact on the portfolios of FHFA-regulated entities. On June 18, 2009, FHFA issued a letter and background paper raising concerns about PACE programs that retroactively created first liens. To discuss the risks to lenders and the Enterprises as well as borrowers, FHFA met over the next year with PACE stakeholders, other federal agencies, and state and local authorities around the country.

On May 5, 2010, in response to continuing questions about PACE programs, Fannie Mae and Freddie Mac

³ See, e.g., Yucaipa Loan Application at 2–3, 10, http://www.yucaipa.org/cityPrograms/EIP/PDF_Files/Application.pdf (last visited Jan. 12, 2012); Sonoma Application at 2, <http://www.sonomacountyenergy.org/lower.php?url=reference-forms-new&catid=603> (document at “Application” link) (last visited Jan. 12, 2012).

⁴ Sonoma Lender Acknowledgement, <http://www.sonomacountyenergy.org/lower.php?url=reference-forms-new&catid=606> (pages 4–7 of document at “Lender Info and Acknowledgement” link) (last visited Jan. 12, 2012).

issued advisories (“Advisories”) to lenders and servicers of mortgages owned or guaranteed by the Enterprises.⁵ The May 5, 2010 Advisories referred to Fannie Mae’s and Freddie Mac’s jointly developed master uniform security instruments (“USIs”), which prohibit liens senior to that of the mortgage.⁶

Shortly after the May 5, 2010 Advisories were issued, FHFA received a number of inquiries seeking FHFA’s position.⁷ On July 6, 2010, FHFA issued the Statement, which provides:

[T]he 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. * * *

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. * * *

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.⁸

The Statement directed that the May 5, 2010 Advisories “remain in effect” and that the Enterprises “should undertake prudential actions to protect their operations,” including: (i) Adjusting loan-to-value ratios; (ii) ensuring that loan covenants require approval/consent for any PACE loans; (iii) tightening borrower debt-to-income ratios; and, (iv) ensuring that mortgages on properties with PACE liens satisfy all applicable federal and state lending regulations. However, FHFA directed these actions on a prospective basis only, directing in the Statement that any prohibition against such liens in the Enterprises’ USIs be waived as to PACE obligations already in existence as of July 6, 2010.

On February 28, 2011, the Conservator issued a directive stating the Agency’s view that PACE liens

⁵ Fannie Mae Lender Letter LL–2010–06 (May 5, 2010), available at <https://www.efanniemae.com/sf/guides/ssg/annltrs/pdf/2010/111006.pdf>; Freddie Mac Industry Letter (May 5, 2010), available at <http://www.freddiemac.com/sell/guide/bulletins/pdf/iltr050510.pdf>.

⁶ The relevant provision appears in Section 4. See, e.g., Freddie Mac Form 3005, California Deed of Trust, available at <http://www.freddiemac.com/uniform/doc/3005-CaliforniaDeedofTrust.doc>; Fannie Mae Form 3005, California Deed of Trust, available at <https://www.efanniemae.com/sf/formsdocs/documents/secinstruments/doc/3005w.doc>.

⁷ Letter from Edmund G. Brown, Jr. to Edward DeMarco (May 17, 2010); Letter from Edmund G. Brown, Jr. to Edward DeMarco (June 22, 2010).

⁸ FHFA Statement on Certain Energy Retrofit Loan Programs (July 6, 2010), available at <http://www.fhfa.gov/webfiles/15884/PACESTMT7610.pdf>.

“present significant risks to certain assets and property of the Enterprises—mortgages and mortgage-related assets—and pose unusual and difficult risk management challenges.” FHFA thus directed the Enterprises to “continue to refrain from purchasing mortgage loans secured by properties with outstanding first-lien PACE obligations.” *Id.* In all its statutory capacities, FHFA is empowered to act decisively to avoid risk to the Enterprises. In conservatorship, with taxpayer support, this obligation is emphasized by express Congressional directions on conservator duties.

Several parties brought legal challenges to the process by which FHFA issued the July 6, 2010 Statement and the February 28, 2011 Directive, as well as to their substance. The United States District Courts for the Northern District of Florida, the Southern District of New York, and the Eastern District of New York all dismissed lawsuits presenting such challenges. The United States District Court for the Northern District of California (the “California District Court”), however, has allowed such a lawsuit to proceed and has issued a preliminary injunction ordering FHFA “to proceed with the notice and comment process” in adopting guidance concerning mortgages that are or could be affected by PACE programs. Specifically, the California District Court ordered FHFA to “cause to be published in the **Federal Register** an Advance Notice of Proposed Rulemaking relating to the statement issued by FHFA on July 6, 2010, and the letter directive issued by FHFA on February 28, 2011, that deal with property assessed clean energy (PACE) programs.” The California District Court further ordered that “[i]n the Advance Notice of Proposed Rulemaking, FHFA shall seek comments on, among other things, whether conditions and restrictions relating to the regulated entities’ dealing in mortgages on properties participating in PACE are necessary; and, if so, what specific conditions and/or restrictions may be appropriate.” The California District Court also ordered that “[t]he comment period shall not be less than 60 days.” The California District Court neither invalidated nor required FHFA to withdraw the July 6, 2010 Statement or the February 28, 2011 Directive, both of which remain in effect.

In response to and compliance with the California District Court’s order, FHFA is seeking comment on whether the restrictions and conditions set forth in the July 6, 2010 Statement and the February 28, 2011 Directive should be maintained, changed, or eliminated, and

whether other restrictions or conditions should be imposed. FHFA has appealed the California District Court’s order to the U.S. Court of Appeals for the Ninth Circuit (the “Ninth Circuit”). Inasmuch as the California District Court’s order remains in effect pending the outcome of the appeal, FHFA is proceeding with the publication of this ANPR and NOI pursuant to that order. The Ninth Circuit has stayed, pending the outcome of FHFA’s appeal, the portion of the California District Court’s Order requiring publication of a final rule. FHFA reserves the right to withdraw this ANPR and NOI should FHFA prevail in its appeal, and may in that situation continue to address the financial risks FHFA believes PACE programs pose to safety and soundness through means other than notice-and-comment rulemaking.

This ANPR and NOI reviews FHFA’s statutory authority as the federal supervisory regulator of the Enterprises, reviews FHFA’s statutory role and authority as the Conservator of each Enterprise, summarizes issues relating to PACE that are relevant to FHFA’s supervision and direction of the Enterprises, suggests subjects relating to PACE on which FHFA might issue a proposed rule or otherwise provide guidance to the Enterprises within the governing statutory framework, and invites comments from the public.

III. Issues as to Which FHFA Seeks Comment

In light of the California District Court’s order and the background information provided above, FHFA seeks comments on the following issues regarding the Enterprises’ dealing in mortgages on properties that participate in PACE programs or that could participate in PACE programs.

A. Conditions and Restrictions Relating to PACE

The California District Court called upon FHFA to seek comments on whether conditions and restrictions relating to the regulated entities’ dealing in mortgages on properties participating in PACE programs are necessary; and, if so, what specific conditions and/or restrictions may be appropriate. In the July 6, 2010 Statement and the February 28, 2011 Directive, FHFA imposed certain conditions and restrictions relating to the Enterprises’ dealing in mortgages on properties participating in PACE programs. FHFA thus will take comments on whether those restrictions and conditions should be maintained, changed, or eliminated, and whether other restrictions or conditions should be imposed. Accordingly, FHFA

requests comment on the following question:

Question 1: Are conditions and restrictions relating to FHFA-regulated entities’ dealings in mortgages on properties participating in PACE programs necessary? If so, what specific conditions and/or restrictions may be appropriate?

B. Financial Risk to the Enterprises Resulting From Subordination of Mortgage Security Interests to PACE Liens

FHFA is concerned that PACE programs that involve subordination of any mortgage holder’s security interest in the underlying property to that of the provider of PACE financing may increase the financial risk borne by the Enterprises as holders of mortgages on properties subject to PACE obligations, as well as mortgage-backed securities based on such mortgages. FHFA believes that any such increase in the financial risk on mortgages and mortgage-backed securities already in the Enterprise portfolios, especially if imposed without Enterprise consent, may present significant safety and soundness concerns. In light of that concern, FHFA requests comment on the following three questions regarding financial risks to the Enterprises relating to the subordination of mortgage security interests to PACE liens:

Question 2: How does the lien-priming feature of first-lien PACE obligations affect the financial risks borne by holders of mortgages affected by PACE obligations or investors in mortgage-backed securities based on such mortgages? To the extent that the lien-priming feature of first-lien PACE obligations increases any financial risk borne by holders of mortgages affected by PACE obligations or investors in mortgage-backed securities based on such mortgages, how and at what cost could such parties insulate themselves from such increased risk?

Question 3: How does the lien-priming feature of first-lien PACE obligations affect any financial risk that is borne by holders of mortgages affected by PACE obligations or investors in mortgage-backed securities based on such mortgages and that relates to any of the following:

- The total amount of debt secured by the subject property relative to the value of the subject property (*i.e.*, Combined Loan to Value Ratio for the property or other measures of leverage);
- The amount of funds available to pay for energy-related home-improvement projects after the subtraction of administrative fees or any other program expenses charged or

deducted before funds become available to pay for an actual PACE-funded project (FHFA understands such fees and expenses can consume up to 10% or more of the funds a borrower could be obligated to repay under some PACE programs);

- The timing and nature of advancements in energy-efficiency technology;
- The timing and nature of changes in potential homebuyers' preferences regarding particular kinds of energy-efficiency projects;
- The timing, direction, and magnitude of changes in energy prices; and,
- The timing, direction, and magnitude of changes of property values, including the possibility of downward adjustments in value?

Question 4: To the extent that the lien-priming feature of first-lien PACE obligations increases any financial risk that is borne by holders of mortgages affected by PACE obligations or investors in mortgage-backed securities based on such mortgages and that relates to any of the following, how and at what cost could such parties insulate themselves from that increase in risk:

- The total amount of debt secured by the subject property relative to the value of the subject property (*i.e.*, Combined Loan to Value Ratio for the property or other measures of leverage);
- The amount of funds available to pay for energy-related home-improvement projects after the subtraction of administrative fees or any other programs expenses charged deducted before funds become available to pay for an actual PACE funded project (FHFA understands such fees and expenses can consume up to 10% or more of the funds a borrower could be obligated to repay under some PACE programs);
- The timing and nature of advancements in energy-efficiency technology;
- The timing and nature of changes in potential homebuyer preferences regarding particular kinds of energy-efficiency projects;
- The timing, direction, and magnitude of changes in energy prices; and,
- The timing, direction, and magnitude of changes of property values, including the possibility of downward adjustments in value?

C. PACE and the Market for Home-Improvement Financing

FHFA is concerned that the risks first-lien PACE programs present to mortgage holders may be unnecessary or unreasonable in light of other market

options for financing home-improvement projects relating to energy efficiency that do not subordinate mortgage holders' security interests. In light of that concern, FHFA requests comment on the following four questions relating to PACE programs and the market for home-improvement financing:

Question 5: What alternatives to first-lien PACE loans (*e.g.*, self-financing, bank financing, leasing, contractor financing, utility company "on-bill" financing, grants, and other government benefits) are available for financing home-improvement projects relating to energy efficiency? On what terms? Which do and which do not share the lien-priming feature of first-lien PACE obligations? What are the relative advantages and disadvantages of each, from the perspective of (i) The current and any future homeowner-borrower, (ii) the holder of an interest in any mortgage on the subject property, and (iii) the environment?

Question 6: How does the effect on the value of the underlying property of an energy-related home-improvement project financed through a first-lien PACE program compare to the effect on the value of the underlying property that would flow from the same project if financed in any other manner?

Question 7: How does the effect on the environment of an energy-related home-improvement project financed through a first-lien PACE program compare to the effect on the environment that would flow from the same project if financed in any other manner?

Question 8: Do first-lien PACE programs cause the completion of energy-related home improvement projects that would not otherwise have been completed, as opposed to changing the method of financing for projects that would have been completed anyway? What, if any, objective evidence exists on this point?

D. PACE and Protections for the Homeowner-Borrower

FHFA is concerned that PACE programs may not incorporate features that adequately protect the interests of the homeowner-borrower, and that the lack of adequate protection could result in homeowner-borrowers undertaking PACE projects or selecting PACE financing terms that increase the financial risks borne by mortgage holders such as the Enterprises. In light of that concern, FHFA requests comment on the following five questions relating to PACE and protections for the homeowner-borrower:

Question 9: What consumer protections and disclosures do first-lien PACE programs mandate for participating homeowners? When and how were those protections put into place? How, if at all, do the consumer protections and disclosures that local first-lien PACE programs provide to participating homeowners differ from the consumer protections and disclosures that non-PACE providers of home-improvement financing provide to borrowers? What consumer protection enforcement mechanisms do first-lien PACE programs have?

Question 10: What, if any, protections or disclosures do first-lien PACE programs provide to homeowner-borrowers concerning the possibility that a PACE-financed project will cause the value of their home, net of the PACE obligation, to decline? What is the effect on the financial risk borne by the holder of any mortgage interest in a subject property if PACE programs do not provide any such protections or disclosures?

Question 11: What, if any, protections or disclosures do first-lien PACE programs provide to homeowner-borrowers concerning the possibility that the utility-cost savings resulting from a PACE-financed project will be less than the cost of servicing the PACE obligation? What is the effect on the financial risk borne by the holder of any mortgage interest in a subject property if first-lien PACE programs do not provide any such protections or disclosures?

Question 12: What, if any, protections or disclosures do first-lien PACE programs provide to homeowner-borrowers concerning the possibility that over the service life of a PACE-financed project, the homeowner-borrower may face additional costs (such as costs of insuring, maintaining, and repairing equipment) beyond the direct cost of the PACE obligation? What is the effect on the financial risk borne by the holder of any mortgage interest in a subject property if first-lien PACE programs do not provide any such protections or disclosures?

Question 13: What, if any, protections or disclosures do first-lien PACE programs provide to homeowner-borrowers concerning the possibility that subsequent purchasers of the subject property will reduce the amount they would pay to purchase the property by some or all of the amount of any outstanding PACE obligation? What is the effect on the financial risk borne by the holder of any mortgage interest in a subject property if first-lien PACE programs do not provide any such protections or disclosures?

E. PACE and Underwriting Standards

FHFA is concerned that first-lien PACE programs may not incorporate underwriting standards that adequately ensure that the homeowner-borrower will be able to repay the obligation, and that as a result homeowner-borrowers may undertake PACE projects, or select PACE financing terms, that adversely affect the homeowner-borrower's ability to repay other debt, including mortgage debt. In light of that concern, FHFA requests comment on the following three questions relating to PACE and underwriting standards:

Question 14: How do the credit underwriting standards and processes of PACE programs compare to that of other providers of Home-improvement financing, such as banks? Do they consider, for example: (i) Borrower creditworthiness, including an assessment of total indebtedness in relation to borrower income, consistent with national standards; (ii) total loan-to-value ratio of all secured loans on the property combined, consistent with national standards; and (iii) appraisals of property value, consistent with national standards?

Question 15: What factors do first-lien PACE programs consider in determining whether to provide PACE financing to a particular homeowner-borrower seeking funding for a particular project eligible for PACE financing? What analytic tools presently exist to make that determination? How, if at all, have the methodologies, metrics, and assumptions incorporated into such tools been tested and validated?

Question 16: What factors and information do first-lien PACE programs gather and consider in determining whether a homeowner-borrower will have sufficient income or cash flow to service the PACE obligation in addition to the homeowner-borrower's pre-existing financial obligation? What analytic tools presently exist to make that determination? How, if at all, have the methodologies, metrics, and assumptions incorporated into such tools been tested and validated?

F. Considerations Relating to FHFA's Intent To Prepare an EIS

FHFA intends to prepare an EIS to address the potential environmental impacts of any proposed rule that FHFA may issue following its consideration of the comments submitted in response to this ANPR and NOI. To that end, this ANPR and NOI initiates the NEPA scoping process to identify the environmental issues and reasonable alternatives to be examined in the EIS, and requests comments regarding those

and other matters related to the scope of the EIS ("EIS Scoping Comments").

To ensure that all relevant environmental issues and reasonable alternatives are addressed, FHFA invites and encourages EIS Scoping Comments. Interested parties are encouraged to submit their EIS Scoping Comments within a 60-day scoping period, which begins with publication of this notice. EIS Scoping Comments received after the end of the scoping period will be considered to the extent practicable. You may submit EIS Scoping Comments, identified by regulatory information number (RIN) 2590-AA53 and marked "EIS Scoping Comments," by any of the methods identified in the **ADDRESSES** section above. Submissions may include both EIS Scoping Comments and other comments, but the EIS Scoping Comments must be separately identified.

1. Proposed Action

FHFA's Proposed Action would direct the Enterprises not to purchase any mortgage that is subject to a first-lien PACE obligation or that could become subject to first-lien PACE obligations without the consent of the mortgage holder. FHFA believes that the Proposed Action is reasonable and necessary to limit, in the interest of safety and soundness, the financial risks that could be involuntarily borne by the Enterprises, thereby preserving and conserving the Enterprises' assets and property while protecting American taxpayers from further loss.

2. No Action Alternative

As required by the Council on Environmental Quality regulations that implement NEPA, the EIS will analyze and present the potential environmental impacts associated with reasonable alternatives, including the No Action Alternative.

The No Action Alternative is to withdraw the July 6, 2010 Statement and the February 28, 2011 Directive. This would allow the Enterprises to purchase mortgage loans secured by properties with outstanding first-lien PACE and PACE-like obligations.

3. Other Alternatives

In addition to the Proposed Action and No Action alternatives described above, FHFA invites comments on reasonable alternatives that would reduce or avoid known or potential adverse environmental impacts associated with the proposed action while ensuring that the Enterprises operate in a safe and sound manner. Accordingly, FHFA requests that for each reasonable alternative suggested,

the commenter explain the positive, neutral or negative environmental impacts, as well as potential changes in the level of financial risk borne by holders of any interest in a mortgage on PACE-affected properties, associated with the suggested alternative. Accordingly, FHFA specifically requests comment on the following question:

Question 17: What specific alternatives to FHFA's existing statements about PACE should FHFA consider? For each alternative, as compared to the Proposed Action, what positive or negative environmental effects would result and how would the level of financial risk borne by holders of any interest in a mortgage on PACE-affected properties change?

4. Issues and Environmental Resources To Be Examined

To facilitate the scoping process, FHFA has identified a preliminary approach and list of issues and environmental resources that it may consider in the EIS. This list is not intended to be all-inclusive or to predetermine the scope of the EIS, but is intended to serve as a starting point for public comment.

- FHFA intends to develop scenarios (high, medium, and low) that describe three potential levels of uptake of PACE program loans by homeowners (irrespective of the Agency's action). These scenarios would be developed at the regional level and would make assumptions on the types of home improvement projects (e.g., home insulation, solar panels, geothermal energy units, etc.) that could be installed. The "high" scenario would assume the potential for a high level of uptake of PACE projects by homeowners. The "medium" and "low" scenarios would assume medium and low levels of uptake. FHFA invites comment on how these scenarios should be developed.

- Potential effects of the Proposed Action and alternatives on the uptake of PACE home improvement projects will be considered. For each alternative analyzed in detail in the EIS, FHFA would estimate PACE project implementation for each of the scenarios listed above and then compare these estimates across the alternatives.

- Using assumptions on the types of home improvement projects that could be implemented, FHFA would estimate the potential energy and water consumption savings associated with each scenario at the regional level for each alternative.

- FHFA proposes to analyze the potential direct, indirect, and cumulative environmental impacts of

the proposed action and alternatives for the following resource areas: Greenhouse gas emissions; climate change; air pollutant emissions (including Clean Air Act criteria pollutant emissions); human health; water conservation; cultural and historic resources; and disproportionately high and adverse impacts to low-income and minority populations (environmental justice).

IV. Request for Comments

FHFA invites comments on all of the issues and questions discussed above, and will consider all comments in developing any proposed rule that FHFA may issue concerning the Enterprises' dealing in mortgages on properties participating in PACE programs. As to all questions enumerated above, commenters should provide supporting data and documentation for each of their responses, as these will assist FHFA in its consideration of comments.

Studies addressing relevant aspects of PACE programs may be submitted for the agency's consideration. FHFA is interested in studies analyzing:

- The effect of PACE-funded improvements on the value of the underlying property, including differential effects over time and across markets;
- The comparative costs of PACE programs with other means of financing such as home equity loans, refinance transactions, and leasing programs;
- Payback periods for projects eligible for PACE funding, considering costs, energy savings, and risks (including risk of changes in energy pricing or in the level of subsidies or tax credits available);
- The economic life of PACE-funded improvements, particularly in relation to the term of the PACE loan;
- Default rates of PACE and non-PACE loans based on populations with comparable borrower, loan and property characteristics; and
- Other subjects relating to PACE and the financial risks PACE programs pose to mortgage holders such as the Enterprises.

All study-related submissions should provide the complete study protocol; the date(s) the study was proposed, initiated, completed, and published or otherwise reported; all key assumptions; the sample size; the data; the results (including sensitivity of reported results to key assumptions); and any published report of the study. Study-related submissions should also identify the persons who developed, implemented, and published or otherwise reported the study, as well as the principal sources

of funding for the study. All data should be provided in a reasonably accessible computer-readable format, such as Microsoft Excel files.

Dated: January 19, 2012.

Edward J. DeMarco,
Acting Director, Federal Housing Finance Agency.

[FR Doc. 2012-1345 Filed 1-25-12; 8:45 am]

BILLING CODE 8070-01-P

DEPARTMENT OF THE TREASURY

Internal Revenue Service

26 CFR Part 301

[REG-208274-86]

RIN 1545-AJ93

Information Reporting by Passport Applicants

AGENCY: Internal Revenue Service (IRS), Treasury.

ACTION: Withdrawal of notice of proposed rulemaking; notice of proposed rulemaking.

SUMMARY: This document contains proposed regulations that provide information reporting rules for certain passport applicants. These regulations do not provide information reporting rules for individuals applying to become permanent residents (green card holders). This document also withdraws the notice of proposed rulemaking (57 FR 61373) published in the **Federal Register** on December 24, 1992.

DATES: Comments and requests for a public hearing must be received by April 25, 2012.

ADDRESSES: Send submissions to CC:PA:LPD:PR (REG-208274-86), Room 5205, Internal Revenue Service, P.O. Box 7604, Ben Franklin Station, Washington, DC 20044. Submissions may be hand-delivered Monday through Friday between the hours of 8 a.m. and 4 p.m. to CC:PA:LPD:PR (REG-208274-86), Courier's Desk, Internal Revenue Service, 1111 Constitution Avenue NW., Washington, DC, or sent electronically via the Federal eRulemaking Portal at <http://www.regulations.gov> (IRS REG-208274-86).

FOR FURTHER INFORMATION CONTACT: Concerning the proposed regulations, Lynn Dayan or Quyen Huynh at (202) 622-3880; concerning submissions of comments and requests for public hearing, Oluwafunmilayo Taylor, (202) 622-7180 (not toll-free numbers).

SUPPLEMENTARY INFORMATION:

Paperwork Reduction Act

The collections of information contained in this notice of proposed rulemaking have been submitted to the Office of Management and Budget for review in accordance with the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)) and, pending receipt and evaluation of public comments approved by the Office of Management and Budget under control number 1545-1359. Comments on the collections of information should be sent to the Office of Management and Budget, Attn: Desk Officer for the Department of the Treasury, Office of Information and Regulatory Affairs, Washington, DC 20503, with copies to the Internal Revenue Service, Attn: IRS Reports Clearance Officer, SE:W:CAR:MP:T:T:SP, Washington, DC 20224. Comments on the collection of information should be received by March 26, 2012. Comments are specifically requested concerning:

Whether the proposed collection of information is necessary for the proper performance of the duties of the Internal Revenue Service, including whether the information will have practical utility;

The accuracy of the estimated burden associated with the proposed collection of information;

How the quality, utility, and clarity of the information to be collected may be enhanced;

How the burden of complying with the proposed collection of information may be minimized, including through the application of automated collection techniques or other forms of information technology; and

Estimates of capital or start-up costs and costs of operation, maintenance, and purchase of service to provide information.

The collection of information in these proposed regulation is in § 301.6039E-1(b). The information is required to be provided by individuals who apply for a United States passport or a renewal of a United States passport. The information provided by passport applicants will be used by the IRS for tax compliance purposes.

Estimated total annual reporting burden: 1,213,354 hours.

Estimated average annual burden hours per respondent: four to ten minutes.

Estimated number of respondents: 12,133,537.

Estimated annual frequency of responses: one.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid control

Proposed Rules

Federal Register

Vol. 77, No. 17

Thursday, January 26, 2012

This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

DEPARTMENT OF ENERGY

10 CFR Part 900

RIN 1901-AB18

Coordination of Federal Authorizations for Electric Transmission Facilities

AGENCY: Office of Electricity Delivery and Energy Reliability, Department of Energy.

ACTION: Notice of extension of public comment period.

SUMMARY: This document announces that the period for submitting comments on the proposed rule for the coordination of Federal Authorizations for Electric Transmission Facilities has been extended until February 27, 2012.

DATES: DOE will accept comments, data, and information regarding the proposed coordination rule published December 13, 2011 (76 FR 77432) until February 27, 2012.

ADDRESSES: Any comments submitted must be identified as comments on the "Proposed 216(h) Regulations". Comments may be submitted using any of the following methods:

- *Federal eRulemaking Portal:* <http://www.regulations.gov>. Follow the instructions for submitting comments.
- *Email:* Brian.Mills@hq.doe.gov.

Include "Proposed 216(h) Regulations" in the subject line of the message.

- *Mail:* Brian Mills, Office of Electricity Delivery and Energy Reliability (OE-20), U.S. Department of Energy, 1000 Independence Avenue SW., Washington, DC 20585.

FOR FURTHER INFORMATION CONTACT:

Brian Mills, Office of Electricity Delivery and Energy Reliability (OE-20), U.S. Department of Energy, 1000 Independence Avenue SW., Washington, DC 20585, Phone (202) 586-8267, email Brian.Mills@hq.doe.gov, or Lot Cooke, Attorney-Advisor, U.S. Department of Energy, Office of the General Counsel, GC-76, 1000 Independence Avenue SW., Washington, DC 20585, Phone (202) 586-0503, email Lot.Cooke@hq.doe.gov.

SUPPLEMENTARY INFORMATION: On December 13, 2011, DOE published a proposed rule in the **Federal Register** (76 FR 77432) to amend its regulations for the timely coordination of Federal authorizations for proposed interstate electric transmission facilities pursuant to section 216(h) of the Federal Power Act (FPA). The proposed rule provided for the submission of comments by January 27, 2012. A commenter noted the significant interest of its members in the rulemaking and requested an extension of the comment period given the holidays and the need for its members to complete projects and reports for calendar year 2011.

DOE has determined that an extension of the public comment period is appropriate based on the foregoing reasons and is hereby extending the comment period. DOE will consider any comments received by February 27, 2012.

Issued in Washington, DC, on January 20, 2012.

Patricia A. Hoffman,

Assistant Secretary, Office of Electricity Delivery and Energy Reliability.

[FR Doc. 2012-1662 Filed 1-25-12; 8:45 am]

BILLING CODE 6450-01-P

FEDERAL HOUSING FINANCE AGENCY

12 CFR Part 1254

RIN 2590-AA53

Mortgage Assets Affected by PACE Programs

AGENCY: Federal Housing Finance Agency.

ACTION: Advance notice of proposed rulemaking; request for comments; Notice of intent to prepare environmental impact statement; request for scoping comments.

SUMMARY: The Federal Housing Finance Agency ("FHFA") hereby issues this Advance Notice of Proposed Rulemaking ("ANPR") concerning mortgage assets affected by Property Assessed Clean Energy ("PACE") programs and Notice of Intent ("NOI") to prepare an environmental impact statement ("EIS") under the National Environmental Policy Act ("NEPA") to address the potential environmental impacts of FHFA's proposed action.

The United States District Court for the Northern District of California issued a preliminary injunction ordering FHFA "to proceed with the notice and comment process" in adopting guidance concerning mortgages that are or could be affected by PACE programs. Specifically, the California District Court ordered FHFA to "cause to be published in the **Federal Register** an Advance Notice of Proposed Rulemaking relating to the statement issued by FHFA on July 6, 2010, and the letter directive issued by FHFA on February 28, 2011, that deal with property assessed clean energy (PACE) programs."

In response to and compliance with the California District Court's order, FHFA is seeking comment on whether the restrictions and conditions set forth in the July 6, 2010 Statement and the February 28, 2011 Directive should be maintained, changed, or eliminated, and whether other restrictions or conditions should be imposed. FHFA has appealed the California District Court's order to the U.S. Court of Appeals for the Ninth Circuit (the "Ninth Circuit"). Inasmuch as the California District Court's order remains in effect pending the outcome of the appeal, FHFA is proceeding with the publication of this ANPR and NOI pursuant to that order. The Ninth Circuit has stayed, pending the outcome of FHFA's appeal, the portion of the California District Court's Order requiring publication of a final rule. FHFA reserves the right to withdraw this ANPR and NOI should FHFA prevail in its appeal, and may in that situation continue to address the financial risks FHFA believes PACE programs pose to safety and soundness through means other than notice-and-comment rulemaking.

DATES: Written comments must be received on or before March 26, 2012.

ADDRESSES: You may submit your comments, identified by regulatory information number (RIN) 2590-AA53, by any of the following methods:

- *Federal eRulemaking Portal:* <http://www.regulations.gov>: Follow the instructions for submitting comments. If you submit your comment to the *Federal eRulemaking Portal*, please also send it by email to FHFA at RegComments@fhfa.gov to ensure timely receipt by FHFA. Please include "RIN 2590-AA53" in the subject line of the message.

- *Email*: Comments to Alfred M. Pollard, General Counsel may be sent by email to RegComments@fhfa.gov. Please include “RIN 2590-AA53” in the subject line of the message.

- *U.S. Mail, United Parcel Service, Federal Express, or Other Mail Service*: The mailing address for comments is: Alfred M. Pollard, General Counsel, Attention: Comments/RIN 2590-AA53, Federal Housing Finance Agency, Eighth Floor, 400 Seventh Street SW., Washington, DC 20024.

- *Hand Delivered/Courier*: The hand delivery address is: Alfred M. Pollard, General Counsel, Attention: Comments/RIN 2590-AA53, Federal Housing Finance Agency, Eighth Floor, 400 Seventh Street SW., Washington, DC 20024. The package should be logged at the Seventh Street entrance Guard Desk, First Floor, on business days between 9 a.m. and 5 p.m.

FOR FURTHER INFORMATION CONTACT:

Alfred M. Pollard, General Counsel, (202) 649-3050 (not a toll-free number), Federal Housing Finance Agency, Eighth Floor, 400 Seventh Street SW., Washington, DC 20024. The telephone number for the Telecommunications Device for the Hearing Impaired is (800) 877-8339.

SUPPLEMENTARY INFORMATION:

I. Comments

FHFA invites comments on all aspects of this ANPR and NOI. Commenters should identify by number, the question each of their comments addresses. Copies of all comments will be posted without change, including any personal information you provide, such as your name and address, on the FHFA Web site at <https://www.fhfa.gov>. In addition, copies of all comments received will be available for examination by the public on business days between the hours of 10 a.m. and 3 p.m. at the Federal Housing Finance Agency, Eighth Floor, 400 Seventh Street SW., Washington, DC 20024. To make an appointment to inspect comments, please call the Office of General Counsel at (202) 649-3804.

II. Background

A. FHFA’s Statutory Role and Authority as Regulator

FHFA is an independent federal agency created by the Housing and Economic Recovery Act of 2008 (HERA) to supervise and regulate the Federal National Mortgage Association (Fannie Mae), the Federal Home Loan Mortgage Corporation (Freddie Mac), (together, the Enterprises), and the Federal Home Loan Banks (the “Banks”). FHFA is the exclusive supervisory regulator of the Enterprises and the Banks. Both

Enterprises are presently in conservatorship under the direction of FHFA as Conservator. 12 U.S.C. 4501 *et seq.* Congress established FHFA in the wake of a national crisis in the housing market. A key purpose of HERA was to create a single federal regulator with all of the authority necessary to oversee Fannie Mae, Freddie Mac, and the Banks. 12 U.S.C. 4511(b)(2).

Fannie Mae and Freddie Mac operate in the secondary mortgage market. Accordingly, they do not directly lend funds to home purchasers, but instead buy mortgage loans from original lenders, thereby providing funds those entities can use to make additional loans. The Enterprises hold in their own portfolios a fraction of the mortgage loans they purchase. The Enterprises also securitize a substantial fraction of the mortgage loans they purchase, packaging them into pools and selling interests in the pools as mortgage-backed securities. Traditionally, the Enterprises guarantee nearly all of the mortgage loans they securitize. Together, the Enterprises own or guarantee more than \$5 trillion in residential mortgages.

FHFA’s “Director shall have general regulatory authority over each [Enterprise] * * *, and shall exercise such general regulatory authority * * * to ensure that the purposes of this Act, the authorizing statutes, and any other applicable law are carried out.” 12 U.S.C. 4511(b)(2). As regulator, FHFA is charged with ensuring that the Enterprises operate in a “safe and sound manner.” 12 U.S.C. 4513(a). FHFA is statutorily authorized “to exercise such incidental powers as may be necessary or appropriate to fulfill the duties and responsibilities of the Director in the supervision and regulation” of the Enterprises. 12 U.S.C. 4513(a)(2). FHFA’s Director is authorized to “issue any regulations or guidelines or orders as necessary to carry out the duties of the Director * * *.” *Id.* 4526(a). FHFA’s regulations are subject to notice-and-comment rulemaking under the Administrative Procedure Act.

B. FHFA’s Statutory Role and Authority as Conservator

HERA also authorizes the Director of FHFA to “appoint the Agency as conservator or receiver for a regulated entity * * * for the purpose of reorganizing, rehabilitating or winding up [its] affairs.” *Id.* 4617(a)(1), (2). On September 6, 2008, FHFA placed Fannie Mae and Freddie Mac into conservatorships. FHFA thus “immediately succeed[ed] to all rights, titles, powers, and privileges of the

shareholders, directors, and officers of the [Enterprises].” *Id.* 4617(b)(2)(B).

In its role as Conservator, FHFA may take any action “necessary to put the regulated entity into sound and solvent condition” or “appropriate to carry on the business of the regulated entity and preserve and conserve the assets and property of the regulated entity.” *Id.* 4617(b)(2)(D). The Conservator also may “take over the assets of and operate the regulated entity in the name of the regulated entity,” “perform all functions of the entity” consistent with the Conservator’s appointment, and “preserve and conserve the assets and property of the regulated entity.” *Id.* 4617(b)(2)(A), (B). The Conservator may take any authorized action “which the Agency determines is in the best interests of the regulated entity or the Agency.” *Id.* 4617(b)(2)(J). “The authority of the Director to take actions [as Conservator] shall not in any way limit the general supervisory and regulatory authority granted” by HERA. 12 U.S.C. 4511(c).

C. Issues Relating to PACE Programs That Are Relevant to FHFA’s Supervision and Direction of the Enterprises

PACE programs provide a means of financing certain kinds of home-improvement projects. Specifically, PACE programs permit local governments to provide financing to property owners for the purchase of energy-related home-improvement projects, such as solar panels, insulation, energy-efficient windows, and other products. Homeowners repay the amount borrowed, with interest, over a period of years through “contractual assessments” added to their property tax bill. Over the last three years, more than 25 states have passed legislation authorizing local governments to set up PACE-type programs. Such legislation leaves most program implementation and standards to local governmental bodies and provides no uniform requirements or enforcement mechanisms.

In most, but not all, states that have implemented PACE programs, the liens that result from PACE program loans have priority over mortgages, including pre-existing first mortgages.¹ In such programs, the PACE lender “steps ahead” of the mortgage holder (e.g., a Bank, Fannie Mae, or Freddie Mac) in

¹ In at least four states—Maine, New Hampshire, Oklahoma, and Vermont—legislation provides that the PACE lien does not subordinate a first mortgage on the subject property. FHFA understands that under legislation now pending in Connecticut, PACE programs in that state also would not subordinate first mortgages.

priority of its claim against the collateral, and such liens “run” with the property. As a result, a mortgagee foreclosing on a property subject to a PACE lien must pay off any accumulated unpaid PACE assessments (*i.e.*, past-due payments) and remains responsible for the principal and interest payments that are not yet due (*i.e.*, future payments) on the PACE obligation. Likewise, if a home is sold before the homeowner repays the city or county, the purchaser of the home assumes the obligation to pay the remainder. The mortgage holder is also at risk in the event of foreclosure for any diminution in the value of the property caused by the outstanding lien or the retrofit project, which may or may not be attractive to potential purchasers. Also, the homeowner’s assumption of this new obligation may itself increase the risk that the homeowner will become delinquent or default on other financial obligations, including any mortgage obligations.²

Typically, PACE programs serve as a channel through which private-sector capital flows through the local government to the homeowner-borrower (or the homeowner-borrower’s contractors). While PACE programs vary in the particular mechanisms they use to raise capital, in many instances private investors provide the capital by purchasing bonds secured by the payments that homeowner-borrowers make on their PACE obligations. From the capital provider’s perspective, one advantage of channeling the funding through a local government, rather than lending directly to the homeowner-borrower or channeling the funds through a private enterprise, is that the local government is able to use the property-tax assessment system as the vehicle for repayment. Because of the “lien-priming” feature of most PACE programs, the capital provider effectively “steps ahead” of all other private land-secured lenders (including mortgage lenders) in priority, thereby minimizing the financial risk to the capital provider while downgrading the priority of first and second mortgages, and of any other property-secured financial obligation.

Proponents of PACE programs have analogized the obligations to repay PACE loans to traditional tax assessments. However, unlike traditional tax assessments, PACE loans are voluntary—homeowners opt in,

²In many PACE programs, the allowable amount of a loan is based on assessed property value and may not consider the borrower’s ability to repay. States have considered permitting loan levels of 10% to 40% of the assessed value of the underlying property.

submit applications, and contract with the city or county’s PACE program to obtain the loan. Each participating property owner controls the use of the funds, selects the contractor who will perform the energy retrofit, owns the energy retrofit fixtures and must repair the fixtures should they become inoperable, including during the time the PACE loan remains outstanding. Each locality sets its own terms and requirements for homeowner and project eligibility for PACE loans; no uniform national standards exist. Nothing in PACE requires that local governments adopt and implement nationally uniform financial underwriting standards, such as minimum total loan-to-value ratios that take into account either: (i) Total debt or other liens on the property; or (ii) the possibility of subsequent declines in the value of the property. Many PACE programs also do not employ standard personal creditworthiness requirements, such as limits on FICO score or total debt-to-income ratio, although some include narrower requirements, such as that the homeowner-borrower be current on the mortgage and property taxes and not have a recent bankruptcy history.

Some local PACE programs communicate to homeowners that incurring a PACE obligation may violate the terms of their mortgage documents.³ Similarly, some cities and counties provide forms that participants can use to obtain the lender’s consent or acknowledgment prior to participation.⁴

State legislation authorizing PACE programs gained notoriety in 2008. As PACE programs were being considered by more states, FHFA began to evaluate their implementations and potential impact on the portfolios of FHFA-regulated entities. On June 18, 2009, FHFA issued a letter and background paper raising concerns about PACE programs that retroactively created first liens. To discuss the risks to lenders and the Enterprises as well as borrowers, FHFA met over the next year with PACE stakeholders, other federal agencies, and state and local authorities around the country.

On May 5, 2010, in response to continuing questions about PACE programs, Fannie Mae and Freddie Mac

³ See, e.g., Yucaipa Loan Application at 2–3, 10, http://www.yucaipa.org/cityPrograms/EIP/PDF_Files/Application.pdf (last visited Jan. 12, 2012); Sonoma Application at 2, <http://www.sonomacountyenergy.org/lower.php?url=reference-forms-new&catid=603> (document at “Application” link) (last visited Jan. 12, 2012).

⁴ Sonoma Lender Acknowledgement, <http://www.sonomacountyenergy.org/lower.php?url=reference-forms-new&catid=606> (pages 4–7 of document at “Lender Info and Acknowledgement” link) (last visited Jan. 12, 2012).

issued advisories (“Advisories”) to lenders and servicers of mortgages owned or guaranteed by the Enterprises.⁵ The May 5, 2010 Advisories referred to Fannie Mae’s and Freddie Mac’s jointly developed master uniform security instruments (“USIs”), which prohibit liens senior to that of the mortgage.⁶

Shortly after the May 5, 2010 Advisories were issued, FHFA received a number of inquiries seeking FHFA’s position.⁷ On July 6, 2010, FHFA issued the Statement, which provides:

[T]he 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. * * *

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. * * *

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.⁸

The Statement directed that the May 5, 2010 Advisories “remain in effect” and that the Enterprises “should undertake prudential actions to protect their operations,” including: (i) Adjusting loan-to-value ratios; (ii) ensuring that loan covenants require approval/consent for any PACE loans; (iii) tightening borrower debt-to-income ratios; and, (iv) ensuring that mortgages on properties with PACE liens satisfy all applicable federal and state lending regulations. However, FHFA directed these actions on a prospective basis only, directing in the Statement that any prohibition against such liens in the Enterprises’ USIs be waived as to PACE obligations already in existence as of July 6, 2010.

On February 28, 2011, the Conservator issued a directive stating the Agency’s view that PACE liens

⁵ Fannie Mae Lender Letter LL–2010–06 (May 5, 2010), available at <https://www.efanniemae.com/sf/guides/ssg/annltrs/pdf/2010/111006.pdf>; Freddie Mac Industry Letter (May 5, 2010), available at <http://www.freddiemac.com/sell/guide/bulletins/pdf/iltr050510.pdf>.

⁶ The relevant provision appears in Section 4. See, e.g., Freddie Mac Form 3005, California Deed of Trust, available at <http://www.freddiemac.com/uniform/doc/3005-CaliforniaDeedofTrust.doc>; Fannie Mae Form 3005, California Deed of Trust, available at <https://www.efanniemae.com/sf/formsdocs/documents/secinstruments/doc/3005w.doc>.

⁷ Letter from Edmund G. Brown, Jr. to Edward DeMarco (May 17, 2010); Letter from Edmund G. Brown, Jr. to Edward DeMarco (June 22, 2010).

⁸ FHFA Statement on Certain Energy Retrofit Loan Programs (July 6, 2010), available at <http://www.fhfa.gov/webfiles/15884/PACESTMT7610.pdf>.

“present significant risks to certain assets and property of the Enterprises—mortgages and mortgage-related assets—and pose unusual and difficult risk management challenges.” FHFA thus directed the Enterprises to “continue to refrain from purchasing mortgage loans secured by properties with outstanding first-lien PACE obligations.” *Id.* In all its statutory capacities, FHFA is empowered to act decisively to avoid risk to the Enterprises. In conservatorship, with taxpayer support, this obligation is emphasized by express Congressional directions on conservator duties.

Several parties brought legal challenges to the process by which FHFA issued the July 6, 2010 Statement and the February 28, 2011 Directive, as well as to their substance. The United States District Courts for the Northern District of Florida, the Southern District of New York, and the Eastern District of New York all dismissed lawsuits presenting such challenges. The United States District Court for the Northern District of California (the “California District Court”), however, has allowed such a lawsuit to proceed and has issued a preliminary injunction ordering FHFA “to proceed with the notice and comment process” in adopting guidance concerning mortgages that are or could be affected by PACE programs. Specifically, the California District Court ordered FHFA to “cause to be published in the **Federal Register** an Advance Notice of Proposed Rulemaking relating to the statement issued by FHFA on July 6, 2010, and the letter directive issued by FHFA on February 28, 2011, that deal with property assessed clean energy (PACE) programs.” The California District Court further ordered that “[i]n the Advance Notice of Proposed Rulemaking, FHFA shall seek comments on, among other things, whether conditions and restrictions relating to the regulated entities’ dealing in mortgages on properties participating in PACE are necessary; and, if so, what specific conditions and/or restrictions may be appropriate.” The California District Court also ordered that “[t]he comment period shall not be less than 60 days.” The California District Court neither invalidated nor required FHFA to withdraw the July 6, 2010 Statement or the February 28, 2011 Directive, both of which remain in effect.

In response to and compliance with the California District Court’s order, FHFA is seeking comment on whether the restrictions and conditions set forth in the July 6, 2010 Statement and the February 28, 2011 Directive should be maintained, changed, or eliminated, and

whether other restrictions or conditions should be imposed. FHFA has appealed the California District Court’s order to the U.S. Court of Appeals for the Ninth Circuit (the “Ninth Circuit”). Inasmuch as the California District Court’s order remains in effect pending the outcome of the appeal, FHFA is proceeding with the publication of this ANPR and NOI pursuant to that order. The Ninth Circuit has stayed, pending the outcome of FHFA’s appeal, the portion of the California District Court’s Order requiring publication of a final rule. FHFA reserves the right to withdraw this ANPR and NOI should FHFA prevail in its appeal, and may in that situation continue to address the financial risks FHFA believes PACE programs pose to safety and soundness through means other than notice-and-comment rulemaking.

This ANPR and NOI reviews FHFA’s statutory authority as the federal supervisory regulator of the Enterprises, reviews FHFA’s statutory role and authority as the Conservator of each Enterprise, summarizes issues relating to PACE that are relevant to FHFA’s supervision and direction of the Enterprises, suggests subjects relating to PACE on which FHFA might issue a proposed rule or otherwise provide guidance to the Enterprises within the governing statutory framework, and invites comments from the public.

III. Issues as to Which FHFA Seeks Comment

In light of the California District Court’s order and the background information provided above, FHFA seeks comments on the following issues regarding the Enterprises’ dealing in mortgages on properties that participate in PACE programs or that could participate in PACE programs.

A. Conditions and Restrictions Relating to PACE

The California District Court called upon FHFA to seek comments on whether conditions and restrictions relating to the regulated entities’ dealing in mortgages on properties participating in PACE programs are necessary; and, if so, what specific conditions and/or restrictions may be appropriate. In the July 6, 2010 Statement and the February 28, 2011 Directive, FHFA imposed certain conditions and restrictions relating to the Enterprises’ dealing in mortgages on properties participating in PACE programs. FHFA thus will take comments on whether those restrictions and conditions should be maintained, changed, or eliminated, and whether other restrictions or conditions should be imposed. Accordingly, FHFA

requests comment on the following question:

Question 1: Are conditions and restrictions relating to FHFA-regulated entities’ dealings in mortgages on properties participating in PACE programs necessary? If so, what specific conditions and/or restrictions may be appropriate?

B. Financial Risk to the Enterprises Resulting From Subordination of Mortgage Security Interests to PACE Liens

FHFA is concerned that PACE programs that involve subordination of any mortgage holder’s security interest in the underlying property to that of the provider of PACE financing may increase the financial risk borne by the Enterprises as holders of mortgages on properties subject to PACE obligations, as well as mortgage-backed securities based on such mortgages. FHFA believes that any such increase in the financial risk on mortgages and mortgage-backed securities already in the Enterprise portfolios, especially if imposed without Enterprise consent, may present significant safety and soundness concerns. In light of that concern, FHFA requests comment on the following three questions regarding financial risks to the Enterprises relating to the subordination of mortgage security interests to PACE liens:

Question 2: How does the lien-priming feature of first-lien PACE obligations affect the financial risks borne by holders of mortgages affected by PACE obligations or investors in mortgage-backed securities based on such mortgages? To the extent that the lien-priming feature of first-lien PACE obligations increases any financial risk borne by holders of mortgages affected by PACE obligations or investors in mortgage-backed securities based on such mortgages, how and at what cost could such parties insulate themselves from such increased risk?

Question 3: How does the lien-priming feature of first-lien PACE obligations affect any financial risk that is borne by holders of mortgages affected by PACE obligations or investors in mortgage-backed securities based on such mortgages and that relates to any of the following:

- The total amount of debt secured by the subject property relative to the value of the subject property (*i.e.*, Combined Loan to Value Ratio for the property or other measures of leverage);
- The amount of funds available to pay for energy-related home-improvement projects after the subtraction of administrative fees or any other program expenses charged or

deducted before funds become available to pay for an actual PACE-funded project (FHFA understands such fees and expenses can consume up to 10% or more of the funds a borrower could be obligated to repay under some PACE programs);

- The timing and nature of advancements in energy-efficiency technology;
- The timing and nature of changes in potential homebuyers' preferences regarding particular kinds of energy-efficiency projects;
- The timing, direction, and magnitude of changes in energy prices; and,
- The timing, direction, and magnitude of changes of property values, including the possibility of downward adjustments in value?

Question 4: To the extent that the lien-priming feature of first-lien PACE obligations increases any financial risk that is borne by holders of mortgages affected by PACE obligations or investors in mortgage-backed securities based on such mortgages and that relates to any of the following, how and at what cost could such parties insulate themselves from that increase in risk:

- The total amount of debt secured by the subject property relative to the value of the subject property (*i.e.*, Combined Loan to Value Ratio for the property or other measures of leverage);
- The amount of funds available to pay for energy-related home-improvement projects after the subtraction of administrative fees or any other programs expenses charged deducted before funds become available to pay for an actual PACE funded project (FHFA understands such fees and expenses can consume up to 10% or more of the funds a borrower could be obligated to repay under some PACE programs);
- The timing and nature of advancements in energy-efficiency technology;
- The timing and nature of changes in potential homebuyer preferences regarding particular kinds of energy-efficiency projects;
- The timing, direction, and magnitude of changes in energy prices; and,
- The timing, direction, and magnitude of changes of property values, including the possibility of downward adjustments in value?

C. PACE and the Market for Home-Improvement Financing

FHFA is concerned that the risks first-lien PACE programs present to mortgage holders may be unnecessary or unreasonable in light of other market

options for financing home-improvement projects relating to energy efficiency that do not subordinate mortgage holders' security interests. In light of that concern, FHFA requests comment on the following four questions relating to PACE programs and the market for home-improvement financing:

Question 5: What alternatives to first-lien PACE loans (*e.g.*, self-financing, bank financing, leasing, contractor financing, utility company "on-bill" financing, grants, and other government benefits) are available for financing home-improvement projects relating to energy efficiency? On what terms? Which do and which do not share the lien-priming feature of first-lien PACE obligations? What are the relative advantages and disadvantages of each, from the perspective of (i) The current and any future homeowner-borrower, (ii) the holder of an interest in any mortgage on the subject property, and (iii) the environment?

Question 6: How does the effect on the value of the underlying property of an energy-related home-improvement project financed through a first-lien PACE program compare to the effect on the value of the underlying property that would flow from the same project if financed in any other manner?

Question 7: How does the effect on the environment of an energy-related home-improvement project financed through a first-lien PACE program compare to the effect on the environment that would flow from the same project if financed in any other manner?

Question 8: Do first-lien PACE programs cause the completion of energy-related home improvement projects that would not otherwise have been completed, as opposed to changing the method of financing for projects that would have been completed anyway? What, if any, objective evidence exists on this point?

D. PACE and Protections for the Homeowner-Borrower

FHFA is concerned that PACE programs may not incorporate features that adequately protect the interests of the homeowner-borrower, and that the lack of adequate protection could result in homeowner-borrowers undertaking PACE projects or selecting PACE financing terms that increase the financial risks borne by mortgage holders such as the Enterprises. In light of that concern, FHFA requests comment on the following five questions relating to PACE and protections for the homeowner-borrower:

Question 9: What consumer protections and disclosures do first-lien PACE programs mandate for participating homeowners? When and how were those protections put into place? How, if at all, do the consumer protections and disclosures that local first-lien PACE programs provide to participating homeowners differ from the consumer protections and disclosures that non-PACE providers of home-improvement financing provide to borrowers? What consumer protection enforcement mechanisms do first-lien PACE programs have?

Question 10: What, if any, protections or disclosures do first-lien PACE programs provide to homeowner-borrowers concerning the possibility that a PACE-financed project will cause the value of their home, net of the PACE obligation, to decline? What is the effect on the financial risk borne by the holder of any mortgage interest in a subject property if PACE programs do not provide any such protections or disclosures?

Question 11: What, if any, protections or disclosures do first-lien PACE programs provide to homeowner-borrowers concerning the possibility that the utility-cost savings resulting from a PACE-financed project will be less than the cost of servicing the PACE obligation? What is the effect on the financial risk borne by the holder of any mortgage interest in a subject property if first-lien PACE programs do not provide any such protections or disclosures?

Question 12: What, if any, protections or disclosures do first-lien PACE programs provide to homeowner-borrowers concerning the possibility that over the service life of a PACE-financed project, the homeowner-borrower may face additional costs (such as costs of insuring, maintaining, and repairing equipment) beyond the direct cost of the PACE obligation? What is the effect on the financial risk borne by the holder of any mortgage interest in a subject property if first-lien PACE programs do not provide any such protections or disclosures?

Question 13: What, if any, protections or disclosures do first-lien PACE programs provide to homeowner-borrowers concerning the possibility that subsequent purchasers of the subject property will reduce the amount they would pay to purchase the property by some or all of the amount of any outstanding PACE obligation? What is the effect on the financial risk borne by the holder of any mortgage interest in a subject property if first-lien PACE programs do not provide any such protections or disclosures?

E. PACE and Underwriting Standards

FHFA is concerned that first-lien PACE programs may not incorporate underwriting standards that adequately ensure that the homeowner-borrower will be able to repay the obligation, and that as a result homeowner-borrowers may undertake PACE projects, or select PACE financing terms, that adversely affect the homeowner-borrower's ability to repay other debt, including mortgage debt. In light of that concern, FHFA requests comment on the following three questions relating to PACE and underwriting standards:

Question 14: How do the credit underwriting standards and processes of PACE programs compare to that of other providers of Home-improvement financing, such as banks? Do they consider, for example: (i) Borrower creditworthiness, including an assessment of total indebtedness in relation to borrower income, consistent with national standards; (ii) total loan-to-value ratio of all secured loans on the property combined, consistent with national standards; and (iii) appraisals of property value, consistent with national standards?

Question 15: What factors do first-lien PACE programs consider in determining whether to provide PACE financing to a particular homeowner-borrower seeking funding for a particular project eligible for PACE financing? What analytic tools presently exist to make that determination? How, if at all, have the methodologies, metrics, and assumptions incorporated into such tools been tested and validated?

Question 16: What factors and information do first-lien PACE programs gather and consider in determining whether a homeowner-borrower will have sufficient income or cash flow to service the PACE obligation in addition to the homeowner-borrower's pre-existing financial obligation? What analytic tools presently exist to make that determination? How, if at all, have the methodologies, metrics, and assumptions incorporated into such tools been tested and validated?

F. Considerations Relating to FHFA's Intent To Prepare an EIS

FHFA intends to prepare an EIS to address the potential environmental impacts of any proposed rule that FHFA may issue following its consideration of the comments submitted in response to this ANPR and NOI. To that end, this ANPR and NOI initiates the NEPA scoping process to identify the environmental issues and reasonable alternatives to be examined in the EIS, and requests comments regarding those

and other matters related to the scope of the EIS ("EIS Scoping Comments").

To ensure that all relevant environmental issues and reasonable alternatives are addressed, FHFA invites and encourages EIS Scoping Comments. Interested parties are encouraged to submit their EIS Scoping Comments within a 60-day scoping period, which begins with publication of this notice. EIS Scoping Comments received after the end of the scoping period will be considered to the extent practicable. You may submit EIS Scoping Comments, identified by regulatory information number (RIN) 2590-AA53 and marked "EIS Scoping Comments," by any of the methods identified in the **ADDRESSES** section above. Submissions may include both EIS Scoping Comments and other comments, but the EIS Scoping Comments must be separately identified.

1. Proposed Action

FHFA's Proposed Action would direct the Enterprises not to purchase any mortgage that is subject to a first-lien PACE obligation or that could become subject to first-lien PACE obligations without the consent of the mortgage holder. FHFA believes that the Proposed Action is reasonable and necessary to limit, in the interest of safety and soundness, the financial risks that could be involuntarily borne by the Enterprises, thereby preserving and conserving the Enterprises' assets and property while protecting American taxpayers from further loss.

2. No Action Alternative

As required by the Council on Environmental Quality regulations that implement NEPA, the EIS will analyze and present the potential environmental impacts associated with reasonable alternatives, including the No Action Alternative.

The No Action Alternative is to withdraw the July 6, 2010 Statement and the February 28, 2011 Directive. This would allow the Enterprises to purchase mortgage loans secured by properties with outstanding first-lien PACE and PACE-like obligations.

3. Other Alternatives

In addition to the Proposed Action and No Action alternatives described above, FHFA invites comments on reasonable alternatives that would reduce or avoid known or potential adverse environmental impacts associated with the proposed action while ensuring that the Enterprises operate in a safe and sound manner. Accordingly, FHFA requests that for each reasonable alternative suggested,

the commenter explain the positive, neutral or negative environmental impacts, as well as potential changes in the level of financial risk borne by holders of any interest in a mortgage on PACE-affected properties, associated with the suggested alternative. Accordingly, FHFA specifically requests comment on the following question:

Question 17: What specific alternatives to FHFA's existing statements about PACE should FHFA consider? For each alternative, as compared to the Proposed Action, what positive or negative environmental effects would result and how would the level of financial risk borne by holders of any interest in a mortgage on PACE-affected properties change?

4. Issues and Environmental Resources To Be Examined

To facilitate the scoping process, FHFA has identified a preliminary approach and list of issues and environmental resources that it may consider in the EIS. This list is not intended to be all-inclusive or to predetermine the scope of the EIS, but is intended to serve as a starting point for public comment.

- FHFA intends to develop scenarios (high, medium, and low) that describe three potential levels of uptake of PACE program loans by homeowners (irrespective of the Agency's action). These scenarios would be developed at the regional level and would make assumptions on the types of home improvement projects (e.g., home insulation, solar panels, geothermal energy units, etc.) that could be installed. The "high" scenario would assume the potential for a high level of uptake of PACE projects by homeowners. The "medium" and "low" scenarios would assume medium and low levels of uptake. FHFA invites comment on how these scenarios should be developed.

- Potential effects of the Proposed Action and alternatives on the uptake of PACE home improvement projects will be considered. For each alternative analyzed in detail in the EIS, FHFA would estimate PACE project implementation for each of the scenarios listed above and then compare these estimates across the alternatives.

- Using assumptions on the types of home improvement projects that could be implemented, FHFA would estimate the potential energy and water consumption savings associated with each scenario at the regional level for each alternative.

- FHFA proposes to analyze the potential direct, indirect, and cumulative environmental impacts of

the proposed action and alternatives for the following resource areas: Greenhouse gas emissions; climate change; air pollutant emissions (including Clean Air Act criteria pollutant emissions); human health; water conservation; cultural and historic resources; and disproportionately high and adverse impacts to low-income and minority populations (environmental justice).

IV. Request for Comments

FHFA invites comments on all of the issues and questions discussed above, and will consider all comments in developing any proposed rule that FHFA may issue concerning the Enterprises' dealing in mortgages on properties participating in PACE programs. As to all questions enumerated above, commenters should provide supporting data and documentation for each of their responses, as these will assist FHFA in its consideration of comments.

Studies addressing relevant aspects of PACE programs may be submitted for the agency's consideration. FHFA is interested in studies analyzing:

- The effect of PACE-funded improvements on the value of the underlying property, including differential effects over time and across markets;
- The comparative costs of PACE programs with other means of financing such as home equity loans, refinance transactions, and leasing programs;
- Payback periods for projects eligible for PACE funding, considering costs, energy savings, and risks (including risk of changes in energy pricing or in the level of subsidies or tax credits available);
- The economic life of PACE-funded improvements, particularly in relation to the term of the PACE loan;
- Default rates of PACE and non-PACE loans based on populations with comparable borrower, loan and property characteristics; and
- Other subjects relating to PACE and the financial risks PACE programs pose to mortgage holders such as the Enterprises.

All study-related submissions should provide the complete study protocol; the date(s) the study was proposed, initiated, completed, and published or otherwise reported; all key assumptions; the sample size; the data; the results (including sensitivity of reported results to key assumptions); and any published report of the study. Study-related submissions should also identify the persons who developed, implemented, and published or otherwise reported the study, as well as the principal sources

of funding for the study. All data should be provided in a reasonably accessible computer-readable format, such as Microsoft Excel files.

Dated: January 19, 2012.

Edward J. DeMarco,
Acting Director, Federal Housing Finance Agency.

[FR Doc. 2012-1345 Filed 1-25-12; 8:45 am]

BILLING CODE 8070-01-P

DEPARTMENT OF THE TREASURY

Internal Revenue Service

26 CFR Part 301

[REG-208274-86]

RIN 1545-AJ93

Information Reporting by Passport Applicants

AGENCY: Internal Revenue Service (IRS), Treasury.

ACTION: Withdrawal of notice of proposed rulemaking; notice of proposed rulemaking.

SUMMARY: This document contains proposed regulations that provide information reporting rules for certain passport applicants. These regulations do not provide information reporting rules for individuals applying to become permanent residents (green card holders). This document also withdraws the notice of proposed rulemaking (57 FR 61373) published in the **Federal Register** on December 24, 1992.

DATES: Comments and requests for a public hearing must be received by April 25, 2012.

ADDRESSES: Send submissions to CC:PA:LPD:PR (REG-208274-86), Room 5205, Internal Revenue Service, P.O. Box 7604, Ben Franklin Station, Washington, DC 20044. Submissions may be hand-delivered Monday through Friday between the hours of 8 a.m. and 4 p.m. to CC:PA:LPD:PR (REG-208274-86), Courier's Desk, Internal Revenue Service, 1111 Constitution Avenue NW., Washington, DC, or sent electronically via the Federal eRulemaking Portal at <http://www.regulations.gov> (IRS REG-208274-86).

FOR FURTHER INFORMATION CONTACT: Concerning the proposed regulations, Lynn Dayan or Quyen Huynh at (202) 622-3880; concerning submissions of comments and requests for public hearing, Oluwafunmilayo Taylor, (202) 622-7180 (not toll-free numbers).

SUPPLEMENTARY INFORMATION:

Paperwork Reduction Act

The collections of information contained in this notice of proposed rulemaking have been submitted to the Office of Management and Budget for review in accordance with the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)) and, pending receipt and evaluation of public comments approved by the Office of Management and Budget under control number 1545-1359. Comments on the collections of information should be sent to the Office of Management and Budget, Attn: Desk Officer for the Department of the Treasury, Office of Information and Regulatory Affairs, Washington, DC 20503, with copies to the Internal Revenue Service, Attn: IRS Reports Clearance Officer, SE:W:CAR:MP:T:T:SP, Washington, DC 20224. Comments on the collection of information should be received by March 26, 2012. Comments are specifically requested concerning:

Whether the proposed collection of information is necessary for the proper performance of the duties of the Internal Revenue Service, including whether the information will have practical utility;

The accuracy of the estimated burden associated with the proposed collection of information;

How the quality, utility, and clarity of the information to be collected may be enhanced;

How the burden of complying with the proposed collection of information may be minimized, including through the application of automated collection techniques or other forms of information technology; and

Estimates of capital or start-up costs and costs of operation, maintenance, and purchase of service to provide information.

The collection of information in these proposed regulation is in § 301.6039E-1(b). The information is required to be provided by individuals who apply for a United States passport or a renewal of a United States passport. The information provided by passport applicants will be used by the IRS for tax compliance purposes.

Estimated total annual reporting burden: 1,213,354 hours.

Estimated average annual burden hours per respondent: four to ten minutes.

Estimated number of respondents: 12,133,537.

Estimated annual frequency of responses: one.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid control

INDEX OF AUTHORITIES FOR COMMENTS IN RIN 2590-AA52

Listed in order of citation

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3. Freddie Mac, Bulletin: Mortgages Secured By Properties With An Outstanding Property Assessed Clean Energy (PACE) Obligation (Aug. 31, 2010), available at <http://www.freddiemac.com/sell/guide/bulletins/pdf/bl1020.pdf>.
4. Letter from Alfred M. Pollard, FHFA (Feb. 28, 2011) to General Counsels of Fannie Mae and Freddie Mac Re: PACE Programs. On file with author.
5. *People of State of California ex rel. Harris v. Federal Housing Finance Agency*, 2011 U.S. Dist. LEXIS 96235 (N.D. Cal. Aug. 26, 2011).
6. *People of State of California v. Federal Housing Finance Agency*, Order Granting Plaintiffs' Cross-Motion for Summary Judgment, Docket No. 168, Document 194, at *38 (Aug. 9, 2012).
7. Federal Housing Finance Agency, Mortgage Assets Affected by PACE Programs, RIN 2590-AA53, 77 Fed. Reg. 3959 (Jan. 26, 2012).
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11. 5 U.S.C. §706(2)(A).
12. *Motor Veh. Mfrs. Ass'n v. State Farm Ins.*, 463 U.S. 29 (1983).



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14. Cal. Pub. Res. Code §§ 26500-26654 (West 1997).
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18. *German Sav. & Loan Soc'y v. Ramish*, 138 Cal. 120 (1902).
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21. California Assembly Bill 811 (Cal. Stats. 2008, ch. 159).
22. California Office of Emergency Services, Bay Area Regional Earthquake Preparedness Project, Seismic Retrofit Incentive Programs: A Handbook for Local Governments, Part Six 47-48 (1992), available at <http://abag.ca.gov/bayarea/eqmaps/incentives/>.
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24. Ben Hoen, et. al., *An Analysis of the Effects of Residential Photovoltaic Energy Systems on Home Sales Prices in California*, Lawrence Berkeley National Laboratory (April 2011), available at <http://newscenter.lbl.gov/news-releases/2011/04/21/bright-spot-for-solar/>.
25. Bryan Bloom, et. al., *Valuing Green Home Designs: A Study of Energy Star Homes*, 3 Journal of Sustainable Real Estate, No. 1 at 109 (2011), available at http://www.costar.com/uploadedFiles/JOSRE/JournalPdfs/06.109_126.pdf.
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112TH CONGRESS
1ST SESSION

H. R. 2599

To prevent Fannie Mae, Freddie Mac, and other Federal residential and commercial mortgage lending regulators from adopting policies that contravene established State and local property assessed clean energy laws.

IN THE HOUSE OF REPRESENTATIVES

JULY 20, 2011

Ms. HAYWORTH (for herself, Mr. THOMPSON of California, Mr. DANIEL E. LUNGREN of California, Mr. SENSENBRENNER, Mr. SESSIONS, Mr. FLORES, Mr. COLE, Mr. HANNA, Mr. DOLD, Mr. MANZULLO, Mrs. CAPPS, Ms. WOOLSEY, Mr. PERLMUTTER, Ms. MATSUI, and Mr. POLIS) introduced the following bill; which was referred to the Committee on Financial Services

A BILL

To prevent Fannie Mae, Freddie Mac, and other Federal residential and commercial mortgage lending regulators from adopting policies that contravene established State and local property assessed clean energy laws.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “PACE Assessment
5 Protection Act of 2011”.

1 **SEC. 2. PURPOSE.**

2 It is the purpose of this Act to ensure that those
3 PACE programs which incorporate prudent programmatic
4 safeguards to protect the interest of mortgage holders and
5 property owners remain viable as a potential avenue for
6 States and local governments to achieve the many public
7 benefits associated with energy efficiency, water efficiency,
8 and renewable energy retrofits. In addition, it is essential
9 that the power and authority of State and local govern-
10 ments to exercise their longstanding and traditional pow-
11 ers to levy taxes for public purposes not be impeded.

12 **SEC. 3. DEFINITIONS.**

13 For purposes of this Act the following definitions
14 apply:

15 (1) The term “local government” includes coun-
16 ties, cities, boroughs, towns, parishes, villages, dis-
17 tricts, and other political subdivisions authorized
18 under State laws to establish PACE programs.

19 (2) The term “PACE agreement” means an
20 agreement between a local government and a prop-
21 erty owner detailing the terms of financing for a
22 PACE improvement.

23 (3) The term “PACE assessment” means a tax
24 or assessment levied by a local government to pro-
25 vide financing for PACE improvements.

1 (4) The term “PACE improvements” means
2 qualified clean energy improvements, qualified en-
3 ergy conservation and efficiency improvements, and
4 qualified water conservation and efficiency improve-
5 ments.

6 (5) The term “PACE lien” means a lien secur-
7 ing a PACE assessment, which may be senior to the
8 lien of pre-existing purchase money mortgages on
9 the same property subject to the PACE lien.

10 (6) The term “PACE program” means a pro-
11 gram implemented by a local government under
12 State law to provide financing for PACE improve-
13 ments by levying PACE assessments.

14 (7) The term “residential property” means a
15 property with up to 4 private residences.

16 (8) The term “non-residential property” means
17 private property that is—

18 (A) not used for residential purposes; or

19 (B) residential property with 5 or more
20 residences.

21 (9) The term “clean energy improvements”
22 means any system on privately owned property for
23 producing electricity for, or meeting heating, cooling,
24 or water heating needs of the property, using renew-
25 able energy sources, combined heat and power sys-

1 tems, or energy systems using wood biomass (but
2 not construction and demolition waste) or natural
3 gas. Such improvements include solar photovoltaic,
4 solar thermal, wood biomass, wind, and geothermal
5 systems. Such term includes the reasonable costs of
6 a study undertaken by a property owner to analyze
7 the feasibility of installing any of the improvements
8 described in this paragraph and the cost of a war-
9 ranty or insurance policy for such improvements.

10 (10) The term “energy conservation and effi-
11 ciency improvements” means measures to reduce
12 consumption, through conservation or more efficient
13 use, of electricity, fuel oil, natural gas, propane, or
14 other forms of energy by the property, including air
15 sealing, installation of insulation, installation of
16 heating, cooling, or ventilation systems, building
17 modification to increase the use of daylighting, re-
18 placement of windows, installation of energy controls
19 or energy recovery systems, installation of building
20 management systems, and installation of efficient
21 lighting equipment, provided that such improve-
22 ments are permanently affixed to the property. Such
23 term includes the reasonable costs of an audit un-
24 dertaken by a property owner to identify potential
25 energy savings that could be achieved through instal-

1 lation of any of the improvements described in this
2 paragraph.

3 (11) The term “water conservation and effi-
4 ciency improvements” means measures to reduce
5 consumption, through conservation or more efficient
6 use of water by the property, including installation
7 of low-flow toilets and showerheads, installation of
8 timer or timing system for hot water heaters, and
9 installation of rain catchment systems.

10 (12) The term “property owner” means the
11 owner of record of real property that is subject to
12 a PACE assessment, whether such property is zoned
13 or used for residential, commercial, industrial, or
14 other uses.

15 (13) The term “qualified” means, with respect
16 to PACE improvements, that the improvements meet
17 the criteria specified in section 5.

18 **SEC. 4. TREATMENT OF PACE PROGRAMS BY FNMA AND**

19 **FHLMC.**

20 (a) LENDER GUIDANCE.—The Director of the Fed-
21 eral Housing Finance Agency, acting in the Director’s
22 general supervisory capacity, shall direct the Federal Na-
23 tional Mortgage Association and the Federal Home Loan
24 Mortgage Corporation to—

1 (1) issue guidance, within 30 days after the
2 date of enactment of this Act, providing that the
3 levy of a PACE assessment and the creation of a
4 PACE lien do not constitute a default on any loan
5 secured by a uniform instrument of Federal Na-
6 tional Mortgage Association or Federal Home Loan
7 Mortgage Corporation and do not trigger the exer-
8 cise of remedies with respect to any provision of
9 such uniform security instrument if the PACE as-
10 sessment and the PACE lien meet the requirements
11 of section 5;

12 (2) rescind any prior issued guidance or Selling
13 and Servicing Guides that are inconsistent with the
14 provisions of paragraph (1); and

15 (3) take all such other actions necessary to ef-
16 fect the purposes of this Act.

17 (b) PROHIBITION OF DISCRIMINATION.—The Direc-
18 tor of the Federal Housing Finance Agency, the Comp-
19 troller of the Currency, the Federal National Mortgage
20 Association, the Federal Home Loan Mortgage Corpora-
21 tion, the Federal Deposit Insurance Corporation, the Na-
22 tional Credit Union Administration, the Board of Gov-
23 ernors of the Federal Reserve System, and all Federal
24 agencies and entities chartered or otherwise established
25 under Federal law shall not discriminate in any manner

1 against States or local governments implementing or par-
2 ticipating in a PACE program, or against any property
3 that is obligated to pay a PACE assessment or is subject
4 to a PACE lien, including, without limitation, by—

5 (1) prohibiting lending within such jurisdiction
6 or requiring more restrictive underwriting criteria
7 for properties within such jurisdiction;

8 (2) except for the escrowing of funds as per-
9 mitted by section (5)(g)(2), requiring payment of
10 PACE assessment amounts that are not due or that
11 are not delinquent; or

12 (3) applying more restrictive underwriting cri-
13 teria to any property that is obligated to pay a
14 PACE assessment and is subject to a PACE lien
15 than any such entity would apply to such property
16 in the event that such property were subject to a
17 State or municipal tax or assessment that was not
18 a PACE assessment.

19 **SEC. 5. PACE PROGRAMS ELIGIBLE FOR PROTECTION.**

20 (a) IN GENERAL.—A PACE program, and any
21 PACE assessment and PACE lien related to such pro-
22 gram, are entitled to the protections of this Act only if
23 the Program meets all of the requirements under this sec-
24 tion at the time of its establishment, or, in the case of
25 any PACE program in effect upon the date of the enact-

1 ment of this Act, not later than 60 days after such date
2 of enactment.

3 (b) CONSUMER PROTECTIONS APPLICABLE TO RESI-
4 DENTIAL PROPERTY.—A PACE program shall provide,
5 with respect to residential property, for the following:

6 (1) PROPERTY OWNER AGREEMENTS.—

7 (A) PACE ASSESSMENT.—The property
8 owner shall agree in writing to a PACE assess-
9 ment, either pursuant to a PACE agreement or
10 by voting in the manner specified by State law.
11 In the case of any property with multiple own-
12 ers, each owner or the owner’s authorized rep-
13 resentative shall execute a PACE agreement or
14 vote in the manner specified by State law, as
15 applicable.

16 (B) PAYMENT SCHEDULE.—The property
17 owner shall agree to a payment schedule that
18 identifies the term over which PACE assess-
19 ment installments will be due, the frequency
20 with which PACE assessment installments will
21 be billed and amount of each installment, and
22 the annual amount due on the PACE assess-
23 ment. Upon full payment of the amount of the
24 PACE assessment, including all outstanding in-
25 terest and charges and any penalties that may

1 become due, the local government shall provide
2 the participating property owner with a written
3 statement certifying that the PACE assessment
4 has been paid in full and the local government
5 shall also satisfy all requirements of State law
6 to extinguish the PACE lien.

7 (2) DISCLOSURES BY LOCAL GOVERNMENT.—

8 The local government shall disclose to the partici-
9 pating property owner the costs and risks associated
10 with participating in the PACE program, including
11 risks related to their failure to pay PACE assess-
12 ments and the risk of enforcement of PACE liens.

13 The local government shall disclose to the property
14 owner the effective interest rate of the PACE assess-
15 ment, including all program fees. The local govern-
16 ment shall clearly and conspicuously provide the
17 property owner the right to rescind his or her deci-
18 sion to enter into a PACE assessment, within 3 days
19 of the original transaction.

20 (3) NOTICE TO LIENHOLDERS.—Before enter-
21 ing into a PACE agreement or voting in favor of a
22 PACE assessment, the property owner or the local
23 government shall provide to the holders of any exist-
24 ing mortgages on the property written notice of the
25 terms of the PACE assessment.

1 (4) CONFIDENTIALITY.—Any personal financial
2 information provided by a property owner to a local
3 government or an entity administering a PACE pro-
4 gram on behalf of a local government shall comply
5 with applicable local, State, and Federal laws gov-
6 erning the privacy of the information.

7 (c) REQUIREMENTS APPLICABLE ONLY TO NON-RES-
8 IDENTIAL PROPERTY.—A PACE program shall provide,
9 with respect to non-residential property, for the following:

10 (1) AUTHORIZATION BY LIENHOLDERS.—Be-
11 fore entering into a PACE agreement with a local
12 government or voting in favor of PACE assessments
13 in the manner specified by State law, the property
14 owner shall obtain written authorization from the
15 holders of the first mortgage on the property.

16 (2) PACE AGREEMENT.—

17 (A) TERMS.—The local government and
18 the owner of the property to which the PACE
19 assessment applies at the time of commence-
20 ment of assessment shall enter into a written
21 PACE agreement addressing the terms of the
22 PACE improvement. In the case of any prop-
23 erty with multiple owners, the PACE agreement
24 shall be signed by all owners or their legally au-
25 thorized representative or representatives.

1 (B) PACE IMPROVEMENTS.—The property
2 owner shall contract for PACE improvements,
3 purchase materials to be used in making such
4 improvements, or both, and upon submission of
5 documentation required by the local govern-
6 ment, the local government shall disburse funds
7 to the property owner in payment for the
8 PACE improvements or materials used in mak-
9 ing such improvements.

10 (C) PAYMENT SCHEDULE.—The PACE
11 agreement shall include a payment schedule
12 showing the term over which payments will be
13 due on the assessment, the frequency with
14 which payments will be billed and amount of
15 each payment, and the annual amount due on
16 the assessment. Upon full payment of the
17 amount of the assessment, including all out-
18 standing interest and charges and any penalties
19 that may become due, the local government
20 shall provide the participating property owner
21 with a written statement certifying that the as-
22 sessment has been paid in full and the local
23 government shall also satisfy all requirements
24 of State law to extinguish the PACE lien.

1 (3) DISCLOSURES BY LOCAL GOVERNMENT.—

2 The local government shall disclose to the partici-
3 pating property owners the costs and risks associ-
4 ated with participating in the program, including
5 risks related to their failure to make payments and
6 the risk of enforcement of PACE liens.

7 (4) CONFIDENTIALITY.—Any personal financial
8 information provided by a property owner to a local
9 government or an entity administering a PACE pro-
10 gram on behalf of a local government shall comply
11 with applicable local, State, and Federal laws gov-
12 erning the privacy of the information.

13 (d) PUBLIC NOTICE OF PACE ASSESSMENT.—The
14 local government shall file a public notice of the PACE
15 assessment in a manner sufficient to provide notice of the
16 PACE assessment to potential lenders and potential pur-
17 chasers of the property. The notice shall consist of the
18 following statement or its substantial equivalent: “This
19 property is subject to a tax or assessment that is levied
20 to finance the installation of qualifying energy and water
21 conservation and efficiency improvements or clean energy
22 improvements. The tax or assessment is secured by a lien
23 that is senior to all private liens.”.

24 (e) ELIGIBILITY OF RESIDENTIAL PROPERTY OWN-
25 ERS.—Before levying a PACE assessment on a property,

1 the local government shall ensure that all of the following
2 are true with respect to the property:

3 (1) All property taxes and any other public as-
4 sessments are current and have been current for 3
5 years or the property owner's period of ownership,
6 whichever period is shorter.

7 (2) There are no involuntary liens, such as me-
8 chanics liens, on the property in excess of \$1,000.

9 (3) No notices of default and not more than one
10 instance of property-based debt delinquency have
11 been recorded during the past 3 years or the prop-
12 erty owner's period of ownership, whichever period is
13 shorter.

14 (4) The property owner has not filed for or de-
15 clared bankruptcy in the previous 7 years.

16 (5) The property owner is current on all mort-
17 gage debt on the property.

18 (6) The property owner or owners are the hold-
19 ers of record of the property.

20 (7) The property title is not subject to power of
21 attorney, easements, or subordination agreements
22 restricting the authority of the property owner to
23 subject the property to a PACE lien.

1 (8) The property meets any geographic eligi-
2 bility requirements established by the PACE pro-
3 gram.

4 The local government may adopt additional criteria, ap-
5 propriate to PACE programs, for determining whether to
6 provide PACE financing to a property.

7 (f) QUALIFYING IMPROVEMENTS AND QUALIFYING
8 CONTRACTORS FOR RESIDENTIAL PROPERTIES.—PACE
9 improvements for residential properties shall be qualified
10 if they meet the following criteria:

11 (1) AUDIT.—For clean energy improvements
12 and energy conservation and efficiency improve-
13 ments, an audit or feasibility study performed by a
14 person who has been certified as a building analyst
15 by the Building Performance Institute or as a Home
16 Energy Rating System (HERS) Rater by a Rating
17 Provider accredited by the Residential Energy Serv-
18 ices Network (RESNET); or who has obtained other
19 similar independent certification shall have been
20 commissioned by the local government or the prop-
21 erty owner and the audit or feasibility study shall—

22 (A) identify recommended energy conserva-
23 tion, efficiency, and/or clean energy improve-
24 ments and such recommended improvements
25 must include the improvements proposed to be

1 financed with the PACE assessment to the ex-
2 tent permitted by law;

3 (B) estimate the potential cost savings,
4 useful life, benefit-cost ratio, and simple pay-
5 back or return on investment for each improve-
6 ment; and

7 (C) provide the estimated overall difference
8 in annual energy costs with and without the
9 recommended improvements.

10 State law may provide that the cost of the audit and
11 the cost of a warranty covering the financed im-
12 provements may be included in the total amount fi-
13 nanced.

14 (2) AFFIXED FOR USEFUL LIFE.—The local
15 government shall have determined the improvements
16 are intended to be affixed to the property for the en-
17 tire useful life of the improvements based on the ex-
18 pected useful lives of energy conservation, efficiency,
19 and clean energy measures approved by the Depart-
20 ment of Energy.

21 (3) QUALIFIED CONTRACTORS.—The improve-
22 ments must be made by a contractor or contractors,
23 determined by the local government to be qualified
24 to make the PACE improvements. A local govern-
25 ment may accept a designation of contractors as

1 qualified made by an electric or gas utility or an-
2 other appropriate entity. Any work requiring a li-
3 cense under applicable law shall be performed by an
4 individual holding such license. A local government
5 may elect to provide financing for improvements
6 made by the owner of the property, but shall not
7 permit the value of the owner's labor to be included
8 in the amount financed.

9 (4) DISBURSEMENT OF PAYMENTS.—A local
10 government must require, prior to disbursement of
11 final payments for the financed improvements, sub-
12 mission by the property owner in a form acceptable
13 to the local government of—

14 (A) a document signed by the property-
15 owner requesting disbursement of funds;

16 (B) a certificate of completion, certifying
17 that improvements have been installed satisfac-
18 torily; and

19 (C) documentation of all costs to be fi-
20 nanced and copies of any required permits.

21 (g) FINANCING TERMS APPLICABLE ONLY TO RESI-
22 DENTIAL PROPERTY.—A PACE program shall provide,
23 with respect to residential property, for the following:

24 (1) AMOUNT FINANCED.—PACE improvements
25 shall be financed on terms such that the total energy

1 and water cost savings realized by the property
2 owner and the property owner's successors during
3 the useful lives of the improvements, as determined
4 by the audit or feasibility study pursuant to sub-
5 section (f)(1), are expected to exceed the total cost
6 to the property owner and the property owner's suc-
7 cessors of the PACE assessment. In determining the
8 amount that may be financed by a PACE assess-
9 ment, the total amount of all rebates, grants, and
10 other direct financial assistance received by the
11 owner on account of the PACE improvements shall
12 be deducted from the cost of the PACE improve-
13 ments.

14 (2) PACE ASSESSMENTS.—The total amount of
15 PACE assessments for a property shall not exceed
16 10 percent of the estimated value of the property. A
17 property owner who escrows property taxes with the
18 holder of a mortgage on a property subject to PACE
19 assessment may be required by the holder to escrow
20 amounts due on the PACE assessment, and the
21 mortgage holder shall remit such amounts to the
22 local government in the manner that property taxes
23 are escrowed and remitted.

24 (3) OWNER EQUITY.—As of the effective date of
25 the PACE agreement or the vote required by State

1 law, the property owner shall have equity in the
2 property of not less than 15 percent of the estimated
3 value of the property calculated without consider-
4 ation of the amount of the PACE assessment or the
5 value of the PACE improvements.

6 (4) TERM OF FINANCING.—The maximum term
7 of financing provided for a PACE improvement may
8 be 20 years. The term shall in no case exceed the
9 weighted average expected useful life of the PACE
10 improvement or improvements. Expected useful lives
11 used for all calculations under this paragraph shall
12 be consistent with the expected useful lives of energy
13 conservation and efficiency and clean energy meas-
14 ures approved by the Department of Energy.

15 (h) COLLECTION AND ENFORCEMENT.—A PACE
16 program shall provide that—

17 (1) PACE assessments shall be collected in the
18 manner specified by State law;

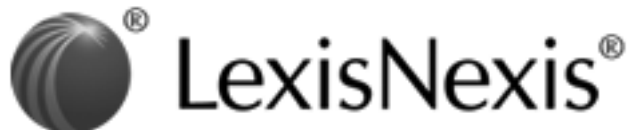
19 (2) notwithstanding any other provision of law,
20 in the event of a transfer of property ownership
21 through foreclosure, the transferring property owner
22 may be obligated to pay only PACE assessment in-
23 stallments that are due (including delinquent
24 amounts), along with any applicable penalties and
25 interest, except that before imposition of any pen-

1 alties or fees, the PACE program shall provide an
2 opportunity to any holder of a senior lien on the
3 property to assume payment of the PACE assess-
4 ment;

5 (3) PACE assessment installments that are not
6 due may not be accelerated by foreclosure except as
7 provided by State law; and

8 (4) payment of a PACE assessment installment
9 from the loss reserve established for a PACE pro-
10 gram shall not relieve a participating property owner
11 from the obligation to pay that amount.

○



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*** Current through PL 112-173, approved 8/16/12 ***

TITLE 12. BANKS AND BANKING
CHAPTER 46. GOVERNMENT SPONSORED ENTERPRISES
SUPERVISION AND REGULATION OF ENTERPRISES
FINANCIAL SAFETY AND SOUNDNESS REGULATOR

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12 USCS § 4526

§ 4526. Regulations and orders

(a) Authority. The Director shall issue any regulations, guidelines, or orders necessary to carry out the duties of the Director under this title or the authorizing statutes, and to ensure that the purposes of this title and the authorizing statutes are accomplished.

(b) Notice and comment. Any regulations issued by the Director under this section shall be issued after notice and opportunity for public comment pursuant to the provisions of *section 553 of title 5, United States Code*.

HISTORY:

(Oct. 28, 1992, P.L. 102-550, Title XIII, Subtitle A, Part 1, § 1319G, 106 Stat. 3952; July 30, 2008, P.L. 110-289, Div A, Title I, Subtitle A, § 1107, 122 Stat. 2672.)

HISTORY; ANCILLARY LAWS AND DIRECTIVES

References in text:

"This title", referred to in this section, is Title XIII of Act Oct. 28, 1992, P.L. 102-550, 106 Stat. 3941, popularly known as the Federal Housing Enterprises Financial Safety and Soundness Act of 1992, which appears generally as *12 USCS §§ 4501 et seq*. For full classification of this Title, consult USCS Tables volumes.

Effective date of section:

Act Oct. 28, 1992, P.L. 102-550, § 2, 106 Stat. 3681, which appears as *42 USCS § 5301* note, provides that this section is effective and applicable on enactment.



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TITLE 5. GOVERNMENT ORGANIZATION AND EMPLOYEES
PART I. THE AGENCIES GENERALLY
CHAPTER 5. ADMINISTRATIVE PROCEDURE
SUBCHAPTER II. ADMINISTRATIVE PROCEDURE

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5 USCS § 553

§ 553. Rule making

- (a) This section applies, according to the provisions thereof, except to the extent that there is involved--
- (1) a military or foreign affairs function of the United States; or
 - (2) a matter relating to agency management or personnel or to public property, loans, grants, benefits, or contracts.

(b) General notice of proposed rule making shall be published in the Federal Register, unless persons subject thereto are named and either personally served or otherwise have actual notice thereof in accordance with law. The notice shall include--

- (1) a statement of the time, place, and nature of public rule making proceedings;
- (2) reference to the legal authority under which the rule is proposed; and
- (3) either the terms or substance of the proposed rule or a description of the subjects and issues involved.

Except when notice or hearing is required by statute, this subsection does not apply--

- (A) to interpretative rules, general statements of policy, or rules of agency organization, procedure, or practice; or
- (B) when the agency for good cause finds (and incorporates the finding and a brief statement of reasons therefor in the rules issued) that notice and public procedure thereon are impracticable, unnecessary, or contrary to the public interest.

(c) After notice required by this section, the agency shall give interested persons an opportunity to participate in the rule making through submission of written data, views, or arguments with or without opportunity for oral presentation. After consideration of the relevant matter presented, the agency shall incorporate in the rules adopted a concise general statement of their basis and purpose. When rules are required by statute to be made on the record after opportunity for an agency hearing, sections 556 and 557 of this *title* [5 USCS §§ 556 and 557] apply instead of this subsection.

(d) The required publication or service of a substantive rule shall be made not less than 30 days before its effective date, except--

5 USCS § 553

- (1) a substantive rule which grants or recognizes an exemption or relieves a restriction;
- (2) interpretative rules and statements of policy; or
- (3) as otherwise provided by the agency for good cause found and published with the rule.

(e) Each agency shall give an interested person the right to petition for the issuance, amendment, or repeal of a rule.

HISTORY:

(Added Sept. 6, 1966, P.L. 89-554, § 1, 80 Stat. 383.)

HISTORY; ANCILLARY LAWS AND DIRECTIVES

Prior law and revision:

Derivation	U.S. Code	Revised Statutes and Statutes at Large
.....5 USC Sec. 1003	June 11, 1946, ch 324, Sec. 4.	60 Stat. 238.

In subsection (a)(1), the words "or naval" are omitted as included in "military".

In subsection (b), the word "when" is substituted for "in any situation in which".

In subsection (c), the words "for oral presentation" are substituted for "to present the same orally in any manner". The words "sections 556 and 557 of this title apply instead of this subsection" are substituted for "the requirements of sections 1006 and 1007 of this title shall apply in place of the provisions of this subsection".

Standard changes are made to conform with the definitions applicable and the style of this title as outlined in the preface to the report.

Explanatory notes:

A former 5 USC § 553 was transferred by Act Sept. 6, 1966, which enacted 5 USCS §§ 101 et seq., and now appears as 7 USCS § 2245.

Other provisions:

Ex. Or. No. 12044 revoked. Ex. Or. No. 12044 of Mar. 23, 1978, 43 Fed. Reg. 12661, formerly classified to this section, was revoked by § 10 of Ex. Or. No. 12291 of Feb. 17, 1981, 46 Fed. Reg. 13193, which formerly appeared as 5 USCS § 601 note. Such Order provided for improving government regulations.

NOTES:

Code of Federal Regulations:

Food Safety and Inspection Service, Department of Agriculture--Petitions for rulemaking, 9 CFR 392.1 et seq.

Nuclear Regulatory Commission--Rules of practice for domestic licensing proceedings and issuance of orders., 10 CFR 2.1 et seq.

Nuclear Regulatory Commission--Statement of organization and general information, 10 CFR 10.1 et seq.

Nuclear Regulatory Commission--Export and import of nuclear equipment and material, 10 CFR 110.1 et seq.

Federal Election Commission--Petitions for rulemaking, 11 CFR 200.1 et seq.



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TITLE 5. GOVERNMENT ORGANIZATION AND EMPLOYEES
PART I. THE AGENCIES GENERALLY
CHAPTER 7. JUDICIAL REVIEW

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5 USCS § 706

THE CASE NOTES SEGMENT OF THIS DOCUMENT HAS BEEN SPLIT INTO 2 DOCUMENTS.
THIS IS PART 1.
USE THE BROWSE FEATURE TO REVIEW THE OTHER PART(S).

§ 706. Scope of review

To the extent necessary to decision and when presented, the reviewing court shall decide all relevant questions of law, interpret constitutional and statutory provisions, and determine the meaning or applicability of the terms of an agency action. The reviewing court shall--

- (1) compel agency action unlawfully withheld or unreasonably delayed; and
- (2) hold unlawful and set aside agency action, findings, and conclusions found to be--
 - (A) arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law;
 - (B) contrary to constitutional right, power, privilege, or immunity;
 - (C) in excess of statutory jurisdiction, authority, or limitations, or short of statutory right;
 - (D) without observance of procedure required by law;
 - (E) unsupported by substantial evidence in a case subject to sections 556 and 557 of this title [5 USCS §§ 556 and 557] or otherwise reviewed on the record of an agency hearing provided by statute; or
 - (F) unwarranted by the facts to the extent that the facts are subject to trial de novo by the reviewing court.

In making the foregoing determinations, the court shall review the whole record or those parts of it cited by a party, and due account shall be taken of the rule of prejudicial error.

HISTORY:

(Sept. 6, 1966, P.L. 89-554, § 1, *80 Stat.* 393.)

HISTORY; ANCILLARY LAWS AND DIRECTIVES



MOTOR VEHICLE MANUFACTURERS ASSOCIATION OF THE UNITED STATES, INC., ET AL. v. STATE FARM MUTUAL AUTOMOBILE INSURANCE CO. ET AL.

No. 82-354

SUPREME COURT OF THE UNITED STATES

463 U.S. 29; 103 S. Ct. 2856; 77 L. Ed. 2d 443; 1983 U.S. LEXIS 84; 51 U.S.L.W. 4953; 13 ELR 20672

**April 26, 1983, Argued
June 24, 1983, Decided ***

* Together with No. 82-355, *Consumer Alert et al. v. State Farm Mutual Automobile Insurance Co. et al.*; and No. 82-398, *United States Department of Transportation et al. v. State Farm Mutual Automobile Insurance Co. et al.*, also on certiorari to the same court.

PRIOR HISTORY: CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA CIRCUIT.

DISPOSITION: 220 U. S. App. D. C. 170, 680 F.2d 206, vacated and remanded.

DECISION:

NHTSA's rescission of motor vehicle passive restraint standard held arbitrary and capricious.

SUMMARY:

In 1977, the National Highway Traffic Safety Administration (NHTSA) issued a motor vehicle safety standard pursuant to the National Traffic and Motor Vehicle Safety Act (15 USCS 1381 *et seq.*) that required newly sold cars to be equipped with either airbags or detachable or nondetachable passive seatbelts as of the 1982 or 1984 model year, depending on the model. But before the effective date, the agency issued a final rule rescinding the passive restraint requirement in the

standard, the agency stating that the requirement was no longer reasonable or practical in view of the possibly minimal safety benefits and the costs of implementing the requirement. An insurance company and an association of independent insurers filed petitions for review of NHTSA's rescission of the passive restraint standard. The United States Court of Appeals for the District of Columbia Circuit held that the agency's rescission of the passive restraint requirement was arbitrary and capricious (680 F2d 206).

On certiorari, the United States Supreme Court Court vacated and remanded. In an opinion by White, J., joined by Brennan, Marshall, Blackmun, and Stevens, JJ., and joined in part (all but the holding as to the detachable passive seatbelts) by Burger, Ch. J., and O'Connor, JJ., it was held that although not all of the Court of Appeals' reasoning was correct, the NHTSA's rescission of the passive restraint requirement was arbitrary and capricious, since the agency failed to present an adequate basis and explanation for rescinding the requirement in regards to each of the three passive restraint options, the agency having failed to supply the requisite reasoned analysis for its action, and that the agency was therefore

required to consider the matter further or adhere to or amend the standard along the lines which its analysis supports.

Rehnquist, J., joined by Burger Ch. J., and Powell and O'Connor, JJ., concurred in part and dissented in part, stating that although the agency must explain further why it rescinded requirements as to airbags and nondetachable passive seatbelts, the agency's view of detachable passive seatbelts was not arbitrary and capricious, since the agency adequately explained its decision to rescind the standard insofar as it was satisfied by detachable belts.

LAWYERS' EDITION HEADNOTES:

[***LEdHN1]

LAW §77

motor vehicles -- passive restraint standard -- rescission -- validity --

Headnote:[1A][1B][1C][1D][1E][1F][1G][1H]

The National Highway Traffic Safety Administration's rescission of the requirement in a motor vehicle safety standard that new automobiles be equipped with either air bags or detachable or nondetachable passive seatbelts is arbitrary and capricious, where the agency failed to present an adequate basis and explanation for rescinding the requirement as to each of the three passive restraint options, the agency having failed to supply the requisite reasoned analysis for its actions, and the agency must therefore consider the matter further or adhere to or amend the standard along lines which its analysis supports. (Rehnquist, J., Burger, Ch. J., and Powell and O'Connor, JJ., dissented in part from this holding.)

[***LEdHN2]

LAW §250

motor vehicle safety standards -- promulgation -- scope of judicial review --

Headnote:[2]

Pursuant to the Motor Vehicle Safety Act (*15 USCS 1381 et seq.*), motor vehicle safety standards are to be promulgated under the informal rulemaking procedures of 553 of the Administrative Procedure Act (*5 USCS 553*

), and an agency's action in promulgating such standards may therefore be set aside if found to be arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law pursuant to *5 USCS 706(2)(A)*.

[***LEdHN3]

LAW §250

motor vehicles -- occupant protection standards -- rescission -- scope of judicial review --

Headnote:[3]

The rescission or modification of an occupant protection standard promulgated pursuant to the Motor Vehicle Safety Act (*15 USCS 1381 et seq.*) may be set aside if found to be arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law, this being the same test for reviewing the promulgation of a standard, since 103(b) of the Act (*15 USCS 1392(b)*) suggests no difference in the scope of judicial review depending on the nature of the agency's action.

[***LEdHN4]

LAW §89

rescission of regulations -- basis for change in policy -- reasoned analysis --

Headnote:[4]

A settled course of behavior by a regulatory agency embodies the agency's informed judgment that by pursuing that course it will carry out the policies committed to it by Congress, there therefore being at least a presumption that those policies will be carried out best if the settled rule is adhered to, and accordingly, an agency changing its course by rescinding a rule is obligated to supply a reasoned analysis for the change beyond that which may be required when an agency does not act in the first instance.

[***LEdHN5]

LAW §89

deregulation -- change in rules and policies -- justification --

Headnote:[5]

Regulatory agencies do not establish rules of conduct to last forever, and an agency must be given ample latitude to adapt their rules and policies to the demands of changing circumstances, but that change does not always point to deregulation, and any presumption from which judicial review should start would be a presumption not against safety regulation, but against changes in current policy that are not justified by the rulemaking record.

[***LEdHN6]

EVIDENCE §99(1)

agency action -- presumption of regularity --

Headnote:[6A][6B]

The presumption of constitutionality afforded legislation drafted by Congress is not equivalent to the presumption of regularity afforded an agency in fulfilling its statutory mandate.

[***LEdHN7]

LAW §159

250 scope of review -- arbitrary and capricious standard --

Headnote:[7]

The scope of review under the arbitrary and capricious standard for reviewing an agency's action is narrow, and a court is not to substitute its judgment for that of the agency, but the agency must examine the relevant data and articulate a satisfactory explanation for its action, including a rational connection between the facts found and the choices made, and in reviewing that explanation, the United States Supreme Court must consider whether the decision was based on a consideration of the relevant factors and whether there has been a clear error of judgment.

[***LEdHN8]

LAW §250

agency rules -- arbitrary and capricious standard --

Headnote:[8]

Normally, an agency rule is arbitrary and capricious if the agency has relied on factors which Congress has

not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.

[***LEdHN9]

LAW §238

judicial review -- agency rules -- reasonable basis -- arbitrary and capricious standard --

Headnote:[9]

A court reviewing whether an agency rule is arbitrary and capricious may not supply a reasoned basis for the agency's action that the agency itself has not given, but the reviewing court will uphold a decision of less than ideal clarity if the agency's path may be reasonably discerned.

[***LEdHN10]

LAW §158

agency findings -- motor vehicle safety -- substantial evidence. --

Headnote:[10]

Agency findings under the Motor Vehicle Safety Act (*15 USCS 1381 et seq.*) are required to be supported by substantial evidence on the record considered as a whole.

[***LEdHN11]

LAW §89

scope of review -- agency rule -- congressional reaction -- rescission by agency --

Headnote:[11]

It is improper, when reviewing the National Highway Traffic Safety Administration's rescission of its regulation requiring passive restraints in newly sold cars, to intensify, on the basis of congressional reaction to various versions of the requirement, the scope of review beyond the arbitrary and capricious test to require that the agency provide increasingly clear and convincing reasons for its actions, since even an unequivocal ratification,

short of statutory incorporation, of the passive restraint standard would not connote approval or disapproval of the agency's decision to rescind the regulation, and even if it was proper to rely on such congressional reaction, the inference to be drawn fails to suggest that the agency acted improperly in rescinding the regulation.

[***LEdHN12]

STATUTES §158.4

agency interpretation -- ratification -- congressional inaction --

Headnote:[12]

An agency's interpretation of a statute may be confirmed or ratified by subsequent congressional failure to change that interpretation.

[***LEdHN13]

LAW §93

exercise of agency discretion -- explanation --

Headnote:[13]

An agency must cogently explain why it has exercised its discretion in a given manner.

[***LEdHN14]

LAW §288

agency action -- judicial review -- basis of action --

Headnote:[14]

Courts, when reviewing an agency's action, may not accept an appellate counsel's post hoc rationalization for agency action; an agency's action must be upheld, if at all, on the basis articulated by the agency itself.

[***LEdHN15]

LAW §89

change in rules -- rescission -- notice --

Headnote:[15A][15B]

Even if a new notice of proposed rulemaking is required in order for the National Highway Traffic Safety

Administration to change a passive restraint standard for newly sold cars to require all cars to have air bags, as opposed to previously requiring either air bags or passive seatbelts, that requirement does not constitute sufficient cause to rescind the previous passive restraint requirement.

[***LEdHN16]

LAW §89

rescission of rule -- study of alternatives -- suspension or delay --

Headnote:[16A][16B]

It is permissible for the National Highway Traffic Safety Administration to temporarily suspend its passive restraint standard requiring that newly sold cars be equipped with air bags or passive seat belts, or to delay its implementation date, while a standard requiring air bags only is studied, but that option must be considered before the passive restraint requirement is revoked.

[***LEdHN17]

LAW §77

rulemaking -- policy alternatives --

Headnote:[17]

An agency is not broadly required to consider all policy alternatives in reaching a decision, and a rulemaking cannot be found wanting simply because the agency failed to include every alternative device and thought conceivable to the mind of man, regardless of how uncommon or unknown that alternative may have been.

[***LEdHN18]

LAW §89

airbag regulations -- repeal --

Headnote:[18]

Given the judgment that airbags are an effective and cost-beneficial life-saving technology, which underlay a modified motor vehicle safety standard mandating the phasing in of passive restraints--either airbags or passive seatbelts--in new automobiles, the mandatory

passive-restraint rule may not be abandoned by the agency without any consideration whatsoever of an airbags-only requirement.

[***LEdHN19]

LAW §89

rescission of safety standard -- justification -- effectiveness -- uncertainty --

Headnote:[19]

Just as an agency reasonably may decline to issue a safety standard if it is uncertain about its efficacy, an agency may also revoke a standard on the basis of serious uncertainties if supported by the record and reasonably explained, but allowing for such uncertainty does not imply that it is sufficient for an agency to recite the terms "substantial uncertainty" as a justification for its actions, and one aspect of the necessary explanation for its actions would be a justification for rescinding the regulation before engaging in a search for further evidence.

[***LEdHN20]

LAW §257

judicial review -- agency expertise -- motor vehicle safety --

Headnote:[20]

It is within the discretion of the National Highway Traffic Safety Administration to pass upon the generalizability of field studies concerning passive seat belt usage to an across-the-board mandatory standard, this type of issue resting within the expertise of the agency, and upon which a reviewing court must be most hesitant to intrude.

[***LEdHN21]

LAW §77

motor vehicle safety -- rescission of rule -- grounds --

Headnote:[21]

Whether the fact that 20 to 50 percent of motorists currently wear seatbelts on some occasion provides grounds to believe that seatbelt use by occasional users

will be substantially increased by detachable passive belts is a matter for the National Highway Traffic Safety Administration to decide, but it must bring its expertise to bear on the question when deciding whether a passive restraint standard for newly sold automobiles should be rescinded.

[***LEdHN22]

LAW §77

motor vehicle safety -- passive restraint standards -- costs and benefits --

Headnote:[22]

The National Highway Traffic Safety Administration is correct to look at the costs as well the benefits of a passive restraint standard for newly sold automobiles, but when reconsidering its judgment of the reasonableness of the monetary and other costs associated with the standard, the agency should take into account that Congress intended safety to be the pre-eminent factor under the Motor Vehicle Safety Act (*15 USCS 1381 et seq.*).

[***LEdHN23]

LAW §77

motor vehicle safety standards -- passive restraints -- acceptability -- rescission -- justification --

Headnote:[23]

The National Highway Traffic Safety Administration is entitled to change its view on the acceptability of continuous passive seatbelts, but it is obligated to explain its reasons for doing so when deciding to rescind a motor vehicle safety standard requiring that newly sold cars be equipped with passive restraints.

[***LEdHN24]

LAW §89

rescission of motor vehicle safety standard -- explanation -- by agency --

Headnote:[24]

It is the responsibility of the National Highway Traffic Administration, and not that of the United States

Supreme Court, to explain the agency's decision to rescind a motor vehicle safety standard requiring that newly sold cars be equipped with passive restraints.

[***LEdHN25]

LAW §89

agency policy -- change -- reasoned analysis --

Headnote:[25]

An agency's view of what is in the public interest may change, either with or without a change in circumstances, but an agency changing its course must supply a reasoned analysis.

[***LEdHN26]

LAW §89

motor vehicle safety standards -- passive restraints -- suspension -- further consideration -- justification --

Headnote:[26A][26B]

The National Highway Traffic Safety Administration has sufficient justification to suspend, although not rescind, a motor vehicle safety standard requiring that newly sold cars be equipped with passive restraints, pending the agency's further consideration of the standard as required by the United States Supreme Court.

SYLLABUS

The National Traffic and Motor Vehicle Safety Act of 1966 (Act) directs the Secretary of Transportation to issue motor vehicle safety standards that "shall be practicable, shall meet the need for motor vehicle safety, and shall be stated in objective terms." In issuing these standards, the Secretary is directed to consider "relevant available motor vehicle safety data," whether the proposed standard is "reasonable, practicable and appropriate" for the particular type of motor vehicle for which it is prescribed, and "the extent to which such standards will contribute to carrying out the purposes" of the Act. The Act authorizes judicial review, under the Administrative Procedure Act, of "all orders establishing, amending, or revoking" a motor vehicle safety standard. The National Highway Traffic Safety Administration (NHTSA), to which the Secretary has delegated his authority to promulgate safety standards, rescinded the

requirement of Modified Standard 208 that new motor vehicles produced after September 1982 be equipped with passive restraints (automatic seatbelts or airbags) to protect the safety of the occupants of the vehicle in the event of a collision. In explaining the rescission, NHTSA maintained that it was no longer able to find, as it had in 1977 when Modified Standard 208 was issued, that the automatic restraint requirement would produce significant safety benefits. In 1977, NHTSA had assumed that airbags would be installed in 60% of all new cars and automatic seatbelts in 40%. But by 1981 it became apparent that automobile manufacturers planned to install automatic seatbelts in approximately 99% of the new cars and that the overwhelming majority of such seatbelts could be easily detached and left that way permanently, thus precluding the realization of the lifesaving potential of airbags and requiring the same type of affirmative action that was the stumbling block to achieving high usage of manual belts. For this reason, NHTSA concluded that there was no longer a basis for reliably predicting that Modified Standard 208 would lead to any significant increased usage of restraints. Hence, in NHTSA's view, the automatic restraint requirement was no longer reasonable or practicable. Moreover, given the high expense of implementing such a requirement and the limited benefits arising therefrom, NHTSA feared that many consumers would regard Modified Standard 208 as an instance of ineffective regulation. On petitions for review of NHTSA's rescission of the passive restraint requirement, the Court of Appeals held that the rescission was arbitrary and capricious on the grounds that NHTSA's conclusion that it could not reliably predict an increase in belt usage under the Standard was an insufficient basis for the rescission, that NHTSA inadequately considered the possibility of requiring manufacturers to install nondetachable rather than detachable passive belts, and that the agency failed to give any consideration to requiring compliance with the Standard by the installation of airbags. The court found that congressional reaction to various versions of the Standard "raised doubts" that NHTSA's rescission "necessarily demonstrates an effort to fulfill its statutory mandate" and that therefore the agency was obligated to provide "increasingly clear and convincing reasons" for its action.

Held: NHTSA's rescission of the passive restraint requirement in Modified Standard 208 was arbitrary and capricious; the agency failed to present an adequate basis and explanation for rescinding the requirement and must

either consider the matter further or adhere to or amend the Standard along lines which its analysis supports. Pp. 40-57.

(a) The rescission of an occupant crash protection standard is subject to the same standard of judicial review -- the "arbitrary and capricious" standard -- as is the promulgation of such a standard, and should not be judged by, as petitioner Motor Vehicle Manufacturers Association contends, the standard used to judge an agency's refusal to promulgate a rule in the first place. The Act expressly equates orders "revoking" and "establishing" safety standards. The Association's view would render meaningless Congress' authorization for judicial review of orders revoking safety standards. An agency changing its course by rescinding a rule is obligated to supply a reasoned analysis for the change beyond that which may be required when an agency does not act in the first instance. While the scope of review under the "arbitrary and capricious" standard is narrow and a court is not to substitute its judgment for that of the agency, the agency nevertheless must examine the relevant data and articulate a satisfactory explanation for its action. In reviewing that explanation, a court must consider whether the decision was based on a consideration of the relevant factors and whether there was a clear error of judgment. Pp. 40-44.

(b) The Court of Appeals correctly found that the "arbitrary and capricious" standard of judicial review applied to rescission of agency regulations, but erred in intensifying the scope of its review based upon its reading of legislative events. While an agency's interpretation of a statute may be confirmed or ratified by subsequent congressional failure to change that interpretation, here, even an unequivocal ratification of the passive restraint requirement would not connote approval or disapproval of NHTSA's later decision to rescind the requirement. That decision remains subject to the "arbitrary and capricious" standard. Pp. 44-46.

(c) The first reason for finding NHTSA's rescission of Modified Standard 208 was arbitrary and capricious is that it apparently gave no consideration to modifying the Standard to require that airbag technology be utilized. Even if NHTSA's conclusion that detachable automatic seatbelts will not attain anticipated safety benefits because so many individuals will detach the mechanism were acceptable in its entirety, standing alone it would not justify any more than an amendment of the Standard

to disallow compliance by means of one technology which will not provide effective passenger protection. It does not cast doubt on the need for a passive restraint requirement or upon the efficacy of airbag technology. The airbag is more than a policy alternative to the passive restraint requirement; it is a technology alternative within the ambit of the existing standard. Pp. 46-51.

(d) NHTSA was too quick to dismiss the safety benefits of automatic seatbelts. Its explanation for rescission of the passive restraint requirement is not sufficient to enable this Court to conclude that the rescission was the product of reasoned decisionmaking. The agency took no account of the critical difference between detachable automatic seatbelts and current manual seatbelts, failed to articulate a basis for not requiring nondetachable belts, and thus failed to offer the rational connection between facts and judgment required to pass muster under the "arbitrary and capricious" standard. Pp. 51-57.

COUNSEL: Solicitor General Lee argued the cause for petitioners in No. 82-398. With him on the briefs were Assistant Attorney General McGrath, Deputy Solicitor General Geller, Edwin S. Kneedler, Robert E. Kopp, Michael F. Hertz, Frank Berndt, David W. Allen, Enid Rubenstein, and Eileen T. Leahy. Lloyd N. Cutler argued the cause for petitioners in No. 82-354. With him on the briefs were John H. Pickering, William R. Perlik, Andrew B. Weissman, William R. Richardson, Jr., Milton D. Andrews, Lance E. Tunick, William H. Crabtree, Edward P. Good, Henry R. Nolte, Jr., Otis M. Smith, Charles R. Sharp, and William L. Weber, Jr. Raymond M. Momboisse, Sam Kazman, and Ronald A. Zumbrun filed briefs for petitioners in No. 82-355.

James F. Fitzpatrick argued the cause for respondents in all cases. With him on the brief for respondents State Farm Mutual Automobile Insurance Co. et al. were Michael N. Sohn, John M. Quinn, and Merrick B. Garland. Robert Abrams, Attorney General of New York, Robert S. Hammer, Assistant Attorney General, Peter H. Schiff, Martin Minkowitz, and Milton L. Freedman filed a brief for respondent Superintendent of Insurance of the State of New York. Raymond J. Rasenberger, Lawrence C. Merthan, Jerry W. Cox, and Lowell R. Beck filed a brief for respondents National Association of Independent Insurers et al. +

+ Briefs of amici curiae urging affirmance were

filed by Dennis J. Barbour for the American College of Preventive Medicine et al.; by Nathan Lewin for the American Insurance Association; by Philip R. Collins and Thomas C. McGrath, Jr., for the Automotive Occupant Protection Association; by Alexandra K. Finucane for the Epilepsy Foundation of America et al.; by Katherine I. Hall for the Center for Auto Safety et al.; by Simon Lazarus III for Mothers Against Drunk Drivers; and by John H. Quinn, Jr., and John Hardin Young for the National Association of Insurance Commissioners.

JUDGES: WHITE, J., delivered the opinion of the Court, in which BRENNAN, MARSHALL, BLACKMUN, and STEVENS, JJ., joined, and in all but Parts V-B and VI of which BURGER, C. J., and POWELL, REHNQUIST, and O'CONNOR, JJ., joined. REHNQUIST, J., filed an opinion concurring in part and dissenting in part, in which BURGER, C. J., and POWELL and O'CONNOR, JJ., joined, post, p. 57.

OPINION BY: WHITE

OPINION

[*32] [***451] [**2861] JUSTICE WHITE delivered the opinion of the Court.

The development of the automobile gave Americans unprecedented freedom to travel, but exacted a high price for [*33] enhanced mobility. Since 1929, motor vehicles have been the leading cause of accidental deaths and injuries in the United States. In 1982, 46,300 Americans died in motor vehicle accidents and hundreds of thousands more were maimed and injured.¹ While a consensus exists that the current loss of life on our highways is unacceptably high, improving safety does not admit to easy solution. In 1966, Congress decided that at least part of the answer lies in improving the design and safety features of the vehicle itself.² But much of the technology for building safer cars was undeveloped or untested. Before changes in automobile design could be mandated, the effectiveness of these changes had to be studied, their costs examined, and public acceptance [**2862] considered. This task called for considerable expertise and Congress responded by enacting the National Traffic and Motor Vehicle Safety Act of 1966 (Act), 80 Stat. 718, as amended, *15 U. S. C. § 1381 et seq.* (1976 ed. and Supp. V). The Act, created for the

purpose of "[reducing] traffic accidents and deaths and injuries to persons resulting from traffic accidents," *15 U. S. C. § 1381*, directs the Secretary of Transportation or his delegate to issue motor vehicle safety standards that "shall be practicable, shall meet the need for motor vehicle safety, and shall be stated in objective terms." *15 U. S. C. § 1392(a)* (1976 ed., Supp. V). In issuing these standards, the Secretary is [***452] directed to consider "relevant available motor vehicle safety data," whether the proposed standard "is reasonable, practicable and appropriate" for the particular type of motor vehicle, and the "extent to which [*34] such standards will contribute to carrying out the purposes" of the Act. *15 U. S. C. §§ 1392(f)(1), (3), (4)*.³

1 National Safety Council, 1982 Motor Vehicle Deaths By States (May 16, 1983).

2 The Senate Committee on Commerce reported:

"The promotion of motor vehicle safety through voluntary standards has largely failed. The unconditional imposition of mandatory standards at the earliest practicable date is the only course commensurate with the highway death and injury toll." S. Rep. No. 1301, 89th Cong., 2d Sess., 4 (1966).

3 The Secretary's general authority to promulgate safety standards under the Act has been delegated to the Administrator of the National Highway Traffic Safety Administration (NHTSA). *49 CFR § 1.50(a)* (1982). This opinion will use the terms NHTSA and agency interchangeably when referring to the National Highway Traffic Safety Administration, the Department of Transportation, and the Secretary of Transportation.

[***LEdHR1A] [1A]The Act also authorizes judicial review under the provisions of the Administrative Procedure Act (APA), *5 U. S. C. § 706*, of all "orders establishing, amending, or revoking a Federal motor vehicle safety standard," *15 U. S. C. § 1392(b)*. Under this authority, we review today whether NHTSA acted arbitrarily and capriciously in revoking the requirement in Motor Vehicle Safety Standard 208 that new motor vehicles produced after September 1982 be equipped with passive restraints to protect the safety of the occupants of the vehicle in the event of a collision. Briefly summarized, we hold that the agency failed to present an adequate basis and explanation for rescinding

the passive restraint requirement and that the agency must either consider the matter further or adhere to or amend Standard 208 along lines which its analysis supports.

I

The regulation whose rescission is at issue bears a complex and convoluted history. Over the course of approximately 60 rulemaking notices, the requirement has been imposed, amended, rescinded, reimposed, and now rescinded again.

As originally issued by the Department of Transportation in 1967, Standard 208 simply required the installation of seatbelts in all automobiles. *32 Fed. Reg. 2415*. It soon became apparent that the level of seatbelt use was too low to reduce traffic injuries to an acceptable level. The Department therefore began consideration of "passive occupant restraint systems" -- devices that do not depend for their effectiveness [*35] upon any action taken by the occupant except that necessary to operate the vehicle. Two types of automatic crash protection emerged: automatic seatbelts and airbags. The automatic seatbelt is a traditional safety belt, which when fastened to the interior of the door remains attached without impeding entry or exit from the vehicle, and deploys automatically without any action on the part of the passenger. The airbag is an inflatable device concealed in the dashboard and steering column. It automatically inflates when a sensor indicates that deceleration forces from an accident have exceeded a preset minimum, then rapidly deflates to dissipate those forces. The lifesaving potential of these devices was immediately recognized, and in 1977, after substantial on-the-road experience with both devices, it was estimated by NHTSA that passive restraints could prevent approximately 12,000 deaths and over 100,000 serious injuries annually. *42 Fed. Reg. 34298*.

[***453] In 1969, the Department formally proposed a standard requiring the installation of passive restraints, *34 Fed. Reg. 11148*, thereby commencing a lengthy series of proceedings. In 1970, the agency revised [**2863] Standard 208 to include passive protection requirements, *35 Fed. Reg. 16927*, and in 1972, the agency amended the Standard to require full passive protection for all front seat occupants of vehicles manufactured after August 15, 1975. *37 Fed. Reg. 3911*. In the interim, vehicles built between August 1973 and August 1975 were to carry either passive restraints or lap and shoulder belts coupled with an "ignition interlock"

that would prevent starting the vehicle if the belts were not connected. ⁴ On review, the [*36] agency's decision to require passive restraints was found to be supported by "substantial evidence" and upheld. *Chrysler Corp. v. Department of Transportation*, *472 F.2d 659 (CA6 1972)*.

5

4 Early in the process, it was assumed that passive occupant protection meant the installation of inflatable airbag restraint systems. See *34 Fed. Reg. 11148 (1969)*. In 1971, however, the agency observed that "[some] belt-based concepts have been advanced that appear to be capable of meeting the complete passive protection options," leading it to add a new section to the proposed standard "[to] deal expressly with passive belts." *36 Fed. Reg. 12859*.

5 The court did hold that the testing procedures required of passive belts did not satisfy the Act's requirement that standards be "objective." *472 F.2d, at 675*.

In preparing for the upcoming model year, most car makers chose the "ignition interlock" option, a decision which was highly unpopular, and led Congress to amend the Act to prohibit a motor vehicle safety standard from requiring or permitting compliance by means of an ignition interlock or a continuous buzzer designed to indicate that safety belts were not in use. Motor Vehicle and Schoolbus Safety Amendments of 1974, Pub. L. 93-492, § 109, 88 Stat. 1482, *15 U. S. C. § 1410b(b)*. The 1974 Amendments also provided that any safety standard that could be satisfied by a system other than seatbelts would have to be submitted to Congress where it could be vetoed by concurrent resolution of both Houses. *15 U. S. C. § 1410b(b)(2)*. ⁶

6 Because such a passive restraint standard was not technically in effect at this time due to the Sixth Circuit's invalidation of the testing requirements, see n. 5, *supra*, the issue was not submitted to Congress until a passive restraint requirement was reimposed by Secretary Adams in 1977. To comply with the Amendments, NHTSA proposed new warning systems to replace the prohibited continuous buzzers. *39 Fed. Reg. 42692 (1974)*. More significantly, NHTSA was forced to rethink an earlier decision which contemplated use of the interlocks in tandem with detachable belts. See n. 13, *infra*.

463 U.S. 29, *36; 103 S. Ct. 2856, **2863;
77 L. Ed. 2d 443, ***453; 1983 U.S. LEXIS 84

The effective date for mandatory passive restraint systems was extended for a year until August 31, 1976. 40 Fed. Reg. 16217 (1975); *id.*, at 33977. But in June 1976, Secretary of Transportation William T. Coleman, Jr., initiated a new rulemaking on the issue, 41 Fed. Reg. 24070. After hearing testimony and reviewing written comments, Coleman extended the optional alternatives indefinitely and suspended the passive restraint requirement. Although he found passive [*37] restraints technologically and economically feasible, the Secretary based his decision on the expectation that there [***454] would be widespread public resistance to the new systems. He instead proposed a demonstration project involving up to 500,000 cars installed with passive restraints, in order to smooth the way for public acceptance of mandatory passive restraints at a later date. Department of Transportation, The Secretary's Decision Concerning Motor Vehicle Occupant Crash Protection (Dec. 6, 1976), App. 2068.

Coleman's successor as Secretary of Transportation disagreed. Within months of assuming office, Secretary Brock Adams decided that the demonstration project was unnecessary. He issued a new mandatory passive restraint regulation, known as Modified Standard 208. 42 Fed. Reg. 34289 (1977); 49 CFR § 571.208 (1978). The Modified Standard mandated the phasing in of passive restraints beginning with large cars in model year 1982 and extending to all cars by model year 1984. The two principal systems that would satisfy the Standard were airbags and passive belts; the choice of which system to install was left to the manufacturers. In *Pacific Legal Foundation v. Department of Transportation*, 193 U. S. App. D. C. 184, 593 F.2d 1338, [*2864] cert. denied, 444 U.S. 830 (1979), the Court of Appeals upheld Modified Standard 208 as a rational, nonarbitrary regulation consistent with the agency's mandate under the Act. The Standard also survived scrutiny by Congress, which did not exercise its authority under the legislative veto provision of the 1974 Amendments.⁷

⁷ No action was taken by the full House of Representatives. The Senate Committee with jurisdiction over NHTSA affirmatively endorsed the Standard, S. Rep. No. 95-481 (1977), and a resolution of disapproval was tabled by the Senate. 123 Cong. Rec. 33332 (1977).

Over the next several years, the automobile industry geared up to comply with Modified Standard 208. As

late as July 1980, NHTSA reported:

[*38] "On the road experience in thousands of vehicles equipped with air bags and automatic safety belts has confirmed agency estimates of the life-saving and injury-preventing benefits of such systems. When all cars are equipped with automatic crash protection systems, each year an estimated 9,000 more lives will be saved, and tens of thousands of serious injuries will be prevented." NHTSA, Automobile Occupant Crash Protection, Progress Report No. 3, p. 4; App. in No. 81-2220 (CADDC), p. 1627 (hereinafter App.).

In February 1981, however, Secretary of Transportation Andrew Lewis reopened the rulemaking due to changed economic circumstances and, in particular, the difficulties of the automobile industry. 46 Fed. Reg. 12033. Two months later, the agency ordered a one-year delay in the application of the Standard to large cars, extending the deadline to September 1982, *id.*, at 21172, and at the same time, proposed the possible rescission of the entire Standard. *Id.*, at 21205. After receiving written comments and holding public hearings, NHTSA issued a final rule (Notice 25) that rescinded the passive restraint requirement contained in Modified Standard 208.

[***455] II

In a statement explaining the rescission, NHTSA maintained that it was no longer able to find, as it had in 1977, that the automatic restraint requirement would produce significant safety benefits. Notice 25, *id.*, at 53419. This judgment reflected not a change of opinion on the effectiveness of the technology, but a change in plans by the automobile industry. In 1977, the agency had assumed that airbags would be installed in 60% of all new cars and automatic seatbelts in 40%. By 1981 it became apparent that automobile manufacturers planned to install the automatic seatbelts in approximately 99% of the new cars. For this reason, the lifesaving potential of airbags would not be realized. Moreover, it now appeared that the overwhelming majority of passive belts [*39] planned to be installed by manufacturers could be detached easily and left that way permanently. Passive belts, once detached, then required "the same type of affirmative action that is the stumbling block to obtaining high usage levels of manual belts." *Id.*, at 53421. For this reason, the agency concluded that there was no longer a

basis for reliably predicting that the Standard would lead to any significant increased usage of restraints at all.

In view of the possibly minimal safety benefits, the automatic restraint requirement no longer was reasonable or practicable in the agency's view. The requirement would require approximately \$ 1 billion to implement and the agency did not believe it would be reasonable to impose such substantial costs on manufacturers and consumers without more adequate assurance that sufficient safety benefits would accrue. In addition, NHTSA concluded that automatic restraints might have an adverse effect on the public's attitude toward safety. Given the high expense and limited benefits of detachable belts, NHTSA feared that many consumers would regard the Standard as an instance of ineffective regulation, adversely affecting the public's view of safety regulation and, in particular, "poisoning . . . popular sentiment toward [*2865] efforts to improve occupant restraint systems in the future." *Id.*, at 53424.

State Farm Mutual Automobile Insurance Co. and the National Association of Independent Insurers filed petitions for review of NHTSA's rescission of the passive restraint Standard. The United States Court of Appeals for the District of Columbia Circuit held that the agency's rescission of the passive restraint requirement was arbitrary and capricious. *220 U. S. App. D. C. 170, 680 F.2d 206 (1982)*. While observing that rescission is not unrelated to an agency's refusal to take action in the first instance, the court concluded that, in this case, NHTSA's discretion to rescind the passive restraint requirement had been restricted by various forms of congressional "reaction" to the passive restraint issue. It then [*40] proceeded to find that the rescission of Standard 208 was arbitrary and capricious for three reasons. First, the court found insufficient as a basis for rescission NHTSA's conclusion that it could not reliably predict an increase in belt usage under the Standard. The court held that there was insufficient evidence in the record to sustain NHTSA's position on this issue, and [***456] that, "only a well justified refusal to seek more evidence could render rescission non-arbitrary." *Id.*, at 196, 680 *F.2d*, at 232. Second, a majority of the panel ⁸ concluded that NHTSA inadequately considered the possibility of requiring manufacturers to install nondetachable rather than detachable passive belts. Third, the majority found that the agency acted arbitrarily and capriciously by failing to give any consideration whatever to requiring compliance with Modified Standard 208 by the

installation of airbags.

8 Judge Edwards did not join the majority's reasoning on these points.

The court allowed NHTSA 30 days in which to submit a schedule for "resolving the questions raised in [the] opinion." *Id.*, at 206, 680 *F.2d*, at 242. Subsequently, the agency filed a Notice of Proposed Supplemental Rulemaking setting forth a schedule for complying with the court's mandate. On August 4, 1982, the Court of Appeals issued an order staying the compliance date for the passive restraint requirement until September 1, 1983, and requested NHTSA to inform the court whether that compliance date was achievable. NHTSA informed the court on October 1, 1982, that based on representations by manufacturers, it did not appear that practicable compliance could be achieved before September 1985. On November 8, 1982, we granted certiorari, 459 *U.S.* 987, and on November 18, the Court of Appeals entered an order recalling its mandate.

III

[***LEdHR2] [2] [***LEdHR3] [3] Unlike the Court of Appeals, we do not find the appropriate scope of judicial review to be the "most troublesome [*41] question" in these cases. Both the Act and the 1974 Amendments concerning occupant crash protection standards indicate that motor vehicle safety standards are to be promulgated under the informal rulemaking procedures of the Administrative Procedure Act. 5 *U. S. C.* § 553. The agency's action in promulgating such standards therefore may be set aside if found to be "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 *U. S. C.* § 706 (2)(A); *Citizens to Preserve Overton Park v. Volpe*, 401 *U.S.* 402, 414 (1971); *Bowman Transportation, Inc. v. Arkansas-Best Freight System, Inc.*, 419 *U.S.* 281 (1974). We believe that the rescission or modification of an occupant-protection standard is subject to the same test. Section 103(b) of the Act, 15 *U. S. C.* § 1392(b), states that the procedural and judicial review provisions of the Administrative Procedure Act "shall apply to all orders establishing, amending, or revoking a Federal motor vehicle safety standard," and suggests no difference in the scope of judicial review depending upon the nature of the agency's action.

[**2866] [***LEdHR4] [4] Petitioner Motor

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Vehicle Manufacturers Association (MVMA) disagrees, contending that the rescission of an agency rule should be judged by the same standard a court would use to judge an agency's refusal to promulgate a rule in the first place -- a standard petitioner believes [***457] considerably narrower than the traditional arbitrary-and-capricious test. We reject this view. The Act expressly equates orders "revoking" and "establishing" safety standards; neither that Act nor the APA suggests that revocations are to be treated as refusals to promulgate standards. Petitioner's view would render meaningless Congress' authorization for judicial review of orders revoking safety rules. Moreover, the revocation of an extant regulation is substantially different than a failure to act. Revocation constitutes a reversal of the agency's former views as to the proper course. A "settled course of behavior embodies the agency's informed judgment that, by pursuing that course, it will carry out the policies [*42] committed to it by Congress. There is, then, at least a presumption that those policies will be carried out best if the settled rule is adhered to." *Atchison, T. & S. F. R. Co. v. Wichita Bd. of Trade*, 412 U.S. 800, 807-808 (1973). Accordingly, an agency changing its course by rescinding a rule is obligated to supply a reasoned analysis for the change beyond that which may be required when an agency does not act in the first instance.

[***LEdHR5] [5]In so holding, we fully recognize that "[regulatory] agencies do not establish rules of conduct to last forever," *American Trucking Assns., Inc. v. Atchison, T. & S. F. R. Co.*, 387 U.S. 397, 416 (1967), and that an agency must be given ample latitude to "adapt their rules and policies to the demands of changing circumstances." *Permian Basin Area Rate Cases*, 390 U.S. 747, 784 (1968). But the forces of change do not always or necessarily point in the direction of deregulation. In the abstract, there is no more reason to presume that changing circumstances require the rescission of prior action, instead of a revision in or even the extension of current regulation. If Congress established a presumption from which judicial review should start, that presumption -- contrary to petitioners' views -- is not *against* safety regulation, but *against* changes in current policy that are not justified by the rulemaking record. While the removal of a regulation may not entail the monetary expenditures and other costs of enacting a new standard, and, accordingly, it may be easier for an agency to justify a deregulatory action, the direction in which an agency chooses to move does not alter the standard of judicial review established by law.

[***LEdHR6A] [6A] [***LEdHR7] [7] [***LEdHR8] [8] [***LEdHR9] [9] [***LEdHR10] [10]The Department of Transportation accepts the applicability of the "arbitrary and capricious" standard. It argues that under this standard, a reviewing court may not set aside an agency rule that is rational, based on consideration of the relevant factors, and within the scope of the authority delegated to the agency by the statute. We do not disagree with [*43] this formulation.⁹ The scope of review [***458] under the "arbitrary and capricious" standard is narrow and a court is not to substitute its judgment for that of the agency. Nevertheless, the agency must examine the relevant data and articulate a satisfactory explanation for its action including a "rational connection between the facts found and the choice made." *Burlington Truck Lines, Inc. v. United States*, 371 U.S. 156, 168 (1962). In reviewing that explanation, we must "consider whether the decision was based on a consideration of the relevant [**2867] factors and whether there has been a clear error of judgment." *Bowman Transportation, Inc. v. Arkansas-Best Freight System, Inc.*, *supra*, at 285; *Citizens to Preserve Overton Park v. Volpe*, *supra*, at 416. Normally, an agency rule would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise. The reviewing court should not attempt itself to make up for such deficiencies; we may not supply a reasoned basis for the agency's action that the agency itself has not given. *SEC v. Chenery Corp.*, 332 U.S. 194, 196 (1947). We will, however, "uphold a decision of less than ideal clarity if the agency's path may reasonably be discerned." *Bowman Transportation, Inc. v. Arkansas-Best Freight System, Inc.*, *supra*, at 286. See also *Camp v. Pitts*, 411 U.S. 138, 142-143 (1973) (*per curiam*). For purposes of these cases, it is also relevant that Congress required a record of the rulemaking proceedings to be compiled [*44] and submitted to a reviewing court, 15 U. S. C. § 1394, and intended that agency findings under the Act would be supported by "substantial evidence on the record considered as a whole." S. Rep. No. 1301, 89th Cong., 2d Sess., 8 (1966); H. R. Rep. No. 1776, 89th Cong., 2d Sess., 21 (1966).

9 [***LEdHR6B] [6B]The Department of

Transportation suggests that the arbitrary-and-capricious standard requires no more than the minimum rationality a statute must bear in order to withstand analysis under the Due Process Clause. We do not view as equivalent the presumption of constitutionality afforded legislation drafted by Congress and the presumption of regularity afforded an agency in fulfilling its statutory mandate.

IV

[***LEdHR11] [11]The Court of Appeals correctly found that the arbitrary-and-capricious test applied to rescissions of prior agency regulations, but then erred in intensifying the scope of its review based upon its reading of legislative events. It held that congressional reaction to various versions of Standard 208 "[raised] doubts" that NHTSA's rescission "necessarily demonstrates an effort to fulfill its statutory mandate, " and therefore the agency was obligated to provide "increasingly clear and convincing reasons" for its action. *220 U. S. App. D. C., at 186, 193, 680 F.2d, at 222, 229.* Specifically, the Court of Appeals found significance in three legislative occurrences:

"In 1974, Congress banned the ignition interlock but did not foreclose NHTSA's pursuit of a passive restraint standard. In 1977, Congress allowed the standard to take effect when neither of the concurrent resolutions needed for disapproval was passed. In 1980, a majority of each house indicated support for the concept of mandatory passive restraints and a majority of each house supported the unprecedented attempt to require [***459] some installation of airbags." *Id., at 192, 680 F.2d, at 228.*

From these legislative acts and nonacts the Court of Appeals derived a "congressional commitment to the concept of automatic crash protection devices for vehicle occupants." *Ibid.*

[***LEdHR12] [12]This path of analysis was misguided and the inferences it produced are questionable. It is noteworthy that in this Court respondent State Farm expressly agrees that the postenactment legislative history of the Act does not heighten the [*45] standard of review of NHTSA's actions. Brief for Respondent State Farm Mutual

Automobile Insurance Co. 13. State Farm's concession is well taken for this Court has never suggested that the *standard* of review is enlarged or diminished by subsequent congressional action. While an agency's interpretation of a statute may be confirmed or ratified by subsequent congressional failure to change that interpretation, *Bob Jones University v. United States*, 461 U.S. 574, 599-602 (1983); *Haig v. Agee*, 453 U.S. 280, 291-300 (1981), in the cases before us, even an unequivocal ratification -- short of statutory [***2868] incorporation -- of the passive restraint standard would not connote approval or disapproval of an agency's later decision to rescind the regulation. That decision remains subject to the arbitrary-and-capricious standard.

That we should not be so quick to infer a congressional mandate for passive restraints is confirmed by examining the postenactment legislative events cited by the Court of Appeals. Even were we inclined to rely on inchoate legislative action, the inferences to be drawn fail to suggest that NHTSA acted improperly in rescinding Standard 208. First, in 1974 a mandatory passive restraint standard was technically not in effect, see n. 6, *supra*; Congress had no reason to foreclose that course. Moreover, one can hardly infer support for a mandatory standard from Congress' decision to provide that such a regulation would be subject to disapproval by resolutions of disapproval in both Houses. Similarly, no mandate can be divined from the tabling of resolutions of disapproval which were introduced in 1977. The failure of Congress to exercise its veto might reflect legislative deference to the agency's expertise and does not indicate that Congress would disapprove of the agency's action in 1981. And even if Congress favored the Standard in 1977, it -- like NHTSA -- may well reach a different judgment, given changed circumstances four years later. Finally, the Court of Appeals read too much into floor action on the 1980 authorization bill, a bill which was not enacted into law. Other [*46] contemporaneous events could be read as showing equal congressional hostility to passive restraints.¹⁰

¹⁰ For example, an overwhelming majority of the Members of the House of Representatives voted in favor of a proposal to bar NHTSA from spending funds to administer an occupant restraint standard unless the standard permitted the purchaser of the vehicle to select manual rather than passive restraints. 125 Cong. Rec. 36926 (1979).

V

[***LEdHR1B] [1B]The ultimate question before us is whether NHTSA's rescission of [***460] the passive restraint requirement of Standard 208 was arbitrary and capricious. We conclude, as did the Court of Appeals, that it was. We also conclude, but for somewhat different reasons, that further consideration of the issue by the agency is therefore required. We deal separately with the rescission as it applies to airbags and as it applies to seatbelts.

A

The first and most obvious reason for finding the rescission arbitrary and capricious is that NHTSA apparently gave no consideration whatever to modifying the Standard to require that airbag technology be utilized. Standard 208 sought to achieve automatic crash protection by requiring automobile manufacturers to install either of two passive restraint devices: airbags or automatic seatbelts. There was no suggestion in the long rulemaking process that led to Standard 208 that if only one of these options were feasible, no passive restraint standard should be promulgated. Indeed, the agency's original proposed Standard contemplated the installation of inflatable restraints in all cars.¹¹ Automatic belts [*47] were added as a means of complying with the Standard because they were believed to be as effective as airbags in achieving the goal of occupant crash protection. 36 *Fed. Reg. 12859 (1971)*. At that time, the passive belt approved by the agency could not be detached.¹² Only later, [**2869] at a manufacturer's behest, did the agency approve of the detach-ability feature -- and only after assurances that the feature would not compromise the safety benefits of the restraint.¹³ Although it was then foreseen that 60% of the new cars would contain airbags and 40% would have automatic seatbelts, the ratio between the two was not significant as long as the passive belt would also assure greater passenger safety.

11 While NHTSA's 1970 passive restraint requirement permitted compliance by means other than the airbag, 35 *Fed. Reg. 16927*, "[this] rule was a de facto air bag mandate since no other technologies were available to comply with the standard." Graham & Gorham, *NHTSA and Passive Restraints: A Case of Arbitrary and Capricious Deregulation*, 35 *Ad. L. Rev.* 193, 197 (1983). See n. 4, *supra*.

12 Although the agency suggested that passive restraint systems contain an emergency release mechanism to allow easy extrication of passengers in the event of an accident, the agency cautioned that "[in] the case of passive safety belts, it would be required that the release not cause belt separation, and that the system be self-restoring after operation of the release." 36 *Fed. Reg. 12866 (1971)*.

13 In April 1974, NHTSA adopted the suggestion of an automobile manufacturer that emergency release of passive belts be accomplished by a conventional latch -- provided the restraint system was guarded by an ignition interlock and warning buzzer to encourage reattachment of the passive belt. 39 *Fed. Reg. 14593*. When the 1974 Amendments prohibited these devices, the agency simply eliminated the interlock and buzzer requirements, but continued to allow compliance by a detachable passive belt.

[***LEdHR1C] [1C] [***LEdHR13] [13]The agency has now determined that the detachable automatic belts will not attain anticipated safety benefits because so many individuals will detach the mechanism. Even if this conclusion were acceptable in its entirety, see *infra*, at 51-54, standing alone it would not justify any more than an amendment of Standard 208 to disallow compliance by means of the one technology which will not [***461] provide effective passenger protection. It does not cast doubt on the need for a passive restraint standard or upon the efficacy of airbag technology. In its most recent rulemaking, the agency again acknowledged the lifesaving potential of the airbag:

[*48] "The agency has no basis at this time for changing its earlier conclusions in 1976 and 1977 that basic air bag technology is sound and has been sufficiently demonstrated to be effective in those vehicles in current use" NHTSA Final Regulatory Impact Analysis (RIA) XI-4 (Oct. 1981), App. 264.

Given the effectiveness ascribed to airbag technology by the agency, the mandate of the Act to achieve traffic safety would suggest that the logical response to the faults of detachable seatbelts would be to require the installation of airbags. At the very least this alternative way of achieving the objectives of the Act should have been addressed and adequate reasons given for its abandonment. But the agency not only did not

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require compliance through airbags, it also did not even consider the possibility in its 1981 rulemaking. Not one sentence of its rulemaking statement discusses the airbags-only option. Because, as the Court of Appeals stated, "NHTSA's . . . analysis of airbags was nonexistent," 220 U. S. App. D. C., at 200, 680 F.2d, at 236, what we said in *Burlington Truck Lines, Inc. v. United States*, 371 U.S., at 167, is apropos here:

"There are no findings and no analysis here to justify the choice made, no indication of the basis on which the [agency] exercised its expert discretion. We are not prepared to and the Administrative Procedure Act will not permit us to accept such . . . practice. . . . Expert discretion is the lifeblood of the administrative process, but 'unless we make the requirements for administrative action strict and demanding, *expertise*, the strength of modern government, can become a monster which rules with no practical limits on its discretion.' *New York v. United States*, 342 U.S. 882, 884 (dissenting opinion)" (footnote omitted).

We have frequently reiterated that an agency must cogently explain why it has exercised its discretion in a given manner, [*49] *Atchison, T. & S. F. R. Co. v. Wichita Bd. of Trade*, 412 U.S., at 806; *FTC v. Sperry & Hutchinson Co.*, 405 U.S. 233, 249 (1972); *NLRB v. Metropolitan Life Ins. Co.*, 380 U.S. 438, 443 (1965); and we reaffirm this principle again today.

The automobile industry has opted for the passive belt over the airbag, but surely it is not enough that the regulated industry has eschewed a given safety device. For nearly a decade, the automobile industry waged the regulatory equivalent [**2870] of war against the airbag 14 and lost -- the inflatable restraint was proved sufficiently effective. Now the automobile [***462] industry has decided to employ a seatbelt system which will not meet the safety objectives of Standard 208. This hardly constitutes cause to revoke the Standard itself. Indeed, the Act was necessary because the industry was not sufficiently responsive to safety concerns. The Act intended that safety standards not depend on current technology and could be "technology-forcing" in the sense of inducing the development of superior safety design. See *Chrysler Corp. v. Department of Transportation*, 472 F.2d, at 672-673. If, under the statute, the agency should not defer to the industry's failure to develop safer cars, which it surely should not do, *a fortiori* it may not revoke a safety standard which

can be satisfied by current technology simply because the industry has opted for an ineffective seatbelt design.

14 See, e. g., Comments of Chrysler Corp., Docket No. 69-07, Notice 11 (Aug. 5, 1971) (App. 2491); Chrysler Corp. Memorandum on Proposed Alternative Changes to FMVSS 208, Docket No. 44, Notice 76-8 (1976) (App. 2241); General Motors Corp. Response to the Dept. of Transportation Proposal on Occupant Crash Protection, Docket No. 74-14, Notice 08 (May 27, 1977) (App. 1745). See also *Chrysler Corp. v. Department of Transportation*, 472 F.2d 659 (CA6 1972).

[***LEdHR14] [14] [***LEdHR15A] [15A] [***LEdHR16A] [16A] Although the agency did not address the mandatory airbag option and the Court of Appeals noted that "airbags seem to have none of the problems that NHTSA identified in passive seatbelts," 220 U. S. App. D. C., at 201, 680 F.2d, at 237, petitioners recite a number of difficulties that they [*50] believe would be posed by a mandatory airbag standard. These range from questions concerning the installation of airbags in small cars to that of adverse public reaction. But these are not the agency's reasons for rejecting a mandatory airbag standard. Not having discussed the possibility, the agency submitted no reasons at all. The short -- and sufficient -- answer to petitioners' submission is that the courts may not accept appellate counsel's *post hoc* rationalizations for agency action. *Burlington Truck Lines, Inc. v. United States*, 371 U.S., at 168. It is well established that an agency's action must be upheld, if at all, on the basis articulated by the agency itself. *Ibid.*; *SEC v. Chenery Corp.*, 332 U.S., at 196; *American Textile Mfrs. Institute, Inc. v. Donovan*, 452 U.S. 490, 539 (1981).¹⁵

15 [***LEdHR15B] [15B] [***LEdHR16B] [16B] The Department of Transportation expresses concern that adoption of an airbags-only requirement would have required a new notice of proposed rulemaking. Even if this were so, and we need not decide the question, it would not constitute sufficient cause to rescind the passive restraint requirement. The Department also asserts that it was reasonable to withdraw the requirement as written to avoid forcing

manufacturers to spend resources to comply with an ineffective safety initiative. We think that it would have been permissible for the agency to temporarily suspend the passive restraint requirement or to delay its implementation date while an airbag mandate was studied. But, as we explain in text, that option had to be considered before the passive restraint requirement could be revoked.

[***LEdHR1D] [1D] [***LEdHR17] [17] [***LEdHR18] [18] Petitioners also invoke our decision in *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc.*, 435 U.S. 519 (1978), as though it were a talisman under which any agency decision is by definition unimpeachable. Specifically, it is submitted that to require an agency to consider an airbags-only alternative is, in essence, to dictate to the agency the procedures it is to follow. Petitioners both misread *Vermont Yankee* and misconstrue the nature of the remand that is in order. In *Vermont Yankee*, we held that a court may not impose additional procedural requirements upon an agency. We do not require today any specific procedures [*51] which NHTSA must follow. Nor do we broadly require an agency to consider [***463] all policy alternatives in reaching decision. It is true that rulemaking "cannot be found wanting simply because the agency failed to include every alternative device and [*2871] thought conceivable by the mind of man . . . regardless of how uncommon or unknown that alternative may have been . . ." *Id.*, at 551. But the airbag is more than a policy alternative to the passive restraint Standard; it is a technological alternative within the ambit of the existing Standard. We hold only that given the judgment made in 1977 that airbags are an effective and cost-beneficial life-saving technology, the mandatory passive restraint rule may not be abandoned without any consideration whatsoever of an airbags-only requirement.

B

[***LEdHR1E] [1E] Although the issue is closer, we also find that the agency was too quick to dismiss the safety benefits of automatic seatbelts. NHTSA's critical finding was that, in light of the industry's plans to install readily detachable passive belts, it could not reliably predict "even a 5 percentage point increase as the

minimum level of expected usage increase." 46 *Fed. Reg.* 53423 (1981). The Court of Appeals rejected this finding because there is "not one iota" of evidence that Modified Standard 208 will fail to increase nationwide seatbelt use by at least 13 percentage points, the level of increased usage necessary for the Standard to justify its cost. Given the lack of probative evidence, the court held that "only a well justified refusal to seek more evidence could render rescission non-arbitrary." 220 *U. S. App. D. C.*, at 196, 680 *F.2d*, at 232.

[***LEdHR19] [19] Petitioners object to this conclusion. In their view, "substantial uncertainty" that a regulation will accomplish its intended purpose is sufficient reason, without more, to rescind a regulation. We agree with petitioners that just as an agency reasonably may decline to issue a safety standard if it is uncertain about its efficacy, an agency may also revoke a [*52] standard on the basis of serious uncertainties if supported by the record and reasonably explained. Rescission of the passive restraint requirement would not be arbitrary and capricious simply because there was no evidence in direct support of the agency's conclusion. It is not infrequent that the available data do not settle a regulatory issue, and the agency must then exercise its judgment in moving from the facts and probabilities on the record to a policy conclusion. Recognizing that policymaking in a complex society must account for uncertainty, however, does not imply that it is sufficient for an agency to merely recite the terms "substantial uncertainty" as a justification for its actions. As previously noted, the agency must explain the evidence which is available, and must offer a "rational connection between the facts found and the choice made." *Burlington Truck Lines, Inc. v. United States*, *supra*, at 168. Generally, one aspect of that explanation would be a justification for rescinding the regulation before engaging in a search for further evidence.

[***LEdHR1F] [1F] [***LEdHR20] [20] In these cases, the agency's explanation for rescission of the passive restraint requirement is *not* sufficient to enable us to conclude that the rescission was the product of reasoned decisionmaking. To reach [***464] this conclusion, we do not upset the agency's view of the facts, but we do appreciate the limitations of this record in supporting the agency's decision. We start with the accepted ground that if used, seatbelts unquestionably would save many thousands of lives and would prevent tens of thousands of crippling injuries. Unlike recent

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regulatory decisions we have reviewed, *Industrial Union Dept. v. American Petroleum Institute*, 448 U.S. 607 (1980); *American Textile Mfrs. Institute, Inc. v. Donovan*, 452 U.S. 490 (1981), the safety benefits of wearing seatbelts are not in doubt, and it is not challenged that were those benefits to accrue, the monetary costs of implementing the Standard would be easily justified. We move next to the fact that there is no direct evidence in support of the agency's finding that detachable automatic belts cannot be predicted [*53] to yield a substantial increase in [**2872] usage. The empirical evidence on the record, consisting of surveys of drivers of automobiles equipped with passive belts, reveals more than a doubling of the usage rate experienced with manual belts.¹⁶ Much of the agency's rulemaking statement -- and much of the controversy in these cases -- centers on the conclusions that should be drawn from these studies. The agency maintained that the doubling of seatbelt usage in these studies could not be extrapolated to an across-the-board mandatory standard because the passive seatbelts were guarded by ignition interlocks and purchasers of the tested cars are somewhat atypical.¹⁷ Respondents insist these studies demonstrate that Modified Standard 208 will substantially increase seatbelt usage. We believe that it is within the agency's discretion to pass upon the generalizability of these field studies. This is precisely the type of issue which rests within the expertise of NHTSA, and upon which a reviewing court must be most hesitant to intrude.

16 Between 1975 and 1980, Volkswagen sold approximately 350,000 Rabbits equipped with detachable passive seatbelts that were guarded by an ignition interlock. General Motors sold 8,000 1978 and 1979 Chevettes with a similar system, but eliminated the ignition interlock on the 13,000 Chevettes sold in 1980. NHTSA found that belt usage in the Rabbits averaged 34% for manual belts and 84% for passive belts. RIA, at IV-52, App. 108. For the 1978-1979 Chevettes, NHTSA calculated 34% usage for manual belts and 72% for passive belts. On 1980 Chevettes, the agency found these figures to be 31% for manual belts and 70% for passive belts. *Ibid.*

17 "NHTSA believes that the usage of automatic belts in Rabbits and Chevettes would have been substantially lower if the automatic belts in those cars were not equipped with a use-inducing device inhibiting detachment." Notice 25, 46 *Fed. Reg.* 53422 (1981).

[**LEdHR21] [21]But accepting the agency's view of the field tests on passive restraints indicates only that there is no reliable real-world experience that usage rates will substantially increase. To be sure, NHTSA opines that "it cannot reliably predict even a 5 percentage point increase as the minimum level of [*54] expected increased usage." Notice 25, 46 *Fed. Reg.* 53423 (1981). But this and other statements that passive belts will not yield substantial increases in seatbelt usage apparently take no account of the critical difference between detachable automatic belts and current manual belts. A detached passive belt does require an affirmative act to reconnect it, but -- unlike [***465] a manual seatbelt -- the passive belt, once reattached, will continue to function automatically unless again disconnected. Thus, inertia -- a factor which the agency's own studies have found significant in explaining the current low usage rates for seatbelts¹⁸ -- works in *favor* of, not *against*, use of the protective device. Since 20% to 50% of motorists currently wear seatbelts on some occasions,¹⁹ there would seem to be grounds to believe that seatbelt use by occasional users will be substantially increased by the detachable passive belts. Whether this is in fact the case is a matter for the agency to decide, but it must bring its expertise to bear on the question.

18 NHTSA commissioned a number of surveys of public attitudes in an effort to better understand why people were not using manual belts and to determine how they would react to passive restraints. The surveys reveal that while 20% to 40% of the public is opposed to wearing manual belts, the larger proportion of the population does not wear belts because they forgot or found manual belts inconvenient or bothersome. RIA, at IV-25, App. 81. In another survey, 38% of the surveyed group responded that they would welcome automatic belts, and 25% would "tolerate" them. See RIA, at IV-37, App. 93. NHTSA did not comment upon these attitude surveys in its explanation accompanying the rescission of the passive restraint requirement.

19 Four surveys of manual belt usage were conducted for NHTSA between 1978 and 1980, leading the agency to report that 40% to 50% of the people use their belts at least some of the time. RIA, at IV-25, App. 81.

[***LEdHR22] [22]The agency is correct to look at the costs as well as the benefits of Standard 208. The agency's conclusion that the incremental costs of the requirements were no longer reasonable was predicated on its prediction that the safety benefits of the regulation [**2873] might be minimal. Specifically, the [*55] agency's fears that the public may resent paying more for the automatic belt systems is expressly dependent on the assumption that detachable automatic belts will not produce more than "negligible safety benefits." *Id.*, at 53424. When the agency reexamines its findings as to the likely increase in seatbelt usage, it must also reconsider its judgment of the reasonableness of the monetary and other costs associated with the Standard. In reaching its judgment, NHTSA should bear in mind that Congress intended safety to be the pre-eminent factor under the Act:

"The Committee intends that safety shall be the overriding consideration in the issuance of standards under this bill. The Committee recognizes . . . that the Secretary will necessarily consider reasonableness of cost, feasibility and adequate leadtime." S. Rep. No. 1301, 89th Cong., 2d Sess., 6 (1966).

"In establishing standards the Secretary must conform to the requirement that the standard be practicable. This would require consideration of all relevant factors, including technological ability to achieve the goal of a particular standard as well as consideration of economic factors.

"Motor vehicle safety is the paramount purpose of this bill and each standard must be related thereto." H. R. Rep. No. 1776, 89th Cong., 2d Sess., 16 (1966).

The agency also failed to articulate a basis for not requiring nondetachable belts under Standard 208. It is argued that the concern of the agency with the easy detachability [***466] of the currently favored design would be readily solved by a continuous passive belt, which allows the occupant to "spool out" the belt and create the necessary slack for easy extrication from the vehicle. The agency did not separately consider the continuous belt option, but treated it together with the ignition interlock device in a category it titled "Option of Adopting Use-Compelling Features." 46 *Fed. Reg.* 53424 [*56] (1981). The agency was concerned that use-compelling devices would "complicate the extrication

of [an] occupant from his or her car." *Ibid.* "[To] require that passive belts contain use-compelling features," the agency observed, "could be counterproductive [, given] . . . widespread, latent and irrational fear in many members of the public that they could be trapped by the seat belt after a crash." *Ibid.* In addition, based on the experience with the ignition interlock, the agency feared that use-compelling features might trigger adverse public reaction.

[***LEdHR1G] [1G] [***LEdHR23] [23]By failing to analyze the continuous seatbelts option in its own right, the agency has failed to offer the rational connection between facts and judgment required to pass muster under the arbitrary-and-capricious standard. We agree with the Court of Appeals that NHTSA did not suggest that the emergency release mechanisms used in nondetachable belts are any less effective for emergency egress than the buckle release system used in detachable belts. In 1978, when General Motors obtained the agency's approval to install a continuous passive belt, it assured the agency that nondetachable belts with spool releases were as safe as detachable belts with buckle releases. 43 *Fed. Reg.* 21912, 21913-21914 (1978). NHTSA was satisfied that this belt design assured easy extricability: "[the] agency does not believe that the use of [such] release mechanisms will cause serious occupant egress problems" *Id.*, at 52493, 52494. While the agency is entitled to change its view on the acceptability of continuous passive belts, it is obligated to explain its reasons for doing so.

[***LEdHR24] [24]The agency also failed to offer any explanation why a continuous passive belt would engender the same adverse public reaction as the ignition interlock, and, as the Court of Appeals concluded, "every indication in the record points the other way." 220 *U. S. App. D. C.*, at 198, 680 *F.2d*, at 234.²⁰ [*57] We [**2874] see no basis for equating the two devices: the continuous belt, unlike the ignition interlock, does not interfere with the operation of the vehicle. More importantly, it is the agency's responsibility, not this Court's, to explain its decision.

20 The Court of Appeals noted previous agency statements distinguishing interlocks from passive restraints. 42 *Fed. Reg.* 34290 (1977); 36 *Fed. Reg.* 8296 (1971); RIA, at II-4, App. 30.

"

[***LEdHR1H] [1H] [***LEdHR25] [25] [***LEdHR26A] [26A] An agency's view of what is in the public interest may change, either with or without a change in circumstances. But an agency changing its course must supply a reasoned analysis" *Greater Boston Television Corp. v. FCC*, 143 U. S. App. D. C. 383, 394, 444 F.2d 841, 852 (1970) (footnote omitted), cert. denied, 403 U.S. 923 (1971). We do not accept all of the reasoning of [***467] the Court of Appeals but we do conclude that the agency has failed to supply the requisite "reasoned analysis" in this case. Accordingly, we vacate the judgment of the Court of Appeals and remand the cases to that court with directions to remand the matter to the NHTSA for further consideration consistent with this opinion.²¹

21

[***LEdHR26B] [26B] Petitioners construe the Court of Appeals' order of August 4, 1982, as setting an implementation date for Standard 208, in violation of *Vermont Yankee's* injunction against imposing such time constraints. *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc.*, 435 U.S. 519, 544-545 (1978). Respondents maintain that the Court of Appeals simply stayed the effective date of Standard 208, which, not having been validly rescinded, would have required mandatory passive restraints for new cars after September 1, 1982. We need not choose between these views because the agency had sufficient justification to suspend, although not to rescind, Standard 208, pending the further consideration required by the Court of Appeals, and now, by us.

So ordered.

CONCUR BY: REHNQUIST (In Part)

DISSENT BY: REHNQUIST (In Part)

DISSENT

JUSTICE REHNQUIST, with whom THE CHIEF JUSTICE, JUSTICE POWELL, and JUSTICE O'CONNOR join, concurring in part and dissenting in part.

I join Parts I, II, III, IV, and V-A of the Court's opinion. In particular, I agree that, since the airbag and continuous [*58] spool automatic seatbelt were explicitly approved in the Standard the agency was rescinding, the agency should explain why it declined to leave those requirements intact. In this case, the agency gave no explanation at all. Of course, if the agency can provide a rational explanation, it may adhere to its decision to rescind the entire Standard.

I do not believe, however, that NHTSA's view of detachable automatic seatbelts was arbitrary and capricious. The agency adequately explained its decision to rescind the Standard insofar as it was satisfied by detachable belts.

The statute that requires the Secretary of Transportation to issue motor vehicle safety standards also requires that "[each] such . . . standard shall be practicable [and] shall meet the need for motor vehicle safety." 15 U. S. C. § 1392(a) (1976 ed., Supp. V). The Court rejects the agency's explanation for its conclusion that there is substantial uncertainty whether requiring installation of detachable automatic belts would substantially increase seatbelt usage. The agency chose not to rely on a study showing a substantial increase in seatbelt usage in cars equipped with automatic seatbelts and an ignition interlock to prevent the car from being operated when the belts were not in place and which were voluntarily purchased with this equipment by consumers. See *ante*, at 53, n. 16. It is reasonable for the agency to decide that this study does not support any conclusion concerning the effect of automatic seatbelts that are installed in all cars whether the consumer wants them or not and are not linked to an ignition interlock system.

The Court rejects this explanation because "there would seem to be grounds to believe that seatbelt use by occasional users will be substantially increased by the detachable passive belts," *ante*, at 54, [***468] and the agency did not adequately explain its rejection of these grounds. It seems to me that the agency's explanation, while by [*2875] no means a model, is adequate. The agency acknowledged that there would probably be some increase in belt usage, but concluded that the increase would be small and not worth the cost of mandatory [*59] detachable automatic belts. 46 Fed. Reg. 53421-53423 (1981). The agency's obligation is to articulate a "rational connection between the facts found and the choice made." *Ante*, at 42, 52, quoting

463 U.S. 29, *59; 103 S. Ct. 2856, **2875;
77 L. Ed. 2d 443, ***468; 1983 U.S. LEXIS 84

Burlington Truck Lines, Inc. v. United States, 371 U.S. 156, 168 (1962). I believe it has met this standard.

The agency explicitly stated that it will increase its educational efforts in an attempt to promote public understanding, acceptance, and use of passenger restraint systems. 46 *Fed. Reg.* 53425 (1981). It also stated that it will "initiate efforts with automobile manufacturers to ensure that the public will have [automatic crash protection] technology available. If this does not succeed, the agency will consider regulatory action to assure that the last decade's enormous advances in crash protection technology will not be lost." *Id.*, at 53426.

The agency's changed view of the standard seems to be related to the election of a new President of a different political party. It is readily apparent that the responsible members of one administration may consider public resistance and uncertainties to be more important than do their counterparts in a previous administration. A change in administration brought about by the people casting their votes is a perfectly reasonable basis for an executive agency's reappraisal of the costs and benefits of its programs and regulations. As long as the agency remains within the bounds established by Congress, * it is entitled to assess administrative records and evaluate priorities in light of the philosophy of the administration.

* Of course, a new administration may not refuse to enforce laws of which it does not approve, or to ignore statutory standards in carrying out its regulatory functions. But in this case, as the Court correctly concludes, *ante*, at 44-46, Congress has not required the agency to require passive restraints.

REFERENCES

2 *Am Jur 2d, Administrative Law* 310, 610, 612; 614,

619-621, 633, 678-691; 7A *Am Jur 2d, Automobiles and Highway Traffic* 171-173, 180

2 *Federal Procedure, L Ed, Administrative Procedure* 2:59, 2:66-2:68, 2:232, 2:233

1 *Federal Procedural Forms, L Ed, Administrative Procedure* 2:21

1 *Am Jur Pl & Pr Forms (Rev), Administrative Law, Forms* 32-35, 42, 187, 236

16 *Am Jur Proof of Facts* 1, *Automobile Design Hazards*; 16 *Am Jur Proof of Facts* 351, *Seat Belt Accidents*

5 *USCS* 553, 706(2)(A); 15 *USCS* 1381 *et seq.*, 1392(b)

US L Ed Digest, Administrative Law 77, 89, 250

L Ed Index to Annos, Administrative Law; Motor Vehicles and Carriers; Safety

ALR Quick Index, Administrative Law; Automobiles and Highway Traffic; National Traffic and Motor Vehicle Safety Act ;Safety Codes or Standards; Safety Precautions or Devices; Seat Belts

Federal Quick Index, Administrative Law; Automobiles and Highway Traffic; Safety Codes and Regulations; Safety Equipment; Seat Belts

Annotation References:

Construction and application of federal *Administrative Procedure Act*. 94 *L Ed* 631, 95 *L Ed* 473, 97 *L Ed* 884.

Judicial review of orders under National Traffic and Motor Vehicle Safety Act of 1966 (15 *USCS* 1381 *et seq.*). 18 *ALR Fed* 610.

Validity and construction of safety standards issued under National Traffic and Motor Vehicle Safety Act of 1966, as amended (15 *USCS* 1381 *et seq.*). 6 *ALR Fed* 988.

2005 California Government Code Sections 53311-53317.5 Article 1. General Provisions

GOVERNMENT CODE SECTION 53311-53317.5

53311. This chapter shall be known and may be cited as the "Mello-Roos Community Facilities Act of 1982".

53311.5. This chapter provides an alternative method of financing certain public capital facilities and services, especially in developing areas and areas undergoing rehabilitation. The provisions of this chapter shall not affect or limit any other provisions of law authorizing or providing for the furnishing of governmental facilities or services or the raising of revenue for these purposes.

A local government may use the provisions of this chapter instead of any other method of financing part or all of the cost of providing the authorized kinds of capital facilities and services.

53312. Any provision in this chapter which conflicts with any other provision of law shall prevail over the other provision of law.

53312.5. The local agency may take any actions or make any determinations which it determines are necessary or convenient to carry out the purposes of this chapter and which are not otherwise prohibited by law.

53312.7. (a) On and after January 1, 1994, a local agency may initiate proceedings to establish a district pursuant to this chapter only if it has first considered and adopted local goals and policies concerning the use of this chapter. The policies shall include at least the following:

(1) A statement of the priority that various kinds of public facilities shall have for financing through the use of this chapter, including public facilities to be owned and operated by other public agencies, including school districts.

(2) A statement concerning the credit quality to be required of bond issues, including criteria to be used in evaluating the credit quality.

(3) A statement concerning steps to be taken to ensure that prospective property purchasers are fully informed about their taxpaying obligations imposed under this chapter.

(4) A statement concerning criteria for evaluating the equity of tax allocation formulas, and concerning desirable and maximum amounts of special tax to be levied against any parcel pursuant to this chapter.

(5) A statement of definitions, standards, and assumptions to be used in appraisals required by Section 53345.8.

(b) The goals and policies adopted by any school district pursuant to subdivision (a) shall include, but not be limited to, a priority access policy which gives priority attendance access to students residing in a community facilities district whose residents have paid special taxes which have, in whole or in part, financed the construction of school district facilities. The degree of priority shall reflect the proportion of each school's financing provided through the community facilities district. In developing a priority access policy for residents of a community facilities district, a

school district may incorporate a school district attendance policy including criteria for student assignment such as goals to achieve ethnic, racial, or socioeconomic diversity; federal, state, or court mandates; transportation needs, safe pedestrian routes; grade levels for which facilities were designed; and ensuring students continuity of schooling within any single school year.

53312.8. (a) Territory that is dedicated or restricted to agricultural, open-space, or conservation uses may not be included within or annexed to a community facilities district that provides or would provide facilities or services related to sewers, nonagricultural water, or streets and roads, unless the landowner consents to the inclusion or annexation of that territory to the community facilities district.

(b) Notwithstanding any other provision of law, and except as provided in subdivision (c), if a landowner consents to the inclusion or annexation of territory in a community facilities district pursuant to subdivision (a), the landowner and any local agency may not terminate any easement or effect a final cancellation of any contract with respect to any portion of the land included within or annexed to the community facilities district prior to the release of land that is the subject of the proposed termination or cancellation from all liens that arise under the community facilities district for any sewers, nonagricultural water, or streets and roads that did not benefit land uses allowed under the contract or easement.

(c) Subdivision (b) shall not apply to any of the following:

(1) Land under a contract entered into pursuant to the California Land Conservation Act of 1965 (Chapter 7 (commencing with Section 51200) of Part 1 of Division 1) included in a community facilities district for which a tentative map may be filed pursuant to paragraph (3) of subdivision (d) of Section 66474.4 or for which a tentative cancellation has been approved.

(2) Land subject to a conservation easement entered into prior to January 1, 2003.

(3) Land included in a community facilities district prior to the imposition of an enforceable restriction listed in subdivision (d) or prior to January 1, 2003.

(4) Land subject to an enforceable restriction listed in subdivision (d) that expressly waives the requirement of subdivision (b).

(d) As used in this section, "territory that is dedicated or restricted to agricultural, open-space, or conservation uses" means territory that is subject to any of the following:

(1) An open-space easement entered into pursuant to Chapter 6.5 (commencing with Section 51050) of Part 1 of Division 1.

(2) An open-space easement entered into pursuant to the Open-Space Easement Act of 1974 (Chapter 6.6 (commencing with Section 51070) of Part 1 of Division 1).

(3) A contract entered into pursuant to the California Land Conservation Act of 1965 (Chapter 7 (commencing with Section 51200) of Part 1 of Division 1).

(4) A farmland security zone contract created pursuant to Article 7 (commencing with Section 51296) of Chapter 7 of Part 1 of Division 1), except as otherwise provided in Section 51296.4.

(5) A conservation easement entered into pursuant to Chapter 4 (commencing with Section 815) of Title 2 of Part 2 of Division 2 of the Civil Code.

(6) An agricultural conservation easement entered into pursuant to

Chapter 4 (commencing with Section 10260) of Division 10.2 of the Public Resources Code.

(7) An agricultural conservation easement entered into pursuant to Section 51256.

53313. A community facilities district may be established under this chapter to finance any one or more of the following types of services within an area:

(a) Police protection services, including, but not limited to, criminal justice services. However, criminal justice services shall be limited to providing services for jails, detention facilities, and juvenile halls.

(b) Fire protection and suppression services, and ambulance and paramedic services.

(c) Recreation program services, library services, maintenance services for elementary and secondary schoolsites and structures, and the operation and maintenance of museums and cultural facilities. Bonds may not be issued pursuant to this chapter to fund any of the services specified in this subdivision. A special tax may be levied for any of the services specified in this subdivision only upon approval of the voters as specified in subdivision (b) of Section 53328. However, the requirement contained in subdivision (b) of Section 53328 that a certain number of persons have been registered to vote for each of the 90 days preceding the close of the protest hearing does not apply to an election to enact a special tax for recreation program services, library services, and the operation and maintenance of museums and cultural facilities subject to subdivision (c) of Section 53326.

(d) Maintenance of parks, parkways, and open space.

(e) Flood and storm protection services, including, but not limited to, the operation and maintenance of storm drainage systems, and sandstorm protection systems.

(f) Services with respect to removal or remedial action for the cleanup of any hazardous substance released or threatened to be released into the environment. As used in this subdivision, the terms "remedial action" and "removal" shall have the meanings set forth in Sections 25322 and 25323, respectively, of the Health and Safety Code, and the term "hazardous substance" shall have the meaning set forth in Section 25281 of the Health and Safety Code. Community facilities districts shall provide the State Department of Health Services and local health and building departments with notification of any cleanup activity pursuant to this subdivision at least 30 days prior to commencement of the activity.

A community facilities district tax approved by vote of the landowners of the district may only finance the services authorized in this section to the extent that they are in addition to those provided in the territory of the district before the district was created. The additional services may not supplant services already available within that territory when the district was created.

53313.1. To the extent that any capital facility is provided under this chapter, a duplicate levy, impact fee, or other exaction may not be required for the same purpose under Section 66477.

53313.4. Any territory within a community facilities district established for the acquisition or improvement of school facilities for a school district shall be exempt from any fee, increase in any fee other than a cost-of-living increase as authorized by law, or other requirement first levied, increased, or imposed subsequent to the date on which the resolution of formation creating the community

facilities district is adopted under Section 53080, or under Chapter 4.7 (commencing with Section 65970) of Division 1 of Title 7, by or to benefit any other school district, except as otherwise negotiated between the school districts. That exemption shall apply until a date 10 years following the most recent issuance of bonds by the community facilities district or, if no bonds have ever been issued by the community facilities district, a date 10 years following the formation of the community facilities district or until the school district applies for state funding as provided in subdivision (d) of Section 17705.6.

53313.5. A community facilities district may also finance the purchase, construction, expansion, improvement, or rehabilitation of any real or other tangible property with an estimated useful life of five years or longer or may finance planning and design work that is directly related to the purchase, construction, expansion, or rehabilitation of any real or tangible property. The facilities need not be physically located within the district. A district may not lease out facilities which it has financed except pursuant to a lease agreement or annexation agreement entered into prior to January 1, 1988. A district may only finance the purchase of facilities whose construction has been completed, as determined by the legislative body, before the resolution of formation to establish the district is adopted pursuant to Section 53325.1, except that a district may finance the purchase of facilities completed after the adoption of the resolution of formation if the facility was constructed as if it had been constructed under the direction and supervision, or under the authority of, the local agency. For example, a community facilities district may finance facilities, including, but not limited to, the following:

(a) Local park, recreation, parkway, and open-space facilities.

(b) Elementary and secondary schoolsites and structures provided that the facilities meet the building area and cost standards established by the State Allocation Board.

(c) Libraries.

(d) Child care facilities, including costs of insuring the facilities against loss, liability insurance in connection with the operation of the facility, and other insurance costs relating to the operation of the facilities, but excluding all other operational costs. However, the proceeds of bonds issued pursuant to this chapter shall not be used to pay these insurance costs.

(e) The district may also finance the construction or undergrounding of water transmission and distribution facilities, natural gas pipeline facilities, telephone lines, facilities for the transmission or distribution of electrical energy, and cable television lines to provide access to those services to customers who do not have access to those services or to mitigate existing visual blight. The district may enter into an agreement with a public utility to utilize those facilities to provide a particular service and for the conveyance of those facilities to the public utility. "Public utility" shall include all utilities, whether public and regulated by the Public Utilities Commission, or municipal. If the facilities are conveyed to the public utility, the agreement shall provide that the cost or a portion of the cost of the facilities that are the responsibility of the utility shall be refunded by the public utility to the district or improvement area thereof, to the extent that refunds are applicable pursuant to (1) the Public Utilities Code or rules of the Public Utilities Commission, as to

utilities regulated by the commission, or (2) other laws regulating public utilities. Any reimbursement made to the district shall be utilized to reduce or minimize the special tax levied within the district or improvement area, or to construct or acquire additional facilities within the district or improvement area, as specified in the resolution of formation.

(f) The district may also finance the acquisition, improvement, rehabilitation, or maintenance of any real or other tangible property, whether privately or publicly owned, for the purposes described in subdivision (e) of Section 53313.

(g) The district may also pay in full all amounts necessary to eliminate any fixed special assessment liens or to pay, repay, or defease any obligation to pay or any indebtedness secured by any tax, fee, charge, or assessment levied within the area of a community facilities district or may pay debt service on that indebtedness. In addition, tax revenues of a district may be used to make lease or debt service payments on any lease, lease purchase contract, or certificate of participation used to finance authorized district facilities.

(h) Any other governmental facilities which the legislative body creating the community facilities district is authorized by law to contribute revenue to, or construct, own, or operate. However, the district shall not operate or maintain or, except as otherwise provided in subdivisions (e) and (f), have any ownership interest in any facilities for the transmission or distribution of natural gas, telephone service, or electrical energy.

(i) (1) A district may also pay for the following:

(A) Work deemed necessary to bring buildings or real property, including privately owned buildings or real property, into compliance with seismic safety standards or regulations. Only work certified as necessary to comply with seismic safety standards or regulations by local building officials may be financed. No project involving the dismantling of an existing building and its replacement by a new building, nor the construction of a new or substantially new building may be financed pursuant to this subparagraph. Work on qualified historical buildings or structures shall be done in accordance with the State Historical Building Code (Part 2.7 (commencing with Section 18950) of Division 13 of the Health and Safety Code).

(B) In addition, within any county or area designated by the President of the United States or by the Governor as a disaster area or for which the Governor has proclaimed the existence of a state of emergency because of earthquake damage, a district may also pay for any work deemed necessary to repair any damage to real property directly or indirectly caused by the occurrence of an earthquake cited in the President's or the Governor's designation or proclamation, or by aftershocks associated with that earthquake, including work to reconstruct, repair, shore up, or replace any building damaged or destroyed by the earthquake, and specifically including, but not limited to, work on any building damaged or destroyed in the Loma Prieta earthquake which occurred on October 17, 1989, or by its aftershocks. Work may be financed pursuant to this subparagraph only on property or buildings identified in a resolution of intention to establish a community facilities district adopted within seven years of the date on which the county or area is designated as a disaster area by the President or by the Governor or on which the Governor proclaims for the area the existence of a state of emergency.

(2) Work on privately owned property, including reconstruction or replacement of privately owned buildings pursuant to subparagraph (B) of paragraph (1), may only be financed by a tax levy if all of the votes cast on the question of levying the tax, vote in favor of levying the tax, or with the prior written consent to the tax of the owners of all property which may be subject to the tax, in which case the prior written consent shall be deemed to constitute a vote in favor of the tax and any associated bond issue. Any district created to finance seismic safety work on privately owned buildings, including repair, reconstruction, or replacement of privately owned buildings pursuant to this subdivision, shall consist only of lots or parcels on which the legislative body finds that the buildings to be worked on, repaired, reconstructed, or replaced, pursuant to this subdivision, are located or were located before being damaged or destroyed by the earthquake cited pursuant to subparagraph (B) of paragraph (1) or by the aftershocks of that earthquake.

(j) (1) A district may also pay for the following:

(A) Work deemed necessary to repair and abate damage caused to privately owned buildings and structures by soil deterioration. "Soil deterioration" means a chemical reaction by soils that causes structural damage or defects in construction materials including concrete, steel, and ductile or cast iron. Only work certified as necessary by local building officials may be financed. No project involving the dismantling of an existing building or structure and its replacement by a new building or structure, nor the construction of a new or substantially new building or structure may be financed pursuant to this subparagraph.

(B) Work on privately owned buildings and structures pursuant to this subdivision, including reconstruction, repair, and abatement of damage caused by soil deterioration, may only be financed by a tax levy if all of the votes cast on the question of levying the tax vote in favor of levying the tax. Any district created to finance the work on privately owned buildings or structures, including reconstruction, repair, and abatement of damage caused by soil deterioration, shall consist only of lots or parcels on which the legislative body finds that the buildings or structures to be worked on pursuant to this subdivision suffer from soil deterioration. 53313.51. The legislative body may enter into an agreement for the construction of discrete portions or phases of facilities to be constructed and purchased consistent with Section 53313.5. The agreement may include any provisions that the legislative body determines are necessary or convenient, but shall do all of the following:

(a) Identify the specific facilities or discrete portions or phases of facilities to be constructed and purchased. The legislative body may agree to purchase discrete portions or phases of facilities if the portions or phases are capable of serviceable use as determined by the legislative body.

(b) Notwithstanding subdivision (a), when the purchase value of a facility exceeds one million dollars (\$1,000,000), the legislative body may agree to purchase discrete portions or phases of the partially completed project.

(c) Identify procedures to ensure that the facilities are constructed pursuant to plans, standards, specifications, and other requirements as determined by the legislative body.

(d) Specify a price or a method to determine a price for each facility or discrete portion or phase of a facility. The price may

include an amount reflecting the interim cost of financing cash payments that must be made during construction of the project, at the discretion of the legislative body.

(e) Specify procedures for final inspection and approval of facilities or discrete portions of facilities, for approval of payment, and for acceptance and conveyance or dedication of the facilities to the local agency.

53313.6. The legislative body may provide for adjustments in ad valorem property taxes pursuant to Section 53313.7 within a community facilities district only after making both of the following findings at the conclusion of the public hearing held pursuant to Article 2 (commencing with Section 53318):

(a) That an ad valorem property tax is levied on property within a proposed community facilities district for the exclusive purpose of making lease payments or paying principal or interest on bonds or other indebtedness, including state school building loans, incurred to finance construction of capital facilities.

(b) That capital facilities to be financed by the community facilities district will provide the same services to the territory of the community facilities district as were provided by the capital facilities mentioned in subdivision (a).

53313.7. (a) Upon making the findings pursuant to Section 53313.6, the legislative body may, with the concurrence of the legislative body which levied the property tax described in subdivision (a) of Section 53313.6, by ordinance, determine that the total annual amount of ad valorem property tax revenue due from parcels within the proposed community facilities district, for purposes of paying principal and interest on the debt identified in Section 53313.6, shall not be increased after the date on which the resolution of formation for the community facilities district is adopted, or after a later date determined by the legislative body creating the community facilities district with the concurrence of the legislative body which levied the property tax in question.

(b) The legislative body may, by ordinance, with the concurrence of the legislative body that levied the property tax described in subdivision (a) of Section 53313.6, determine to cease and eliminate the freeze on property tax revenue established pursuant to subdivision (a), upon determining that the community facilities district's special tax or portion thereof levied on the parcels in question to pay for the capital facilities specified in subdivision (b) of Section 53313.6 shall cease to be levied and collected.

53313.85. Pursuant to Section 53313.5, a community facilities district may also finance the acquisition improvement, rehabilitation, or maintenance of any real or other tangible property, whether privately or publicly owned, for the purposes described in subdivision (f) of Section 53313.

53313.9. (a) All or any part of the cost of any school facilities financed by a community facilities district may be shared by the State Allocation Board pursuant to Section 17718.5 of the Education Code.

(b) If the State Allocation Board shares in any part of the cost of the school facilities, the ownership of those facilities and the real property upon which the facilities are located shall be transferred to the State of California. A copy of the deed by which the title is transferred shall be recorded in the office of the county recorder of the county in which the property is located. The deed shall be indexed by the county recorder in the grantor-grantee

index to the name of the school district as grantor and to the State of California as grantee. In addition, the community facilities district shall take one or more of the following actions:

(1) Reduce the amount of bonds authorized to be issued by the community facilities district by an amount not to exceed the amount that the State Allocation Board contributes to the project.

(2) Reduce the rate of any special tax which is levied within the community facilities district to reflect the amount that the State Allocation Board contributes to the project.

(3) Reduce the amount of outstanding bonds or provide for the defeasance of outstanding bonds by an amount not to exceed the amount that the State Allocation Board contributes to the project.

(4) Shorten the period of time during which a special tax is levied within the community facilities district to reflect the reduced funding needs resulting from the amount that the State Allocation Board contributes to the project.

(c) Any reductions pursuant to subdivision (b) shall be consistent with the provisions of the resolutions of intention, formation, consideration, and to incur bonded indebtedness, adopted pursuant to Sections 53320, 53321, 53325.1, 53334, and 53345. The legislative body may, by resolution, reduce the special tax or the amount of outstanding bonds in a manner consistent with the provisions of this section.

53314. The legislative body may from time to time transfer moneys to a community facilities district or to an improvement area within a community facilities district, for the benefit of the district or improvement area, from any funds available to the legislative body. Any moneys so transferred may be used for the payment of any currently payable expenses incurred by reason of the construction or acquisition of any facilities or provision of any authorized services within the district or improvement area prior to December 1 of the first fiscal year in which a special tax may be levied for the facilities or services within the district or improvement area. The rate of interest earned by the investment of those moneys shall be determined by the legislative body.

53314.3. In the first fiscal year in which a special tax or charge is levied for any facility or for any services in a community facilities district or a zone within a community facilities district, the legislative body shall include in the levy a sum sufficient to repay to the legislative body the amounts transferred to that district or zone pursuant to Section 53314. The amounts borrowed, with interest, shall be retransferred to the proper fund or funds from the first available receipts from the special levy in that district or zone.

Notwithstanding the above provisions, the legislative body may, by a resolution adopted no later than the time of the first levy, extend the repayment of the transferred funds over a period of time not to exceed three consecutive years, in which event the levy and each subsequent levy shall include a sum sufficient to repay the amount specified by the legislative body for the year of the levy.

53314.5. Pursuant to a resolution adopted by the legislative body, the legislative body may appropriate any of its available moneys to a revolving fund to be used for the acquisition of real or personal property, engineering services, or the construction of structures or improvements needed in whole or in part to provide one or more of the facilities of a community facilities district. The revolving fund shall be reimbursed from tax revenues or other moneys available from

the facilities district, and no sums shall be disbursed from the fund until the legislative body has, by resolution, established the method by, and term not exceeding five years within, which the community facilities district is to reimburse the fund. The district shall reimburse the fund for any amount disbursed to the area within five years after such disbursement, together with interest at the current rate per annum received on similar types of investments by the legislative body as determined by the local agency's treasurer. 53314.6. (a) In connection with the financing of services and facilities pursuant to subdivision (f) of Section 53313 and Section 53313.8, the legislative body may establish a revolving fund to be kept in the treasury of the district. Except as provided in subdivision (b), moneys in the revolving fund shall be expended solely for the payment of costs with respect to those services and facilities. The revolving fund may be funded from time to time with moneys derived from any of the following:

(1) Proceeds of the sale of bonds issued pursuant to Article 5 (commencing with Section 53345), notwithstanding any limitation contained in Section 53345.3.

(2) Any taxes or charges authorized under this chapter.

(3) Any other lawful source.

(b) Subject to the provisions of any resolution, trust agreement or indenture providing for the issuance of district bonds for the purposes set forth in Section 53313.8, the legislative body may withdraw money from the revolving fund whenever and to the extent that it finds that the amount of money therein exceeds the amount necessary to accomplish the purposes for which the revolving fund was established. Any moneys withdrawn from the revolving fund shall be used to redeem bonds of the district issued for the purposes set forth in Section 53313.8 or shall be paid to taxpayers in the district in amounts which the legislative body determines.

53314.7. (a) Any responsible party as defined by subdivision (a) of Section 25323.5 of the Health and Safety Code shall be liable to the district for the costs incurred in the removal or remedial action for the cleanup of any hazardous substance released or threatened to be released into the environment. The amount of the costs shall include interest on the costs accrued from the date of expenditure. The interest shall be calculated based on the average annual rate of return on the district's investment of surplus funds for the fiscal year in which the district incurred the costs. Recovery of costs by a community facilities district under this section shall be commenced before or immediately upon completion of the removal or remedial action, and payments received hereunder by the district shall be deposited in the revolving fund in accordance with Section 53314.6.

(b) To expedite cleanup, this section is intended to provide local jurisdictions an alternative method of financing the cost of removal or remedial action for the cleanup of any hazardous substance through the issuance of voter-approved limited obligation bonds. The provisions of this section shall not affect or limit the provisions of any other law establishing the liability of any person for, or otherwise regulating, the generation, transportation, storage, treatment, or disposal of hazardous substances. The scope and standard of liability for any costs recoverable pursuant to Section 53314.7 shall be the scope and standard of liability set forth in the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (42 U.S.C. Sec. 6901 et seq.), or any other provision of state or federal law establishing responsibility for

cleanup of hazardous waste sites.

53314.8. At any time either before or after the formation of the district, the legislative body may provide, by ordinance, that for a period specified in the ordinance, the local agency may contribute, from any source of revenue not otherwise prohibited by law, any specified amount, portion, or percentage of the revenues for the purposes set forth in the ordinance, limited to the following: the acquisition or construction of a facility, the acquisition of interest in real property, or the payment of debt service with respect to the financing of either, the provision of authorized services, and the payment of expenses incidental thereto. The contribution shall not constitute an indebtedness or liability of the local agency.

53314.9. (a) Notwithstanding Section 53313.5, at any time either before or after the formation of the district, the legislative body may accept advances of funds or work in-kind from any source, including, but not limited to, private persons or private entities and may provide, by resolution, for the use of those funds or that work in-kind for any authorized purpose, including, but not limited to, paying any cost incurred by the local agency in creating a district. The legislative body may enter into an agreement, by resolution, with the person or entity advancing the funds or work in-kind, to repay all or a portion of the funds advanced, or to reimburse the person or entity for the value, or cost, whichever is less, of the work in-kind, as determined by the legislative body, with or without interest, under all of the following conditions:

(1) The proposal to repay the funds or the value or cost of the work in-kind, whichever is less, is included both in the resolution of intention to establish a district adopted pursuant to Section 53321 and in the resolution of formation to establish the district adopted pursuant to Section 53325.1, or in the resolution of consideration to alter the types of public facilities and services provided within an established district adopted pursuant to Section 53334.

(2) Any proposed special tax or change in a special tax is approved by the qualified electors of the district pursuant to this chapter. Any agreement shall specify that if the qualified electors of the district do not approve the proposed special tax or change in a special tax, the local agency shall return any funds which have not been committed for any authorized purpose by the time of the election to the person or entity advancing the funds.

(3) Any work in-kind accepted pursuant to this section shall have been performed or constructed as if the work had been performed or constructed under the direction and supervision, or under the authority of, the local agency.

(b) The agreement shall not constitute a debt or liability of the local agency.

53315. This chapter shall be liberally construed in order to effectuate its purposes. No error, irregularity, informality, and no neglect or omission of any officer, in any procedure taken under this chapter, which does not directly affect the jurisdiction of the legislative body to order the installation of the facility or the provision of service, shall void or invalidate such proceeding or any levy for the costs of such facility or service.

53315.3. The failure of any person to receive a notice, resolution, order, or other matter shall not affect in any way whatsoever the validity of any proceedings taken under this chapter, or prevent the

legislative body from proceeding with any hearing so noticed.

53315.6. When any proceeding is initiated under this chapter by a legislative body other than that of a city or county, a copy of the resolution of intention shall be transmitted to the legislative body of the city, where the land to be assessed lies within the corporate limits of any city, or of the county, where the land to be assessed lies within an unincorporated territory.

53315.8. A county may not form a district within the territorial jurisdiction of a city without the consent of the legislative body of the city.

53316. This chapter applies to all local agencies insofar as those entities have the power to install or contribute revenue for any of the facilities or provide or contribute revenue for any of the services authorized under this chapter. This chapter authorizes local agencies to create community facilities districts pursuant to this chapter within their territorial limits. A local agency may initiate proceedings pursuant to Section 53318 to include territory proposed for annexation to the local agency within a community facilities district if a petition or resolution of application for the annexation of the territory to the local agency has been accepted for filing and a certificate of filing has been issued by the executive officer of the local agency formation commission at the time the proceedings to create the district are initiated. Those proceedings may be completed only if the annexation of the territory to the local agency is completed. The officers of local agencies who have similar powers and duties, as determined by the legislative body of the local agency, as the municipal officers referred to in this chapter shall have the powers and duties given by this chapter to the municipal officials. Where no similar officer exists, the legislative body of the local agency shall, by resolution, appoint a person or designate an officer to perform the duties under this chapter. Any local agency that has no authority to enact an ordinance under other laws may, for purposes of this chapter, enact an ordinance in substantially the same manner as provided for the enactment of a city ordinance in Chapter 2 (commencing with Section 36900) of Part 2 of Division 3 of Title 4.

53316.2. (a) A community facilities district may finance facilities to be owned or operated by an entity other than the agency that created the district, or services to be provided by an entity other than the agency that created the district, or any combination, only pursuant to a joint community facilities agreement or a joint exercise of powers agreement adopted pursuant to this section.

(b) At any time prior to the adoption of the resolution of formation creating a community facilities district or a resolution of change to alter a district, the legislative bodies of two or more local agencies may enter into a joint community facilities agreement pursuant to this section and Sections 53316.4 and 53316.6 or into a joint exercise of powers agreement pursuant to the Joint Exercise of Powers Act (Chapter 5 (commencing with Section 6500) of Division 7 of Title 1) to exercise any power authorized by this chapter with respect to the community facilities district being created or changed if the legislative body of each entity adopts a resolution declaring that the joint agreement would be beneficial to the residents of that entity.

(c) Notwithstanding the Joint Exercise of Powers Act (Chapter 5 (commencing with Section 6500) of Division 7 of Title 1), a contracting party may use the proceeds of any special tax or charge

levied pursuant to this chapter or of any bonds or other indebtedness issued pursuant to this chapter to provide facilities or services which that contracting party is otherwise authorized by law to provide, even though another contracting party does not have the power to provide those facilities or services.

(d) Notwithstanding subdivision (b), nothing in this section shall prevent entry into or amendment of a joint community facilities agreement or a joint exercise of powers agreement, after adoption of a resolution of formation, if the new agreement or amendment is necessary, as determined by the legislative body, for either of the following reasons:

(1) To allow an orderly transition of governmental facilities and finances in the case of any change in governmental organization approved pursuant to the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000 (Division 3 (commencing with Section 56000) of Title 5).

(2) To allow participation in the agreement by a state or federal agency that could or would not otherwise participate, including, but not limited to, the California Department of Transportation.

(e) Notwithstanding any other provision of this chapter, no local agency which is party to a joint exercise of powers agreement or joint community facilities agreement shall have primary responsibility for formation of a district or an improvement area within a district, or for an extension of authorized facilities and services or a change in special taxes pursuant to Article 3, unless that local agency is one or more of the following:

(1) A city, a county, or a city and county.

(2) An agency created pursuant to a joint powers agreement that is separate from the parties to the agreement, is responsible for the administration of the agreement, and is subject to the notification requirement of Section 6503.5.

(3) An agency that is reasonably expected to have responsibility for providing facilities or services to be financed by a larger share of the proceeds of special taxes and bonds of the district or districts created or changed pursuant to the joint exercise of powers agreement or the joint community facilities agreement than any other local agency.

53316.4. The agreement entered into pursuant to Section 53316.2 shall contain a description of the facilities and services to be provided under the agreement, and any real or tangible property which is to be purchased, constructed, expanded, or rehabilitated.

53316.6. The agreement entered into pursuant to Section 53316.2 may provide for the division of responsibility to provide any of the facilities or services among the entities entering into the agreement. The agreement shall provide for the allocation and distribution of the proceeds of any special tax levy among the parties to the agreement.

53317. Unless the context otherwise requires, the definitions contained in this article shall govern the construction of this chapter.

(a) "Clerk" means the clerk of the legislative body of a local agency.

(b) "Community facilities district" means a legally constituted governmental entity established pursuant to this chapter for the sole purpose of financing facilities and services.

(c) "Cost" means the expense of constructing or purchasing the public facility and of related land, right-of-way, easements,

including incidental expenses, and the cost of providing authorized services, including incidental expenses.

(d) "Debt" means any binding obligation to pay or repay a sum of money, including obligations in the form of bonds, certificates of participation, long-term leases, loans from government agencies, or loans from banks, other financial institutions, private businesses, or individuals, or long-term contracts.

(e) "Incidental expense" includes all of the following:

(1) The cost of planning and designing public facilities to be financed pursuant to this chapter, including the cost of environmental evaluations of those facilities.

(2) The costs associated with the creation of the district, issuance of bonds, determination of the amount of taxes, collection of taxes, payment of taxes, or costs otherwise incurred in order to carry out the authorized purposes of the district.

(3) Any other expenses incidental to the construction, completion, and inspection of the authorized work.

(f) "Landowner" or "owner of land" means any person shown as the owner of land on the last equalized assessment roll or otherwise known to be the owner of the land by the legislative body. The legislative body has no obligation to obtain other information as to the ownership of the land, and its determination of ownership shall be final and conclusive for the purposes of this chapter. A public agency is not a landowner or owner of land for purposes of this chapter, unless the land owned by a public agency would be subject to a special tax pursuant to Section 53340.1, or unless the land owned by a public agency is within the territory of a military base that is closed or is being closed.

(g) "Legislative body" means the legislative body or governing board of any local agency.

(h) "Local agency" means any city or county, whether general law or chartered, special district, school district, joint powers entity created pursuant to Chapter 5 (commencing with Section 6500) of Division 7 of Title 1, redevelopment agency, or any other municipal corporation, district, or political subdivision of the state.

(i) "Rate" means a single rate of tax or a schedule of rates.

(j) "Services" means the provision of categories of services identified in Section 53313. "Services" includes the performance by employees of functions, operations, maintenance, and repair activities. "Services" does not include activities or facilities identified in Section 53313.5.

53317.3. If property not otherwise exempt from a special tax levied pursuant to this chapter is acquired by a public entity through a negotiated transaction, or by gift or devise, the special tax shall, notwithstanding Section 53340, continue to be levied on the property acquired and shall be enforceable against the public entity that acquired the property. However, even if the resolution of formation that authorized creation of the district did not specify conditions under which the obligation to pay a special tax may be prepaid and permanently satisfied, the legislative body of the local agency that created the district may specify conditions under which the public agency that acquires the property may prepay and satisfy the obligation to pay the tax. The conditions may be specified only if the local agency that created the district finds and determines that the prepayment arrangement will fully protect the interests of the owners of the district's bonds.

53317.5. If property subject to a special tax levied pursuant to

this chapter is acquired by a public entity through eminent domain proceedings, the obligation to pay the special tax shall be treated, pursuant to Section 1265.250 of the Code of Civil Procedure, as if it were a special annual assessment. For this purpose, the present value of the obligation to pay a special tax to pay the principal and interest on any indebtedness incurred by the district prior to the date of apportionment determined pursuant to Section 5082 of the Revenue and Taxation Code shall be treated the same as a fixed lien special assessment.

Cal. Pub. Res. Code §§ 26500-26654 (West 1997)

26500. Unless the context otherwise requires, the definitions set forth in this chapter govern the construction of this division.

26501. "Board of directors" means the governing body of the district.

26502. "Bonds" means bonds, notes, or other evidence of indebtedness issued by a district pursuant to this division.

26503. "Local agency" means a city, a city and county, or a county.

26504. "Clerk", where not otherwise modified, means the clerk of the district.

26505. "Improvement" means any activity that is necessary or incidental to the prevention, mitigation, abatement, or control of a geologic hazard, including, but not limited to, all of the following:

- (a) Acquisition of property or any interest therein.
- (b) Construction.
- (c) Maintenance, repair, or operation of any improvement.
- (d) Preparation of geologic reports required pursuant to Section 2623 for multiple projects within an earthquake fault zone or zones.
- (e) Issuance and servicing of bonds, notes, or debentures issued to finance the costs of the improvements specified in subdivisions (a), (b), (c), and (d).

26506. "District" means a geologic hazard abatement district created pursuant to this division.

26507. "Geologic hazard" means an actual or threatened landslide, land subsidence, soil erosion, earthquake, fault movement, or any other natural or unnatural movement of land or earth.

26508. "Legislative body" means the legislative body of a local agency.

26509. "Plan of control" means a report prepared by an engineering geologist certificated pursuant to Section 7822 of the Business and Professions Code or a firm of engineering geologists which describes in detail a geologic hazard, its location and the area affected thereby, and a plan for the prevention, mitigation, abatement, or control thereof.

26510. "Section", unless otherwise modified, refers to a section of the Public Resources Code.

26511. "State" means the State of California and, where the context requires, any agency or instrumentality thereof.

26512. "Treasurer" means the treasurer of the district.

26525. A geologic hazard abatement district may be formed pursuant to this division for the following purposes:

(a) Prevention, mitigation, abatement, or control of a geologic hazard.

(b) Mitigation or abatement of structural hazards that are partly or wholly caused by geologic hazards.

26530. The lands included within a district may be contiguous or noncontiguous.

26531. The lands included within a district may be situated in more than one local agency.

26532. The lands included within a district may be publicly or privately owned.

26533. No parcel of real property shall be divided by the boundaries of the proposed district.

26534. All lands included within a district shall be specially benefitted by construction proposed in a plan of control approved by the legislative body.

26550. The provisions of this chapter shall be inoperative as to a legislative body unless and until the legislative body adopts a resolution declaring that it is subject to its provisions and has forwarded a copy of such resolution to the State Controller.

26550.5. Proceedings for the formation of a district may be initiated by either of the following methods:

(a) A petition signed by owners of not less than 10 percent of the real property to be included within the proposed district.

(b) By resolution of the legislative body.

26551. If the territory proposed to be included within a district is located in more than one local agency, the legislative body of the local agency wherein lies the greater amount of assessed valuation of real property as shown on the assessment roll last equalized by the county, shall initiate and conduct the proceedings to form a district.

26552. A petition initiating proceedings for formation of a district may be presented to the clerk of the legislative body, and shall contain substantially all of the following:

(a) A statement that the petition is made pursuant to this division.

(b) An indication, opposite each signature, of the lot, tract, and map number or other legal description sufficient to identify such signature as that of the owner of land within the territory included within the proposed district.

(c) An indication, opposite each signature, of the date each signature was affixed to the petition.

(d) A legal description and map of the boundaries of the territory to be included within the proposed district.

26553. A plan of control shall be attached to the petition.

26554. Upon receipt of a petition in the form described in Sections 26550.5, 26551, and 26553, the clerk of the legislative body shall place such petition on the agenda for the regular meeting of the legislative body next following the clerk's determination that such petition is substantially in the form described in Sections 26551 and 26552 and upon verification that the signatures affixed to the petition represent owners of not less than 10 percent of the real property to be included within the proposed district.

26555. No petition shall be accepted by the clerk of the legislative body unless the signatures thereon shall have been secured within 120 days of the date on which the first signature on the petition was affixed and such petition is submitted to the clerk within 30 days after the last signature was affixed.

26556. The clerk of the legislative body shall notify the person

whose signature first appears on the petition of any irregularity in the petition. Such notification shall be by certified mail with return receipt requested. Within 10 days of the date of such mailing, a supplemental petition curing any irregularity may be submitted to the clerk.

26557. Upon presentation to the legislative body of a petition in the form prescribed by Sections 26551 and 26552, the legislative body shall adopt a resolution setting a public hearing on such petition and directing notice thereof to be mailed to all owners of real property to be included within the proposed district as shown on the assessment roll last equalized by the county.

26558. A resolution of the legislative body initiating proceedings for the formation of a district shall contain substantially the following:

(a) A statement that the resolution is made pursuant to this division.

(b) A statement that the legislative body has been presented with and has reviewed a plan of control, and has determined that the health, safety, and welfare require formation of a district.

(c) The setting of a public hearing on such determination and directing that notice be mailed to all owners of real property included within the proposed district.

26559. All activities of a local agency taken pursuant to this division for the formation of a district or the annexation of territory thereto are specific actions necessary to prevent or mitigate an emergency within the meaning of paragraph (4) of subdivision (b) of Section 21080.

26560. Notwithstanding any other provision of law, proceedings for the formation of a district pursuant to this division are exclusive.

26561. Notice of the hearing set pursuant to Section 26557 or subdivision (c) of Section 26558 shall be mailed first-class, postage prepaid, in the United States mail, at least 20 days preceding the date of the public hearing, to each owner of real property within the proposed district as shown on the last equalized county assessment roll, or the State Board of Equalization assessment roll, as the case may be.

26562. A copy of the petition described in Section 26552 or the resolution described in Section 26558 shall be attached to the notice.

26563. The notice shall set forth the time, date, and place of the hearing, briefly describe the purpose thereof, and indicate where the plan of control may be reviewed or duplicated, at a cost not to exceed the cost of duplication. The notice shall also set forth the address where objections to the proposed formation may be mailed or otherwise delivered up to and including the time of the hearing.

26564. At any time not later than the time set for hearing objections to the proposed formation, any owner of real property within the proposed district may make a written objection to the formation. Such objection shall be in writing, shall contain a description of the land by lot, tract, and map number, and shall be signed by such owner. Objections shall be mailed or delivered as specified in the notice described in Section 26561. If the person whose signature appears on such objection is not shown on the assessment roll last equalized by the county as the owner of the subject real property, the written objection shall be accompanied by evidence sufficient to indicate that such person is the owner of such property. The determination by the legislative body of ownership for purposes of this section shall be final and conclusive.

26565. At the time set for hearing objections, the legislative body shall be presented with all objections made pursuant to Section 26564. The legislative body may adjourn such hearing from time to time, but not to exceed 60 days from the date specified in the original notice.

26566. If it appears at the hearing that owners of more than 50 percent of the assessed valuation of the proposed district object to the formation thereof, the legislative body shall thereupon close the hearing and direct that proceedings for the formation of a district be abandoned.

26567. At the close of the hearing or within 60 days thereafter, the legislative body may proceed by resolution to order the formation of the proposed district. The resolution shall appoint five owners of real property within the district to the initial board of directors for terms not to exceed four years, or, as an alternative to the appointment of five owners of real property within the district, the legislative body may appoint itself to act as the board of directors. If the legislative body appoints itself as the board of directors, Section 26583 shall not apply. If owners of real property within the district are appointed as the initial board of directors, then following the initial term, the board of directors shall be elected as provided by Section 26583. This section shall apply to all districts formed on or after January 1, 1980.

26568. The procedures for initiation of proceedings, notice, and hearing and formation of a district under this chapter shall be alternative to the procedures in Articles 3 (commencing with Section 26550) and 4 (commencing with Section 26561) of Chapter 2. Chapter 3 (commencing with Section 26570) does not apply to districts formed under this chapter.

26568.1. Proceedings for the formation of a district for any of the work specified in Section 26525 may be initiated by a petition signed by two-thirds of the property owners of the real property to be included within the proposed district.

26568.2. A petition initiating proceedings for the formation of a district under this chapter shall contain substantially all of the following:

(a) A statement that the petition is made pursuant to this chapter.

(b) An indication, opposite each signature, of the lot, tract, and map number, or other legal description sufficient to identify the signature as that of the owner of land within the proposed district.

(c) The reasons necessitating the creation of the district under this chapter.

(d) A request that the time set for hearings on the formation of the district be on short notice and the reason or reasons for the request.

(e) A description of, or proposal for, work to be done, an estimate of the cost of the work, and proposed assessments.

26568.3. (a) Upon presentation to the legislative body of a petition in the form prescribed by Section 26568.2, the legislative body shall adopt a resolution setting a public hearing on short notice on the petition and directing that notice of the hearing be given as provided in Section 26569. However, notice of the hearing shall be omitted if the hearing of objections is not required as provided in subdivision (b). The hearing shall be set no earlier than 15 days after the adoption of the resolution under this subdivision.

(b) The hearing of objections shall not be required if the legislative body, when considering the passage of a resolution of intention pursuant to a petition presented pursuant to Section 26568.1, finds and determines by a four-fifths vote of all members thereof, that all of the owners of lots or lands liable to be assessed have signed and filed a petition with the clerk on or before the day that the resolution of intention is to be considered for passage, waiving the hearing, declaring that they do not have any objections to the proposed work or the formation of the district, and requesting that the hearings of objections not be required.

26570. A district is a political subdivision of the state. A district is not an agency or instrumentality of a local agency.

26571. A district is comprised of an area specially benefited by and subject to special assessment to pay the cost of an improvement. While a district performs certain governmental and proprietary functions as a political subdivision of the state, it is not a special district within the meaning of Section 56036 of the Government Code.

26573. The powers of a district are vested in the board of directors.

26574. A district may do all of the following:

- (a) Sue and be sued.
- (b) Make, amend, and repeal bylaws.
- (c) Have a seal.
- (d) Exercise all powers necessary or incidental to carry out the purposes of this division.

26575. A district may obtain, hire, purchase, or rent office space and equipment.

26576. Within the territorial limits of the district, or for the purposes set forth in this division, a district may acquire real property or any interest therein by eminent domain.

26577. A district may purchase, lease, obtain an option upon, acquire by gift, grant, bequest, or devise, or otherwise acquire any property or any interest in property.

26578. A district may sell, lease, exchange, assign, encumber, or otherwise dispose of property or any interest in property.

26579. The district may enter into contracts and agreements with the United States, any state or local unit of government, public agency, including any other geologic hazard abatement district or public district, private organization, or any person in furtherance of the purposes of the division.

26580. The district may:

(a) Acquire, construct, operate, manage, or maintain improvements on public or private lands. Such improvements shall be with the consent of the owner, unless effected by the exercise of eminent domain pursuant to Section 26576.

(b) Accept such improvements undertaken by anyone.

26580.1. The district may make improvements to existing public or private structures where the board of directors determines that it is in the public interest to do so.

26581. At any time following the adoption of the resolution pursuant to Section 26567, the board of directors may proceed to annex territory to the district. The proceedings for annexation shall follow the procedure contained in Article 3 (commencing with Section 26550) and Article 4 (commencing with Section 26561) of Chapter 2 of this division. In such instance, the board of directors shall assume the responsibilities of the legislative body. Annexation of territory to a district shall be subject to the approval of the legislative body which ordered formation of the district. Such approval shall be given by resolution, following the order by the board of directors for annexation of territory to the district.

26587. A district may use the Improvement Act of 1911 (commencing with Section 5000 of the Streets and Highways Code) or the Municipal Improvement Act of 1913 (commencing with Section 10000 of the Streets and Highways Code) or the Improvement Bond Act of 1915 (commencing with Section 8500 of the Streets and Highways Code) to pay the costs of an improvement pursuant to this division.

26588. The powers and duties conferred by the Improvement Act of 1911 or the Municipal Improvement Act of 1913 or the Improvement Bond Act of 1915 on the various boards, officers, and agents of cities shall be exercised by the corresponding boards, officers, and agents of the district.

26589. In the application of the Improvement Act of 1911 or the Municipal Improvement Act of 1913 or the Improvement Bond Act of 1915 to proceedings instituted by a district, the terms used in the Improvement Act of 1911 or the Municipal Improvement Act of 1913 or the Improvement Bond Act of 1915 have the following meanings:

(a) "City council" or "council" or "legislative body" means the

board of directors of the district.

(b) "Municipality" or "city" means the district.

(c) "Clerk" or "city clerk" means the clerk of the district.

(d) "Superintendent of streets," "street superintendent," or "city engineer" means any person appointed by the board to perform or effect an improvement.

(e) "Tax collector" means the county tax collector.

(f) "Treasurer" or "city treasurer" means the treasurer of the district.

(g) "Mayor" means the board of directors or an officer of the district to whom such powers and duties are delegated by the board of directors.

(h) "Right-of-way" means any parcel of land in, on, under, or through which a right-of-way or easement has been granted to the district for the purpose of performing or effecting an improvement.

26590. Any certificates or documents required by the Improvement Act of 1911 or the Municipal Improvement Act of 1913 or the Improvement Bond Act of 1915 to be filed or recorded in the office of the superintendent of streets or street superintendent shall be filed or recorded in the office of the clerk of the district.

26591. A district may accept financial or other assistance from any public or private source and may expend any funds so accepted for any of the purposes of this division.

26592. Contributions by a local agency, the state, or any instrumentality or political subdivision thereof, are hereby declared to be for a public purpose.

26593. A district may borrow money from or otherwise incur an indebtedness to a local agency, the state, any instrumentality or political subdivision thereof, the federal government, or any private source, and may comply with any conditions imposed upon the incurring of that indebtedness.

26594. A district may repay any financial assistance accepted pursuant to Section 26591.

26595. A district may reimburse the local agency for all or any part of the cost and expenses incurred by the local agency in formation of the district.

26600. The board of directors may negotiate improvement contracts or may award such contracts by competitive bidding pursuant to procedures approved by the board of directors.

26601. Improvement caused to be undertaken pursuant to this division, and all activities in furtherance thereof or in connection therewith, shall be deemed to be specific actions necessary to prevent or mitigate an emergency within the meaning of paragraph (4) of subdivision (b) of Section 21080.

26650. A district may levy and collect assessments pursuant to this chapter to pay for the cost and expenses of the maintenance and operation of any improvements acquired or constructed pursuant to this division.

26651. The board of directors shall adopt a resolution declaring its intention to order that the cost and expenses of maintaining and operating an improvement acquired or constructed pursuant to this division shall be assessed against the property within the district benefited thereby. The resolution shall contain both of the following:

(a) A report prepared by an officer of the district which sets forth the yearly estimated budget, the proposed estimated assessments to be levied each year against each parcel of property, and a description of the method used in formulating the estimated assessments.

(b) The time, date, and place for the hearing of protests to the proposed assessments.

26652. The board of directors shall cause a notice of the adoption of the resolution described in Section 26651 to be mailed by first class mail to each owner of real property within the district as shown on the last equalized assessment roll of the county. The notice shall be mailed not less than 14 days prior to the date set for the hearing and shall contain all of the following:

(a) A statement that the board of directors has adopted the resolution.

(b) The time, date, and place set forth in the resolution for the hearing of protests on the proposed assessments.

(c) A statement of the total yearly estimated budget for the maintenance and operation of the improvements.

(d) A statement that the report described in Section 26651 is available for inspection at the office of the district.

(e) The name and telephone number of a person designated by the board of directors to answer inquiries regarding the proposed assessment.

26653. At the hearing, the board of directors shall hear and consider all protests. At the conclusion of the hearing, the board of directors may adopt, revise, change, reduce, or modify any assessment and shall make its determination upon each assessment described in the report. Thereafter, by resolution, the board of directors may confirm the assessments and order the levy and collection thereof.

26653.5. If assessments are proposed to increase from the maximum amount levied in any previous year, the board of directors shall comply with the notice, protest, and hearing procedures in Section 53753 of the Government Code with respect to that increase.

26654. Following the order by resolution of the levy and collection of assessments by the board of directors, the clerk shall cause to be recorded a notice of assessment, as provided for in Section 3114 of the Streets and Highways Code, whereupon the assessment shall attach as a lien upon the property, as provided in Section 3115 of the Streets and Highways Code.

Thereafter, the clerk shall collect the assessments as directed by the board of directors, or, in lieu of collection by the clerk, the board of directors may provide that the assessments are payable at the same time and in the same manner as general taxes on real property are payable.

A district board of directors shall reimburse the city or county, as the case may be, for any cost incurred pursuant to this section.

2009 California Streets and Highways Code - Section 5000-5026 : Part 1. General Provisions

STREETS AND HIGHWAYS CODE SECTION 5000-5026

5000. This division may be cited as the Improvement Act of 1911.

5001. Unless the particular provision or the context otherwise requires, the definitions and general provisions contained in this part shall govern the construction of this division.

5002. This division provides an alternative system for doing the work authorized by this division and the provisions of this division shall not apply to or affect any other provisions of this code.

When any proceedings are commenced under this division, the provisions of this division and no other shall apply to such proceedings.

5003. This division shall be liberally construed in order to effectuate its purposes. No error, irregularity, informality, and no neglect or omission of any officer, in any procedure taken under this division, which does not directly affect the jurisdiction of the legislative body to order the work or improvement, shall avoid or invalidate such proceeding or any assessment for the cost of work done thereunder. The exclusive remedy of any person affected or aggrieved thereby shall be by appeal to the legislative body in accordance with the provisions of this division.

5004. Whenever in any proceedings under this division, a time and place for any hearing by the legislative body is fixed and, from any cause, the hearing is not then and there held or regularly adjourned to a time and place fixed, the power of the legislative body in the premises shall not thereby be divested or lost, but the legislative body may proceed anew to fix a time and place for the hearing, and cause notice thereof to be given by publication by at least one insertion in a daily, semiweekly or weekly newspaper, such publication to be at least five days before the date of the hearing, and thereupon the legislative body shall have power to act as in the first instance.

5005. "City" includes counties, cities, cities and counties and all corporations organized and existing for municipal purposes, together with resort districts organized and existing under the Resort Improvement District Law (Division 11 (commencing with Section 13000) of the Public Resources Code), and any special district organized for the purpose of aiding in the development or improvement of navigation or commerce to, or within, the district.

5006. "Legislative body" when used with reference to a county means

the board of supervisors, and when used with reference to a city means the body which by law constitutes the legislative department of the government of the city.

5007. "Clerk" when used with reference to a county means the person or officer who is the clerk of the legislative body of the county, and when used with reference to a city means the person or officer who is or acts as clerk of the legislative body of the city.

5008. "Treasurer" when used with reference to a county means the county treasurer, and when used with reference to a city means the city treasurer. "Treasurer" also includes any person or officer who has charge and makes payment of the funds of such county or city, respectively.

5009. "Mayor" when used with reference to a county means the chairman of the board of supervisors, and when used with reference to a city means the mayor, or if the city has no mayor, the chairman or the president of the legislative body, the city manager or such other person as may be the chief executive officer of the city.

5010. "Council chambers" refers to the place where the regular meetings of the legislative body of the county or city are held.

5011. "Street superintendent" or "superintendent of streets" when used with reference to a county means the county surveyor, and when used with reference to a city means the person or officer whose duty it is under the law to have the care or charge of the streets or the improvement thereof in such city.

5012. If there is no street superintendent or superintendent of streets in any city, the legislative body thereof may appoint a person to perform the duties imposed upon the street superintendent by this division, and all of the provisions of this division applicable to the street superintendent shall apply to the person so appointed.

5012.5. In a city in which there is a superintendent of streets or street superintendent, the legislative body of the city may nevertheless appoint another person to perform the duties imposed upon the street superintendent by this division and all of the provisions of this division applicable to the street superintendent shall apply to the person so appointed.

5013. "Engineer" when applied to a county means the county surveyor, and when applied to a city means the city engineer.

5014. "Street" includes avenues, highways, lanes, alleys, crossings, or intersections and courts which have been dedicated and accepted according to law or which have been in common and undisputed use by the public for a period of not less than five years next

preceding, or which have been dedicated to a semipublic use by way of a dedication made for the exclusive use and benefit of all properties located within the boundaries of a community services district formed under the provisions of the Community Services District Law (commencing with Section 61000 of the Government Code), or which are privately owned, opened to public traffic, and located within the boundaries of an assessment district established to provide street lighting.

5018. "Place" includes any public park or pleasure ground and common which has been dedicated and accepted according to law.

5019. "Paved" or "repaved" includes pavement of stone, paving blocks or macadamizing, or of bituminous rock or asphalt, or of iron, wood or other material, whether patented or not, which is adopted by ordinance or resolution by the legislative body.

5020. "Contractor" means the person, firm, partnership, association, corporation, organization or business trust, and includes contracting owners or their agents, to whom a contract for the performance of any work authorized by this division is awarded.

5021. "Owner" means the person owning the fee, or the person in whose name the legal title to the property appears, by deed duly recorded in the county recorder's office of the county in which the property is situated, or the person in possession of the property or buildings under claim of, or exercising acts of ownership over the same for himself, or as the executor, administrator, guardian, or conservator of the owner. If the property is leased, the possession of the tenant or lessee holding and occupying such property shall be deemed to be the possession of the owner.

5022. "Lot," "land," "piece," or "parcel of land" whether used singly or in combination include property owned or controlled by any person as a railroad right of way or as a street or interurban railroad right of way.

5022.5. "Lot," "portion of lot," "land," "piece," or "parcel of land," whether used singly or in combination, may, in the discretion of the superintendent of streets, for purposes of spreading assessments and calculating benefits include any contiguous real property under the same ownership as it appears on the last equalized assessment roll used by the assessing entity in which the property is situated, whether consisting of unsubdivided land or land subdivided into blocks or lots and blocks or the superintendent of streets may if requested by such owner make separate assessments against portions of such lots or parcels of land.

5023. "Work" or "improvement" whether used singly or in combination mean and include any work which is authorized to be done or any improvement which is authorized to be made under this division, as

well as the construction, reconstruction and repair of all or part of any such work or improvement.

5023.1. "Acquisition," or any of its variants, means one or more of the following:

(a) Any works, improvements, appliances, or facilities which are authorized to be made, constructed, or acquired under this division and which are in existence and installed in place on or before the date of adoption of the resolution of intention for the acquisition thereof; any use or capacity rights in any of the above; and any works, improvements, appliances, or facilities acquired or installed pursuant to Sections 10109 to 10111, inclusive.

(b) Electric current, gas, or other illuminating agent for power or lighting service.

(c) Any real property, rights-of-way, easements, or interests in real property, acquired or to be acquired by gift, purchase, or eminent domain, necessary or convenient in connection with the construction or operation of any work or improvement authorized to be acquired or to be made or constructed under this division, except any real property, rights-of-way, easements, or interests in real property shown on any final map filed with or submitted to the legislative body for acceptance and approval under the Subdivision Map Act (Division 2 (commencing with Section 66410) of Title 7 of the Government Code) and offered for dedication to public use by the map or by any separate offer of dedication previously or subsequently made.

(d) The payment in full of all amounts necessary to eliminate any special assessment liens previously imposed upon any assessment parcel included in the new assessment district. The cost of the payment shall be included in the new assessment on the parcel. This subdivision is applicable only in cases where the acquisition is incidental to other acquisitions or improvements.

5024. "Incidental expense" includes all of the following:

(a) Compensation for work done by the engineer, and attorney's fees or services in proceedings pursuant to this division. Notwithstanding the foregoing, if a court of competent jurisdiction renders a final judgment that invalidates in whole or part the formation of the assessment district or the levy of assessments, any attorney's fees and engineering charges incurred by the city in defending that litigation are not incidental expenses and shall not be charged against the assessment district in any manner except as to those claims upon which the city prevails and as allowed by a court of competent jurisdiction.

(b) The cost of printing and advertising provided for in this division, including the treasurer's estimated cost of printing, servicing, and collecting any bonds to be issued to represent or be secured by unpaid assessments.

(c) The compensation of the person appointed by the superintendent of streets to take charge of, and superintend any of, the work.

(d) The expenses of making the assessment, of the collection of

assessments by the superintendent of streets when directed by ordinance to receive payments pursuant to Section 5396, and of preparing and typing the resolutions, notices, and other papers and proceedings for any work authorized by this division.

(e) The expenses of making any analyses and tests to determine that the work, and any materials or appliances incorporated therein, comply with the specifications.

(f) All costs and expenses incurred in carrying out the investigations and making the reports required by the provisions of the Special Assessment Investigation, Limitation and Majority Protest Act of 1931 (Division 4 (commencing with Section 2800)).

(g) The cost of title searching, description writing, right-of-way agent salaries, appraisal fees, partial reconveyance fees, surveys, and sketches incident to securing rights-of-way for any work authorized by this division.

(h) Any other expenses incidental to the construction, completion, and inspection of the work in the manner provided for in this division.

(i) The cost of relocating or altering any public utility facilities as required by the improvement in those cases where that cost is the legal obligation of the city.

(j) The cost of planning and designing public facilities to be financed pursuant to this division, including the cost of environmental evaluations of those facilities.

(k) The cost of filing and recording documents when the cost is the legal obligation of the city.

(l) The cost of any acquisition, as defined in Section 5023.1, and expenses incidental in connection with the acquisition.

(m) If the construction of sewers or appurtenances incident thereto has been ordered, sewer service, connection, and capacity charges established by the city as a condition to the providing of sewer service for the benefit of properties within the assessment district and required for the completion and utilization of the improvement constructed.

(n) If the construction of water improvements or appurtenances incident thereto has been ordered, water service, connection, and capacity charges established by the city as a condition to the providing of water service for the benefit of properties within the assessment district and required for the completion and utilization of the improvement constructed.

(o) All costs not identified in subdivisions (a) to (n), inclusive, related to the issuance of bonds, including, but not limited to, costs of obtaining credit ratings, bond insurance premiums, fees for letters of credit and other credit enhancement costs, and initial fees for the registration of bonds.

All demands for incidental expenses shall be presented to the street superintendent, by an itemized bill, duly verified by the demandant.

5025. In all resolutions, notices, orders and determinations, subsequent to the resolution of intention it shall not be necessary

to describe the work, and any description of the work in any of the same, subsequent to the resolution of intention and the notice of improvement, shall be sufficient, if it refers to the resolution of intention for a description of the work or improvement.

5026. The legislative body of a county, city or city and county, may by resolution adopt a name for any street, boulevard, park or place which is to be improved under this division, for which a name has not been provided under the provisions of Sections 970.5 and 971, or otherwise, and may by resolution change the name of any street, boulevard, park or place heretofore established; provided further, that a copy of the resolution or order providing for the new name or change of name made by any city shall be promptly forwarded by the city clerk to the clerk of the board of supervisors and county surveyor of the county in which the municipality is situated.

2009 California Streets and Highways Code - Section 5180-5182: Chapter 6. Creating Assessment Districts

STREETS AND HIGHWAYS CODE SECTION 5180-5182

5180. The legislative body shall make the expense of such work chargeable upon a district, which the legislative body shall, in its resolution of intention, declare to be the district benefited by the work, and to be assessed to pay the cost and expense thereof. The territory comprising said district may, but need not, include all, or be confined to, or extend beyond, the lots or lands fronting upon the improvement, or be contiguous, and the district may consist of separate and distinct areas or sections. The work performed in one section need not benefit the other section or sections.

5181. The district may be described by:

- (a) Stating its exterior boundaries; or
- (b) Giving a description thereof according to any official or recorded map; or
- (c) Referring to a plat or map on file in the office of the clerk or engineer at the time of passing the resolution of intention, which shall indicate by a boundary line the extent of the territory included in the proposed district, and shall govern for all details as to the extent of the assessment district.

5182. The assessment district need not be described in any of the notices, resolutions, orders or determinations provided for in this division, other than the resolution of intention. Any description of said district in any of the same shall be sufficient, if it refers to the resolution of intention for a description of the district.

2009 California Streets and Highways Code - Section 5341-5344: Chapter 15. District Assessments

**STREETS AND HIGHWAYS CODE
SECTION 5341-5344**

5341. The engineer shall prior to completion of the contract make a diagram of the property affected or benefited by the proposed work, as described in the resolution of intention, which is to be assessed to pay the costs and expenses thereof.

5342. The diagram shall show each separate lot or parcel of land within the limits of the assessment district, and the dimensions of each such lot or parcel of land, and the relative location of the same to the work proposed to be done.

5343. Immediately after its completion the diagram shall be delivered to the superintendent of streets, who shall immediately, after the contractor has fulfilled his contract to the satisfaction of the superintendent of streets or the legislative body, on appeal, proceed to estimate upon the lots or parcels of land within the assessment district, as shown by the diagram, the benefits arising from such work, and to be received by each such lot or parcel of land. He shall thereupon assess upon and against the lands in the assessment district the total amount of the costs and expenses of such work, and in so doing shall assess the total sum upon the several lots or parcels of land in the assessment district, benefited thereby, in proportion to the estimated benefits to be received by each of the said several lots or parcels of land.

5344. In other respects the assessment shall be made in accordance with the provisions of Chapter 16.

**2009 California Streets and Highways Code - Section 5450-5458: Chapter 18.1.
Collecting The Assessment On The Tax Roll**

**STREETS AND HIGHWAYS CODE
SECTION 5450-5458**

5450. As an alternative method for the collection of cash assessments or assessments of less than one hundred fifty dollars (\$150) levied under the provisions of this division, the legislative body, upon the written request of the contractor or his assigns, shall, by resolution adopted on or before the third Tuesday in September, direct that such assessments be collected upon the tax roll upon which general taxes are collected.

5451. Said resolution shall contain a description of the properties so assessed, the amount of such assessments, together with interest thereon from the date of filing the original list of unpaid assessments and at the rate of 1 percent per month to the next succeeding thirty-first day of December of the tax year for which such roll shall have been prepared, and the total amounts of principal and interest on each property.

5452. A certified copy of said resolution shall be delivered

immediately to the officer designated by law to extend city taxes upon the tax roll on which they are collected.

5453. Said officer shall extend upon such roll the total amounts of such assessments and interest.

5454. Said amounts shall be collected at the same time and in the same manner, as general municipal taxes are collected, and be subject to the same penalties and interest, and to the same procedure under foreclosure and sale in case of delinquency, as provided for general municipal taxes, all of which laws for the levy, enforcement and collection of which are hereby made applicable to such special assessment taxes.

5455. Said assessments and the interest so entered shall become due and payable to the contractor or his assigns at the office of the city treasurer on the second day of January next succeeding.

5456. Upon default in payment, the lands so assessed shall be sold in the same manner in which real property in such city is sold for the nonpayment of general municipal taxes, and be subject to redemption within one year from the date of sale in the same manner as such real property is redeemed from such delinquent sale, and upon failure of such redemption, shall in like manner be sold or pass by deed to the city. The city shall not, however, be required to pay into the assessment fund any part of such delinquency until such property be redeemed or sold and money received therefor.

5457. Upon receipt of such deed the city shall thereupon offer and sell such property at public auction in the manner provided by law for the sale of its tax-deeded property, and the amount of said assessment and the penalties and interest thereon shall be paid to said contractor or his assigns.

5458. In the event there shall have been no bidder offering the amount then due on such property, it may, at the city's election, be declared sold to the owner of such assessment, and in like manner be deeded to him, and such assessment ordered satisfied of record.

2009 California Streets and Highways Code - Section 5600-5602: Article 1. General Provisions

STREETS AND HIGHWAYS CODE SECTION 5600-5602

5600. As used in this chapter "sidewalk" includes a park or parking strip maintained in the area between the property line and the street line and also includes curbing, bulkheads, retaining walls or other works for the protection of any sidewalk or of any such park or parking strip.

5601. This chapter shall only apply to maintenance and repair proceedings, whether upon work originally done under this division or otherwise, and shall not be used for the construction of new

improvements. The "Special Assessment Investigation, Limitation and Majority Protest Act of 1931" shall not apply to proceedings taken under this chapter.

5602. This chapter constitutes a separate and alternate procedure for performing the work specified herein and, except for the provisions of Part 5 of this division, no other provisions of this division shall apply to proceedings instituted hereunder.

2009 California Streets and Highways Code - Section 5896.1-5896.17: Chapter 28. Conversion Of Existing Overhead Electric And Communication Facilities To Underground Locations

STREETS AND HIGHWAYS CODE SECTION 5896.1-5896.17

5896.1. The Legislature finds that, in many areas of the state, landowners, cities, public agencies, and public utilities desire to convert existing overhead electric and communication facilities to underground locations by means of special assessment proceedings. The Legislature hereby declares that a public purpose will be served by providing a procedure to accomplish this conversion and that it is in the public interest to provide for the conversion by proceedings taken pursuant to this division.

5896.2. As used in this chapter, the following words and phrases (and any variants thereof) mean:

"Communication service" means the transmission of intelligence by electrical means, including, but not limited to, telephone, telegraph, messenger-call, clock, police, fire alarm, and traffic control circuits, and circuits for the transmission of standard television or radio signals.

"Convert" or "conversion" means the removal of all, or any part, of any existing overhead electric or communication facilities and the replacement thereof with underground electric or communication facilities constructed at the same or different locations.

"Electric service" means the distribution of electricity for heat, light, or power.

"Electric or communication facilities" means any works or improvements used or useful in providing electric or communication service, including, but not limited to, poles, supports, tunnels, manholes, vaults, conduits, pipes, wires, conductors, guys, stubs, platforms, crossarms, braces, transformers, insulators, cutouts, switches, capacitors, meters, communication circuits, appliances, attachments, and appurtenances, other than those owned or used by, or provided for, any railroad or pipeline, and located upon or above the right-of-way of the railroad or pipeline. "Electric facilities" does not include any facilities used or intended to be used for the transmission of electric energy at nominal voltages in excess of 35,000 volts.

"Overhead electric or communication facilities" means electric or communication facilities located, in whole or in part, above the surface of the ground.

"Underground electric or communication facilities" means electric or communication facilities located, in whole or in part, beneath the surface of the ground.

"Public agency" means any city, county, district, or public corporation (other than the one conducting the proceedings) that provides electric or communication service to the public by means of electric or communication facilities.

"Public utility" means any person or corporation that provides electric or communication service to the public by means of electric or communication facilities.

5896.3. In addition to proceedings for types of work or improvement authorized elsewhere in this division, proceedings may be taken for the conversion of existing electric or communication facilities and the construction, reconstruction or relocation of any other electric or communications facilities which may be incidental thereto.

5896.4. Except as otherwise expressly provided by this chapter, a proceeding for a conversion shall be conducted and completed in accordance with the procedure specified elsewhere in this division. All of the provisions of this division shall be applicable to a proceeding for a conversion. This chapter does not affect any other law relating to the same or any similar subject, but provides an alternative authority and procedure for the subject to which it relates. When proceeding under this chapter its provisions only need be followed.

5896.5. Proceedings for a conversion shall be initiated by either a petition or by a determination of the legislative body.

(a) In order to initiate proceedings, a petition shall:

(1) Describe the proposed assessment district, as provided in Section 5181.

(2) Generally describe the proposed conversion.

(3) Request that proceedings for such conversion be taken pursuant to this division.

(b) In order to initiate proceedings, the legislative body shall determine that the city or a public utility has voluntarily agreed to pay over 50 percent of all costs of conversion, excluding costs of users' connections to underground electric or communication facilities.

5896.6. A petition for proceedings for conversion shall be signed by not less than five owners of assessable land in the proposed assessment district, as shown by the last equalized assessment roll used by the city, owning lands constituting more than one-half of the area of all assessable lands within the proposed assessment district.

5896.7. The petition shall be filed with the clerk, who shall thereupon check or cause said petition to be checked. If the petition is signed by the requisite number of qualified signers, the clerk shall execute a certificate of sufficiency and present said petition and certificate to the legislative body.

5896.8. Upon presentation of the petition and certificate of sufficiency or upon a determination pursuant to subdivision (b) of

Section 5896.5, the legislative body may adopt a resolution declaring its intention to order the conversion.

5896.9. In a proceeding for a conversion, the city and any public utility or public agency supplying electric or communication service within the city, by agreement, may provide that, upon confirmation of the assessment, the public utility or public agency shall have legal title to the electric or communication facilities, which shall thereafter constitute part of a system of the public utility or public agency and be used, operated, maintained, and managed by it as part of its system.

Subject to any rules, regulations, or tariffs applicable to any public utility or public agency, the agreement also may provide, among other things, for any of the following: the supplying or approval by the public utility or public agency of plans and specifications; a contribution of labor, materials, or money by the public utility or public agency; the performance by the public utility or public agency of all, or any part, of the work or improvement; and payment to the public utility or public agency for any work or improvement performed or service rendered by it.

Any agreement shall be made prior to the adoption of the resolution ordering the work. If the proceedings are abandoned, the agreement shall be given no further force or effect. To the extent that the agreement provides that all, or any part, of the work or improvement is to be performed by the public utility or public agency, the provisions of this division requiring competitive bidding and the award of the contract to the lowest responsible bidder shall be inapplicable.

Nothing in this chapter precludes the city or the public utility, in the event of disagreement regarding any provision of the proposed agreement, from seeking review of the disagreement by the Public Utilities Commission.

5896.10. If the work or improvement consists solely of a conversion, and the work or improvement is performed by a public utility or public agency, the resolution of intention shall provide that (a) the warrant, assessment and diagram or (b) any bonds issued or to be issued to represent unpaid assessments, or both (a) and (b), shall be sold as the legislative body directs. The purchaser, and any successors, shall have the same rights and liens as the contractor to collect and enforce the assessments and all bonds issued to represent unpaid assessments. If the work and improvement consists, in part, of a conversion and, in part, of other types of work or improvement under this division, the legislative body may provide, in the resolution of intention, that the costs and expenses of conversion is part of the incidental expenses to be advanced to the city by the contractor and to be included in the assessment. Any payments made upon assessments, any proceeds from the sale of the warrant, assessment, and diagram or bonds, and any incidental expenses so advanced to the city may be used by the city for the purpose of making payments to a public utility or public agency pursuant to an agreement made under Section 5896.9.

5896.11. If the city furnishes electric or communication service by means of electric or communication facilities owned or operated by the city, the legislative body, in the resolution ordering work, may

provide that the work or improvement of conversion shall be performed for the price or prices specified in the resolution by the city or any department, agency, commission, or officer of the city having the duty of furnishing the service. To that extent, the provisions of Part 1 (commencing with Section 1100) of Division 2 of the Public Contract Code requiring competitive bidding and the award of the contract to the lowest responsible bidder shall be inapplicable.

5896.13. If the work or improvement consists solely of conversion of electric or communication facilities owned or operated by the city and the legislative body has provided that such work or improvement shall be performed by the city or any department, agency, commission or officer of the city, the warrant, assessment and diagram and all bonds issued to represent unpaid assessments shall be delivered to the city and the city shall thereupon have the same rights and liens as the contractor to collect and enforce the payment of the assessments and all bonds issued to represent unpaid assessments. In such event, (a) such warrant, assessment and diagram or (b) any bonds issued or to be issued to represent unpaid assessment, or both (a) and (b), may be sold as the legislative body directs and the purchaser, and any successors, shall thereupon succeed to all of the rights and liens of the city.

If the work and improvement consists, in part, of a conversion and, in part, of other types of work or improvement, the legislative body may provide in the resolution of intention that the costs and expenses of conversion shall constitute part of the incidental expenses to be advanced to the city by the contractor and to be included in the assessment. Any incidental expenses so advanced to the city may be retained by the city for the purpose of paying or reimbursing the city for the cost of such conversion.

5896.14. Subject to applicable rules, regulations, tariffs or ordinances, all electric or communication facilities, including connections to the owner's premises, located upon any lot or parcel of land within the assessment district shall be constructed, reconstructed, relocated or converted by the owner of such lot or parcel at his own expense. Such work may be done by the contractor, or the public utility, public agency or city performing the conversion work, and the cost thereof included in the assessment to be levied upon such lot or parcel provided, that the owner shall execute a written request therefor and file the same with the clerk. Any such request shall expressly authorize the contractor, public utility, public agency or city, and their respective officers, agents and employees to enter upon such lot or parcel for such purpose and shall waive any right of protest or objection in respect of the doing of such work and the inclusion of the cost thereof in said assessment.

The provisions of this chapter shall not be deemed to diminish any right of an owner of a lot or parcel of land to contract any portion of work on his premises.

5896.15. Any written request executed pursuant to Section 5896.14 shall be filed with the clerk not later than the date fixed for commencement of construction of the conversion. A written request executed after such date shall not be accepted for filing by the clerk unless it shall contain the written approval of the contractor,

public utility, public agency or city which is authorized to perform such work or improvement.

5896.16. The clerk shall mail a notice to each owner of a lot or parcel of land within the assessment district advising him of the provisions of Sections 5896.14 and 5896.15 and stating that unless such owner complies with the requirements of such sections all buildings, structures and improvements located upon the lot or parcel will be subject to disconnection from the electric or communication facilities providing service thereto. Such notice shall be mailed at least 15 days prior to the date of commencement of construction and shall be mailed to the owners whose names and addresses appear on the last equalized assessment roll used by the city or as known to the clerk.

5896.17. If the owner of any lot or parcel of land shall fail to comply with the requirements of Sections 5896.14 and 5896.15, the city may order the disconnection and removal of all overhead electric or communication facilities providing service to any building, structure or improvement located upon such lot or parcel. Written notice of proposed disconnection shall be given at least five days prior to disconnection by leaving a copy of such notice at the principal building, structure or improvement located upon such lot or parcel.

**2010 Nevada Code
TITLE 21 CITIES AND TOWNS
Chapter 271 Local Improvements
NRS 271.010 Short title.**

NRS 271.010 Short title. This chapter shall be known as the Consolidated Local Improvements Law.

**2010 Nevada Code
TITLE 21 CITIES AND TOWNS
Chapter 271 Local Improvements
NRS 271.015 Applicability of chapter.**

NRS 271.015 Applicability of chapter. Except as otherwise provided in NRS 271.700, this chapter applies:

1. To any unincorporated town.
2. To any city, including Carson City, whether incorporated or governed under a general act, special legislative act or special charter, enacted, adopted or granted pursuant to Section 1 or 8 of Article 8 of the Constitution of the State of Nevada, or otherwise.
3. To any county for any project outside of any city.
4. To any county, city, or town for a project not specified in this chapter but which that municipality is otherwise authorized by law to acquire and defray its cost by special assessment, and to any other political subdivision of this State otherwise authorized by law to acquire a specified or described project and to defray its cost by special assessment. In such a case, this chapter provides the method of doing so, to the extent that a special procedure is not provided in the authorizing statute.
5. To a county for a project or benefited property within the boundaries of a city, if the city within whose boundaries the project or benefited property is located consents to the exercise of powers under this chapter within its boundaries, in an interlocal agreement entered into pursuant to NRS 277.045 to 277.180, inclusive.
6. To a city for a project or benefited property outside the boundaries of the city, if the county or other city within whose boundaries the project or benefited property is located consents to the exercise of powers under this chapter within its boundaries, in an interlocal agreement entered into pursuant to NRS 277.045 to 277.180, inclusive.

**2010 Nevada Code
TITLE 21 CITIES AND TOWNS
Chapter 271 Local Improvements
NRS 271.020 Legislative declaration.**

NRS 271.020 Legislative declaration. It is hereby declared as a matter of legislative determination:

1. That providing for municipalities to which this chapter appertains the purposes, powers, duties, rights, disabilities, privileges, liabilities and immunities herein provided will serve a public use and will promote the health, safety, prosperity, security and general welfare of the inhabitants thereof and of the State of Nevada.
2. That the acquisition, improvement, equipment, maintenance and operation of any project herein authorized is in the public interest, is conducive to the public welfare, and constitutes a part of the established and permanent policy of the State of Nevada.
3. That the necessity for this chapter is a result of the large population growth and intense residential, commercial and industrial development in the incorporated and unincorporated areas of portions of the State and of the ensuing need for extensive local improvements therein.
4. That the Legislature recognizes the duty of municipalities as instruments of State Government to meet adequately the needs for such facilities within their boundaries, in cooperation with the State, counties and districts within the State.
5. That for the accomplishment of these purposes, the provisions of this chapter shall be broadly construed, and the rule that statutes in derogation of the common law are to be strictly construed shall have no application to this chapter.
6. That the notices herein provided are reasonably calculated to inform each interested person of his or her legally protected rights.
7. That the rights and privileges herein granted and the duties, disabilities and liabilities herein provided comply in all respects with any requirement or limitation imposed by any constitutional provision.

2010 Nevada Code

TITLE 21 CITIES AND TOWNS

Chapter 271 Local Improvements

NRS 271.025 Decision of governing body prima facie evidence of correctness.

NRS 271.025 Decision of governing body prima facie evidence of correctness. Except for an action or decision made conclusive by a provision of this chapter, the action and decision of a municipality's governing body as to all matters passed upon by it in relation to any action, matter or thing provided in this chapter is, in the absence of fraud, prima facie evidence of its correctness.

2010 Nevada Code

TITLE 21 CITIES AND TOWNS

Chapter 271 Local Improvements

NRS 271.040 "Assessable property" defined.

NRS 271.040 "Assessable property" defined. "Assessable property" means the tracts of land specially benefited by any project the cost of which is wholly or partly defrayed by the municipality by the levy of assessments, except:

1. Any tract owned by the Federal Government, in the absence of its consent to the assessment.

2. Any tract owned by the municipality, unless the governing body of the municipality adopts a resolution finding that the tract is specially benefited by the project.

3. Any street or other public right-of-way.

2010 Nevada Code
TITLE 21 CITIES AND TOWNS
Chapter 271 Local Improvements
NRS 271.045 "Assessment" and "assess" defined.

NRS 271.045 "Assessment" and "assess" defined. "Assessment" or "assess" means a special assessment, or the levy thereof, against any tract specially benefited by any project, to defray wholly or in part the cost of the project, which assessment shall be made on a front foot, zone, area or other equitable basis, as may be determined by the governing body, but in no event shall any assessment exceed the estimated maximum special benefits to the tract assessed or its reasonable market value, as determined by the governing body, as provided in NRS 271.365.

2010 Nevada Code
TITLE 21 CITIES AND TOWNS
Chapter 271 Local Improvements
NRS 271.050 "Assessment lien" defined.

NRS 271.050 "Assessment lien" defined. "Assessment lien" means a lien on a tract created by ordinance of the municipality to secure the payment of an assessment levied against that tract, as provided in NRS 271.420.

2010 Nevada Code
TITLE 21 CITIES AND TOWNS
Chapter 271 Local Improvements
NRS 271.265 General powers of counties, cities and towns.

NRS 271.265 General powers of counties, cities and towns.

1. The governing body of a county, city or town, upon behalf of the municipality and in its name, without any election, may from time to time acquire, improve, equip, operate and maintain, within or without the municipality, or both within and without the municipality:

- (a) A commercial area vitalization project;
- (b) A curb and gutter project;
- (c) A drainage project;
- (d) An energy efficiency improvement project;
- (e) An off-street parking project;
- (f) An overpass project;

- (g) A park project;
- (h) A public safety project;
- (i) A renewable energy project;
- (j) A sanitary sewer project;
- (k) A security wall;
- (l) A sidewalk project;
- (m) A storm sewer project;
- (n) A street project;
- (o) A street beautification project;
- (p) A transportation project;
- (q) An underpass project;
- (r) A water project; and
- (s) Any combination of such projects.

2. In addition to the power specified in subsection 1, the governing body of a city having a commission form of government as defined in NRS 267.010, upon behalf of the municipality and in its name, without any election, may from time to time acquire, improve, equip, operate and maintain, within or without the municipality, or both within and without the municipality:

- (a) An electrical project;
- (b) A telephone project;
- (c) A combination of an electrical project and a telephone project;
- (d) A combination of an electrical project or a telephone project with any of the projects, or any combination thereof, specified in subsection 1; and
- (e) A combination of an electrical project and a telephone project with any of the projects, or any combination thereof, specified in subsection 1.

3. In addition to the power specified in subsections 1 and 2, the governing body of a municipality, on behalf of the municipality and in its name, without an election, may finance an underground conversion project with the approval of each service provider that owns the overhead service facilities to be converted.

4. In addition to the power specified in subsections 1, 2 and 3, if the governing body of a municipality in a county whose population is less than 400,000 complies with the provisions of NRS 271.650, the governing body of the municipality, on behalf of the municipality and in its name, without any election, may from time to time acquire, improve, equip, operate and maintain, within or without the municipality, or both within and without the municipality:

(a) An art project; and

(b) A tourism and entertainment project.



Local Governments and Public School Systems by Type and State: 2007

Geographic area	General purpose						Special purpose		
	Total	Total	County ¹	Subcounty			Total	Special districts	Public s
				Total	Municipal	Town or township			
1	2	3	4	5	6	7	8	9	
United States	89,476	39,044	3,033	36,011	19,492	16,519	50,432	37,381	14,561
Alabama	1,185	525	67	458	458	-	660	529	131
Alaska	177	162	14	148	148	-	15	15	54
Arizona	645	105	15	90	90	-	540	301	253
Arkansas	1,548	577	75	502	502	-	971	724	247
California	4,344	535	57	478	478	-	3,809	2,765	1,102
Colorado	2,416	332	62	270	270	-	2,084	1,904	180
Connecticut	649	179	-	179	30	149	470	453	166
Delaware	338	60	3	57	57	-	278	259	19
District of Columbia	2	1	-	1	1	-	1	1	2
Florida	1,623	477	66	411	411	-	1,146	1,051	95
Georgia	1,439	689	154	535	535	-	750	570	180
Hawaii	19	4	3	1	1	-	15	15	1
Idaho	1,240	244	44	200	200	-	996	880	116
Illinois	6,994	2,833	102	2,731	1,299	1,432	4,161	3,249	912
Indiana	3,231	1,666	91	1,575	567	1,008	1,565	1,272	293
Iowa	1,954	1,046	99	947	947	-	908	528	380
Kansas	3,931	2,084	104	1,980	627	1,353	1,847	1,531	316
Kentucky	1,346	537	118	419	419	-	809	634	175
Louisiana	526	363	60	303	303	-	163	95	69
Maine	850	504	16	488	22	466	346	248	299
Maryland	256	180	23	157	157	-	76	76	39
Massachusetts	861	356	5	351	45	306	505	423	332
Michigan	2,893	1,858	83	1,775	533	1,242	1,035	456	730
Minnesota	3,526	2,729	87	2,642	854	1,788	797	456	341
Mississippi	1,000	378	82	296	296	-	622	458	167

Missouri	3,723	1,378	114	1,264	952	312	2,345	1,809	536
Montana	1,273	183	54	129	129	-	1,090	758	332
Nebraska	2,659	1,077	93	984	530	454	1,582	1,294	288
Nevada	198	35	16	19	19	-	163	146	17
New Hampshire	545	244	10	234	13	221	301	137	174
New Jersey	1,383	587	21	566	324	242	796	247	625
New Mexico	863	134	33	101	101	-	729	633	96
New York	3,403	1,604	57	1,547	618	929	1,799	1,119	716
North Carolina	963	648	100	548	548	-	315	315	173
North Dakota	2,699	1,730	53	1,677	357	1,320	969	771	198
Ohio	3,702	2,334	88	2,246	938	1,308	1,368	700	668
Oklahoma	1,880	671	77	594	594	-	1,209	642	567
Oregon	1,546	278	36	242	242	-	1,268	1,034	234
Pennsylvania	4,871	2,628	66	2,562	1,016	1,546	2,243	1,728	515
Rhode Island	134	39	-	39	8	31	95	91	36
South Carolina	698	314	46	268	268	-	384	299	85
South Dakota	1,983	1,291	66	1,225	309	916	692	526	166
Tennessee	928	439	92	347	347	-	489	475	136
Texas	4,835	1,463	254	1,209	1,209	-	3,372	2,291	1,082
Utah	599	271	29	242	242	-	328	288	40
Vermont	733	296	14	282	45	237	437	144	293
Virginia	511	324	95	229	229	-	187	186	135
Washington	1,845	320	39	281	281	-	1,525	1,229	296
West Virginia	663	287	55	232	232	-	376	321	55
Wisconsin	3,120	1,923	72	1,851	592	1,259	1,197	756	444
Wyoming	726	122	23	99	99	-	604	549	55

- Represents zero.

¹ Excludes areas corresponding to counties but having no organized governments.

² 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.

Measuring America—People, Places, and Our Economy

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United States Census Bureau

Last Revised: October 24 2011

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GERMAN SAVINGS AND LOAN SOCIETY, Appellant, v. ADOLPH RAMISH et al., Respondents

L. A. No. 995

Supreme Court of California

138 Cal. 120; 70 P. 1067; 1902 Cal. LEXIS 462

December 18, 1902

PRIOR HISTORY: [***1] APPEAL from a judgment of the Superior Court of Los Angeles County and from an order denying a new trial. W. F. Fitzgerald, Judge.

HEADNOTES

CALIFORNIA OFFICIAL REPORTS HEADNOTES

Street Bond Act--Constitutional Law--Prior Mortgage.--The bond lien provided for in the Street Bond Act of March 9, 1893, is intended to be prior to all other liens; and that act is not unconstitutional, as impairing the obligation of a prior mortgage; nor is it in violation of the *fourteenth amendment to the federal constitution*, which is inapplicable in tax proceedings.

Id.--Opportunity for Hearing.--The fact that the Street Bond Act, which gives the lot-owner an opportunity to object to the issuance of the bond, but does not in terms give the right to object to lien-holders, does not make the statute void.

Id.--Long Period of Bonds--Taxing Power.--The power conferred upon the council by the Street Bond Act to impose a charge upon the property-owners for a period of ten years is a proper exercise of the taxing power, and is not a taking of private property for public use.

Id.--Constitutionality of Vrooman

Act--Amendments.--The Vrooman Act is constitutional; and none of the amendments thereto are invalid.

Id.--Change of Grade Act -- Provision for Hearing -- Damages--Waiver.--The Change of Grade Act, which is not intended to include the original establishment of grade, sufficiently provides for notice and hearing on the question of damages by all persons entitled to compensation under the constitution before the actual damage occurs, to be paid when the grade-lines are changed, provided a petition is made for damages. Those who do not ask damages may be deemed to have waived them.

Id.--Statutory Construction--Ordinance to Change Grade.--The Vrooman Act and the Change of Grade Act are to be treated as *in pari materia*; and the power to pass an ordinance to change or modify the grade of a street exists under both acts, and may be referred to either.

Id.--Proceedings to Improve Street after Change of Grade.--Proceedings to grade, gravel, and otherwise improve a street, inaugurated by another ordinance, after a change of official grade has been made under the Change of Grade Act, are not invalid because not complying with that act.

Id.--Sufficiency of Petition--Determination by Council.--A petition presented by a majority in frontage of lot-owners, asking both for a change of grade, and also

that after such change an order be made to grade and improve the streets to the new grade, and to issue serial bonds therefor, is sufficient to confer power upon the council not only to change the grade, but also to order the improvements petitioned for. An ordinance of intention to grade and otherwise improve the street is conclusive that, at its passage, the persons whose names appeared upon the petition were owners of a majority of the frontage.

Id.--Assessment District.--The council may establish the assessment district either so as to be coincident with and include only the lots which would have been assessed under the front-foot mode of assessment, if such mode had been adopted, or it may include a district other than that.

Id.--Street Bond Act not Repealed.--The Street Bond Act was not repealed by the constitutional amendment of 1896 to *section 6 of article XI of the constitution*. That amendment did not give life to the scheme for street improvements in the charter of Los Angeles which were void under *section 8 of article XI of the constitution*.

Id.--Contract for Reduced Rate--Privilege of Property-Owners--Fraud not Shown.--Where three fourths of the property-owners, instead of electing to do the work at the price awarded, made a contract with the contractor for a reduced rate, and a corresponding credit on their assessments, the privilege of entering into which was extended to all other lot-owners, such contract carries no such evidence of fraud as to warrant the court in declaring the bonds void.

Id.--Description of Assessment District--Certainty.--A description of an assessment district which would have been sufficiently certain in a conveyance is sufficiently certain under the law.

SYLLABUS

The facts are stated in the opinion of the court rendered in Department Two.

COUNSEL: J. S. Chapman, for Appellant.

Frank G. Finlayson, for Respondents.

JUDGES: In Bank. Van Dyke, J., Garoutte, J., McFarland, J., Henshaw, J.

OPINION BY: THE COURT

OPINION

[*121] [**1067] For the reasons given in the opinion delivered in this case in Department the judgment and order appealed from are affirmed.

The following is the opinion rendered in Department Two, on the third day of April, 1902: --

[*122] CHIPMAN, C. -- Statement of the facts. Lots 1 to 11, block 15, in the city of Los Angeles, on January 8, 1890, belonged to W. D. Gould and wife, and on that day were mortgaged to plaintiff; the mortgage was subsequently foreclosed, and plaintiff became the purchaser at foreclosure sale after all the proceedings relating to the assessment and sale of the property had taken place. On November 11, 1895, the owners of a majority of the feet frontage, and also owners of a majority of the property affected by the proposed change of grade, filed a petition [***2] with the council, in which they prayed for "the change and establishment of the grade of said streets [here follows description, subsequently followed by the council]; also stating that the grade should be changed and established at the same time, for the mutual benefit of the public and all parties in interest, and that the district which will be benefited . . . is the property fronting thereon [here follows a description of the district as given subsequently in the ordinance 3638]; also that when the grade has been changed and established as prayed for, that the council "will order said streets, and each of them, to be graded, graveled, guttered, curbed and granite cross-walked to the said new and established grade," (the description here follows and is the same as was afterwards set forth in the ordinance 3638); also that if the cost is found to be greater than one dollar per front foot on each line of street, the council "will determine that serial bonds be issued to represent the cost of said work and improvement, in the manner and form provided by law; also praying that the council establish and declare the district to be benefited by said grading, . . . and to be assessed [***3] to pay the total costs and expenses thereof" (here follows description of the proposed district as appearing later in said ordinance 3638); also praying that the assessment be "at a uniform rate per square foot over the entire district," and representing that "the public interests demand that the same be expedited and completed rapidly, and that the same is of more than local and ordinary benefit." Plaintiff

did not sign this petition nor did it appear in any of the subsequent proceedings, but the Goulds signed the petition. On November 18, 1895, the city council, in accordance with said petition, duly passed an ordinance (No. 2313) of intention to change the grade of the street described in the petition, on which the [*123] improvements in question were afterwards made. No objection was filed to the proposed change of grade within thirty days from the publication of said ordinance, except by one Mitchell and one Nollack, and no other persons filed any claim or petition showing ownership of any property claimed to be damaged by said proposed change of grade. The mayor, city engineer, and superintendent of streets assumed to act as a board of commissioners, provided for in section [***4] 3 of the act of March 9, 1893, though no record appears of their appointment as such board, but it appears that each of these commissioners made affidavit in the matter of the change of grade of the streets mentioned in ordinance 2313, reciting that the council having referred to them the claims of Mitchell and Nollack, they, said commissioners, would "make the estimate of benefits and damages incurred by such change of grade as in said ordinance proposed, to the best of his ability. They reported to the council April 11, 1896, . . . we find that the benefits that accrue to said property are in excess of any damages incurred by virtue of said change in grade." Notice was given by the clerk of the filing of their report as required by law and a day fixed therein for all persons to show cause why it should not be confirmed; no objections being made except by Mitchell and Nollack, a day was fixed to hear their objections, and on the day fixed for such hearing, to wit, May 25, 1896, the objections were denied and the report of the commissioners confirmed. Neither plaintiff nor the Goulds made any objection to any of the proceedings. On May 25, 1896, the council changed the grades of [***5] these streets, by ordinance No. 3620, under the provisions of the Change of Grade Act of March 9, 1893, (Stats. 1893, p. 89). On January 8, 1896, the council, by an ordinance of intention No. 3638, under the Street Bond Act of February 27, 1893, (Stats. 1893, p. 33,) commenced proceedings to grade, gravel, gutter, cross-walk, and curb the streets in question; and deeming the work of more than local or of ordinary public benefit, the council declared by this ordinance that the intention was to make the expense of said work chargeable upon an assessment district, declaring the same to be the district benefited by the proposed improvement, and to be assessed to pay its cost, according to the district plan and

not by the front-foot method of assessment. Other facts appear in the opinion.

[*124] This is an action to enjoin defendant Hartwell, city treasurer of the city of Los Angeles, from executing a deed to defendant Holliday to all of the lots in block 15, of the Woolen Mill Tract in said city, being lots 1 to 11, inclusive, the only property affected by this action. These lots were sold because of the non-payment of certain bonds which had been issued for street improvement [***6] pursuant to the Street-Bond Act (Stats. 1893, p. 33). The cause was tried by the court on the pleadings and an agreed statement of facts. Plaintiff appeals from the judgment in favor of defendants and from the order denying plaintiff's motion for a new trial.

1. Plaintiff contends that if the bond act is to be given a retrospective effect it impairs the obligation of Gould and wife to plaintiff and violates the constitution of the United States.

Whether the power to tax for street improvements is to be referred to the general taxing power and the power of eminent domain, or, as some courts have suggested, to the police power, is not very important. Whatever its source may be, it exists beyond question by reason of its nature and objects, and that it partakes of the nature of the taxing power must be admitted. The power to levy a tax for general purposes, which shall be a lien superior to all other liens, prior or otherwise, is not doubted, and it is not because it is called a tax, but because of its object and the necessity for raising revenue in order to execute the functions of government. In modern times, whatever may have been the demands of society in an earlier period [***7] of the development of government, the necessity for improving the streets of cities and towns, while perhaps less important in degree than the general objects of government, is yet important and necessary to the welfare of the whole community, and in our opinion the principles on which the system of general taxation depends, and which govern in the enforcement of tax levies for general purposes, are also applicable to taxation for the improvement of streets, the construction of sewers, and other like public work. It is a mistaken assumption that the improvement of a particular street in a city is solely for the benefit of adjoining property-owners; the benefit accrues to the public generally, and the power to compel such improvements is essential to the well-being [*125] of communities. The bond act expressly provides that the lien of the bonds

138 Cal. 120, *125; 70 P. 1067, **1067;
1902 Cal. LEXIS 462, ***7

shall be "a first lien upon property" (Stats. 1893, sec. 4, p. 36); and section 5 also makes the provisions of the law for the collection of delinquent state and county taxes applicable to sales under the bond act. (Pol. Code, sec. 3788.) The intention seems to be clearly manifested that the bond lien shall be prior to all liens. The [***8] view we take of the statute makes it unnecessary to inquire as to the effect of the lien which attaches upon the recording of the warrant. If we are to protect prior mortgages against the lien, how can we in reason take from the owner his title, which antedates the mortgagee's interest?

In *Murphy v. Beard*, 138 Ind. 560, at page 565, the question of the priority of the assessment lien was involved and the court said: "If, however, we are correct in the proposition that a purchaser takes title with the implied paramount right of the public for the uses named, the lienor takes his mortgage and makes his own loan with notice of that paramount right, and must submit to its exercise." (*Wabash etc. Ry. Co. v. Commissioners etc.*, 134 Ill. 384 at p. 400; see, also, the principle discussed in *California Loan etc. Co. v. Weis*, 118 Cal. 489.)

2. It is next contended that the act is in violation of the *fourteenth amendment to the federal constitution*. Plaintiff insists upon this point, notwithstanding this court in *Hadley v. Dague*, 130 Cal. 207, has held adversely to this contention. We are not disposed to reopen this question. *Hadley v. Dague* was adhered [***9] to in *San Francisco Paving Co. v. Bates*, 134 Cal. 39.

3. Plaintiff claims that all the acts, in so far as they undertake to provide for the issuance of bonds, are void as against plaintiff, for the reason that they do not offer any opportunity to it to be heard in the proceeding. The assessments are payable and become liens upon the recording of the warrant, assessment, diagram, and certificate of the city engineer. (Vrooman Act, secs. 9 and 10, Stats. 1885, p. 155.) Thenceforward all persons have notice by the recordation of these documents, and the assessment may be paid at any time thereafter. (*Ibid.*) The statute provides that the bond shall not issue until after the expiration of thirty days from the date of the warrant. (Bond Act, sec. 4, Stats. 1893, p. 34.) [*126] The bond creates no new liability, and in effect provides for what by some would be regarded as more favorable payment, because in installments and after a period of years. However this may be, the lot-owner cannot

complain, since he may pay the assessment and prevent the issuance of the bond. But the act does give the lot-owner an opportunity to object to the issuance of the bond; and that [***10] the person so objecting must file a certain affidavit accompanied by a certificate cannot be said to take away the right given to object. And because this right to object is not in terms given to lienholders does not, in our opinion, make the statute void. (See on the subject *Hellman v. Shoulters*, 114 Cal. 136.) If a mortgagee can be heard to complain, so could a leasehold-owner or any other person having any interest, however slight, present or prospective. It would be difficult to frame an act that would escape appellant's objection.

It is urged also that no sufficient hearing is accorded by the act of March 9, 1893, the Change of Grade Act, because no hearing is given upon the question of establishing or changing the grade, -- i. e. a paper grade, -- and yet damage may result at some time from such grade; also that although section 2 of the Vrooman Act of 1885 gives the council power to establish and change the grades of streets, no provision is made for any notice before the grade is established; that the Change of Grade Act only gives to an owner or person owning property an opportunity to be heard upon the question of damage or benefit, and does not give the mortgagee [***11] any opportunity to be heard whether there is damage or benefit arising from changing or establishing grade lines, and even the owner has no opportunity to be heard as to benefits or damages where the grade is first established, and hence the act is void. The *fourteenth amendment of the federal constitution* cannot be invoked, because it is inapplicable in tax-proceeding cases. (*Merchants' Transportation Co. v. Chicago*, 99 U.S. 635; *Reardon v. San Francisco*, 66 Cal. 492. ¹) If any damage can be claimed, it must be by reason of our state constitution requiring such notice and hearing. It was said in *Paulson v. City of Portland*, 149 U.S. 30 (at p. 38): "While not questioning that notice to the taxpayer in some form must be given before an assessment for the construction of a sewer [*127] can be sustained, . . . we do not think it essential to the validity of a section in the charter of a city granting power to construct sewers that there should in terms be expressed either the necessity for or the time or manner of notice"; and it was held that where the power is given to do the work the statute would not be unconstitutional if it did not require that any [***12] notice be given; notice must be given, but "the city would have a broad discretion with reference to the kind of

notice and the manner of giving the same," quoting *Gilmore v. Hentig*, 33 Kan. 156. (See, also, *Lent v. Tillson*, 72 Cal. 404.) The consequential damages arising directly from a change of grade may be compensated only by reason of the provisions of the state constitution, or some law passed pursuant to the constitution. The constitutional provision is: "Private property shall not be taken or damaged for public use without just compensation having been first made, or paid into court for the owner." A mortgagee is entitled to compensation, if at all, because of this provision of the constitution, and if he object that the Change of Grade Act provides only for the filing of a petition for damages by the owner, then he must seek compensation as an owner; and if he claims that the word "owner" does not include a mortgagee, *Lent v. Tillson* replies to him that the statute and the constitution must be read together as one law, and the statute is as broad as the constitution. It may well be asked at this point, May compensation for the same damage be awarded [***13] to both the owner and mortgagee? Certainly not. If to but one, which one? And if one damage to both, how to be apportioned? And why the necessity for providing notice to others than the owner? But the act does make ample provision for a notice to and a hearing by such persons as come within the description of those entitled to compensation, and this we think relieves the statute from appellant's objection. It may be true, as contended, that where the statute fails to provide a time of payment for damages arising from changing a grade the damages are payable at the time they accrue, -- i. e. when the grading is begun; but the Change of Grade Act of 1893 has provided that the compensation may be determined before the actual damage occurs, and shall be paid when the grade lines are changed; lot-owners who do not then petition for compensation, as the statute provides, shall be [*128] deemed to have waived them. This was the rule under the old constitution (*In re Beale Street*, 39 Cal. 495); and the rule is not changed where, as now, compensation is made for property "damaged," which could be demanded under the old constitution where "taken." The property-owner may waive [***14] all claim to compensation (*Bigelow v. Ballerino*, 111 Cal. 559); and those who do not ask damages may be deemed to have intentionally waived them.

1 56 Am. Rep. 109.

We do not think appellant is sustained in assuming that the Change of Grade Act is broad enough to include

the original establishment of grades, as well as the change of established grades. Counsel thus assumes and claims that the act does not give any one an opportunity to be heard upon the question of damages and benefits where the grade is first established. Section 1 (Stats. 1893, p. 89) empowers the city council "to change or modify the grade of any public street . . . and to regrade or repave the same, so as to conform to such modified grade, in the manner as hereinafter provided." This language implies the existence of a previous grade. Under the Vrooman Act the council had power to establish as well as change the grade of streets, and, treating all these statutes as *in pari materia*, counsel for respondents answers, we think [***15] with reason, that it was because of the provision of the Vrooman Act that section 1 of the Change of Grade Act provided that "no change of an *established* grade shall be ordered except on petition of the owners of a majority of the property affected." We do not think it was intended by the Change of Grade Act of 1893 to grant power to originally establish a grade; such power comes from other acts. Besides, as counsel further shows, if, as is alleged in the complaint, ordinance No. 3620 did change the grade of these streets, the power of the council to pass the ordinance may be referred to the Vrooman Act; and if the ordinance did not have the effect to change the grade of these streets, they remained as originally established, and the true grade lines, wherever they may be, were the grade lines as originally established. We must construe the ordinance of intention as intending to grade the streets to the proper official grade lines (*Emery v. San Francisco Gas Co.*, 28 Cal. 346, at p. 376); and there having been no appeal to the council by the parties interested from the acceptance of the work by the [*129] city engineer, which the Vrooman Act, by section 11, provided [***16] might be taken, the act of the superintendent was conclusive that the streets were graded to the true official grade. (*Warren v. Riddle*, 106 Cal. 352.) And the Street Bond Act makes the bonds conclusive evidence as to matters not essential to the jurisdiction of the officers to create the assessment. (Stats. 1893, p. 36; *Ramish v. Hartwell*, 126 Cal. 443.)

5. Assuming that the Vrooman Act of 1885 is unconstitutional in that it provides for front-foot assessments, appellant contends that all subsequent acts amendatory thereof are necessarily unconstitutional because a void statute cannot be amended. Appellant's premise being unsound (*Hadley v. Dague*, 130 Cal. 207), the conclusion is equally faulty.

6. It is claimed that the proceedings to grade, gravel, etc., are void because they did not comply with the statute of March 9, 1893, (Change of Grade Act): 1. Because the commissioners did not assess the benefits or damages upon each lot within the district; 2. That no petition was filed by the owners of a majority of the lot frontage; and 3. The district included no lots or land except such as would have been assessed had the front-foot method been adopted.

[***17] We have already held that this act only authorizes the council to regrade, repave, etc., and not to grade, pave, etc., originally, this latter authority being derived from other statutes. The improvements of the streets in question were initiated by petition, in which the Goulds joined, which substantially asked to have everything done which was subsequently done in the matter. It does not follow that because the petition was broad enough to include the grading, graveling, etc., of the streets, that what the council did, under ordinance 3638, after the grade was established, was done under the Change of Grade Act. It does appear that the commissioners acted on the petitions of Mitchell and Nollack, who were the only ones who claimed any damage in the matter of changing the grade, and their report was confirmed by the council. Their petition was filed during the proceedings to change the grade, and we do not think the act required the commissioners to assess any benefits and damages for which no petition was presented to them. If there were other lot-owners entitled to have the question of benefit and damages [*130] determined by the commissioners, it was their duty to present [***18] their petitions therefor, and not having done so, their claims must be deemed to have been waived. The assessment liens would not be void because of any failure to first provide compensation to the lot-owner. The power of taxation, unlike that of eminent domain, may be exercised although damages have not been paid to the owner before the street work is done. (*Hornung v. McCarthy*, 126 Cal. 17; *De Baker v. Southern Cal. Railway Co.*, 106 Cal. 260. ¹) The act of March 9, 1893, was amended by the act of March 11, 1893, (Stats. 1893, p. 172,) by which latter act a petition by the owners of a majority of the feet fronting thereon is made a condition precedent to the grading, regrading, etc., of any street; and appellant claims that no such petition was filed, unless the petition of November 18, 1895, meets the requirements, which appellant denies. Aside from the fact that there is no allegation in the complaint that there was no such petition filed, and that it may be presumed

that there was a petition, and aside from the further claim of respondent that, in view of the conclusive evidence clause of the bond act (Stats. 1893, p. 36), such a petition is not jurisdictional [***19] in the sense that it is a necessary prerequisite to a valid assessment, we think the petition filed by a majority of the lot-owners, the Goulds among them, was sufficient to meet the requirements of the amendatory act relied on by appellant. The suggestion that the signers of the petition on November 18, 1895, may not have been lot-owners when the council afterwards passed ordinance No. 3638, is met by the counter-suggestion that it was part of the duty of the council to determine whether the signers were then lot-owners, and this duty we must presume was performed; and the ordinance of intention to grade, etc., is itself conclusive that at its passage the persons whose names appeared on the petition were owners of a majority of the frontage. (*Spaulding v. Homestead Assn.*, 87 Cal. 40; *Farmers & M. Bank v. Dinsmore*, 97 Cal. 318; *People v. Los Angeles*, 133 Cal. 338.) To the point that the council had no authority to declare that the assessment district should be coincident with or include only the lots which would have been assessed under the front-foot mode of assessment, it may be replied that section 3 of the act of 1891, amendatory of the [*131] act [***20] of 1885, does not mean that the council must necessarily impose the expense of the improvement upon a district other than a district embracing the lots fronting on the streets to be improved. It may do so, and it may make the district coextensive with the lots which would be liable under the front-foot method, if such mode had been adopted. The statute provides that lot-owners may object to the extent of the district, and thus arrest the proceedings if successful. The council may, however, again proceed, omitting the lots found improperly included. (Section 3, *supra*.) Counsel for respondents points out that at least one lot was included in the district that is three blocks away from Beaudry Avenue, for the grading and improving of which this lot became liable for a part of the cost.

1 46 Am. St. Rep. 237.

That the method pursued was to plaintiff's pecuniary advantage appears from the undisputed fact that the assessment against its lots was less than one third of what the cost would have been to it had [***21] the front-foot mode been adopted.

7. The act under which these proceedings were taken

and bonds issued was not repealed by the constitutional amendment of 1896 (art. XI, sec. 6) of the constitution. Appellant relies on *Byrne v. Drain*, 127 Cal. 663. The scheme for street improvements provided by the city charter was, when adopted, inconsistent with the general laws then in force, or is inconsistent with general laws subsequently passed and prior to the amendment of 1896, and hence such charter provisions are void because of *section 8 of article XI of the constitution*; and it has recently been held, in *Banaz v. Smith*, 133 Cal. 102, that the amendment of 1896 "did not give life to such provisions." Section 3 (Stats. 1893, p. 34,) does not require the resolution of intention and notice of street-work to state that a bond will issue for each assessment over fifty dollars. A notice to this effect must be given in the warrant, and was so given. Plaintiff admits that the ordinance of intention and the notice of street-work did give a description of the bonds and the rate of interest, and this is all the act required to be there stated as to the bonds; and there was a reference [***22] to the bonds in the advertisement for bids.

8. After the city council had awarded to Ramish & Marsh the contract to do the work, the contractors entered into an agreement with the owners of more than three fourths of the [*132] frontage of the lots fronting on the streets to be improved, by which, in consideration of the lot-owners waiving their right to do the work, the contractors agreed to execute the contract with the superintendent to perform the work awarded to them and allow the lot-owners a credit of twenty-five per cent on their assessments, provided they paid to the contractors the balance, seventy-five per cent in cash, within thirty days after the making and filing of the assessment by the superintendent of streets. It was also provided that the lot-owners might elect to have bonds issue under the act, in which case they were to have fifteen per cent credit indorsed on the bonds. It was also provided that any lot-owner not signing the agreement might within thirty days from posting of notice of the award become a party to the contract; and after the issuing of the assessment the contractors offered to receive from Gould and wife seventy-five per cent of the assessments [***23] against the lots in block 15, in full settlement against said lots. The allegations of fraud in the complaint were denied, and the only facts agreed upon as to this transaction are as above stated, -- i. e. are to be found in the agreement itself. If there was fraud in the contract, it must be judged alone from its terms. The award had already been made, and alleged fraudulent combination between the

lot-owners and the contractors could not have influenced the council in making the award. By the act of 1891 (p. 200) three fourths of the property-owners might elect within ten days after notice of the award to do the work at the price awarded. But if, instead of making the contract complained of, they had elected to do the work, the assessment on the property would have been no less. We fail to see how the other property-owners were injured, especially as they had an opportunity to avail themselves of the contract. Besides, how could this plaintiff as mortgagee be injuriously affected because the Goulds, its mortgagors, did not become a party to the obnoxious contract? It might be inferred that there was too great profit in a contract which would justify the contractors to enter [***24] into such an agreement. But on the face of it the contract carries no such evidence of fraud as would warrant the court in declaring the bonds to be void. In one sense it was an acknowledgment by three fourths of the lot-owners that the contract was fairly and duly entered into, and the recitals in the contract say as much.

[*133] 9. Plaintiff insists that the legislative attempt to confer power on the council to impose a charge upon the property of owners in a city to continue for the period of ten years is not the exercise of the taxing power, but is a taking of property for a public use without compensation and without due process of law. The point we think is shown to be untenable in *Hellman v. Shoulters*, 114 Cal. 140.

10. It is contended that the finding that the lots in block 15 were benefited in excess of the damages by more than the amount of the assessment is not justified by the evidence. Respondents' counsel contends that this is a finding upon a wholly immaterial issue; and because of a recent decision, in *White v. City of Tacoma*, 109 Fed. Rep. 32, holding otherwise, counsel urges a decision on the point for the reason that a cloud has been thrown [***25] over these street-assessment bonds by this decision. We think there was evidence sufficient to support the finding, and this makes it unnecessary to pass upon the question.

11. It is claimed that the district is so indefinitely described that the attempt to create it is void. The alleged defect in the description relates to calls from a point on the north line of Sixth Street, "easterly to the northwest corner of the Galpin tract; . . . thence easterly along the northerly line of said tract and the prolongation thereof to the easterly line of Sixth Street." Some distance before

138 Cal. 120, *133; 70 P. 1067, **1067;
1902 Cal. LEXIS 462, ***25

Sixth Street (which runs nearly east and west) reaches Beaudry Avenue, as shown on the diagram, it makes a slight bend southerly, and shortly after passing Beaudry Avenue it makes nearly a right angle, running southerly, the easterly side of the street joining the Woolen Mill tract at the northwest corner of the Galpin tract as we understand the diagram. The controversy arises over the fact whether Sixth Street, running east and west, can have an east line. This southerly arm of Sixth Street, as marked on the diagram, was once Loomis Street, but the name of this part of Loomis Street was changed by ordinance [***26] duly passed and published before the proceedings to grade, gravel, etc., were commenced. As shown on the diagram, so did Sixth Street appear on the maps of the city which were published and sold to

residents of the city some months prior to the commencement of said proceedings. Clearly the diagram shows an easterly line of Sixth Street at the particular point named. [*134] Without stating further the evidence and the situation as to the contention of appellant, we think the description was sufficiently certain; it would have been a sufficient description in a conveyance, and the law requires no greater certainty. (*Irrigation Dist. v. De Lappe*, 79 Cal. 351; *Thomason v. Cuneo*, 119 Cal. 25.)

It is advised that the judgment and order be affirmed.

Cooper, C., and Gray, C., concurred.

**2011 Oregon Revised Statutes
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ORS Chapter 223**

223.001 Definitions.

- (1) Actual cost has the meaning given the term under ORS 310.140.
- (2) Capital construction project means a project for capital construction, as defined under ORS 310.140.
- (3)(a) Estimated assessment means, with respect to each property to be assessed in connection with a local improvement, the total assessment that, at the time of giving notice of the assessment and the right to object or remonstrate, the local government estimates will be levied against the property following completion of the local improvement. The estimate shall be based on the local government's estimate at that time of the actual costs of the local improvement and the proposed formula for apportioning the actual costs to the property.
- (b) Estimated assessment shall be determined by:
 - (A) Excluding from estimated actual costs the estimated financing costs associated with any bonds issued to accommodate the payment of the assessment in installments; and
 - (B) Including in estimated actual costs the estimated financing costs associated with interim financing of the local improvement.
- (4) Final assessment means, with respect to each property to be assessed in connection with a local improvement, the total assessment levied against the property following completion of the local improvement. The total assessment shall be based on the actual costs of the local improvement and the formula for apportioning the actual costs to the property.
- (5)(a) Financing means all costs necessary or attributable to acquiring and preserving interim or permanent financing of a local improvement.
- (b) The costs of financing may include the salaries, wages and benefits payable to employees of the local government to the extent the same are reasonably allocable to the work or services performed by the employees in connection with the financing of a local improvement or any part thereof. However, as a condition to inclusion of any salaries, wages or benefits payable to employees of a local government as financing costs of a local improvement or any part thereof, the local government shall establish a record keeping system to track the actual work done or services performed by each employee on or in connection with such local improvement.
- (c) Financing costs that are to be incurred after the levy of a final assessment may be included in the final assessment based on the local government's reasonable estimate of the financing costs if the local government first documents the basis for the estimate and makes the documentation available to interested persons on request.
- (6) Governing body means the council, commission, board or other controlling body, however designated, in which the legislative powers of a local government are vested.

(7) Installment application means an application filed by a property owner to have a final assessment paid in installments over a period of years.

(8) Local government means a local government as defined in ORS 174.116 that has authority to undertake the acquisition, construction, reconstruction, repair, betterment or extension of a local improvement.

(9) Local improvement has the meaning given the term under ORS 310.140.

(10) Lot means a lot, block or parcel of land.

(11) Owner means the owner of the title to real property or the contract purchaser of real property of record as shown on the last available complete assessment roll in the office of the county assessor.

(12) Recorder means the auditor, recorder, clerk or other person or officer of a local government serving as clerk of the local government or performing the clerical work of the local government, or other official or employee as the governing body of a local government shall designate to act as recorder.

(13) Structure has the meaning given the term under ORS 310.140.

(14) Treasurer means the elected or appointed official of a local government, however designated, charged by law with the responsibility for acting as custodian of and investment officer for the public moneys of the local government. [1991 c.902 3; 2003 c.802 2]

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223.114 Economic improvement; assessment ordinance.

(1) A council may enact an ordinance establishing a procedure to be followed by the city in making assessments for the cost of an economic improvement upon the lots which are specially benefited by all or part of the improvement.

(2) In any ordinance adopted under subsection (1) of this section, a city shall not be authorized to:

(a) Levy assessments in an economic improvement district in any year that exceed one percent of the real market value of all the real property located within the district.

(b) Include within an economic improvement district any area of the city that is not zoned for commercial or industrial use.

(c) Levy assessments on residential real property or any portion of a structure used for residential purposes. [1985 c.576 2; 1989 c.1018 3; 1991 c.459 350; 1991 c.902 5]

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ORS Chapter 223**

223.117 Requirements of assessment ordinance.

(1) An ordinance adopted under ORS 223.114, shall provide for enactment of an assessment ordinance that:

- (a) Describes the economic improvement project to be undertaken or constructed.
- (b) Contains a preliminary estimate of the probable cost of the economic improvement and the proposed formula for apportioning cost to specially benefited property.
- (c) Describes the boundaries of the district in which property will be assessed.
- (d) Specifies the number of years, to a maximum of five, in which assessments will be levied.
- (e) Contains provision for notices to be mailed or delivered personally to affected property owners that announce the intention of the council to construct or undertake the economic improvement project and to assess benefited property for a part or all of the cost. The notice shall state the time and place of the public hearing required under paragraph (f) of this subsection.
- (f) Provides for a hearing not sooner than 30 days after the mailing or delivery of notices to affected property owners at which the owners may appear to support or object to the proposed improvement and assessment.

(2) The ordinance shall also:

- (a) Provide that if, after the hearing held under subsection (1)(f) of this section, the council determines that the economic improvement shall be made, the council shall determine whether the property benefited shall bear all or a portion of the cost and shall determine, based on the actual or estimated cost of the economic improvement, the amount of assessment on each lot in the district.
- (b) Require the city recorder or other person designated by the council to prepare the proposed assessment for each lot in the district and file it in the appropriate city office.
- (c) Require notice of such proposed assessment to be mailed or personally delivered to the owner of each lot to be assessed, which notice shall state the amount of the assessment proposed on the property of the owner receiving the notice. The notice shall state the time and place of a public hearing at which affected property owners may appear to support or object to the proposed assessment. The hearing shall not be held sooner than 30 days after the mailing or personal delivery of the notices.
- (d) Provide that the council shall consider such objections and may adopt, correct, modify or revise the proposed assessments.

(e) Provide that the assessments will not be made and the economic improvement project terminated when written objections are received at the public hearing from owners of property upon which more than 33 percent of the total amount of assessments is levied. [1985 c.576 3; 1989 c.1018 4]

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223.230 Lien docket; interest; priority; public access.

(1) After expiration of the time for filing application under ORS 223.210, the local government shall enter in a docket kept for that purpose, under separate heads for each local improvement, by name or number, a description of each lot or parcel of land or other property against which the final assessment is made, or which bears or is chargeable for a portion of the actual cost of the local improvement, with the name of the owner and the amount of the unpaid final assessment. The entries shall be made as of the date of initial determination and levy of the final assessment.

(2) The docket shall stand thereafter as a lien docket as for ad valorem property taxes assessed and levied in favor of the local government against each lot or parcel of land or other property, until paid, for the following:

(a) For the amounts of the unpaid final assessments therein docketed, with interest on the installments of the final assessments at the rate determined by the governing body of the local government under ORS 223.215; and

(b) For any additional interest or penalties imposed by the local government with respect to any installments of final assessments that are not paid when due.

(3) All unpaid final assessments together with accrued and unpaid interest and penalties are a lien on each lot or parcel of land or other property, respectively, in favor of the local government, and the lien shall have priority over all other liens and encumbrances whatsoever.

(4) For a local improvement district assessment lien or system development charge installment payment contract lien to continue, each local government shall make the appropriate lien record, as prescribed by this section and ORS 223.393, available on hard copy or through an online electronic medium. [Amended by 1957 c.103 6; 1959 c.653 3; 1969 c.531 2; 1975 c.642 2a; 1981 c.94 10; 1981 c.322 2; 1991 c.902 13; 1995 c.709 2; 1997 c.840 2; 2003 c.195 10; 2005 c.46 1]

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223.235 Issuance of bonds; limitations.

(1) When in any local government a bond lien docket is made up, as provided in ORS 223.230, as to the final assessments for any local improvement, the local government shall by ordinance or resolution of the governing body authorize the issue of its bonds pursuant to the applicable provisions of ORS chapter 287A and in accordance with this section.

(2) The bonds authorized to be issued under this section must be issued in an amount that does not exceed the unpaid balance of all final assessments for the related local improvements, plus the amounts necessary to fund any debt service reserve and to pay any other financing costs associated with the bonds.

(3)(a) If the question of the issuance of the specific bonds has been approved by the electors of the local government and the bonds are issued as general obligation bonds, the local government shall each year assess, levy and collect a tax on all taxable property within its boundaries. The amount of the tax must be sufficient to pay all principal of and interest on the bonds that are due and payable in that year and to replenish any debt service reserves required for the bonds. In computing the amount of taxes to impose, the local government shall:

(A) Deduct from the total amount otherwise required the amount of final installment payments that are pledged to the payment of the bonds and that are due and payable in that year; and

(B) Add to this net amount the amount of reasonably anticipated delinquencies in the payments of the installments or the taxes.

(b) The taxes must be levied in each year and returned to the county officer whose duty it is to extend the tax roll within the time and in the manner provided in ORS 310.060.

(c) The taxes become payable at the same time and are collected by the same officer who collects county taxes and must be turned over to the local government according to law.

(d) The county officer whose duty it is to extend the county levy shall extend the levy of the local government in the same manner as city taxes are extended. Property may be sold for nonpayment of the taxes levied by a local government in like manner and with like effect as in the case of county and state taxes.

(4)(a) All bonds issued pursuant to this section, including general obligation bonds, are secured by and payable from the installments of final assessments with respect to which the bonds were issued.

(b) In the ordinance or resolution authorizing the issuance of the bonds, the governing body of the issuing local government may:

(A) Provide that installments of final assessments levied with respect to two or more local improvements shall secure a single issue of bonds.

(B) Reserve the right to pledge, as security for any bonds thereafter issued pursuant to this section, any installments of final assessments previously pledged as security for other bonds issued pursuant to this section.

(c) All bonds must be secured by a lien on the installments of final assessments with respect to which they were issued. The lien is valid, binding and fully perfected from the date of issuance of the bonds. The installments of final assessments are immediately subject to the lien without the physical delivery thereof, the filing of any notice or any further act. The lien is valid, binding and fully perfected against all persons having claims of any kind against the local government or the property assessed whether in tort, contract or otherwise, and irrespective of whether the persons have notice of the lien.

(5) As additional security for any bonds issued under this section, including general obligation bonds, the governing body of the issuing local government may pledge or mortgage, or grant security interests in, its revenues, assets and properties, and otherwise secure and enter into covenants with respect to the bonds as provided in ORS chapter 287A.

(6)(a) A local government may, from time to time after the undertaking of a local improvement has been authorized, borrow money and issue and sell notes for the purpose of providing interim financing for the actual costs of the local improvement.

(b) Notes authorized under this subsection may be issued in a single series for the purpose of providing interim financing for two or more local improvements.

(c) Notes authorized under this subsection may not mature later than one year after the date upon which the issuing local government expects to issue bonds for the purpose of providing permanent financing with respect to installment payments of the final assessments for the local improvements.

(d) Any notes authorized under this subsection may be refunded from time to time by the issuance of additional notes or out of the proceeds of bonds issued pursuant to this section. The notes may be made payable from the proceeds of any bonds to be issued under this section to provide permanent financing or from any other sources from which the bonds are payable.

(e) The governing body of the issuing local government may pledge to the payment of the notes any revenues that may be pledged to the payment of bonds authorized to be issued under this section with respect to the local improvements for which the notes provide interim financing.
[Amended by 1957 c.103 7; 1959 c.653 4; 1967 c.196 1; 1975 c.320 2; 1975 c.738 1; 1983 c.349 2; 1991 c.902 14; 1995 c.333 1; 2003 c.802 8; 2005 c.443 1; 2007 c.783 74]



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, 2009.¹ 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.² 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.³ 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.

¹ The Policy Framework for PACE Financing Programs is available here:
http://www.whitehouse.gov/assets/documents/PACE_Principles.pdf.

² 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.

³ 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 One⁴

The primary rationale for PACE programs is to pursue a legally-defined “public purpose”, which generally includes environmental, health, and energy independence benefits.⁵ 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:⁶

- 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.

⁴ 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.

⁵ 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>

⁶ 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.⁷

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.

⁷ 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.⁸

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.⁹

⁸ A desktop appraisal involves a licensed appraiser estimating the value of a property without a visual inspection. These appraisals cost approximately \$100.

⁹ 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.

Assembly Bill No. 811

CHAPTER 159

An act to amend Sections 5898.12, 5898.20, 5898.22, and 5898.30 of, and to add Sections 5898.14 and 5898.21 to, the Streets and Highways Code, relating to contractual assessments, and declaring the urgency thereof, to take effect immediately.

[Approved by Governor July 21, 2008. Filed with
Secretary of State July 21, 2008.]

LEGISLATIVE COUNSEL'S DIGEST

AB 811, Levine. Contractual assessments: energy efficiency improvements.

Existing law authorizes the legislative body of any city, as defined, to determine that it would be convenient and advantageous to designate an area within which authorized city officials and free and willing property owners may enter into contractual assessments and make arrangements to finance public improvements to specified lots or parcels under certain circumstances. Existing law requires the legislative body to make these determinations by adopting a resolution indicating its intention to do so and requires the resolution to include certain information, including, but not limited to, identification of the kinds of public works that may be financed, a description of the boundaries of the area within which contractual assessments may be entered into, and a description of the proposed arrangements for financing the program. Existing law also directs an appropriate city official to prepare a report to include, among other things, the terms and conditions that would be agreed to by a property owner within the contractual assessment area and the city and identification of the types of facilities that may be financed through the use of contractual assessments.

This bill would additionally authorize a legislative body of any city, as defined, to determine that it would be in the public interest to designate an area within which authorized city officials and free and willing property owners may enter into contractual assessments to finance the installation of distributed generation renewable energy sources or energy efficiency improvements that are permanently fixed to real property, as specified. The bill would require the resolution of intention to include, among other things, the kinds of distributed generation renewable energy sources or energy efficiency improvements that may be financed as well as a statement specifying that it is in the public interest to finance those distributed generation renewable energy sources or energy efficiency improvements. The bill would further require the report to include, among other things, the types of distributed generation renewable energy sources or energy efficiency improvements that may be financed through the use of contractual

assessments. The bill would authorize a property owner, upon written consent of an authorized city official, to purchase directly the related equipment and materials for the installation of distributed generation renewable energy sources or energy efficiency improvements and to contract directly for the installation of those sources or improvements. The bill would make findings and a declaration in this regard.

This bill would declare that it is to take effect immediately as an urgency statute.

The people of the State of California do enact as follows:

SECTION 1. Section 5898.12 of the Streets and Highways Code is amended to read:

5898.12. (a) It is the intent of the Legislature that this chapter should be used to finance public improvements to lots or parcels which are developed and where the costs and time delays involved in creating an assessment district pursuant to other provisions of this division or any other law would be prohibitively large relative to the cost of the public improvements to be financed.

(b) It is also the intent of the Legislature that this chapter should be used to finance the installation of distributed generation renewable energy sources or energy efficiency improvements that are permanently fixed to residential, commercial, industrial, or other real property.

(c) This chapter shall not be used to finance facilities for parcels which are undergoing development.

(d) This chapter shall not be used to finance the purchase or installation of appliances that are not permanently fixed to residential, commercial, industrial, or other real property.

(e) Assessments may be levied pursuant to this chapter only with the free and willing consent of the owner of each lot or parcel on which an assessment is levied at the time the assessment is levied.

SEC. 2. Section 5898.14 is added to the Streets and Highways Code, to read:

5898.14. (a) The Legislature finds all of the following:

(1) Energy conservation efforts, including the promotion of energy efficiency improvements to residential, commercial, industrial, or other real property are necessary to address the issue of global climate change.

(2) The upfront cost of making residential, commercial, industrial, or other real property more energy efficient prevents many property owners from making those improvements. To make those improvements more affordable and to promote the installation of those improvements, it is necessary to authorize an alternative procedure for authorizing assessments to finance the cost of energy efficiency improvements.

(b) The Legislature declares that a public purpose will be served by a contractual assessment program that provides the legislative body of any city with the authority to finance the installation of distributed generation

renewable energy sources and energy efficiency improvements that are permanently fixed to residential, commercial, industrial, or other real property.

SEC. 3. Section 5898.20 of the Streets and Highways Code is amended to read:

5898.20. (a) (1) The legislative body of any city may determine that it would be convenient and advantageous to designate an area within the city, which may encompass the entire city or a lesser portion, within which authorized city officials and property owners may enter into contractual assessments for public improvements and to make financing arrangements pursuant to this chapter.

(2) The legislative body of any city may also determine that it would be convenient, advantageous, and in the public interest to designate an area within the city, which may encompass the entire city or a lesser portion, within which authorized city officials and property owners may enter into contractual assessments to finance the installation of distributed generation renewable energy sources or energy efficiency improvements that are permanently fixed to real property pursuant to this chapter.

(b) The legislative body shall make these determinations by adopting a resolution indicating its intention to do so. The resolution of intention shall include a statement that the city proposes to make contractual assessment financing available to property owners, shall identify the kinds of public works, distributed generation renewable energy sources, or energy efficiency improvements that may be financed, shall describe the boundaries of the area within which contractual assessments may be entered into, and shall briefly describe the proposed arrangements for financing the program. The resolution of intention shall state that it is in the public interest to finance the installation of distributed generation renewable energy sources or energy efficiency improvements, or both, pursuant to paragraph (2) of subdivision (a), if applicable. The resolution shall state that a public hearing should be held at which interested persons may object to or inquire about the proposed program or any of its particulars, and shall state the time and place of the hearing. The resolution shall direct an appropriate city official to prepare a report pursuant to Section 5898.22 and to enter into consultations with the county auditor's office or county controller's office in order to reach agreement on what additional fees, if any, will be charged to the city or county for incorporating the proposed contractual assessments into the assessments of the general taxes of the city or county on real property.

(c) As used in this chapter, each of the following terms has the following meaning:

(1) Notwithstanding Section 5005, "city" means a city, county, or city and county.

(2) "Legislative body" has the same meaning as defined in Section 5006.

SEC. 4. Section 5898.21 is added to the Streets and Highways Code, to read:

5898.21. Notwithstanding any other provision of this chapter, upon the written consent of an authorized city official, the proposed arrangements

for financing the program pertaining to the installation of distributed generation renewable energy sources or energy efficiency improvements that are permanently fixed to real property may authorize the property owner to purchase directly the related equipment and materials for the installation of distributed generation renewable energy sources or energy efficiency improvements and to contract directly for the installation of distributed generation renewable energy sources or energy efficiency improvements that are permanently fixed to the property owner's residential, commercial, industrial, or other real property.

SEC. 5. Section 5898.22 of the Streets and Highways Code is amended to read:

5898.22. The report shall contain all of the following:

(a) A map showing the boundaries of the territory within which contractual assessments are proposed to be offered.

(b) A draft contract specifying the terms and conditions that would be agreed to by a property owner within the contractual assessment area and the city.

(c) A statement of city policies concerning contractual assessments including all of the following:

(1) Identification of types of facilities, distributed generation renewable energy sources, or energy efficiency improvements that may be financed through the use of contractual assessments.

(2) Identification of a city official authorized to enter into contractual assessments on behalf of the city.

(3) A maximum aggregate dollar amount of contractual assessments.

(4) A method for setting requests from property owners for financing through contractual assessments in priority order in the event that requests appear likely to exceed the authorization amount.

(d) A plan for raising a capital amount required to pay for work performed pursuant to contractual assessments. The plan may include amounts to be advanced by the city through funds available to it from any source. The plan may include the sale of a bond or bonds or other financing relationship pursuant to Section 5898.28. The plan shall include a statement of or method for determining the interest rate and time period during which contracting property owners would pay any assessment. The plan shall provide for any reserve fund or funds. The plan shall provide for the apportionment of all or any portion of the costs incidental to financing, administration, and collection of the contractual assessment program among the consenting property owners and the city.

(e) A report on the results of the consultations with the county auditor's office or county controller's office concerning the additional fees, if any, that will be charged to the city or county for incorporating the proposed contractual assessments into the assessments of the general taxes of the city or county on real property, and a plan for financing the payment of those fees.

SEC. 6. Section 5898.30 of the Streets and Highways Code is amended to read:

5898.30. Assessments levied pursuant to this chapter, and the interest and any penalties thereon shall constitute a lien against the lots and parcels of land on which they are made, until they are paid. Division 10 (commencing with Section 8500) applies to the levy and collection of assessments levied pursuant to this chapter, insofar as those provisions are not in conflict with the provisions of this chapter, including, but not limited to, the collection of assessments in the same manner and at the same time as the general taxes of the city on real property are payable and any penalties and remedies and lien priorities in the event of delinquency and default.

SEC. 7. This act is an urgency statute necessary for the immediate preservation of the public peace, health, or safety within the meaning of Article IV of the Constitution and shall go into immediate effect. The facts constituting the necessity are:

In order for legislative bodies of cities and free and willing property owners to enter into contractual assessments to finance the installation of distributed generation renewable energy sources or energy efficiency improvements and for the state to begin to experience the effects of these contractual assessments, such as saving millions of kilowatthours, as early as this summer when usage is the highest, it is necessary that this act take effect immediately.

<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
TOTAL	7	\$679,3225	100.0

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.

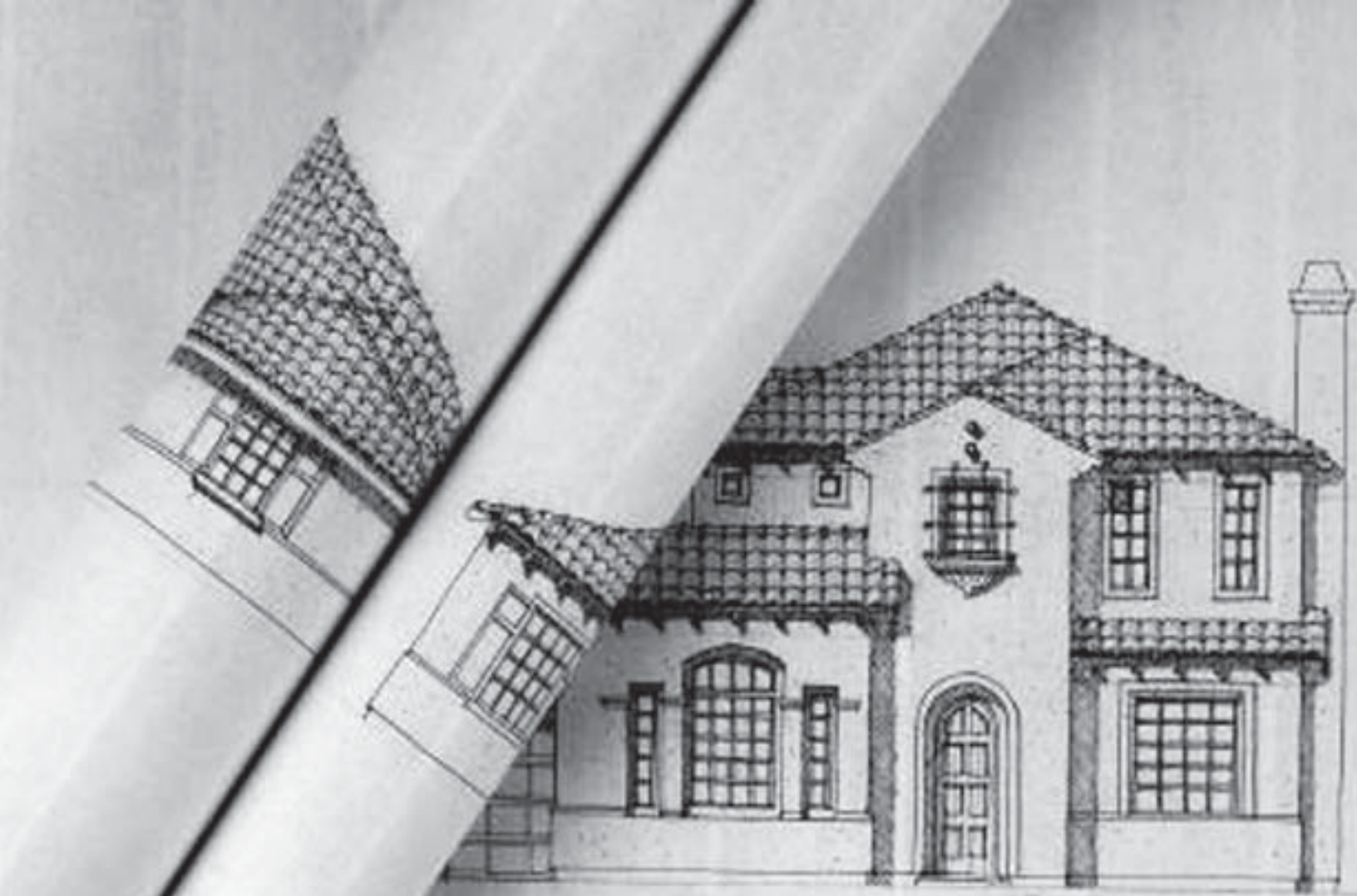
The issue of life safety related to URMs is very well understood by staff, elected officials, and the public at large. As a result very little controversy surrounded the city's development of its program.

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).

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community
septic
management
program

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.

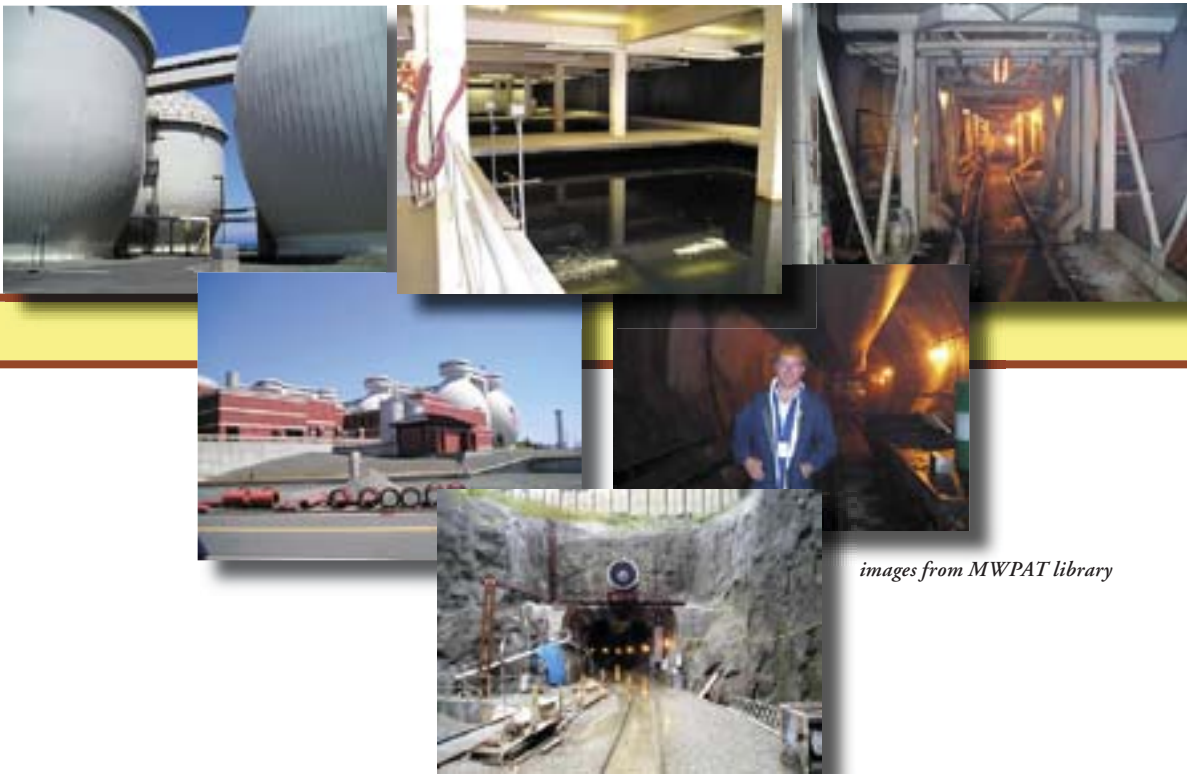
This document is a comprehensive step-by-step guide to help communities implement the CSMP at a local level.

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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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 reloans 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:

“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.”

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.

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.

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.

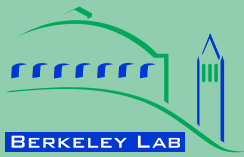


A property subject to a betterment under M.G.L. c. 111 §127B ½ may be sold or mortgaged free of liens even though remaining betterment payments will come due in the future. This aspect of the law facilitates the transfer of properties improved with betterments by permitting the betterment to be amortized 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.



LBL-4476E

**ERNEST ORLANDO LAWRENCE
BERKELEY NATIONAL LABORATORY**

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

Download from <http://eetd.lbl.gov/ea/emp/reports/lbnl-4476e.pdf>

This work was supported by the Office of Energy Efficiency and Renewable Energy (Solar Energy Technologies Program) of the U.S. Department of Energy under Contract No. DE-AC02-05CH11231, by the National Renewable Energy Laboratory under Contract No. DEK-8883050, and by the Clean Energy States Alliance.

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

Prepared for the

Office of Energy Efficiency and Renewable Energy
Solar Energy Technologies Program
U.S. Department of Energy

and the

National Renewable Energy Laboratory

and the

Clean Energy States Alliance

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April 2011

This work was supported by the Office of Energy Efficiency and Renewable Energy (Solar Energy Technologies Program) of the U.S. Department of Energy under Contract No. DE-AC02-05CH11231, by the National Renewable Energy Laboratory under Contract No. DEK-8883050, and by the Clean Energy States Alliance.

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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)¹ 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

¹ 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 tiers², 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

² 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.³ 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).

³ 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.⁴ 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).

⁴ 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)⁵, 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)⁶; 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,

⁵ 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.

⁶ 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.⁷

From Sammamish Data, Berkeley Laboratory purchased x/y coordinates for each zip+4 code, which allowed the mapping of addresses to street level accuracy.⁸ 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.⁹ 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).¹⁰ 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-

⁷ 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>

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

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

¹⁰ 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;¹¹
- 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*);¹²
- 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 $pav = sp2 * 1.02^{(2010 - \text{year of sale})}$.¹³

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*).¹⁴

¹¹ 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.

¹² 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.

¹³ 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.

¹⁴ 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.¹⁵ 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).¹⁶

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,

¹⁵ 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.

¹⁶ 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

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

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

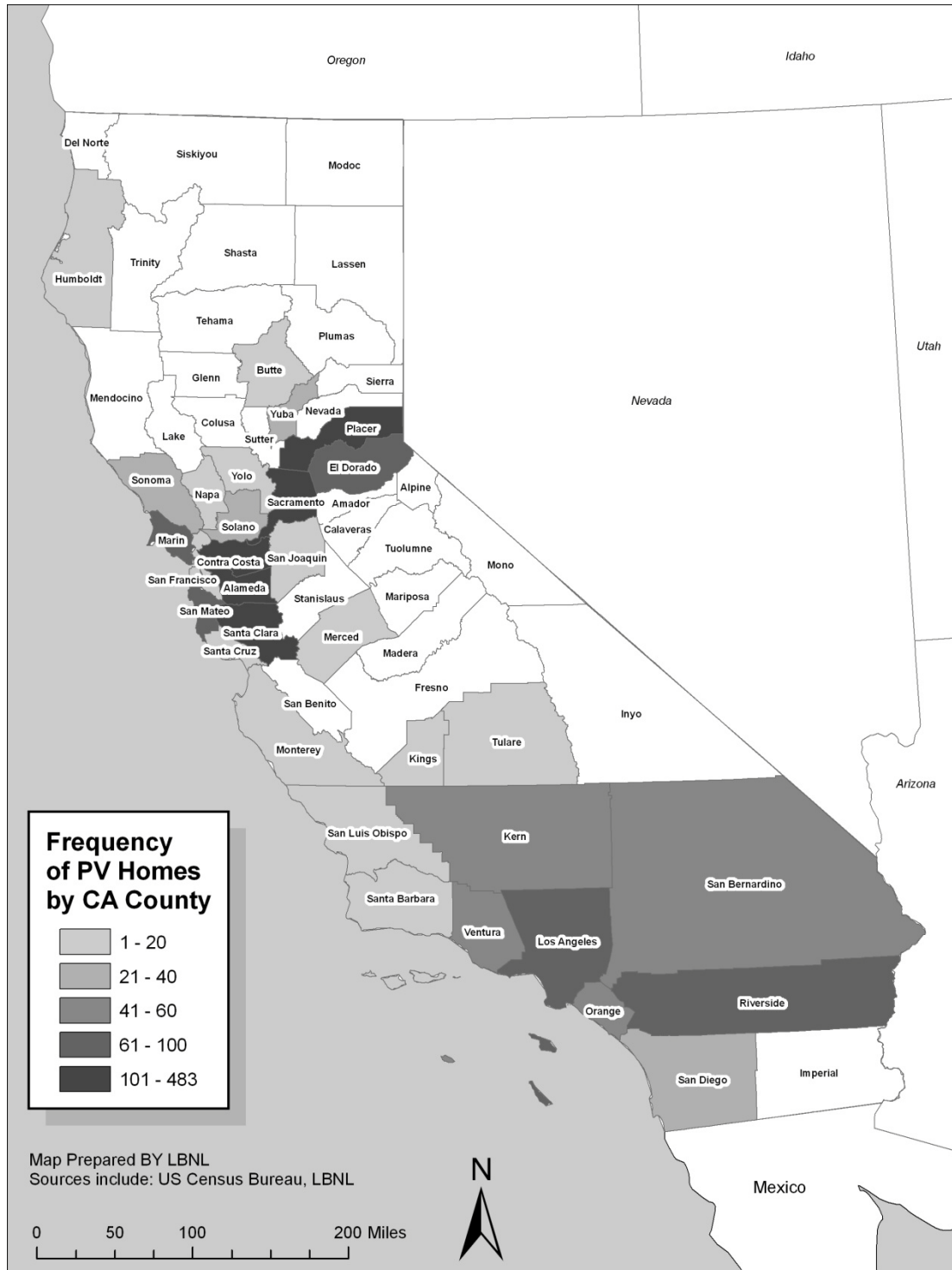


Table 5: Frequency Summary by Home Type, Utility and Sale Year

Home Type *	Non-PV	PV	Total
New Home	26,938	935	27,873
Existing Home	43,487	897	44,384
Utility **	Non-PV	PV	Total
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
Sale Year	Non-PV	PV	Total
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.¹⁷ 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

¹⁷ 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).¹⁸ 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.¹⁹ A census block group generally contains between 200 and 1,000 households,²⁰ 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 autocorrelation²¹ 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

¹⁸ 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.

¹⁹ 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.

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

²¹ 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.²²

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 ,

α 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 ,

β_1 is a parameter estimate for the quarter in which transaction i occurred,

β_2 is a parameter estimate for the census block group in which transaction i occurred,

β_3 is a vector of parameter estimates for home characteristics a ,

β_4 is a parameter estimate for the PV fixed effects variable, and

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

²² 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 β_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 ,

β_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 β_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.²³ 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

²³ 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.²⁴

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).²⁵ 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.

²⁴ 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.

²⁵ 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.²⁶ Comparing the coefficient of the variable of interest (β_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

²⁶ *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.²⁷

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
PV Homes	PV ₁	PV ₂	ΔPV = PV ₂ - PV ₁
Non-PV Homes	NPV ₁	NPV ₂	ΔNPV = NPV ₂ - NPV ₁
			DD = ΔPV - ΔNPV
<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_{*i*} is a fixed effect variable indicating if a PV system is or will be installed on the home in transaction *i*,

²⁷ 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,
 α is the constant or intercept across the full sample,
 β_4 is a parameter estimate for homes that have or will have PV installed (i.e., from Table 6
“ $PV_1 - NPV_1$ ”),
 β_5 is a parameter estimate if transaction i occurred as of the second sale (i.e., “ ΔNPV ”),
 β_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 β_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 (β_4) and the differences between the initial sale and the second
sale of non-PV homes (β_5). If differences in selling prices exist between PV and non-PV homes,
we would expect the coefficient to be positive and statistically significant.²⁸

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.²⁹
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

²⁸ 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.

²⁹ 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.³⁰

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, β_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 β_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.

³⁰ 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:³¹

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

where

β_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 (β_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.³² 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 ,³³

β_4 is a parameter estimate for the percentage change in sale price for each additional 1000 square feet added to the home,

³¹ Neither this nor the following model is coupled with robustness models in this paper.

³² 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.

³³ 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.

β_5 is a parameter estimate for the percentage change in sale price for each additional kW added to a PV system,

β_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 β_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.^{34, 35} 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.³⁶

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.³⁷ 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

³⁴ 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.

³⁵ 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.

³⁶ 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.

³⁷ 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

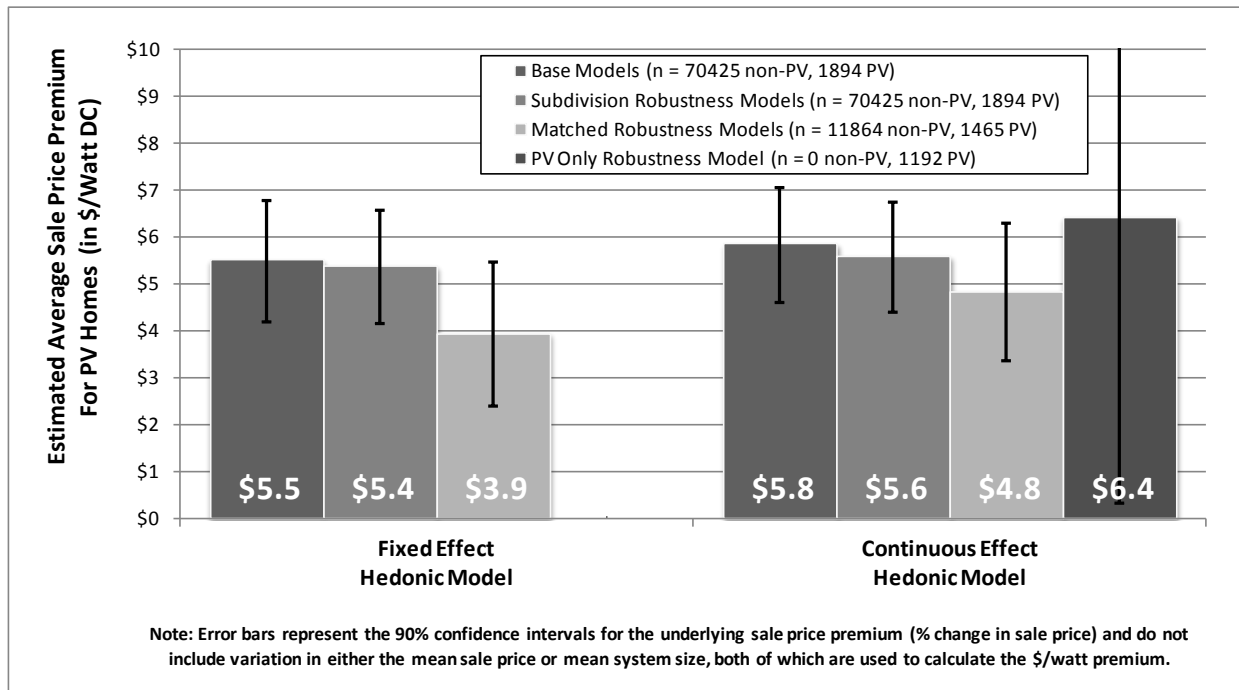
The results from the base hedonic models (equations 1 and 2) are shown in Table 8 as Models 1 and 2, respectively. These models estimate the differences across the full dataset between PV and non-PV homes, with Model 1 estimating this difference as a fixed effect, and Model 2 estimating the difference 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.³⁸

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



³⁸ 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.³⁹

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 area⁴⁰ – 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.⁴¹

³⁹ 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.

⁴⁰ 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.

⁴¹ 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
pv	0.036*** (0.005)	0.024*** (0.006)	0.035*** (0.005)				
size				0.012*** (0.002)	0.010*** (0.002)	0.012*** (0.001)	0.013* (0.008)
sqft_1000	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)
lt1acre	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)
acre	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)
ages2	-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)
ages2sqr	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)
bgre_100	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)
intercept	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<0.01, ** p<0.05, * p<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>							
Total n	72,319	13,329	72,319	72,319	13,329	72,319	1,192
Adjusted R²	0.93	0.95	0.94	0.93	0.95	0.94	0.93
n (pv homes)	1,894	1,465	1,894	1,894	1,465	1,894	1,192
Mean non-pv asp2	\$ 480,862	\$ 480,533	\$ 480,862	\$ 480,862	\$ 480,533	\$ 480,862	\$ 475,811
Mean size (kW)	3.1	3.0	3.1	3.1	3.0	3.1	2.7
Estimated \$/Watt	\$ 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>							

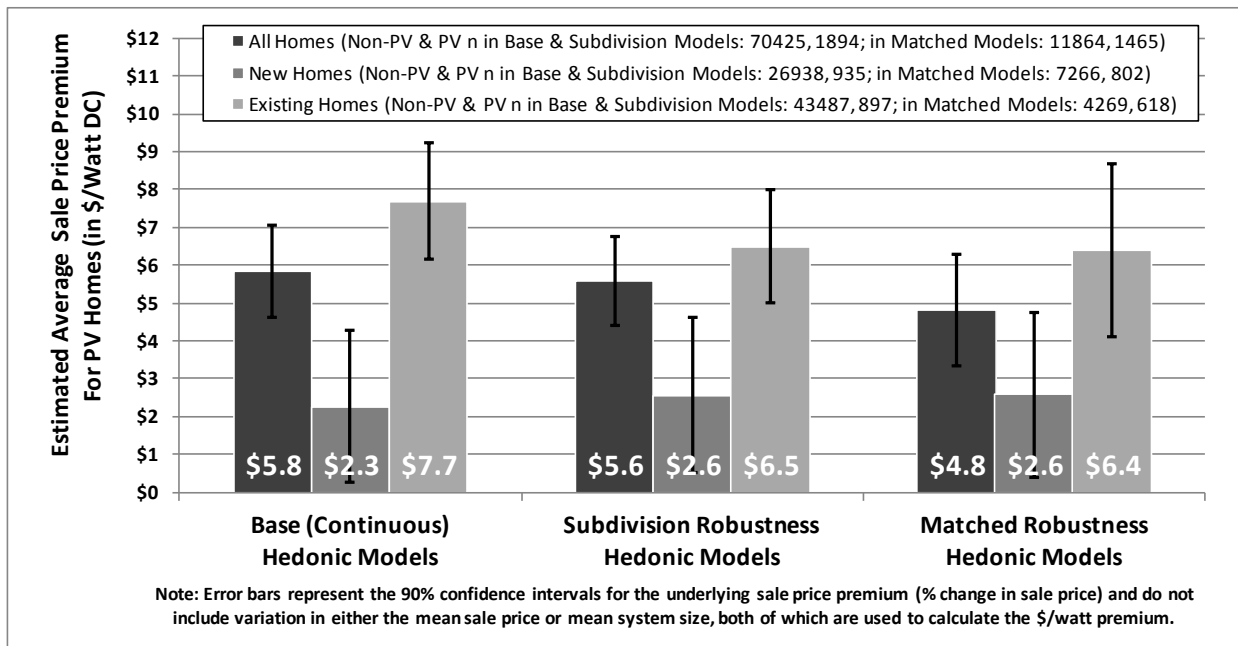
4.2. New and Existing Home Model Results

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.⁴²

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

⁴² 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
size	0.006*	0.006*	0.006**	0.014***	0.011***	0.012***
	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)
sqft_1000	0.247***	0.190***	0.250***	0.256***	0.238***	0.251***
	(0.002)	(0.006)	(0.002)	(0.002)	(0.015)	(0.002)
lt1acre	0.536***	0.279***	0.517***	0.373***	0.426***	0.376***
	(0.019)	(0.073)	(0.024)	(0.010)	(0.046)	(0.012)
acre	-0.007	0.338***	-0.009*	0.019***	0.011	0.017***
	(0.005)	(0.027)	(0.005)	(0.002)	(0.011)	(0.003)
ages2	-0.010	0.081***	-0.010*	-0.005***	-0.006***	-0.005***
	(0.006)	(0.017)	(0.006)	(0.000)	(0.002)	(0.000)
ages2sqr	0.00768***	-0.02443***	0.00715***	0.00004***	0.00004***	0.00004***
	(0.001676)	(0.004407)	(0.001604)	(0.000003)	(0.000014)	(0.000004)
bgre_100	0.008***	0.027***	0.007***	0.002	-0.002	0.002
	(0.001)	(0.003)	(0.001)	(0.001)	(0.009)	(0.001)
intercept	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<0.01, ** p<0.05, * p<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>						
Total n	27,873	8,068	27,873	44,384	4,887	44,384
Adjusted R²	0.94	0.94	0.94	0.93	0.95	0.94
n (pv homes)	935	802	935	897	618	897
Mean non-pv asp2	\$ 397,265	\$ 399,162	\$ 397,265	\$ 532,645	\$ 590,428	\$ 532,645
Mean size (kW)	2.5	2.4	2.5	3.8	3.7	3.8
Estimated \$/Watt	\$ 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

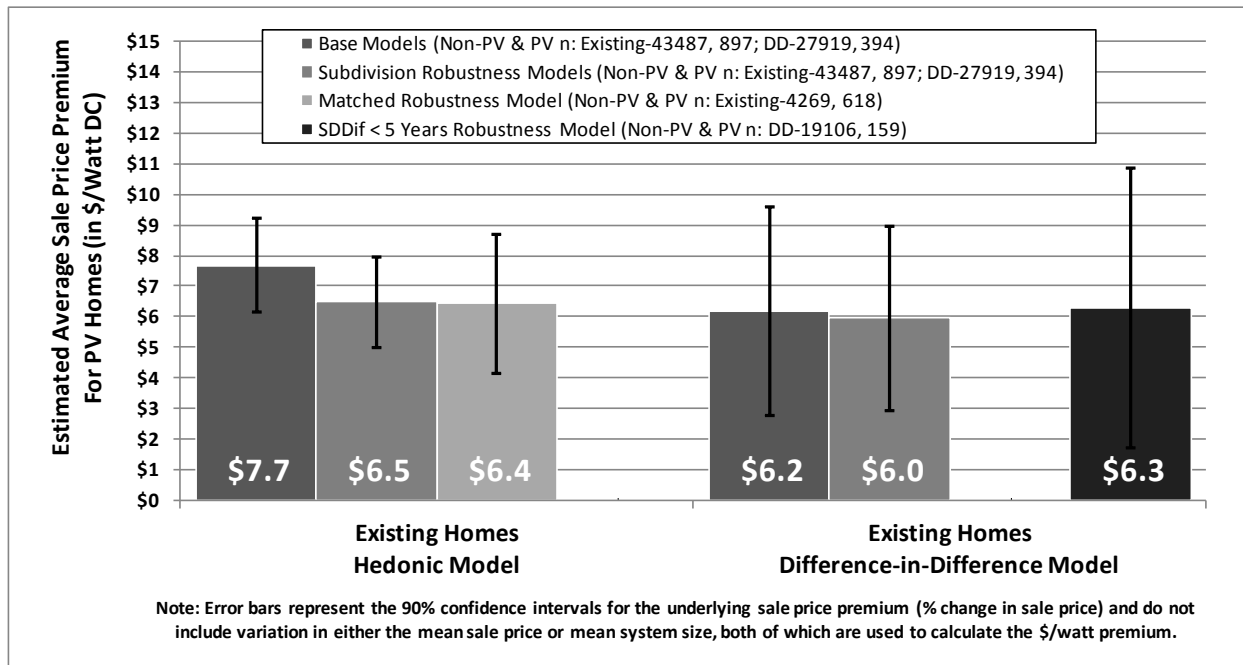


Table 10: Difference-in-Difference Model Results

	Difference-in-Difference		
	Base	Robustness	Robustness
		Subdivision	Sddif < 5
	Model 5	Model 5Ra	Model 5Rb
pvh	0.022*	0.024	0.022*
	(0.013)	(0.021)	(0.012)
sale2	0.023***	0.026***	0.019***
	(0.002)	(0.002)	(0.002)
pvs	0.051***	0.061**	0.049***
	(0.017)	(0.027)	(0.015)
sqft_1000	0.255***	0.256***	0.251***
	(0.002)	(0.002)	(0.002)
ltlacre	0.374***	0.385***	0.377***
	(0.011)	(0.013)	(0.012)
acre	0.012***	0.009**	0.011***
	(0.003)	(0.004)	(0.003)
age	-0.005***	-0.005***	-0.005***
	(0.0002)	(0.0003)	(0.0003)
agesqr	0.00004***	0.00004***	0.00004***
	(0.000003)	(0.000003)	(0.000003)
bgre_100	0.002*	0.000	0.001
	(0.001)	(0.001)	(0.001)
intercept	12.677***	12.594***	12.694***
	(0.013)	(0.015)	(0.014)
<i>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</i>			
Total n	28,313	19,265	28,313
Adjusted R²	0.93	0.94	0.94
n (pv homes)	394	159	394
Mean non-pv asp2	\$ 488,127	\$ 450,223	\$ 488,127
Mean size (kW)	4.0	4.3	4.0
Estimated \$/Watt	\$ 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
		Matched	Subdivision		
	Model 6	Model 6Ra	Model 6Rb	Model 7	Model 8
size*1 year old	0.016*** (-0.004)	0.016*** (-0.005)	0.013*** (-0.004)		
size*2-4 years old	0.015*** (-0.002)	0.010*** (-0.003)	0.013*** (-0.002)		
size*5+ years old	0.012*** (-0.003)	0.008** (-0.004)	0.008** (-0.003)		
size				0.008** (0.003)	0.021*** (0.006)
sizesqr				0.001 (0.001)	
size*sqft_1000					-0.003 (0.002)
sqft_1000	0.256*** (0.002)	0.238*** (0.015)	0.251*** (0.002)	0.253*** (0.001)	0.253*** (0.001)
lt1acre	0.373*** (0.010)	0.426*** (0.046)	0.376*** (0.012)	0.416*** (0.009)	0.416*** (0.009)
acre	0.019*** (0.002)	0.010*** (0.011)	0.017*** (0.003)	0.016*** (0.002)	0.016*** (0.002)
ages2	-0.005*** (0.000)	-0.006*** (0.002)	-0.005*** (0.000)	-0.004*** (0.000)	-0.004*** (0.000)
ages2sqr	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
bgre_100	0.002*** (0.001)	-0.002*** (0.009)	0.002*** (0.001)	0.003*** (0.001)	0.003*** (0.001)
intercept	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

Total n	44,384	4,887	44,384	72,319	72,319
Adjusted R²	0.93	0.95	0.94	0.93	0.93
n (pv homes)	897	618	897	1,894	1,894
Mean non-pv asp2	\$ 532,645	\$ 590,428	\$ 532,645	\$ 480,862	\$ 480,862
Mean size (kW)	3.8	3.7	3.8	3.1	3.1
Estimated \$/Watt	\$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

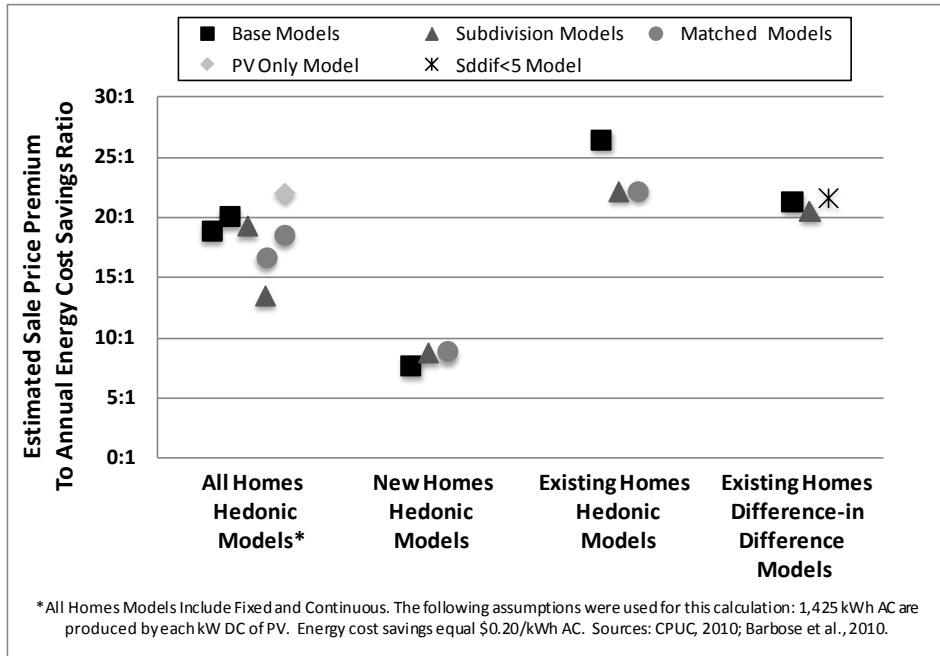
(Longstreth et al., 1984; Horowitz and Haeri, 1990), to 12:1 (Dinan and Miranowski, 1989), to approximately 20:1 (Johnson and Kaserman, 1983; Nevin et al., 1999; Eichholtz et al., 2009), and even as high as 31:1 (Nevin and Watson, 1998).

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)⁴³ 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.

⁴³ 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 3rd party owned at the time of sale, and if the homeowner can sell the green attributes the system generates.⁴⁴ 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.

⁴⁴ 3rd 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 3rd 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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Valuing Green Home Designs: A Study of ENERGY STAR® Homes

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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:

H₁: ENERGY STAR rated homes will have higher sales prices than comparable non-ENERGY STAR rated homes in the study area.

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 ²
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.).

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.

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_(d)</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_(d)</i>	Superior quality of construction	+
<i>CovPorch_(d)</i>	Whether or not home has covered porch	+
<i>GarageSF</i>	Total garage square feet	+
<i>ENERGYSTAR_(d)</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_(d)</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_(d)</i>	–3.141	.362
<i>GarageSF</i>	0.043***	<.001
<i>ENERGYSTAR_(d)</i>	8.664**	.005
R ²	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.

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 (β) 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.

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

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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THE VALUE *of* GREEN LABELS *in the California Housing Market*

An Economic Analysis of the Impact of Green Labeling on the Sales Price of a Home

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Financial support for this research has been provided by the San Francisco Department of the Environment and StopWaste.Org. Nils Kok is grateful for the financial support of the Netherlands Organization for Scientific Research (NWO). We thank the US Green Building Council and Build It Green for their generous supply of data. We are grateful to Kim Goodrich, Barry Hooper and Reuben Schwartz for their helpful comments. Owen Heary provided excellent research assistance. All errors pertain to the authors.



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THE VALUE *of* GREEN LABELS
in the California Housing Market

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EXECUTIVE SUMMARY

“The Value of Green Labels in the California Housing Market” is the first study to provide statistical evidence that, holding other factors constant, a green label on a single-family home in California provides a market premium compared to a comparable home without the label. The research also indicates that the price premium is influenced by local climate and environmental ideology. To reach these conclusions, researchers conducted an economic analysis of 1.6 million homes sold in California between 2007 and 2012, controlling for other variables known to influence home prices in order to isolate the added value of green home labels.

KEY FINDING: *Green Home Labels Add 9 Percent Price Premium*

This study, conducted by economists at the University of California, Berkeley and University of California, Los Angeles, finds that California homes labeled by Energy Star, LEED for Homes and GreenPoint Rated sell for 9 percent more ($\pm 4\%$) than comparable, non-labeled homes. Because real estate prices depend on a variety of factors, the study controlled for key variables that influence home prices including location, size, vintage, and the presence of major amenities such as swimming pools, views and air conditioning. Considering that the average sales price of a non-labeled home in California is \$400,000, the price premium for a certified green home translates into some \$34,800 more than the value of a comparable home nearby.

GREEN LABELED HOMES SELL AT HIGHER PRICES

A green label adds an average **9%** price premium to sale price versus other comparable homes.

**AVERAGE HOME
SALE PRICE
IN CALIFORNIA**



GREEN LABELS FOR HOMES

Green home labels such as Energy Star, LEED for Homes, and GreenPoint Rated have been established to verify and communicate to consumers that a home is designed and built to use energy efficiently. Green homes also provide benefits beyond energy savings, such as more comfortable and stable indoor temperatures and more healthful indoor air quality. LEED and GreenPoint Rated homes also feature efficient water use; sustainable, non-toxic building materials; and other features that reduce their impact on the environment, such as proximity to parks, shops and transit.

EXPLAINING THE GREEN PREMIUM

This study yields two key insights into the effect of green labels on property values, and why these effects can be so significant. This is especially important in light of the fact that the added value of a green-labeled home far exceeds both the estimated cost of adding energy efficiency features to a home and the utility-bill savings generated by those improvements. Clearly, other factors are in play in producing this premium:

- The results show that the resale premium associated with a green label varies considerably from region to region in California, and is highest in the areas with hotter climates. It is plausible that residents in these areas value green labels more due to the increased cost of keeping a home cool.
- The premium is also positively correlated to the environmental ideology of the area, as measured by the rate of registration of hybrid vehicles. In line with previous evidence on the private value of green product attributes, this correlation suggests that some homeowners may attribute value to intangible qualities associated with owning a green home, such as pride or perceived status.

RESEARCH METHODOLOGY

The study, conducted by Matthew E. Kahn of UCLA and Nils Kok, visiting scholar at UC Berkeley and affiliated with Maastricht University in the Netherlands, examined all of the 1.6 million single-family homes sold between 2007 and 2012 in California. Of those homes, 4,321 were certified under Energy Star Version 2, GreenPoint Rated, or LEED for Homes. Seventy percent of the homes with a green label that were sold during this time period were new construction. The economic approach used, called "hedonic pricing analysis," controlled for a large number of variables that affect real estate pricing, such as vintage, size, location (by zip code) and the presence of major amenities (e.g., pools, views, and air conditioning). The findings of this study echo the results of previous research in the commercial real estate sector, which has found that green labels positively affect rents, vacancy rates and transaction prices for commercial space in office buildings.

RESEARCH QUESTIONS:

- *Commercial real estate investors and tenants value "green" building features. Do homeowners?*
- *How much more value do green homes have?*
- *What factors influence the value homeowners place on green or energy efficient homes? Hotter climate? Higher electricity prices? Environmental ideology?*

1 INTRODUCTION

Increased awareness of energy efficiency and its importance in the built environment have turned public attention to more efficient, green building. Indeed, previous research has documented that the inventory of certified green commercial space in the U.S. has increased dramatically since the introduction of rating schemes that attest to the energy efficiency or sustainability of commercial buildings (based on criteria published by the public and private institutions administering the rating schemes). Importantly, tenants and investors value the green features in such buildings. There is empirical evidence that green labels affect the financial performance of commercial office space: Piet Eichholtz et al. (2010) study commercial office buildings certified under the LEED program of the US Green Building Council (USGBC) and the Energy Star program of the EPA, documenting that these labels positively affect rents, vacancy rates and transaction prices.

Of course, private homeowners may be different from tenants and investors in commercial buildings, especially in the absence of standardized, publicly available information on the energy efficiency of homes. But in recent years, there has been an increase in the number of homes certified as energy efficient or sustainable based on national standards such as Energy Star and LEED and local standards such as GreenPoint Rated in

California. By obtaining verification from a third party that these homes are designed and built to use energy and other resources more efficiently than prescribed by building codes, homes with green labels are claimed to offer lower operational costs than conventional homes. In addition, it is claimed that owners of such homes enjoy ancillary benefits beyond energy savings, such as greater comfort levels and better indoor environmental quality. If consumers observe and capitalize these amenities, hedonic methods can be used to measure the price premium for such attributes, representing the valuation of the marginal buyer (Patrick L. Bajari and Lanier C. Benkard, 2005, Sherwin Rosen, 1974).

In the European Union, the introduction of energy labels, following the 2003 European Performance of Buildings Directive (EPBD), has provided single-family homebuyers with information about how observationally identical homes differ with respect to thermal efficiency. Presumably, heterogeneity in thermal efficiency affects electricity and gas consumption. The EU energy label seems to be quite effective in resolving the information asymmetry in understanding the energy efficiency of dwellings: Dirk Brounen and Nils Kok (2011) estimate hedonic pricing gradients for recently sold homes in the Netherlands and document that homes receiving an “A” grade in terms of energy efficiency sell for a 10 percent price premium. Conversely, dwellings that are labeled as inefficient transact for substantial discounts relative to otherwise comparable, standard homes.

We are not aware of any large sample studies in the United States that have investigated the financial performance of green homes. There is some information on the capitalization of solar panels in home prices; one study based in California documents that homes with solar panels sell for roughly 3.5 percent more than comparable homes without solar panels (Samuel R. Dastrup et al., 2012). But unlike findings in previous research on the commercial real estate sector, there is a dearth of systematic evidence on the capitalization of energy efficiency and other sustainability-related amenities in asset prices of the residential building stock, leading to uncertainty among private investors and developers about whether and how much to invest in the construction and redevelopment of more efficient homes.¹

This paper is the first to systematically address the impact of labels attesting to energy efficiency and other green features of single-family dwellings on the value of these homes as observed in the marketplace, providing evidence on the private returns to the investments in energy-efficient single-family dwellings, an increasingly important topic for the residential market in the U.S.

Using a sample of transactions in California, consisting of some 4,231 buildings certified by the USGBC, EPA, and a statewide rating agency, Build It Green, and a control sample of some 1.6 million non-certified homes, we relate transaction prices of these dwellings to their hedonic characteristics, controlling for geographic location and the time of the sale.

¹ There are some industry-initiated case studies on the financial performance of green homes. An example is a study by the Earth Advantage Institute, which documents for a sample of existing homes in Oregon that those with a sustainable certification sell for 30 percent more than homes without such a designation, based on sales data provided by the Portland Regional Multiple Listing Service. However, the sources of the economic premiums are diverse, not quantified, and not based on rigorous econometric estimations.

The results indicate the importance of a label attesting to the sustainability of a property in affecting the transaction price of recently constructed homes as observed in the marketplace, suggesting that an otherwise comparable dwelling with a green certification will transact for about 9 percent more.

The results are robust to the inclusion of a large set of control variables, such as dwelling vintage, size and the presence of amenities, although we cannot control for “unobservables,” such as the prestige of the developer and the relative quality of durables installed in the home.

In addition to estimating the average effect, we test whether the price premium is higher for homes located in hotter climates and in electric utility districts featuring higher average residential electricity prices. Presumably, more efficient homes are more valuable in regions where climatic conditions demand more cooling, and where energy prices are higher. In line with evidence on the capitalization of energy efficiency in commercial buildings (Piet Eichholtz et al., in press), our results suggest that a label appears to add more value in hotter climates, where cooling expenses are likely to be a larger part of total

housing expenses. This provides some evidence on the rationality of consumers in appropriately capitalizing the benefits of more efficient homes.

We also test whether the price of certified homes is affected by consumer ideology, as measured by the percentage of hybrid registrations in the neighborhood. A desire to be environmentally conscious may increase the value of green homes because it is a tangible signal of environmental virtue (Steven E. Sexton and Alison L. Sexton, 2011), and an action a person can take in support of their environmental commitment. The results show that the green premium is positively related to the environmental ideology of the neighborhood; green homes located in areas with a higher fraction of hybrid registrations sell for higher prices. Some homeowners seem to attribute non-financial utility to a green label (and its underlying features), which is in line with previous evidence on the private value of green product attributes (Matthew E. Kahn, 2007).

The remainder of this paper is organized as follows: Section 2 describes the empirical framework and the econometric models. Section 3 discusses the data, which represent a unique combination of dwelling-level transaction data with detailed information on green labels that have been assigned to a subsample of the data. In Section 4, we provide the main results of the analysis. Section 5 provides a discussion and policy implications of the findings.

1.6 MILLION HOMES SOLD IN CALIFORNIA DURING THE STUDY PERIOD *(control group)*

4,231 CALIFORNIA HOMES SOLD
with a green label from Energy Star, GreenPoint Rated or LEED for Homes

*An otherwise comparable home with a green certification transacts for **8.7% more** (+/-4%).*

The green homes in our sample are mostly “production homes” and not high-end custom homes. Many large residential developers, such as KB Homes, are now constructing Energy Star and GreenPoint Rated homes.

2

METHOD AND EMPIRICAL FRAMEWORK

Consider the determinants of the value of a single-family dwelling at a point in time as a bundle of residential services consumed by the household (John F. Kain and John M. Quigley, 1970). It is well-documented in the urban economics literature that the services available in the neighborhood, such as schools, public transport and other amenities, will explain a large fraction of the variation in price (see, for example, Joseph Gyourko et al., 1999). But of course, the dwelling’s square footage, architecture and other structural attributes will also influence its value.

In addition to attributes included in standard asset pricing models explaining home prices, the thermal characteristics and other “sustainability” features of the dwelling may have an impact on the transaction price. These characteristics provide input, which combined with energy inputs, provide comfort (John M. Quigley and Daniel L. Rubinfeld, 1989). However, the energy efficiency of homes (and their equipment) is often hard to observe, leading to information asymmetry between the seller and the buyer. In fact, homeowners typically have limited information on the efficiency of their own home; it has been documented that the “energy literacy” of resident households is quite low (Dirk Brounen et al., 2011). Indeed, recent evidence shows that providing feedback to private consumers with respect to their energy consumption is a simple, but effective “nudge” to improve their energy efficiency (Hunt Allcott, 2011).

To resolve the information asymmetry in energy efficiency, and also in related green attributes, energy labels and green certificates have been introduced in commercial and residential real estate markets. The labels can be viewed as an additional step to enhance the transparency of resource consumption in the real estate sector. Such information provision may enable private investors to take sustainability into account when making housing decisions, reducing costly economic research (Robert W. Gilmer, 1989). From an economic perspective, the labels should have financial utility for prospective homeowners, as the savings resulting from purchasing a more efficient home may result in lower operating costs during the economic life, or less exposure to utility cost escalation over time.² In addition, similar to a high quality “view,” various attributes of homes, such as durability or thermal comfort, may not provide a direct cash flow benefit, but may still be monetized in sales transactions.

To empirically test this hypothesis, we relate the logarithm of the transaction price to the hedonic characteristics of single-family homes, controlling precisely for the variations in the measured and unmeasured characteristics of rated buildings and the nearby control dwellings, by estimating:

$$(1) \log(R_{ijt}) = \alpha green_{it} + \beta X_i + \gamma_{jt} + \varepsilon_{ijt}$$

In this formulation, R_{ijt} is the home’s sales price commanded by dwelling i in cluster j in quarter t ; X_i is the set of hedonic characteristics of building i , and ε_{ijt} is an error term. To control more precisely for locational effects, we include a set of dummy variables, one for each of the j zip codes. These zip-code-fixed effects account for cross-area differences in local public goods such as weather, crime, neighborhood demographics and school quality. To capture the time-variance in local price dynamics, we interact zip-code-fixed effects with year/month indicators; the transaction prices of homes are thus allowed to vary by each month during the time period, in each specific location. This rich set of fixed effects allows for local housing market trends and captures the value of time-varying local public goods, such as crime dynamics or the growth or decline of a nearby employment district. $green_i$ is a dummy variable with a value of one if dwelling i is rated by the EPA, USGBC or Build It Green, and zero otherwise. α , β , γ_{jt} are estimated coefficients. α is thus the average premium, in percent, estimated for a labeled building relative to those observationally similar buildings in its geographic cluster—the zip code. Standard errors are clustered at the zip code level to control for spatial autocorrelation in prices within zip codes.

² For the commercial real estate market, a series of papers that study investor and tenant demand for green office space in the U.S. show that buildings with an Energy Star label—indicating that a building belongs to the top 25 percent of the most energy-efficient buildings—or a LEED label have rents that are two to three percent higher as compared to regular office buildings. Transaction prices for energy-efficient office buildings are higher by 13 to 16 percent. Further analyses show that the cross-sectional variation in these premiums has a strong relation to real energy consumption, indicating that tenants and investors in the commercial property sector capitalize energy savings in their investment decisions (Piet Eichholtz *et al.*, 2010; in press).

In a second set of estimates, we include in equation (1) additional interaction terms where we interact “green” with a vector of locational attributes:

$$(2) \log(R_{ijt}) = \alpha_0 \text{green}_{it} + \alpha_1 N \text{green}_{it} + \beta X_i + \gamma_{jt} + \varepsilon_{ijt}$$

We estimate equation (2) to study whether the “green label” premium varies with key observables such as climatic conditions and local electricity prices.³ We posit that green homes will be more valuable in areas that experience more hot days and areas where electricity prices are high. Presumably, the present value of future energy savings is highest in those regions, which should be reflected in the value attributed to the “green” indicator.

A second interaction effect addressed in this study is whether the capitalization effect of green labels is larger in communities that reveal a preference for “green products.” A desire to appear environmentally conscious or to act on one’s environmental values may increase the financial value of “green” homes because it is a signal of environmental virtue.⁴ Our proxy for

environmental idealism is the Toyota Prius share of registered vehicles in the zip code (these data are from the year 2007).⁵ Last, we test for whether the green home premium differs over the business cycle. The recent sharp recession offers significant variation in demand for real assets, which may affect the willingness to pay for energy efficiency and other green attributes.

Anecdotally, we know that the green homes in our sample are mostly “production homes” and not high-end custom homes—many large residential developers, such as KB Homes, are now constructing Energy Star and GreenPoint Rated homes. But, it is important to note that we do not have further information on the characteristics of the developers of “green” homes and conventional homes. Therefore, we cannot control for the possibility that some developers choose to systematically bundle green attributes with other amenities, such more valuable appliances in green homes or a higher-quality finishing. We assume that such unobservables are not systematically correlated with green labels. Otherwise, we would overestimate the effects of “green” on housing prices.

³ In model (2), we replace the zip-code-fixed effects for county fixed effects, as data on Prius registrations, electricity prices and the clustering of green homes is measured at the zip code level. To further control for the quality of the neighborhood and the availability of local public goods, we include a set of demographic variables from the Census bureau, plus distance to the central business district (CBD) and distance to the closest public transportation hub.

⁴ This is comparable to private investors’ preference for socially responsible investments (Jeroen Derwall *et al.*, 2011).

⁵ See Matthew E. Kahn (2007) for a discussion of Prius registrations as proxy for environmentalism.

3 DATA

A. Green Homes: Measurements and Data Sources

In the U.S., there are multiple programs that encourage the development of energy efficient and sustainable dwellings through systems of ratings to designate and publicize exemplary buildings. These labels are asset ratings: snapshots in time that quantify the thermal and other sustainability characteristics of the building and predict its energy performance through energy modeling. They neither measure actual performance, nor take occupant behavior into account. The Energy Star program, jointly sponsored by the U.S. Environmental Protection Agency and the U.S. Department of Energy, is intended to identify and promote energy-efficient products, appliances, and buildings. The Energy Star label was first offered for residential buildings in 1995.⁶



The Energy Star label is an asset rating touted as a vehicle for reducing operational costs in heating, cooling, and water-delivering in homes, with conservation claims in the range of 20 to 30 percent, or \$200 to \$400 in annual savings. In addition, it is claimed that the label improves comfort by sealing leaks, reducing indoor humidity and creating a quieter environment. But the Energy Star label is also marketed as a commitment to conservation and environmental stewardship, reducing air pollution.

In a parallel effort, the US Green Building

⁶ Under the initial rating system, which lasted until 2006, buildings could receive an Energy Star certification if improvements were made in several key areas of the home, including high-performance windows, tight constructions and ducts, and efficient heating and cooling equipment. An independent third-party verification by a certified Home Energy Rater was required. Homes qualified under Energy Star Version 1 had to meet a predefined energy efficiency score ("HERS") of 86, equating more than 30 percent energy savings as compared to a home built to the 1992 building code. From January 2006 until the end of 2011, homes were qualified under Energy Star Version 2. This version was developed in response to increased mandatory requirements in the national building codes and local regulations, as well as technological progress in construction practices. The updated guidelines included a visual inspection of the insulation installation, a requirement for appropriately sized HVAC systems, and a stronger promotion of incorporating efficient lighting and appliances into qualified homes. An additional "thermal bypass checklist" (TBC) became mandatory in 2007. As of 2012, Energy Star Version 3 has been in place, including further requirements for energy efficiency measures and strict enforcement of checklist completion.



Council, a private non-profit organization, has developed the LEED (Leadership in Energy and Environmental Design) green building rating system to encourage the “adoption of sustainable green building and development practices.” Since adoption in 1999, separate standards have been applied to new buildings and to existing structures.

The LEED label requires sustainability performance in areas beyond energy use, and the requirements for certification of LEED buildings are substantially more complex than those for the award of an Energy Star rating. The certification process for homes measures six distinct components of sustainability: sustainable sites, water efficiency, materials and resources, indoor environmental quality, innovation, as well as energy performance. Additional points can be obtained for location and linkages, and awareness and education.⁷

Whereas LEED ratings for commercial (office) space have diffused quite rapidly over the past 10 years (see Nils Kok et al., 2011, for a discussion), the LEED for Homes rating began in pilot form only in 2005, and it was fully balloted as a rating system in January 2008.

It is claimed that LEED-certified dwellings reduce expenses on energy and water, have increased asset values, and that they provide healthier and safer environments for occupants. It is also noted that the award of a LEED designation “demonstrate[s] an owner’s commitment to environmental stewardship and social responsibility.”



In addition to these national programs intended for designating exemplary performance in the energy efficiency and sustainability of (single-family) homes, some labeling initiatives have emerged at the city or state level. In California, the most widely adopted of these is GreenPoint Rated, developed by Build It Green, a non-profit organization whose mission is to promote healthy, energy- and resource-efficient homes in California.

The GreenPoint Rated scheme is comparable to LEED for Homes, including multiple components of “sustainability” in the rating process, with minimum rating requirements for energy, water, indoor air quality, and resource conservation. Importantly, the GreenPoint Rated scheme is available not just for newly constructed homes, but it is applicable to homes of all vintages. The label is marketed as “a recognizable, independent seal of approval that verifies a home has been built or remodeled according to proven green standards.” Comparable to other green rating schemes, proponents claim that a GreenPoint rating can improve property values at the time of sale.

⁷ For more information on the rating procedures and measurements for LEED for Homes, see: <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=147>.

B. Data on Homes Prices and Their Determinants

We obtain information on LEED-rated homes and GreenPoint Rated homes using internal documentation provided by the USGBC and Build It Green, respectively. Energy-Star-rated homes are identified by street address in files available from local Energy Star rating agencies. We focus our analysis on the economically most important state of California, covering the 2007–2012 time period.

The number of homes rated by the green schemes is still rather limited – 4,921 single-family homes rated with GreenPoint Rated and 489 homes rated with LEED for Homes (as of January 2012). The number of homes that obtained an Energy Star label is claimed to be substantially larger, but we note that data on Energy Star Version 1 has not been documented, and information on homes certified under Energy Star Version 2 is not stored in a central database at the federal level. Therefore, we have to rely on information provided by consultants who conduct Energy Star inspections. We obtained details on 4,938 single-family dwellings that have been labeled under the Energy Star Version 2 program.

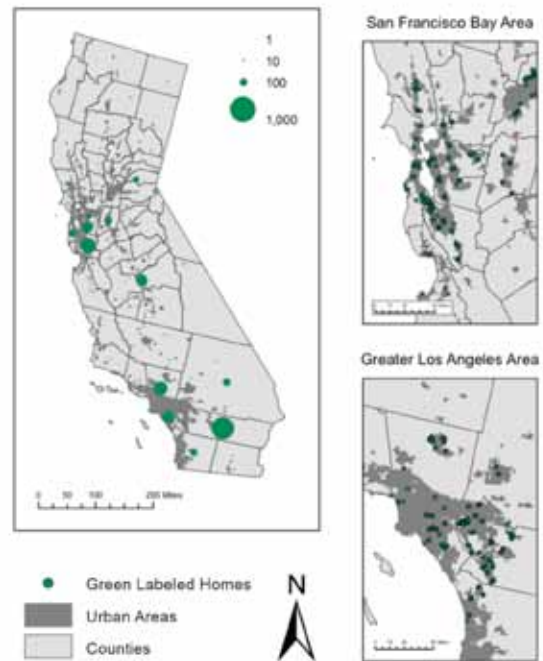
We matched the addresses of the buildings rated in these three programs as of January 2012 to the single-family residential dwellings identified in the archives maintained by DataQuick. The DataQuick service and the data files maintained by DataQuick are advertised as a “robust national property database and analytic expertise to deliver innovative solutions for any company participating in the real estate market.”⁸ Our initial match yielded 8,243 certified single-family dwellings for which an assessed value or transaction price, and dwelling characteristics could be identified in the DataQuick files; of those homes, 4,231 transacted during the sample period.⁹

⁸ DataQuick maintains an extensive micro database of approximately 120 million properties and 250 million property transactions. The data has been extensively used in previous academic studies. See, for example, Raphael W. Bostic and Kwan Ok Lee (2008) and Fernando Ferreira *et al.* (2010).

⁹ We were not able to match the remaining 2,105 certified properties to the DataQuick files. Reasons for the missing observations include, for example, properties that were still under construction, and incomplete information on certified properties.

Figure 1 shows the geographic distribution of the certified homes in our sample. There is a clustering of green rated homes in certain areas, such as the Los Angeles region and the San Francisco region. The geographic distribution is correlated with higher incomes (e.g., in the San Francisco Bay Area), but also with higher levels of construction activity in recent years (e.g., in the Central Valley). As shown by the maps, in the case of Los Angeles, many of the “green label” homes are built in the hotter eastern part of the metropolitan area. It is important to note that there is little new construction in older, richer cities such as Berkeley and Santa Monica (Matthew E. Kahn, 2011). This means that it is likely to be the case that there will be few single-family “green homes” built in such areas.

FIGURE 1.
Certified Homes in California (2007-2012)



Sources: Build It Green, EPA, and USGBC

GEOGRAPHIC DISTRIBUTION of GREEN-LABELED HOMES is correlated with

- Higher incomes (e.g., San Francisco Bay Area)
- Higher levels of construction activity (e.g., Central Valley)
- Hotter local climate (e.g., inland areas around Los Angeles and Central Valley)

HEDONIC VARIABLES CONSIDERED:

- size
- quality
- number of bedrooms
- renovations
- garage
- swimming pool
- air conditioning
- view

To investigate the effect of energy efficiency and sustainability on values of dwellings as observed in the market, we also collect information on all non-certified single-family dwellings that transacted during the same time period, in the same geography. In total, there are nearly 1.6 million dwellings in our sample of green buildings and control buildings with hedonic and financial data.

Besides basic hedonic characteristics, such as vintage, size and presence of amenities, we also have information on the time of sale. Clearly, during the time period that we study, many homes in our geography were sold due to financial distress (i.e., foreclosure or mortgage delinquency). This, of course, has implications for the transaction value of homes (John Y. Campbell et al., 2011). We therefore create an indicator for a “distressed” sale, based on information provided by DataQuick.

We also collect data on environmental ideology, proxied by the registration share of Prius vehicles in each zip code.¹⁰ Local climatic conditions are assessed by the total annual cooling degree days at the nearest weather station (measured by the longitude and latitude of each dwelling and each weather station) during the year of sale.¹¹ Information on electricity prices is collected at the zip code level.¹²

C. Descriptive Statistics

Table 1 summarizes the information available on the samples of certified and non-certified dwellings. The table reports the means and standard deviations for a number of hedonic characteristics of green buildings and control buildings, including their size, quality, and number of bedrooms, as well as indexes for building renovation, the presence of on-site amenities (such as a garage or carport, swimming pool, or presence of cooling equipment), and the presence of a “good” view.¹³

Simple, non-parametric comparisons between the samples of certified and non-certified homes show that transaction prices of green homes are higher by about \$45,000, but of course, this ignores any observable differences between the two samples. Indeed, green homes are much younger—70 percent of the dwellings in the green sample have been constructed during the last five years.

More than two-thirds of the stock of green homes are those certified by Energy Star, but there is substantial overlap among the green certifications—about 20 percent of the green homes have multiple labels.

¹⁰ We calculate the Toyota Prius share of registered vehicles from zip code totals of year 2007 automobile registration data (purchased from R.L. Polk).

¹¹ Data retrieved from <http://www.ncdc.noaa.gov/cdo-web/>.

¹² Data retrieved from http://www.energy.ca.gov/maps/serviceareas/electric_service_areas.html. We thank the California Energy Commission for providing a list containing each zip code in California and the corresponding local electric utility provider.

¹³ DataQuick classifies the presence and type of view from the property. A “good” view includes the presence of a canyon, water, park, bluff, river, lake or creek

4 RESULTS

Table 2 presents the results of a basic regression model relating transaction prices of single-family dwellings to their observable characteristics and a green rating. Zip-code-fixed effects account for cross-area differences in local public goods, such as weather, crime, neighborhood demographics and school quality. The analysis is based upon more than 1.6 million observations on rated and unrated dwellings. Results are presented for ordinary least squares regression models, with errors clustered at the zip code level. Coefficients for the individual location clusters and the time-fixed effects are not presented.

Column 1 reports a basic model, including some hedonic features: dwelling size in thousands of square feet, the number of bed and bathrooms, and the presence of a garage or carport. We also include zip-year/month fixed effects. The model explains about 85 percent of the variation in the natural logarithm of home prices.

Larger homes command higher prices; 1,000 square feet increase in total dwelling size (corresponding to an increase of about 50 percent in the size of typical home) leads to a 31 percent higher transaction price. Controlling for dwelling size, an additional bathroom adds about 10 percent to the value of a home, and a garage yields about 6 percent, on average.

In column 2, we add a vector of vintage indicators to the model. Relative to homes constructed more than 50 years ago (the omitted variable), recently developed homes fetch significantly higher prices. The relation between vintage and price is negative, but homes constructed during the 1960-1980 period seem to transact at prices similar to very old (“historic”) homes. Renovation of dwellings is capitalized in the selling prices, although the effect is small; prices of renovated homes are just one percent higher.¹⁴

¹⁴ We replace the original “birth year” of a home with the renovation date in the analysis, so that vintage better reflects the “true” state of the home. This may explain the low economic significance of the renovation indicator.

Column 3 includes a selection of dwelling amenities in the model. The results show that homes that were sold as “distressed,” for example following mortgage default, transact at a discount of 16 percent, on average. The presence of a swimming pool, cooling system or a “view” contributes significantly to home prices.

Importantly, holding all hedonic characteristics of the dwellings constant, column 4 shows that a single-family dwelling with a LEED, GreenPoint Rated or Energy Star certificate transacts at a premium of 12 percent, on average. This result holds while controlling specifically for all

the observable characteristics of dwellings in our sample. The green premium is quite close to what has been documented for properties certified as efficient under the European energy labeling scheme. A sample of 32,000 homes classified with an energy label “A” transacted for about 10 percent more as compared to standard homes (Dirk Brounen and Nils Kok, 2011). In the commercial property market, green premiums have been documented to be slightly higher – about 16 percent (Piet Eichholtz, et al., 2010).

A. Robustness Checks

In Table 3, the green rating is disaggregated into three components: an Energy Star label, a LEED certification, and a GreenPoint Rated label. The (unreported) coefficients of the other variables are unaffected when the green rating is disaggregated into these component categories. The estimated coefficient for the Energy Star rating indicates a premium of 14.5 percent. The GreenPoint Rated and LEED rating are associated with insignificantly higher transaction prices. Energy efficiency is an important underlying determinant of the increased values for green certified dwellings.¹⁵ But of course, sample sizes for homes certified under the alternative rating schemes are quite limited, and just a small fraction of those homes transacted over the past years. An alternative explanation for the lack of significant results for the GreenPoint Rated and LEED schemes is the still limited recognition of those “brands” in the marketplace.¹⁶

The downturn in housing markets and the subsequent decrease in transaction prices may also have an impact on the willingness to pay for more efficient, green homes. It has been documented that prices are more procyclical for durables and luxuries as compared to prices of necessities and nondurables (see Mark Bils and Peter J. Klenow, 1998). To control for the time-variation in the value attributed to green, we include interaction terms of year-fixed effects and the green indicator in column 4. When interaction terms of year-fixed effects are included in the model (the years 2007 and 2012 are omitted due to the lack of a sufficient number of observations in those years), we document substantial variation in the premium for green dwellings over the sample period.

¹⁵ The fundamental energy efficiency requirement is identical across the three different labeling schemes, and the mechanisms for verification are almost entirely similar. The three labels require design for 15 percent energy savings beyond building code requirements and all schemes require various on-site verifications to confirm the delivered home was built to that standard. GreenPoint Rated and LEED offer the highest number of credits for exceeding that minimum requirement. Energy Star rated homes are thus not necessarily better energy performers as compared to the other rating schemes.

¹⁶ The Energy Star label is recognized by more than 80 percent of U.S. households, and 44 percent of households report they knowingly purchased an Energy Star labeled product in the past 12 months (see <http://www.cee1.org/eval/00-new-eval-es.php3>). Energy Star is one of the most widely recognized brands in the U.S. While similar data is not available for GreenPoint Rated or LEED, both were introduced as building labels much more recently, and do not benefit from near ubiquitous cobranding in consumer products.

In the first years of the sample, labeled homes sold for a discount, albeit insignificantly (which may be related to the lack of demand for newly constructed homes during that time period), whereas the premium is large and significant in later years. The parallel with the business cycle suggests that, among private homeowners, demand for green is lower in recessions, but increases as the economy accelerates. This is contrasting evidence for the commercial market: It has been documented that green-certified office buildings experienced rental decreases similar to conventional office buildings during the most recent downturn in the economy (Eichholtz et al., in press).

As noted in Table 1, most homes certified by one of three rating schemes have been constructed quite recently – some 70 percent of the green homes were constructed less than six years ago. Recognizing this point, we seek a similar control sample of non-certified single-family transactions, restricting the analysis to dwellings that are five years old or younger.¹⁷

Table 4 presents the results of this simple robustness check. Control variables, location-fixed effects and time-fixed effects are again omitted. The results presented in Table 4 are not consistently different from the results in Table 3, but the green premium is slightly lower: On average, green-rated homes that were constructed during the last five years transact at a premium of some 9 percent. The Energy Star label is significantly different from zero. We note that the estimated coefficient for the LEED rating indicates a premium of some 10 percent in transaction prices, but this is not statistically significant at conventional levels.

¹⁷ Quite clearly, this paper mostly deals with labeled developer homes rather than existing homes that went through the labeling process. As noted in Section 2, this raises the possibility of a “developer effect” in explaining the price variation between green and conventional homes. More information on the identity of developers of labeled and non-labeled homes would allow us to further disentangle this effect, but we have information on the developers of green homes only. About one third of the homes in the labeled sample have been constructed by KB Homes. Regressions that exclude homes constructed by KB Homes lead to similar results, with the green premium decreasing to about 6 percent.

B. Testing for Heterogeneity in "Green Label" Capitalization

As demonstrated in the statistical models reported in Tables 2–4, there is a statistically significant and rather large premium in the market value for green-certified homes. The statistical analysis does not identify the source of this premium, or the extent to which the signal about energy efficiency is important relative to the other potential signals provided by a building of sufficient quality to earn a label. Of course, the estimates provide a common percentage premium in value for all rated dwellings. But the value of green certification may be influenced by factors related to the location of homes: Figure 1 suggests that the distribution of green-rated dwellings is not random within urban areas in California, and this may affect the geographic variation in the value increment estimated for green-certified homes. For example, non-financial utility attributed to green certification may be higher for environmentally conscious households (comparable to the choice for solar panels, see Samuel R. Dastrup et al., 2012, for a discussion) or in areas where such homes are clustered (This peer effect is referred to as "conspicuous conservation" in a recent paper by Steven E. Sexton and Alison L. Sexton, 2011).

But, the financial utility of more efficient homes may also be affected by other factors related to the location of a dwelling. The financial benefits of a more efficient home should increase with the temperature of a given location, keeping all other things constant. (Presumably, more energy is needed for the heating of dwellings in areas with more heating degree days, and more energy is needed for the cooling of buildings in areas with more cooling degree days.) To test this hypothesis, we interact the green indicator with information on cooling degree days for each dwelling in the transaction year, based on the nearest weather station in the database of the National Oceanic and Atmospheric Administration (NOAA). Similarly, in areas with higher electricity costs, the return on energy efficiency should be higher. We therefore interact the climate variable with information on the retail price of electricity in the electric utility service area.

KEY FINDING

Homeowners in areas with a hotter climates are willing to pay more for a green, energy-efficient home.

Table 5 presents a set of models that include a proxy for ideology, green home density, climatic conditions and local electricity prices. In this part of the analysis, we seek to (at least partially) distinguish the effects of the energy-saving aspect of the rating from other, intangible effects of the label itself. The results in column 1 show that more efficient homes located in

There is a statistically significant premium in the market value for of green-certified homes.

hotter climates (e.g., the Central Valley) are more valuable as compared to labeled homes constructed in more moderate climates (e.g., the coastal region). At the mean temperature level (6,680 cooling degree days), the green premium equals about 10 percent. But for

every 1000 cooling degree day increase, the premium for certified homes increases by 1.3 percent, keeping all other things constant. **This result suggests that private homeowners living in areas where cooling loads are higher are willing to pay more for the energy efficiency of their dwellings.**¹⁸

In column 2, we add an interaction of climatic conditions with local electricity prices. (In models 2-4, we control for location using county-fixed effects.) Presumably, energy savings are more valuable if the price of electricity per kWh is higher. **However, our results do not show a difference in the capitalization of energy savings between consumers paying high rates** (the maximum rate in our sample equals 0.27 cent/kWh) **and those paying lower rates** (the minimum rate in our sample equals 0.07 cent/kWh). This may be because the true driver of consumer behavior is their overall energy outlay rather than the unit cost per kWh.

¹⁸ While we do not have household level data on electricity consumption, the “rebound effect” would predict that such homeowners might respond to the relatively lower price of achieving “cooling” by lowering their thermostat. In such a case, the actual energy performance of the buildings would not necessarily be lower, because of this behavioral response.

Homeowners in environmentally-conscious communities place a higher value on homes with a green label.

In Column 3, we include the share of Prius registrations for each zip code in the sample, interacted with the indicator for green certification. Quite clearly, the capitalization of green varies substantially by heterogeneity in environmental idealism: **In areas with higher concentrations of hybrid vehicle registrations, the value attributed to the green certification is higher.** These results on the larger capitalization effect of green homes in more environmentally conscious communities are consistent with empirical work on solar panels (Samuel R. Dastrup, et al., 2012) and theoretical work on the higher likelihood for the private provision of public goods by environmentalists (Matthew J. Kotchen, 2006).

In column 4, we include a variable for the “density” of green homes in a given street and zip code, and built by the same developer. One could argue that in areas with a larger fraction of green homes, there is a higher value attributed to such amenity by the local residents. Households who purchase a home on this street know that their neighbors also will be living in a green home and this will create a type of Tiebout sorting as those who want to live

near other environmentalists will be willing to pay more to live there. In this sense, the “green label” density acts as a co-ordination device. However, competition in the share of green homes in a given neighborhood may also negatively affect the willingness to pay for green, as such feature is becoming a commodity (see Andrea Chegut et al., 2011, for a discussion).

When including the density indicator, the point estimate for green certification does not change significantly, but the coefficient on green home density is pointing to a negative relation between the intensity of local green development and the transaction increment paid for green homes. This finding is not significant, but the sign of the coefficient is in line with evidence on green building competition in the UK. As more labeled homes are constructed, the marginal effect relative to other green homes becomes smaller, even though the average effect, relative to non-green homes, remains positive.

KEY FINDING

No evidence that homeowners in areas with higher electricity prices are willing to pay more for a green, energy-efficient home.

5 DISCUSSION & CONCLUSIONS

The economic significance of the green premium documented for labeled homes is quite substantial. **Considering that the average transaction price of a non-labeled home equals \$400,000 (see Table 1), the incremental value of 9 percent for a certified dwelling translates into some \$34,800 more than the value of a comparable dwelling nearby.**

Of course, this raises the issue of relative input costs. The increment in construction costs of more efficient, green homes is open to popular debate, and there is a lack of consistent and systematic evidence. Anecdotally, a recent industry report shows that estimated cost to reach a modeled energy efficiency level of 15 percent above California's 2008 energy code is between \$1,600 and \$2,400 for a typical 2,000 sq. ft. dwelling, depending on the climate zone. To reach a modeled energy efficiency level of some 35 percent above the 2008 code, estimated costs range from \$4,100 to \$10,000 for a typical 2,000 sq. ft. dwelling, again depending on the climate zone.¹⁹ (Some of these costs are offset by incentives, and it is estimated that about one-third of the costs could be compensated for by rebates.) These admittedly rough estimates suggest that the capitalization of energy efficiency features in the transaction price (about \$35,000) far exceeds the input cost for the developer (about \$10,000, at most).

¹⁹ Source: Gabel Associates, LLC. (2008). "Codes and Standards: Title 24 Energy-Efficient Local Ordinances."

From the perspective of a homeowner, the benefits of purchasing a labeled home, or of “greening” an existing dwelling, include direct cost savings during tenure in the home. Indeed, we document some consumer rationality in pricing the benefits of more efficient homes, as reflected in the positive relation between cooling degree days in a given geography and the premium rewarded to a certified home. Presumably, the capitalization of the label should at least reflect the present value of future energy savings. Considering that the typical utility bill for single-family homes in California equals approximately \$200 per month, and savings in a more efficient home are expected to yield a 30 percent reduction in energy costs, the annual dollar value of savings for a typical consumer is some \$720. Compared to the increment for green-labeled homes documented in this paper, that implies a simple payback period of some 48 years.

Quite clearly, there are other (unobservable) features of green homes that add value for consumers. This may include savings on resources other than energy, such as water, but the financial materiality of these savings is relatively small. **However, there are also other, intangible benefits of more efficient homes, such as better insulation, reducing draft, and more advanced ventilation systems, which enhance indoor air quality. These ancillary benefits may be appealing to consumers through the comfort and health benefits they provide.**

The results documented in this paper also show that the premium in transaction price associated with a green label varies considerably across geographies. **The premium is positively related to the environmental ideology of the neighborhood.** In line with previous evidence on the private value of green product attributes, some homeowners seem to attribute non-financial utility to a green label (and its underlying features), explaining part of the premium paid for green homes.

B. Conclusion

Buildings are among the largest consumers of natural resources, and increasing their energy efficiency can thus play a significant role towards achieving cost savings for private consumers and corporate organizations, and can be an important step in realizing global carbon reduction goals. With these objectives in mind, an ongoing effort has sought to certify buildings that have been constructed more efficiently. Considering the lack of “energy literacy” among private consumers, if homebuyers are unaware of a building’s steady state (modeled) energy consumption, then they will most likely not appropriately capitalize energy savings in more efficient dwellings.

Comparable to evidence documented for the commercial sector in the U.S., and for the residential sector in Europe, the results in this paper provide the first evidence on the importance of publicly providing information about the energy efficiency and “sustainability” of structures in affecting consumer choice.

Green homes transact for significantly higher prices as compared to other recently constructed homes that lack sustainability attributes. This is important information for residential developers and for private homeowners: Energy efficiency and other green features are capitalized in the selling price of homes.

We note that the green homes in our sample are not high-end, custom homes, but rather “production homes” built by large developers. From the developer’s perspective, there are likely to be economies of scale from producing green homes in the same geographic area. If green communities command a price premium and developers enjoy cost savings from producing multiple homes featuring similar attributes, then for-profit developers will be increasingly likely to build such complexes. This has implications for the green premium, as the marginal effect relative to other green homes becomes smaller.

The findings in this paper also have some implications for policy makers. Information on the energy efficiency of homes in the U.S. residential market is currently provided just for exemplary dwellings.²⁰ The mandatory disclosure of such information for all homes could further consumers’ understanding of the energy efficiency of their (prospective) residence, thereby reducing the information asymmetry that is presumably an important explanation for the energy-efficiency gap.

An effective and cheap market signal may trigger investments in the efficiency of the building stock, with positive externality effects as a result.

Of course, we cannot disentangle the energy savings required to obtain a label from the unobserved effects of the label itself, which could serve as a signaling measure of environmental ideology and other non-financial benefits from occupying a green home. Future research should incorporate the *realized* energy consumption in green homes and conventional homes to further disentangle these effects. Reselling of green-labeled homes will also offer an opportunity to further study the value persistence of certified homes, unraveling the effect of developer quality on the green premium documented in this paper.

It also important to note that this paper focuses just on the market for owner-occupied single-family dwellings. While this represents an important fraction of the housing market, the market for rental housing has been growing considerably over the course of the housing crisis, and represents the majority of the housing stock in large U.S. metropolitan areas such as New York and San Francisco. Addressing the signaling effect of green labels for tenants in multi-family buildings should thus be part of a future research agenda.

²⁰ At the time of writing, the City and County of San Francisco’s Office of the Assessor-Recorder is beginning to record and publish the presence or absence of green labels in the county property database. Their stated objective is to increase the incentive to make green upgrades in new and existing properties by using transparency to increase market actors’ ability to act upon label information.

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TABLE 1. Comparison of Green-Labeled Buildings and Nearby Control Buildings
(standard deviations in parentheses)

	RATED BUILDINGS	CONTROL BUILDINGS		RATED BUILDINGS	CONTROL BUILDINGS
Sample Size	4,321	1,600,558	TRANSACTION YEAR		
Sales Price (thousands of dollars)	445.29 (416.58)	400.51 (380.47)	2007 (percent)	0.01 (0.09)	0.13 (0.34)
Assessed Value (thousands of dollars)	425.95 (376.86)	355.21 (347.34)	2008 (percent)	0.04 (0.20)	0.19 (0.39)
Dwelling Size (thousands of sq. ft.)	2.06 (0.69)	1.80 (0.86)	2009 (percent)	0.15 (0.36)	0.23 (0.42)
Lot Size (thousands of sq. ft.)	8.40 (14.01)	16.94 (41.23)	2010 (percent)	0.55 (0.50)	0.21 (0.41)
Age (years)	1.68 (9.49)	32.23 (24.39)	2011 (percent)	0.23 (0.42)	0.21 (0.41)
VINTAGE:			2012 (percent)	0.01 (0.08)	0.02 (0.14)
Vintage < 6 years (percent)	0.70 (0.46)	0.18 (0.38)			
Vintage > 5 years < 11 (percent)	0.00 (0.02)	0.08 (0.28)			
Vintage >10 years < 21 (percent)	0.00 (0.00)	0.11 (0.31)			
Vintage > 20 years < 31 (percent)	0.00 (0.02)	0.14 (0.35)			
Vintage > 30 years < 41 (percent)	0.00 (0.02)	0.12 (0.33)			
Vintage > 40 years < 51 (percent)	0.00 (0.02)	0.09 (0.29)			
Vintage > 50 years (percent)	0.01 (0.08)	0.20 (0.40)			
Renovated Building (percent)	0.04 (0.19)	0.12 (0.33)			
Garage (number)	0.15 (0.55)	0.61 (0.94)			
Number of Bedrooms (percent)	2.64 (1.63)	2.96 (1.18)			
Number of Bathrooms (percent)	2.03 (1.26)	2.11 (0.94)			
GREEN LABEL					
Energy Star (percent)	0.68 (0.47)	- -			
GreenPoint Rated (percent)	0.47 (0.50)	- -			
LEED for Homes (percent)	0.03 (0.16)	0.49 (0.50)			
Multiple Certifications (percent)	0.17 (0.38)	0.39 (0.49)			
Distressed Sale (1 = yes)	0.08 (0.26)	0.11 (0.31)			
Cooling Equipment (1 = yes)	0.45 (0.50)	0.02 (0.15)			
Swimming Pool (1 = yes)	0.01 (0.09)	0.42 (0.41)			
View (1 = yes)	0.00 (0.02)	6.37 (4.34)			
Prius Registration Share (percent x100)	0.45 (0.38)	14.94 (1.37)			
Cooling Degree Days Per Year (thousands)	6.86 (3.86)				
Electricity Price (cents/kWh)	15.06 (0.84)				

TABLE 2. Regression Results
Dwelling Characteristics, Amenities, and Sales Prices
(California, 2007 - 2012)

	(1)	(2)	(3)	(4)
Green Rating (1 = yes)				0.118*** [0.023]
Dwelling Size (thousands of sq. ft.)	0.309*** [0.008]	0.289*** [0.008]	0.273*** [0.007]	0.273*** [0.007]
Number of Bathrooms	0.095*** [0.005]	0.070*** [0.005]	0.066*** [0.005]	0.066*** [0.005]
Number of Bedrooms	0.015*** [0.003]	0.019*** [0.003]	0.022*** [0.003]	0.022*** [0.003]
Number of Garages	0.059*** [0.005]	0.062*** [0.005]	0.058*** [0.005]	0.058*** [0.005]
AGE#				
New Construction (1 = yes)		0.248*** [0.017]	0.190*** [0.016]	0.186*** [0.016]
1 - 2 years (1 = yes)		0.259*** [0.015]	0.209*** [0.015]	0.206*** [0.015]
2 - 3 years (1 = yes)		0.239*** [0.015]	0.223*** [0.015]	0.221*** [0.015]
3 - 4 years (1 = yes)		0.207*** [0.014]	0.219*** [0.014]	0.219*** [0.014]
4 - 5 years (1 = yes)		0.195*** [0.014]	0.213*** [0.014]	0.213*** [0.014]
5 - 6 years (1 = yes)		0.186*** [0.014]	0.203*** [0.014]	0.203*** [0.014]
6 - 10 years (1 = yes)		0.191*** [0.014]	0.193*** [0.014]	0.193*** [0.014]
10 - 20 years (1 = yes)		0.158*** [0.012]	0.149*** [0.012]	0.149*** [0.012]
20 - 30 years (1 = yes)		0.072*** [0.011]	0.064*** [0.011]	0.064*** [0.011]
30 - 40 years (1 = yes)		0.009 [0.010]	0.001 [0.010]	0.001 [0.010]
40 - 50 years (1 = yes)		0.007 [0.008]	-0.002 [0.007]	-0.002 [0.007]
Renovated (1 = yes)		0.012** [0.005]	0.011** [0.005]	0.011** [0.005]
Distressed Sale (1 = yes)			-0.161*** [0.003]	-0.161*** [0.003]
View (1 = yes)			0.063*** [0.011]	0.063*** [0.011]
Swimming Pool (1 = yes)			0.086*** [0.005]	0.086*** [0.005]
Cooling Systems (1 = yes)			0.060*** [0.008]	0.060*** [0.008]
TIME-ZIP-FIXED EFFECTS	Y	Y	Y	Y
Constant	11.743*** [0.203]	11.651*** [0.177]	11.795*** [0.161]	11.681*** [0.163]
N	1,609,879	1,609,879	1,609,879	1,609,879
R ²	0.849	0.854	0.864	0.864
Adj R ²	0.856	0.861	0.871	0.871

Notes:

* Omitted variable: vintage > 50 years

Regressions include: fixed effects by quarter year, 2007I–2012I, interacted with fixed effects by zip code. (Coefficients are not reported.)

Standard errors, clustered at the zip code level, are in brackets. Significance at the 0.10, 0.05, and 0.01 levels are indicated by *, **, and ***, respectively.

TABLE 3. Regression Results
Green Labeling Schemes and Sales Prices
(Energy Star, GreenPoint Rated and LEED for Homes)

	(1)	(2)	(3)	(4)
Energy Star (1 = yes)	0.145*** [0.027]			
GreenPoint Rated (1 = yes)		0.024 [0.024]		
LEED for Homes (1 = yes)			0.077 [0.082]	
Green*Year 2008 (1 = yes)				-0.011 [0.057]
Green*Year 2009 (1 = yes)				0.052 [0.033]
Green*Year 2010 (1 = yes)				0.144*** [0.024]
Green*Year 2011 (1 = yes)				0.131*** [0.029]
Time-ZIP-Fixed Effects	Y	Y	Y	Y
Control Variables	Y	Y	Y	Y
Constant	11.759*** [0.162]	11.778*** [0.162]	11.795*** [0.161]	11.668*** [0.165]
	1,609,879	1,609,879	1,609,879	1,609,879
R ²	0.871	0.871	0.871	0.871
Adj R ²	0.864	0.864	0.864	0.864

Notes:

Regressions include: fixed effects by quarter year, 2007I–2012I, interacted with fixed effects by zip code; as well as vintage, amenities and other measures reported in Table 2 (column 4). (Coefficients are not reported.)

Standard errors, clustered at the zip code level, are in brackets. Significance at the 0.10, 0.05, and 0.01 levels are indicated by *, **, and ***, respectively.

TABLE 4. Regression Results
Robustness Check: Recently Constructed Homes #

	(1)	(2)	(3)	(4)
Green Rating (1 = yes)	0.087*** [0.018]			
Energy Star (1 = yes)		0.112*** [0.017]		
GreenPoint Rated (1 = yes)			-0.016 [0.026]	
LEED for Homes (1 = yes)				0.097 [0.074]
Time-ZIP-Fixed Effects	Y	Y	Y	Y
Control Variables	Y	Y	Y	Y
Constant	12.044*** [0.245]	12.059*** [0.240]	12.119*** [0.222]	12.114*** [0.223]
	314,759	314,759	314,759	314,759
R ²	0.884	0.884	0.883	0.883
Adj R ²	0.899	0.899	0.899	0.899

Notes:

Sample restricted to dwellings constructed during the 2007-2012 period.

Regressions include: fixed effects by quarter year, 2007I–2012I, interacted with fixed effects by zip code; as well as vintage (ranging from 1–5 years), amenities and other measures reported in Table 2 (column 4). (Coefficients are not reported.)

Standard errors, clustered at the zip code level, are in brackets. Significance at the 0.10, 0.05, and 0.01 levels are indicated by *, **, and ***, respectively.

TABLE 5. Regression Results
Green Labels, Climatic Conditions, Electricity Costs, and Sales Prices #

	(1) ^{##}	(2) ^{###}	(2) ^{###}	(3) ^{###}
Green Rating (1 = yes)	-0.013 [0.026]	0.098* [0.054]	-0.057 [0.039]	0.082** [0.033]
Green Rating*Cooling Degree Days	0.014*** [0.003]	0.006 [0.075]		
Green Rating*Cooling Degree Days*Electricity Price		-0.001 [0.005]		
Green Rating*Prius Registration			21.957*** [5.355]	
Green Rating*Green Density				-0.002 [0.001]
Distance to Closest Rail Station (in kilometers)		-0.004*** [0.001]	-0.004*** [0.001]	-0.004*** [0.001]
Distance to CBD (in kilometers)		-0.001 [0.001]	-0.001 [0.001]	-0.001 [0.001]
Time-ZIP-fixed Effects	Y	N	N	N
Time-FIPS-Fixed Effects	N	Y	Y	Y
Control Variables	Y	Y	Y	Y
Constant	12.055*** [0.023]	12.494*** [0.067]	12.378*** [0.161]	12.759*** [0.240]
N	323,840	238,939	242,678	286,325
R ²	0.877	0.758	0.758	0.747
Adj R ²	0.893	0.760	0.761	0.749

Notes:

Sample restricted to dwellings constructed during the 2007-2012 period.

** Regression in column 1 includes fixed effects by quarter year, 2007I–2012I, interacted with fixed effects by zip code; as well as vintage, amenities and other measures reported in Table 2 (column 4). (Coefficients are not reported.)

*** Regressions in columns 2 - 4 include fixed effects by quarter year, 2007I–2012I interacted with fixed effects by Census tract; the following Census variables at the zip code level: percentage of the population with at least some college education, percentage blacks, and percentage Hispanics, percentage in age categories 18-64, > 64; as well as vintage, amenities and other measures reported in Table 2 (column 4). (Coefficients are not reported.)

Standard errors, clustered at the zip code level, are in brackets. Significance at the 0.10, 0.05, and 0.01 levels are indicated by *, **, and ***, respectively.



Contents lists available at SciVerse ScienceDirect

European Economic Review

journal homepage: www.elsevier.com/locate/eev

Understanding the Solar Home price premium: Electricity generation and “Green” social status[☆]

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ARTICLE INFO

Available online 25 February 2012

JEL classification:

H23

Q42

Q58

Keywords:

Solar panels

Real estate prices

Environmentalism

ABSTRACT

This study uses a large sample of homes in the San Diego area and Sacramento, California area to provide some of the first capitalization estimates of the sales value of homes with solar panels relative to comparable homes without solar panels. Although the residential solar home market continues to grow, there is little direct evidence on the market capitalization effect. Using both hedonics and a repeat sales index approach we find that solar panels are capitalized at roughly a 3.5% premium. This premium is larger in communities with a greater share of college graduates and of registered Prius hybrid vehicles.

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1. Introduction

On a per-capita basis, California has the most installed residential solar capacity in the United States. Solar homes are expensive. It can cost \$30,000 to install such a system. Several state and federal programs actively subsidize this investment. Judged on strictly efficiency criteria (foregone electricity expenditure per dollar of investment), solar panels may be a bad investment. Borenstein (2008) finds that the cost of a solar photovoltaic system is about 80% greater than the value of the electricity it will produce.

Solar panels bundle both investment opportunities (the net present value of the flow of electricity they generate) and conspicuous consumption opportunities (that it is common knowledge that your home is “green”). Kotchen (2006) provides a theoretical analysis of the case in which individuals have the option of consuming “impure” public goods that generate private and public goods as a joint product. Outside of the Toyota Prius, solar homes are perhaps the best known “green products” sold on the market.

The owner of a solar home faces low electricity bills and, if an environmentalist, enjoys the “warm glow” for “doing his duty” and producing minimal greenhouse gases (Andreoni 1990). Because the presence of solar panels on most roofs is readily apparent, the solar home owner knows that others in the same community know that the home owner has solar

[☆] An early draft of this paper was presented at the Conference on “Green Building: The Economy, and Public Policy”, March 22–24, 2011, Maastricht University, The Netherlands. We thank our conference discussants, Thomas Dohmen, Henry Overman, and an anonymous reviewer for helpful comments on that draft. We also thank the University of California Center for Energy and Environmental Economics (UCE³) for research support and Andrew McAllister, Melanie McCutchan and Timothy Treadwell at the California Center for Sustainable Energy for feedback and data assistance.

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panels. This community level re-enforcement may further increase the demand for this green product. This “observability” is likely to be even more valued in an environmentalist community (i.e., a Berkeley) than in a community that dismisses climate change concerns. The recent political divide between Democrats and Republicans over climate change mitigation efforts (see Cragg et al., 2011) highlights that in conservative communities solar panels may offer less “warm glow” utility to its owners.

In this paper, we examine two aspects of solar purchases. We provide new hedonic marginal valuation estimates for a large sample of solar homes based on recent real estate transactions in San Diego County and Sacramento County. We document evidence of a solar price premium and find that this premium is larger in environmentalist communities. In most mature housing markets, we expect that the econometrician knows less about the market than the decision makers. In the case of solar panels, our interactions with professionals in the field suggests that these professionals have little basis for estimating the pecuniary benefits of solar installation. Our second empirical contribution is to document what types of people, in terms of education, political ideology and demographic attributes do and do not live in solar homes. Most hedonic studies that use sales data (rather than Census data) know very little about the household who actually lives in the home, but we can observe household characteristics for a single year.

Our hedonic study contributes to two literatures. The real estate hedonics literature explores how different housing attributes are capitalized into home prices. Solar installation can be thought of as a quality improvement in the home. Recent studies have used longitudinal data sets such as the American Housing Survey (which tracks the same homes over time) to study how home upgrades such as new bathrooms and other home improvements are capitalized into resale values (Harding et al., 2007; Wilhelmsson, 2008). A distinctive feature of solar panels is that on a day to day basis they have no “use value” as compared to a new bathroom or kitchen. Solar panels reduce your household’s need to purchase electricity but from an investment standpoint they represent an intermediate good that indirectly provides utility to households. For those households who derive pleasure from knowing that they are generating their own electricity, the solar panels will yield “existence value”. Such households will recognize that they have reduced their greenhouse gas emissions and thus are providing world public goods. In their local communities, such households may be recognized by neighbors for their civic virtue. Households who take pride in engaging in “voluntary restraint” will especially value this investment (Kotchen and Moore, 2008).

A recent literature in environmental economics has examined the demand for green products. Most of these studies have focused on hybrid vehicle demand such as Kahn (2007), Kahn and Vaughn (2009) and Heutel and Muehlegger (2010) or the diffusion of solar panels across communities (Dastrup, 2010 and Bollinger and Gillingham, 2010). By using hedonic methods to estimate the price premium for green attributes our study shares a common research design with several recent studies that have used hedonic methods to infer the “green product” price premium such as Delmas and Grant’s (2010) study the demand for organic wine, Eichholtz et al.’s (forthcoming) work on the capitalization of Energy Star and LEED status for commercial buildings, and Brounen and Kok’s (2010) investigation of the capitalization of residential energy efficiency when Dutch homes are certified with regards to this criterion.

2. The hedonic pricing equilibrium and the make versus buy decision over solar installation

A household who wants to live in a solar home can either buy such a home or buy another home that does not have solar panels and pay a contractor to install these solar panels. This option to “make” versus “buy” should impose cross-restrictions on the size of the capitalization effect. Consider an extreme case in which all homes are identical and there is a constant cost of \$ c to install solar panels. By a no arbitrage argument, the hedonic price premium for a solar home should equal c dollars. Over time, any supply innovations that lead to a lower installation cost or higher quality of the new solar panels would be immediately reflected in the hedonic price premium.

In reality, homes are differentiated products that differ along many dimensions. No home has a “twin”. The non-linear hedonic pricing gradient is such that different homes are close substitutes at the margin (Rosen, 2002). Since at any point in time the same home is not available with and without solar panels, there is no reason why the hedonic solar capitalization must equal the installation cost.

We recognize that the investment decision in solar has an option value component. Households may be uncertain about how much electricity the solar panels will generate, the future price of electricity and future price declines in quality adjusted solar systems. In a standard investment under uncertainty problem, it can be rational to delay and not exercise the option. On the other hand, many of the tax incentive programs to foster the adoption of solar panels have been designed with a declining rebate structure and even the duration of these programs are uncertain, making delay costly.¹ Households may also be uncertain about what the resale value of their house would be if they install solar. All of these factors, as well as the household’s power needs and its ideology, will influence demand for solar panels. For a formal model of hedonic pricing with a redevelopment option see Clapp and Salavei (2010).

On the supply side, there are two sources of solar homes. There are existing homes whose owners have installed solar panels in the past and are now selling their home. In contrast, the second set of solar homes is produced by developers of

¹ For example, the California Solar Initiative began with a rebate of \$2.50 per watt on residential installations that is scheduled to drop to \$0.15 per watt.

new homes who will compare their profit for building a home with and without solar panels.² Such developers are likely to have invested more effort in the basic marketing research of determining the market for this custom feature.

3. Empirical specification

We employ both a hedonic and a repeat sales approach to assess the extent to which solar panels are capitalized into home prices. The hedonic specification decomposes home prices by observable characteristics for all transactions while flexibly controlling for spatial and temporal trends. Solar panels are included as a home characteristic and average capitalization is measured as the coefficient on the solar panel variable. The repeat sales model controls for average appreciation of properties from one sale to the next within each census tract, with an indicator for installation of panels between sales.

3.1. Hedonic approach

Our first approach to measuring the capitalization of solar panels in home sales is to decompose home prices by home characteristics and neighborhood level time trends. We interpret the average difference between the log price of homes with solar panels and those without after controlling for observable home characteristics and average neighborhood prices in each quarter as the average percent contribution to home sales price of solar panels. The baseline equation we estimate in our hedonic specification is

$$\log(\text{Price}_{ijt}) = \alpha \text{Solar}_{it} + \beta \mathbf{X}_i + \gamma_{jt} + \varepsilon_{ijt} \quad (1)$$

where Price_{ijt} is the observed sales price of home i in census tract j in quarter t . The variable Solar_{it} is an indicator for the existence of a solar panel on the property and α is the implicit price of the panels as a percentage of the sales price – our measure of the extent of capitalization. Home, lot, and sale characteristics are included as \mathbf{X}_i .

We allow for the differential capitalization across geographic areas of home and lot size by interacting the logs of these observable characteristics with zip code level indicator variables.³ Additional characteristics contained in \mathbf{X}_i are the number of bathrooms, the number of times the property has sold in our sales data, the number of mortgage defaults associated with the property since 1999, indicators for the building year, if the property has a pool, a view, and is owner occupied, and month of the year indicators to control for seasonality in home prices. In Eq. (1), we are imposing a constant solar capitalization rate across time and space.⁴

We control for housing market price trends and unobserved neighborhood and location amenities with census tract-quarter fixed effects, γ_{jt} . Allowing different appreciation patterns for different geographies is critical because these different geographical appreciation patterns are correlated with the incidence of solar panel installation.

Our OLS capitalization estimate, α , measures the average differential in sales price of homes with solar panels and homes without panels in the same census tract selling in the same quarter after controlling for differences in observable home characteristics.⁵ Interpreting the hedonic coefficient estimate as the effect on home price of solar panels requires assuming that the residual idiosyncratic variation in sales prices (ε_{ijt} in our framework), solar panel installation and unobservable house attributes are uncorrelated. This assumption is invalid if homeowners who install solar panels are more likely to make other home improvements that increase sales prices of their homes than their neighbors who do not install. We investigate how this might influence our capitalization estimate by estimating (1) with a control for whether a home improvement is observed in building permit data available for a large subset of San Diego County. Alternatively, homes with solar panels may be homes of higher unobserved quality. We explore whether these homes command a time-invariant premium by including an indicator for whether a home will have panels installed at some point in the future relative to a particular sale.

We allow the capitalization of panels to vary over system size and neighborhood characteristics by interacting our solar indicator variable in Eq. (1) with a linear term including the characteristic. Our estimating equation becomes:

$$\log(\text{Price}_{ijt}) = \alpha_0 \text{Solar}_{it} + \alpha_1 N * \text{Solar}_{it} + \beta \mathbf{X}_i + \gamma_{jt} + \varepsilon_{ijt} \quad (2)$$

² While the costs of new installations are quite similar to the cost of a retrofit for new custom home construction, large developments will create economies of scale that may reduce the costs of residential solar systems. The magnitude of this cost advantage is presumably limited, as a large share of system costs are devoted to system hardware.

³ There is substantial variation in climate and other local amenities across the three counties in our data sets. Our specification allows a home or lot of a given size on the temperate coast near the beach to be valued by the market differently than the same size home or lot in the inland desert region.

⁴ Recent changes in the federal tax incentives for solar may affect the solar price capitalization. On October 3, 2008 the President signed the Emergency Economic Stabilization Act of 2008 into law. The bill extends the 30% ITC for residential solar property for eight years through December 31, 2016. It also removes the cap on qualified solar electric property expenditures (formerly \$2000), effective for property placed in service after December 31, 2008 <http://www.clarysolar.com/residential-solar.html>. We do not have enough observations to determine whether the law has affected the size of the solar capitalization effect.

⁵ In Bajari and Benkard's (2005) study of hedonic pricing, they demonstrate that because the solar option is discrete (i.e., a home either has or does not have panels), groups of diverse buyers with different tastes will be forced to choose among the discrete number of alternative hedonic packages. For those who choose to buy a home with solar panels, we can infer that the hedonic price provides a lower bound on such a household's willingness to pay for this attribute.

The value of installed solar panels may be influenced by factors beside the financial implications of installation, and we estimate Eq. (2) using a number of proxies for other factors. Households may have preferences for the production technology used to generate the electricity they use if they are concerned about their individual environmental impact or value their own energy independence. A desire to appear environmentally conscious may increase the value of solar, because it is a visible signal of environmental virtue. Our proxies for environmental idealism and the social return to demonstrating environmental awareness are the percent of voters registered as Green party members in the census tract and the Toyota Prius share of registered vehicles in the zip code. For comparison, we estimate capitalization variation by Democratic party registered voter share and the pickup truck share of registered vehicles in the zip code. We also examine solar panel capitalization by census tract log median income and percent of college graduates.

3.2. Repeat sales approach

A second approach to measuring the average additional value to a home sale of solar panels is to average the additional appreciation of a single home from one sale to the next (repeat sales) when solar panels are installed between sales. We interpret the average differential in the appreciation in consecutive sales of properties where solar was installed between sales and other properties in the same census tract with no installation between consecutive sales as the average capitalization of solar panels in home sales. The baseline equation we estimate for our repeat sales specification is

$$\log\left(\frac{\text{Price}_{ij(t+\tau)}}{\text{Price}_{ijt}}\right) = \tilde{\alpha}\Delta\text{Solar}_{i(t+\tau)} + T_{j(t+\tau)} + \tilde{\varepsilon}_{ij(t+\tau)} \quad (3)$$

where $\text{Price}_{ij(t+\tau)}$ and Price_{ijt} are consecutive sales of the same property i in neighborhood j occurring τ quarters apart where the first sale is in period t . The variable $\Delta\text{Solar}_{i(t+\tau)}$ is an indicator for the installation of solar panels at a property between sales (after t but before $t+\tau$). Census tract specific time effects are included as the vector $T_{j(t+\tau)}$, with remaining idiosyncratic property appreciation measured as $\tilde{\varepsilon}_{ij(t+\tau)}$.

Our repeat sales GLS capitalization estimate, $\tilde{\alpha}$, of the capitalization of solar panels in housing prices measures the average additional appreciation of homes with solar installed between sales beyond that measured by the housing price indexes of their respective census tracts. Interpreting $\tilde{\alpha}$ as the effect of panel installation on subsequent sales price requires the assumption that idiosyncratic price appreciation of homes is not correlated with solar panel installation. Again, this will not be the case if unobserved changes in properties are correlated with solar panel installation.⁶

4. San Diego County data

Our hedonic analysis utilizes single family home sales records occurring between January 1997 and early December 2010 in San Diego County. For our sample of repeat sales of single family homes in which solar was installed between sales we use first sales beginning as early as January of 1990. When we restrict our analysis to homes for which we know the home square footage, the number of bedrooms and bathrooms, the year the house was built or most recently underwent a major remodeling, whether the property has a pool, whether the property has a view, and if the property is subject to a lower tax because it is owner occupied, we obtain 364,992 sales records for the hedonic analysis and 80,182 records for the repeat sales analysis.⁷ The Data Appendix provides details on the variables.

We control for the home observable characteristics mentioned above as well as lot size, the number of times the property has transacted in our dataset and the number of public mortgage default notices associated with the property. We view the latter as proxies for idiosyncratic home quality. As measures of local community member preferences for “green products”, we use the percent of voters in each census tract who are Green Party registrants as a measure of the level of environmentalism in the neighborhood. We use the Toyota Prius share of registered automobiles from zip code totals of year 2007 automobile registration data as a proxy of the neighborhood prevalence of both the level of environmentalism and of displayed environmentalism.⁸ We use the percent registered Democrats and vehicles classified as trucks from the respective summary datasets as comparison measures. We control for year 2000 census tract median income and average census tract education levels as percent of the over age 25 population who are college graduates.⁹ We also control for census tract specific time effects.

We know which homes have solar panels from administrative records from four incentive programs which have subsidized residential solar panel systems in San Diego County (details about these programs are given in the Data Appendix). These

⁶ Our hedonic and repeat sales approaches are related. Since differencing consecutive observations on the same property i in Eq. (1) results in Eq. (3), both methods estimate the same parameter for the average capitalization of solar panels, $\alpha = \tilde{\alpha}$. An advantage of the repeat sales approach is that this differencing controls for unobservable time-invariant housing characteristics, in addition to the observable X_i , that may be correlated with solar installations. The census tract-quarter time effects, $T_{j(t+\tau)} = \gamma_{i(t+\tau)} - \gamma_{it}$, are jointly estimated as quarterly repeat sales price indexes for each census tract using standard GLS procedures to account for the dependence of the idiosyncratic error $\tilde{\varepsilon}_{ij(t+\tau)}$ on τ , the number of quarters between sales.

⁷ The building year is not recorded for 1681 properties. Sales of these properties are included with a building year unknown indicator variable.

⁸ See Kahn (2007) for a discussion on the Green Party and party membership as an identifier of environmentalists.

⁹ See Wheaton (1977) for a discussion of how parameters in the utility function enter the hedonic pricing function. We thank a reviewer for pointing us to this reference.

programs cover virtually all solar installations in San Diego County, as we have confirmed with conversations from industry experts.

The solar systems consist of solar panels installed on the property, typically on the roof, which are connected to the electricity grid, meaning the home draws electricity both from the panels and from standard utility lines and the panels supply electricity to the local infrastructure when production exceeds consumption at a given home. We use a dataset of the administrative records from these programs to determine the presence of solar panels on a property being sold as well as the installation of panels between sales.¹⁰

We know, for each installation, the address of the property, size of the system in terms of kilowatt production potential, and date completed. Most installations also include information on the cost of the system and the amount subsidized by the respective program. We successfully match installation records to 6249 single family homes by address to public San Diego County Assessor property records for installations through early December 2010.¹¹

We assign each home in our sample to one of four mutually exclusive and exhaustive categories. At the time the home was sold, the home can (1) already have solar panels installed (329 observations); (2) concurrently have installed solar panels (73 observations); (3) have solar panels installed in the future but be sold without solar panels at the time of the specific sale (3433 observations); and, (4) not have solar panels as of Winter 2010. In the regressions, this fourth category will be the omitted category.¹² We use the date of installation of each system to determine how many homes in the same census block had solar panels installed for each month of our sample.

We use building permit data to examine whether homeowners who install solar panels also make other improvements to their homes more often than their neighborhoods, thus potentially biasing our estimate of the home price premium for solar panels. Our building permit reports begin in 2003 for San Diego City, the largest permit issuing jurisdiction in San Diego County, and for Escondido, a smaller municipality in our sample area. We define a “major renovation” as one referencing a kitchen, bath, HVAC, or roof with an associated value greater than \$1000 and a “high value” renovations as one with an associated value greater than \$10,000.

4.1. Summary statistics for San Diego

Table 1 shows that compared to homes sold without solar, those sold with solar are bigger, have more bedrooms and bathrooms, and are more likely to have a view and a pool, among various other characteristics. We thus need to control for observable home characteristics as well as census tract location in our empirical specification so that our regressions are comparing sales prices of homes with solar panels to sales of similar homes in the same census tract.

Neighborhoods where solar panels have been installed are richer, whiter, more educated, have more registered Democrats, and have larger homes than the 103 of 478 census tracts where no solar was installed during period covered by our data (see Table 2). Our empirical analysis exploits the gradation in these differences across neighborhoods to examine how capitalization in home price varies with ideological and demographic characteristics.

5. Who lives in solar homes?

Most hedonic real estate studies have detailed information about the home, its sales price, location and physical attributes but they know little about the marginal buyer who chose to pay the sales price to live there. For the city of San Diego in 2009, we have information for registered voters on their age, education, political party of registration, and contributions to environmental, political, and religious organizations.¹³ These data enable us to investigate what types of people self select into solar homes.

We estimate linear probability models using the City of San Diego homes in the year 2009 that are represented in the voter registration data. We regress a dummy variable indicating whether the home has solar panels on various household characteristics, including the number of voters in conservative (Republican, American, and Libertarian) and liberal parties (Democrat, Peace and Freedom, and Green), whether the two oldest registered voters in the household contribute to environmental, political, and religious organizations, the highest education level of the two oldest registered voters, the age of the oldest registered voter in the household, whether a child is present, the highest imputed income (based on census block data and the age of the household) of the two oldest registered voters in the household, and census tract fixed effects.

¹⁰ Federal tax credits allow homeowners to recover 30% of the costs of a system, but we do not have access to tax return data as an additional source of installation detail.

¹¹ We match nearly 90% of installation records, and have verified that many unmatched records are business or multifamily addresses. Match quality was verified by inspecting publicly available aerial photographs (www.bing.com/maps) of the installation addresses for the existence of solar panels for a subset of the records.

¹² An additional 50 transactions with an existing solar systems occurred within the year following a public mortgage default notice or sometimes attendant notice of trustee's sale. These are excluded from the analysis here. Including them, along with an indicator for a sale following default for all observations does substantively alter our results.

¹³ Our data are from www.aristotle.com. We merged by street address to each home. We were able to match 83% of the voter records in the sample, which accounts for 50% of single family properties in the City of San Diego.

Table 1
San Diego summary statistics and mean comparisons for solar and no solar home sales.

Variable	Sales with no solar	Sales with solar	No solar–solar
	Mean <i>Std Dev</i>	Mean <i>Std Dev</i>	Difference in means $Pr(T > t)$
Sale price (2000 \$s)	427,047 380,536	667,645 426,980	–240,599 0.000
Square feet	1,984 961	2,512 1,124	–528 0.000
Bedrooms	3.39 0.89	3.76 0.86	–0.37 0.000
Baths	2.37 0.88	2.86 1.00	–0.48 0.000
View	0.30 0.46	0.36 0.48	–0.06 0.020
Pool	0.18 0.38	0.33 0.47	–0.15 0.000
Acres	0.40 1.51	0.88 2.56	–0.49 0.001
Owner occupied	0.70 0.46	0.69 0.46	0.02 0.531
Building year*	1978 19.5	1983 20.9	–5.56 0.000
System cost (2000 \$s) ⁺		27,790 17,245	
System size (kW)		3.37 2.23	
Incentive amount ⁺		11,930 8,301	
Observations	364,663 (*363,504)	329 (*307)	

Table 2
San Diego neighborhood summary stats and comparison by solar penetration.

Variable	Neighborhoods with no solar	Neighborhoods with at least one solar	No solar–solar
	Mean <i>Std Dev</i>	Mean <i>Std Dev</i>	Difference in means $Pr(T > t)$
Average square footage	1,278 326	1,822 535	–544 0.000
Average acreage	0.22 0.44	0.44 0.88	–0.22 0.000
Percent with pools	3.01 3.73	15.01 11,081	–12.00 0.000
Percent green party	0.50 0.50	0.52 0.45	–0.02 0.709
Percent democrat	47.38 9.42	35.63 8.95	11.75 0.000
Median income (\$1000s)	30.35 11.97	55.86 22.85	–25.51 0.000
Percent white	26.73 22.70	60.85 23.67	–34.13 0.000
Percent owner occupied	53.89 18.21	72.87 8.95	–18.99 0.000
Percent college grads	13.54 13.33	31.19 17.95	–17.66 0.000
Percent prius*	0.39 0.03	0.39 0.03	0.002 0.993
Percent truck*	51.83 8.23	45.61 6.92	6.21 0.126
Observations	89 (*6)	496 (*89)	

* Auto data variables reported at the zip code level, all others are census tract averages.

Table 3
Correlates of living in a solar home in the city of San Diego in 2009.

Dependent variable: Dummy=1 if lives in a solar home	Aristotle sample	
	Mean	Coefficient (Std Error)
Home has solar panels (count)	1272 ^a	
Conservative (all HH voters)	0.405	
Liberal (all HH voters)	0.399	0.002** (0.001)
Mixed conservative and liberal	0.022	0.005 (0.003)
Other party	0.174	0.000 (0.001)
Less than high school	0.067	
High school grad	0.205	0.001 (0.001)
Some college	0.249	0.000 (0.001)
College grad	0.253	0.003** (0.001)
Post graduate	0.171	0.006*** (0.001)
Household has contributed to environmental organizations	0.080	0.005*** (0.002)
Political organizations	0.490	–0.001 (0.001)
Religious organizations	0.058	0.001 (0.002)
Census tract fixed effects		Y
Observations		100,943
R-squared		0.010

Estimated from a linear probability model. Sample includes all single family homes in San Diego City that were successfully matched to Aristotle data. Additional controls include the age of the oldest registered voter in the household, whether a child is present in the household, the highest imputed income of the two oldest registered voters in the household, and an indicator for the being in the Aristotle data base. A conservative is registered as Republican, American, or Libertarian Party. A liberal is a registered as Democrat, Peace and Freedom, or Green Party. Robust standard errors in parentheses. The symbols *, **, and *** indicate significance at the 10, 5, and 1% level, respectively.

^a Our solar indicator in this specification equals one if any home has solar panels, in contrast to results below, where the solar indicator denotes whether a home that is sold has solar panels.

We find that households in which all voters are registered liberal and in which the household contributes to environmental organizations are much more likely to be in solar homes controlling for education, imputed income, the age of the oldest registered household member, and whether any children are present in the household (see Table 3). When all voters in the household are registered liberal (and also controlling for contributions to organizations) the probability of being in a solar home increases by 0.002, an 18% increase from the base of 0.011. When the household contributes to environmental organizations (and controlling for party registration) the probability of being in a solar home increases by 0.006, a 55% increase.

Education, age, and income were also predictors of living in a solar home. Those with a college education have a 0.003 greater probability of living in a solar home than those with less than a high school education and those with a graduate degree have a 0.006 greater probability of living in a solar home. This represents roughly a 27–55% increase in the probability of living in a solar home. Households living in a solar home are also most likely to be those where the oldest voter was born after 1950 (relative to being born before 1950) and households with imputed income above the 70th percentile compared to households with imputed income between the 50th and 60th percentile (results not shown).

We have shown that environmentalists, the college-educated, baby-boomers and later generations, and richer households paid the hedonic premium to live in solar homes. We next estimate the size of these hedonic premia.

6. Estimation results

Tables 1 and 2 showed that large nice homes in rich white neighborhoods are more likely to have solar than small homes in poor minority neighborhoods. Our estimated solar coefficient is the average premium for a large nice home with solar (in a rich white neighborhood) relative to the other homes *in the same neighborhood* after flexibly controlling for observable differences between the two homes. Because the hedonic regressions based on Eq. (2) contain census tract by

Table 4
San Diego hedonic OLS regression estimates of log sales price on solar panels.

Dependent variable: Log(SalePrice)	Baseline	Neighborhood	System size
	Coefficient (Std error)	Coefficient (Std error)	Coefficient (Std error)
Solar	0.036*** (0.010)	0.031** (0.014)	0.043 ^a (0.137)
Solar will be installed	0.004 (0.003)	0.004 (0.003)	
Solar concurrently installed	0.028 (0.021)	0.028 (0.021)	
Solar home in solar block		0.010 (0.020)	
Log size (watts) * Solar			–0.001 ^b (0.017)
Log(Acres) ^b	0.074*** (0.003)	0.074*** (0.003)	0.074*** (0.003)
Swimming pool	0.050*** (0.001)	0.050*** (0.001)	0.050*** (0.001)
View	0.049*** (0.001)	0.049*** (0.001)	0.049*** (0.001)
Log(SquareFoot) ^b	0.432*** (0.003)	0.432*** (0.003)	0.432*** (0.003)
Bathrooms	0.024*** (0.001)	0.024*** (0.001)	0.024*** (0.001)
Constant	9.385*** (0.012)	9.385*** (0.012)	9.385*** (0.012)
Census tract quarter fixed effects (578 tracts, 56 quarters)	30,426	30,426	30,426
Observations	364,992	364,992	364,992
Sales with solar	329	329	329
R ² within; overall	0.64; 0.34	0.64; 0.34	0.64; 0.34

Significant at *** 1% and ** 5% levels.

^a A joint test rejects that both $\alpha_0 = 0$ and $\alpha_1 = 0$, indicating that the total solar effect, $\alpha_0 \text{Solar}_{it} + \alpha_1 \text{LogSize}_{it} * \text{Solar}_{it}$, is significantly different from zero.

^b Zip code specific variation in these coefficients is also estimated; Building vintage, mortgage default frequency, sales frequency, owner occupancy tax status, and month in year of sale are included in all regressions, with coefficient estimates available from the authors by request.

quarter fixed effects, the coefficient picks up the price premium for a home with solar relative to homes in the same tract. Similarly, our repeat sales approach measures the average additional increase in price between sales for homes with solar installed between sales relative to other homes in the neighborhood because we are fitting census tract specific repeat sales indexes.

6.1. Hedonic estimates

All of our hedonic specifications estimate the capitalization of solar panels in observed property sales while controlling for housing characteristics, and census tract/quarter fixed effects. We find that solar panels add 3.6% to the sales price of a home after controlling for observable characteristics and flexible neighborhood price trends (see Table 4). This corresponds to a predicted \$22,554 increase in price for the average sale with solar panels installed.¹⁴ Homes which do not yet have solar installed but will at some subsequent time in our sample have no associated premium, indicating that our measured solar effect is not attributable to unobserved, time-invariant differences in these homes. Homes in which the solar installation was done “concurrently” receive a statistically insignificant capitalization rate of 2.8%, probably because they are a combination of two types of installations. If the installation was done before the sale (for example, for new developments or contract remodels) then the price will be capitalized in the sales price. If the installation was done after the sale, the home owner probably added the panels. Unfortunately, we cannot distinguish between these two cases because we do not have the precise date of installation.

We estimate the solar premium to be 1% higher if other homes in the same census block have previously installed panels, but the coefficient is not statistically different from zero. We observe a decreasing return to additional system size, a positive relationship between the capitalization rate and Prius penetration, Green party registration share, Democrat registration share, median income, and education, as well as a negative relationship between capitalization and truck

¹⁴ We convert the coefficient estimate to a dollar amount by differencing the predicted sales price from our estimated model with our solar indicator equal to one and zero and all other characteristics equal to the mean values of all other homes with solar.

Table 5

Predicted value of solar from hedonic estimates and comparison sample values (Adjusted to 2010 dollars).

Predicted added value of solar at mean characteristics of sales with solar	\$22,554; (\$5.65/watt)
Average total (before subsidy) system cost of solar for solar sales	\$35,967; (\$9.02/watt)
Average net (after subsidy) system cost of solar for solar sales	\$20,892; (\$5.24/watt)
Average mean total (before subsidy) system cost of all systems installed during quarter of home sale (replacement cost)	\$30,858; (\$7.74/watt)
Average mean net (after subsidy) system cost of all systems installed during quarter of home sale	\$21,047; (\$5.28/watt)

ownership. Our results on the larger capitalization effect of solar panels in liberal/environmentalist communities are consistent with the theoretical work of Kotchen (2006) who argues that environmentalists are more likely to be willing to purchase private goods that help to supply public goods. In this case, a private household buys a home with solar panels but this contributes to the public good of reducing greenhouse gas production. Controlling for building permit activity in a subsample of our data suggests that the solar panel addition rather than unobserved home improvements are responsible for the measured price premium.

6.2. The returns to solar investment based on the San Diego Estimates

Table 5 compares this predicted increase in price of \$22,554 to four different measures of costs of solar panels. The first potential comparison is the average total cost of the systems, which is \$35,967.¹⁵ However, this amount does not include subsidies which lowered the effective price to homeowners to about \$20,892. Although we do not know the value to the homeowners of federal tax credits for each installation, this comparison suggests that, on average, homeowners fully recover their costs of installing solar panels upon sale of the property. Another measure of the value of panels is the average cost of adding panels during the quarter in which the home was sold. We calculate this value for each quarter in our data, and for our sales the average of this replacement cost measure is \$30,858 before and \$21,047 after subsidies. Buyers purchasing homes with pre-installed solar panels are paying less than the cost of a new system. However, the 30% tax credit lowers this replacement cost measure net measure to \$14,733, below our estimated capitalization value.

We use our hedonic estimates of Eq. (3) to test for heterogeneous impacts of solar installation across communities and structure attributes. First we include the log of the size in watts (maximum production capacity) of the solar system, $N = \log(\text{Watts}_{it})$ as a measure of the expected energy production from the system. Although a larger system by definition produces more electricity, because of the structure of electricity rates and the valuation of electricity produced under California's "net metering" system, we do not expect capitalization to increase proportionately with system size. For excess generation, households may opt in to the net metering system that compensates them for electricity returned to the grid at (currently) between \$0.171 and \$0.275/kW h depending on the time of day, but the compensation is capped at the total of their annual electric bill and households face typically higher time of use prices for any electricity purchased from the utility.¹⁶ The combined effect of the rate structure and net metering is that electricity produced by residential solar panels in excess of their annual electricity consumption is essentially donated to the utility. While households may value larger systems for other reasons, additional financial incentives to installing capacity decrease with system size.¹⁷ Indeed, the statistical insignificance of the estimated coefficient for Log Size indicates that the premium for solar installation does not vary with system size.

Allowing capitalization to vary by neighborhood characteristics demonstrates that the addition to a home's market value from solar panels varies across neighborhoods by environmental ideology, income, and education levels. Tables 6 and 7 report estimates of Eq. (2) that indicate that the sales price premium for solar panel installations does vary with neighborhood characteristics. In each case, the capitalization of solar panels follows a pattern that would be predicted by the measure of environmental ideology, income, or education. Neighborhoods with relatively high Prius concentrations and College graduate share capitalize solar panels at a higher value with statistically significant coefficients. While the coefficients for heterogeneous capitalization by Green party and Democrat registrant share and median income have the expected positive signs, they are not statistically significantly different from zero. In contrast, solar panels provide statistically significantly less of a premium to home sales in neighborhoods with a larger share of trucks.

Our final hedonic specification suggests that our estimates are not driven by unobserved home upgrades besides solar panel installation (see Table 8). Our capitalization estimate of 6.2% in the smaller subsample of San Diego City and Escondido is robust to the inclusion of our building permit measures. Our estimates suggest that remodeling a kitchen or

¹⁵ All dollar amounts are adjusted to 2010 dollars using the "All items less shelter" consumer price index from the Bureau of Labor Statistics.

¹⁶ Consumer electricity prices in San Diego County are tiered by monthly consumption, with each household allocated a geography specific baseline amount of electricity (from 9.6 kW h along the coast to 16.4 kW h per month in the inland desert during the summer) at a relatively low price (currently \$0.039/kW h during the summer months) with an up to five fold increases for above baseline consumption (the top of four tiers is \$0.197/kW h during the summer for all consumption over 200% of the baseline). Households pay for electricity use in excess of what is produced by the panels at any given point in time.

¹⁷ Because of these institutional factors, estimated or actual household specific expected electricity demand is necessary for a complete accounting of the financial benefit of installing a system as a function of system size, and is beyond the scope of this paper.

Table 6
Hedonic OLS regression estimates of log price on solar panels with neighborhood characteristic interaction.

Variable	Prius share Coeff. (S.E.)	Truck share Coeff. (S.E.)	Green share Coeff. (S.E.)	Dems share Coeff. (S.E.)	Log Med income Coeff. (S.E.)	College grads Coeff. (S.E.)
Solar _{ijt}	−0.002 (0.022)	0.198*** (0.078)	0.031** (0.014)	−0.027 (0.047)	−0.156 (0.277)	−0.022 (0.026)
NbhdVar _j * Solar _{ijt}	0.076** (0.038)	−0.004** (0.002)	0.009 (0.022)	0.002 (0.002)	0.017 (0.025)	0.001* (0.0005)
Home characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Census tract quarter fixed effects (578 tracts, 56 quarters)	29,697	29,697	30,420	30,420	30,420	30,420
Observations	349,108	349,108	364,985	364,985	364,985	364,985
Sales with solar	319	319	329	329	329	329
R ² within; overall	0.64; 0.33	0.64; 0.33	0.64; 0.34	0.64; 0.34	0.64; 0.34	0.64; 0.34

***, **, * Significant at 1%, 5%, 10% levels, respectively; A joint test rejects that both $\alpha_0 = 0$ and $\alpha_1 = 0$, indicating that the solar effect, $\alpha_0 \text{Solar}_{it} + \alpha_1 N_j * \text{Solar}_{it}$, is statistically significant in all models.

Table 7
Hedonic OLS regression estimates of solar on log price with building permits.

Variable	Baseline Coefficient (Std error)	Major renovation Coefficient (Std error)	High value renovation Coefficient (Std error)	Any permit Coefficient (Std error)
Solar _{ijt}	0.062*** (0.016)	0.062*** (0.016)	0.060*** (0.016)	0.062*** (0.016)
Building Permit _{ijt}		0.025*** (0.007)	0.056*** (0.005)	−0.036*** (0.001)
Home characteristics	Yes	Yes	Yes	Yes
Census tract quarter fixed effects (578 tracts, 51 quarters)	13,416	13,416	13,416	13,416
Observations	136,389	136,389	136,389	136,389
Sales with solar	122	122	122	122
Sales with permit		725	1,411	20,324
Sales with solar and permit		4	12	25
R ² within; overall	0.57; 0.31	0.57; 0.31	0.57; 0.31	0.57; 0.32

*** Significant at the 1% level.

Table 8
Repeat sales GLS regression estimates of log of sales price ratio on added solar.

Variable	Baseline Coefficient (Std error)	System Size Coefficient (Std error)
Solar _{ijt}	0.036** (0.018)	0.611** (0.277)
Log Size (watts) * Solar _{ijt}		−0.073** (0.035)
Census tract specific HPIs	110	110
Observations	80,182	80,164
Sales with solar	160	160
R ²	0.76	0.76

** Significant at the 5% level.

bath or replacing a roof or HVAC system has a small impact on price, while high value renovations with costs similar to solar panels are estimated to have a similar value on home prices.

6.3. Repeat sales estimates

The results of our hedonic specification are largely replicated in our repeat sales approach. All of the presented results are based on three stage GLS estimates, with observations in the final stage weighted based on time between sales, and

Table 9
Sacramento hedonic OLS regression estimates of log sales price on solar panels.

Dependent variable: Log(sale price)	Baseline		Street
	Mean	Coefficient (Std error)	Coefficient (Std error)
Solar	0.003	0.04 (0.014)***	0.073 (0.026)***
Solar will be installed	0.003	0.009 (0.013)	0.009 (0.013)
Solar concurrently installed	0.001	0.024 (0.030)	0.065 (0.041)
Solar home on solar street			–0.046 (0.030)
Log(acres)	–1.803	0.156 (0.002)***	0.156 (0.002)***
Swimming pool	0.116	0.076 (0.002)***	0.076 (0.002)***
Log (ft ²)	7.365	0.559 (0.004)***	0.559 (0.004)***
Bathrooms	2.201	0.018 (0.002)***	0.018 (0.002)***
Constant		8.523 (0.028)***	8.523 (0.028)***
Year built dummies		Y	Y
Zip code/year/month Dummies		Y	Y
Observations		90,686	90,686
Sales with solar		265	265
R ²		0.852	0.852

***, **, * indicate statistical significance at the 1%, 5%, 10% levels, respectively. Regressions include year built dummies. Average sales price is \$305,178.

controlling for jointly estimated census tract level repeat sales indexes.¹⁸ Our average capitalization estimate of 3.6% (see Table 8) implies that installing solar panels leads to an increase of \$20,194 from the first to the second sale when the average price of the first sale is \$558,100. Households who install panels thus recuperate more than their costs in subsequent sales even though our estimated value remains below our “replacement cost” measure of solar value. Our estimate of the contribution of system size to the capitalization rate suggests an anomalous large negative relationship.¹⁹ Neighborhood characteristics estimates in the repeat sales framework also indicate that the capitalization of solar panels depends on local preferences and incomes (results not shown).

7. Capitalization of Solar Homes: evidence from Sacramento County

We examine the robustness of our capitalization estimates using data on 90,686 single family home transactions in Sacramento County between January 2003 and November 2010. We believe that this is a 100% sample of all homes transacted in this period in the county. For each of these homes, we observe its sales date and sales price and its physical attributes. We are also able to identify every single family home in Sacramento County that has solar panels as of November 2010 and that was sold at least once between January 2003 and November 2010. For each of these 620 homes, we know the solar system’s installation date. Using the information on the installation date and the sales date, we are able to partition these homes into four mutually exclusive and exhaustive categories. A home can either not have solar panels, or it can have solar panels already installed at the time of the sale (true for 256 observations), concurrently have installed solar panels (52 observations), or in the future this same home will have solar panels installed but it does not have solar panels at the time of the specific sale (312 observations).²⁰ We also define a “solar” street as a street where at least two homes adjacent to each other have solar panels. These streets are more likely to be new developments and solar installation is cheaper when done on all homes in a new development.

We find that the premium for solar homes in Sacramento is 4% (see Table 9), similar to the premium for solar homes in San Diego (see Table 4). We find an even larger capitalization of 7% for a solar home in Sacramento that is not on a solar

¹⁸ OLS estimates of solar capitalization that do not correct for time between sales do not vary greatly from our GLS estimates.

¹⁹ Given the larger number of sales available for our hedonic estimate, we prefer the Log Size estimate in Table 4. We anticipate the reliability of this coefficient will improve with additional observations that will accumulate over time, and would be informed by an analysis of rate tiers and panel installation discussed in note 16 above.

²⁰ For the “concurrent” set of homes, we do not know if the home had solar panels when it was sold. Either the new home buyer installed solar panels after purchase or the developer installed solar panels.

street and a smaller one of 3% when it is on a solar street. Similar to our San Diego results, we fail to reject the hypothesis that there is no price premium for homes that will install solar panels in the future.

8. Conclusion

This study used a large sample of homes in the San Diego and Sacramento areas to provide some of the first capitalization estimates of the resale value of homes with solar panels relative to comparable homes without solar panels. Although the residential solar home market continues to grow, there is little direct evidence on the market capitalization effect. Using both hedonics and a repeat sales index approach we find that solar panels are capitalized at roughly a 3% to 4% premium. This premium is larger in communities with more registered Prius hybrid vehicles and in communities featuring a larger share of college graduates.

Our new marginal valuation estimates inform the debate led by Borenstein (2008) on whether expenditure on residential solar is a “good investment.” His analysis evaluates residential solar installations solely as a ‘pure’ investment good judged in terms of upfront cost and subsequent power generation. Our evidence suggests that similar to other home investments such as a new kitchen, solar installation bundles both investment value and consumption value. Some households may take pride in knowing that they are producers of “green” electricity and “warm glow” may triumph over present discounted value calculations in determining a household’s install choice.

Data appendix

Solar panel installations

California’s Emerging Renewables Program subsidized solar panel installations as early as 1999 and supported almost all installations through 2007, when it was replaced as the primary State subsidy regime by the California Solar Initiative, which continues today.²¹ Over 95% of the systems in our data are installed under these two programs. The New Solar Homes Partnership aims to encourage developers to include solar on new properties, and accounts for less than 1% of installations in our data. These programs are administered in areas of California serviced by public utilities, including San Diego County. A final program supported solar panel installations on rebuilding projects during 2005 to 2007 following wildfires in San Diego County.

Property records

The San Diego County Assessor maintains public records of characteristics and transactions of all property in the county for tax assessment purposes. We use a corresponding publicly available map file (GIS shapefile) of the boundaries of all county properties to determine the acreage of the lot on which each home is built. We also obtain information on the number of times the property has transacted in our dataset and the number of public mortgage default notices associated with the property.²² Homes are grouped spatially using the county property map and census tract and zip code boundary maps to assign each parcel number to the respective geography in which its property lies.²³ We use these groupings to construct spatial and temporal controls as well as for matching a home to the characteristics of its census tract and zip code. The assessor also maintains a record of each property transaction in the county. The date, sales price, and parcel number identifier of all single family home sales since 1983 is publicly available from these records, which form the dataset which is our source for sales prices and dates.

Our building permit data begin in 2003 for San Diego City and for Escondido. In San Diego City, building permits are required for “all new construction” including for “repair or replacement of existing fixtures, such as replacing windows.” Permits are also required for changes to a home’s “existing systems”; for example, moving or adding an electrical outlet requires a permit.²⁴ A permit is not required “wallpapering, painting or similar finish work” and for small fences, decks, and walks.²⁵

Neighborhood characteristics

We use voter registration summary statistics for each San Diego County Census tract in the year 2000 from the Berkeley IGS (see <http://swdb.berkeley.edu/>), zip code level automobile registration summary statistics from 2007, and 2000 Census tract level demographic as sources of descriptors of San Diego neighborhoods over which solar panel capitalization may

²¹ <http://www.gosolarcalifornia.org/about/gosolar/california.php>.

²² Default data are matched by parcel number from public records published online by the San Diego daily transcript.

²³ Maps were retrieved from www.sangis.org.

²⁴ Although not all improvements may be completed with a permit, as long as homeowners who install solar panels are not less likely than others to obtain permits for other improvements, including permitting activity in our capitalization regressions should provide evidence of the extent of bias due to unobserved home improvements and maintenance in our capitalization estimates.

²⁵ <http://www.sandiego.gov/development-services/homeowner/hometips.shtml#whendo>

vary. The voter registration summary files report the total number of registrants by political party affiliation for each census tract in California. From these reports we calculate the percent of voters in each tract who are Green Party registrants. Similarly, we calculate the Toyota Prius share of registered autos from zip code totals of year 2007 automobile registration data (purchased from R.L. Polk). We likewise calculate the percent registered Democrats and vehicles classified as trucks from the respective summary datasets. We obtain reported census tract median income and the percent of the over age 25 population who are college graduates from the 2000 Census.

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PACENow

March 25, 2012

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Sent via Federal eRulemaking Portal <http://www.regulations.gov> and E-mail to FHFA RegComments@fhfa.gov.

RE: RIN 2590-AA53 Mortgage Assets Affected by PACE Programs; Comments on Advanced Notice of Proposed Rulemaking and EIS Scoping Comments

PACENow submits this comment and guidance to the FHFA in response to the U.S. District Court ordered Advance Notice of Public Rulemaking (ANPR). 77 Fed. Reg. 3958 (January 26, 2012).

Property Assessed Clean Energy (PACE) programs promote a clear government policy goal to reduce energy use in buildings. They rely on a municipal assessment mechanism that has been used by state and local governments for decades to efficiently finance improvements to private property that further clear public policy objectives. Since its inception in 2008, PACE has been adopted (or was already authorized) in 28 states. On July 6, 2010, the Federal Housing Finance Agency (FHFA) issued a statement (the July 6th statement) prohibiting Fannie Mae and Freddie Mac (the Enterprises) from buying mortgages with senior lien PACE assessments, asserting that they are unlike other municipal assessments (and therefore undeserving of their senior assessment lien status), pose a “significant safety and soundness concern” to the mortgage industry, and lack adequate program standards and consumer protections. This has had the effect of almost entirely stopping the development of PACE programs authorized by state and local laws.

We believe the FHFA acted imprudently, without conducting adequate analysis, and to the detriment of the public good. Under 12 U.S.C. section 451(a)(1)(B)(v), a “principal duty of the Director” [of the FHFA] is to “ensure that . . . the activities of each regulated entity are consistent with the public interest.” PACE programs serve the public good in myriad ways and provide a valid means of promoting state, and local policy objectives. There is no evidence that they pose a “significant” risk to mortgage lenders. PACENow, and other PACE advocates, working with the White House and U.S. Department of Energy, developed and supported standards and guidelines that ensure that the interests of local governments, consumers, and mortgage lenders are protected.

PACENow urges the FHFA to rescind its July 6th statement and allow Fannie Mae and Freddie Mac to resume underwriting mortgages with PACE assessments, treating them no differently than other municipal taxes and assessments.

Public Policy Goals and PACE

Property Assessed Clean Energy (PACE) programs respond to a growing national consensus that state and local governments have a direct and legitimate public policy interest in promoting, facilitating, and financing energy efficiency (EE) and renewable energy (RE) projects for buildings, which use almost half the energy consumed in the United States and about three-quarters of the electricity¹. Energy conservation and development of on-site renewable energy systems clearly promote the public good by:

- Making the United States less reliant on imported fuels,
- Improving energy security for states and local communities by reducing their reliance on inter-state imports and strain on an already overloaded and outmoded grid system,
- Avoiding the costs of building new power plants and transmission systems,
- Saving money for property owners while enhancing the value of their buildings,
- Hedging property owners from rising and/or spiking fuel costs,
- Reducing air pollution caused by burning fossil fuels, which safeguards the environment, and
- Protecting the public's health and welfare by reducing air pollutants known to cause death and disease and the attendant costs that burden us all.

Economic Objectives Furthered by PACE

The enormous potential for economic output gains and job creation resulting from EE/RE projects is an equally important state and local government policy consideration. An economic study performed by ECONorthwest in 2011 predicts that every \$1 million of EE/RE project spending results in \$2.5 million in total economic output, roughly \$250 thousand in state and local taxes, and approximately 15 new jobs nationwide.² Another study conducted in 2011 by the United States Department of Energy on the economic impacts of the Boulder County (CO) Climate Smart (PACE) Loan Program found that \$9 million spent on EE/RE projects on 598 homes contributed, statewide, to more than \$7 million in personal income gains, just under \$30 million of total economic activity, and the creation of roughly 125 short-term jobs (that would have been sustainable on a longer term basis if the program had remained operational).³ Larger scale adoption of EE/RE measures nationwide could have enormous economic impact. A March 2012 report by Deutsche Bank and The Rockefeller Foundation finds that improving EE 30% in our

¹ Deutsche Bank Climate Change Advisors & the Rockefeller Foundation, "United States Building Energy Efficiency Retrofits: Market Sizing and Financing Models," March 2012, accessed March 2012. http://www.dbcca.com/dbcca/EN/investment_research.jsp.

² ECONorthwest, "Economic Impact Analysis of Property Assessed Clean Energy Programs (PACE)," April 2011, accessed March 2012. <http://pacenow.org/blog/wp-content/uploads/PACE-Econometric-Study-by-ECONorthwest-for-PACENow-5-4-11.pdf>.

³ U.S. Department of Energy, National Renewable Energy Laboratory, "Economic Impacts from the Boulder County, Colorado, ClimateSmart Loan Program: Using Property-Assessed Clean Energy Financing," July 2011, accessed March 2012. <http://www.nrel.gov/docs/fy11osti/52231.pdf>.

nation's homes built before 1980 would result in total investment of \$144 billion and over 1.7 billion total jobs.⁴

Establishment of Public Purpose and PACE

The nexus between public purpose and PACE has been clearly established in law by PACE enabling statutes, enacted by our elected legislatures, governors, and local municipal representatives, examples of which are provided below.

Florida Statutes – Section 163.08, Florida Statutes - Supplemental Authority for Improvements to Real Property, Excerpts 1(a) – 1(c)⁵:

“In chapter 2008-227, Laws of Florida, the Legislature amended the energy goal of the state comprehensive plan to provide, in part, that the state shall reduce its energy requirements through enhanced conservation and efficiency measures in all end-use sectors and reduce atmospheric carbon dioxide by promoting an increased use of renewable energy resources. That act also declared it the public policy of the state to play a leading role in developing and instituting energy management programs that promote energy conservation, energy security, and the reduction of greenhouse gases . . . Further, the installation and operation of qualifying improvements not only benefit the affected properties for which the improvements are made, but also assist in fulfilling the goals of the state's energy . . . policies. In order to make qualifying improvements more affordable and assist property owners who wish to undertake such improvements, the Legislature finds that there is a compelling state interest in enabling property owners to voluntarily finance such improvements with local government assistance . . . The Legislature determines that the actions authorized under this section, including, but not limited to, the financing of qualifying improvements through the execution of financing agreements and the related imposition of voluntary assessments are reasonable and necessary to serve and achieve a compelling state interest and are necessary for the prosperity and welfare of the state and its property owners and inhabitants.”

New York State General Municipal Law Article 5-L, Section 119-ee, Legislative findings and declarations⁶:

⁴ Deutsche Bank Climate Change Advisors & The Rockefeller Foundation, “United States Building Energy Efficiency Retrofits: Market Sizing and Financing Models,” March 2012, accessed March 2012. http://www.dbcca.com/dbcca/EN/investment_research.jsp.

⁵ Florida House of Representatives, CS/HB 7179, 2010 Legislature, accessed March 2012. <http://www.myfloridahouse.gov/Sections/Documents/loaddoc.aspx?FileName=h7179er.docx&DocumentType=Bill&BillNumber=7179&Session=2010>.

⁶New York State General Municipal Law Article 5-L, Section 119-ee, accessed March 2012. [http://public.leginfo.state.ny.us/LAWSSEAF.cgi?QUERYTYPE=LAWS+&QUERYDATA=\\$G MU119-EE\\$\\$@TXGMU0119-EE+&LIST=LAW+&BROWSER=BROWSER+&TOKEN%20=12896925+&TARGET=VIEW](http://public.leginfo.state.ny.us/LAWSSEAF.cgi?QUERYTYPE=LAWS+&QUERYDATA=$G MU119-EE$$@TXGMU0119-EE+&LIST=LAW+&BROWSER=BROWSER+&TOKEN%20=12896925+&TARGET=VIEW).

“The Legislature finds and declares that it is the policy of the state to achieve statewide energy efficiency and renewable energy goals, reduce greenhouse gas emissions and mitigate the effect of global climate change, and advance a clean energy economy; and that to achieve such policy and goals the state must promote the deployment of renewable energy systems and energy efficiency measures throughout the state; and that municipalities would fulfill an important public purpose by providing loans to property owners for the installation of renewable energy systems and energy efficiency measures.”

California Streets and Highways Code Sections 5898.10 – 5898.15, Section 5898.14⁷:

“(a) The Legislature finds all of the following: (1) Energy and water conservation efforts, including the promotion of energy efficiency improvements to residential, commercial, industrial, agricultural, or other real property are necessary to address the issue of global climate change. (2) The upfront cost of making residential, commercial, industrial, agricultural, or other real property more energy and water efficient prevents many property owners from making those improvements. To make those improvements more affordable and to promote the installation of those improvements, it is necessary to authorize an alternative procedure for authorizing assessments to finance the cost of energy and water efficiency improvements.

(b) The Legislature declares that a public purpose will be served by a voluntary contractual assessment program that provides the legislative body of any public agency with the authority to finance the installation of distributed generation renewable energy sources and energy or water efficiency improvements that are permanently fixed to residential, commercial, industrial, agricultural, or other real property.”

PACE Removes Barriers

A range of barriers hamper public policy goals to promote EE/RE projects in homes. In its September 2011 report on Energy Efficiency Financing programs, for example, the American Council for an Energy Efficient Economy found that “most [loan] programs are not penetrating the market of potential consumers.” More than half of the 24 programs ACEEE studied from 13 states had a participation rate of less than .5% of potential customers. The report flags a number of problems inherent to existing programs that make scaling of energy efficiency unlikely with existing models, including: a lack of available funding from private sector capital providers, the need for government or utility imposed public service charges to fund interest rate buy-downs, an inability to package small individual loans to create broader market liquidity, and a lack of public awareness

⁷ Streets and Highways Code Sections 5898.10 – 5898.15.15, accessed March 2012.
<http://www.leginfo.ca.gov/cgi-bin/displaycode?section=shc&group=05001-06000&file=5898.10-5898.15>.

or understanding of the opportunities to benefit from EE⁸. The failure of other programs and a multitude of alternative financing mechanisms has directly led to the adoption of PACE by state and local governments. PACE programs have many features that remove barriers that impede the success of other EE/RE financing programs and models:

1. **Local Focus:** Perhaps most importantly, PACE is a local government initiative that supports focused education and marketing efforts, which are proven to be more effective in motivating homeowners to act than those directed by states or the federal government. Statewide programs tend to be remote and are inadequately staffed and/or marketed to reach homeowners effectively. They are also unable to mobilize local trusted source or peer based marketing efforts. PACE programs create a critical nexus between a local government and its homeowner community. There are proven benefits of local initiatives, such as improved service delivery, strengthened democratic participation, and ameliorated skills and resource utilization.⁹
2. **Capital Availability:** PACE can provide access to almost unlimited amounts of private capital using an assessment mechanism and credit structure that is broadly understood and accepted in the fixed income capital markets.
3. **Quick Payback:** Relatively long-term assessment financing can make projects immediately cash flow positive (which saves homeowners money, makes it easier for them to pay their mortgages, and increases the value of their homes, all to the benefit of their mortgage lender).
4. **Transferability:** Owners who are unsure how long they will own a home are reluctant to take on projects if they fear they will need to pay off a loan balance before a breakeven point. Like all municipal taxes and levies, PACE assessments remain with the property and are assumed by a subsequent buyer (who continues to benefit from the financed measures).

⁸ Sara Hayes, Steven Nadel, Chris Granda, and Kathryn Hottel, "What Have We Learned From Energy Efficiency Financing Programs?" September 2011, accessed March 2012. <http://aceee.org/research-report/u115>.

⁹ Several studies and white papers ascertained the benefits of local initiatives, by pointing out service delivery improvements, positive impacts on democratization, and opportunities for efficient partnership-building among the local actors. The following studies support our assertions:

Derick W. Brinkerhoff & Omar Azfar, "Decentralization and Community Empowerment: Does community empowerment deepen democracy and improve service delivery?" U.S. Agency for International Development Office of Democracy and Governance, October 2006, accessed March 2012. http://pdf.usaid.gov/pdf_docs/PNADH325.pdf.

Eric Mackres, Elena Alschuler, Amy Stitely, & Erin Brandt, "The Role of Local Governments and Community Organization as Energy Efficiency Implementation Partners: Case Studies and a Review of Trends," American Council for an Energy-Efficient Economy, February 2012, accessed March 2012. <http://www.aceee.org/white-paper/the-role-of-local-actors>.

5. **No Subsidies:** PACE can access private capital at the same attractive interest rates as other municipal assessment projects for existing homes, which means interest rates need not be subsidized at the expense of others.
6. **Aggregation:** PACE assessments based on standard financing mechanisms and protocols can be aggregated and securitized, providing scalability and a liquid secondary market that will further reduce borrowing costs and, as the ACEEE report notes, is non-existent for alternative funding measures.

FHFA Objections to PACE – Validity of PACE Assessments

The FHFA made assertions regarding the character and validity of PACE assessments in its July 6th statement that are unsupported and incorrect. FHFA asserts that “PACE loans are unlike routine tax assessment . . . [that] The size and duration of PACE loans exceed typical tax programs and do not have the traditional community benefits associated with taxing initiatives.”

Similarity to Other Assessments

To the contrary, PACE assessments are like other “routine” tax assessments. As noted above, the municipal assessment process has been used for decades by state and local governments to finance a broad range of projects that benefit real property owners. There are over 37,000 special districts in the United States today that are used to finance parks, streetlights, water and sewer systems, sidewalks, septic tank upgrades, seismic strengthening, and neighborhood beautification projects, among others.¹⁰ The common feature of these otherwise disparate endeavors is the finding, by our elected governmental representatives, that they each further the health, safety, and/or welfare of the public. Reducing demand for energy in buildings, for all of the reasons noted above, clearly promotes the public’s health, safety, and welfare.

FHFA’s claims that PACE assessments exceed the size and duration of “typical tax programs” is factually incorrect. Municipalities finance projects using taxes and assessments for periods linked to the average life of the asset. PACE financing is similarly constrained. A water and sewer plant might be financed over 30 years (and in some jurisdictions, up to 40 years). Based on the measures adopted, PACE assessments could finance projects for a period of from 10 to 20 years. For expensive municipal projects (like water and sewer facilities), costs per home can far exceed a typical PACE project. Furthermore, assessments for parks, water and sewer systems, and countless other projects remain on the tax rolls in perpetuity, and unlike PACE assessments, rise over time as the cost of maintaining them increases with inflation.

¹⁰ U.S Census Bureau, “Local Governments and Public School Systems by Type and State: 2007,” accessed March 12. <http://www.census.gov/govs/cog/GovOrgTab03ss.html>.

Voluntary versus Mandatory

FHFA's October 14, 2010 filing of a motion to dismiss the lawsuit in the United States District Court in the Northern District of California (Motion to Dismiss) that has led to this ANPR procedure, notes that "[u]nlike traditional assessments, PACE programs are voluntary."

While PACE is voluntary, that fact is also irrelevant. Most municipal projects financed with assessments begin with public information sessions, followed by a public hearing, and then some form of referendum that give property owners the right to approve or disapprove the measure. When assessments are imposed on all properties after most property owners have approved, two conditions will generally apply: (1) the measure will provide a benefit that all property owners have the ability to enjoy in the same manner and to a like degree, and (2) the failure to assess all property owners would likely make the measure impossible to finance. The "free rider" problem must necessarily be avoided if economies of scale are required to implement the project. For example, a new sewer system could result in substantial annual assessments. Each individual property owner might recognize the collective need for the proposed system, to protect the environment and drinking water supplies, for example, but each property owner, given the opportunity to opt-out, might choose to remain instead with a functioning individual septic system.

There is no system-wide solution to making buildings more energy efficient. There is clearly no way to encase a community in some sort of shield or bubble that would maintain a constant temperature or trap and remove greenhouse gas emissions or other pollutants. And, there is no rationale for making a homeowner whose dwelling is already efficient, pay an assessment to make his neighbor's equally so. While paying for my neighbor's improvements might benefit me to an extent, by contributing to a cleaner environment, I cannot benefit in a like manner, since only my neighbor's home will realize added cost savings, have enhanced comfort, and achieve a higher market value.

While less common than mandatory assessments, there are examples of other opt-in assessment programs that recognize the lack of a free rider problem and allow individual property owners to receive benefits and pay an assessment in return. Examples include geologic hazard abatement districts in California¹¹, and septic tank improvement programs in Massachusetts.¹² Ironically, FHFA uses against PACE, the voluntary opt-in feature that protects homeowners and lenders by allowing only those homeowners who would benefit from a project to incur the cost associated with it.

¹¹ Daniel J. Curtin Jr. and Bryan W. Wenter, "Areas Prone to Landslides Can Use Abatement Districts Land Use Law," California Association of Geological Hazard Abatement Districts, Daily Journal - July 05, 2005, accessed March 2012. <http://ghad.org/dailyjournal.html>.

¹² Massachusetts Department of Environmental Protection, "The Community Septic Management Program," accessed March 2012. <http://www.mass.gov/dep/water/wastewater/csmphl.htm>.

Semantic Distinction Between Loans and Assessments

FHFA insists that PACE assessments are loans instead of assessments,¹³ noting use of the word “loan” in some (but not all) enabling legislation, on various program websites, and in common parlance to buttress its assertions that PACE is meaningfully different from other assessments and undeserving of its senior lien status. Whenever a municipal government funds a project on behalf of property owners, typically by borrowing at some rate of interest, it is “lending” money to its residents, who repay that capital, with interest, in the form of a tax or assessment, but semantic arguments miss the over-riding point. Whether referred to as a loan, or a “benefit financing”, the underlying government objective to use lawfully established benefit district financing to achieve a public policy objective is what matters.

FHFA cites a number of factors that it believes distinguish loans from assessments. In its ANPR, for example, it notes that a homeowner “selects the contractor who will perform the energy retrofit”, but fails to note that programs, like Babylon’s, require homeowners to use contractors from a government approved list. FHFA also notes in the ANPR, that “[e]ach participating property owner . . . owns the energy retrofit fixtures and must repair the fixtures should they become inoperable, including during the time the PACE loan remains outstanding.” Other municipally assessed improvements, such as sidewalks, may be owned by a resident or are the responsibility of the resident to repair and maintain. FHFA states, regarding PACE, that “no uniform national standards exist.”, but fails to note that no such “uniform national standards” exist for any other type of municipal assessment project and ignores the extensive efforts among PACE proponents, the White House, and U.S. Department of Energy (among others) to do exactly that.

Request for Further Analysis

PACENow is not aware of any authority vested in the FHFA to pick and choose among assessment programs that have their basis in valid state and local laws. We request that the FHFA provide evidence of its statutory right to do so and legal justification for any decision it makes in this rulemaking process to ignore what are certainly validly imposed laws in states that have enabled PACE.

FHFA Objections to PACE – Safety and Soundness Concerns

FHFA’s July 6th Statement, Motion to Dismiss, and ANPR are replete with references to risk, such as: “PACE loans . . . pose unusual and difficult risk management challenges for lenders, servicers and mortgage securities investors”, “PACE liens present significant risks to certain assets and property of the Enterprises . . . and pose unusual and difficult risk management challenges”, “[i]n all its statutory capacities, FHFA is empowered to act decisively to avoid risk to the Enterprises,” and “FHFA has determined that...[PACE] programs present significant safety and soundness concerns.”

¹³ Federal Housing Finance Agency, “RE: Property Assessed Clean Energy (PACE) Programs,” June 10, 2011, accessed March 2012. <http://pacenow.org/blog/wp-content/uploads/FHFA-Letter-to-Lungren-Thompson-and-Hayworth-re-PACE-programs-6.10.2011.pdf>.

Risk Management

All mortgage underwriting entails risk management. There is always the risk, for example, that a homeowner will face changing circumstances that could result in an inability to pay. For decades, lenders have managed the risks associated with property taxes and assessments. Municipal governments often respond to reductions in non-property tax revenues by raising taxes substantially. School districts regularly expand and improve facilities with resultant increases, often substantial in both dollar and percentage terms, to homeowners. Municipal water and sewer districts create and upgrade facilities at costs that result in substantial increases to assessments. The Enterprises and other mortgage lenders have long demonstrated their ability to manage all of these risks that are fundamentally no different than those resulting from PACE assessments, with one key difference. To our knowledge, PACE assessments are the only example of a municipal assessment that can reduce net costs to a homeowner and protect against energy cost increases and spikes.

PACE Program Experience to Date

In his June 10, 2011 response¹⁴ to an April 20, 2011 letter from Congresswoman Nan Hayworth, Congressman Dan Lungren, and Congressman Mike Thompson to FHFA's Acting Director Edward DeMarco seeking clarification on "what data or financial modeling serves as the basis for FHFA's claim that PACE programs pose significant safety and soundness concerns?", Alfred Pollard, FHFA's General Counsel, replied that, "FHFA's analysis was based on its investigation of PACE legislation and programs ... no econometric modeling was involved."

Clearly, investigation of PACE programs was inadequate or premature to support the view that PACE poses significant safety and soundness concerns. Actual program data shows this is simply untrue. Sonoma County (CA), Boulder County (CO) and Babylon (NY) conducted a thorough review of all properties financed to date by their PACE programs. Their results, as provided to *PACENow*, are summarized in the table below.

Program	Homes	\$ (Mil)	# Def	% Def
Babylon	652	6.53	1	0.15%
Boulder	612	9.78	7	1.14%
Sonoma County	1,459	45.50	16	1.10%
	2,723	61.81	24	0.88%

Source: Program Administrators
Note: Palm Dessert (CA) is still compiling data

It is not known, based on the information available to program administrators, whether any of the defaults actually resulted in a loss to the Enterprises, or for that matter, a loss of any magnitude to any mortgage lender. Homes in default on their mortgages may have had positive equity, and some may have been current on their taxes and assessments.

¹⁴ Federal Housing Finance Agency, "RE: Property Assessed Clean Energy (PACE) Programs," June 10, 2011, accessed March 2012. <http://pacenow.org/blog/wp-content/uploads/FHFA-Letter-to-Lungren-Thompson-and-Hayworth-re-PACE-programs-6.10.2011.pdf>.

While there may have been defaulted homes with negative equity and assessments in arrears, it is equally possible that the sale price of the home in foreclosure was higher than it would have been, absent the improvements.

It is entirely reasonable to conclude, however, that the magnitude of defaults in this sample does not constitute a significant concern to the safety and soundness of the mortgage industry. Indeed, from 2008 to the present, during one of the worst housing markets in history, PACE program homes clearly defaulted at significantly lower rates than non-PACE improved homes in their communities.

Protections to Lenders that Result from PACE

PACE programs and the assessment mechanism protect the Enterprises, other mortgage lenders, and the financial sector at large in a number of ways.

1. **Non-Acceleration:** Like any municipal tax or assessment, PACE assessments remain with a property upon sale, whether voluntary or as the result of a foreclosure. A lender's exposure is limited, therefore, only to assessments in arrears. Non-acceleration ensures that an unpaid future balance will be assumed by a subsequent buyer and not netted from proceeds of the sale. In its Motion to Dismiss, FHFA asserts that "any rational purchaser will treat his "assum[ption] [of]... the remaining PACE obligation ... as a cost, and will reduce his cash bid accordingly." FHFA belies its own argument when it refers to rational behavior. No rational buyer of a home would fail to factor the lower costs of operating a home with EE/RE improvements in a pricing decision. A rational buyer will pay more for a home when savings exceed assessment costs. By the FHFA's logic, no rational person would ever undertake an EE/RE project, or for that matter, vote for a sewer project, if doing so would immediately devalue the property by the present value of all future assessments.
2. **Value from Improvements:** A number of studies demonstrate that EE/RE projects increase the market value of homes.¹⁵ Homes that require less energy, or generate energy on-site, are less expensive to operate. Buyers are also increasingly aware that such homes are healthier and more comfortable.

¹⁵ Several studies showed an increase in property values due to EE/RE projects:

Ben Hoen, Ryan Wiser, Peter Cappers, and Mark Thayer & Ernest Orlando Lawrence Berkley National Laboratory. "An Analysis of the Effects of Residential Photovoltaic Energy Systems on Home Sales Prices in California," April 2011, accessed March 2012.

<http://eetd.lbl.gov/ea/emp/reports/lbnl-4476e.pdf>.

Bryan Bloom, Mary Ellen C. Nobe, and Michael D. Nobe, "Valuing Green Home Designs: A Study of ENERGY STAR Homes," *JOSRE*, 3 no. 1 (2011), accessed March 2012.

http://www.costar.com/uploadedFiles/JOSRE/JournalPdfs/06.109_126.pdf.

Rick Nevin & Gregory, "Watson Evidence of Rational Market Valuations for Home Energy Efficiency," *The Appraisal Journal*, October 1998, accessed March 2012. [http://mpr.ub.uni-muenchen.de/35343/1/Nevin-](http://mpr.ub.uni-muenchen.de/35343/1/Nevin-Watson_1998_APJ_Market_Value_of_Home_Energy_Efficiency.pdf)

[Watson_1998_APJ_Market_Value_of_Home_Energy_Efficiency.pdf](http://mpr.ub.uni-muenchen.de/35343/1/Nevin-Watson_1998_APJ_Market_Value_of_Home_Energy_Efficiency.pdf).

3. **Savings to Owners:** PACE assessments fund EE/RE projects that produce savings to homeowners, often immediately. Improved cash flow for a property owner enhances his or her ability to make mortgage payments and lowers default risk to lenders.
4. **Hedge Against Cost Increases:** Reducing the energy needs of a home with PACE creates a permanent hedge against rising (or spiking) fuel costs in the future.¹⁶
5. **Economic Activity:** FHFA, in admitting that it has conducted no econometric modeling, has failed to factor the risk mitigating impact of increased economic activity and job creation that results from PACE.

PACE Standards and Guidelines that Protect Lenders and Homeowners

The risks of lenders and homeowners are clearly intertwined, and PACE programs have and can be designed to mitigate them. As noted above, PACENow and many other PACE advocates worked closely with the White House and U.S. Department of Energy on PACE program best practices and guidelines for implementation (DOE Guidelines).¹⁷ Many of these were incorporated and/or expanded upon in the “PACE Assessment Protection Act of 2011” (HR 2599), which is currently in the U.S. House of Representatives.¹⁸ They include the following features:

1. **Equity Test:** To qualify for a PACE assessment, homes would need to meet a loan to value test. HR 2599 would require there be at least 15% positive equity in a participating home.
2. **Limit on Project Size:** Projects are limited in size relative to the current market value of a home.
3. **Past Performance Criteria:** Homeowners need to be current in their tax and mortgage payments, and demonstrate a history of on-time payments.
4. **Absence of Problems:** Homes need to be free of outstanding involuntary liens.
5. **Audit/Evaluation Requirements:** A home must be evaluated with specific, proven measures to determine the appropriateness and effectiveness of EE/RE measures.
6. **Contractor Qualifications:** Work must be performed by contractors that meet specific accreditation standards.
7. **Demonstration of Savings:** Projects must demonstrate a positive savings to investment ratio.

Request for Further Analysis

FHFA cites its statutory mandate to “avoid risk to the Enterprises” to justify its ban on PACE. Clearly, the total avoidance of risk is not its sole mandate; FHFA must regularly weigh risk against benefit. FHFA, in the statutorily required analysis that must precede

¹⁶ Dan Barry, “In Fuel Oil Country, Cold That Cuts to the Heart,” The New York Times, February 3, 2012, accessed March 2012. http://www.nytimes.com/2012/02/04/us/maine-resident-struggles-to-heat-his-home.html?_r=3&hp.

¹⁷ U.S Department of Energy, “Guidelines to Pilot PACE Financing Programs,” May 7, 2010, accessed March 2012. http://pacenow.org/documents/arra_guidelines_for_pilot_pace_programs.pdf.

¹⁸ H. R. 2599, 112th Congress, 1st Session, July 20, 2011, accessed March 2012. <http://pacenow.org/blog/wp-content/uploads/HR-2599-PACE-Protection-Act-of-2011.pdf>.

establishment of a rule for PACE programs must develop analysis that takes the following into account, to avoid acting capriciously:

1. The extent to which increased home value that results from EE/RE projects outweighs the risk of loss associated with a year or two of assessments in arrears.
2. The extent to which increased economic activity and job creation resulting from PACE serves the public interest and reduces the risk of default on all homes, to the benefit of the Enterprises and other mortgage lenders.
3. The extent to which hedging homeowners from rising energy costs and/or energy price spikes safeguards them and reduces the risk of defaults to the Enterprises.
4. The extent to which the non-acceleration feature of assessments protects the financial sector broadly, many lending institutions directly, and the Enterprises by extension, from total losses resulting from the complete extinguishment of alternative loan products in the event of mortgage defaults.
5. Under its requirement to perform an Environmental Impact Study (EIS), the costs to the public of continued degradation of the environment that result from a failure to make homes more energy efficient and less reliant on fossil fuels.

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Proposed Action

FHFA's Proposed Action would "direct the Enterprises not to purchase any mortgage that is subject to a first-lien PACE obligation or that could become subject to first-lien PACE obligations without the consent of the mortgage holder."¹⁹ The Proposed Action in FHFA's EIS should be changed to provide that the Enterprises *may* purchase mortgages subject to a first-lien PACE obligation or that could become subject to first-lien PACE obligations, so long as the applicable PACE program conforms to standards established by FHFA through this rulemaking, such as those set forth in H.R. 2599 or the DOE Guidelines. This revised Proposed Action would address the safety and soundness concerns raised in the ANPR and mitigate financial risks to the Enterprises, while respecting the well-established rights of local governments to place liens on property to secure assessments and to protect public health and safety.

No Action Alternative

PACENow also supports the No Action Alternative: to withdraw the July 6th statement and subsequent directives, allowing the Enterprises to purchase mortgages secured by properties with outstanding first-lien PACE obligations. If FHFA adopts the No Action Alternative, it can still address the safety and soundness concerns raised in the ANPR by working collaboratively with other agencies and state and local governments to shape guidelines such as those established in H.R. 2599 or the DOE Guidelines.

Other Alternatives/FHFA Question 17

If FHFA does not alter the Proposed Action, one of the alternatives analyzed in the EIS should be revisions to the FHFA's July 6th statement to provide that the Enterprises are permitted to purchase mortgages subject to a first-lien PACE obligation or that could

¹⁹ ANPR at 3963.

become subject to first-lien PACE obligations so long as the applicable PACE program conforms to standards and guidelines such as those established in HR 2599 or the DOE Guidelines. In addition, this alternative should include directing the Enterprises to rescind their May 5, 2010 advisories. This reasonable alternative would reduce or avoid known or potential adverse environmental impacts associated with the proposed action while ensuring that the Enterprises operate in a safe and sound manner. In addition, this alternative would permit local governments to move forward with the adoption of PACE programs and implementation of previously-approved PACE programs. This alternative would also enable residential energy efficiency upgrades and the installation of renewable energy systems around the country, thereby conserving precious non-renewable sources of energy and reducing the many negative environmental impacts of traditional energy production (such as greenhouse gas emissions, air and water pollution, takings of endangered species, ecosystem modification and aesthetic impacts). Finally, this alternative would include safeguards to address the financial risks to the Enterprises about which FHFA has articulated concerns, through controls that result from due process and respect state police powers.

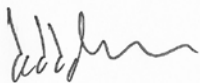
Summary of PACENow's Proposed Rule

PACENow urges FHFA to adopt a rule that rescinds the July 6th statement. The Proposed Rule should provide that the Enterprises are permitted to buy residential mortgage loans on properties subject to PACE obligations originated by programs that conform to standards established via this rulemaking proceeding, such as those set forth in the DOE Guidelines and H.R. 2599.

Conclusion

PACENow appreciates this opportunity to comment on FHFA's ANPR. We respectfully request that the Agency give PACE the full and objective consideration that the law requires.

Sincerely,



David Gabrielson
Executive Director



Title: Delinquencies and Foreclosures Decline in Latest MBA Mortgage Delinquency Survey

Source: MBA

Date: 2/16/2012

WASHINGTON, D.C. (February 16, 2012) — 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.

Change from last year (fourth quarter of 2010)

Given the challenges in interpreting the true seasonal effects in these data when comparing quarter to quarter changes, it is important to highlight the year over year changes of the non-seasonally adjusted results.

Compared with the fourth quarter of 2010, the foreclosure inventory rate decreased 150 basis points for prime ARM loans and decreased 15 basis points for prime fixed loans, while the foreclosure inventory rate increased 79 basis points for subprime fixed, 17 basis points for subprime ARM loans, 24 basis points for FHA loans and two basis points for VA loans.

Over the past year, the non-seasonally adjusted foreclosure starts rate decreased 22 basis points for prime fixed loans, 55 basis points for prime ARM loans, 42 basis points for subprime fixed, 45 basis points for

subprime ARM loans, 14 basis points for FHA loans and 28 basis points for VA loans.

For a copy of the survey, please contact Matt Robinson at mrobinson@mortgagebankers.org or 202-557-2727. If you are not a member of the media and would like to purchase the survey, please e-mail MBAResearch@MortgageBankers.org.

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The Mortgage Bankers Association (MBA) is the national association representing the real estate finance industry, an industry that employs more than 280,000 people in virtually every community in the country. Headquartered in Washington, D.C., the association works to ensure the continued strength of the nation's residential and commercial real estate markets; to expand homeownership and extend access to affordable housing to all Americans. MBA promotes fair and ethical lending practices and fosters professional excellence among real estate finance employees through a wide range of educational programs and a variety of publications. Its membership of over 2,200 companies includes all elements of real estate finance: mortgage companies, mortgage brokers, commercial banks, thrifts, Wall Street conduits, life insurance companies and others in the mortgage lending field. For additional information, visit MBA's Web site: www.mortgagebankers.org.

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June 19, 2012

Summary: Economic Impact Analysis of Property Assessed Clean Energy Programs

Date: April 2011

Author: Randall Pozdena, PhD Senior Economist and Managing Director, and Alec Josephson MA Senior Economist and Director of Economic Impact Modeling

Link: <http://pacenow.org/blog/wp-content/uploads/PACE-Econometric-Study-by-ECONorthwest-for-PACENow-5-4-11.pdf>

ECONorthwest research for PACENow suggests that PACE programs have significant positive economic and fiscal impacts. \$4 million in spending on projects across four cities generated \$10 million in gross revenue, \$1 million in combined federal, state, and local tax revenue, and 60 jobs. Under the most likely conditions, the reduction in the cost and instability of a building's purchased energy requirements should bolster property values in a manner that balances the lenders' concern about the lien undermining their mortgage loan collateral.

ECONorthwest carried out hypothetical projects across four cities to analyze the output, employment, and tax impact of purchase activity of PACE projects, using an input-output model system. ECONorthwest, using the IMPLAN model of analysis, found that PACE projects have two potential economic impacts: spending, and changes in the burden of utility bills.

PACE drives spending through the installation of energy efficient equipment and the implementation of renewable energy measures. Direct impacts of purchase activity include the deployment of capital and labor to install new equipment, as well as output of labor services and materials. This input-output creates the addition of jobs and increased capital project activity. It also impacts taxes, taking the form of local, state, and federal tax payments associated with the PACE model of payment. Indirect impacts on the economy include impacts on labor services, increased property value, and marginal increases in tax payments in the supply-chain. Induced impacts consist of increased income and increases in the amount spent on purchasing other goods in the supply-chain. PACE also changes the burden in utility bills, and subsequently the effective cash resources of the household to support other household spending.

ECONorthwest ultimately discovered the following about PACE projects that install photovoltaic cells, and PACE energy efficiency projects:

- Photovoltaic PACE projects in each of the four cities' effects on the US as a whole:
 - increased personal income by approximately \$3.325 million
 - added 60 jobs
 - increased total tax revenue by \$1.102 million
- Energy efficiency projects in each of the four cities' effects for the US as a whole:
 - increased total economic output by \$10.925 million
 - increased personal income by \$3.232 million
 - added 61 jobs
 - increased total tax revenue by \$1.058 million



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

NREL is a national laboratory of the U.S. Department of Energy, Office of Energy Efficiency & Renewable Energy, operated by the Alliance for Sustainable Energy, LLC.

Technical Report
NREL/TP-7A20-52231
July 2011

Contract No. DE-AC36-08GO28308

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Prepared under Task No. SM10.1710

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Sponsor

This report was made possible through funding from the U.S. Department of Energy (DOE) Solar America Communities program. The Solar America Communities program is designed to increase the use and integration of solar energy in communities across the United States. Through federal-local partnerships and nationwide outreach, DOE supports local governments' efforts to accelerate adoption of solar energy. To learn more, please visit www.solaramericacommunities.energy.gov.

Acknowledgment

This publication was developed for the National Renewable Energy Laboratory by MRG & Associates under Subcontract No. AGG-0-40291-01. The document is not legal or tax advice or a legal opinion on specific facts or circumstances. The contents are intended for informational purposes only. The authors are solely responsible for errors and omissions.

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 loans¹ 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.

¹ 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.²
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.

² 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.

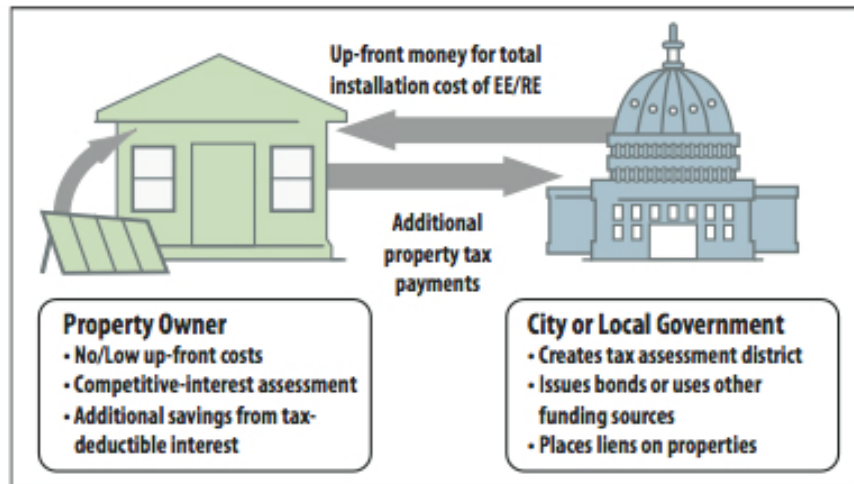


Figure 1. Basic PACE financing process. Source: NREL 2010

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.³

³ 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).

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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).

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.

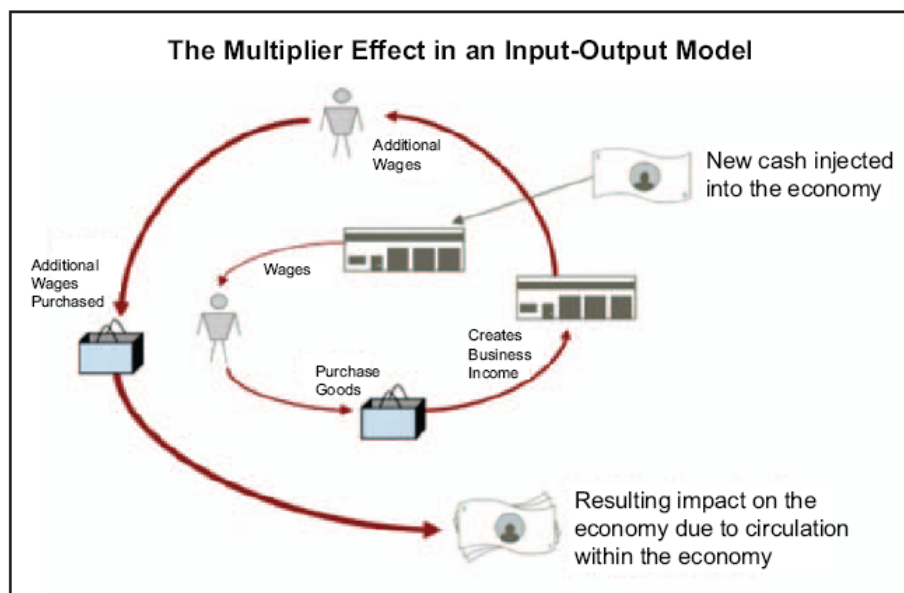


Figure 2. The recirculation of dollars spent on energy efficiency or renewable energy measures is known as the multiplier effect.

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.⁴ 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.

⁴ 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 choose 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.⁵ 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

⁵ 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.

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) ^a	\$9,007,868		
Total Measures Installed	1,207		
Total Expenditures (for measures installed) ^b	\$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) ^c	\$124,197		
Utility Bill Savings (average per participant)	\$208		

^a Loan amounts are for approved measure-related costs only. They do not include fees or other associated costs included in final loan amounts.

^b 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.

^c 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.⁶

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.⁷ 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.

⁶ A detailed breakout of spending by measure is included in the next section of this report.

⁷ 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 energy⁸ 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.⁹ 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.

⁸ 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.

⁹ 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 ^a	Total Investment ^b	Local Contractor Share ^c	Local Sales Tax Generated ^d
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
Total	\$9,007,868	\$12,691,542	\$10,072,036	\$234,798

^a Loan amounts are for measure-related costs only. They do not include fees or other associated costs included in final loan amounts.

^b 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.

^c Local Contractor Share represents only the portion of Total Investment paid to Boulder County contractors.

^d 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)
Boulder County – from in-county spending only			
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
Total	85	\$5.1	\$13.7
State of Colorado – from in-state spending only			
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
Total	126	\$7.1	\$19.5

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.¹⁰ 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.

¹⁰ 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/.

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.¹¹

¹¹ 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/.

Table 2.4. Macroeconomic Impacts of the Boulder CSLP by Sector in One Future Year (2015)

Sector	Net Job Gain	Change in Wage and Salary Compensation (Millions)	Change in Output (Millions)
Boulder County – from in-county spending only			
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
Total	88	\$5.3	\$14.0
State of Colorado – from in-state spending only			
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
Total	128	\$7.2	\$19.8

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)

Sector	Net Job Gain	Change in Wage and Salary Compensation (Millions)	Change in Output (Millions)
Boulder County – from in-county spending only			
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
Total	93	\$5.5	\$14.7
State of Colorado – from in-state spending only			
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
Total	132	\$7.3	\$20.1

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:¹²

- 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.

¹² 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.

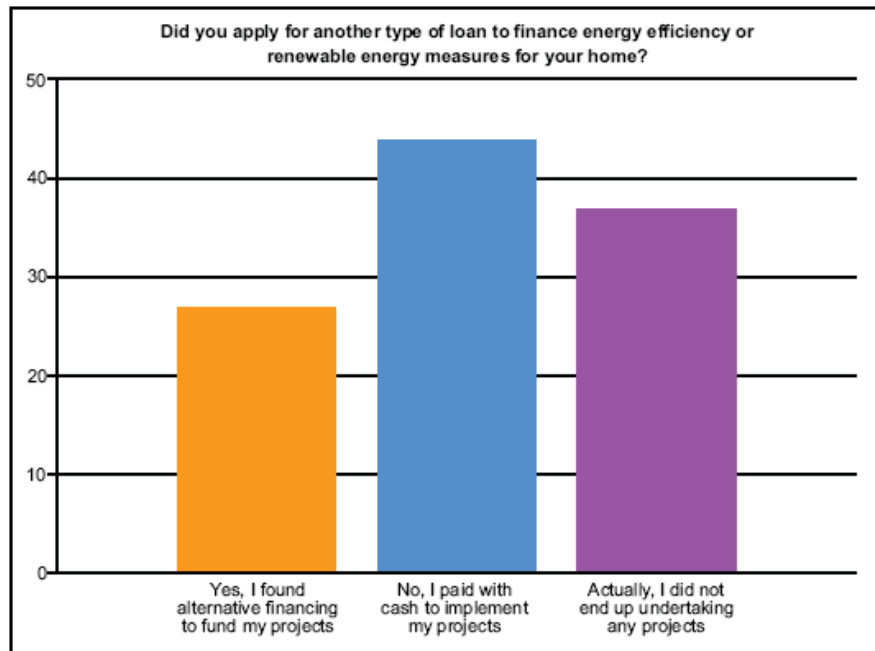


Figure 3. Responses to a survey question addressed to those who registered for a CSLP workshop, but ultimately did not use program financing.

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.¹³ This form

¹³ 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%.¹⁴ 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.¹⁵

¹⁴ Boulder Economic Council, Personal Communications, August 2010. See also, www.bouldereconomiccouncil.org.

¹⁵ "Growth in Construction Economic Activity in Sonoma County and the Sonoma County Energy Independence Program," November 2009, 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

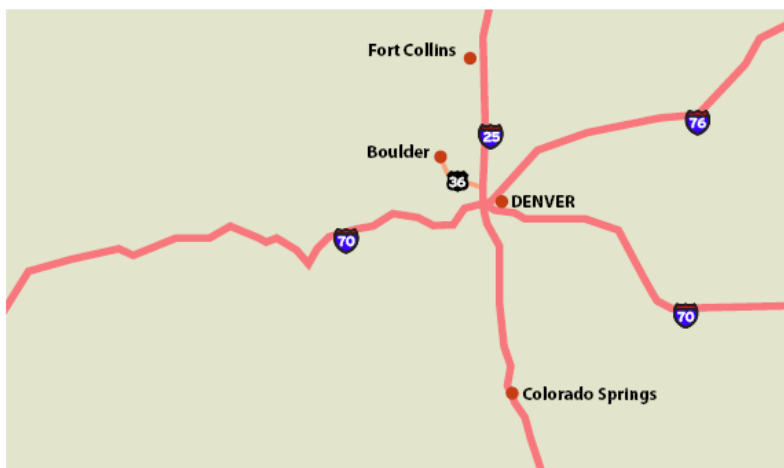
projects. Based on information from both surveys and interviews, we conclude that additional CSLP-inspired spending would likely increase total documented spending by 20% or more. This would, in turn, increase program economic impacts.

The general finding of additional non-PACE spending was confirmed anecdotally by other PACE programs nationwide.¹⁶ 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



¹⁶ "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

	Berkeley, CA BerkeleyFirst ci.berkeley.ca.us/contentdisplay.aspx?id=26580	Boulder County, CO ClimateSmart Loan climatesmartloanprogram.com	Babylon, NY Long Island Green Homes lgreenhomes.com	Sonoma County, CA Energy Independence sonomacountyenergy.org
Funding Mechanism	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 ₂ (\$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.
Eligible Properties for Implemented Round(s)	Residential, Commercial	Residential (initial), Commercial	Residential	Residential, commercial, industrial
Eligible Measures	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
Spending and Participants to Date	\$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
Collection Mechanism	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
General Process	Application, construction, payment	Workshop, quotes, application, bond sale, construction, payment	Application, audit, construction, payment	Application, audit, construction, payment
Unique Attributes	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.