



# Research Report

## EXECUTIVE SUMMARY:

### **PACE Financing for Commercial Buildings**

Property Assessed Clean Energy Financing for  
Energy Efficiency Retrofits and Renewable Energy:  
Market Opportunity, GHG Reduction, and Job Creation

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# Section 1

## EXECUTIVE SUMMARY

### 1.1 PACE Overview

A Property Assessed Clean Energy (PACE) program creates voluntary tax liens on private property, to secure financing for retrofits on existing buildings for energy efficiency, renewable energy, and sometimes water conservation. The liens are paid off over 5 to 20 years, usually on the property tax bills.

With a lien as security, financing can be secured in various ways. In most programs to date, PACE bonds are issued by special municipal finance districts or finance organizations, or funding is borrowed from the general fund. In some programs, each large commercial project secures its own third party financing, for example an additional loan from the primary mortgage lender. Each property owner in the district can voluntarily opt in to the program to receive energy upgrades on their own property, and to repay a property lien through their own property tax bill.

The effect of the lien on the property owner's financial statement is to shift operational expense from energy bills to property tax bills. Some programs require this shift to be revenue-neutral or cash flow positive, while other programs allow PACE lien repayments which are larger than the expected energy cost savings.

It is unclear yet whether a voluntary PACE lien will be treated in generally accepted accounting principles (GAAP) as a loan (which counts against a business's total debt capacity) or as an assessment lien (such as a school district assessment, which does not count against the debt capacity of businesses in the district).

For a municipality, a PACE program is a "gift that keeps on giving" because a one-time public investment yields an ongoing benefit. In terms of the total amount of outstanding liens, the cost of running a program is roughly 1% to 2% for administration and education, plus 5% for credit enhancements such as a loan loss reserve fund or credit insurance. Some programs subsidize these costs, while others amortize them into the lien repayments. When a startup loan fund is established with an original investment of public funds, the funds are reused time after time and can be repaid if the program ends. After this initial public investment, the subsequent funding to support energy retrofits comes from investors who buy bonds and property owners whose utility savings offset the repayments. Unlike a conventional revolving loan fund, where previous loans must be paid off before new loans can be issued, new PACE liens can be issued as quickly as new bonds are sold. For a commercial program, if each large building project brings its own third party financing, then minimal public funding is needed.

For third party financing, repayment can be managed in different ways. In one model, the municipality collects the repayment on the property tax bill, and remits it to the third party lienholder. In another model, some states allow a taxing jurisdiction to assign the collection responsibility directly to the third party.

As the scope of a PACE program grows, bonds can be issued more frequently. For instance, a program might launch using \$20 million borrowed from a municipal reserve. The program allocates \$20 million in retrofit loans during the first year, and then issues a \$20 million bond to replenish the funding. As the PACE program becomes more popular

in year two, the cycle of “issue \$20 million in retrofit loans, then aggregate these small liens and issue \$20 million in bonds” might be repeated twice or even three times within the year. If all program costs are fully amortized into each lien, then the program can grow without additional public funding.

A wide variety of efficiency upgrades are cost-effective within this structure. When existing rebates and tax credits are included, renewable energy projects are also cost-effective in some states.

This financial tool was developed recently, and is rapidly evolving. Most programs have concentrated on residential retrofits thus far, with a few pilot commercial programs, some of which have developed out of residential programs. Therefore, while this report is focused on commercial property, information is included about some residential PACE programs.

Opinions vary regarding the potential effectiveness of PACE in commercial energy retrofits, and the potential characteristics of successful commercial programs. For example, how exactly will the municipality act as an intermediary between the property owner and the source of financing? Under what circumstances will primary mortgage holders tolerate PACE liens? What effects, positive and negative, will a PACE lien have on commercial property value?

The lien is attached to the property, so creditworthiness depends primarily on the property (utilities and property taxes paid on time, 10%+ equity, etc.), rather than on the owner. In theory, each property lien will transfer with property ownership. However, in practice, this will be subject to negotiation at the time of sale, with some buyers refusing to buy until all liens of any kind are paid off.

The appetite of institutional retirement accounts for long-term bonds is huge. A municipal PACE program may issue a \$20 million bond to replenish a loan fund for energy efficiency. This amount is too small for many institutional investors to notice, since their minimum purchases tend to be in the range of \$100 million to \$150 million. A federal credit guarantee for a standard PACE bond product with standard quality control could help energy retrofit programs to expand quickly, because small bonds from multiple PACE programs could be easily rated and easily bundled, for sale to large institutional buyers.

States with active PACE programs include Arizona, California, Colorado, Maryland, New York, and Oregon. The most activity in 2010 will be in California, where new programs are developing in alignment with state goals for renewable energy, energy efficiency, and GHG reduction. Nationally, new programs will align with local state goals, as well as with the federal EECBG program funding and guidelines.

Commercial property owners likely to take advantage of PACE in the next few years will be those with noticeably high energy bills, 10%+ equity, and expectations of keeping the property for a while. Because PACE programs are so new, some potential buyers and lending institutions may be wary of existing PACE liens. Initial applications will probably include buildings less than 200 KSF, such as office buildings less than six stories, select-service hotels, small malls with central HVAC, and grocery. Until now, private buildings such as these have had minimal access to financing for energy retrofits. Owners are likely to hold a few properties. These owners may be pressured to be “green” by corporate parents, competitors, or tenants or may learn about the program through promotions for residential PACE. Owners with hundreds of properties or very large buildings have other sources of capital, but might participate for favorable interest rates. Over the next 4 years, many commercial properties will change hands as mortgages come due that exceed the

present market value of the property. Some of the new owners of these distressed properties will use green retrofits for market repositioning, especially in office buildings. In regions where PACE programs are available, PACE will provide one of the best options to finance these retrofits.

To transform the market for energy retrofits in private buildings, financing is one component of a comprehensive solution that will include extensive marketing, workforce training, quality assurance, general contractors offering one-stop-shopping, clarity around PACE lien positions and state laws, well-documented and well-publicized success stories, and possibly federal credit enhancement. Within the next few years, many municipal PACE programs will develop all of these components for single-family homes, especially in California. While some of these programs will also allow commercial retrofits, commercial property owners and energy retrofit contractors may need to be proactive in order to reap the benefits of early adoption.

**Table 1.1 Websites with PACE Information**

General PACE information	<a href="http://www.pacenow.org">www.pacenow.org</a> <a href="http://www.institutebe.com/clean-energy-finance/pace-finance.aspx">http://www.institutebe.com/clean-energy-finance/pace-finance.aspx</a> <a href="http://www1.eere.energy.gov/wip/solutioncenter/financialproducts/PACE.html">http://www1.eere.energy.gov/wip/solutioncenter/financialproducts/PACE.html</a> <a href="http://www.thebabylonproject.org">www.thebabylonproject.org</a>
Locations of PACE programs & enabling laws	<a href="http://www.pacefinancing.org">www.pacefinancing.org</a> & <a href="http://www.dsireusa.org">www.dsireusa.org</a>
"How to" guide	<a href="http://rael.berkeley.edu/sites/default/files/berkeleysolar/HowTo.pdf">http://rael.berkeley.edu/sites/default/files/berkeleysolar/HowTo.pdf</a>
White House	<a href="http://www.whitehouse.gov/assets/documents/PACE_Principles.pdf">http://www.whitehouse.gov/assets/documents/PACE_Principles.pdf</a>
U.S. DOE EERE webcasts	<a href="http://www1.eere.energy.gov/wip/solutioncenter/webcasts/">http://www1.eere.energy.gov/wip/solutioncenter/webcasts/</a>
ARRA for energy retrofits	<a href="http://www.eecbg.energy.gov/solutioncenter/financialproducts/">http://www.eecbg.energy.gov/solutioncenter/financialproducts/</a> <a href="http://www.aceee.org/energy/national/recovery.htm">http://www.aceee.org/energy/national/recovery.htm</a>
No-first-cost programs, including PACE	<a href="http://www.calcef.org/innovations/activities/CALCEF-WP-EE-2010.pdf">http://www.calcef.org/innovations/activities/CALCEF-WP-EE-2010.pdf</a>

(Source: Pike Research)

## 1.2 Overview of the Energy Retrofit Industry

PACE programs finance energy retrofit projects, including energy efficiency upgrades and onsite renewable energy. This section provides an overview of aspects of the energy retrofit industry which are relevant to PACE.

Because the industry is driven by incentives, regulations, and local utility prices, it varies by state and often by municipality or region within each state. PACE programs, which depend on state legislation and local assessment districts, add another dimension to this regional variability.

Of all the states with PACE enabling legislation, a few spend a relatively large percentage of the total cost of energy in commercial buildings in the U.S. California spends 11%, followed by New York (10%), Texas (8%), and Florida (6%), for a total of 35% in these four states. In terms of potential volume for PACE programs, these states are the leaders.

The following table illustrates the difference between relatively small financial numbers related to PACE, and relatively large financial numbers related to the U.S. bond market. This difference presents an opportunity, because there is a huge pool of private capital

available to buy PACE bonds. It also represents a challenge, because bonds from multiple municipal programs will probably need to be consistently rated and bundled, in order to meet the minimum requirements of the institutional bond market.

**Table 1.2 Key Financial Statistics for Commercial Building Energy Efficiency**

Federal ARRA EECBG formula grants (some might be used for PACE)	\$2.7 billion
Scale at which Federal credit guarantees would support PACE programs well	\$5 billion to \$20 billion
Cost savings generated when each ton of CO <sub>2</sub> equivalent emissions are eliminated by energy efficiency measures	\$40
U.S. bond market, average daily trading volume	\$800+ billion
Typical annual purchase by one of many institutional bond buyers	\$5 billion
Annual revenue of the entire U.S. ESCO industry (mainly public sector)	\$6 billion
Annual revenue, remodeling of all kinds in private commercial buildings, in 2009	\$30 billion
Minimum single purchase, so an institutional bond buyer can meet annual target	\$100 million to \$150 million
Largest PACE program in the United States, recently launched in San Francisco	\$150 million
Minimum bond purchase specially negotiated with mission-driven institutional buyers	\$15 million to \$20 million
Average lien per building for pilot PACE programs with residential focus	\$8,000 to \$30,000
Largest PACE lien approved for one commercial property in the U.S., thus far	\$6 million

(Source: Pike Research)

The institutional retirement bond market will transform the scale of the energy retrofit industry. In order to tap into the investment potential of this market, PACE programs aggregate a large number of small retrofit projects. Aggregating a large number of bonds from various municipal PACE programs will also be useful. CaliforniaFIRST will do so in 2010 and a federal credit guarantee might follow in the future.

The following table gives an overview of commercial space. In the 2003 Commercial Buildings Energy Consumption Survey (CBECS) study, 21% percent of all commercial space was owned by the government, most of it for education. Private owners occupied 33%, private leased space was 43%, and 3% was unoccupied.

In 2009, slightly more than half of remodeling revenue was in public buildings. This was an unusually high percentage, because the federal market was healthy while the market in private buildings was extremely slow.

**Table 1.3 Commercial Building Space Statistics, United States**

Total commercial space in the United States (estimated, 2010)	79 BSF
Includes public and private space, non-residential and non-industrial	
Privately owned (non-government-owned) commercial space (estimated, 2010)	60 BSF
Commercial space remodeled each year (private and public);	1.5 to 2 BSF
Commercial space that would benefit from an energy retrofit of some kind	Almost all of it

(Source: Pike Research)

### 1.3 Recent PACE Developments

San Francisco launched a \$150 million PACE program in March 2010. In summer 2010, San Diego and Los Angeles County will launch local programs, and CaliforniaFIRST will launch a statewide PACE program in more than 140 participating locations. Initial marketing for these programs will target single-family homes.

In commercial buildings, Sonoma County, California has completed \$3 million in commercial PACE projects and has approved projects for an additional \$11 million. Boulder, Colorado accepted applications in Spring 2010 for its commercial PACE pilot of \$12 million. Few applications have been received to date, perhaps because of the long lead time required to develop a commercial application.

#### 1.3.1 Federal Retrofit Ramp-Up Award Winners

The following entities will receive funding for energy retrofit programs in Fall 2010. Some of these programs will include PACE pilots.

**Table 1.4 Federal Retrofit Ramp-Up Awards**

Cities and Counties	\$M	States and Nonprofits	\$M
Los Angeles County, California	\$30	San Antonio, Texas	\$10
Boulder County, Colorado	\$25	Camden, New Jersey	\$5
Chicago Metropolitan Agency for Planning	\$25	Greensboro, North Carolina	\$5
Philadelphia, Pennsylvania	\$25	Lowell, Massachusetts	\$5
Phoenix, Arizona	\$25	NY State Research & Development Authority	\$40
Kansas City, Missouri	\$20	State of Maine	\$30
Portland, Oregon	\$20	State of Michigan	\$30
Seattle, Washington	\$20	State of Maryland	\$20
Greater Cincinnati Energy Alliance, Ohio	\$17	Southeast Energy Efficiency Alliance	\$20
Toledo-Lucas County Port Authority, Ohio	\$15	Wisconsin Energy Conservation Corporation	\$20
Austin, Texas	\$10	State of New Hampshire	\$10
Indianapolis, Indiana	\$10	State of Missouri	\$5
Omaha, Nebraska	\$10	<b>TOTAL</b>	<b>\$454</b>

(Source: U.S. Department of Energy)

### 1.4 Policy Recommendations

#### 1.4.1 Primary Recommendations

Pike Research believes that a federal credit guarantee and/or loan loss reserve fund should be established, on the order of \$5 billion guarantee ramped up over a few years to \$10 billion, or loan loss reserve of 5% of this amount. This should be available to municipal programs in conjunction with federal guidelines for quality control, building equity requirements, etc. With these provisions, bonds from multiple municipal programs can be easily rated and easily bundled for sale to large institutional bond buyers. Without these provisions, PACE will develop slowly, and the market for PACE bonds might remain fragmented, not tradable.

In large commercial buildings, the contractual agreements facilitated by PACE may be more valuable than investment money from municipal bonds. If a municipality relies on

owners of large commercial buildings to bring their own financing partners (such as the primary mortgage holder) then the PACE program will be more palatable to commercial lenders. Federal, state and local policies should allow this arrangement.

States can support PACE at two levels: state legislation to permit municipal programs, and also statewide programs such as CalFIRST, which smaller municipalities can join easily.

If local PACE programs follow federal guidelines, they will be well positioned to take advantage of any future federal loan guarantees, and/or standardized bond ratings which enable bonds from multiple small local programs to be easily bundled.

#### 1.4.2 Additional Recommendations

Guidelines for the scope of each retrofit project should permit cashflow-positive and cashflow-negative retrofits, each of which is appropriate in some circumstances.

To the extent feasible, federal guidelines should not preclude states from participating in a federal PACE guarantee program, because of preexisting state laws. For example, California and Colorado have different laws about whether a property assessed lien is due in full (versus only the missed payments to date) upon foreclosure.

After project completion, until the lien is paid off, require participants to publicly disclose building energy performance in some way, such as an ENERGY STAR rating, ASHRAE Building Energy Quotient, or utility bills. Without this, the long term success or failure of a PACE program will be difficult to verify.

For large retrofit projects (over \$500,000), a performance guarantee will assure energy savings in complex buildings. Smaller projects involve simpler buildings, so verification may not require a performance guarantee.

If a Senate energy bill for carbon reform does not include the energy efficiency measures previously passed in the House energy bill, then a follow-up bill supporting energy efficiency should be enacted.

The demand for PACE services could be increased by a national Renewable Portfolio Standard (RPS), a national EERS (Energy Efficiency Resource Standard), and ongoing support for clean energy tax credits and the EECBG program. Rather than a one-time stimulus, ongoing programs should drive towards national energy independence and carbon-negative emissions.

If federal or state energy goals were aligned more closely with the European timeline (e.g. by 2020, new construction will be net zero energy, overall energy savings will be 20%, and overall renewable energy will be 20%), this could expand demand for energy retrofits.

*Note: In this report, the term “commercial buildings” usually refers to privately owned buildings “in which at least half of the floor space is used for a purpose that is not residential, industrial, or agricultural.”<sup>1</sup> Where publicly owned buildings are discussed, the buildings are explicitly labeled as “public” and “private”.*

*The focus of this report is on privately owned buildings since public buildings do not pay property taxes, and have other funding mechanisms for energy retrofits.*

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<sup>1</sup> [www.eia.doe.gov/emeu/cbecs](http://www.eia.doe.gov/emeu/cbecs)

## Section 7

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## Section 9

### SCOPE OF STUDY

Pike Research has completed this report on PACE financing for commercial buildings to assist industry participants including, but not limited to: commercial building owners; federal, state, and municipal governments; building equipment manufacturers of hardware and software; utilities; design, architectural and engineering firms; and policy makers. The study strives to analyze industry dynamics in a fashion that accelerates decision-making regarding financing structures, public policy and legislation, energy efficiency, implementation of renewable energy sources, and building retrofit activity. The PACE financing market forecasts extend through 2020.

### SOURCES AND METHODOLOGY

Pike Research's industry analysts utilize a variety of research sources in preparing Research Reports. The key component of Pike Research's analysis is primary research gained from phone and in-person interviews with industry leaders, including executives, engineers, and marketing professionals. Analysts are diligent in ensuring that they speak with representatives from every part of the value chain, including but not limited to technology companies, utilities and other service providers, industry associations, government agencies, and the investment community.

Additional analysis includes secondary research conducted by Pike Research's analysts and the firm's staff of research assistants. Where applicable, all secondary research sources are appropriately cited within this report.

These primary and secondary research sources, combined with the analyst's industry expertise, are synthesized into the qualitative and quantitative analysis presented in Pike Research's reports. Great care is taken in making sure that all analysis is well supported by facts, but where the facts are unknown and assumptions must be made, analysts document their assumptions and are prepared to explain their methodology, both within the body of a report and in direct conversations with clients.

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### NOTES

CAGR refers to compound average annual growth rate, using the formula:

$$\text{CAGR} = (\text{End Year Value} \div \text{Start Year Value})^{(1/\text{steps})} - 1.$$

CAGRs presented in the tables are for the entire timeframe in the title. Where data for fewer years are given, the CAGR is for the range presented. Where relevant, CAGRs for shorter timeframes may be given as well.

Figures are based on the best estimates available at the time of calculation. Annual revenues, shipments, and sales are based on end-of-year figures unless otherwise noted. All values are expressed in year 2010 U.S. dollars unless otherwise noted. Percentages may not add up to 100 due to rounding.

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