

SETTING THE PACE 2.0

Financing Commercial Retrofits



Issue Brief

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INTRODUCTION

Property Assessed Clean Energy (PACE) financing in the commercial buildings sector continues to grow and expand to new municipalities across the United States. As a new finance approach, PACE addresses the principal market barrier to investment in energy efficiency and on-site renewable energy projects. PACE financing offers building owners up-front funding up to 100 percent of the cost of energy upgrades; the money is repaid with assessments added to property tax bills for up to 20 years. The PACE assessment obligation stays with the building upon sale and allows the owners to pass payments through to tenants who enjoy the benefits of improved energy efficiency and lower utility costs.

Unlocking the efficiency improvement opportunity in U.S. buildings would translate to more than \$1 trillion in energy savings, over 3 million jobs, and a reduction of 600 million metric tons of carbon emissions per year.¹ At scale, this represents an investment opportunity of nearly \$280 billion over the next 10 years. Studies show that owners of efficient buildings can benefit from higher rents, increased tenant satisfaction, lower turnover rates, and higher property values.²

In February 2013, PACENow, the Institute for Building Efficiency, and the Urban Land Institute provided a first look at the structure of PACE programs in "Setting the PACE: Financing Commercial Retrofits."³ Since then, many projects have been completed and more PACE programs have been launched. There are now over 250 completed commercial PACE projects worth more than \$75 million. In this updated report – based on more than 30 interviews with market leaders including program administrators, financing entities, contractors, building owners, and project developers – we analyze the market's direction, successes and challenges.

How has the market evolved and developed? What program financing and administration models have gained traction? What drives project completion? And what are some of the emerging best practices? This paper answers those questions by focusing on four leading PACE programs:

- C-PACE (Connecticut)



- Figtree PACE (California)



- Los Angeles County Commercial PACE program



- Toledo-Lucas Port Authority program/
BetterBuildings Northwest Ohio



¹ "United States Building Energy Efficiency Retrofits: Market Sizing and Financing Models" March 2012. Rockefeller Foundation and DB Climate Change Advisors. <http://www.rockefellerfoundation.org/uploads/files/791d15ac-90e1-4998-8932-5379bcd654c9-building.pdf>

² Institute for Building Efficiency fact sheet, "Assessing the Value of Green Buildings" <http://www.institutebe.com/InstituteBE/media/Library/Resources/Green%20Buildings/Green-Building-Valuation-Fact-Sheet.pdf>

³ "Setting the PACE: Financing Commercial Retrofits." <http://www.institutebe.com/InstituteBE/media/Library/Resources/Financing%20Clean%20Energy/Setting-the-PACE-Financing-Commercial-Retrofits.pdf>

We describe and analyze program administration design options, best practices in program administration, financing models, sources of funding, and methods of arranging financing. Key features of each program are compared, and more detailed case studies are included in the appendix.

WHAT IS PACE?

PACE is an adaptation of a common financing technique used for decades throughout the United States: local governments provide financing that is repaid with a property tax based assessment for improvements that benefit property owners and also meet a public purpose.⁴ Using PACE, cities and counties promote energy efficiency upgrades, on-site renewable energy projects, and in some places, water conservation and resiliency measures. PACE can be used to finance 100 percent of a project's costs with a repayment term matching the useful life of the implemented measures. To date, nearly 500 municipalities in the United States participate in PACE programs. Some of the program design attributes include:

⁴ Please see Appendix 1 to learn more about the history of PACE since 2008 onward.

- PACE financing can be used for any commercial, industrial or agricultural property, and may be available to non-profit and government facilities as well.
- PACE projects must save or produce energy and be permanently affixed to the property.⁵
- PACE is entirely voluntary. Benchmarking, energy audits and evaluations can be part of a set of services and analysis offered through PACE. In communities that adopt PACE, assessments are paid only by participating owners, and only for their own projects, so no additional taxpayers are involved.
- Property taxes and assessments have a senior claim on property. If a property goes into foreclosure, only PACE assessments in arrears will be repaid from sale proceeds, along with other property taxes and assessments.

⁵ Water conservation and resiliency measures are eligible for PACE financing in some states as well.

HOW PACE WORKS

Six steps allow a building owner to take advantage of PACE financing (Figure 1). Once the legal framework (state legislation and local ordinance) and basic PACE programmatic requirements are in place, a building owner can choose a set of upgrades and arrange financing through a municipality or a private provider.

Figure 1. The six basic steps of how PACE works.



THE ADVANTAGES OF PACE FINANCING

Using PACE can lower energy costs and increase building value, often producing immediate increases to building cash-flows. Various characteristics of PACE financing may appeal to different building owners depending on the building's type, size, use, and ownership structure, as well as the nature of the improvements, and location.

- **Accessible capital with zero up-front cash investment:** PACE programs offer 100 percent up-front financing for energy efficiency, renewable energy and, in some municipalities, water conservation and resiliency measures. PACE financing replaces or augments limited internal capital budget resources. It is a good fit for building owners, who are less evaluated on their personal or business credit than on the building's value and financial performance.
- **Long-term financing (up to 20 years):** While the commercial real estate lenders generally provide only 5- to 7-year financing, PACE offers secured capital for up to 20 years. The long-term nature of PACE financing allows building owners to pursue capital intensive, deeper retrofits by combining multiple technologies with long and short payback periods.
- **Immediate positive cash flow:** Long-term financing allows most PACE projects to generate immediately positive cash-flow: the energy savings are greater than the annual PACE assessment payments. PACE can be combined with local, state and federal incentives and utility rebates and tax deductions to achieve even greater cash flow impact. Some programs require projects to be cash-flow positive, while others take a more flexible approach.
- **PACE assessment stays with the property upon sale:** A PACE assessment stays with the property in the event of a property sale, making the owner more likely to consider and undertake a capital intensive, deeper energy retrofit with longer payback characteristics.
- **Possible off-balance-sheet treatment:** Commercial building owners typically treat property taxes and assessments as annual expenses that do not encumber the company balance sheet. If PACE is treated as an off-balance-sheet expense, a PACE transaction can preserve borrowing capacity for other capital projects. Not all owners treat PACE as off-balance-sheet, since PACE-financed upgrades result in actual modifications and additions to a property, increasing its value as an asset, and also entail a corresponding fixed-term liability. Ultimately, property owners should seek advice from experts on the appropriate tax treatment for the assessment payments.

Characteristics of an Ideal PACE Early Adopter Building

Program administrators identified a number of characteristics of buildings that may be strong candidates for early use of PACE:

- Buildings that are 15 years and older
- Buildings with high energy use due to inefficient equipment, long hours of operation, multiple tenants
- Buildings with deferred maintenance issues
- Owners who are concerned about making the building more sustainable (e.g., PACE supports corporate social responsibility initiatives or LEED certification) and improving occupant and tenant comfort
- Building managers interested in reducing system failure risks
- Building owners interested in incorporating new technologies (geothermal, fuel cells, LED lighting)

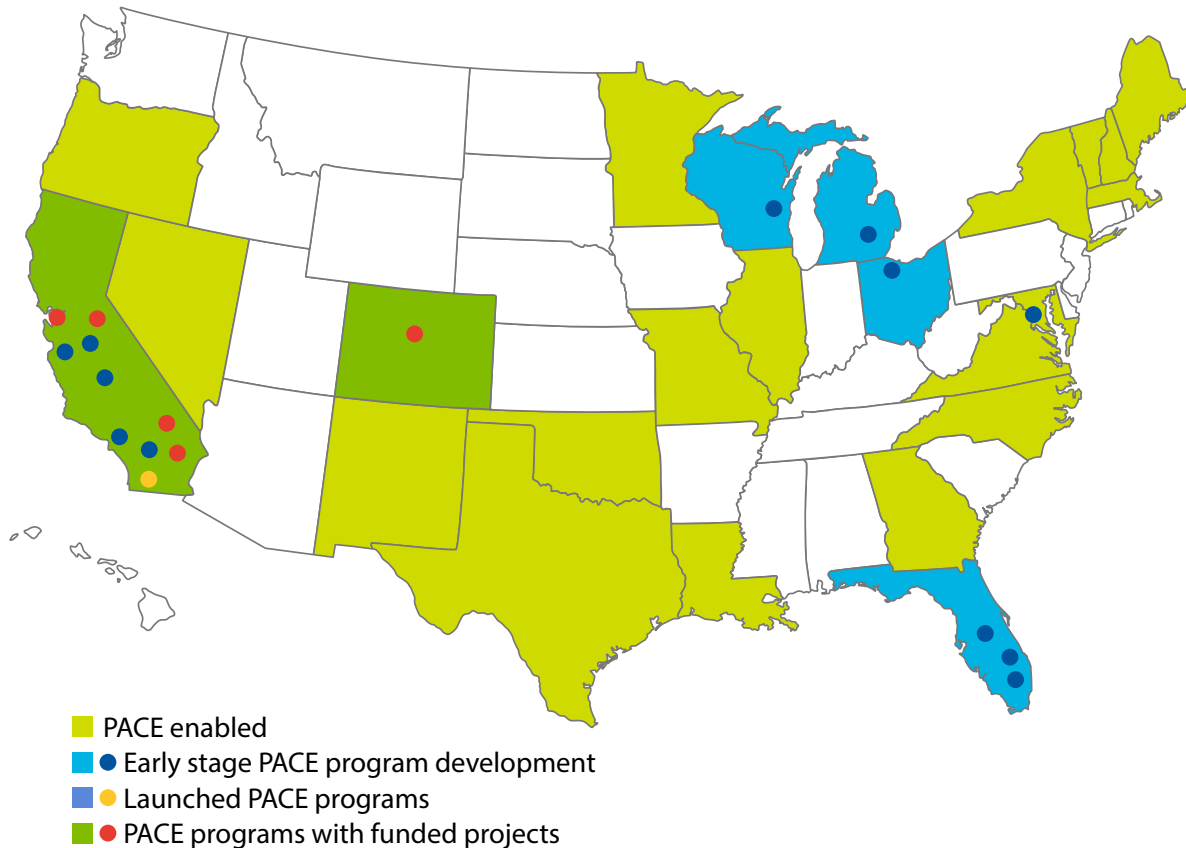
- **Ability to pass payments through to tenants:** PACE can solve the “split incentive” or misalignment of incentives that arise between owners and tenants. Owners are less likely to undertake energy retrofits when they pay for improvements but tenants receive the financial benefits through lower monthly utility bills. Under most leases, PACE allows the owner to pass the tax assessment to tenants. For certain property types (such as retail, office, and multi-family) this characteristic may be especially attractive.
- **Low interest rates:** Interest rates vary with each program’s financing arrangement, geographic location, and other factors. In 2013–14, PACE financing rates have ranged from 4.3 to 7.9 percent APR. These rates are likely to fall as the PACE market becomes more developed and liquid. The PACE mechanism brings many additional advantages, listed above, beyond the interest rate. These may still make PACE worth considering for some owners who could access cheaper sources of capital.

PACE is a flexible financing tool with many advantages that do not apply across the board to all property sizes and types. Therefore, it is important to align PACE characteristics with building segments.

PACE MARKET ACTIVITY TODAY

The number of cities and counties with active commercial PACE programs has grown dramatically in the last three years. On the accompanying maps, red dots show the cities/counties with funded commercial PACE projects, yellow dots represent places with operational PACE programs accepting applications, and blue dots represent places with PACE programs in development.

Figure 2. June 2011: 75 projects completed – \$10 million



In 2011, commercial PACE projects had been funded in just five jurisdictions, all in California and Colorado. Sonoma County (CA) and Boulder County (CO) had completed roughly 75 projects totaling approximately \$10 million of investment. Palm Desert, Yucaipa, and Placer County (CA) had completed an additional 10 projects with spending of roughly \$1.4 million. Early-stage development of commercial efforts had begun in San Francisco, Los Angeles, Sacramento, Miami, Milwaukee, Toledo, Ann Arbor, and Washington, D.C. In addition, a growing number of new PACE-focused companies were being formed, including: Renewable Funding, Ygrene Energy Fund, Figtree PACE Financing, Clean Fund, and Structured Finance Associates. They were created to provide administrative and financing services to PACE government sponsors.

2013 was a turning point year for commercial PACE, with financing available in nearly 500 cities and towns in nine states and the District of Columbia. Figure 4 shows the cumulative PACE projects financed since 2009. As of May 2014:

- 25 active PACE programs/platforms are prepared to fund or are already funding projects (Figure 3);
- More than 250 commercial PACE projects have been completed;
- Over \$75 million in projects have been funded; and
- More than \$250 million in PACE project applications in the pipeline.⁶ (Figure 4)

Figure 3. June 2014: 256 projects closed – \$75 million – pipeline of \$250+ million

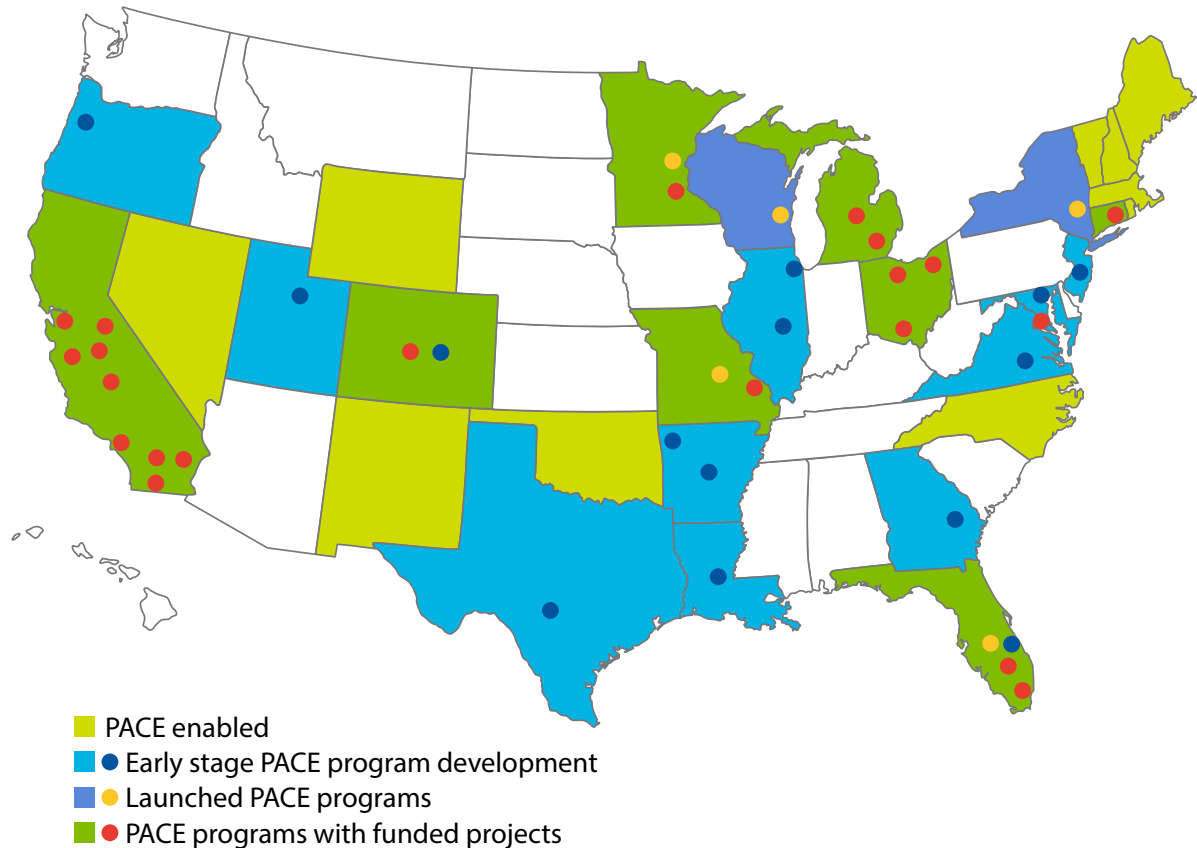
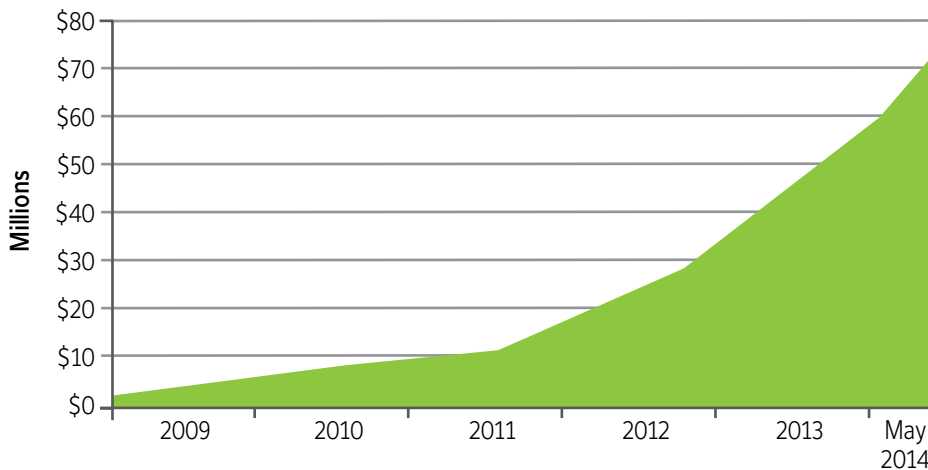


Figure 4. Cumulative PACE funding, in \$ millions



While PACE financing has doubled in each of the last two years (in dollar terms) and many new programs have been launched, overall project volume is low and the availability of PACE financing is still very limited. Key challenges in the coming years will center on the availability of PACE financing and the extent to which building owners and contractors are aware of PACE. PACE is an inherently local mechanism. It must be adopted by a governmental entity, and the basics of a program must be established before any project can be funded. PACE project development process has been time-consuming, partly because energy efficiency projects are complex, and because PACE adds new procedural elements that have yet to be streamlined. Overall, there is significant opportunity in the PACE market, but as with any emerging market, wide-scale adoption will take time.

Small commercial buildings account for 47 percent of all energy consumed by the commercial buildings sector,⁷ but small-business owners are particularly underserved in the energy efficiency/renewable energy (EE/RE) market. Typically, they are less likely to have internal resources to fund projects, and they may have fewer borrowing options than large-building owners. By providing 100 percent of project costs and using the building as security, PACE can work well for small-building owners and encourage deeper retrofits, but fixed transaction costs can be high for small projects. Higher project volume could create opportunities to aggregate smaller projects more frequently and efficiently.

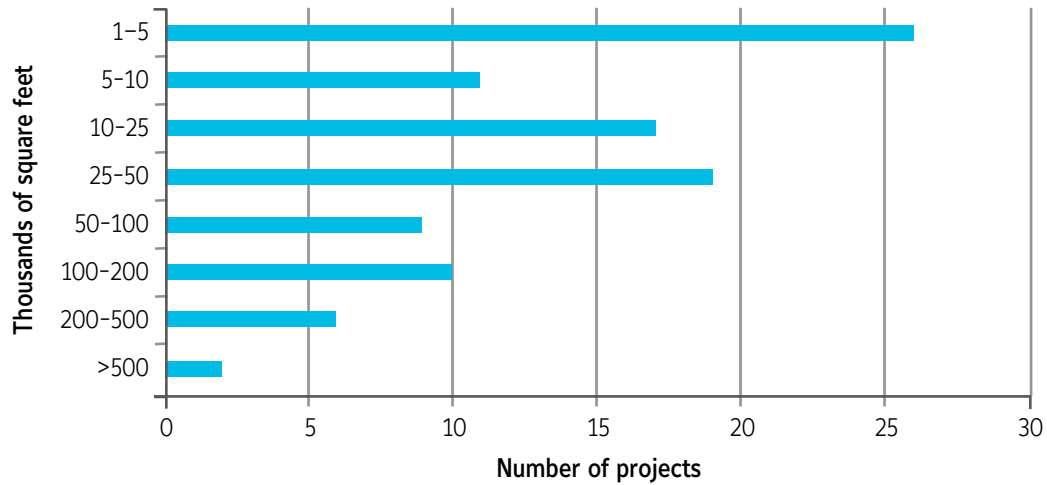
To date, over 70 percent of completed PACE projects⁸ have been for small commercial buildings (less than 50,000 square feet). Nearly 83 percent of PACE projects to date have cost no more than \$300,000 (as seen in the Figures 5 and 6) and account for one quarter⁹ of all PACE financing. This may be true simply because the market is still growing. Small projects are quicker to develop than large projects, as they usually involve fewer measures and fewer stakeholders and decision-makers.

⁷ http://www.preservationnation.org/information-center/sustainable-communities/green-lab/small-buildings/130604_NTHP_report_sm.pdf

⁸ 73% is based on data from 99 commercial PACE projects, the remaining projects did not have data on building size.

⁹ This figure is based on project size data for 150 projects.

Figure 5. Number of projects, by building size.



Large commercial properties use PACE financing for a diverse set of reasons. As in small commercial buildings, some owners may find the financing terms attractive if they don't have easy access to alternative sources of capital. Large commercial owners note that PACE is attractive because it provides 100 percent up-front, off-balance-sheet financing that can be passed through to tenants and stay with the property upon sale, or simply because it is a highly secure addition to the capital stock of the building. Also, PACE makes longer-payback projects cash-flow positive. Even Class A office buildings have used PACE for these reasons, even though they may have alternative sources of capital readily available.

PACE can be used to retrofit any type of commercial, industrial, or multi-family building and, in some places, government properties and non-profits are eligible as well. Figure 7 shows a breakdown of building

Figure 6. Number of projects, by \$ amount

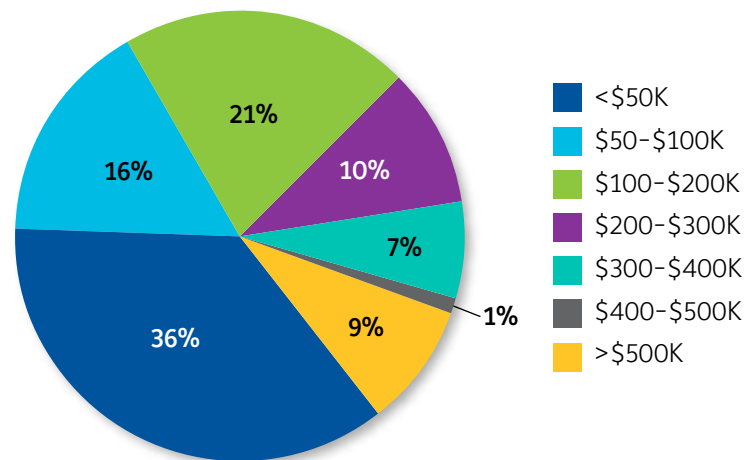
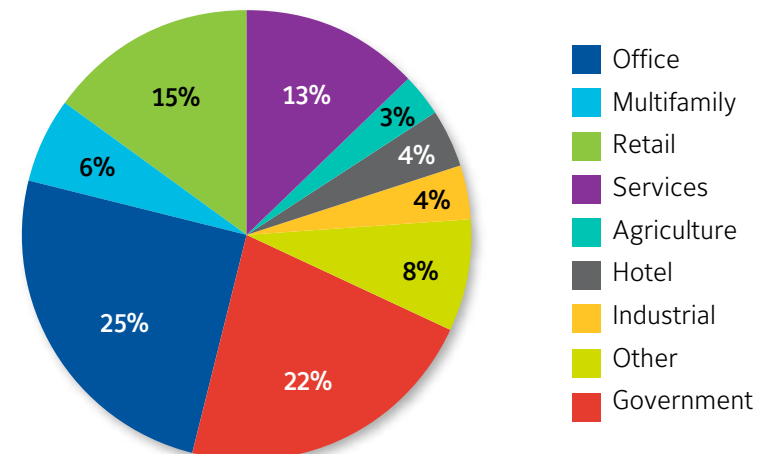


Figure 7. Number of projects, by type



types receiving PACE financing as of May 2014. Office and government buildings¹⁰ account for nearly half of the PACE-funded renovation projects.

Three case studies help illustrate the benefits of PACE for a wide range of buildings and projects.

Case Study: Child Abuse Prevention Center in North Highlands, CA

The Child Abuse Prevention (CAP) Center used PACE to pay for \$162,000 of a \$252,000 project, which involved replacement of existing lighting with LED tubes and fixtures, replacement of a failing HVAC system with ultra high efficiency units, and centralized electronic controls for the HVAC systems. The CAP center is a non-profit organization that owns its 25-year-old, 2-story office building. PACE financing was an attractive alternative to starting a capital fundraising campaign to fund building improvements, competing with the core mission of fundraising to support programs. CaliforniaFIRST PACE program arranged financing and structured the project to achieve a cash-flow neutral outcome. The building's two additional tenants benefited from the improvements, and rents were not affected.

Case Study: Metro Center project in Sacramento, CA

In early 2014, Metro Center, a 250,000-square-foot office park, completed a \$3.4 million project that produced 27 percent (\$140,000) annual energy savings from a more efficient HVAC system, LED lighting, and new pumps on water fixtures, among other measures. The property is owned by the Metzler Group, a multi-property owner, and managed by Colliers International. Johnson Controls led the selection and implementation of energy efficiency improvements. Clean Energy Sacramento (PACE program administered and funded by Ygrene) provided financing for the project and helped obtain the existing lender's consent. Without PACE, both Colliers and Metzler said that they would not have had the capital to make the improvements. The Metzler Group indicated that the long-term up-front capital repaid through property tax assessment and the ability to transfer payments to future owners made PACE attractive. As the manager, Colliers benefited from lower operating expenses and improved tenant experience, which may increase tenant retention and occupancy rates.

Case Study: PACE is catching on with large REITS

PACE has been used to advance energy efficiency goals within the commercial real estate industry for large and small commercial buildings. Major real estate entities such as Simon Property Group, Prologis, and Hilton are taking steps to realize the benefits of this innovative financing program. Simon, a global retail real estate company with a large U.S. footprint, is tapping into PACE financing for projects that implement more sustainable operating practices at many of its malls. PACE projects consisting of cool roof and HVAC systems have already been completed at Great Lakes Mall in Ohio and Santa Rosa Plaza in California. Simon is actively pursuing additional opportunities in these and other states including Massachusetts, Wisconsin, Texas, Georgia, Arkansas, Missouri and Florida where PACE legislation has been enacted. The PACE program makes an important contribution to Simon's goal of reducing its carbon footprint by accelerating the opportunity to implement more energy saving projects.

The projects described above were supported by different PACE programs with their own underwriting criteria, program requirements, eligible improvements and other characteristics. The next sections review trends in administration and finance.

¹⁰ Toledo, Ohio's PACE program is responsible for the government buildings statistic. Under the Ohio law, government properties may choose to be encumbered with a special assessment.

PROGRAM ADMINISTRATION DESIGN

There is great variety in how PACE programs are designed and administered. All PACE programs involve a partnership between public and private entities, but the specific roles played by different actors vary. Many functions must be fulfilled in a PACE program in order to complete projects, but programs differ in how they staff and manage their activities.

1. **Public program, government administration.** In this model, the government staff fulfills all functions: qualifying projects, processing applications, providing or arranging for financing, recording the PACE assessment, enforcing measurement and verification (M&V) requirements and conducting any program promotion and marketing. Local governments can choose to collaborate with each other, typically by entering inter-local government agreements. An example of a government-run program is Sonoma County's Energy Independence program, operated by the county staff.
2. **Public program, contractor administration.** In this model, governments provide the necessary services (such as administering the PACE assessment) and retain third-party firms to share other responsibilities. Connecticut's C-PACE program has used third-party experts to develop and conduct contractor training programs, ongoing contractor project development support and provide independent third-party review of proposed projects to facilitate stakeholder confidence in projected energy savings.
3. **Private program, private administration.** This model has government sponsors that administer the PACE assessment, but uses a private firm to manage all other aspects of the PACE program. The company enrolls municipalities in the program, supports and trains contractors, markets PACE to building owners, arranges financing, supports existing mortgage lenders, sells projects, and validates and reviews the projects. Figtree Financing and Ygrene are private-sector firms that run this type of program for their municipal clients.

In reality, most programs are hybrids of these models.¹¹ Table 1 highlights the program administration approach used by each of four programs reviewed for this analysis. More details, such as rates, fees, and financial terms are provided at the end of this report.

¹¹ In some places, PACE has been implemented with limited administration and the local government acting only as a loan servicer for a building owner capable of arranging financing. We use the term "PACE Platform" to describe places where governments play this minimal role: placing an assessment on a property, collecting, remitting, and enforcing its payment, and satisfying whatever statutory requirement of their state's enabling legislation.

PACE Project Development - Emergence of New Market Actors

Private project development companies have emerged to fill the gap between program administrators and large-building owners, providing a "concierge service" for all stakeholders through the PACE process. Project development contractors can bridge the supply and demand side of a PACE transaction. These entrepreneurial entities (e.g., ReNewAll, PACE Equity, Energy Equity Funding, PACE Energy, K2 Financing) are developing and sourcing PACE projects in a number of municipalities. These companies understand how PACE works and can sell it to building owners and contractors, thus expanding the market. To date, they are mostly focused on selling larger projects.

Table 1. Comparison of key administrative differences for four leading PACE programs.

	Connecticut	Toledo, Ohio	Los Angeles County	Figtree
Administrative model and entity	Public program, contractor administration. Programmatic decisions are made by the government. Connecticut's Green Bank ¹²	Public program, government administration. Toledo Port Authority	Public program, contractor administration. Contractor to LA County does program management and application processing.	Private program, private administration. Figtree is a privately owned and operated company.
Who supports and trains contractors?	Green Bank and 3rd Party Firms	Toledo Port Authority	Project Developers	Figtree
Who sells projects? (originates and develops projects)	Green Bank is often the lead with the owners. 3rd party firm, Sustainable Real Estate Solutions (SRS), is working with contractors, who provide 80% of all project leads. Green Bank has lead developers under a contract.	The port authority generates projects and helps develop them. Contractors, vendors building owners also originate projects.	Contracted PACE project developers bring all parties through the process – ReNewAll and Sustento Group. Anyone else can develop a project as well (contractors, other project developers, etc).	Figtree originates projects; contractors are active in bringing in projects.
Who helps the owner obtain lender consent from the existing lender?	Green Bank	Toledo Port Authority	Contracted project developers, private contractor or private project developer.	Figtree
Who provides technical review?	Green Bank's 3rd party firm, SRS, manages technical review process. M&V is included as part of technical review.	Toledo Port Authority and qualified professionals.	Contractors provide desktop review of all project submitted documents.	Figtree

¹² Connecticut's Green Bank is formerly known as CEFA or Clean Energy Finance and Investment authority.

PROGRAM ADMINISTRATION BEST PRACTICES

In an emerging and diverse market, where many cities are reviewing options and refining their PACE programs, it is important to understand elements of successful administrative and financing strategies. This section provides best practice insights for new programs under development in 12 states, and for existing programs looking to increase project origination and achieve greater success. The program administration recommendations and discussion below are based on conversations with market leaders and research on successful programs.

- **Market education and sales support is essential to generating and originating new projects**

The lack of awareness of what PACE is and how it works remains a challenge. Education and the ability to sell PACE financing to building owners, contractors and existing mortgage holders is critical. It is important to refine the value proposition of PACE to potential market participants.

Building Owner Education: Capital improvements are often a low priority for real estate owners, even though energy may represent a significant portion of a building's variable costs. Tailoring the message to building owners means emphasizing the potential to reduce operating expenses, improve cash flow, increase property values, and access attractive financing. PACE programs should reach building owners through organizations such as the Building Owners and Managers Association (BOMA), the Urban Land Institute (ULI), the Real Estate Roundtable, and International Council of Shopping Centers (ICSC).

Contractor Education: Contractor trainings and workshops result in more completed projects. Once local contractors understand how PACE works and realize that it can help them develop and close projects, they can serve as an extended sales force for PACE programs. Larger and more sophisticated projects often require the involvement of a sophisticated contractor or other finance experts who can sell the project based on the benefits of long-term financing and positive cash flow as opposed to the traditional short-term simple payback approach.

Lender Education: Since a PACE assessment has a senior claim on a property (in the event of bankruptcy the PACE financier is repaid before other debt holders), nearly all PACE programs require the consent and acknowledgement of an existing mortgage holder. Successful lender engagement strategies emphasize that PACE adds value by increasing the building's net operating income (NOI). Also, when seeking lender consent, it may be helpful to have a third-party review of the project to verify cost estimates and savings projections in order to facilitate a high-level of confidence in the project. To date, over 80 financial institutions have consented to PACE transactions.¹³

- **The PACE process must be standardized and streamlined for many owners**

PACE project development is time-consuming, and building owners may encounter hurdles resulting from administrative processes, legal or financial issues, or specific PACE program requirements. Lowering these hurdles by standardizing and simplifying program processes and documents has proven to be beneficial. Market leaders note that small projects work best in a low-touch, high-volume administration model. In the case of larger projects, sometimes standardization works well, and in other cases the building owner may need a more personalized approach. A project developer may be able to help owners through the process. Streamlined processes also keep overhead costs to a small portion of overall project cost.

¹³ These institutions range from local, regional, national, and foreign banks, to private capital providers, insurance companies, specialty lenders, and government entities - continued education of the existing lender community is important. See PACENow's Lender Support Update, March 2014. <http://pacenow.org/lender-support-update/>

Marketing and outreach best practices

1. Conduct contractor outreach through trainings, workshops and project development support.

- The challenge is to educate the contractors to present projects to building owners based on cash-flow opportunity analysis as opposed to short-term simple back criteria. Energy service companies (ESCOs) that offer energy performance contracting, would seem a natural fit with the PACE model, however most ESCOs have traditionally concentrated their efforts in the public buildings sector and will need to modify their approach to leverage PACE benefits in the private building sector.

(continued)

Marketing and outreach best practices *(continued)*

2. Develop tools that convert EE/RE project technical data to the language of finance to better align with owners and capital providers underwriting requirements.
3. Develop sales allies. The message to chambers of commerce, industry associations, and economic development corporations is often centered on economic development and job creation.
4. Segment the market. Identify buildings with deferred maintenance issues, high energy users, or specific building types best suited for improvements.
5. Bring in a firm/consultant to source and develop projects.
6. Reach out to building owners directly. Identify medium to large property owners in each municipality and attend local facility manager and building owner meetings.
7. Sell PACE with other incentives (e.g., tax credits, renewable energy credits, utility rebates). Ensure that they work in concert, not in opposition.
8. Reach out to the media. Traditional and social media outreach has been proven successful.
9. Track other policy and market trends that may lead to more retrofits (e.g., local or state codes to replace/upgrade boilers).

- **A project leader should be clearly designated**

A clear point person shepherding the project from beginning to end often produces the best results (either a third-party project development company or a program administrator). The ideal messenger varies by the type of building owner, contractor, or lender in question. Challenges arise when market participants hear conflicting information from multiple sources.

- **Uniformity is important across a service area**

Programs should be designed to allow building owners and contractors to learn PACE program requirements and processes once, and then participate across an entire region. A municipality making the initial decision about what type of program to enroll in or to set up should consider which model will make it easiest for the types of contractors and building owners in the local market to use the PACE program. A city with mostly local contractors and owners may not have to standardize the program with other markets. On the other hand, a city with contractors and owners who operate nationally can benefit from and jumpstart their activities by aligning the program design with that of programs in similar markets. Privately administered programs can help bring scale to the market by creating uniform service and products across a wide geography.

- **PACE should be incorporated into the existing commercial real estate ecosystem of lenders and contractors**

Contractors and existing mortgage lenders can support PACE markets by incorporating the transactions into their service offerings. For example, existing mortgage lenders could educate owners about PACE at the time of refinancing and encourage them to do a project in order to add PACE financing to the capital stack being used to finance the building. PACE programs should develop relationships with major contractors and ESCOs in their service areas to help incorporate PACE into contractor business development and sales activities.

- **Companies that administer program for municipalities can work with motivated local building owners to expand municipal markets**

As discussed above, one model for PACE is to select a private firm to manage the program for the municipality. Local building owners can help catalyze PACE in their municipalities by reaching out directly to city or county officials to explore bringing a successful program into the local market. Local businesses can advocate to elected officials about the benefits of PACE, such as job creation, economic activity, and sustainability. This strategy has been successful in Connecticut, Toledo, and Arkansas.

FINANCING MODELS

The roles of the municipality, intermediary, and financial institution in PACE financing may differ depending on the specific structure in place in each location. The municipality may act as a loan servicer for the assessment, but leave the property owner to arrange the financing. Alternatively, the municipality may be deeply involved in raising capital through bond issuances, using its reserve funds or arranging external financing in support of the program.

Two dichotomies characterize the decisions around financing: the use of an “open market” as opposed to “turnkey” financial transaction, and a “funding on demand” approach versus a “project aggregation” model. These different financial models are explored below.

- **Open Market:** In this model, a municipality encourages a number of financial institutions to operate in the same market. These could be banks, or other capital providers (e.g., Clean Fund, Structured Finance Associates, Samas, and others). Advocates for open market program design believe that competition leads to a more diverse marketplace and lower interest rates. Open markets may provide flexibility to allow sophisticated property owners to work with preferred capital providers. Critics of open market programs say they place too much burden on property owners and contractors to develop financing. To overcome this issue, PACE administrators in open market systems develop lists of available financing providers.
- **Turnkey:** In this model, municipalities opt to provide an exclusive source of funding for projects. This could be a government reserve (Sonoma County began with this approach) contracted third-party administrator (e.g., Ygrene) that functions as a sole provider. Advocates of turnkey programs cite the advantage of having funding immediately available for projects. Sole-source funding is simple but also deprives building owners of choice and the fees and administrative costs may not be as transparent as in markets with open market competition.

Program administrators must decide if they will support funding on demand or if they will aggregate projects and then seek funding. To date, the clear trend has been for programs to provide funding on demand, whether that funding is provided from government reserves (e.g., Sonoma, Connecticut’s Green Bank), a specialized investment fund (e.g., Clean Fund, Structured Finance Associates, Figtree, Ygrene), or a bank warehouse line.¹⁴

- **Funding on Demand:** In this model, as soon as a project is ready for funding, funds are immediately available. Funding on demand started with Sonoma County, using funds invested by the county treasurer. The advantage of funding on demand is obvious: no waiting. On-demand programs can quote rates and fees, which make it easier for property owners to make a decision. More recently,

¹⁴ These providers of funding on demand may plan to eventually securitize (find new investors) for their holdings.

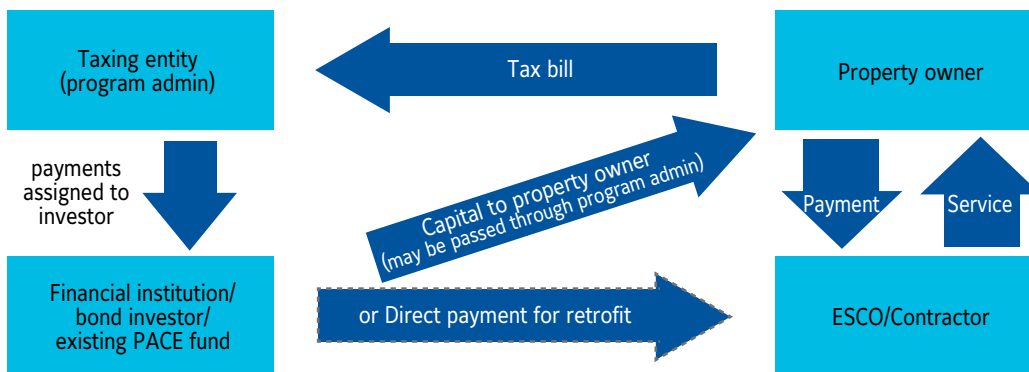
the State of Connecticut has used its Green Bank’s balance sheet to fund projects. Other capital providers, including Ygrene, Clean Fund, Figtree, have raised pools of capital from investors to fund projects on demand. However, there are risks to this approach. If the project is funded initially by a “warehouse” investor (i.e. one that plans to ultimately aggregate the projects that are being funded over time and pool them for future securitization), the portfolio created by the warehouse will fall in value if market interest rates rise. While “interest rate risk” can be hedged, it can be expensive.

- Funding after Aggregation:** Projects are funded in this approach when there are enough projects and sufficient dollar volume to efficiently access the municipal bond market. This approach has been used by Boulder County, Ann Arbor, and Toledo. Each of these programs aggregated PACE projects and then issued a taxable municipal bond that was privately placed with sophisticated institutional investors (investment funds, insurance companies) who may expect to hold them until fully paid off. There may be restrictions on the ability to sell such bonds to anyone other than other institutional investors. With low project volume, property owners will need to wait for other projects to be approved. For planning purposes, the interest rate for projects cannot be determined until all projects are funded.

Whether programs use open market or turnkey approaches, and whether projects are aggregated or funded on demand, the PACE market is today, small, or in finance parlance, illiquid. While the underlying PACE credit is very strong, an illiquid market means investors may find it difficult to find a ready and qualified buyer if there were a need to sell. Today, PACE assets trade at interest rates that are high, relative other less secure credits, mostly because the market is illiquid.

Figure 8 simplifies a PACE financing flow through any of these PACE financing options.

Figure 8. PACE financing flow



One additional finance challenge that emerged in interviews is the need for construction financing. Today, PACE programs generally disburse funds at the completion of project implementation, rather than at the project approval phase. The timing of funding disbursement is often contingent on the placement of a PACE lien on the property. This poses a challenge for many contractors to get paid while the construction work is underway. A construction financing model could help bridge the gap between PACE project approval, construction and payment. Connecticut’s C-PACE program has solved this financing challenge by releasing funds at project approval – typically in installments consistent with the contractor’s construction schedule.

Table 2 compares the basic features of the financing models used by each of the four programs highlighted in this paper.

Table 2. Financing models for PACE Programs.

	Connecticut	Toledo, Ohio	Los Angeles County	Figtree
# of projects	30	84	2	23
\$ financed	\$22 million	\$18 million	\$7.2	\$2.4 million
Interest rate	6% range	\$5-6 % range	7% range	7% range
Financing model	Open market, on demand model with initial warehouse Green Bank funding	Turnkey, aggregation with an on demand component from a revolving loan fund	Open market, on demand model	Open market, on demand model

REMAINING CHALLENGES AND UNSETTLED ISSUES

In this new and dynamic marketplace, there are a variety of financing models and program administration designs. Market leaders we interviewed offered diverging perspectives on a number of challenges facing the expansion of PACE markets.

- **Administration costs may influence type of projects delivered**

With program administration fees that range from 0.5 to 6 percent, depending on the services provided by the municipality, higher-cost programs with more services added may discourage large projects from applying. This is in part reinforced by the contractor community, which may view higher PACE administrative fee structures as essentially duplicative of the project administration costs they bear in project development. Thus larger projects may be perceived as overly burdened with fees, and the owners may be less inclined to pursue PACE. These fees ultimately will be viewed in the context of the unique long-term (up to 20 years) PACE financing and related cash flow benefits.

The fee structure is generally determined by the types of services included in the PACE administrative approach as described above. Programs with minimal administration leave it up to other market actors, such as project developers, to drive participation. Other municipal-led programs conduct their own marketing and outreach (e.g., websites, educational materials, contractor trainings) and build project evaluation tools (technical review, audits, M&V). These programs tend to have higher overhead costs. Different models may need to coexist in the same market to capture all building sizes and owner types in a PACE program.

- **New programs need to develop program materials, but also need to quickly move into selling and developing actual projects**

New programs must decide how to prioritize their activities. PACE programs need a program website, educational materials for market participants, and the legal framework and tools necessary to move projects through the PACE process. Some programs develop all these materials up front before market engagement to find actual projects. Other programs keep program materials minimal at the outset and produce them as needed, enabling them to reduce transaction costs and focus on developing their pipeline of transactions. Because the commercial sales cycle is typically 6-9 months or more, early outreach prior to program launch is critical.

- **Data collection and measurement and verification of savings are cumbersome, but critical to investor confidence**

Some programs require data collection and review both during project development and after a project is implemented to measure and verify (M&V) results.¹⁵ Other programs require only minimal tracking of program success, perhaps in the form of an ENERGY STAR score in the initial years after the project. While comprehensive data collection efforts may add costs, tools have emerged to cost effectively manage the M&V process. Moreover, it is critical for the first generation of PACE projects to prove successful to ensure that PACE is meeting its purpose of funding deeper retrofits, reducing energy needs, and thus avoiding greenhouse gas emissions through responsible investments. The Investor Confidence Project¹⁶ (an initiative of the Environmental Defense Fund to which PACENow is allied) seeks to develop widely understood and practiced standards and protocols for benchmarking buildings, audits to develop possible projects, and ongoing measurement and verification of outcomes. Standardized analysis and data will make it easier for all market participants and stakeholders to make informed decisions.

¹⁵ Additionally, some programs require that contractors provide a guarantee for the energy savings performance.

¹⁶ For more information about the Investor Confidence Project visit www.eepformance.org.

CONCLUSION

2013 was a turning point year for the PACE market. Various financing models and program designs are being implemented across the country and may appeal to buildings of different sizes and types. Today, PACE financing is available in nearly 500 municipalities in nine states and Washington, D.C. (with potential of increasing to 31 states). While there are 25 active programs, PACE availability is still patchy, and it is challenging for building owners with properties in multiple states to get projects completed. In addition, new programs often have limited resources, making it challenging to get the programs started. More scalable program formats or model programs are likely needed. A variety of conclusions emerged from program administrator interviews:

- **Financing processes need to be streamlined.** For example, bond issues incur transaction costs that could be minimized by standardizing underwriting criteria. Alternatively, these fees could be eliminated by using non-bond finance options. Smaller projects may benefit from simpler, on-demand financing, while larger projects may prefer flexibility in choosing a capital provider. Construction financing is critical to lowering project costs.
- **Program administration design varies.** Some programs are entirely funded and run by the private sector, and others are entirely administered by government staff. PACE is always a public-private partnership, but the role of each entity in the market can vary significantly by program design. Some best practices did emerge from all programs:
 - Sales and education is essential for lead generation and project origination.
 - The process must be standardized and streamlined.
 - There should be a clear leader who helps participants through each step.
 - Uniformity is important across a service area.
 - PACE should be incorporated into the existing real estate ecosystem.

Small projects are succeeding in accessing and leveraging PACE-supported resources for successful project implementation. Since PACE administrators are under a great deal of pressure to deliver early success, a focus on completing smaller projects is attractive. However, it may be challenging to expand these models to meet the needs of larger projects. There is less agreement in the market about the best financing model and program design for large retrofit projects. As the market matures, best practices in capturing and delivering large projects may emerge.

PACE programs face a general lack of demand for energy efficiency and renewable energy improvements. Building owner and contractor education on energy efficiency and renewable energy options, and on PACE specifically, is critical to unlocking the market for retrofit financing. Starting a PACE program in a new market is like trying to light a fire – the process required at the beginning may be quite different from what it takes to keep the fire burning and help it grow over time.

APPENDIX 1: BRIEF HISTORY OF PACE

The first PACE programs were conceived and launched in Berkeley and Palm Desert, CA, in 2008. Additional programs then launched in Sonoma County, CA, and Boulder County, CO. A PACE variant also launched in the town of Babylon, NY, on Long Island. By 2009, *Scientific American* magazine had proclaimed PACE a “World Changing Idea.” Its broad appeal to communities eager to implement focused, locally managed energy efficiency/renewable energy financing programs is apparent; today, 31 states and the District of Columbia have passed enabling legislation for PACE programs. While PACE is suitable for both homes and commercial buildings, early programs focused mostly on residential applications. Scores if not hundreds of programs were being considered or were soon under development nationwide. Unfortunately, the early promise of PACE for residential programs was brought to an almost complete halt in July 2010, when the Federal Housing Finance Agency (FHFA), which regulates Fannie Mae, Freddie Mac and other Government Sponsored Enterprises issued a statement directing them to stop underwriting mortgages with PACE assessments. Notwithstanding the FHFA’s position, municipalities continue to express interest in residential PACE, and senior lien programs have been launched since July 2010, most notably in Riverside County, CA, and Miami-Dade County, FL. Renovate America, the company administering the Western Riverside Council of Government’s HERO PACE program, reports completing nearly 8,500 home energy efficiency projects to date, worth \$160 million, and has recently securitized over \$100 million of residential PACE assessments. Pending resolution of the issues stalling PACE residential programs, the focus began shifting throughout the U.S. in early 2011 to commercial PACE programs for buildings whose mortgages fall outside the purview of the FHFA.

APPENDIX 2: DESCRIPTIONS OF THE FOUR LEADING PACE PROGRAMS

Figtree Financing

The Figtree OnDemandPACE™ Program provides PACE financing to help commercial property owners improve their properties and lower their utility bills with energy efficiency, renewable energy, and water conservation upgrades. Figtree Financing has successfully funded millions of dollars of property improvements with commercial PACE financing.

Project financing: Completed 23 projects worth \$2.4 million at a roughly 7 percent interest rate.

Types of projects financed: Figtree has financed a variety of energy efficiency improvements including HVAC, solar, cool roofing, and lighting. The program's OnDemandPACE™ financing enables small and medium-sized projects to use PACE which often do not have other good financing options. In addition, the committed capital allows the program to have attractive paybacks for large \$1M+ projects.

Jurisdictions covered: The program operates in 55 municipalities in California with an aspiration to enroll more California municipalities and offer a PACE program outside California. Figtree has a dedicated staffer in charge of municipal enrollment. As a proponent of market competition, Figtree has non-exclusive agreements with municipalities.

Program structure: Figtree is an example of a PACE program entirely funded and run by the private sector. Figtree enrolls municipalities in its program, does market outreach, and funds projects. Individual municipalities then do not have to start programs of their own.

Financing model: Figtree Financing recently changed from an open market project aggregation financing model to open market on demand financing, arranged with a large New York-based financial institution for up to \$60 million in committed capital to fund commercial PACE energy upgrades. Figtree calls the new model *OnDemandPACE™*, and this financing mechanism will offer flexibility in interest rates and drive transaction costs down. Figtree is working with the California Enterprise and Development Authority (CEDA), which acts as a bonding entity. Figtree does not provide construction financing, but offer progress payments once equipment is delivered and there is proof of work on the property.

The previous bond pooling model left building owners dependent on the market sale price for each bond and resulted in some wait time before funding was available. Figtree arranged three pooled bonds with CEDA using this approach.

Toledo-Lucas County Port Authority/BetterBuildings Challenge

Building owners can save on energy costs while increasing the value of their investment by participating in BetterBuildings Northwest Ohio, a program of the Toledo-Lucas County Port Authority. Through BetterBuildings, owners of virtually every type of building are eligible for fixed rate competitive financing to pay for 100% of the high-efficiency improvements to their buildings.

Project financing: Completed 84 projects worth \$18.0 million at an interest rate between 5 and 6 percent.

Types of projects financed: The program has funded a wide variety of buildings including commercial, municipal and not for profit. Many buildings may be experiencing issues with aging mechanicals, and PACE financing can be ideal as part of a capital stack in a deep retrofit. Properties that are fairly leveraged and already securitized are also candidates for PACE financing.

Jurisdictions covered: Started in Toledo. Ohio is working on legislation that would make it easier to govern larger geographical areas to the existing PACE district – instead of having each county set up its own district. Toledo is also providing guidance to other port authorities across Ohio.

Program structure: The program is administered by the Toledo-Lucas County Port Authority and was initially funded using grants under the American Reinvestment and Recovery Act (ARRA).

Financing model: The program follows a turnkey market, private placement pooling bond model and makes on-demand funding available in jurisdictions covered. The Port Authority created and maintains the NW Ohio Bond Fund and a revolving loan fund. The authority is able to aggregate projects using a combination of bond proceeds and its revolving loan fund. The authority financed over \$30 million in energy efficiency projects, roughly \$18 million of which were PACE projects.

The revolving loan fund allows the port authority to fund projects on demand and later aggregate them and issue municipal revenue backed bonds. Project aggregations result in the best interest rates and the lowest issuance cost and make it possible to fund smaller projects. This method can provide long-term fixed rate funding and can be accomplished by funding all projects simultaneously when a sufficient volume is reached or in combination with a warehouse credit line providing interim financing on demand. In 2014, the program will take advantage of additional loan loss reserves from the state of Ohio.

Los Angeles County Commercial PACE program and LA BetterBuildings Challenge

PACE financing allows commercial property owners to finance up to 100 percent of the cost of installing energy efficiency, renewable energy and water-saving improvements, and enjoy the immediate benefits of lower energy and water bills. Loans are repaid through an assessment placed on property tax bills.

Project financing: Completed two projects worth \$7.2 million at an interest rate roughly 7 percent (exact rate not disclosed).

Types of projects financed: Completed projects are a large hotel property and small office building. The program is focused on large projects; a minimum project size is \$250,000. Preferred property types are older buildings with a need for major upgrade, buildings that have to comply with state or city regulations, properties leased to government industries, and hospitality properties. Program staff noted that properties with no mortgages are also preferred.

Jurisdictions covered: PACE is enabled in over of Los Angeles County's 100 member cities. More than 90 percent of the cities within Los Angeles County have adopted PACE resolutions to participate. If a city has not passed a resolution to participate, they may contact the program to find out how they can participate.

Program structure: The initial funding for the program came from an ARRA grant. The program is administered by the county and city staff with the help of several entities charged with program management, application processing, public relations, communications, project sourcing, and marketing. BKi is charged with program management and application processing, O'Rorke Inc. offers public relations and marketing support, and ReNewAll is sourcing and developing projects. While the county has the bonding authority and functions as a servicer for PACE assessments, the City of Los Angeles staff conducts outreach to capital investors and project developers. The program assigns a PACE project developer, who guides the building owner through every step in the process, including assistance in arranging financing.

Financing model: Open market bond funded model. The program can assist a building owner in finding a financial provider, or a building owner can arrange financing through an investor of choice. The program has a list of accredited capital providers on its website. The county issues the bond and sets up a trustee, while giving the building owner an option to capitalize the trustee fees.

C-PACE

Connecticut Property Assessed Clean Energy (C-PACE) is an innovative program that is helping commercial, industrial and multi-family property owners access affordable, long-term financing for smart energy upgrades to their buildings. C-PACE allows building owners to finance qualifying energy efficiency and clean energy improvements by placing a voluntary assessment on their property tax bill.

Project Financing: Completed 30 projects worth \$22 million at an interest rate of roughly 6 percent.

Types of projects financed: In the beginning, the program attracted small to midsize building owners without extensive capital budgets, and with deferred maintenance concerns. The first seven projects ranged from \$100,000 to \$300,000. Later projects were substantially larger, ranging from \$1 million to \$2 million. Program staff members focus time on driving volume to the program by actively sourcing transactions. Completed projects represent a variety of property types, ranging from office and retail to industrial.

Jurisdictions covered: C-PACE is a statewide program with a goal to enroll all municipalities in Connecticut. Currently, 80 cities and towns are enrolled, constituting 83 percent of all building stock in the state.

Background on program structure: C-PACE is operated by Connecticut's Green Bank, which was mandated by the Connecticut legislature to establish and administer a statewide PACE program for commercial, industrial, and multi-family properties. The program was launched in January 2013 and celebrated its one-year anniversary with more than \$20 million in approved projects.

Green Bank acts as a conduit for private investment and allows property owners to arrange financing with their capital provider. The initial capital of \$40 million was provided by the Green Bank, helping to bring capital costs down and make financing more attractive to early adopters. This seed capital allowed the program to reach volume faster and avoid transaction costs. Green Bank provides construction financing and converts it to a lien upon project completion. Green Bank announced the first sale of its initial \$10 million aggregated portfolio in fall 2013 and received a number of bids from capital providers. Green Bank has also developed a list of qualified capital providers who have the ability to bid into deals financed out of Green Bank's warehouse. The first sale of C-PACE portfolio occurred on May 15, 2014 and enabled Clean Fund (who was selected through a competitive bid process) to purchase the first \$30MM of C-PACE transactions done in CT.

Financing model: Open market model with initial on demand government financing.

Other facts: As for municipal enrollment, program staff had extensive meetings with city and town managers, attorneys and treasurers to educate them about PACE. Program staff noted that the most effective strategy for municipal enrollment is when a property owner approaches elected officials in his/her city. To alleviate the concerns of local tax entities, Green Bank paid to integrate PACE into software used by local tax collectors.

APPENDIX 3: ACKNOWLEDGEMENTS

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PACENow is an advocate for Property Assessed Clean Energy, an innovative way of financing energy efficiency and related upgrades to buildings. PACENow's mission is to promote and assist the development of PACE programs by state and local governments and provide leadership and support for a growing universe of energy efficiency and PACE stakeholders. Please contact PACENow via e-mail: info@pacenow.org or www.pacenow.org.



The Institute for Building Efficiency is an initiative of Johnson Controls providing information and analysis of technologies, policies, and practices for efficient, high performance buildings and smart energy systems around the world. The Institute leverages the company's 125 years of global experience providing energy efficient solutions for buildings to support and complement the efforts of nonprofit organizations and industry associations. The Institute focuses on practical solutions that are innovative, cost-effective and scalable.

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