U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

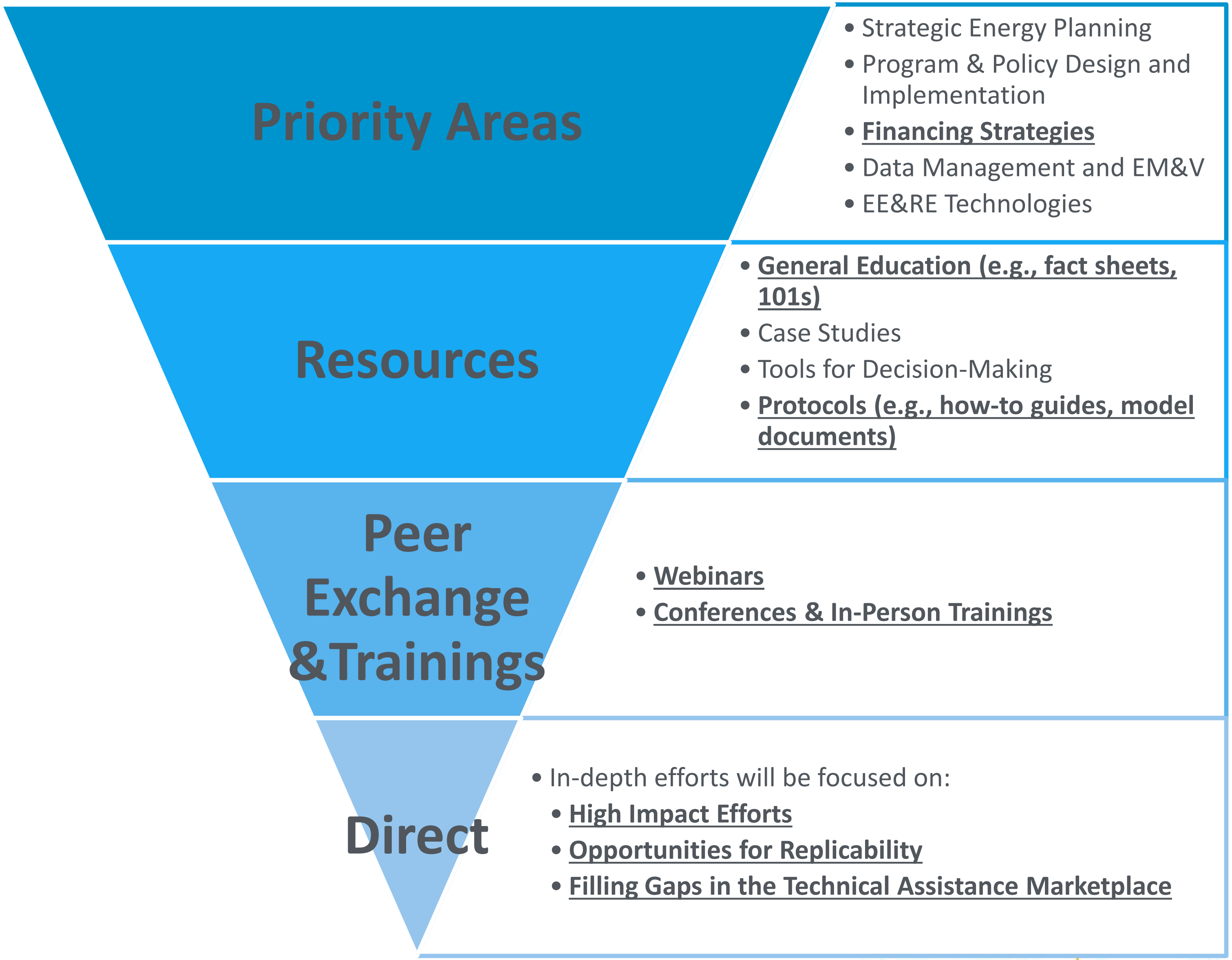
Commercial PACE: A Comparative Analysis

February 26, 2015

DOE's Technical Assistance Program

Office of Weatherization and Intergovernmental Programs

DOE's Technical Assistance Program



Priority Areas

- Strategic Energy Planning
- Program & Policy Design and Implementation
- **Financing Strategies**
- Data Management and EM&V
- EE&RE Technologies

Resources

- **General Education (e.g., fact sheets, 101s)**
- Case Studies
- Tools for Decision-Making
- **Protocols (e.g., how-to guides, model documents)**

Peer Exchange &Trainings

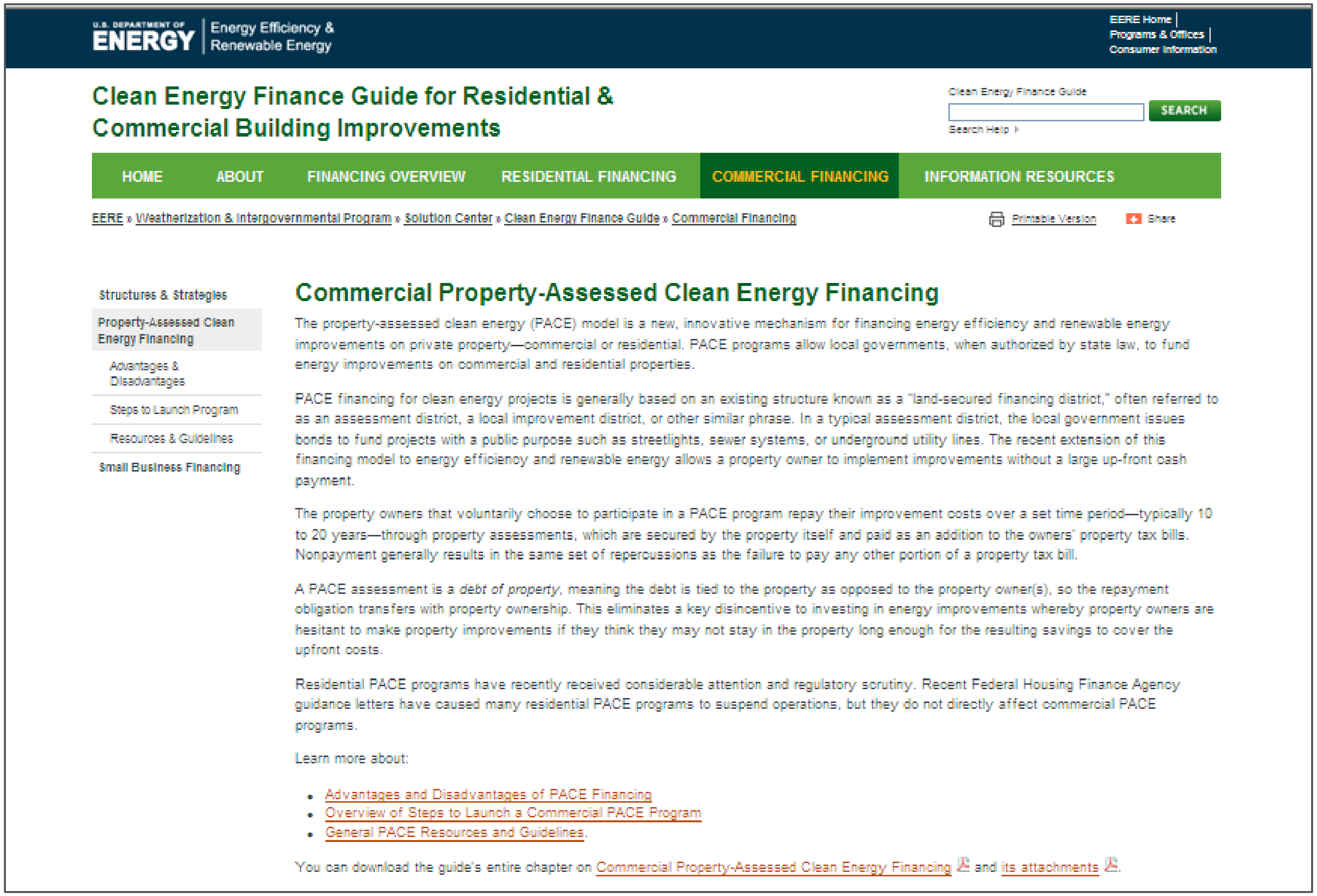
- **Webinars**
- **Conferences & In-Person Trainings**

Direct

- In-depth efforts will be focused on:
  - **High Impact Efforts**
  - **Opportunities for Replicability**
  - **Filling Gaps in the Technical Assistance Marketplace**

Tap into Commercial PACE Resources

Visit our Commercial PACE pages on the TAP *Solution Center*



Clean Energy Finance Guide for Residential & Commercial Building Improvements

Commercial Property-Assessed Clean Energy Financing

The property-assessed clean energy (PACE) model is a new, innovative mechanism for financing energy efficiency and renewable energy improvements on private property—commercial or residential. PACE programs allow local governments, when authorized by state law, to fund energy improvements on commercial and residential properties.

PACE financing for clean energy projects is generally based on an existing structure known as a "land-secured financing district," often referred to as an assessment district, a local improvement district, or other similar phrase. In a typical assessment district, the local government issues bonds to fund projects with a public purpose such as streetlights, sewer systems, or underground utility lines. The recent extension of this financing model to energy efficiency and renewable energy allows a property owner to implement improvements without a large up-front cash payment.

The property owners that voluntarily choose to participate in a PACE program repay their improvement costs over a set time period—typically 10 to 20 years—through property assessments, which are secured by the property itself and paid as an addition to the owners' property tax bills. Nonpayment generally results in the same set of repercussions as the failure to pay any other portion of a property tax bill.

A PACE assessment is a *debt of property*, meaning the debt is tied to the property as opposed to the property owner(s), so the repayment obligation transfers with property ownership. This eliminates a key disincentive to investing in energy improvements whereby property owners are hesitant to make property improvements if they think they may not stay in the property long enough for the resulting savings to cover the upfront costs.

Residential PACE programs have recently received considerable attention and regulatory scrutiny. Recent Federal Housing Finance Agency guidance letters have caused many residential PACE programs to suspend operations, but they do not directly affect commercial PACE programs.

Learn more about:

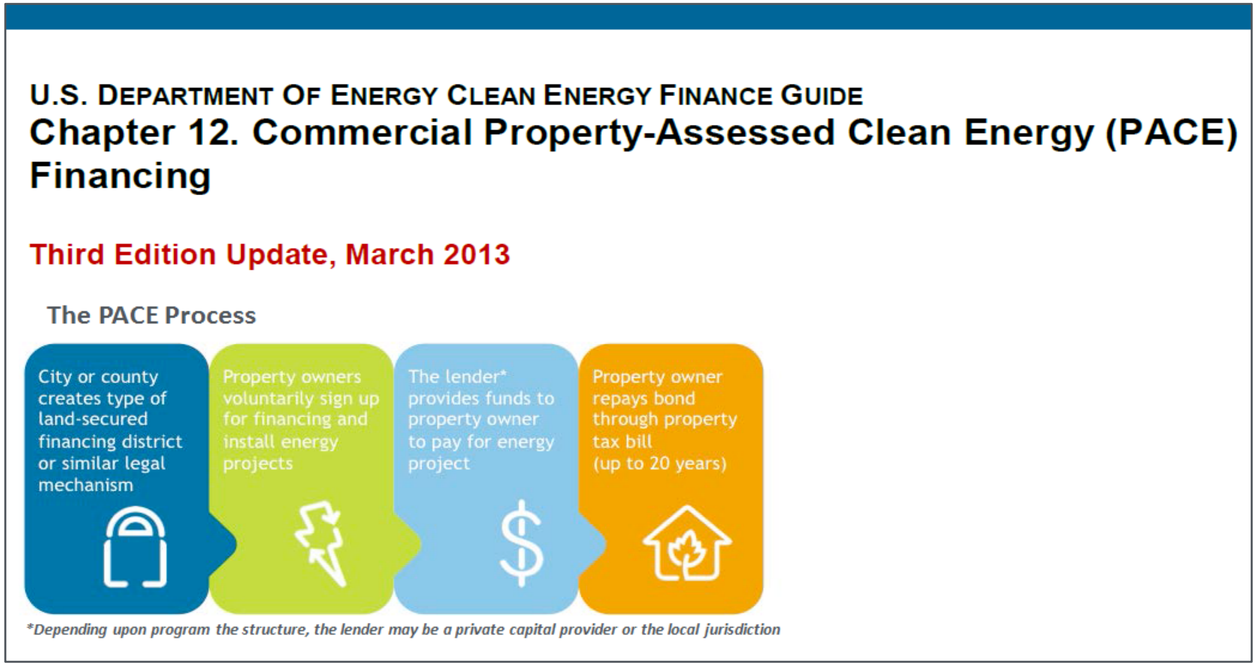
- Advantages and Disadvantages of PACE Financing
- Overview of Steps to Launch a Commercial PACE Program
- General PACE Resources and Guidelines.

You can download the guide's entire chapter on Commercial Property-Assessed Clean Energy Financing and its attachments.

http://www4.eere.energy.gov/wip/solutioncenter/finance_guide/content/commercial_property_assessed_clean_energy_financing

Solution Center: DOE Provided Commercial PACE Materials

- **Clean Energy Financing Guide Chapter 12: Commercial PACE Financing**
- **Application Template Package**
- **Marketing Template Package**



U.S. DEPARTMENT OF ENERGY CLEAN ENERGY FINANCE GUIDE

Chapter 12. Commercial Property-Assessed Clean Energy (PACE) Financing

Third Edition Update, March 2013

The PACE Process

- City or county creates type of land-secured financing district or similar legal mechanism
- Property owners voluntarily sign up for financing and install energy projects
- The lender* provides funds to property owner to pay for energy project
- Property owner repays bond through property tax bill (up to 20 years)

**Depending upon program the structure, the lender may be a private capital provider or the local jurisdiction*

http://energy.gov/sites/prod/files/2014/05/f15/ch12_commercial_pace_all.pdf

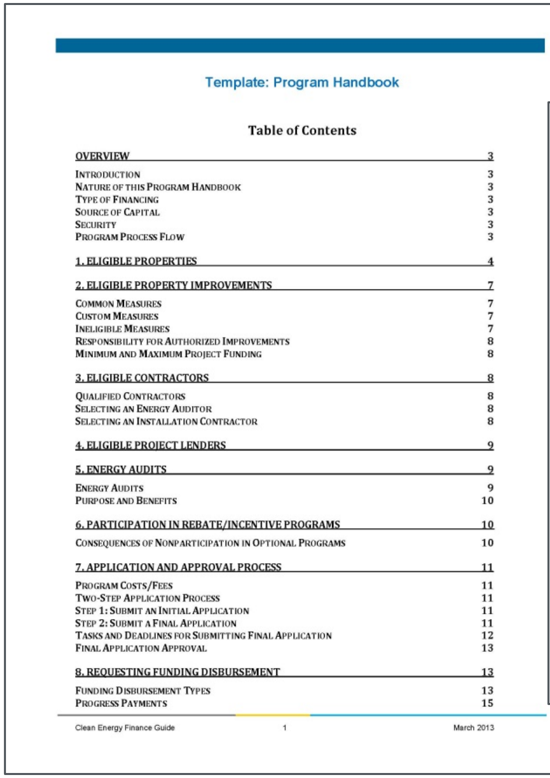
Solution Center: Template Documents

Application Templates

- Program Handbook
- Eligible Measures List
- Application Form
- Lender Acknowledgment Form

Marketing Templates

- Customizable Press Release
- Program Overview
- Program FAQ
- Program Brochure
- Social Media Toolkit



Template: Program Handbook

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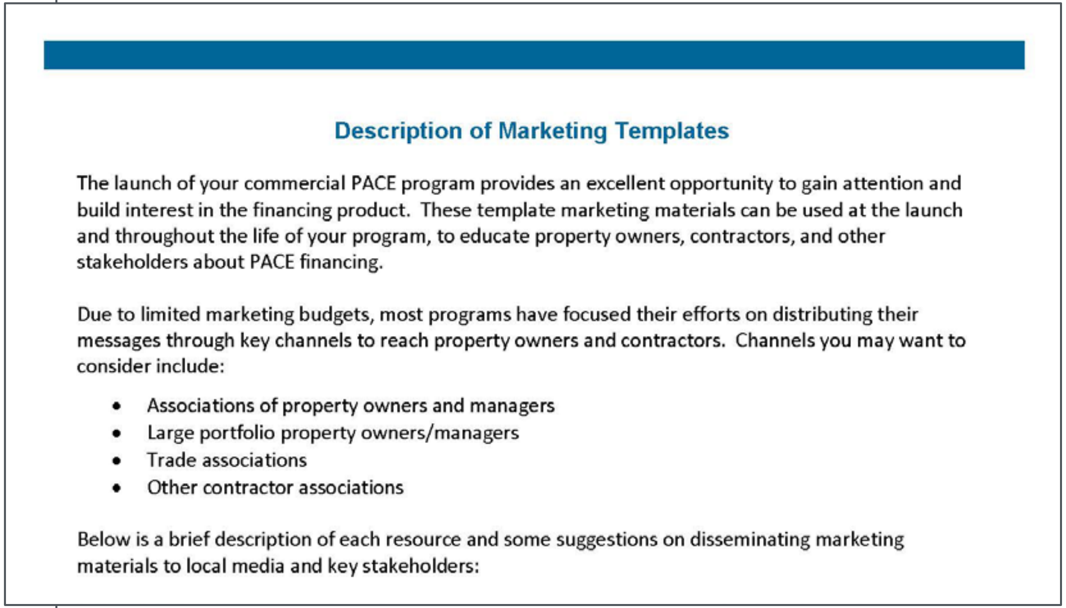
Clean Energy Finance Guide 1 March 2013



Description of Marketing Templates

The launch of your commercial PACE program provides an excellent opportunity to gain attention and build interest in the financing product. These template marketing materials can be used at the launch and throughout the life of your program, to educate property owners, contractors, and other stakeholders about PACE financing.

Due to limited marketing budgets, most programs have focused their efforts on distributing their messages through key channels to reach property owners and contractors. Channels you may want to consider include:

- Associations of property owners and managers
- Large portfolio property owners/managers
- Trade associations
- Other contractor associations

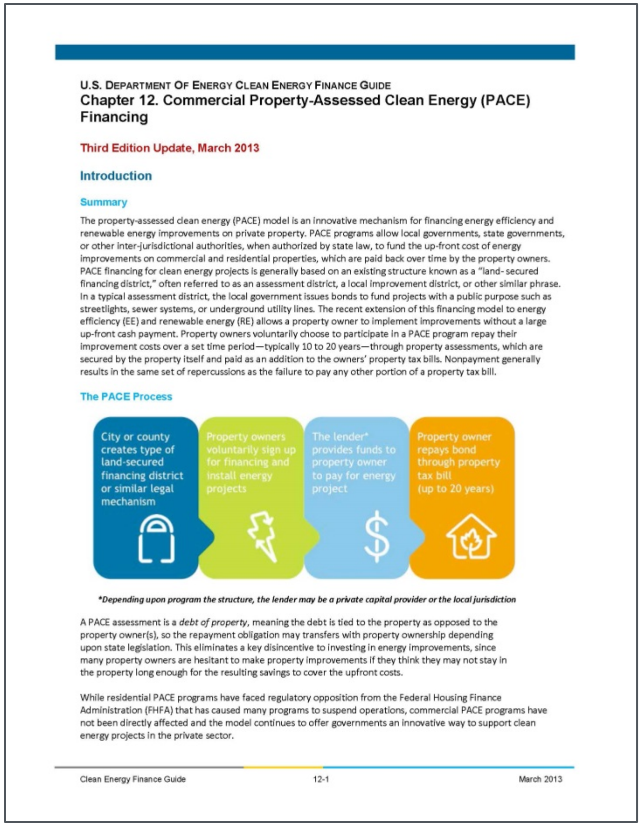
Below is a brief description of each resource and some suggestions on disseminating marketing materials to local media and key stakeholders:

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Solution Center: Clean Energy Financing Guide, Chapter 12

The Financing Guide chapter describes how to:

- Review and address issues
- Establish a supporting framework
- Choose a capital sourcing approach
- Determine if and how to deploy credit enhancement
- Choose eligible property types
- Assemble eligible project measures
- Choose energy audit requirements
- Choose program eligibility criteria
- Leverage existing utility rebate/incentive programs
- Plan quality assurance/quality control
- Design application processing procedures
- Specify contractor requirements
- Market and launch the program



U.S. DEPARTMENT OF ENERGY CLEAN ENERGY FINANCE GUIDE

Chapter 12. Commercial Property-Assessed Clean Energy (PACE) Financing

Third Edition Update, March 2013

Introduction

Summary

The property-assessed clean energy (PACE) model is an innovative mechanism for financing energy efficiency and renewable energy improvements on private property. PACE programs allow local governments, state governments, or other inter-jurisdictional authorities, when authorized by state law, to fund the up-front cost of energy improvements on commercial and residential properties, which are paid back over time by the property owners. PACE financing for clean energy projects is generally based on an existing structure known as a "land- secured financing district," often referred to as an assessment district, a local improvement district, or other similar phrase. In a typical assessment district, the local government issues bonds to fund projects with a public purpose such as streetlights, sewer systems, or underground utility lines. The recent extension of this financing model to energy efficiency (EE) and renewable energy (RE) allows a property owner to implement improvements without a large up-front cash payment. Property owners voluntarily choose to participate in a PACE program repay their improvement costs over a set time period—typically 10 to 20 years—through property assessments, which are secured by the property itself and paid as an addition to the owners' property tax bills. Nonpayment generally results in the same set of repercussions as the failure to pay any other portion of a property tax bill.

The PACE Process

***Depending upon program the structure, the lender may be a private capital provider or the local jurisdiction**

A PACE assessment is a *debt of property*, meaning the debt is tied to the property as opposed to the property owner(s), so the repayment obligation may transfers with property ownership depending upon state legislation. This eliminates a key disincentive to investing in energy improvements, since many property owners are hesitant to make property improvements if they think they may not stay in the property long enough for the resulting savings to cover the upfront costs.

While residential PACE programs have faced regulatory opposition from the Federal Housing Finance Administration (FHFA) that has caused many programs to suspend operations, commercial PACE programs have not been directly affected and the model continues to offer governments an innovative way to support clean energy projects in the private sector.

Clean Energy Finance Guide 12-1 March 2013

DOE Supported PACE Activity in 2015

- **NASEO:** Analysis of Statewide Property Assessed Clean Energy (PACE) Programs
- **Technical Assistance Program:** PACE in the Box Analysis
- **Better Buildings Challenge:** Milwaukee PACE Implementation Model

ENERGY EFFICIENCY FINANCING

Financing is one of several linked strategies to drive and enable customer demand for energy efficiency. Financing alone does not lead to energy savings, but it may be an effective tool for helping customers overcome the high up-front costs of a range of energy efficiency investments.

Key Focus Areas

Broad customer access to attractive capital can enable widespread adoption of energy efficiency improvements by scaling and leveraging secondary markets, reflecting a true assessment of risk, providing more liquidity, and reducing borrowing costs. SEE Action has identified four key focus areas in financing:

- **Improve Data Access**. Improve data collection practices and access to

Guidance Documents from the Network

Credit Enhancement Overview Guide
Provides considerations for state and local policymakers and energy efficiency program administrators designing and implementing successful credit enhancement strategies for residential and commercial buildings.

Energy Efficiency Finance Programs: Use Case Analysis to Define Data Needs and Guidelines
This report takes a foundational step toward the establishment of common data collection practices for energy efficiency lending. The authors reviewed existing practices for data collection for energy efficiency financing programs and, based on discussions with various stakeholders, identified high-priority needs, characterized potential uses for finance program data, and identified use cases that describe how stakeholders use data for key

President Obama speaks on American energy. View video

- Better Buildings Challenge: Progress Update - Spring 2014
- Leadership in Energy Efficiency: 5 Habits
- Better Buildings Summit Recap
- Partner Solutions: Implementation Models
- Partner Progress Against Energy Performance Goals
- Demonstrating Results: Showcase Projects

Partners & Allies Represent

3 Billion Square Feet Committed

$2 Billion in Financing through Allies

600+ Manufacturing Facilities

Featured Video

Better Buildings Challenge 101

Follow our News on Twitter @BetterBldgsDOE

@BetterBldgsDOE Join #BetterBuildings partners @GM @generalelectric @LegrandNA at #VERGECon Oct 27-30 http://grn.bz/VERGE-SF14

@BetterBldgsDOE Jon Ippel, @citybeautiful Sustainability Director, talks future plans for #Orlando

Regional Energy Efficiency Organizations

- SPEER
  - **Support C-PACE and public building efficiency across Texas**
- SWEEP
  - **Support C-PACE in Colorado, Nevada, and Utah**
    - Working with local governments to set up C-PACE programs

SPEER
The South-central Partnership for Energy Efficiency as a Resource

SWEEP
SOUTHWEST ENERGY EFFICIENCY PROJECT

SEEA
SOUTHEAST ENERGY EFFICIENCY ALLIANCE

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Commercial Property Assessed Clean Energy (PACE): A Deeper Dive into Program Administration

February 2015
Emily Martin Fadrhonc (Lawrence Berkeley National Lab)
Chris Kramer (Environmental Futures Group)

Supported by DOE’s Office of Weatherization and Intergovernmental Programs
Originally prepared for Forth Worth, Texas’s Better Buildings Challenge Finance Sub-Committee

Today's Presentation

What is Commercial PACE?

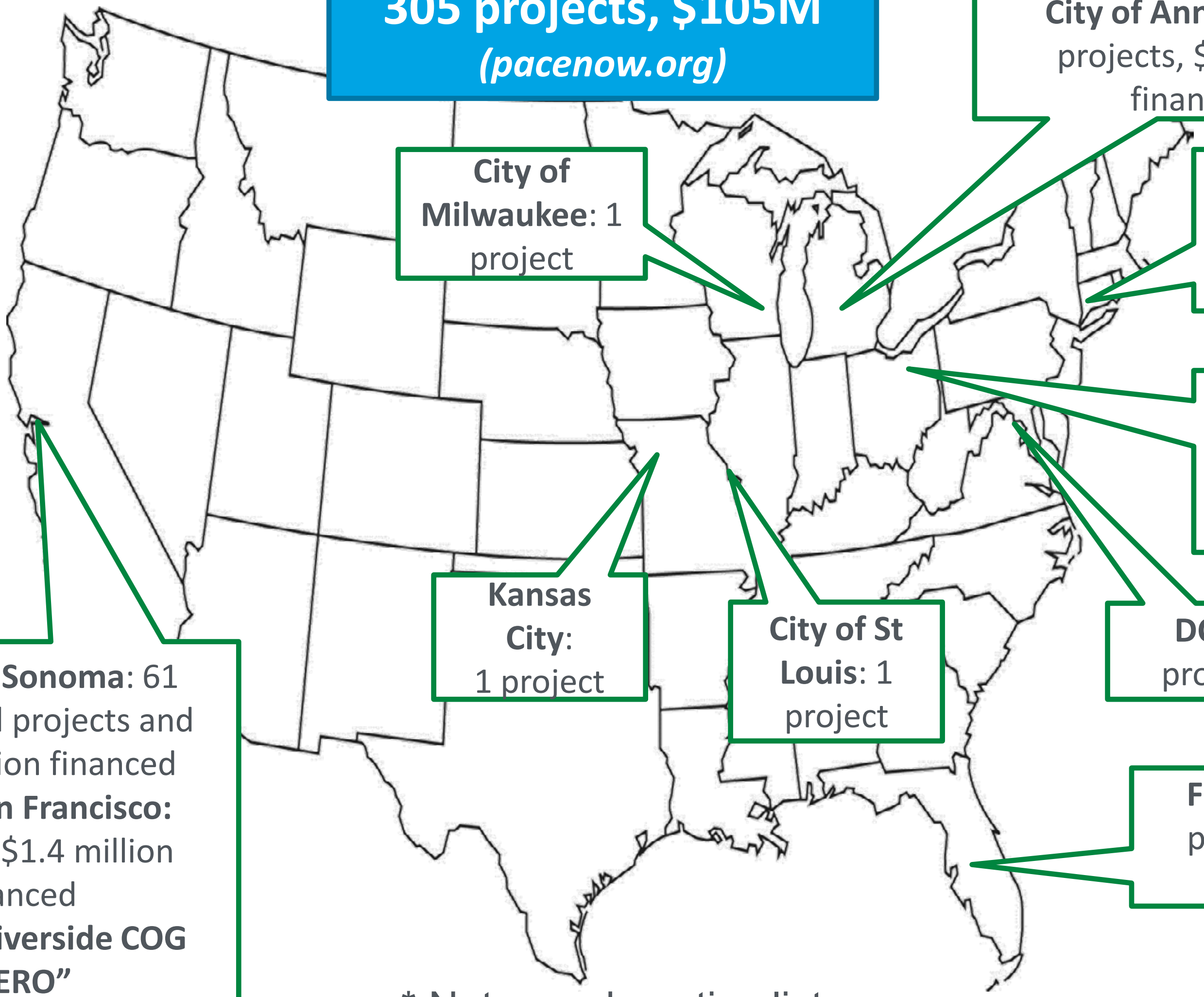
How do Commercial PACE Programs Differ?

Information from the Field

- **What is PACE?** Extension of local governments’ authority to levy special property assessments to fund projects that deliver public benefits
- **What can PACE do?** PACE may offer more attractive
  - Terms (length of assessment) since they are secured by property and can transfer to the next owner
  - Interest rates because the tax collection mechanism is well understood and considered very secure
  - Opportunities to fund deeper, longer-payback projects, since PACE assessments may transfer with ownership
- **What PACE isn’t.** PACE is one tool among many and it does not, by itself, drive demand for energy efficiency

Who is pursuing Commercial PACE?

U.S. C-PACE Total:
305 projects, $105M
(pacenow.org)



Lean and Green MI: 1 project, $500,000 financed
City of Ann Arbor: 4 projects, $540,000 financed

City of Milwaukee: 1 project

Connecticut Green Bank: 29 commercial projects, $21 million financed

Toledo Lucas County Port Authority: 85 commercial projects, $22 million financed

Kansas City: 1 project

City of St Louis: 1 project

DC: 1 project

Florida: 3 programs active

County of Sonoma: 61 commercial projects and $10.9 million financed
City of San Francisco: 1 project, $1.4 million financed
Western Riverside COG “HERO”
Ygrene

* Not an exhaustive list, see www.pacenow.org for updates

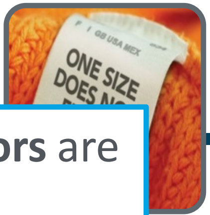
- By level of program organization
- By type of program administrator
- By capital source
- By underwriting criteria
- By eligible measures
- By quality assurance processes

…And more!

Level of Program Organization

- PACE programs may be organized at local, regional, or state-wide levels
- Local organization
  - Allows greatest flexibility in program design
  - May also increase the risk of low levels of participation, due to a small pool of potential customers
  - Local organization was common for the earliest PACE programs
- Regional and statewide organization
  - May benefit from economies of scale
  - May recruit more attractive capital to fund PACE assessments due to the larger pool of potential customers
  - Often developed where there are existing governance entities willing to act as PACE program sponsors
  - Individual local governments retain responsibility for placing PACE assessments on properties

Type of Program Administrator



- PACE program **sponsors** may select a public, quasi-public or private **administrator** to oversee the PACE program
- Public or Quasi-Public
  - Allows greatest control and flexibility in program design, but places larger administrative burden on sponsor and increases risk of "lost sunk costs" should participation not meet expectations
- Private
  - May be paid for their administration services only (fee for service model) or may provide both administrative services and the exclusive right to finance PACE improvements (one stop shop model)
  - A one stop shop administrator may offer PACE programs at no cost to program sponsors in exchange for the exclusive right to fund assessments; potential benefit should be weighed against the risks of reducing competition among financiers to deliver attractive capital to participants

PACE Program Sponsors are government or quasi-government entities that establish PACE districts and agree to record, place, and service PACE assessments.

PACE Program Administrators implement the PACE program and are responsible for processing applications, marketing, outreach, contractor qualification, data tracking, record keeping, etc. Program Sponsors can also act as Administrators or sponsors may contract with a separate public or private Administrator.

Capital Source

- Up-front capital to fund PACE improvements may come from a range of public and private sources
- Funding PACE assessments with **public capital** offers the greatest flexibility in lending terms; however, if demand outstrips the available supply of public capital, the ability to fund additional PACE assessments will be hindered
- Accessing **private capital** increases the total amount of funding available to interested PACE participants; three basic models for funding PACE assessments with private capital
  - Public administrator acts as warehousing entity
    - Requires program administrator to hold assessments until sufficient volume to support a re-sale to private investors; exposes program administrators to the risk that insufficient volume materializes or a private investor cannot be found
  - Private administrator funds assessments directly
    - Allows for an immediate infusion of private capital; may have higher upfront costs that are passed through to participants, as the private administrator is taking on additional risk by holding assessments
  - Open market model
    - Brings private capital to bear immediately; open market models may introduce administrative complexities as multiple lenders interact directly with program participants

Lessons Learned: Options for Funding Assessments

- Open market model is often viewed as the preferred option
  - Reduces the need for any outlay of public funds (even temporarily)
  - Aimed at increasing private market participation
- However, jurisdictions with the most funded projects have used the warehousing model (e.g., Toledo, Sonoma, Connecticut)
  - Has allowed them to get off the ground
  - Some jurisdictions that sought to use open market found low interest among lenders and switched to warehousing
  - Warehousing can still bring in private capital by issuing a bond backed by PACE projects

Underwriting Criteria

- Underwriting criteria (e.g., loan to value ratio, Dun and Bradstreet rating) are rarely applied to non-PACE special assessments
- Because of their unique nature, no standard underwriting criteria exist for PACE assessments, although a range of criteria have been proposed
- Ultimately, programs must strike a balance between extending financing responsibly and achieving broad access to attractive financing to achieve wide-scale clean energy and energy efficiency deployment

Eligible Measures

- PACE financing can be used to fund a range of improvements, including energy efficiency, renewable power systems, and non-energy upgrades such as wind protection
  - Allowing a wide range of measures may increase demand and program volume, but risks lower per-project energy savings
  - A savings to investment ratio (SIR) greater than one is advanced by some as consumer protection, but it has uncertain benefits and may reduce program participation
  - Including incentives in PACE projects can help achieve an SIR > 1

Lessons Learned: Savings to Investment Ratio

- SIR > 1 required in some jurisdictions
- Seen by some as a consumer protection (i.e., matching payments to savings)
- However, not necessarily an accurate reflection of the cost-effectiveness of a project
  - Realized savings may vary from projected
  - May not reflect “incremental” savings (savings above baseline at the time of replacement)
  - May not reflect “incremental” costs (costs associated only with EE)
- Worth considering usefulness of SIR > 1 criteria as a consumer protection tool
  - Disclosure is important
  - Some customers may be willing to invest for other reasons (non-energy benefits)
  - May dampen demand by excluding measures that customers find desirable

Quality Assurance Processes

- Many existing energy upgrade programs have established quality assurance and quality control protocols
  - PACE programs should consider leveraging these existing structures (e.g., contractor training requirements, certification, lists of approved contractors), as PACE-financed measures are likely to be similar to those covered by existing programs
- Ongoing data collection and reporting will allow program sponsors to assess impact and refine PACE programs over time, but may be seen as burdensome by participants
  - A program administrator may wish to take on this effort on participants’ behalf

Savings from PACE Projects

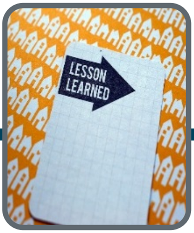
- No studies have been conducted on PACE projects in particular, due to the few completed projects and few years of data
  - However, in general, “realization rates” (defined as ex post verified energy savings divided by ex ante predictions of energy savings) in the commercial sector are estimated at approximately 80%
  - This figure is highly variable however, with some programs saving more (120%) energy than expected
  - Performance of a single retrofit compared to modeled savings will vary
- Several PACE programs are collecting data in order to assess project performance over their lifetime
  - Connecticut collects utility bill data after installation
  - Michigan requires that projects include a plan and funding for ongoing M&V (most projects meet this requirement using Portfolio Manager)
  - Milwaukee asks buildings to join the Better Buildings Challenge and use Portfolio Manager to document savings over time
- Several PACE programs report energy savings of 15 to 30+% compared to baseline
  - These are likely projected, not verified, savings

Source: Resources for the Future “Energy Efficiency Program Evaluations: Opportunities for Learning”

Lessons Learned: Set Realistic Expectations

- Significant administrative requirements in development and implementation
- Low uptake seen in most programs so far
  - Likely due to novelty of the PACE approach and "breaking in" period
  - Most commercial PACE programs have low uptake so far (many have 1 or 0 funded projects)
  - Leading jurisdictions are doing tens of projects annually
- However, the number of programs and projects are growing
  - 25 active programs
  - Over 220 projects completed

PACE Program Costs



- When discussing program costs, differentiate between program **sponsors** and program **administrators**
- Program administrators take a range of approaches to recovering their costs; three main strategies are:
  - One-time fees (0.2-5% of assessment)
  - Annual fees (0.25-3% of outstanding balance)
  - “Adder” to interest rate (3-4%)
- Any fees should be carefully weighed against their potential “demand dampening” effects
  - Anecdotally, some PACE programs have seen low volume, may be in part due to high fees and interest rates
  - Also, some programs have experienced slow “ramp up” periods, so consider timing of cost recovery
  - Some programs offer fee waivers or reduced fees for early projects

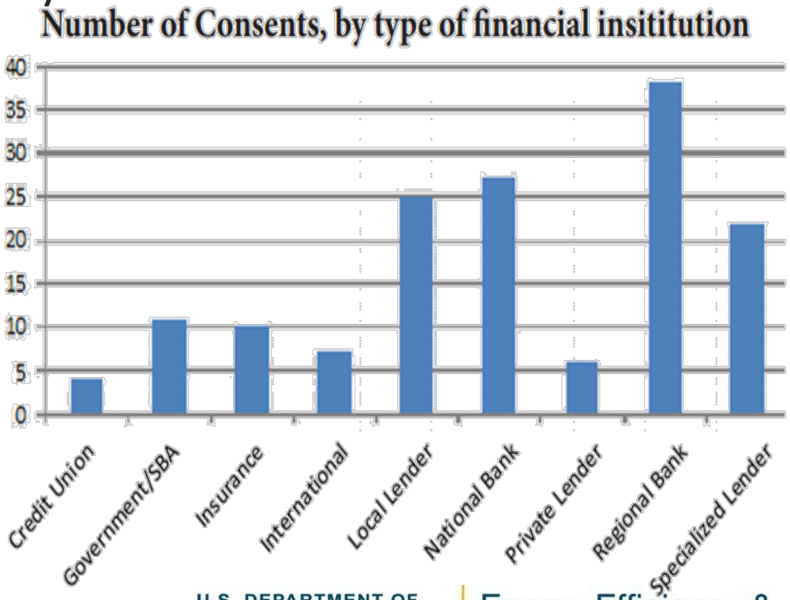
PACE Interest Rates

- In general, PACE assessments are competitive with standard property-secured loan interest rates
  - Range from 5-8.25% for 15-20 year terms
- PACE assessments may be more expensive than financing available to investment-grade commercial properties
  - Municipalities can emphasize the extra benefits of PACE (property attachment, longer terms, possible off-balance sheet treatment) as a reason to pursue PACE
- Difficult to draw conclusions between programs, due to variation in how administrative fees are included (or not included) in interest rates
  - Some programs have significant interest rate adders for program costs (up to 4 percentage points extra), others isolate these costs as one-time fees

Lender Consent to PACE

- Nationally, 81 lenders, ranging from national banks to local credit unions, have given consent to 150 commercial PACE projects as of Q4 2013 (partial list below)
- Consent denials are typically project or borrower specific (e.g., borrower has been late on payments)
- Lenders report a preference for PACE requests that are cash flow positive to the building owner
- Consent decisions typically take 30 to 90 days

Partial Listing Bank of America | Citibank | JP Morgan Chase | US Bank |Wells Fargo | Fifth Third Bank | Great Western Bank | Mechanics Bank | Citizens Bank | First Republic Bank | West America Bank | BMO Harris Bank | M&T Bank | Bank of the West | Whittier Trust Company of Nevada | Security Bank of Kansas City | US Small Business Administration | Mutual of Omaha | Prudential Insurance | American Agricultural Bank | Farm Credit East | Pacific Life Insurance |



Source: PACE Now “Lender Consent Update” (2014)

- **Program Design**: PACE programs vary!
- **Uptake:** Interest is growing, but still limited amount of transactions (300 projects, $100M)
- **Role of the Municipality in Funding Assessments**: In many existing programs, a public entity pools PACE assessments until they can be sold to private investors. Open-market model of connecting projects directly with lenders is more recent, is gaining traction in some jurisdictions (e.g., Michigan, Milwaukee).
- **Eligible Projects**: Some programs require a savings to investment ratio (SIR) > 1. The value of a SIR > 1 requirement should be considered carefully as it may not accurately predict bill impacts and may dampen demand.
- **Program Costs:** Recouped through one time fees (0.2-5% of assessment), annual fees (0.25-3% of outstanding balance), and/or “adders” to interest rate (3-4%). Tax assessment-specific costs around $40/project/year.
- **Interest Rates:** Range from 5-8% for terms of 15-20 years.
- **Mortgage Holder Consent:** Many commercial mortgage holders have consented to PACE assessments.
- **Realized Savings:** Vary (see “SIR” discussion above). Ongoing data collection enables analysis and improvement over time.

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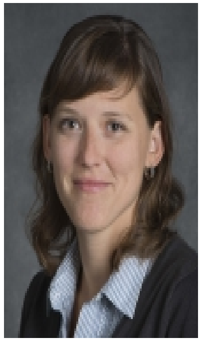

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WIPO State and Local Solution Center:
http://energy.gov/eere/slsc/state-and-local-solution-center

References and Further Reading

References and Further Reading

Document	Link	Details	Contacts
Milwaukee "Me2" Program Manual	http://city.milwaukee.gov/ImageLibrary/Groups/cityMe2/PDF/PACEFINANCINGPROGRAMMANUALv5.pdf	Fees p8; timing of payments p14; prepayment p34	"Shambarger, Erick" Eshamb@milwaukee.gov
CT Program Manual	http://s3.honestbuildings.com/client/c-pace/Program_Guidelines_v3_0_FINAL-1.pdf	Fees and interest rates p16; payment to municipalities p30	Jessica Bailey Jessica.Bailey@ctcleanenergy.com
Southfield Michigan PACE Manual			Andy Levin andy@levinenergypartners.com
Energy Center "PACE in CA" Report	http://energycenter.org/sites/default/files/docs/nav/policy/research-and-reports/PACE%20in%20California.pdf	Sonoma p7; Palm Desert p17; WRCOG/HERO p24; CEDA/Figtree p 40; Ygrene/Sacramento p52	
PACE NOW Setting the PACE (and Update)	http://pacenow.org/setting-the-pace-2-0/	p12 interest rates	David Gabrielson david@pacenow.org
PACE NOW Lender Consent Study (and Update)	http://pacenow.org/wp-content/uploads/2014/03/Lender-Support-Update-20142.pdf		

References and Further Reading

Document	Link	Details	Contacts
HERO ABS Ratings Report	http://www.edf.org/sites/default/files/content/residential_pace_rating_aa_at_97_advance_rate_1.pdf		
PACE Local Government Replication Guidance (Sonoma County)	http://www.drivecms.com/uploads/sonomacountyenergy.org/Municipal%20Resources/PACE%20Manual.pdf		
PACE "How To" Guide (Renewable and Appropriate Energy Lab)	http://rael.berkeley.edu/sites/default/files/berkeleysolar/HowTo.pdf		
(Realization Rates) Energy Efficiency Program Evaluations: Opportunities for Learning	http://www.rff.org/documents/rff-dp-10-16.pdf	Table 4 p 19	
(Realization Rates) Evaluation results for 12 commercial air-conditioning programs	http://www.eceee.org/library/conference_proceedings/eceee_Summer_Studies/2007/Panel_4/4.079/paper	See table 22 and conclusions	
Survey of Existing C-PACE Programs	http://utahcleanenergy.org/images/Survey_of_Existi	See summary table p8	

Appendix

Who else is pursuing Commercial PACE?

Jurisdiction	Administrator Type	Launch Date	Status	Capital Sourcing Approach
Toledo	Port authority	2010	85 commercial projects and $22 million financed	Warehouse and bond-financed (private placement)
Sonoma	County administrative agency (SCEIP)	2009	61 commercial projects and $10.9 million financed	Warehoused and bond-financed (self-financing)
Connecticut	State administrative agency (CEFIA)	2012	29 commercial projects and $21 million financed	Warehouse and bond-financed (private placement)
Ygreene	Private for profit administering over 11 programs (CA, FL, and GA)	Varies	Information not available	Privately funded warehouse line; private placement bonds
Ann Arbor	City administration	2011	4 projects and $540,762 financed	Pooling; bond sold to local bank
St. Louis	Private for profit	2013	1 project funded, 3 more set to close soon	Warehoused or open market/owner arranged
Lean & Green Mich.	Private for profit	2012	1 project, $500,000 financed	Open market/owner arranged
San Francisco	City administration	2011	1 project, $1.4 million financed	Open market/owner arranged
New York	Non-profit in partnership with state administrative agency	2013	0	Warehoused

Source: Utah Clean Energy, “Commercial PACE Across the U.S.” (4/14) and various other sources

Alternatives to the Open Market Model

Jurisdiction	Warehousing	Funding Strategy
Toledo	Warehouse funded with federal ARRA dollars	Private placement bonds with chosen capital partner
Sonoma	Self-funded warehouse	Bonds purchased by county agencies
Connecticut	Warehouse from Green Bank balance sheet	Bonds purchased by specialty PACE investor (Clean Fund)
Ygrene	Warehouse line provided by network of private capital partners	Bonds issued as private placements

Program Costs: Findings

Program	One-Time Fees	Ongoing Fees
Milwaukee “Me2”	0.5% of project costs admin fee, up to $5,000	0.25% of outstanding balance up to $1,000, paid annually
Connecticut CPACE	3% of project costs for projects under $150,000; 1-2.5% of project costs for larger projects	Municipalities are compensated $500/year by the state-wide administrator for recording/assessment services
Sonoma	Title search $50-125; recording fee $66; desktop review $12	4% of project value as admin fee (included in interest rate); $40/project/year for tax assessor
Palm Desert	Title search ($360)	$40/project/year for tax assessor
WRCOG	5% of project costs admin fee, $250 application fee	Not reported
CaliforniaFIRST	Application fee $250, closing fees mentioned but no $ estimate given	County tax collector fee ranges from $.10 a parcel to 2% per payment depending on county; annual PACE admin fee determined by district

Program Costs: Findings (cont)

Program	One-Time Fees	Ongoing Fees
GreenFinanceSF	Title search $250-1000; tax admin fee $1000; recording fee 0.2% of project value; bond counsel fee up to 2% of project value	Tax roll inclusion fee $21.55/year; tax admin fee $15/year
Ygrene/Sacramento	Application fee $50; city cost recovery fee $100; underwriting $250; recording and disbursement $250; escrow $100-700; title insurance $400-5,000	Tax assessor fee $40/project/year
CEDA/Figtree (CA-wide)	Application fee $495; 4% of project costs admin fee; 4% of project cost closing fee	3% of outstanding balance admin fee; $40/project/year for tax assessor
Lean and Green Michigan	Admin fee 2% of project costs paid by contractor, admin fee negotiable (approx. 2%) of project costs paid by lender	Not reported
Toledo-Lucas	Admin fee 2-2.5% of project	Not reported

Transaction Costs (source: Utah Clean Energy)

Sonoma	Connecticut	Ygrene
Transaction costs: • Annual administrative fee - $41.12 • Title search fees (initial project): o Financing requests less than $5000 - $50 o Financing requests $5000 to $500,000 - $125 o Financing requests over $500,000 require title search and insurance (property owner must contact SCEIP for estimate) – TBD • Title search fee (second project within 180 days) - $30 • Multiple disbursement fee (to cover SCEIP inspection) - $150 per disbursement • Recording fee, initial - $66 • Recording fee, contract amendments - $41 • Assessment payoff quote (if used for escrow purposes) - $35 • Removal of tax lien - $26 • Lien prepayment – the County may charge a 3% prepayment premium Legal costs:: • $3000-$5000 to draft municipal resolutions • $25,000 to draft initial bond documents • $135,000 for bond counsel and debt issuance costs	C-PACE Finance Amount C-PACE Transaction Fee: $0 - $150,000 3.00% $150,000 - $300,000 $4,500 + 2.25% of amount over $150,000 $300,000 - $500,000 $7,875 + 1.50% of amount over $300,000 $500,000 - $1,000,000 $10,875 + 1.00% of amount over $500,000 Over $1,000,000 $15,875 + 0.75% of amount over $1,000,000 Legal Costs: Not available	Transaction fees: • From approximately $900 and $1500, depending on project size. Fees cover all program costs. • 3% closing fee for all projects. Ygrene's primary source of profit is this 3% fee. Legal costs: Approximately $30,000 to $50,000 to set up each distr

Transaction Costs (source: Utah clean Energy) – Cont'd.

Ann Arbor	St. Louis	Lean & Green Michigan
Transaction costs: • Application fee - $300 • Title search fee - at least $230, depending on the property • Recording fee - $23 • Annual administration fee - $13.45 Legal costs: • $20,000-$30,000 for bond counsel and financial advisor. Ann Arbor spent aboout $300,000 (primarily on consultants) to set up its PACE program from scratch. This amount does not include any City staff time. Also, because bond counsel and financial professionals wanted to see the project work, they likely reduced their fees.	• Because the lender services the loan and carries the note to term, there is no need to employ an outside financial adviser • Because no bonds are issued, bond counsel is not needed • Because the lender is paid directly, there are no transactional costs to the assessor's office	Legal and administrative fees are incorporated into the financing of each project Transaction costs: • Vary depending on project size and the type of securitization lenders utilize • 2% base administrative fee plus 50 basis points on future repayments Legal costs: Not available (there are no legal fees associated with bond issuance because bond issuances are not necessary, unless a municipality opts to issue bonds)

Transaction Costs (Utah Clean Energy) – Cont'd.

San Francisco	New York
Transaction costs: One time transaction costs: • Special Tax Administration fee ($1000) • Recording fee (0.20% of project cost) • Bond Counsel fee (up to 2% of project financed amount) Ongoing transaction costs: • Special Tax Role Administration fee ($15 per year) • Tax Roll Inclusion fee ($21.55 per year) Legal costs: Not available	Transaction costs: • Application processing fee, calculated as follows: $100 for an approved Scope of Work of less than $25,000 $200 for an approved Scope of Work of $25,001 to $50,000 $300 for an approved Scope of Work of $50,001 to $75,000 $400 for an approved Scope of Work of $75,001 to $100,000 $500 for an approved Scope of Work of $100,001 to $500,000 $1000 for an approved Scope of Work of greater than $500,001 • Title Search fee • Desktop appraisal fee (if applicable) • Appraisal fee (if applicable) • Financing costs (varies by building): _____% Interest rate on Disbursement Amount $________ Interest cost on Disbursement Amount _____% Additional EIC administrative fee on Disbursement

PACE Interest Rates: Findings

Program	Interest Rates (Commercial Properties)	Tenure / Term
Palm Desert, CA	6-8%	Up to 20 years
Sonoma County, CA	7%	10 to 20 years
WRCOG, CA	5-8%	5 to 25 years
CEDA/Figtree (CA-wide)	6.25-8.25%	Up to 20 years
Green Finance SF: Prologis Project, CA	6.93%	20 years
Sacramento (Ygrene), CA	6.95% (Prime + 3.2% [program costs] + 0.5% [profit])	Up to 20 years
Toledo Lucas County Port Authority, OH: 1 Maritime Plaza	4.32%	15 years
Milwaukee (Me2), WI: University Club	6.0%	18 years
Lean and Green Michigan	5-7%	15 to 20 years

Lender Consent to PACE: Best Practices

- Best practices in requesting lender consent include providing lenders:
  - Standard request forms and supporting information (e.g., project summary, improvements, estimated savings)
  - Financial data and projections
  - Borrower statistics (e.g., loan to value, debt service coverage ratio)
  - Energy audit or third party review
  - Program overview, enabling legislation summary
  - Industry information on PACE

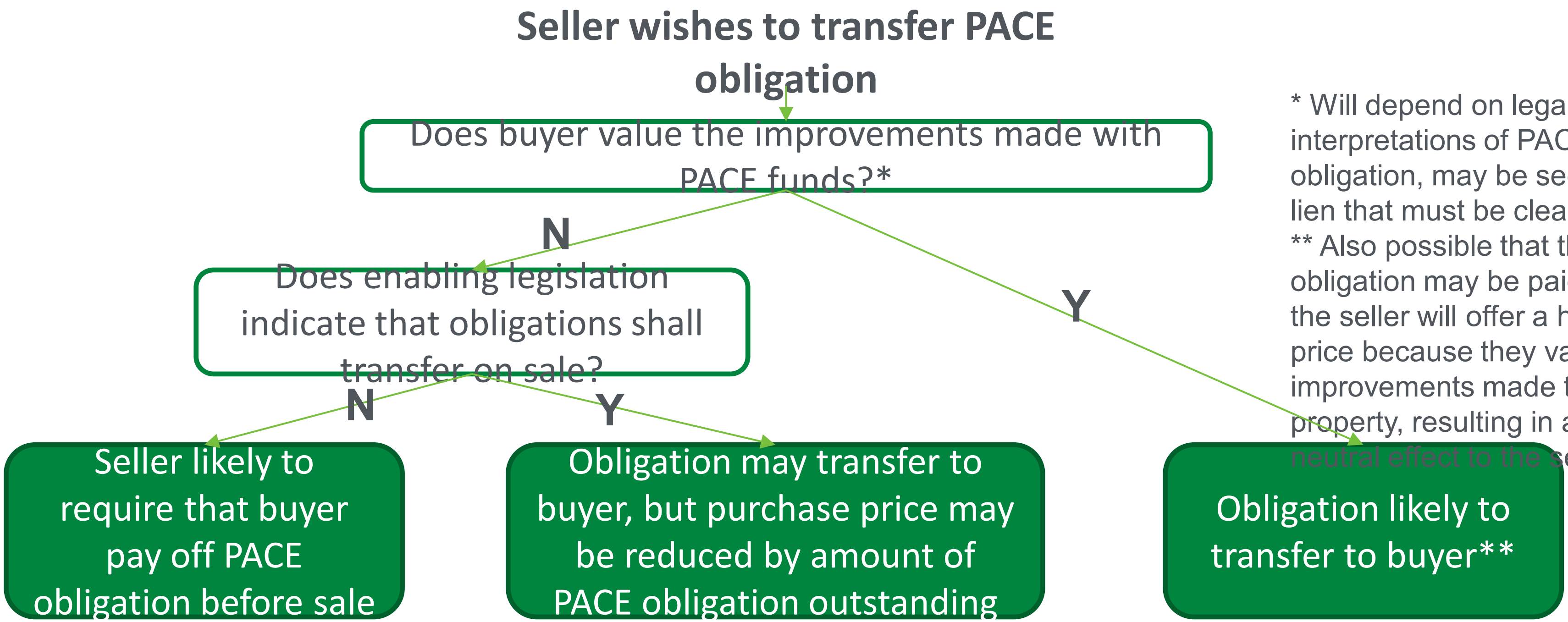
Program	Payment Schedule
Southfield, MI	2x per year
Milwaukee Me2	Property owners have two options – once per year or in 10 equal installments
Connecticut C-PACE	2x per year
Toledo-Lucas County Port Authority	2x per year
Lean and Green Michingan	Determined by lenders, who may directly service PACE assessments

- In general, PACE assessments will be paid on the same schedule as property tax assessments
- One local lender commented that the difference between annual and monthly payments in minor; as long as the lender knows what schedule payments will follow, the lender can accommodate
- Lenders can “true up” any shortfalls if payments are made on an unanticipated schedule
- National lenders may have less flexibility in this regard

- The importance of payment frequency will depend on source of capital and choice of loan servicer
- If municipal bonds initially fund projects, lenders will not directly interact with PACE assessments and should not have a timing preference
  - The bond itself will have a payment timing that is predictable to lenders
- If private capital is used to fund projects, lenders will need to negotiate timing of payments with borrowers and possibly use an escrowing approach
  - If lenders can service PACE assessments directly any payment frequency can be accommodated
  - Michigan offers this option – direct servicing and collections by lenders without involvement of tax collectors

PACE During Sale: Assumptions

- The questions of PACE obligations’ treatment during a sale, prepayment of an obligation, and PACE obligations’ effect on property value are interrelated
  - Assume that most property owners will want the PACE obligation to transfer to a new owner
  - Assume that most property owners will not want to pre-pay their PACE assessment
  - The decision tree below highlights these connections at a very high level



Seller wishes to transfer PACE obligation

Does buyer value the improvements made with PACE funds?*

N

Does enabling legislation indicate that obligations shall transfer on sale?

N

Seller likely to require that buyer pay off PACE obligation before sale

Y

Obligation may transfer to buyer, but purchase price may be reduced by amount of PACE obligation outstanding

Y

Obligation likely to transfer to buyer**

* Will depend on legal interpretations of PACE obligation, may be seen as a lien that must be cleared

** Also possible that the PACE obligation may be paid off, but the seller will offer a higher price because they value the improvements made to the property, resulting in a net neutral effect to the seller.

PACE During Sale: Findings

PACE Obligation During Sale

- To our knowledge, no commercial sales have been publically disclosed
- In the residential sector properties with PACE obligations follow one of two paths during sale:
  - PACE assessment transfers to the next owner and that owner resumes payment of assessments
  - PACE assessment is paid off in full at the point of sale
- The California WRCOG/HERO program reports that a minority of properties choose to pay off the assessment in full at the time of sale; **most PACE obligations transfer to the next owner**

Prepayments

- Are allowed, explicitly, in Wisconsin
- Are discouraged, explicitly, in Connecticut
- Are penalized in the California, CEDA/Figtree
  - Early payoff fee of 2-5% of outstanding balance

PACE During Sale: Findings

Effects on Property Value

- Underwriting and due diligence during a sale is more detailed in the commercial sector than in the residential sector
- Buyer is likely to take utility bill reductions due to PACE improvements into account
- Buyer is likely to take higher rent potential due to PACE improvements into account
- To our knowledge, no studies explicitly link PACE improvements to resale value

PACE During Sale: Observations

- Some states' legislation clearly attempts to define the PACE obligation as "non-accelerating" – that is, it should not be paid off at sale (e.g., CT, FL)
- Likely that PACE obligations will be a point of negotiation between buyer and seller
  - Handling of the obligation will depend on if a buyer values the energy improvements made through PACE
  - This negotiation will also depend on bargaining power (i.e., is it a "buyers" or "sellers" market)
  - Municipalities can help support sellers in communicating the value of PACE assessments by offering materials on the program and commitments, helping sellers to share their third-party verified energy savings estimates, etc

PACE in Secondary Markets: Findings

- PACE assessments have successfully been packaged and sold to secondary markets, notably in Connecticut, Ohio, and California
- For more information, see DOE SEE Action’s / LBL’s fo Loans” Re

	HERO PACE	Toledo PACE	Connecticut C-PACE
Transaction Date	February 2014	2012-2013	May 2014
Seller (Type)	WRCOG (Quasi-public)	Toledo Lucas-County Port Authority (Public)	CT Public Finance Authority - conduit (Public)
Market Sector of Underlying Loans	Residential	Commercial	Commercial
Transaction Structure	Asset-Backed Securitization	Municipal Revenue Bonds (QECB)	Municipal Revenue Bonds
Size	$104M	$16.5M	$30M
Investor Type	Private Placement	Private Placement	Private Placement
Primary Capital Source	WRCOG revenue bonds	Municipal revenue bonds	Municipal revenue bonds

PACE in Secondary Markets: Observations

- PACE assessments have been successfully packaged and sold to secondary market investors
- Early sales indicate that investors view the security of the PACE obligation in a positive light
  - For example, the CA WRCOG/HERO sale was AA-rated, indicating high quality and low risk
- Secondary market transactions are generally not cost-effective until significant deal volume has materialized
  - Particularly true for non-municipal bonds, which are typically $100M or more