Residential PACE Best Practices: Designing and Implementing Effective Programs

Tuesday, May 16, 2017
2:00 – 5:00 PM
Session Goals and Objectives

Participants will engage in dialogue and learn about:

▪ How residential PACE financing works, including roles and responsibilities of states, local governments and PACE administrators

▪ Best Practices for R-PACE programs, including DOE Guidelines and informational resources

▪ Program design and policy considerations for state and local governments

▪ Implementation steps and strategies for developing and launching a residential PACE financing program

▪ Methods for quantifying energy savings and other impacts of PACE, including considerations for data collection, reporting and analysis of program impacts
Session Presenters

- Steve Dunn, US DOE (*Moderator*)
- Jeff Deason, Lawrence Berkeley National Lab
- Sandy Fazeli, NASEO
- David Gabrielson, PACE Nation
- Michael Yaki, Renovate America
Workshop Agenda

- Part I (2:00 – 3:15 pm)
  - Introductions
  - Presentations
    - The Data-Driven Case for R-PACE, David Gabrielson, PACE Nation
    - How PACE Works, Michael Yaki, Renovate America
    - Tracking Residential PACE Program Impacts, Jeff Deason, LBNL
  - BREAK (3:15 – 3:45 pm)
    - ‘Ask the Experts’: DOE staff, Session Leads available
    - Idea Wall – share your suggestions, ideas and comments
Part 2 (3:45 – 5:00 pm)

- Residential PACE Policy and Program Design Considerations, Sandy Fazeli, NASEO
- Small group breakouts (select one):
  - Policy and Program design strategies and considerations, David Gabrielson, Sandy Fazeli
  - Stakeholder mapping, Steve Dunn, Michael Yaki
  - Measuring impacts and communicating results, Jeff Deason, Alison Berry

- Small group report-outs
- Workshop summary / action items
- Adjourn
Guidelines for Residential PACE Financing Programs

- Released November 2016 (update to 2010 guidelines)
- Recommends best practices for residential PACE program design, including:
  - Consumer and lender protections
  - Compatibility of PACE with other energy efficiency programs and services
  - Minimum contractor requirements and performance standards
  - Evaluation of program outcomes (e.g. energy savings, economic benefits)
  - Informational resources for state and local governments

DOE recommends the Best Practice Guidelines for Residential PACE Financing Programs be incorporated and followed by States, Local Governments, PACE program administrators, & contractors to plan, develop, and implement programs and improvements that effectively deliver home energy and related upgrades.
DOE Resources and Assistance

- **State and Local Solution Center**
  - DOE Best Practice Guidelines for Residential PACE
  - Resource guides, case studies
  - [https://energy.gov/eere/slsc/](https://energy.gov/eere/slsc/)

- **State and Local Technical Assistance**
  - PACE program design, best practices, implementation strategies
  - Residential energy efficiency measures and technologies

- **Better Buildings Residential Network**
  - Networking: monthly peer exchange calls and newsletter
  - Residential Solution Center, Toolkits, Case Studies
  - [https://energy.gov/eere/better-buildings-residential-network/](https://energy.gov/eere/better-buildings-residential-network/)
The Data-Driven Case for R-PACE

David Gabrielson, PACE Nation
The Data-driven Case for R-PACE

DOE Better Buildings Summit
May 16th, 2017
What is PACE?

PACE is **tax-assessment** financing for energy efficiency, renewable energy, water conservation, and certain resiliency projects for buildings.
What Buildings?

- Office
- Multi-Family
- Residential
- Industrial
- Retail
- Agriculture
- Hotel
For What Projects?

Projects that save or generate energy, conserve water, or promote resiliency
Old Idea – New Adaptation

Financing a Public Purpose

1736 – First Assessment District in Philadelphia

Today – 37,000 Assessment Districts nationwide
✓ Water & Sewer Service
✓ Parks
✓ Sidewalks
✓ Lighting
✓ Downtown renewal
✓ Energy Efficiency (PACE)
1. **State legislation** enables use of property-based tax assessments for qualifying projects. (Public Purpose)

2. **Municipalities** decide whether or not to establish or join a PACE program. (Voluntary)

3. **Programs** can be administered by the state, a municipality, or contracted to an independent third party.

4. **Funding** for PACE **projects** provided by non-recourse municipal bonds or PACE capital providers.
Important Considerations

Public Private Partnership

1. Based on **property value** – not the individual credit of the property owner
   - Subject to conditions

2. Repaid on **property tax bill** – similar treatment
   - Senior lien to mortgages
   - No acceleration or extinguishment on default
# Two Distinct Markets

## Residential
1. Since 2008
2. Opposition from MLs
3. Hiatus
4. CA resurgence in 2014
5. Availability (CA, FL, MO)
6. Data is our friend
7. Protections

## Commercial
1. Since 2012
2. Consent leads to cooperation
3. National presence
4. Long sales cycle
5. Steady build-out
PACE Legislation

33 States and DC - 80+% of the U.S. Population
How and Why
What Makes a PACE Project?

Home owner......
What Makes a PACE Project?

Chooses a Project and a Contractor
What Makes a PACE Project?

Private sector funding.......

100% FUNDING
What Makes a PACE Project?

Local Government “Services” the financing
Why Building Owners Love PACE

No $ out of pocket - Hard and Soft Costs
Long-Term Payback

Makes Projects Cash-Flow Positive
Why PACE?

Assessment may Transfer on Sale
R-PACE Programs Today

150,000+ Homes $3.7+ Billion 44,000+ Jobs
Cumulative Residential PACE Financing

Source: PACENation.us
R-PACE Projects

- Energy Efficiency (58%)
- Renewable energy (37%)
- Water (4%)
PACE’s Impact

- **150,000** homes improved with PACE
- **44,000** jobs created
- **$5.8 billion** energy costs saved
- **$7 billion** total economic impact
- **20 billion** kWh saved
  - Equivalent to over 1.7 million homes’ annual energy consumption
- **5.5 million** metric tons carbon reduced
  - Equivalent to taking 1.1 million cars off the road for a year
- **12.8 billion** gallons water saved
  - Enough to fill 19,000 Olympic swimming pools
PACE homes increased in value $199 - $8,883

PACE homes saw nearly a $7,000 premium when purchased from foreclosure

PACE home energy renovations recover more than 100% of cost ... compared to 58% to 66% recovery for bath and kitchen remodels
# PACE and Property Sales

## MLS - HERO Home Sales vs. All Home Sales

<table>
<thead>
<tr>
<th>Date</th>
<th>Data Range</th>
<th>1/2/2016-12/31/2016</th>
<th>Monthly</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLS</td>
<td>All</td>
<td>1/2/2016-12/31/2016</td>
<td>Quarterly</td>
</tr>
</tbody>
</table>

### Average Home Sale Price

- **Type**: Hero, Market
- **Number of Sales**: 1,076
- **Average Sale Price**: $348,291
- **Average Days On Market (DOM)**: 52.5
- **Average Price To List Price**: 99.45%

### Average Days On Market (DOM)

<table>
<thead>
<tr>
<th>Date</th>
<th>DOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 2016</td>
<td>73</td>
</tr>
<tr>
<td>Feb 2016</td>
<td>71</td>
</tr>
<tr>
<td>Mar 2016</td>
<td>67</td>
</tr>
<tr>
<td>Apr 2016</td>
<td>62</td>
</tr>
<tr>
<td>May 2016</td>
<td>62</td>
</tr>
<tr>
<td>Jun 2016</td>
<td>63</td>
</tr>
<tr>
<td>Jul 2016</td>
<td>42</td>
</tr>
<tr>
<td>Aug 2016</td>
<td>52</td>
</tr>
<tr>
<td>Sep 2016</td>
<td>63</td>
</tr>
<tr>
<td>Oct 2016</td>
<td>62</td>
</tr>
<tr>
<td>Nov 2016</td>
<td>62</td>
</tr>
</tbody>
</table>

### Average Sale Price To List Price Ratio

- **Ratio**: 99.45%
- **DOM**: 52.5

**Note**: Only sales in Riverside and San Bernardino MLS data.
PACENation CPP V2.0 Key Enhancements

- **Provide Comprehensive Disclosures** which include 3-day right to cancel and modeled on the federal *Know-Before-You-Owe disclosure form*;
- **Conduct 100% confirmation of financing terms by phone** in a live, recorded call;
- **Set standards on contractor marketing practices** and workmanship issues, including **processes to resolve and remediate homeowner complaints** and requirements around **contractor participation and termination**;
- **Develop a forbearance program** for homeowners who unexpectedly suffer financial hardship, including extra protections for U.S. military service members; and
- **Begin collecting monthly household income and debt obligations** to help develop income-based financing criteria that PACENation will use to amend underwriting standards.
Residential PACE
R-PACE Takes

Huge Potential

✓ R-PACE works for Homeowners & Govt Sponsors
  • Helps owners finance projects they want and need
  • Achieves state and local goals

✓ PACENation Consumer Protection Policies V 2.0

✓ HUD / FHA now support PACE

✓ Results Count
Why PACE?

Lots of reasons you should support PACE

✓ Meets a real market need
✓ Helps building owners finance projects they want and need
✓ 100% Voluntary
✓ Increases building value – collateral value
✓ Private market – open market
Our Vision?
PACE financing will be available to every property owner in the United States

Become a member to be listed in the Member Network of active PACE market participants and gain access to exclusive resources and tools for the PACE community.

www.pacenation.us/join
David Gabrielson, Executive Director - David@PACENation.org
How PACE Works

Michael Yaki, Renovate America
How PACE Works
The Challenge

When it comes to improving home energy performance

- The status quo isn’t working.
- Every year, 1 in 6 homeowners update a system in their homes that affects energy consumption.
- The vast majority of the time they choose a less-efficient option.

Why?

- Don’t have access to cost-effective credit
- Don’t know how long they’ll stay in their home
- Don’t know which products to choose
- Don’t have the time or ability to go through lengthy processes
PACE as a Solution

PACE is helping solve the marketplace failure

- **Access to financing**
  - Overcomes cost barriers by offering 100% financing
  - Payments spread out over life of product, lowering annual payment amount
  - Lower utility bills may offset assessment payments
  - Interest may be tax deductible

- **Transferability**
  - May be able to transfer remaining balance

- **Informed efficiency choices**
  - PACE only finances Energy Star rated products
  - Available for unplanned, urgent system replacements
  - Consumer friendly platform
The Power of PACE

A Lawrence Berkley National Laboratory (LBNL) report released in 2016 titled, *Energy Efficiency Program Financing: Where it comes from, where it goes, and how it gets there*, found that PACE financing is leading the way in residential energy efficiency loan volume noting:

“a handful of programs drive a very large fraction of total residential energy efficiency loan volume. The two largest programs – the California HERO PACE program and the Mass Save HEAT Loan program (zero percent financing) – account for 46% of the total capital loaned.”

• The LBNL report was based on 2014 data. From 2011 to 2014, the HERO program originated $400 million in financing. Since then, the HERO program has originated an additional $1.7 billion.

• PACE, because it doesn’t rely on public dollars, has the ability to scale to meet demand in a way that is unparalleled by publicly or rate-payer financed efficiency loan programs.
How Does Residential PACE Work?

1. State legislation grants authority to local governments to establish PACE programs.

2. Local governments either create a Residential PACE program or join a statewide or other district. Third-party PACE Administrator may be designated.

3. Through the PACE Administrator, homeowners apply for, and if qualified, receive Residential PACE financing to install eligible improvements to their home.

4. Property owners repay Residential PACE financing through their property tax bill.
Selects PACE Administrator(s) and provides program oversight

Creates standards for PACE administrators, contractors, and underwriting

Receives quarterly program reports

Audits participating financing companies on compliance

Works with local governments to adopt programs

Develops network of contractors

Oversees underwriting process

Pays contractor after project completion

Works with tax collectors on PACE assessment collection

Adopts PACE program by local resolution

Collects PACE assessments

Works with homeowner and PACE Administrator to select and install eligible products

Repays issuer financing through PACE assessment imposed and collected on property tax bill

Issuer

PACE Administrator

Municipality

Treasurer/Tax Collector

Contractor

Homeowner
**Issuer**
- Adopts consumer protection requirements, e.g. PACENation Standards
- Receives quarterly reports on program results
- Audits administrators on consumer protections, underwriting, contractor, requirements, product eligibility, and other standards
- Based on audit, takes enforcement action as necessary

**PACE Administrator**
- Oversees pricing review and confirms terms of financing through live call with property owner
- Property owner must also receive disclosure form modeled on “Know Before You Owe” and a 3 day right to cancel form
- Additional protections for seniors
- Provide dispute resolution, selling and refinance support for homeowner
- Ensures contractors satisfy program requirements, e.g. licensing, eligible products, and required permitting

**Contractor**
- Installs products that are certified as energy efficient
- Must be licensed, bonded, and insured
- Must abide by business practice and marketing guidelines

**Homeowner**
- Signs a Completion Certificate before the contractor is paid
Benefits to Government Partners

Private Capital Funds Public Policy Objectives

• Voluntary for counties and municipalities
• Participation costs covered by the program
• No taxpayer/ratepayer money
• Boosts municipal revenues
• Meet local economic or environmental goals
• Real-time impact reporting
• Dedicated support
• Consumer protection standards
## CONSUMERS AS STAKEHOLDERS: CREATING SAFEGUARDS FOR A NEW FORM OF FINANCING

<table>
<thead>
<tr>
<th>Feature</th>
<th>hero</th>
<th>HELOC</th>
<th>UNSECURED CREDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Purpose Financing</td>
<td>✔</td>
<td>✗</td>
<td>-</td>
</tr>
<tr>
<td>Fixed Rate and Fully Amortizing</td>
<td>✔</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pricing Review</td>
<td>✔</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>100% Confirmation of Terms Via Live Phone Call</td>
<td>✔</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>Enhanced Disclosure</td>
<td>✔</td>
<td>✔</td>
<td>✗</td>
</tr>
<tr>
<td>Right to Void HERO Financing</td>
<td>✔</td>
<td>-</td>
<td>✗</td>
</tr>
<tr>
<td>Funding Provided Only Upon Completion of Project and Homeowner Certification</td>
<td>✔</td>
<td>✗</td>
<td>-</td>
</tr>
<tr>
<td>Contractor Requirements</td>
<td>✔</td>
<td>✗</td>
<td>-</td>
</tr>
<tr>
<td>No Prepayment Penalty</td>
<td>✔</td>
<td>-</td>
<td>✔</td>
</tr>
<tr>
<td>Pre- and Post-Funding Customer Support</td>
<td>✔</td>
<td>✗</td>
<td>-</td>
</tr>
<tr>
<td>Senior Care</td>
<td>✔</td>
<td>✗</td>
<td>✗</td>
</tr>
</tbody>
</table>

**Legend:**
- ✔ Yes
- ☑ Sometimes
- ✗ No
CONSUMERS AS STAKEHOLDERS: EVOLVING NEW SAFEGUARDS FOR A NEW FORM OF FINANCING

Additional safeguards being considered:

Income-based underwriting / ability to pay

PACE + LTV < 97%

Stricter definitions of eligible products

Forbearance
REPORTING: The County of Los Angeles

<table>
<thead>
<tr>
<th>ECONOMIC IMPACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homes Improved</td>
</tr>
<tr>
<td>Jobs Created</td>
</tr>
<tr>
<td>Amount Funded</td>
</tr>
<tr>
<td>Economic Stimulus</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ENVIRONMENTAL IMPACT¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Saved (kWh-e)</td>
</tr>
<tr>
<td>Emissions Reduced (ton)</td>
</tr>
<tr>
<td>Water Saved (gal)</td>
</tr>
</tbody>
</table>

¹ Impacts are projections based on lifetime of installed products

- PACE is an important policy tool for helping the County achieve the goals of their Community Climate Action Plan (CCAP)
- The CCAP holds the County accountable to delivering on California’s mandate to achieve 1990 GHG emissions levels by 2020
- Contributes to a growing and healthy local economy by creating new jobs that can’t be outsourced
Multiple counties, cities, and towns across the state have joined the New York Energy Improvement Corporation’s Commercial PACE program. The opportunity for economic development is even greater for residential PACE. As of Q3 2016, there are nearly 160 times more Residential PACE projects than Commercial PACE projects nationally.

<table>
<thead>
<tr>
<th>Residential PACE (R-PACE)</th>
<th>Commercial PACE (C-PACE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- $2.9 Billion in Funded Projects</td>
<td>- $311 Million in Funded Projects</td>
</tr>
<tr>
<td>- 130,000 Projects</td>
<td>- 820 Projects</td>
</tr>
<tr>
<td>- 25,000 Jobs Created</td>
<td>- 3,730 Jobs Created</td>
</tr>
</tbody>
</table>

Source: PACENation as of Q3, 2016
Tracking Residential PACE Program Impacts

Jeff Deason, LBNL
Tracking Residential PACE Program Impacts

Jeff Deason

Better Buildings Summit
May 16, 2017
My purposes today

◆ Describe state of knowledge about PACE program impacts

◆ Identify additional data and analysis needed beyond what current programs are providing

◆ Specify how programs can help with data collection and provision
Why evaluate energy programs?

- Provide oversight of the use of public or utility customer funds
- Demonstrate progress toward energy savings goals, targets, or requirements

How do these apply to PACE?

*Who* should evaluate PACE? *Who* funds evaluation?
R-PACE impacts to consider tracking

◆ Investment volumes
◆ Energy (and water) savings
◆ Measure deployment
◆ Cost-effectiveness
◆ Home value
◆ Mortgage market
◆ Consumer satisfaction
◆ Jobs
Investment volumes: well tracked and notable

$3,700  148,000

Source: http://pacenation.us/pace-market-data/
Table 1. Programmatic Efficiency Lending Volumes in 2014

<table>
<thead>
<tr>
<th>Program Type</th>
<th>Total Loan Volume ($M)</th>
<th>Residential Sector ($M)</th>
<th>Number of Residential Loans</th>
<th>Commercial / Industrial Sector ($M)</th>
<th>Public / Institutional Sector ($M)</th>
<th>Number of Non-Residential Loans</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-bill</td>
<td>$179</td>
<td>$76</td>
<td>9,486</td>
<td>$89</td>
<td>$14</td>
<td>11,468</td>
</tr>
<tr>
<td>Utility loan (not on-bill)</td>
<td>$202</td>
<td>$196</td>
<td>16,607</td>
<td>$6</td>
<td>$0.1</td>
<td>231</td>
</tr>
<tr>
<td>PACE</td>
<td>$267</td>
<td>$248</td>
<td>12,061</td>
<td>$18</td>
<td>$0.8</td>
<td>27</td>
</tr>
<tr>
<td>State Energy Office RLF</td>
<td>$74</td>
<td>$17</td>
<td>1,595</td>
<td>$12</td>
<td>$45</td>
<td>92</td>
</tr>
<tr>
<td>ESPC</td>
<td>$4,101</td>
<td>-</td>
<td>-</td>
<td>$171</td>
<td>$3,929</td>
<td>-*</td>
</tr>
<tr>
<td>Total</td>
<td>$4,823M</td>
<td>$537M</td>
<td>39,749</td>
<td>$296M</td>
<td>$3.989M</td>
<td>11,818</td>
</tr>
</tbody>
</table>

R-PACE investment volumes in context

Cumulative R-PACE Financing

2010-2016

Source:
http://pacenation.us/pace-market-data/
## Reported energy and water savings

<table>
<thead>
<tr>
<th>Program</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berkeley FIRST</td>
<td>54,408 kWh annually</td>
</tr>
<tr>
<td>Sonoma County Energy Independence Program</td>
<td>10,928,827 kWh over lifetime, 58,964.85 MTCO2 over lifetime, 94,593 Therms over lifetime</td>
</tr>
<tr>
<td>CaliforniaFIRST</td>
<td>18,933,880 kWh generated annually, 7,894,463 kWh saved annually, 575,332 Therms annually, 11,425,764 gal annually</td>
</tr>
<tr>
<td>WRCOG HERO Program</td>
<td>120,925,639 kWh annually, 24,555,058 gal annually</td>
</tr>
<tr>
<td>SANBAG HERO Program</td>
<td>60,882,289 kWh annually, 13,456,125 gal annually</td>
</tr>
<tr>
<td>California HERO Program</td>
<td>89,361,397 kWh annually, 45,173,529 gal annually</td>
</tr>
<tr>
<td>AllianceNRG Program</td>
<td>23,126 kWh annually</td>
</tr>
<tr>
<td>LA HERO Program</td>
<td>6,102,724 kWh annually, 8,608,965 gal annually</td>
</tr>
<tr>
<td>CaliforniaFIRST in Los Angeles County</td>
<td>4,458,851 kWh generated annually, 2,241,737 saved annually, 163,373 Therms annually, 5,108,368 gal annually</td>
</tr>
</tbody>
</table>

Improving savings estimates

- Existing PACE savings estimates are self-reported; independent evaluation is general best practice
  - Who requires – and funds – independent evaluation?
- Existing estimates are based on “deemed savings” values that predict savings, not on realized savings
  - Access to both program participation and utility data is a barrier for realized savings evaluations
  - Programs can help by proactively ensuring that utility data can be collected and analyzed. Specifics vary by state and customer consent may be required, which is most easily obtained up front.
- With DOE funding support, Berkeley Lab is working with California utilities and PACE providers to conduct an independent analysis of realized savings using utility bills
Savings attribution to financing

Did financing (program or private) generate more savings than would have occurred without it?

- Yes
- No

Did "program" financing generate new savings or simply replace private financing?

- Yes
- No

Would the project have occurred without incentives or other program offerings?*

- Yes
- No
- Yes, but would have been smaller/happened later

*Especially important to understand if financing is expected to substitute for traditional programs.

Moving toward attributable savings

- Best practice: Randomize access to PACE program. But this is unlikely:
  - Multiple providers in many settings
  - Asking private providers to turn down business
- More feasible option: Compare PACE savings to savings achieved by PACE applicants that aren’t approved
  - Programs can help by making data on such applicants available
- Another option: Surveys
Cadmus survey on HERO attribution

Each of the three methods Cadmus tested indicated that, on average, HERO financing had a greater impact on the participant’s decision to make high efficiency improvements than rebates. Table 2 presents the results of each test.

<table>
<thead>
<tr>
<th></th>
<th>Self-Report</th>
<th>Expanded Self-Report</th>
<th>DCM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financing</td>
<td>67.0%</td>
<td>64.7%</td>
<td>54.5%</td>
</tr>
<tr>
<td>Rebates</td>
<td>33.0%</td>
<td>35.3%</td>
<td>45.0%</td>
</tr>
<tr>
<td>Total</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Two independent studies demonstrate that early CA R-PACE programs approximately doubled residential solar PV installed capacity.

Berkeley Lab in process of running similar analysis on more recent data.

Efficiency? Anecdotal reports (from contractors) of surges in volume of efficient measures sold, but no similarly rigorous results.
PV deployment impacts – Ameli et al.

Nadia Ameli, Mauro Pisu, Daniel M. Kammen

Can the US keep the PACE? A natural experiment in accelerating the growth of solar electricity


http://dx.doi.org/10.1016/j.apenergy.2017.01.037
PACE and cost-effectiveness

- Cost-effectiveness tests run on utility programs don’t easily transfer to PACE
  - No direct use of taxpayer or utility customer funds
  - Administrative costs are funded by fees collected from program participants
  - What’s the “cost” of special assessment district usage?
- May want to understand how customers’ bill savings compare to assessment costs
  - But PACE programs not required to be bill-neutral, and have rationales other than reducing customer bills
- No studies of PACE cost-effectiveness that I’m aware of
# PACE home value impacts

<table>
<thead>
<tr>
<th>Methodology</th>
<th>PACE Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Methodology 1</strong> Comparison to Home Price Indices</td>
<td></td>
</tr>
<tr>
<td>Corelogic Monthly Zip</td>
<td>$199</td>
</tr>
<tr>
<td>FHFA Quarterly State</td>
<td>$1,667</td>
</tr>
<tr>
<td>FHFA Monthly Division</td>
<td>$8,882</td>
</tr>
<tr>
<td><strong>Methodology 2</strong> Comparison to Random Sample of Similar Non-PACE Homes</td>
<td>$5,010</td>
</tr>
<tr>
<td><strong>Methodology 3</strong> Comparison with Multivariate Regression</td>
<td></td>
</tr>
<tr>
<td>All Sales</td>
<td>$4,042</td>
</tr>
<tr>
<td>Homes Purchased Out of Foreclosure</td>
<td>$6,824</td>
</tr>
</tbody>
</table>

Source: Goodman and Zhu, “PACE Loans: Does Sale Value Reflect Improvements?”
PACE mortgage market impacts

◆ No research on this that I am aware of

◆ Berkeley Lab scoped a study that would estimate the impact of household-level PACE participation on mortgage repayment
  ◆ Data history is just now becoming sufficient to study this effectively

◆ Also needed: modeling of the impact of PACE on mortgage markets in various scenarios
PACE customer satisfaction

- Consumer protection issues have motivated:
  - Legislation (CA and federal)
  - Class action lawsuits against PACE providers

- Need for a serious empirical look at the frequency of PACE complaints relative to other comparable consumer financial products
  - Is PACE particularly problematic, or just new and noteworthy?
  - Programs can help by keeping records of customer interactions and making those records available to evaluators

- Programs may also want to track positive customer experiences more formally, e.g., through systematic surveys
PACENation

36,500

Total residential market estimate from PACENation
Source: http://pacenation.us/pace-market-data/

Jobs created

HERO PACE: $2.03 billion in PACE commitments have created over 17,000 jobs
Ygrene Works: PACE activity of almost $600 million has created over 8,600 jobs
Renew Financial: CaliforniaFIRST program has created over 8,000 jobs.
Source: http://pacenation.us/pace-creates-jobs-energizes-local-economies/
How programs can help with data collection

- Establish requirements and funding sources for PACE evaluation
- Work to ensure there is a mechanism for programs and evaluators to access customer usage data from utilities
- Maintain information about program applicants that are not accepted
- Keep more systematic records about customer experience – both complaints and success stories
Q&A

- Session presenters, DOE staff available during networking break
Residential PACE Session: Part 2
Welcome back

Agenda for Session Part 2

- **Residential PACE Policy and Program D**, Sandy Fazeli, NASEO

- **Small group breakout discussions (select one):**
  - Program design strategies and considerations, *David Gabrielson, Sandy Fazeli*
  - Stakeholder mapping, *Steve Dunn, Michael Yaki*
  - Measuring impacts and communicating results, *Jeff Deason, Alison Berry*

- Report-outs from each breakout group
- Workshop summary
- Adjourn
Residential PACE Policy and Program Design Considerations

Sandy Fazeli, NASEO
RESIDENTIAL PACE POLICY AND PROGRAM DESIGN CONSIDERATIONS

Sandy Fazeli, NASEO Managing Director
May 16, 2017
U.S. Department of Energy Better Buildings Summit
PLAN

▪ About NASEO and the State Energy Officials
▪ Why States care about PACE
▪ Compare and contrast: C-PACE versus R-PACE
▪ Elements and considerations for R-PACE program design
  ▪ Policy
  ▪ Market Organization/Administration
  ▪ Protections
  ▪ Federal agency involvement
ABOUT NASEO

- Membership includes the 56 Energy Officials from the states, territories, and the District of Columbia, as well as private-sector Affiliate partners
- Serves as a resource for and about the Energy Offices on a number of topics, including building energy efficiency, clean energy financing, fuels and grid integration, government affairs, transportation, energy policy planning, and climate
- Works through topical committees and by regions to facilitate peer learning across states to improve the effectiveness of energy policies and programs
- Visit [www.naseo.org](http://www.naseo.org) for more information
WHY IS PACE IMPORTANT TO SEOS?

- PUBLIC PURPOSE
- STATE-LOCAL CONNECTION
- VOLUNTARY MECHANISM
- VERSATILITY
C-PACE vs. R-PACE

Commercial

Residential

# C-PACE VS. R-PACE

<table>
<thead>
<tr>
<th>Commercial PACE</th>
<th>Residential PACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Requires action from state and local government</td>
<td></td>
</tr>
<tr>
<td>▪ Voluntary financing mechanism</td>
<td></td>
</tr>
<tr>
<td>▪ Programs typically take the form of public-private partnerships with defined geographic boundaries</td>
<td></td>
</tr>
<tr>
<td>▪ Both are large markets with significant untapped energy and water opportunities</td>
<td></td>
</tr>
</tbody>
</table>

■ Borrowers are businesses  
■ Work performed by contractors with experience in commercial improvements  
■ Many states and localities have launched C-PACE, about $380 million in total projects  

■ Borrowers are homeowners who may need additional disclosures and protections  
■ Work performed by home improvement or residential energy contractors  
■ A few states and localities have launched R-PACE, about $3.7 billion in total projects
Policy Considerations

State Level
- (Core) PACE-enabling statute
  - Public purpose
  - Residential, commercial, or both
  - Lien priority
  - Eligible measures
  - Sources of capital
- Additional policy considerations
  - Program administration
  - Underwriting or borrower eligibility criteria
  - Investor Protections
  - PACE Loss Reserves
  - Consumer Protections

Local Level
- Ordinance interprets criteria establish in state’s enabling statute
- Rules regarding available capital sources and administrative options
- Opt-in to existing program (i.e., a statewide or interlocal program)

Policy and Program Balance
- Enough flexibility to allow markets to thrive
- BUT, enough security for all stakeholders to buy in
Options to Organize the Marketplace

- **Administration**
  - Individual, decentralized programs (government- or privately-run), with individual local jurisdiction as a boundary
  - Statewide programs, with local jurisdictions “opting in” (Connecticut or Colorado C-PACE programs)
  - Hybrid models (statewide-available programs that may be government-run, government-supported, or entirely privately-run and financed)

- **Voluntary Standards**
  - Program administration may be decentralized, but statewide entities can support the adoption of consistent best practices across individual programs

- More common (thus far) in C-PACE than in R-PACE
 Protections in R-PACE Programs

- Mortgage Lender Protections
  - Protect in case of PACE borrower default (see California PACE Loss Reserve)

- Consumer Protections
  - Related to the Financing of the Project
    - Disclosures
    - Underwriting
  - Related to the Quality of the Project
    - Contractor training and oversight
    - Borrower recourse options

---


“There is a growing recognition that merely increasing equipment’s laboratory-measured efficiency without ensuring that the equipment is installed and operated correctly in the field is ineffective. A key component for maximizing field equipment performance is to ensure that such equipment is sized, selected, and installed following industry recognized procedures.”
Federal Involvement

- May 2010 – DOE’s “Guidelines for PACE Finance Programs”
- July 2010 – FHFA “Statement on Certain Energy Retrofit Loan Programs”
- Nov. 2010 – FHFA letter to Efficiency Maine re: subordinate-lien program
- Mar. 2014 – PACE Loss Reserve launched
- Aug. 2015 – FHA announces intent to release guidelines for use of FHA financing on homes with PACE liens
- Jul. 2016 – FHA and VA issue guidance on ability of homes with PACE assessments to use mortgage products
- Sept. 2016 – California’s AB 2693 signed into law
- Nov. 2016 – DOE releases Best Practice Guidelines for Residential PACE Financing
- Apr. 2017 – Protecting Americans from Credit Entanglements Act proposed in House and Senate
THANK YOU!

Sandy Fazeli
NASEO Managing Director
sfazeli@naseo.org
703-299-8800 x 117
www.naseo.org
Breakout Sessions

- Divide into small groups to discuss the following topics (select one):
  - **Program design strategies and considerations**
    - PACE legislation and ordinances, consumer protection, contractor management
    - Facilitators: David Gabrielson and Sandy Fazeli
  - **Stakeholder mapping**
    - Identify PACE stakeholders, key issues and strategies for engaging and communicating with stakeholders
    - Facilitators: Michael Yaki and Alison Berry
  - **Quantifying PACE Program Impacts**
    - Measuring and verifying the energy and economic impacts of PACE improvements; data collection requirements; communicating results
    - Facilitators: Jeff Deason and Steve Dunn

---

Break-Out Groups

- Identify key issues, recommendations and next steps
  - Record on flip-charts
  - Reconvene as a group
  - provide brief report-outs from each breakout group
Summary and Next Steps

- Session presentations will be available for download from Summit App and Website
- Connect with Speakers and Summit participants via the Summit App
- Websites for more information:
  - DOE PACE Guidelines: energy.gov/eere/slsc/property-assessed-clean-energy-programs
  - Presenter websites
    - LBNL, Electricity Markets and Policy Group: emp.lbl.gov/
    - NASEO: www.naseo.org
    - PACE Nation: www.pacenation.us
    - Renovate America: www.renovateamerica.com
DOE Contacts

- **Share your comments, questions or suggestions**
  - Steve Dunn [steve.dunn@ee.doe.gov](mailto:steve.dunn@ee.doe.gov)
  - Eleni Pelican [eleni.pelican@ee.doe.gov](mailto:eleni.pelican@ee.doe.gov)
Thank You

Provide feedback on this session in the new Summit App!

Download the app to your mobile device or go to bbsummit.pathable.com