Pick up the PACE:
Accelerating the PACE of Investment in Energy Improvements

Mark Zimring
Lawrence Berkeley National Laboratory

Yale Center for Business and the Environment “Blueprint for Efficiency” Webinar
April 5, 2012
Agenda

• Defining the Problem
• Property Assessed Clean Energy (PACE) 101
• Residential PACE Status Update
• Commercial PACE Financing Models
• Key Challenges
Defining the Problem

• The up-front cost of energy efficiency and renewable energy upgrades is a significant investment barrier.
  ○ $100’s of billions of investment necessary
• BUT, this is just one of several barriers...

+ INFO ≠ ACTION
Financing is NOT a Panacea

• Non-Financing Barriers include:
  o Energy use is not a priority.
  o Buying energy is simple and convenient.
  o Uncertainty about the benefits of energy improvements.
Defining the Problem

- **Access to capital is constrained:**
  - 40-50% of applicants to residential unsecured energy loan programs often rejected
  - Capital access often limited to large, Class A (investment grade) commercial buildings

- **Existing financial products not well-suited to EE/RE investments.**
  - Double digit interest rates are common and products are often short term.

Can Property Assessed Clean Energy (PACE) increase access to capital and/or increase the attractiveness of capital for EE/RE investments?
Agenda

- Defining the Problem
- Property Assessed Clean Energy (PACE) 101
- Residential PACE Status Update
- Commercial PACE Financing Models
- Key Challenges
The Father of PACE

PHILADELPHIA OPT-IN FIRE DISTRICT

Source: Renewable Funding
Property Assessed Clean Energy (PACE)

www.dsireusa.org / February 2012

28 states + DC authorize PACE (27 states have passed legislation and HI permits it based on existing law)

PACE financing authorized by the state*

- CA: 2008
- CO: 2008
- NM: 2009
- TX: 2009
- LA: 2009
- FL: 2010
- WI: 2009
- OH: 2009
- NV: 2009
- OR: 2009
- NY: 2009
- VA: 2009
- NC: 2009
- MD: 2009
- MA: 2010
- MI: 2010 (C&I Only)
- MO: 2010
- WI: 2010
- MN: 2010
- MI: 2010
- VT: 2009
- NH: 2010
- CT: 2011
- NJ: 2012
- DC: 2010
- WY: 2011
- HI: Existing Authority

Existing Authority

PACE financing authorized by the state*

- CA: 2008
- CO: 2008
- NM: 2009
- TX: 2009
- LA: 2009
- FL: 2010
- WI: 2009
- OH: 2009
- NV: 2009
- OR: 2009
- NY: 2009
- VA: 2009
- NC: 2009
- MD: 2009
- MA: 2010
- MI: 2010 (C&I Only)
- MO: 2010
- WI: 2010
- MN: 2010
- MI: 2010
- VT: 2009
- NH: 2010
- CT: 2011
- NJ: 2012
- DC: 2010
- WY: 2011
- HI: Existing Authority

Existing Authority

PACE financing authorized by the state*
PACE Financing Basics

**Government Sponsor**
- Creates financing district & approval process
- Attaches repayment obligation to the building via voluntary property assessment
- May provide upfront capital

**Property Owner**
- Identifies work & chooses contractor
- Repays financing as a line item on the property tax bill (typically over 5-20 years)
Key PACE Benefits

• No or Low Upfront Costs.
  o Removes high first cost barrier to investment.

• Debt of property not person or corporation.
  o Minimizes need to underwrite to personal or business credit.

• Very Secure.
  o Provides investors with repayment security through priority of tax lien. Security enables lower interest rates and longer terms than typical financing vehicles.

• Minimizes holding period bias.
  o Assessment stays with the property, not the owner.

• Addresses split incentives.
  o Property tax assessments may qualify as “pass-through expenses”.

• Attractive across a wide variety of property types and sizes.
  o Property owners have financed $5K to $1 million+ improvements.
Agenda

• Defining the Problem
• Property Assessed Clean Energy (PACE) 101
  • Residential PACE Status Update
• Commercial PACE Financing Models
• Key Challenges
Residential PACE Status Update

- FHFA action in June 2010 halted most programs.
  - Several California programs operating:
    - Sonoma County continues, WRCOG recently launched and Palm Desert, CA offers to households with jumbo mortgages.
  - Other models being tested:
    - Subordinated lien PACE in VT, hybrid in Babylon, NY
- Lawsuits in process and federal legislation introduced. But, outcome and timeline unclear.
  - FHFA rulemaking comment period just completed—30,000+ comments submitted. DOE comments:
  - No clear pathway for legislation.
- Bottom line.
  - No clear short-term pathway to reinstatement of residential PACE.
Agenda

- Defining the Problem
- Property Assessed Clean Energy (PACE) 101
- Residential PACE Status Update
- Commercial PACE Financing Models
- Key Challenges
PACE Financing Structures

• Source of capital varies across programs
  o Warehouse model
  o Pooled Bond model
  o Open Market (Owner-arranged) model
  o Hybrid models
Warehouse Model

• Government or third party program sponsor uses a credit line (or internal capital) to fund projects, followed – potentially - by ‘takeout financing’.

Pros
  o Simple and streamlined!!

Cons
  o Program sponsor, at least temporarily, takes assessments onto its balance sheet, which entails risk. If a third party credit line is used, can be expensive.
  o A single interest rate for all participants - a disadvantage for those with strong credits.
Pooled Bond Model

- Government or third party program sponsor aggregates project applications and issues a bond to fund all projects at the same time.

Pros
  - No risk to the program sponsor.

Cons
  - There can be significant lag time between when a property owner applies for funding and when the project is funded.
  - Low visibility on financing costs.
  - A single interest rate for all participants - a disadvantage for those with strong credits.
Open Market Model

• Each owner negotiates financing terms directly with an investor. Government program sponsor issues bond to investor and passes through assessment payments to investor.

Pros
  o Allows building owners to develop and fund projects on their own schedule and at terms that more accurately reflect the credit profile of their specific building.
  o Program sponsor has relatively few responsibilities - acts as pass-through agent, collecting taxes and passing assessment payments to investor.

Cons
  o More appropriate for large buildings as this structure involves relatively high transaction costs for building owners.
  o What problem are you solving?
Hybrid Models

• A range of potential structures

• Ygrene
  o Expected to be 3rd party administrator in launch of 2-3 programs in summer 2012
  o Private line of credit to aggregate assessments
  o Assessments sold to local investors on short term basis (2-5 yrs) as volume aggregated
  o Long term secondary market takeout
Existing & Emerging Commercial PACE Programs

22 programs may be operational in next 6-12 months. 12 programs are currently operating.
## Commercial PACE Projects Update

<table>
<thead>
<tr>
<th>Govt. Sponsor</th>
<th>Amount Financed ( $)</th>
<th># Projects</th>
<th>PACE model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sonoma County, CA</td>
<td>$10 M</td>
<td>52</td>
<td>Warehouse</td>
</tr>
<tr>
<td>Boulder County, CO</td>
<td>$1.52 M</td>
<td>29</td>
<td>Pooled Bond</td>
</tr>
<tr>
<td>California PACE</td>
<td>$725 K</td>
<td>7</td>
<td>Pooled Bond</td>
</tr>
<tr>
<td>Palm Desert, CA</td>
<td>$600 K</td>
<td>5</td>
<td>Warehouse</td>
</tr>
<tr>
<td>Placer County, CA*</td>
<td>$319 K*</td>
<td>2*</td>
<td>Warehouse</td>
</tr>
<tr>
<td>Edina, MN</td>
<td>$40 K</td>
<td>1</td>
<td>Open Market</td>
</tr>
<tr>
<td>Ann Arbor, MI</td>
<td>$0</td>
<td>0</td>
<td>Warehouse</td>
</tr>
<tr>
<td>Los Angeles, CA</td>
<td>$0</td>
<td>0</td>
<td>Open Market</td>
</tr>
<tr>
<td>Missouri-Regional</td>
<td>$0</td>
<td>0</td>
<td>Hybrid</td>
</tr>
<tr>
<td>River Falls, WI</td>
<td>Not available</td>
<td>Not available</td>
<td>Warehouse</td>
</tr>
<tr>
<td>San Francisco, CA</td>
<td>$0</td>
<td>0</td>
<td>Open Market</td>
</tr>
<tr>
<td>WRCOG, CA</td>
<td>$0</td>
<td>0</td>
<td>Hybrid</td>
</tr>
<tr>
<td>TOTAL</td>
<td>~$13 M-$14 M</td>
<td>96</td>
<td></td>
</tr>
</tbody>
</table>
Agenda

• Defining the Problem
• Property Assessed Clean Energy (PACE) 101
• Residential PACE Status Update
• Commercial PACE Financing Models
• Key Challenges
Commercial PACE Challenges

• High Legal and Administrative Setup Costs. Models in the works to defray these costs.

• Need Significant Deal Flow. May not be appropriate for small towns and cities as scale is required to reduce costs ( regional/ statewide models can help). Only ~$15 million financed to date.

• Mortgage Holder Consent/Acknowledgement Required.

• Regulatory Uncertainty. The OCC has expressed concern about commercial PACE.
Questions?

Mark Zimring
510-495-2088
mzimring@lbl.gov

Download LBNL Energy Efficiency Publications Here:
http://eetd.lbl.gov/ea/emp/ee-pubs.html

Subscribe to LBNL EE List Serve Here:
https://spreadsheets.google.com/a/lbl.gov/spreadsheet/viewform?formkey=dGlFS1U1NFLUNzQ1TIBHSzY2VGZuN1E6MQ