Better Buildings Residential Network Peer Exchange Call Series:

Efficiency and Resilience Improvements with PACE Financing

March 14, 2019

Agenda and Ground Rules

- Agenda Review and Ground Rules
- Opening Poll
- Residential Network Overview and Upcoming Call Schedule
- Featured Speakers:
  - **David Gabrielson**, PACENation
  - **Sean Williamson**, U.S. Department of Energy
  - **Todd Williams**, Lean & Green Michigan
- Open Discussion
- Closing Poll and Announcements

Ground Rules:

1. **Sales of services and commercial messages are not appropriate** during Peer Exchange Calls.
2. Calls are a safe place for discussion; **please do not attribute information to individuals** on the call.

The views expressed by speakers are their own, and do not reflect those of the Dept. of Energy.

Better Buildings Residential Network

Join the Network

Member Benefits:

- Recognition in media and publications
- Speaking opportunities
- Updates on latest trends
- Voluntary member initiatives
- Solution Center guided tours

Commitment:

- Members only need to provide *one number*: their organization's number of residential energy upgrades per year, or equivalent.

Upcoming calls:

- March 28th: The Next Frontier: Energy Storage and Batteries
- April 11th: What's Keeping Energy Experts Up at Night? Technical Problems That Need to Be Solved
- April 25th: Getting Smarter Every Day: Leveraging Smart Home Technologies to Advance Home Performance Projects

Peer Exchange Call summaries are posted on the Better Buildings website a few weeks after the call

For more information or to join, for no cost, email bbresidentialnetwork@ee.doe.gov, or go to energy.gov/eere/bbrn & click Join

Better Buildings

U.S. DEPARTMENT OF ENERGY

David Gabrielson
PACENation

U.S. DEPARTMENT OF ENERGY

Efficiency and Resilience Improvements with PACE

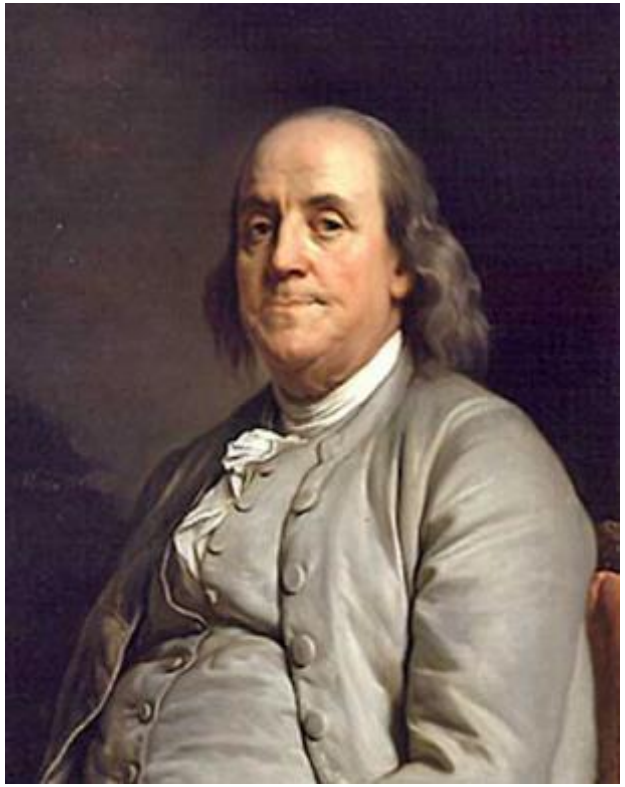
Webinar – March 14, 2019

What is PACE?

PACE is a tax-assessment based financing mechanism for energy efficiency, renewable energy, and water conservation projects.

New Idea?

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)

PACENation

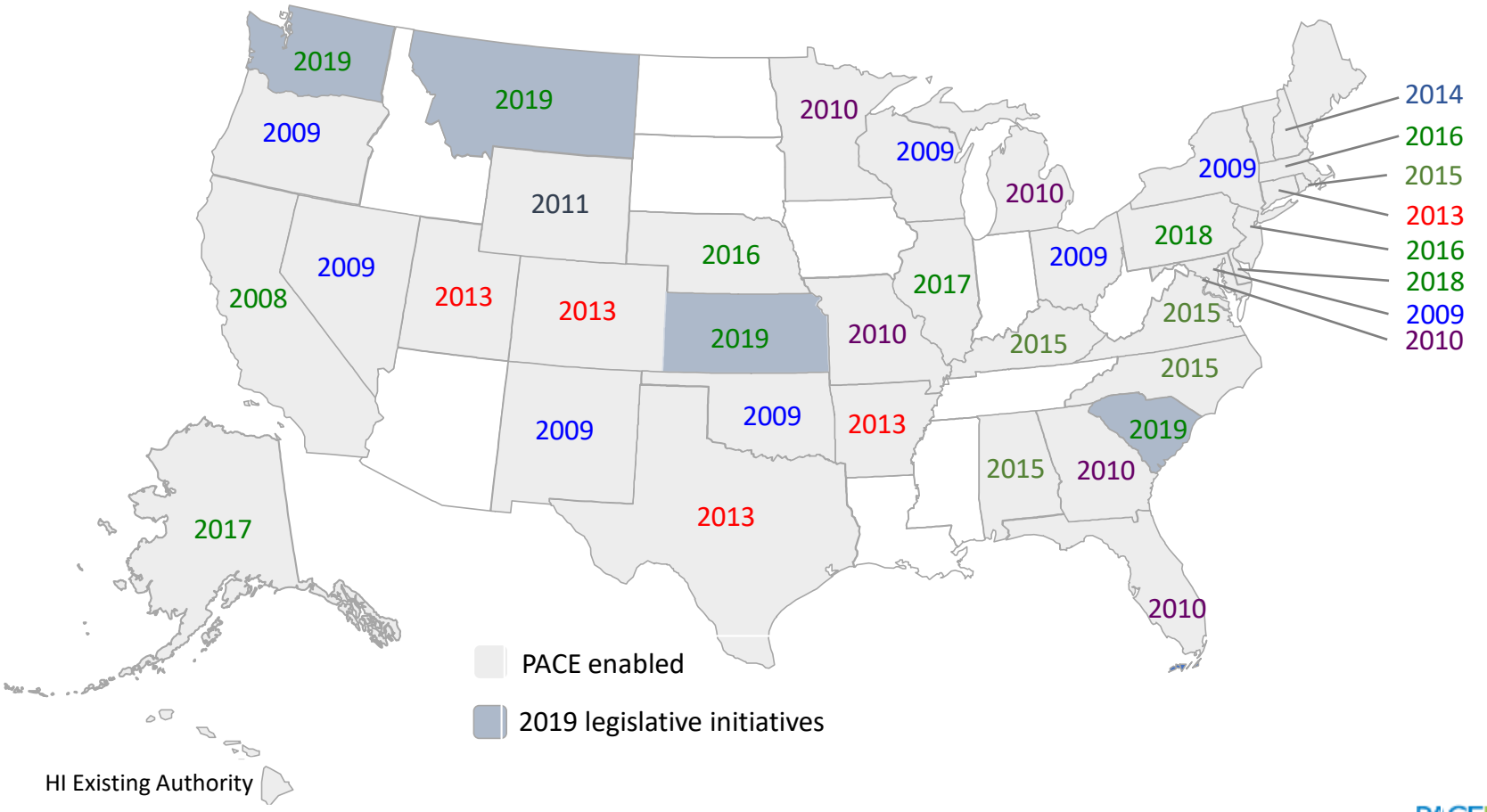
PACE Process

1. State passes enabling legislation
2. Tax-collecting jurisdictions enable PACE programs.
3. Administration by the state, muni, or contracted to an independent Third Party Administrator
4. Projects financed by bonds or loans from PACE capital providers.

PACENation

PACE Legislation

36 States and DC *84+% of the U.S. Population*



PACENation

PACE Process

1. Energy related project(s) identified
2. Underwriting process ensures property qualifies
   - ✓ For C-PACE projects, lender consent is required
3. Funding provided
4. PACE assessment placed on tax bill

PACENation

What Makes a PACE Project?

Local Government "Services" the financing

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Why Building Owners Love PACE

No $ out of pocket - Hard and Soft Costs

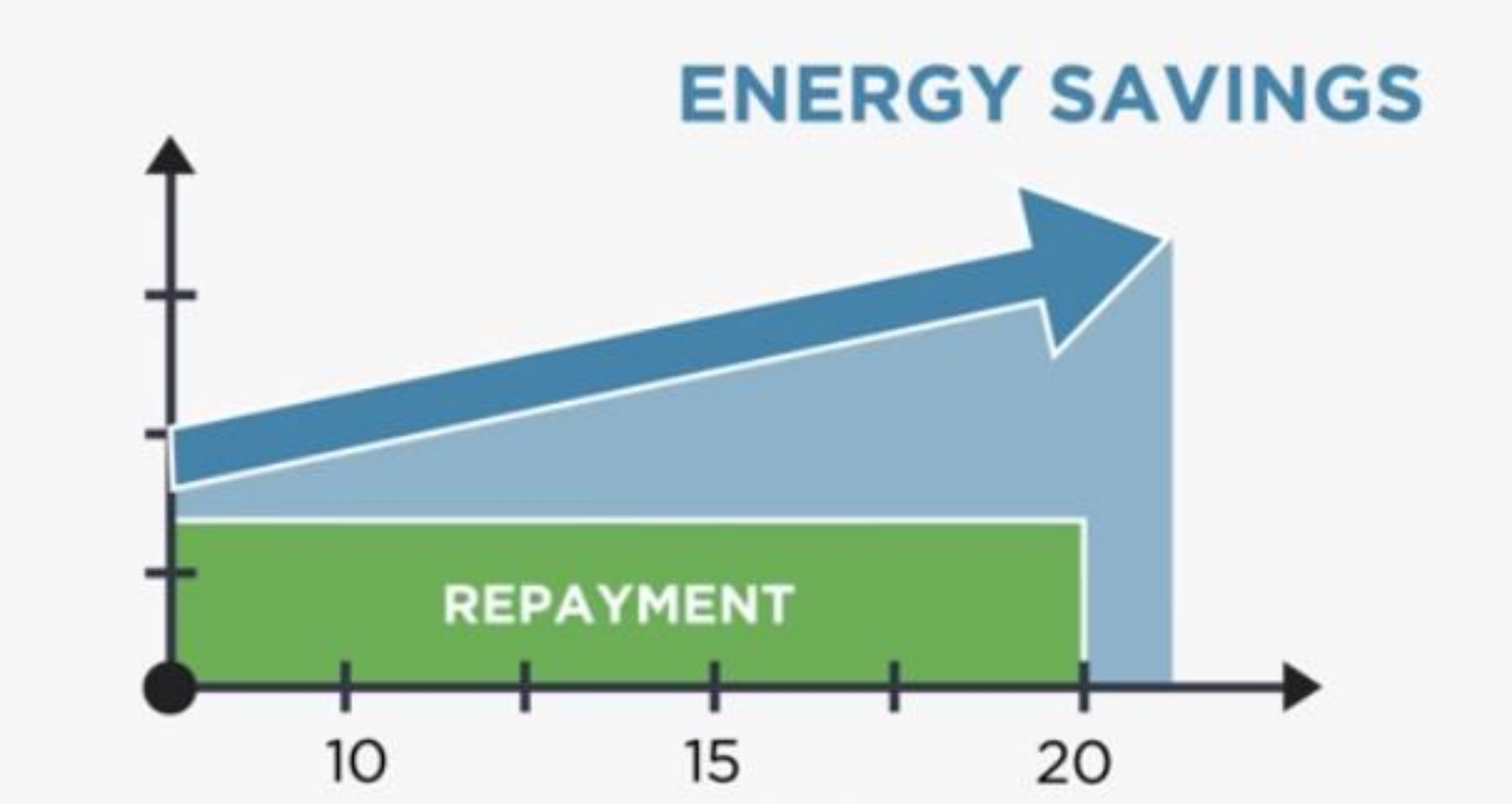
PACENation

Why PACE?

Long Payback

Long-Term Payback

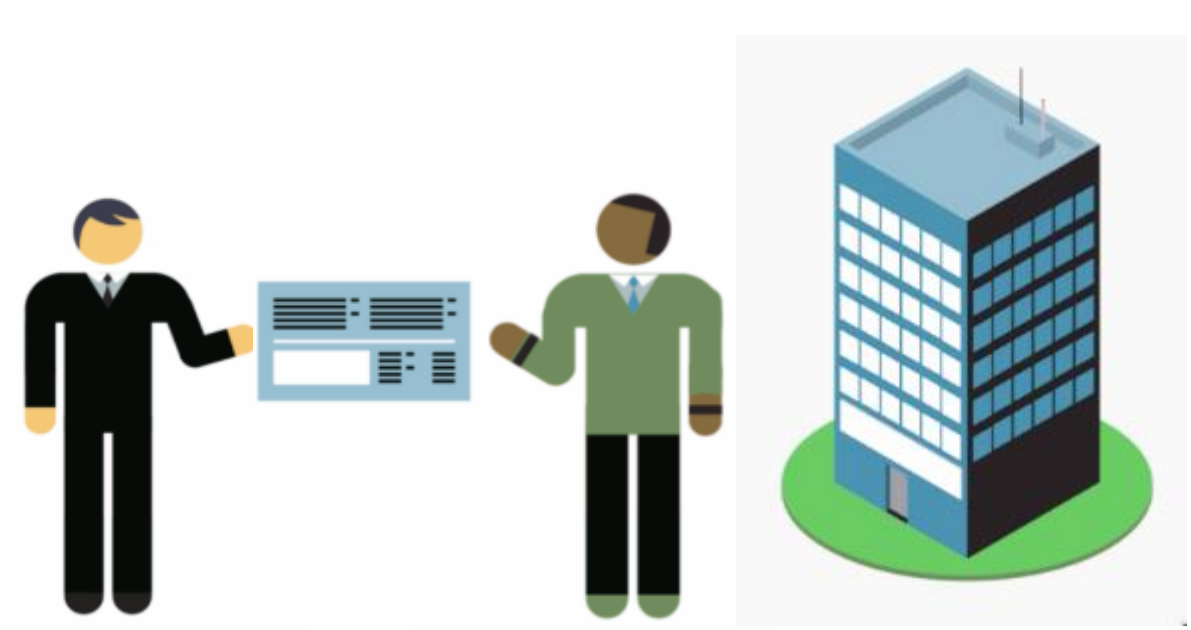
Makes Projects Cash-Flow Positive



PACENation

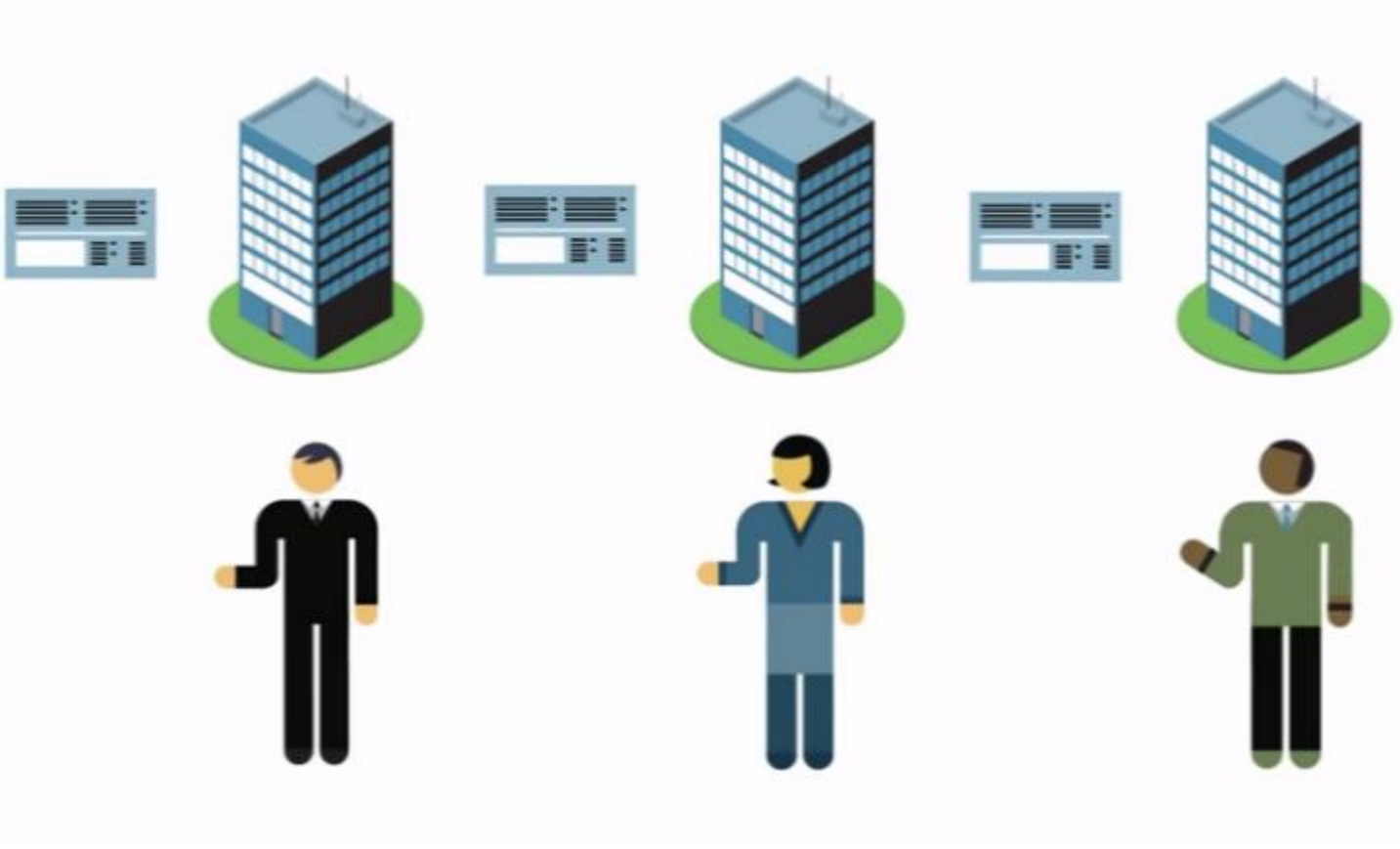
Why PACE?

Assessment Transfers on Sale – C-PACE Yes, R-PACE No



Why PACE?

For C-PACE - Costs and Savings Shared with Tenants

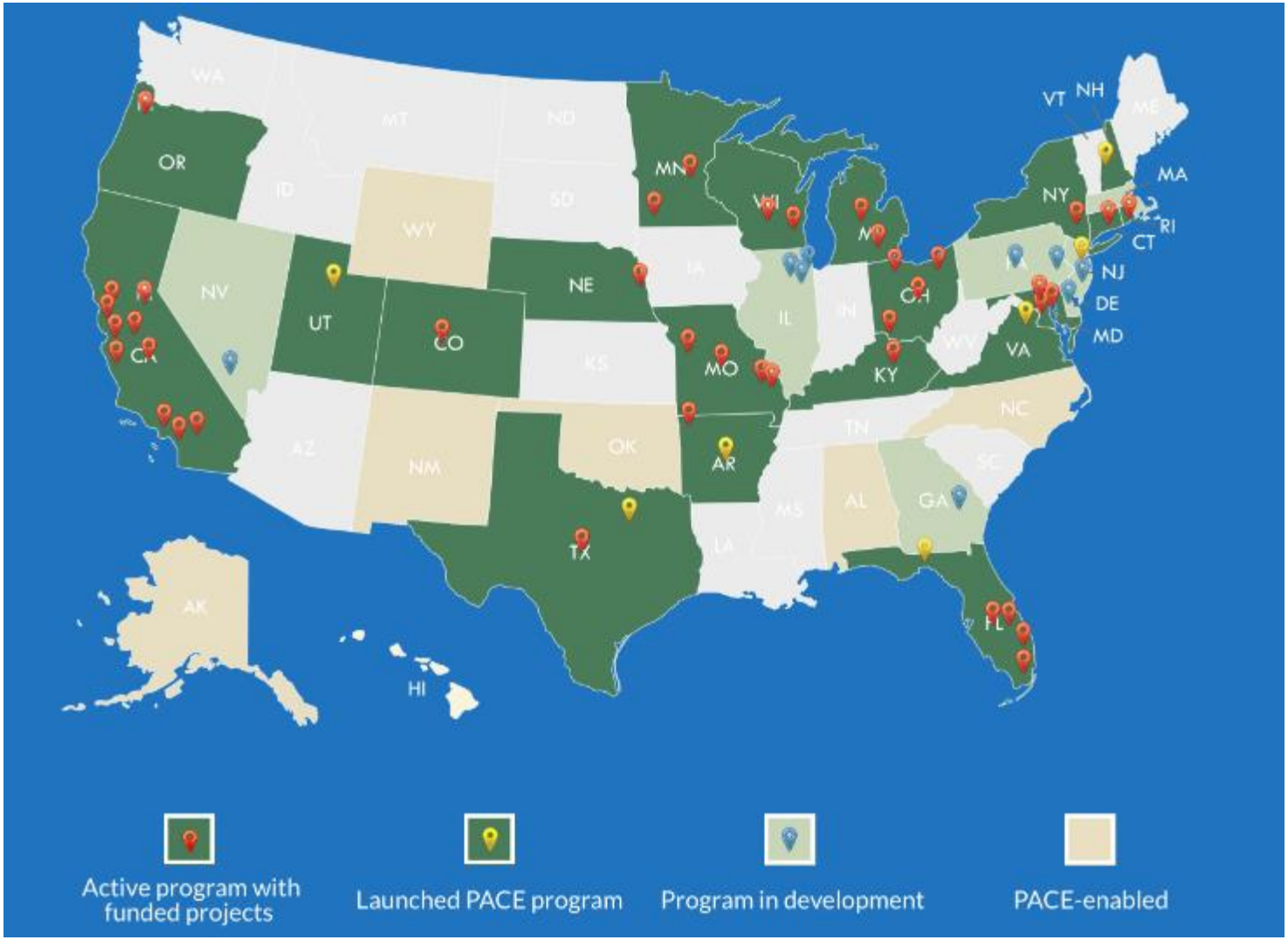


PACENation


PACENation
C-PACE is Working

C-PACE Programs Today

1,866+ Projects *$893+ Million* *13,395 Jobs*



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C-PACE Market Data

Commercial PACE

C-PACE OVERVIEW

$893 Millions

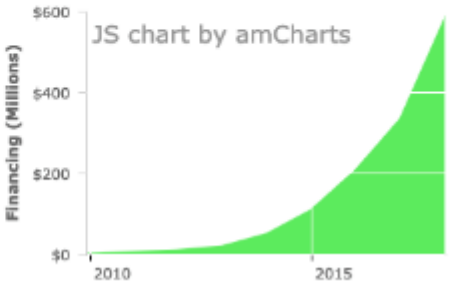
1866 Commercial projects

13,395 Jobs created

(Source: 15 jobs per million, EcoNorthwest)

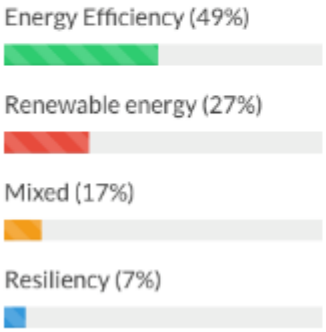
Cumulative C-PACE Financing

2010-2017



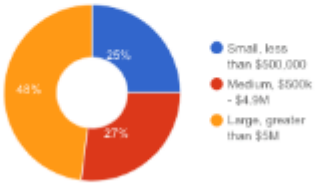
C-PACE improvement type breakdown

(By $ funded)



C-PACE projects by amount financed

(By $ funded)



C-PACE dollars funded in each state (states > $10MM)

(By $ funded)

State	Total PACE amount ($, Millions)
CA	275
CT	130
MO	56
MN	54
OH	49
TX	36
DC	34
NE	28
CO	26
MI	25
WI	21
FL	16
MD	11

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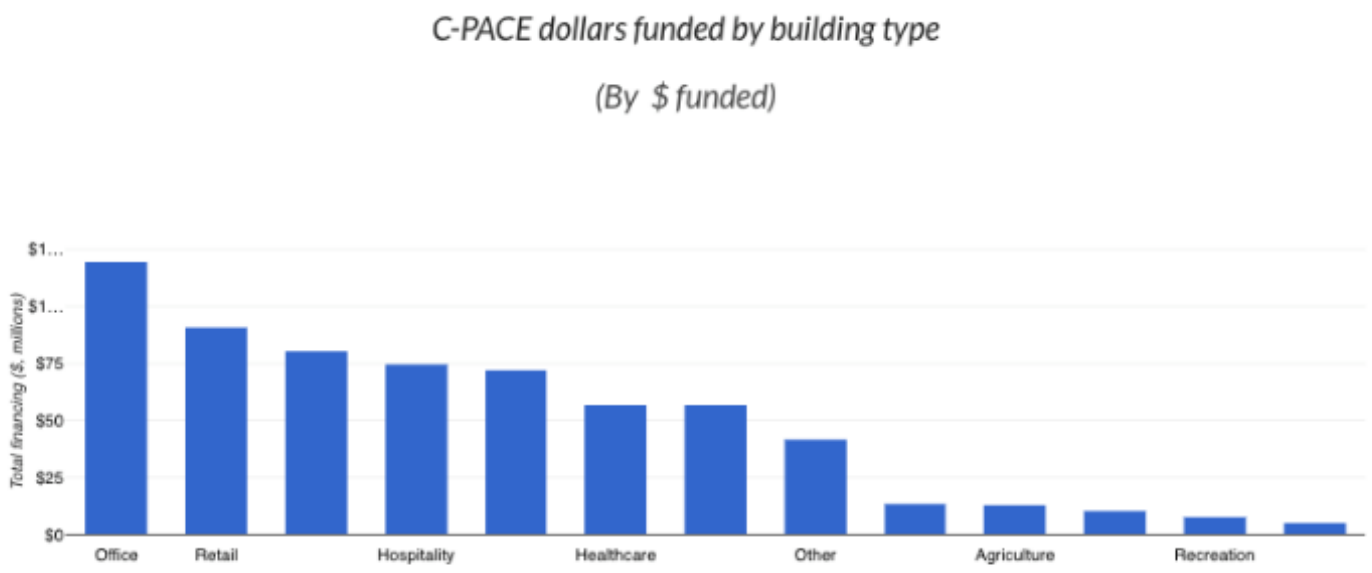
C-PACE Market Data



C-PACE

Some Takes

- ✓Early stages still – good market penetration
- ✓Consistent growth – market 2+X 2017 level
- ✓New legislation and program development
- ✓Key Factors:
  - Supply – PACE in more places
  - Demand – awareness and understanding!
- ✓Project complexity – long sales cycle

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R-PACE is Adapting

R-PACE

Some history

- ✓The first PACE was R-PACE
- ✓ A Powerful Idea – opposed by mortgage industry
  - Super senior lien for assessments in arrears
  - 2010 FHFA opposition and consequence
- ✓California persisted, and
  - Rapid growth starting in 2014, but
    - Mis-steps have plagued programs
- ✓ Key Problems
  - Contractors
  - Multiple liens
  - Ability to Pay

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R-PACE

Industry Accepting Regulation

- ✓Regulation and Oversight
  - CA laws AB1284, SB 242
  - CA Department of Business Oversight (DBO)
  - Key focus:
    - Contractor Education & Testing
    - On-Time Registry
    - Ability to Pay standards
  - 2018 Financial Reform Bill (Crapo Bill)
    - CFPB to set TILA standards for Ability to Pay

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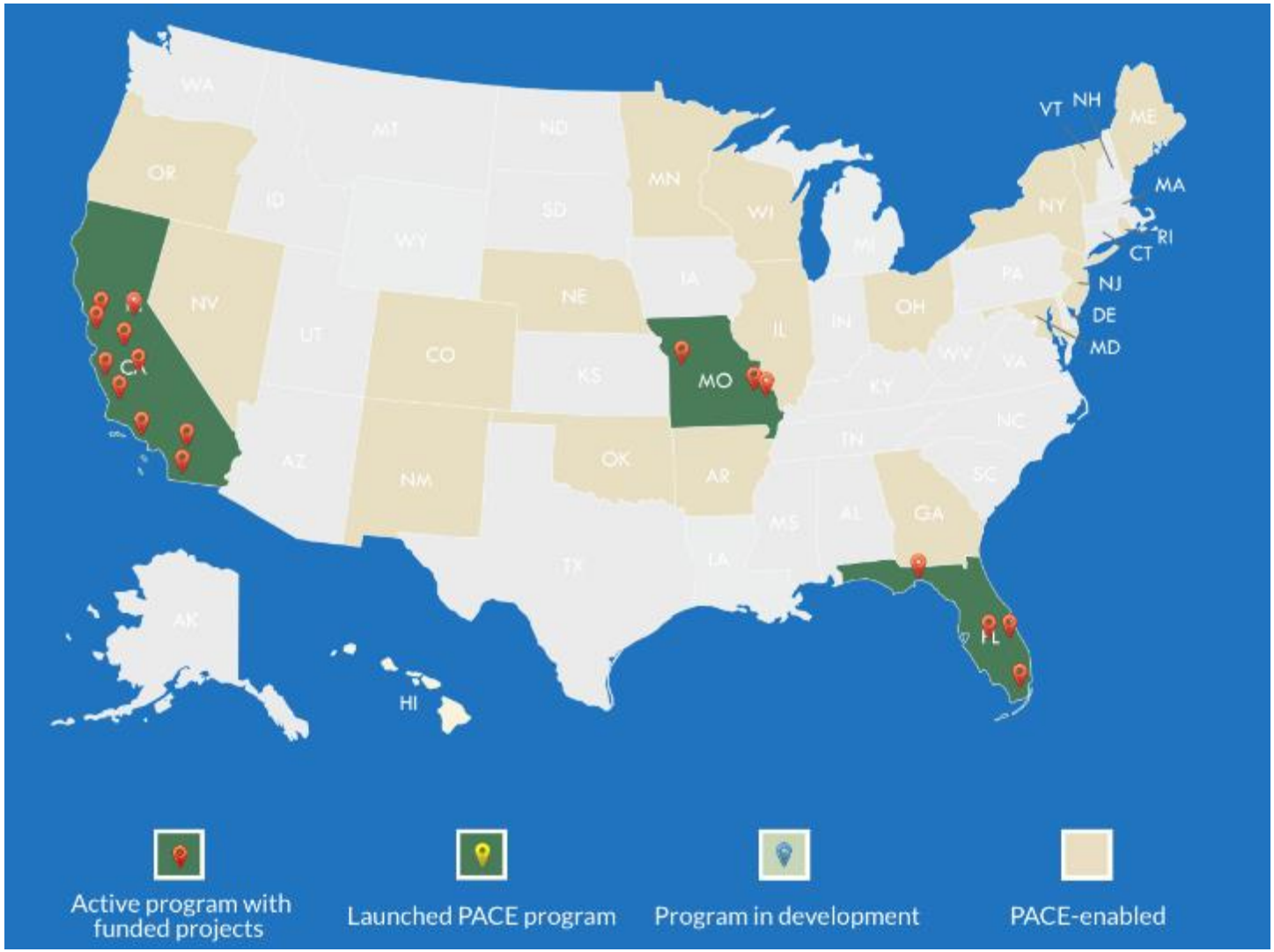
R-PACE Programs Today

220,000 Homes $5.2 Billion 42,000 Jobs



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R-PACE Market Data

R-PACE OVERVIEW

$5,172
Millions

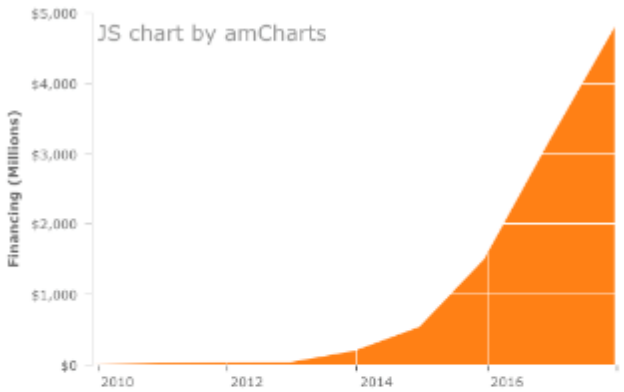
220,000
Home upgrades

42,000
Jobs created

As of May 2018

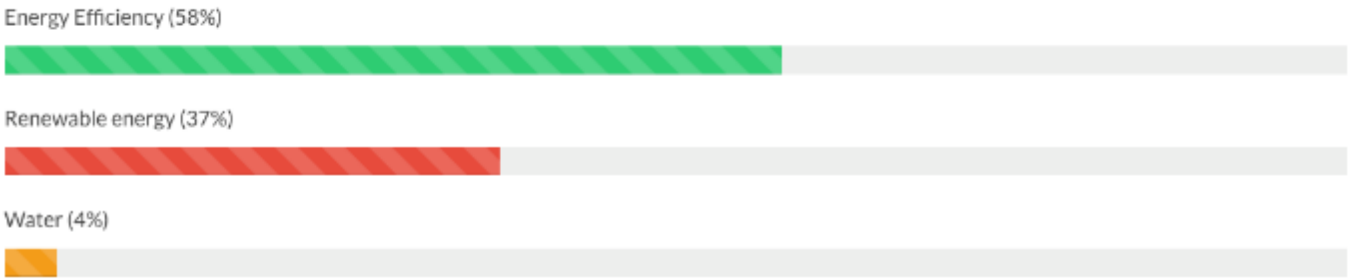
Cumulative R-PACE Financing

2010-2017



R-PACE improvement type breakdown

(By $ funded)



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R-PACE

Key Issues - Takeaways

- ✓California, Florida, Missouri – Ohio next?
- ✓ Continued opposition from mortgage lenders and realtors
- ✓Industry need to address problems w real solutions

Tremendous potential

- ✓Energy
- ✓Resilience
- ✓Opportunity for those often left out

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Why PACE?

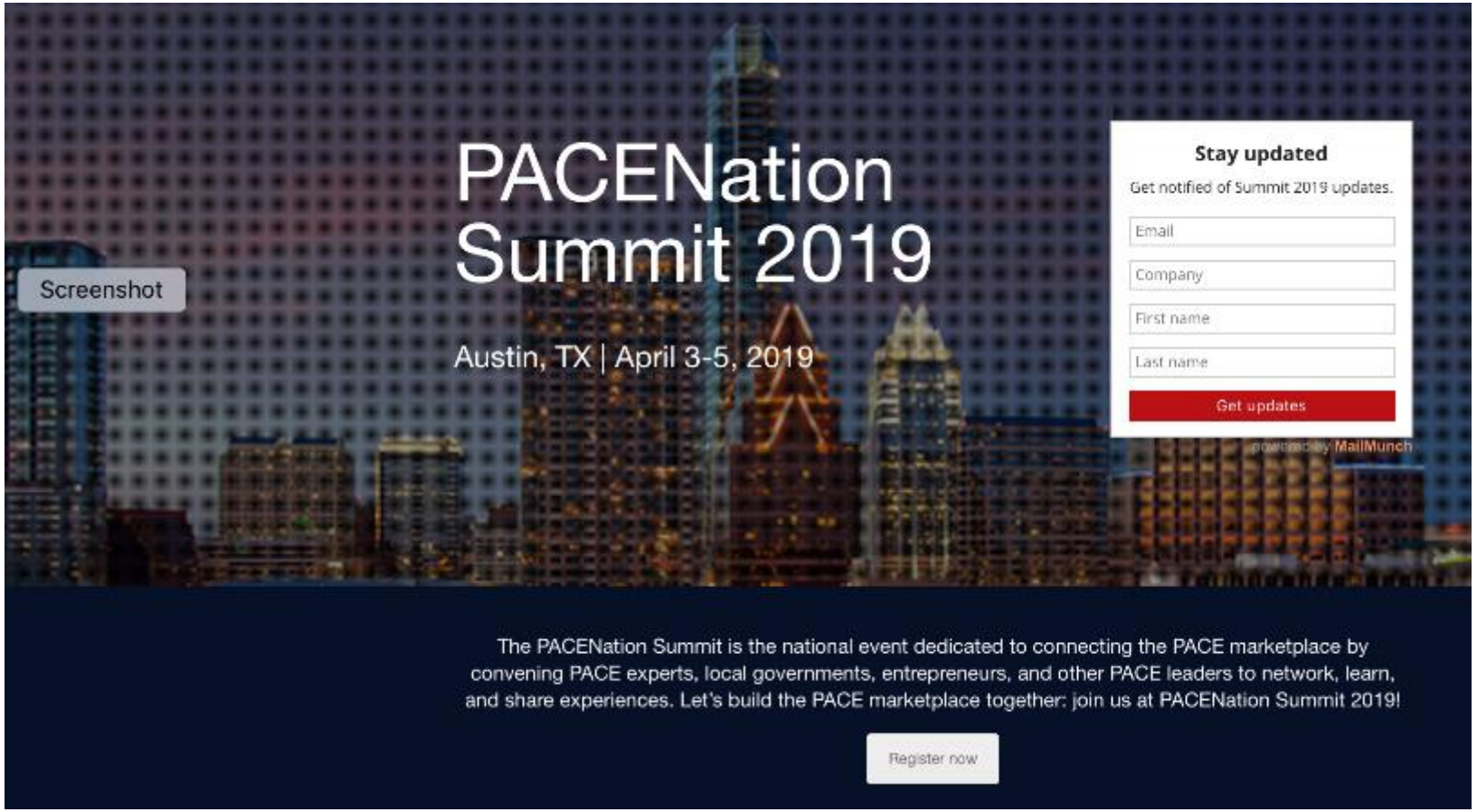
Lots of reasons

- ✓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
- ✓Only effects buildings that choose to participate
- ✓No burden on local government
- ✓Creates long lasting local jobs

PACENation

2019 PACENation Summit

April 3-5 Austin, Texas



PACENation

David Gabrielson, Executive Director - David@PACENation.org

PACENation

Key Points

- PACE is a tax-assessment based financing mechanism for energy efficiency, renewable energy, and water conservation projects.
- Projects are financed by bonds or loans from PACE capital providers, and billed to building owners as part of their property taxes.
- 36 states and the District of Columbia have enacted PACE legislation.

Sean Williamson
U.S. Department of Energy

U.S. DEPARTMENT OF ENERGY

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Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

PACE Financing and Resilience: Policy Considerations and Market Outlook

March 14, 2019
Adapted for Better Buildings Residential Network Call

Sean Williamson, U.S. DOE
Joe Indvik, RE Tech Advisors
Brandi Martin, U.S. DOE

Takeaways: PACE Financing Is…

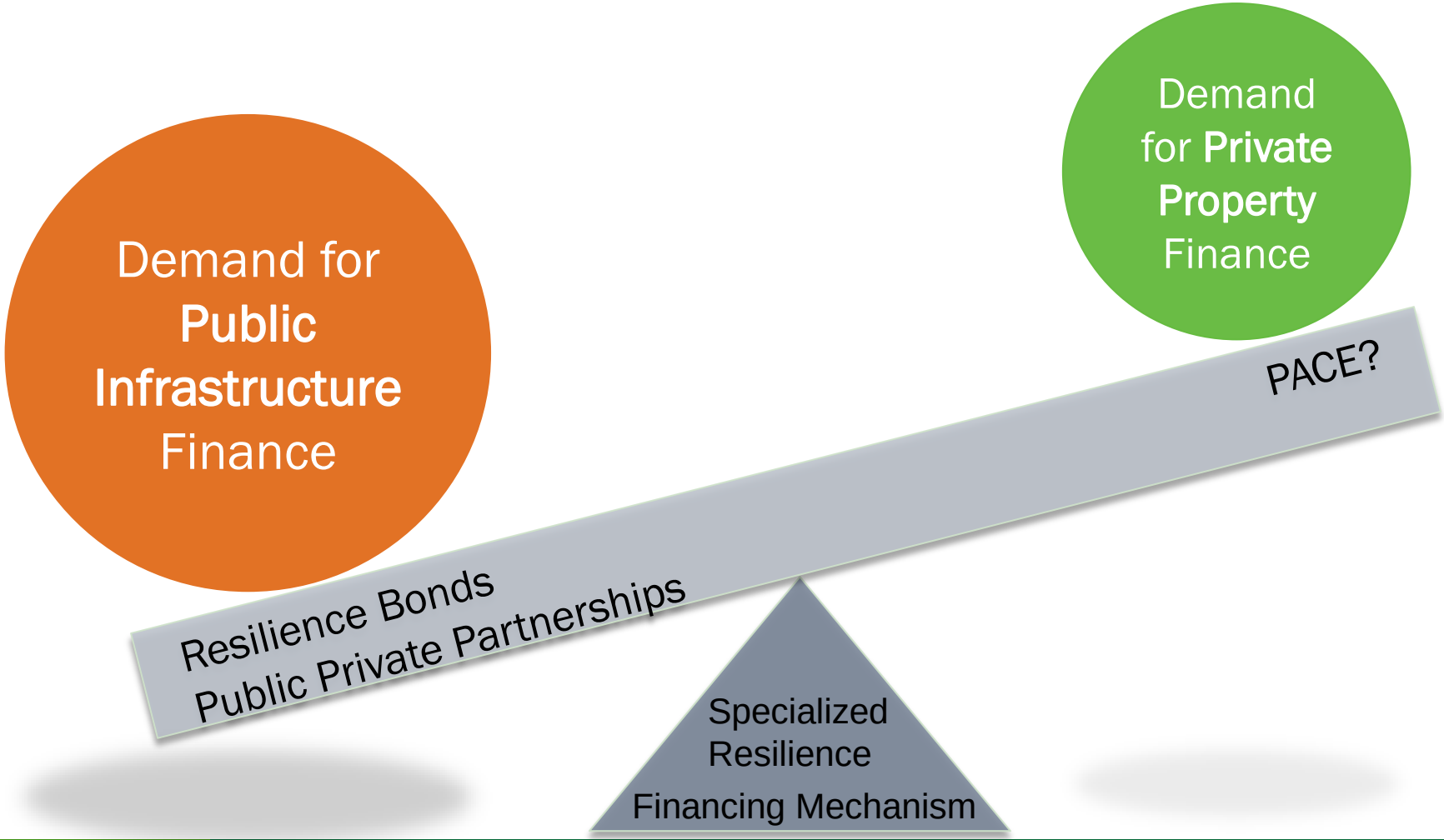
- **Enticing**: PACE strengthens the business case for investing in energy efficiency and resilience measures.
- **Enabling**: Resilience-first projects, when coupled with PACE financing, may enable energy efficiency retrofits and unlock energy savings.
- **Evolving**: PACE program design can be optimized to achieve an array of desired policy outcomes (e.g., consumer protection, economic development, reducing energy waste, more resilient buildings).

Outline

- **Introduction**
  - Financing Resilience Improvements
- **The Intersection of PACE Financing and Resilience**
  - Energy and Non-Energy Resilience Measures
  - Mapping Measures to Legislation
  - Financial Constraints and Other Policy Provisions
  - Market Activity
- **Discussion**
  - Areas for Future Research

Intro: Financing Resilience Improvements

- **Public Infrastructure vs. Private Property**
  - Differences: Time-scale, ownership, and investor risk tolerance



The Intersection of PACE & Resilience

1. Which energy measures and non-energy measures can be considered resilient and why?

2. What are PACE eligible measures and where is there overlap with resilient measures?

3. How do provisions in existing PACE statutes, local ordinances, or program guidelines encourage or inhibit investment in resilient measures?

4. What types of resilience projects have been completed with PACE financing and what is the evidence that resilience-first projects beget efficiency upgrades?

Resiliency through Energy and Non-Energy Measures

COMMON RESILIENCY PROJECTS

Energy Supply
- Renewable energy
- Combined heat and power (CHP)
- Battery storage
- Backup generation
- Microgrid
- Electric vehicle charging

Resource Conservation
- Efficient lighting and HVAC
- Water efficiency measures
- Building envelope improvements

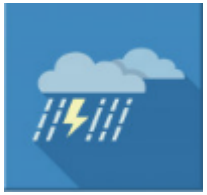
Structure Hardening
- Seismic retrofits
- Wind-resistant roofs and windows
- Flood mitigation

Ensure building systems continue operating

Reduce energy and water demand; increase operating time on backups

Mitigate property damage, injury, and system outages






Measures Expressly Named in Legislation*

Eligible Measures	States
Electric vehicle charging infrastructure	CA, CO, FL, IL, MN, NY, RI, UT
Energy storage	MA, UT
Flood mitigation or “water barriers”	AL, FL
Microgrids	CT
Seismic retrofit	CA, OR, UT
Stormwater management	CA, D.C., NE
Water conservation	AR, CA, D.C., GA, IL, KY, MI, NE, TX, VA, WI
Wind resistance	AL, FL

* Current as of June 2018

Evolving PACE Legislation

- **Commonwealth of Virginia**
  - PACE first enabled in 2009 and amended in 2015 (HB 1446)
  - Legislation introduced in 2019 (S 1559) would:
    - Expand eligible measures to include resiliency improvements. *"Resilience improvements may include mitigation of flooding or the impacts of flooding or stormwater management improvements with a preference for natural or nature-based features and living shorelines."*

- **Washington State**
  - Introduced legislation in 2019 with resilience measures including energy efficiency, renewable energy, fire protection, and flood readiness.

Anecdotes from the Field

National Geographic

2017 Hurricane Season Was the Most Expensive in U.S. History

8 months ago

The Most Expensive Weather Year Ever

The Atlantic • 7 months ago

2017 goes down as costliest year for weather disasters ever recorded in US

AccuWeather.com • 7 months ago

The US just had the most expensive year for weather disasters in history. Expect more.

Quartz • 6 months ago

The Most Expensive Natural Disasters in US History

MoneyWise.com • last month

2017 was the costliest US natural disaster year on record

PRI • 6 months ago

2017 the costliest year in US history for natural disasters

ABS-CBN News • 6 months ago

Crumbling seawalls need costly repairs post-Irma

NBC2 News • 10 months ago

Seawall repairs costing homeowners thousands

NBC2 News • 9 months ago

Analysis: PACE Financial Constraints

Financial constraints across commercial and residential markets

	Savings-to-Investment Ratio (SIR) Requirements	Loan-to-Value (LTV) Requirements
C-PACE	Present in some statutes or guidelines; programs may offer exceptions.	Present in many statutes or guidelines; unclear if exceptions ever permitted.
R-PACE	Not standard for most programs; considered cost prohibitive.	Standard for most programs; considered vital to consumer protection.

Barrier: With regards to C-PACE, there are scenarios where SIR and LTV are prohibitive to executing projects, particularly projects where the revenue/savings stream is minimal or difficult to quantify.

Examples: Energy and Non-Energy

Possible Program Designs Options:

- Broaden savings definition to include more than energy costs (e.g., Alabama includes insurance savings).
- Allow exemptions or waivers for certain projects (e.g., above a certain threshold).
- Encourage multi-measure bundling, or defer to local governments to define SIR requirements based on market.

Market Activity: R-PACE Anecdotes

R-PACE

- In 2017, Renew Financial reported that **45% of their projects in Florida were wind mitigation projects** including shutters, impact windows, and doors.
- In the wake of Hurricane Irma, there was a noticeable uptick in PACE financing.

Renew Financial Residential PACE Eligible Projects

- **PACE Financing is compatible with disaster recovery:**

  "Homeowners place their claim concurrently with obtaining a PACE assessment and pay off the assessment once they receive their insurance reimbursement."
  (N. Schneider, Renew Financial, 2018)

Takeaways – PACE Financing Is…

- **Enticing**: PACE strengthens the business case for investing in energy efficiency and resilience measures.
  - Aligned time-scales, transferable to next owner.
- **Enabling**: Resilience-first projects, when coupled with PACE financing, may enable energy efficiency retrofits and unlock energy savings.
  - Case studies, program design (e.g., SIR requirements).
- **Evolving**: PACE program design can be optimized to achieve an array of desired policy outcomes (e.g., consumer protection, economic development, reducing energy waste, more resilient buildings).
  - Financial constraints, and New Construction policy provisions.

Areas for Future Research

- The market size and potential energy savings from resilience-first investments.
- How does PACE compare to other financing mechanisms for resilience upgrades by accessibility, consumer protection and other factors?
- Can PACE financing offer additionality relative to building safety and energy code requirements?

Thank You

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Presentation adapted from 2018 ACEEE Summer Study Proceedings – Full paper available online here.

Notes and Citations

Slide 6: Icon credit, created by Macrovector - Freepik.com
Slide 8: VA Senate Bill 1559. See: https://lis.virginia.gov/.
Slide 9: Seawall discussion from PACENation Summit 2018, PACE for Disaster Recovery and Resilience. Erin L. Deady, PA
Slide 10: Photo credit, elevated building: FEMA website ; Electric vehicle charging station, NREL photo.
Slide 11: Renew Financial. See: https://renewfinancial.com/PACE-for-homeowners.

Key Points

- PACE strengthens the business case for investing in energy efficiency and resilience measures.
- Resilience-first projects, when coupled with PACE financing, may enable energy efficiency retrofits and unlock energy savings.
- PACE financing is compatible with disaster recovery – homeowners can place their claim concurrently with obtaining a PACE assessment.

Todd Williams
Lean & Green Michigan

U.S. DEPARTMENT OF ENERGY

Lean & Green Michigan

PACE Financing Redeveloping Multi-Family Properties

Todd M. Williams
Senior Counsel
Lean & Green Michigan, LLC

Agenda

- **Intro to PACE:**
  - What is Property Assessed Clean Energy (PACE)
  - What is Lean & Green Michigan

- **Multi-Family Case Studies:**
  - Cambridge Court Apartments
  - Hatchery Road Apartments
  - 515 West Ionia

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Michigan Property Accessed Clean Energy

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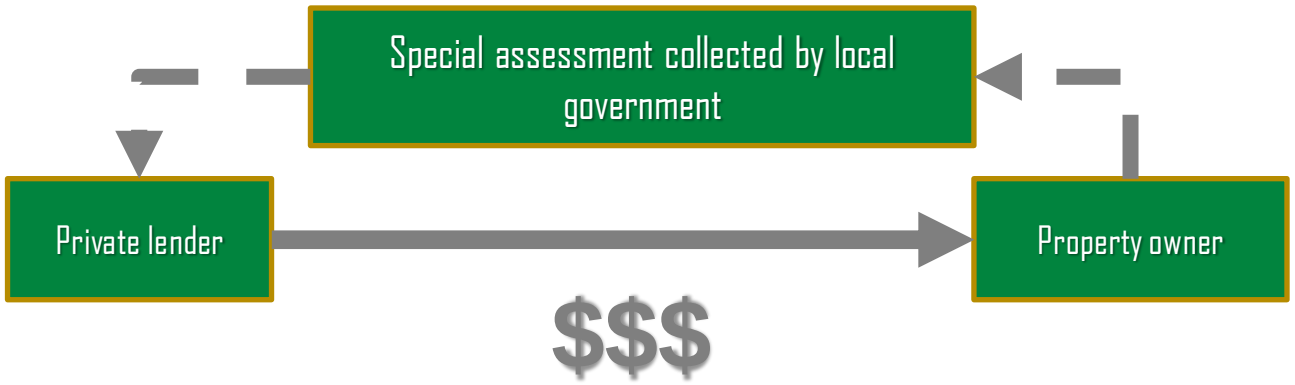
PACE in Michigan

- Public Act 270 of 2010
- Passed on 12/14/2010
- Michigan PACE Act is a model in many ways
  - Flexible financing options (public $, private $)
  - Direct payment from property owner to lender



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What Michigan's PACE Act Allows

- Public Act 270 allows PACE financing of projects that increase energy or water efficiency or add renewable energy generating capacity
  - An energy savings guarantee is required
  - The only exclusions are incinerators
  - The statute includes a long list of what is allowed, but makes clear they are only examples
  - **Bottom line: the statute is *incredibly broad*** and leaves room for you to include new technologies

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Examples of improvements include, but are not limited to:

- Insulation
- Lighting
- Efficient windows
- Caulking, weather-stripping,
- air-sealing
- Energy control systems
- HVAC modifications
- Water efficiency improvements
- Solar
- Wind
- Geothermal
- Manufacturing processes
- Hot water systems
- Biomass
- Combined heat and power

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What is Lean & Green Michigan?

- Statewide administrator
- Open Market for Contractors and Lenders
- Provide support to property owners
- Based out of Detroit, MI
- Manage PACE marketplace
- Provide training to contractors

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The Lean & Green Model

Three Key Concepts:

- Public-private partnership: counties/cities join for free; no barrier to entry or exit
- Statewide, opt-in program: one lean & efficient PACE market for whole state
- Use private capital to unleash the market to drive growth

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Map of Participating Jurisdictions

- **40** Local Governments
- 70% of state's population
- Even higher % of the biz-to-biz economy
- More join each quarter

Counties

Antrim
Bay
Calhoun
Delta
Eaton
Genesee
Grand Traverse
Gratiot
Houghton
Huron
Ingham
Jackson
Kalamazoo
Leelanau
Macomb
Marquette
Midland
Montcalm
Oakland
Otsego
Saginaw
St. Clair
Washtenaw
Wayne

Cities

Bloomfield Twp.
Ferndale
Grand Rapids
Hartland Twp.
Jackson
Kentwood
Orion Twp.
Pleasant Ridge
Pontiac
Rochester Hills
Royal Oak
Southfield
Troy
Wyoming

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Case Studies

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Michigan's Energy Finance Marketplace™

Property Owners | How PACE Works | Contractors | Governments | PACE Lenders | Projects | About | Apply Today

Featured Projects

513-515 West Ionia Street

Cambridge Court Apartments

Garfield Metro Building

Hannan Memorial Foundation

Hatchery Road Apartments

Heller Machine Tools

Liquid Web/Hillcorp

Michigan Public Service Commission

Powers Distributing

Radisson Hotel

Roberts Riverwalk Hotel

St. Clair Inn

The Hotel Harrington

The Whitney Restaurant

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Cambridge Court Apartments – January 2016

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Cambridge Court Apartments

- Small apartment complex in Greenville, Michigan
- First deal in Montcalm County
- First Multi-family PACE Project
- First property in the nation to receive U.S. Department of Agriculture approval for PACE financing, and
- One of the first to combine PACE with a Rural Energy for America Program (REAP) grant

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Cambridge Court Apartments

- Project included a 20kW solar system, LED lighting, low-flow plumbing fixtures, high-efficiency appliances, and upgrades to the heating and cooling systems
- $117k in PACE financing
- $125k in net 20 year savings

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Hatchery Road Apartments - May 2018

Hatchery Road Apartments

- First PACE deal for Oakland County
- Small aging apartment building purchased by new owner Trademark Building Co.
- LEDs, new furnaces + HVAC, efficient toilets, low flow shower heads and other water fixtures, water heating
- Lower utility bills and quality of life for tenants

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Hatchery

- **“This program allowed my to update the building, give the tenants a better life, lower utility bills, and reduce our impact on the environment. We’ve changed the culture of the building for the residents making these improvements.” Tony McGuckin, Trademark Building**

- $124k in PACE financing
- $175k in net 20 year savings

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515 West Ionia - August 2018

515 West Ionia

- First PACE deal in Lansing, and Ingham County
- Located two blocks from Michigan State Capitol
- Formally Orla H. Baily Buildings – home to Belen's Flowers, a Lansing institution.
- Built in mid-1920's – two separate brick buildings

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515 West Ionia

- Complete gut-rehab project of around $1.2 million.

- Capital stack includes: brownfield tif, historic tax credits, bank loan, owner equity, and $247k in PACE financing

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515 Ionia

- End result:
  - Mixed use buildings: multi-family 6 units with commercial space.
  - Solar, high-efficiency windows, EV charger, CHP, boiler upgrade, energy efficient appliances, LEDs + sensors
  - $267k in net 20 year savings
  - Will help to anchor redevelopment in the neighborhood

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Questions?

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Contact

- Todd M. Williams, 313-444-1474 x101
- Todd@leanandgreenmi.com

- info@leanandgreenmi.com for general inquiries

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Key Points

- Michigan's PACE Act is a model in many ways; it offers flexible financing options and permits direct payment from property owners to lenders.
- The statute is incredibly broad and leaves room for the inclusion of new technologies.
- Lean and Green Michigan has facilitated several exemplary projects, which demonstrate the value and opportunity of flexible PACE programs.

Explore the Residential Program Solution Center

Resources to help improve your program and reach energy efficiency targets:

- Handbooks - explain *why* and *how* to implement specific stages of a program.
- Quick Answers - provide answers and resources for common questions.
- Proven Practices posts - include lessons learned, examples, and helpful tips from successful programs.
- Technology Solutions NEW! - present resources on advanced technologies, **HVAC** & **Heat Pump Water Heaters**, including installation guidance, marketing strategies, & potential savings.

https://rpsc.energy.gov

Thank You!

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