The State of PACE in the USA

Report commissioned by City of Edmonton

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March 20, 2017

Introduction

Brian Scott and Leigh Bond attended the 2017 PACENation Summit with the task of determining:

- how PACE is evolving in the U.S., major trends developing on both R-PACE and C-PACE fronts
- what's working (and how it might apply to an Alberta/Edmonton PACE program),
- what challenges PACE is encountering (applicable or "portable" to the Alberta context)
- general lessons that can constructively inform the development of a PACE program delivery in Alberta

To that end, this report documents the observations and insights garnered at the Summit, a gathering of experts and stakeholders in the growing field of PACE financing in the USA, which featured three days of content, 20+ interactive sessions, 40+ expert speakers, and many networking opportunities. Over 600 participants gathered in Denver Colorado from Feb 12 to 15th to learn, share and inspire each other to make PACE a key policy and program initiative in the US economy when it comes to transforming the built infrastructure into one which is the most energy and resource efficient it can be.

Progress in PACE in 2016 was reported as having been tremendous. Residential PACE financing surpassed $3 billion and recent policy developments have set the stage for an anticipated doubling of growth in 2017. Innovation in commercial PACE continued with a variety of new PACE products, strategies and programs developed by C-PACE programs and financiers. This was the story of PACE in 2016: new markets, new innovations, new policy and new programs.

Residential PACE programs (R-PACE) have by far eclipsed in sheer numbers Commercial PACE (both of buildings and dollars), in spite of the few states where active programs exist; the size and scale of the Commercial PACE (C-PACE) projects are significant and also growing exponentially.

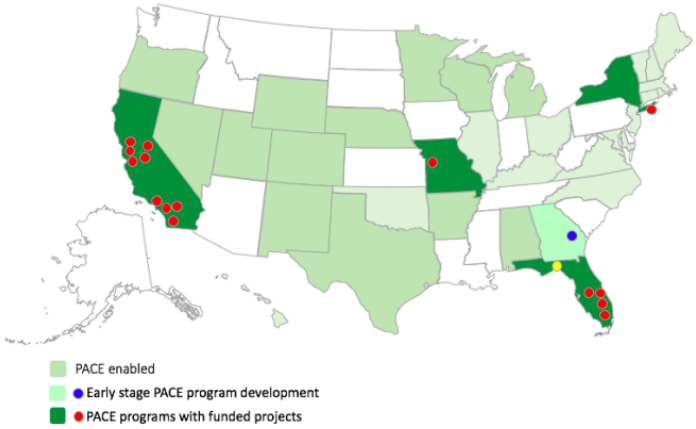
PACE's Impact

PACE creates jobs, saves money, and safeguards the environment

- 33,000 jobs created
- $5 billion energy costs saved
- 20 billion kWh saved
  - Equivalent to over 1 million homes' annual energy consumption
  - Could light the Eiffel tower for over 30,000 years
- 4.2 million metric tons carbon reduced
  - Equivalent to taking 880,000 cars off the road for a year
- 9 billion gallons water saved
  - Enough to fill 14,000 Olympic swimming pools

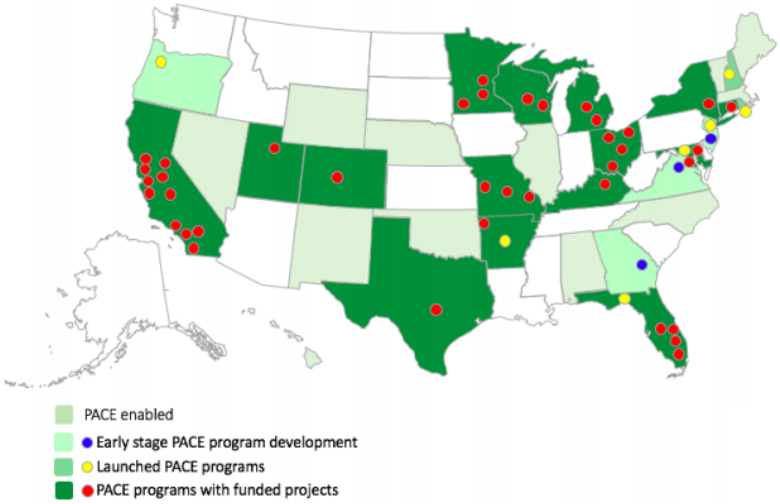
Residential PACE Programs Today

Active programs in 4 states



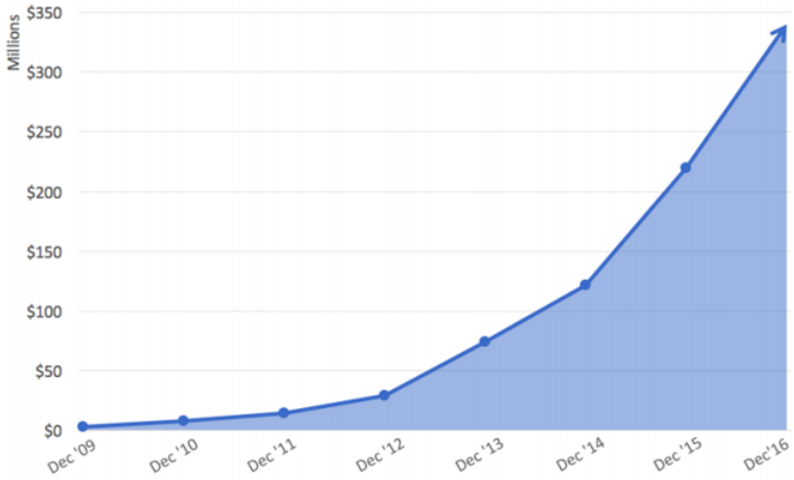
Commercial PACE Programs Today

C-PACE enabled: 33 states plus D.C.



Commercial PACE Market Growth

$340 million and 1,000+ commercial buildings



MOODY'S ANALYTICS

"It's rare to find public policy that is a win-win…The Property Assessed Clean Energy program or PACE, has the potential to be that rare policy gem in which everyone wins…"

—Mark Zandi, Chief Economist for Moody's Analytics

PACE models in practice

The following excerpt from a public paper written by Robert Johnson (president of Johnson Independent Advisors) titled "PACE Financing Primer" is included to help the reader understand the different public/private partnership PACE structures.

> *Across the United States, PACE program design and administration vary widely. All programs involve a public-private partnership. The level of private-entity participation can range from being solely a source that purchases issued bonds to marketing, originating, underwriting, and issuing and purchasing the bonds, with the government entity solely responsible for administering the PACE property tax assessment. PACE programs generally are hybrids of the following basic program models:*
>
> *Public program, government administration: In this model, governmental agencies fulfill essentially all functions. Key functions include: qualifying projects, underwriting, providing warehouse funds, bond issuance (funding), recording PACE assessment liens, servicing PACE bond assessment payments, verifying lender consent and program marketing.*
>
> *Public program, contractor administration: In this model, governmental agencies provide capabilities such as servicing PACE bond assessment payments and bond issuance (funding), but retain third-party firms to share other responsibilities. There is an increasing trend toward scaling down the public program role for these programs to drive down associated fees.*
>
> *Private program, private administration: This model has minimal government involvement. A private company establishes program guidelines in consultation with a public entity partner, which typically includes a statewide bonding authority sponsor. In this setup, the entire PACE program is designed, marketed, administered and funded by the private company as a turnkey solution for all participating cities and counties that join the program. These private-party platforms conform to the same general PACE program guidelines employed nationwide, with some exceptions. Private PACE program administrators manage essentially all functions, including: enrolling municipalities, who need to "opt-in" to the private party platform, supporting and training contractors, marketing to building owners and contractors, underwriting, securing necessary mortgage lender consent or authorization, securing private warehouse capital, funding projects, and securitizing pools of originated bonds.*

Summary of Findings:

How PACE is evolving in the U.S.

- growing exponentially in jurisdictions where enabling PACE legislation and infrastructure has been established without arbitrary limiting legislation
- quality control in the form of consumer protection regulations and standards (R-PACE) have been updated and strengthened
- C-PACE is growing in the new construction arena and is being adopted to help bridge the cost of meeting new building and energy code standards
- Retroactive PACE financing has been introduced wherein installations of PACE eligible building upgrades or additions which were undertaken prior to securing PACE approval are being approved and financed
- large C-PACE and R-PACE financing providers are partnering to expand their reach, find synergies and gain greater access to capital markets

Major trends developing on R-PACE front

- expansion of materials and systems (>200) that will be covered by PACE
- inclusion of upgrades that are not energy or resource specific eg. earthquake, flood proofing measures, asbestos abatement
- option to retroactively apply for PACE financing for work already completed
- streamlined and fast online application and qualification process (typically 15 minutes to be qualified)
- interest rates are dropping (5.99%) and terms are extending out to as much as 30 years depending on expected life of upgrades

- Securitization of PACE financing is growing. Originators, including Renovate America, Inc., Ygrene Energy Fund, Inc., and Renew Financial, have sponsored more than $1.57 billion in PACE securitizations in 2016. The growing appetite for PACE bonds is evidenced by Renovate America's successful completion in September of the largest securitization to date, totaling $320.2 million.

Major trends developing on C-PACE front

- Expansion of C-PACE financing to new construction
- C-PACE is being used by building developers as a means of not only upgrading building performance but also to help meet new building and energy code standards
- PACE financing packages continue to grow in size, the largest being a 10 million solar installation for a biorefinery in California
- while the office and retail sectors are maintaining growth, new sectors (industrial, nonprofit and agricultural) are showing the most growth. growth in the C-PACE sector in general is doubling every year since 2009

What's working (and how it might apply to an Alberta/Edmonton PACE program)

- C-PACE and R-PACE programs that operate under the least restrictive legislative climates have evolved and expanded the fastest. Well intended legislation which arbitrarily limits repayment terms, imposes savings criteria, requires upfront energy audits have been shown to materially impede widespread adoption and success of PACE programs
- establishing PACE industry established quality control and assurance standards and monitoring has proven that the sector is able to self monitor and ensure customer satisfaction
- expanding PACE financing to all building sectors, new and retrofit and finally retroactive financing
- PACE initiated quality control protocols present an industry opportunity to set a higher standard and oversight to the "home improvement" sector

What challenges PACE is encountering (applicable or "portable" to the Alberta context)

- allegations of R-PACE financing abuses have surfaced in the news but are outliers. The PACE sector acknowledges it needs to do better at getting out the fact that R-PACE homes are better value propositions for both homeowners and mortgage lenders and that foreclosure rates on PACE homes are significantly below industry standards and to date with no foreclosures having occurred due directly to the PACE financing

- Training and quality control protocols of R-PACE approved contractors and the PACE approvals process remains a high priority to avoid issues with regards to adverse home owner experiences and confidence in the PACE financing product

- While not an insurmountable challenge, the process of securing mortgage lender approvals for C-PACE financing remains a matter which requires effective communication and education to the lenders with solid data based arguments to support the business case. Building strong cases and a data-base of strong and positive experiences is helping to make this critical process easier and more likely to succeed.

General lessons that can constructively inform the development of a PACE program delivery in Alberta

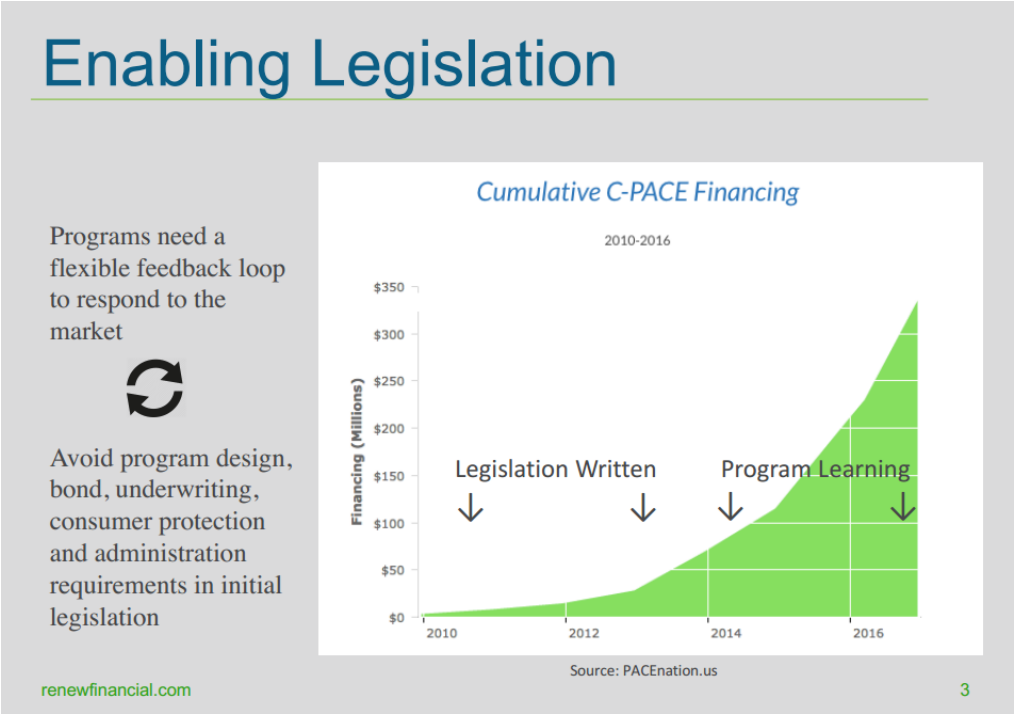
- Adopt a province wide program for standardization using broad enabling legislation combined with more detailed provincial regulations (where absolutely required) which can more easily be amended based on developing markets and feedback

- set up an independent private sector province wide PACE Administrator for C-PACE and R-PACE programs mandated to operate independently and responsible for all aspects of the program administration including marketing, education, coordination with municipalities and securing funding sources.

- open financing up to private and public sectors and invite competition

- ensure that both C-PACE & R-PACE financing is structured such that it can be securitized

- Key message which was repeated throughout the conference "There are few ways to make your PACE program successful; there are many ways to encumber it to the point of failure." The main point was to keep the end goal in mind (maximum number of buildings implementing energy performance measures) while adopting the absolutely minimal legislation and regulation required to ensure the program is delivered fairly and ethically. This approach is found in the most successful PACE states and recognizes the respective ideal roles in a public/private partnership where the public sector sets out a minimum framework and the private sector is left to excel in program delivery and adaptability to the market conditions.



Key Terms:

PACE Administrator (Administrator): an organization set up to deliver the PACE program.

PACE Program: a framework set of documents (legislation, contracts, etc) which outlines the terms and conditions under which PACE financing will be issued.

PACE Provider (Provider): An entity who's function is to assess and provide PACE financing to eligible property owners (also know as Originators)

Key Take-Aways

- Properly structured, organized and set up, a made in Alberta PACE program and delivery will transform the building and energy efficiency sector into an far more significant economic driver and job creator while simultaneously lowering the energy footprint (potentially into net-zero and regenerative building territory) all the while doing so without any need for ongoing public capital input. PACE in the USA is demonstrating the ultimate synergy of a public-private partnership, with the public sector contributing the regulatory framework, financial security (tax lien) and administrative financial collection infrastructure (and optional financing) while the private sector provides some or all of the PACE financing, and typically the entirety of the delivery of the PACE program including: coordination, administration, education, marketing, and quality control. 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.

- The private program, private administration model is by far the most successful model when measured by market penetration and PACE financing dollars, and is the model which was consistently recommended for Alberta.

- Residential Pace (R-PACE) is positioned to require the greatest up front structural investment in the establishment of the PACE Administrator (agency), but once established, will exhibit exponential growth in market penetration if properly positioned, packaged and marketed and if modeled after the successful USA agency model wherein the field of qualified and certified consultants, contractors and supplier/installers of PACE qualified products and systems are the front line promoters and "sellers" of PACE financing to homeowners.

- Commercial PACE (C-PACE) is expected to develop more linear growth in market penetration, in light of the greater building diversity and commensurate complexity associated with the commercial building sector. As a result of the broad scope of building forms, ownership structures, and uses, the scope and scale of PACE financing per building is orders of magnitude larger but commensurately requires a much greater degree of front end time and resource

investment from building owners, mortgage holders, consultants and architects/contractors in order to deliver a successful PACE financing package.

- A clear and consistent message from every PACE stakeholder was that a single program and PACE administrator for the entire Province would lead to the best short and longer term outcomes for all participants and stakeholders.

  PACE Programs in the USA fall into three categories:

  - "Wild West": best exemplified by the state of PACE in California, this approach is characterized by a large number and variety of different PACE Administrators and Providers with sometimes overlapping jurisdictions/territories and a mix of private and public Administrators

  - Single Jurisdiction Program: best exemplified by Connecticut's single state-wide, uniform program model that creates a single governmental Administrator to administer PACE programs on a state-wide basis on behalf of local governments.

  - Standardized Program: exemplified by Texas' PACE-In-A-Box approach, which has established a standardized PACE development template in lieu of a state run program (which would not sell in Texas) in recognition of the value of uniform programs covering large areas that could provide economies of scale.

  - In conversation with stakeholders from all of the above areas of operation, a clear message emerged as a recommendation:

    - Establish a standardized program and program Administrator for the entire Province of Alberta

    - Set the Administrator up as a not-for-profit with representation from all key sectors

    - Invite PACE financing from a competitive field including private and public funding sources

- Consumer protection policies and protocols are evolving as the sector matures. PACENation released newly updated policies, released at the 2017 PACENation Summit in Denver, which

adopts key components of the U.S. Department of Energy's best practices for residential PACE financing programs announced in November 2016. The updated policies include the following requirements:

- all PACE programs must offer simple but comprehensive disclosures which provide a clear, three day right to cancel and are modeled on the federal Know-Before-You-Owe disclosure form now used for home mortgages, even though the average PACE assessment is under $25,000;
- all PACE programs must confirm financing terms by phone with 100 percent of customers in a live, recorded call that reinforces the written disclosures;
- all PACE programs must set standards governing contractor marketing practices and workmanship issues, including adopting processes to resolve and remediate homeowner complaints – a level of consumer protection not available with any other form of home improvement financing;
- all PACE programs must develop a forbearance program for homeowners who unexpectedly suffer financial hardship, including extra protections for U.S. military servicemembers; and
- PACE providers must begin collecting monthly household income and debt obligations at the time of homeowner application in order to help develop income-based financing criteria that PACENation will use to amend underwriting standards.

- Widespread PACE program adoption is not primarily driven by building owner demand for energy upgrades but rather by financially profitable business sectors (financiers/contractors/suppliers) so program design must target the long term end beneficiary (building owner), short term beneficiaries (contractors/suppliers) and finally the long term beneficiaries (PACE capital providers).

Sessions Index

Following is the schedule of the various sessions that were presented during the three days of the summit. In most cases, except for plenary sessions, Brian and Leigh attended different sessions in order to gather as much information as possible.

Day 1, Monday, February 13th

1. 2 – 5 p.m. PACE 101 Workshop .....Leigh & Brian

Day 2, Tuesday, February 14th

2. 9:00 – 10:15 Plenary – The Evolution of PACE and Future Outlook.....Leigh & Brian
3. 10:45 – 11:45 Legislation and Local Ordinances.....
4. 10:45 – 11:45 Lender Consent.....Brian
5. 10:45 – 11:45 Consumer Protection Standards.....
6. 10:45 – 11:45 PACE in More Nations.....Leigh
7. 11:45 – 1:00 Keynote – Where are we in the transition to low carbon .....Leigh & Brian
8. 1:00 – 2:00 PACE Administration Models.....Leigh
9. 1:00 – 2:00 Commercial Real Estate Challenges & Opportunities .....
10. 1:00 – 2:00 Scaling Success in Residential PACE Programs .....Brian
11. 1:00 – 2:00 PACE Securitization.....
12. 2:30 – 3:30 The Administrative Costs of PACE Financing .....Leigh
13. 2:30 – 3:30 Advancing Solar Through PACE.....
14. 2:30 – 3:30 Understanding R_PACE in Real Estate Transactions.....
15. 2:30 – 3:30 Attracting Capital Investments .....
16. 4:00 – 5:00 Local and State Policy Applications .....
17. 4:00 – 5:00 New Construction Projects and Major Renovations .....Brian
18. 4:00 – 5:00 Contractor Engagement for R-PACE Programs.....Leigh
19. 4:00 – 5:00 Building the Capital Stack with PACE.....

Day 3, Wednesday, February 15th

20. 9:30 – 10:30 Plenary – The Data Driven Case for R-PACE .....Leigh & Brian
21. 11:00 – 12:00 Keys to PACE Success.....
22. 11:00 – 12:00 True Cost of PACE Debt versus Traditional Loans .....Leigh
23. 11:00 – 12:00 Expanding Residential Access to Solar.....
24. 11:00 – 12:00 PACE Partnerships with Solar Developers .....
25. 1200 – 1:30 John Picard – Ushering in the clean energy economy.....Leigh & Brian

Session Summaries

01 Session Title: **Pace 101 Workshop – Feb 13, 2017**
Attendees: **Leigh Bond and Brian Scott**
Session Description: **An intensive workshop of the fundamentals of PACE. Workshop covers legislation, program design, administration, financing options, and capital providers.**

Key Take-aways:

1. There are usually 5 players in the Finance Structure – the PACE Administrator, the property owner, the contractor, the PACE Provider (source of capital), and the municipality.
2. Better to amend existing legislation versus trying to create a new law.
3. Legislation should not be overly burdensome, leave that to regulations.
4. Expedited R-PACE approvals key to success; eg. In California where over 90% of the R-PACE financing has been made, approvals are secured within 15 minutes, Vermont can take as much as 8 weeks and was referenced as an example of how not to implement PACE.
5. Programs need a flexible feedback loop to respond to the market.
6. Avoid program design, bond underwriting, consumer protection and administration requirements in the initial legislation.
7. Easiest and fastest way to market acceptance is to set up opt-in mechanism for municipalities.
8. Set up a competitive mechanism for the provisioning of funds to the program.
9. The PACE administrator can be an entity that is Public, a Non-Profit, or a Private one.
10. Most sources of funding are from private money – NOT THE MUNICIPALITIES THEMSELVES.
11. However, in some cases, where the municipality has reserve funds that they invest, that investment could be into a PACE program (example – Connecticut).
12. PACE home energy renovations recover more than 100% of their costs compared to 58% to 66% recovery for bath and kitchen remodels.
13. PACE financing terms are matched to the weighted average expected life of the bundle of energy efficiency measures.
14. Education of financial institutions (mortgage lenders) key to acceptance of seniority of PACE financing, once they understand that the PACE financing is not accelerated in the event of a foreclosure and that the only obligation is the current year PACE tax obligation which can be subrogated.

Local Impact of PACE

Community Impact

Every $100K invested by a homeowner helps communities create local jobs, stimulate their economies, save energy, lower emissions and provide clearer air.

Benefits to Government Partners

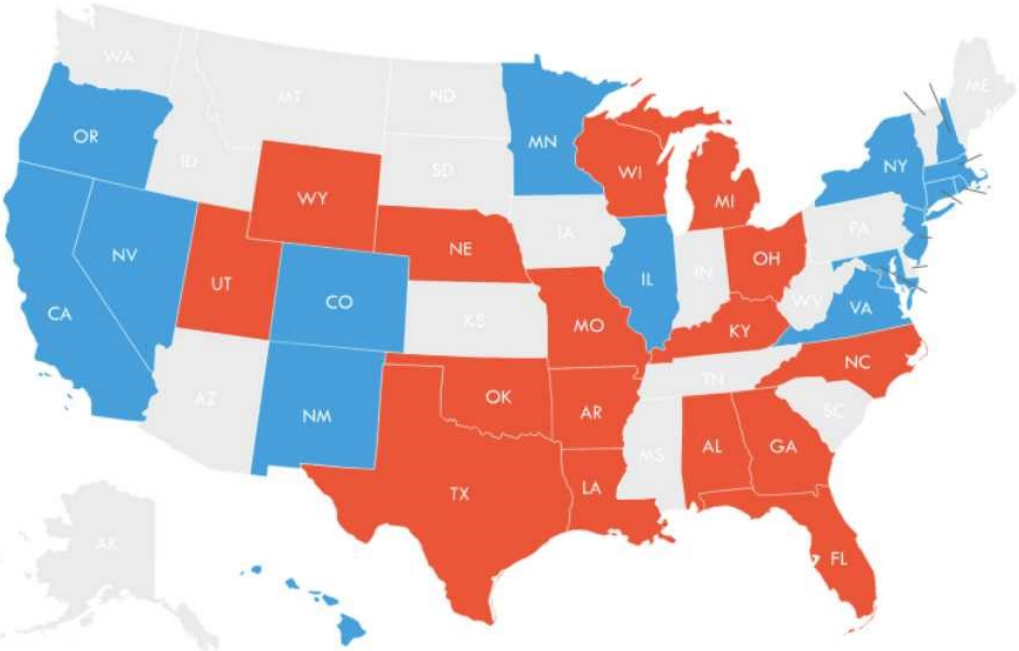
Private Capital Funds Public Policy Objectives

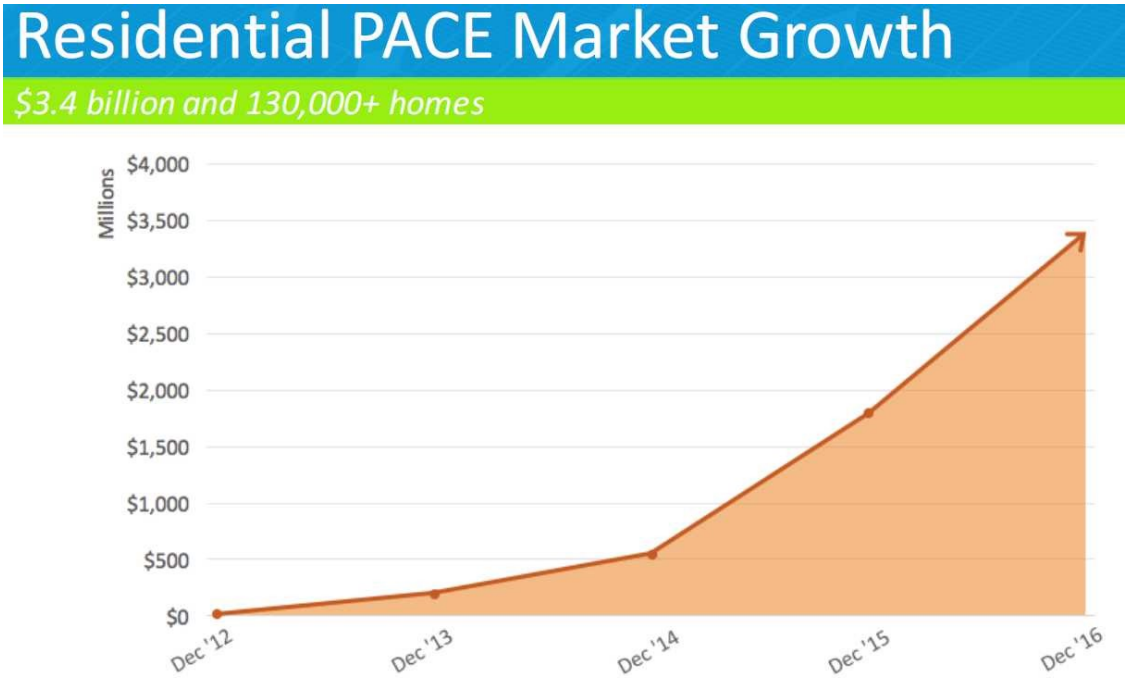
- Voluntary for counties and municipalities
- Participation costs covered by the program
- No taxpayer/ratepayer money
- Boosts municipal revenues
- Meet local economic or environmental goals
- Real-time impact reporting
- Dedicated support
- Consumer protection standards

02 Session Title: **The Evolution of PACE & Future Outlook – Feb 14, 2017**
Attendees: **Leigh Bond and Brian Scott**
Session Description: **Pace market leaders discuss the latest innovations in the world of PACE and their outlook for the future of the industry.**

Key Take-aways:

1. Macro v Micro Approach – Some states have passed legislation that ties a PACE financing arrangement to a study that shows there is going to be possible savings in energy – **this has rarely worked.** This has been the micro economics approach. The most successful market for PACE uptake is in California. They have taken the macro approach. That program has identified 9,000 energy saving products. As long a homeowner agrees to install one of these products versus a lesser quality product, they are approved for PACE financing.
2. List of products is available from Mike Yaki from California (would be a good starting point for Alberta program).
3. For C-PACE, processes have been developed to eliminate 80% of applications up-front.
4. 15% of total value is the maximum allowed for PACE Financing in most jurisdictions.
5. Only 7 out of 28,000 foreclosures were PACE financed properties; and for those 7, none of them were foreclosed because of the PACE financing.
6. For projections of possible projects for a year, get the projections from the contractors that are part of the program and cut it in half.
7. Enabling legislation has been passed in **33 states.** Active programs in **4 states**.
8. Average residential R-PACE project is $27,000
9. Largest C-PACE project to date was for $10 M. Pacific Ethanol in Madera, CA.
10. Support for PACE has been bipartisan – both Democrats and Republicans support the program





04 Session Title: **C-PACE – Lender Consent – Feb 14, 2017**
Attendees: **Brian Scott**
Session Description: **The road to achieving lender consent can make or break a PACE project. Learn top strategies for obtaining timely lender consent, overcoming common barriers and getting to "yes" for PACE projects.**

Key Take-aways:

1. Financial institutions are risk averse and respond well to data based evidence that their mortgage investment is better protected with a PACE enhanced building than without; speak their language by providing financial analysis (pre and post PACE), modeling and examples of other similar buildings whose value and performance was enhanced.
2. Communication with lenders at a very early stage prevents issues developing later; in most cases, lenders are receptive and do not balk at the PACE financing when presented early with well supported analysis.
3. Three largest issues for Commercial lenders: Priority of Lien, Additional Debt Risk and thinking that the PACE lien will result in decreased building value

a. Priority of Lien: lenders accept priority once they understand the non-acceleration aspect of the PACE obligation and its size relative to the total value of mortgage and property
b. Additional Debt Risk: present data to demonstrate how PACE upgraded buildings translate into greater value (higher rents, greater resale value data)
c. PACE lien equals lower value: present historical data

4. Successful PACE mortgage lender approvals most likely to occur when lenders and borrowers have a good established relationship, the borrowers goals are understood and the lender understand how the PACE program works
5. Engage lenders early and fail quickly (avoiding long time investment if red flags are surfaced early and fast)
6. Explain how the PACE financing is not accelerated in the event of foreclosure.

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06 Session Title: **PACE in More Nations – Feb 14, 2017**
Attendees: **Leigh Bond as a panelist**
Session Description: **A discussion with leaders from abroad about international developments and implementation of PACE finance programs. Representatives from Amsterdam, Barcelona, and Edmonton will talk about their initiatives.**

Key Take-aways:

1. We are not alone in our challenges of getting a PACE program up and running. My fellow panelists formed a pact to keep in touch and communicate what is working what is not.

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07 Session Title: **Plenary - Greg Kats, Capital E – Feb 14, 2017**
Attendees: **Leigh Bond and Brian Scott**
Session Description: **Where are we in the transition to a low carbon economy and where does PACE fit in.**

Key Take-aways:

1. Scientific evidence was presented that shows that climate change from man made sources is a certainty.
2. In the last 30 years, Department for Energy shows that in the continental US cooling degree days have gone up and heating degree days have gone down, both significantly in a 35 year period of time.

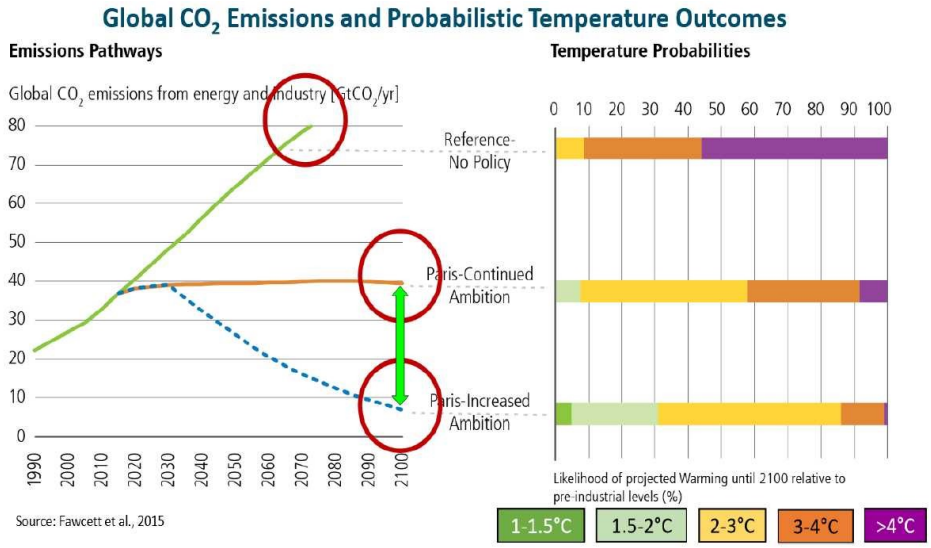
3. The evidence that we must do something quickly is overwhelming.

4. PACE to date has financed $3.1 B worth of projects. By 2025 it is predicted that PACE financing will be a $100 B **per year.**
5. Current jobs in the US:
    a. Solar 373,807
    b. Fossil Fuels – Coal, Oil, & Gas..... 187,117

08 Session Title: **Pace Administration Models – Feb 14, 2017**
Attendees: **Leigh Bond**
Session Description: **Hear from successful program administrators from across the U.S. and learn first hand about options.**

Key Take-aways:

1. Three different models were presented: Sonoma County, CA; Texas, and Connecticut
2. **Sonoma County** – Started 2009, $60M Capital Fund, Avg residential $27,000, Avg Commercial $180,000. Interest Rate 7%. Have Community Advisory Group. Use Public Bonds to obtain capital.
3. **Texas** – State wide, not for profit. No cost to local municipalities. Uniform PACE in a Box approach. Opt-in by municipalities. Closing Fees 6.4% to 6.5%. Low cost admin fee of 1%. Open market Capital Sourcing. Oversight on quality control. Money flows directly from building owner to Capital Provider. Took much longer to set up, but uptake now is quite quick.
4. **Connecticut** – State wide, state controlled, not for profit. Legislation passed in 2012. Staff of 5 people. 112 communities now have programs.
5. For **Alberta**, it appears that the best practices of Texas and Connecticut (except for state control) should be the best approach.



10 Session Title: **Scaling Success in Residential Pace Programs – Feb 14, 2017**
Attendees: **Brian Scott**
Session Description: **Residential PACE programs are poised for tremendous growth across the country, following the massive success in California's $3B+ market and the most recent developments with the FHA Guidelines. This panel will cover lessons learned from successful R-PACE providers in scaling growth, and discussion on best practices as PACE is being adopted and considered in new states and communities.**

Key Take-aways:

1. Good and thorough education and training of contractors who are the front line representatives of R-PACE is essential to avoid issues.
2. Creation of a loan loss reserve fund has addressed home owner and mortgage lender concerns. To date the California Fund with a balance of 10 million dollars securing 17,400 PACE financings worth 1.8 billion dollars has received no claims.
3. Speed of in home PACE approvals combined with independent phone based follow up vetting of communications and representations by the PACE contractor removes home owner barriers while ensuring contractors are properly presenting PACE options and financial implications.
4. Extension of a 10 year tax increase moratorium for the home improvements provides home owners with confidence that the energy savings calculations are not offset by an increase in their tax assessment based solely on the PACE improvements.
5. Contractors are keen to use PACE as they are typically paid promptly within 24 – 48 hours by the PACE Administrator after submitting a signed certificate of completion by the homeowner; in contrast with payments for regular contract work which can sometimes take much longer.
6. Creating and supporting a pool of vetted and approved contractors/supplier installers has proven to be a key component in the strong uptake of R-PACE programs

12 Session Title: **The Administrative Cost of PACE Financing – Feb 14, 2017**
Attendees: **Leigh Bond**
Session Description: **There are many different models for PACE Administration and different cost structures for each. Various ways that administrative costs are funded and recovered will be presented.**

Key Take-aways:

1. There are many different costs and fees associated with setting up and running a PACE program. The table shows some of these and the ranges of what to expect. A careful business plan needs to be put in place that sets all of these fees and the associated cost structure.

Fee or Identified Cost	Range of Cost
PACE Administrator Setup Cost	$100,000 to $3M
Application Review Fee	$150 to $35,000
Assessment Creation Fee	$25 to $20,000
Loan Closing Fee	1% to 5%
Assessment Billing Fee	.2% to 3%
Collection Fee - Commercial	$10,000 to $20,000 + Annual Fee
Collection Fee - Residential	$30 fixed or 3% to 4.25% of money collected

2. A non-profit PACE Administrator is easier to sell to municipalities. Non-profits can also apply for operating and other grants from other levels of government.
3. Some programs use municipal reserves to fund PACE Financing. The theory being that reserve funds are usually placed in low risk, low interest rate investments. PACE financing is about as low risk as you can get because the investment is backed with real property.

15 Session Title: **NEW CONSTRUCTION PROJECTS AND MAJOR RENOVATIONS**
Attendees: **Brian Scott**
Session Description: **Hear from the leading experts that are paving the way for PACE financing to be used on new construction projects. Hear about the key questions that surface when exploring PACE to fund new construction and how they have been addressed in the market, such as: legislative requirements, calculating energy baselines, building PACE into the capital stack and more.**

Key Take-aways:

1. While a number of states had new construction (NC) enabling legislation, 2016 saw the beginning of significant uptake of this facility.
2. The value proposition advantages of NC PACE to Owners/Developers are:
    a. Achieve higher building performance at lower cost vs. traditional financing
    b. Integrate improvements often "value engineered" out of projects
    c. Reduce equity contribution
    d. Lower construction loan amount
    e. No personal guarantee
3. The criteria for financing eligibility are clear and known in advance for the owner/developer team to be able to model:
    a. Establish eligible Total Eligible Cconstruction Costs (TECC): general building construction & C-PACE transaction costs
    b. Model building energy performance at "Code Compliant" & "As Designed"
    c. Determine % "As Designed" performance exceeds "Code Compliant" performance
    d. Determine C-PACE Eligible Finance Amount: typically set at a minimum of 15% performance improvement over code equalled 15% of TECC eligible for PACE financing, with performance index linked to higher % of TECC eligibility for PACE to incentivize higher performance.
4. C-PACE for NC advances public policy goals without need for regulation or incentives
5. A structured performance based approach, including independent review/approval of modeled building energy performance "above code", is critical

6. Clear priority is to balance simplicity and ease of use with prudent oversight and verification to ensure success and replicability

CPACE Colorado Commercial Property Assessed Clean Energy

Project Savings Eligibility Rating™ (SER) Report

Project Summary			
Report Date:	September 26, 2016	Baseline Energy Code:	IECC2009/ASHRAE 90.1-2007
Project Number:	CO-100130	Energy Savings Pathway:	Performance Path
Property Name:	Sample Property, LLC	Building Simulation Software:	EnergyPlus
Property Address:	101 Sample Drive	Modeling Firm:	Building Modelers, LLC
City, State, ZIP:	Denver, CO, 80204	Person Responsible:	John Modeler, PE
Property Type:	Multi-family	Design Savings Over Baseline (w/ Renewables):	56.1%
Property Size (SF):	89,000	Eligible Construction Budget Cost:	$13,224,245
Project Type:	New Construction	Project Eligible C-PACE Financing Amount:	$2,644,849

Savings Eligibility Rating™ (SER)

20.0%

Eligible C-PACE Finance Rating

Design Energy Usage Reduction

56.1%

Tier 1 (15% to <20%) Tier 2 (20%)

19.0% 26.5%

Property Rendering (Modeling)

Building Energy Simulation Metrics (kBtu/Yr)

Baseline: 4,593,719	Planned: 2,374,206	Savings: 2,219,513

17 Session Title: **Scaling Success in Residential Pace Programs – Feb 14, 2017**

Attendees: **Brian Scott**

Session Description: **Residential PACE programs are poised for tremendous growth across the country, following the massive success in California's $3B+ market and the most recent developments with the FHA Guidelines. This panel will cover lessons learned from successful R-PACE providers in scaling growth, and discussion on best practices as PACE is being adopted and considered in new states and communities.**

Key Take-aways:

1. Good and thorough education and training of contractors who are the front line representatives of R-PACE is essential to avoid issues.
2. Creation of a loan loss reserve fund has addressed home owner and mortgage lender concerns. To date the California Fund with a balance of 10 million dollars securing 17,400 PACE financings worth 1.8 billion dollars has received no claims.

3. Non standardized PACE programs (multiple diverse programs in different jurisdictions) preclude securitization
4. Key to program success is good delivery, quality control and quality assurance protocols as well as efficient internal systems and software
5. PACE Administrator standards for contractors is essential, including:
    a. Training
    b. Certification
    c. Verification
    d. Good standing maintenance
    e. Consumer feedback
6. Clear and consistent documentation, processes, communication protocols by all professionals who are dealing with the homeowner were all cited as essential to a successful program
7. A strong consumer protection standard clearly understood by all stakeholders
8. The real estate community needs to be involved and educated as to the PACE program and its benefits

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18 Session Title: **Contractor Engagement for R-PACE Programs – Feb 14, 2017**
Attendees: **Leigh Bond**
Session Description: **Successful R-PACE projects are dependent upon a strong and capable network of energy service professionals. Hear from seasoned R-PACE administrators and contractors about how to develop and cultivate contractor engagement.**

Key Take-aways:

1. Contractors need to be vetted and approved by the PACE Administrator.
2. The contractor is the front-line sales agent for the PACE program.
3. Contractors are trained by the PACE Administrator. Must be able to manage the situation at the kitchen table. Financing is to be presented as a privilege, not a right.
4. The PACE Administrator maintains a hot-line that the homeowner must phone while the contractor is on-site in order to verify that the contractor has communicated all details of the program before an application is signed between the homeowner and the contractor.
5. Homeowner must sign off on a **completion certificate** before the contractor is paid.
6. One contractor that bought into and uses the program extensively grew as follows:
    a. Without PACE - 2000 to 2010 grew from 1 person to 30.
    b. With PACE – 2010 to 2017 grew from 30 staff to 175.
7. Program can do direct pay for materials to the contractor's wholesaler.

20 Session Title: **The Data Driven Case for R-PACE – Feb 15, 2017**
Attendees: **Leigh Bond and Brian Scott**
Session Description: **Leaders in R-PACE present the newest data on customer satisfaction, economic impact, and repayment rates.**

Key Take-aways:

1. The need to address the green house gas problem requires huge amounts of capital to be invested in a very short period of time. Governments, at any level, do not have the revenues to implement this change on their own.
2. PACE is one of the most impactful initiatives to drive private investment into addressing the green house gas problem at very little cost to governments.
3. Statistics – in the last 5 years
    a. $6B economic impact
    b. 130,000 homes
    c. 33,000 jobs
    d. $5B savings in energy costs
    e. 20 billion kWh saved
    f. 4.2 million metric tonnes of GHG's saved
4. Third Party Analysis shows the following:
    a. Average value of home went up - $199 to $8,883
    b. PACE home extra value when purchased from foreclosure - $7,000
    c. Kitchen & Bathroom upgrade recovery cost – 58% to 66%
    d. PACE upgrade recovery cost – 100%.
    e. Default rate on PACE home – 32% less
    f. Listing to Sale Price ratio and days on market - without PACE - 98.4% and 66 days
    - with PACE – 99.5% and 53 days
5. Two principal detractors are:
    a. Realtors
    b. Mortgage Lenders
6. Both can be brought on-side with proper communication and training by the PACE Administrator.
7. PACE Nations' new **Consumer Protection Policy Version 2.0** is an important document that will benefit everybody in the program

22 Session Title: **True Cost of PACE Debt vs Traditional Loans – Feb 15, 2017**
Attendees: **Leigh Bond and Brian Scott**
Session Description: **How does the cost of a typical bank loan compare with PACE financing. It turns out there's much more to it than the interest rate.**

Key Take-aways:

1. See comparison table showing differences between traditional offerings and calculations and PACE Financing.

Topic	Traditional	PACE
Recourse	Personal Guarantee	Secured by Real Property
Mismatch on IRR	10 years (doesn't match useful life)	20 years (more realistic)
On Balance Sheet	Yes	No
Risk	4% plus risk = real cost 12%	6% with little risk
Hard and Soft costs	7 year average	20 years
Commercial Leases	No opportunity to address GHG	Lower Utility Costs offsets Higher taxes
ROI	Assumes money being invested	Money comes from third party
Compared to Mortgage	Non-assumable	Assumable
Compared to Car Lease	Get right to drive car	Get right to save on utilities
Societal GHG Issue	Not Considered	Primary focus

25 Session Title: **John Picard - Keynote**
Attendees: **Leigh Bond and Brian Scott**
Session Description: **Ushering in the clean energy economy with efficiency in the built environment.**

Key Take-aways:

1. johnpicard@mac.com
2. Friends with Elon Musk and similar movers and shakers
3. Inexpensive sensors are coming. Sensors are the most important thing in tracking the data relative to installed energy efficiency systems.
4. "Without data you are just another person with an opinion"
5. View Glass is here. Solar PV imbedded in all glass.
6. Graphene Polymer batteries will be cheaper than lead acid and 5 times the capacity of Lithium.
7. Grahame Batteries available in 3 years.
8. Graphene in solar modules will increase efficiency from 18% to 30%.
9. Vertical Axis Wind Turbines – Hover Energy – 36Kw available now, 210 Kw - Aug/Sep 2017

Appendices (download links)

1. **PACE Basics: one page summary of PACE (**http://pacenation.us/wp-content/uploads/2016/10/PACEBasics_2016_10_7.pdf**)**
2. **PACE Loans: Does Sale Value Reflect Improvements; the Journal of Structured Finance (**http://pacenation.us/wp-content/uploads/2016/10/JSF_Winter_2016_PACENation.pdf**)**
3. **PACE Financing Primer: article by Robert Johnson, president of Johnson Independent Advisors and a managing director with PACE Equity (**http://cdn2.hubspot.net/hubfs/2215213/Pace_Equity_Oct_2016_files/docs/Pace-financing-primer.pdf?t=1490065287320**)**
4. **PACE Consumer Protection Policy Version 2.0 (Residential):** http://pacenation.us/wp-content/uploads/2017/02/PACENation-Consumer-Protection-Policies-v2.0-02.17.17-with-attachments.pdf