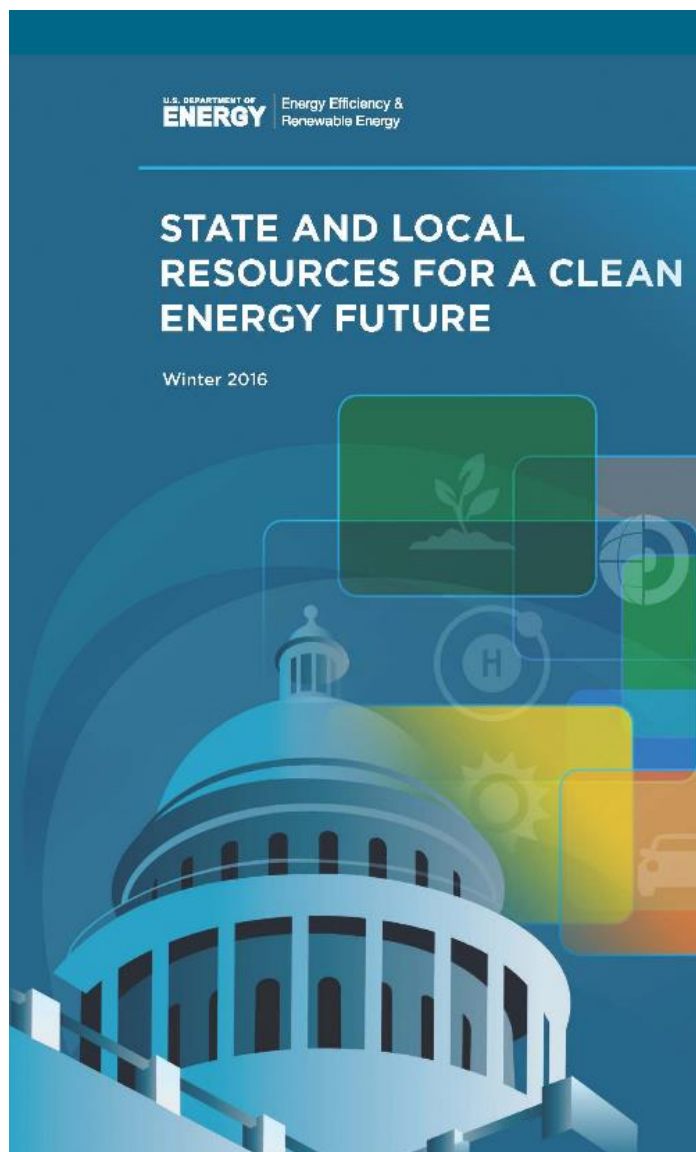




Current Practices in Efficiency Financing: An Overview for State and Local Governments

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Technical Assistance to State and Local Governments



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State & Local Spotlight

August 2016



Clean Energy News and Events for State and Local Leaders

A monthly update from EERE's Weatherization and Intergovernmental Programs Office (WIP) for state, local, and K-12 officials featuring resources to advance successful, high-impact, and long-lasting clean energy policies, programs, and projects.

State & Local News

DOE Releases Updated Draft Guidelines for Residential PACE Programs, Open for Public Comment

The U.S. Department of Energy (DOE) announced new partnerships and resources that will bring the benefits of energy efficiency and renewable energy to more states and communities, including an updated draft of guidelines for residential Property Assessed Clean Energy (PACE) programs. DOE is seeking stakeholder input on the draft, [Best Practice Guidelines for Residential PACE Financing Programs](#), which focuses on best practices for program design, including consumer and lender compatibility of PACE with other energy efficiency programs and services, minimum contractor requirements, performance standards, and evaluation of outcomes.

Featured Blog

Residential PACE Adds Market Value for Home Energy Upgrades
EERE's Deputy Assistant

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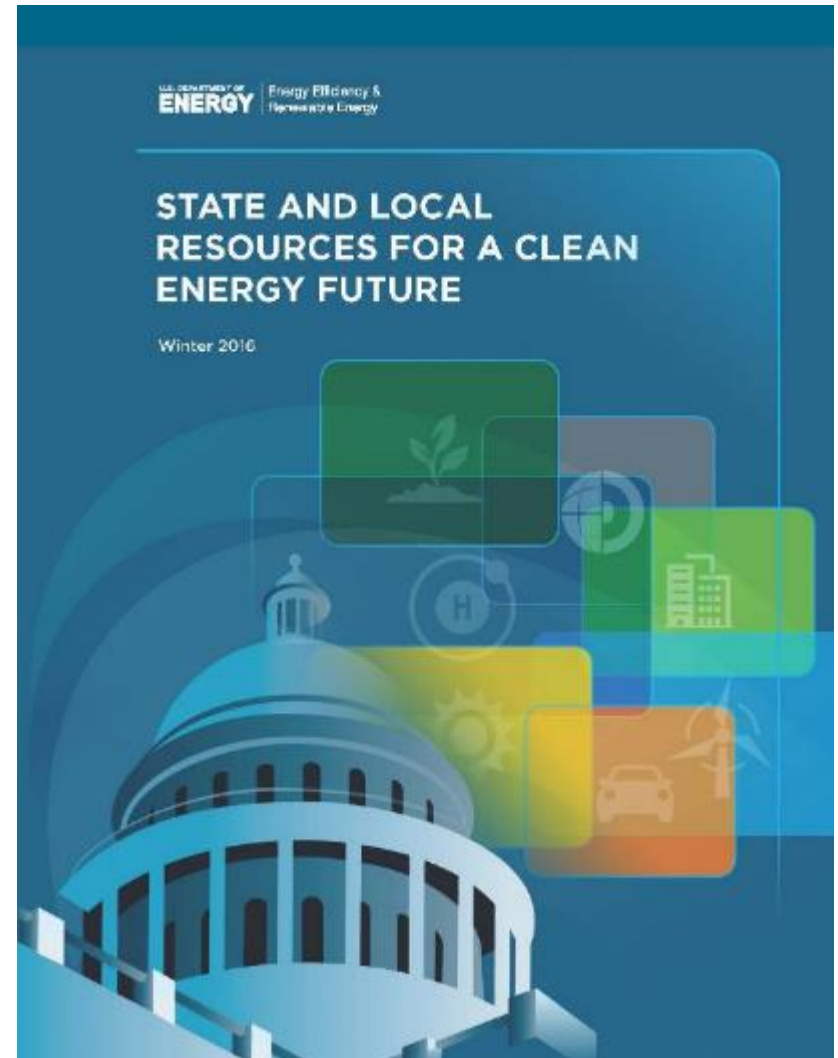
or Email Us:

stateandlocal@ee.doe.gov

State and Local Resources for a Clean Energy Future

What you will find:

- Targeted opportunities for impact in your jurisdiction
- Key resources from each of the four action areas
- Information on initiatives and resources in renewable power, sustainable transportation, and energy-saving homes, buildings, and manufacturing from across EERE





Energy Technologies Area

Lawrence Berkeley National Laboratory

Current Practices in Efficiency Financing: An Overview for State and Local Governments

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Lawrence Berkeley National Laboratory

Presentation for DOE WIP

November 17, 2016

Overview

- ◆ **Objectives**
- ◆ **Comprehensive framework**
- ◆ **Traditional vs. Specialized**
- ◆ **Role of Financing in improving EE Value Proposition**

Objectives

Objectives

- ◆ Provide solid background and broad context to help state and local governments:
 - Participate in discussions of on-bill and PACE
 - Choose which financing products to include in a Green Bank
 - Make decisions about starting a new financing program or modifying an existing program
 - Understand the benefits and tradeoffs for *all* customer-facing financing products used for energy efficiency
 - Identify market barriers and financing solutions in *all* market sectors
- ◆ Provide an easy-to-use framework to think about the larger context of energy efficiency finance and the relative merits of different products in each sector

Poll I

Poll 2

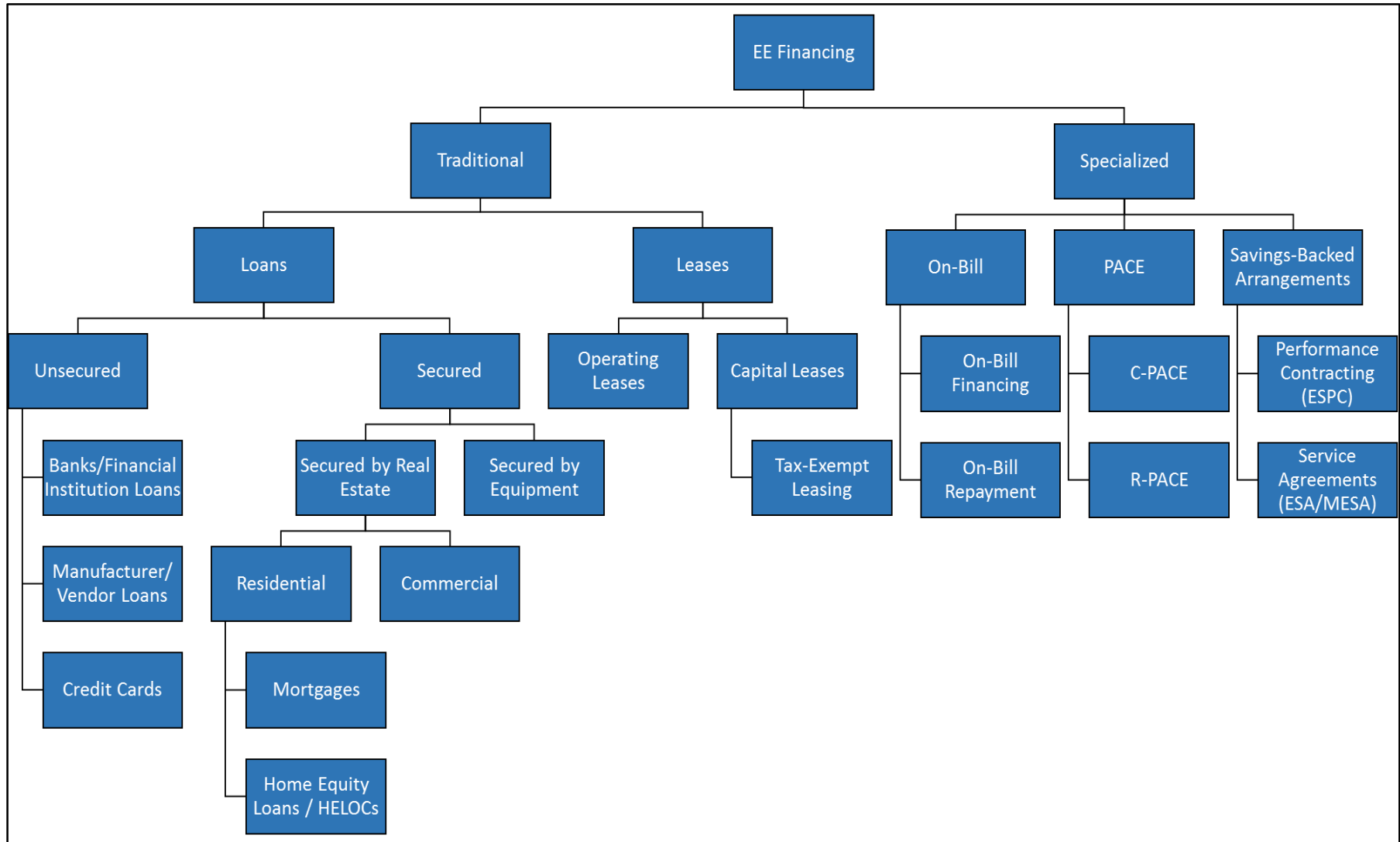
Comprehensive framework

Comprehensive framework

- ◆ Report organizes financing products into **Traditional** and **Specialized** products available to consumers to pay for energy efficiency projects
- ◆ **Traditional:** Common financing products used everyday to pay for a range of goods and services:
 - Unsecured loans
 - Secured loans
 - Leases
- ◆ **Specialized:** Financing products designed specifically to address barriers to efficiency:
 - On-bill loans
 - Property Assessed Clean Energy (PACE)
 - Savings-backed arrangements (ESPC, ESA)

Comprehensive framework

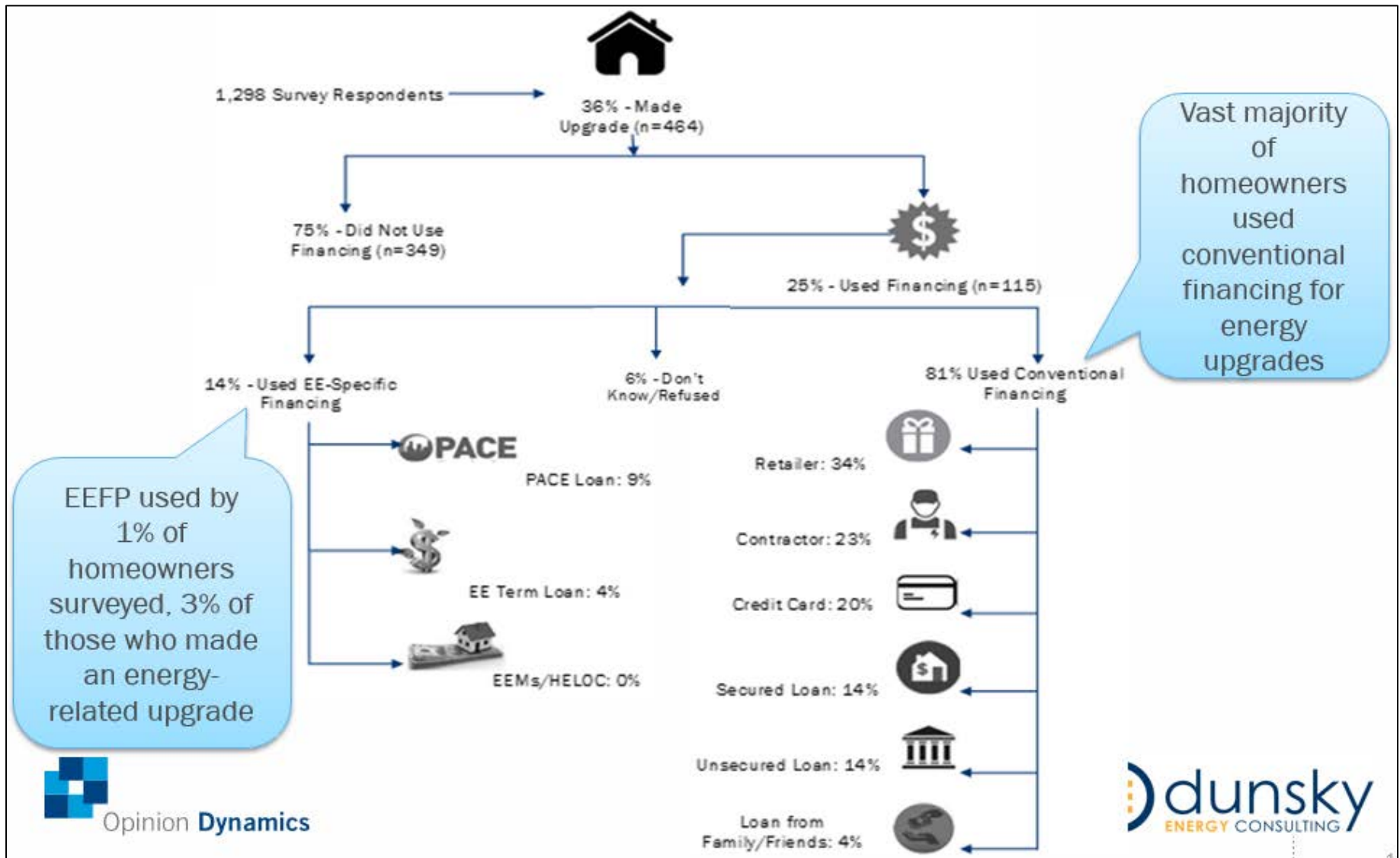
Typology of financing products used to pay for efficiency



Typology of financing products

PRODUCT TYPE	2014 ACTIVITY (\$M)
TRADITIONAL	
Unsecured loans	Unknown (likely over \$100)
Secured loans	Unknown
Leases	Unknown (likely large)
SPECIALIZED	
On-bill loans	\$179
PACE loans	\$267
Energy Savings Performance Contracts	\$4,101
Energy Service Agreements	Unknown (likely very small)

To date, specialized products may make up a small part of the market



Traditional vs. specialized

Poll 3

Traditional: Unsecured loans

◆ DEFINITION:

- ❑ Loans for which lenders have no recourse to take possession of a borrower's assets in case of nonpayment

◆ PROS AND CONS:

- ❑ Quick application processes; no collateral requirement (accessible to more borrowers)
- ❑ In the absence of a subsidy, generally carry higher interest rates than comparable secured loans (e.g., mortgages)

◆ EXPERIENCE:

- ❑ Often used for reactive measures (e.g., replacing HVAC unit when it breaks)
- ❑ Used by a range of program administrators—often at subsidized rates—reaching all market segments
- ❑ *Total* EE Market activity for unsecured loans likely very large

Traditional: Secured loans

◆ DEFINITION:

- ❑ Loans for which lenders may take possession of a borrower's assets in case of nonpayment



◆ PROS AND CONS:

- ❑ Often offer lower interest rates than equivalent unsecured products since collateral can reduce lender losses
- ❑ Longer to execute with higher transaction costs than some other energy efficiency financing products
- ❑ Several distinct drawbacks for commercial and industrial customers

◆ EXPERIENCE:

- ❑ Several federal government entities have offered secured loan programs (e.g., energy efficient mortgages—EEMs, which add energy efficiency project costs to a mortgage), but uptake has been modest

Traditional: Leases

◆ DEFINITION:

- Arrangements in which a lessor offers a lessee possession and use of an asset for a fixed period of time
- Two types: **operating leases** and **capital leases**
 - **Tax-Exempt Lease Purchase Agreement (TELP)**: type of capital lease often used to finance efficiency projects in MUSH sector

◆ PROS AND CONS:

- Faster turnaround, easier approval, lower transaction costs, and more flexible terms than secured loans or bond financing
- Debt limitations, although TELPs and (until 2018) operating leases may not have debt limit impacts

◆ EXPERIENCE:

- To date, most programmatic use of leasing for efficiency has been through TELPs used in the ESCO market
- Market activity for efficiency is unknown but likely large



Traditional: Leases

Types of leases

Operating Lease
(aka true lease, tax lease)

Capital Lease
(aka finance, non-tax-oriented)

Tax-exempt (TELP)
(aka municipal)

Specialized

Specialized: On-bill loans

◆ DEFINITION:

- ❑ Loans to utility customers that are repaid on the utility bill

◆ PROS AND CONS:

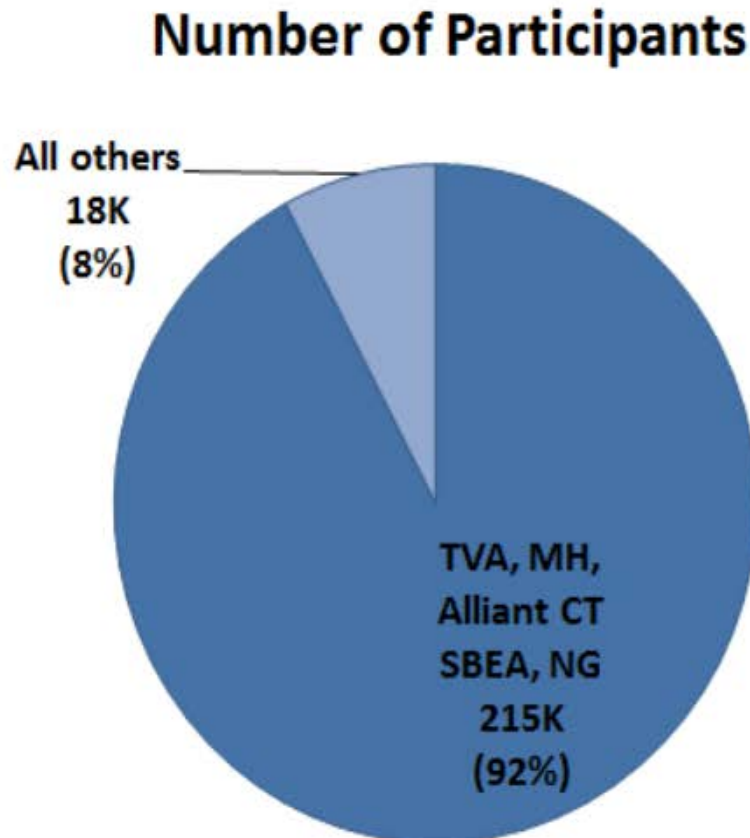
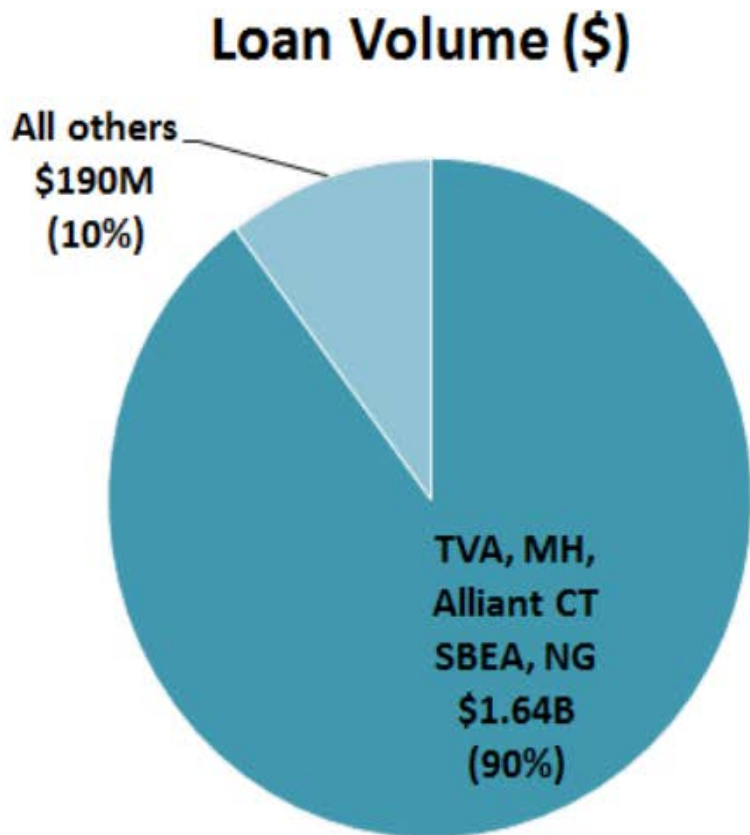
- ❑ Paying on the utility bill is familiar and convenient
- ❑ May allow transfer of loans to subsequent occupants, alternative underwriting (expands access), and may aim for cash-flow positive projects
- ❑ Start-up IT costs and ongoing administrative complexity can be significant

◆ EXPERIENCE:

- ❑ High volume programs offer below-market interest rates combined with either:
 - Allowing almost any “energy-related” improvements; or
 - Coupling with robust financial incentives and rebates
- ❑ Some programs operating since the 1970s; programs have loaned over \$2B with default rates ranging from 0% to 3%
- ❑ In 2014, \$179M in on-bill loans were made for electric efficiency

Specialized: On-bill loans

On-bill volume concentrated in five programs



Specialized: PACE financing

◆ DEFINITION:

- ❑ PACE is a loan made as a special assessment on a property, repaid through the tax bill

◆ PROS AND CONS:

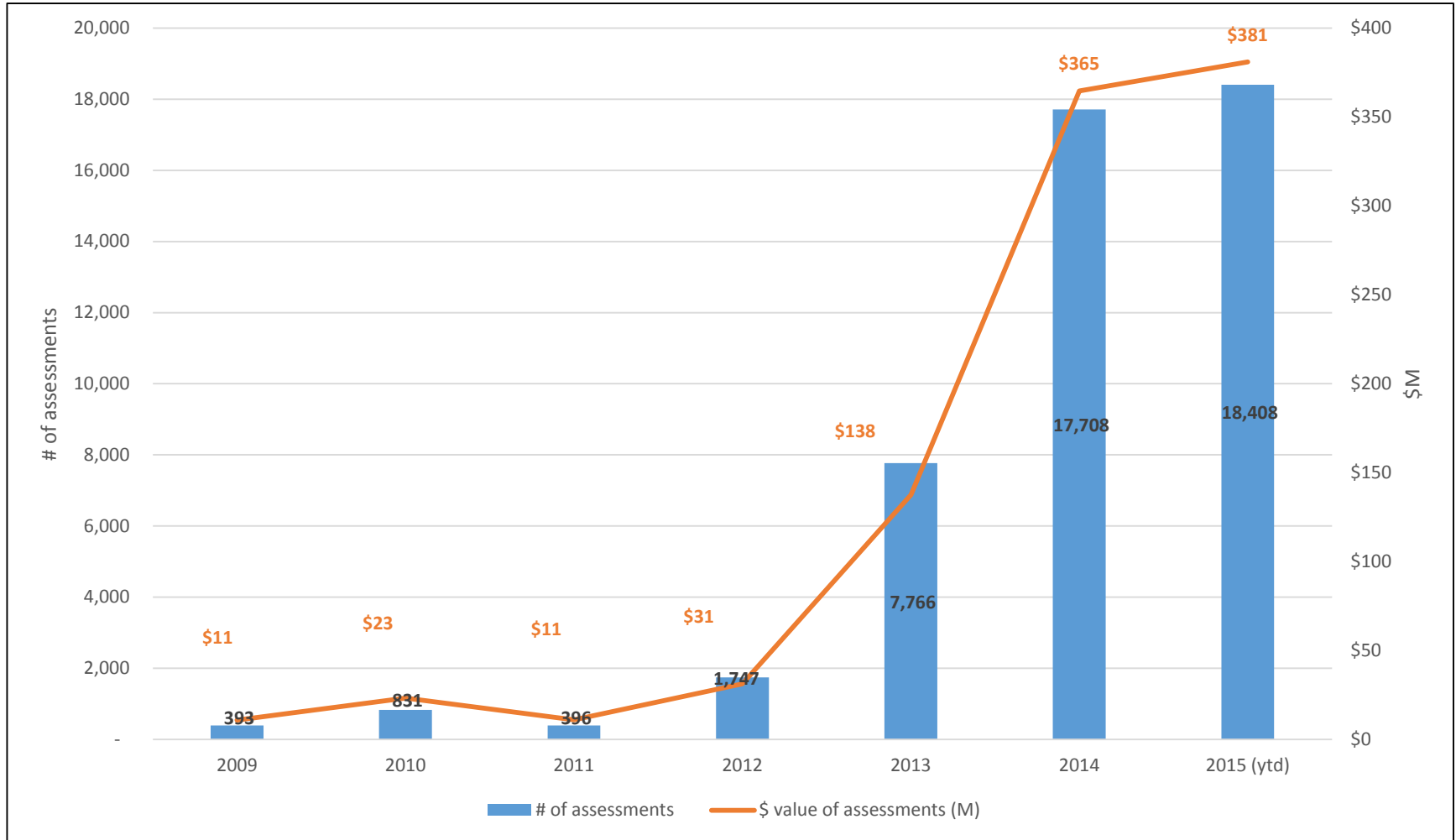
- ❑ Offers strong security, allowing long terms and lower rates
- ❑ Transferable to incoming occupants; could be cash-flow positive; uses alternative underwriting
- ❑ Regulatory challenges

◆ EXPERIENCE:

- ❑ Rapid residential growth, but mostly in CA; over 80% of commercial projects are in CA, OH and CT
- ❑ Uncertainty in the value of transferability, PACE's ability to encourage deeper or very high efficiency projects, and in R-PACE's regulatory status
- ❑ Since 2009, PACE programs have extended over \$2.3B in loans.* In 2014, PACE generated \$267M in efficiency lending

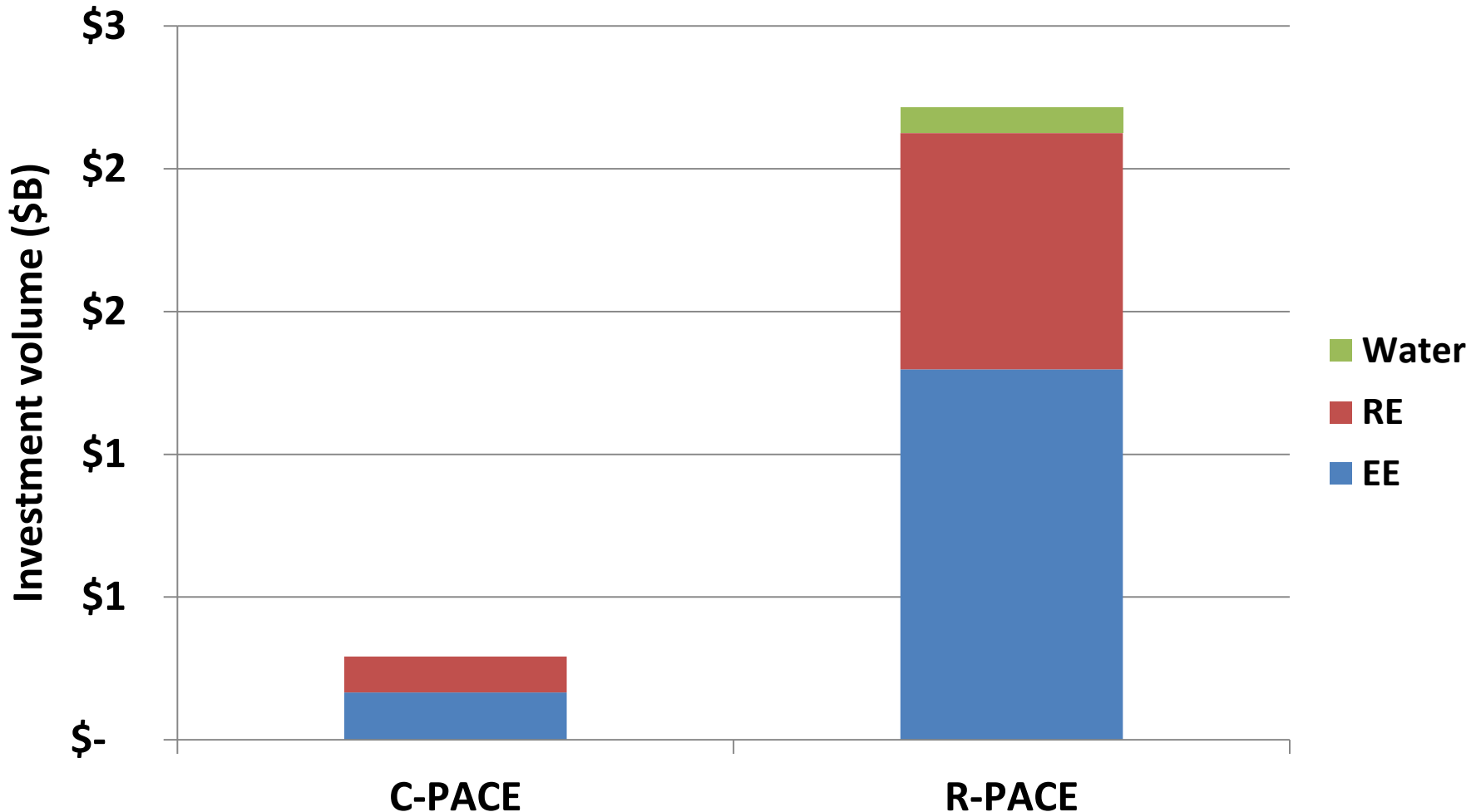
Specialized: PACE financing

CA residential PACE assessments 2009-2015



Specialized: PACE financing

PACE investment by sector and end-use to mid-2016



Specialized: Savings-backed arrangements

◆ DEFINITIONS:

- **Savings-backed arrangements:** Arrangements in which a service provider takes on performance risk. Two main types used: Energy Savings Performance Contracts (ESPC), and Energy Service Agreements (ESA) and Managed Energy Service Agreements (MESA)—a subset of ESAs:
 1. **ESPCs:** ESCOs directly contract with building owners to perform EE work; ESPCs often guarantee energy savings; financing is obtained separately
 2. **ESAs and MESAs:** ESA provider contracts with a building owner to oversee an ESCO's work and to furnish project financing; often guarantees energy savings

Specialized: ESPC

◆ PROS AND CONS:

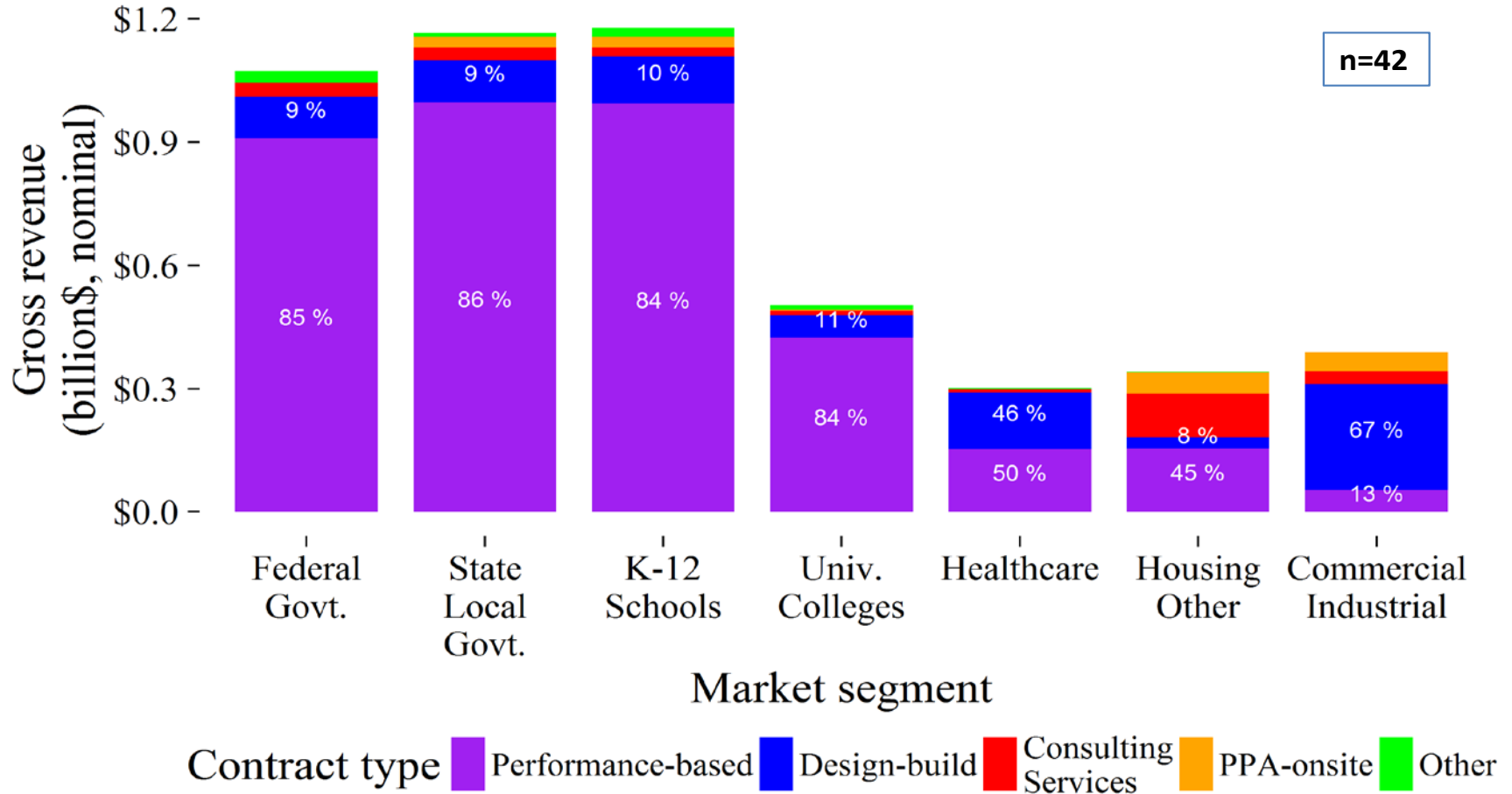
- ❑ Can minimize project performance risk for building owners and provide technical support and O&M
- ❑ Complex; for large projects; funding must be obtained from a third party

◆ EXPERIENCE:

- ❑ Most ESPC activity takes place in the public and institutional markets (e.g., federal/state/local government buildings, K-12 schools, universities/colleges)
- ❑ In 2014, ESPC represented \$4.1B in investment electric efficiency, 85% of that year's programmatic financing
- ❑ Since 1990, over \$57B has been invested in efficiency through ESPC*

Specialized: ESPC

ESPC use by volume and sector



Specialized: ESA

◆ PROS AND CONS:

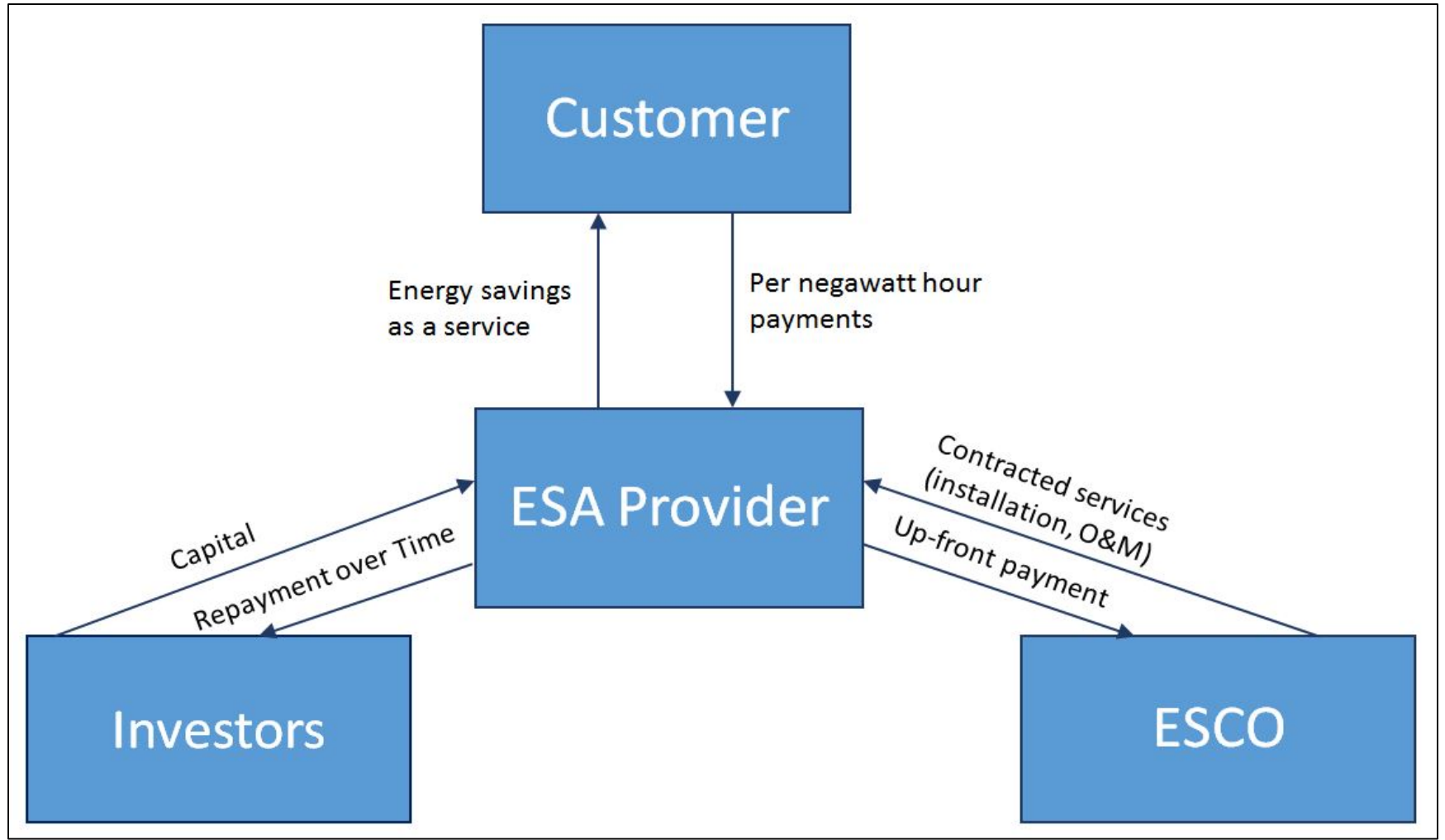
- ❑ Require no public funds and no up-front costs or O&M responsibility for building owners
- ❑ Can minimize project performance risk and utility bill price risk; some structures could potentially garner off-balance sheet treatment
- ❑ Some ESA providers raise capital by attracting investors to each project, which can add significant transaction costs and complexity

◆ EXPERIENCE:

- ❑ Complex, relatively new structures; currently not well understood in the marketplace
- ❑ Market activity for ESAs is unknown but likely modest to date

Specialized: ESA

A simplified ESA structure



Role of financing products in improving the energy efficiency value proposition

Poll 4

Improving the energy efficiency value proposition: Barriers to Efficiency

- ◆ **Access to Capital**
- ◆ **Cash Flow (customer focus on short paybacks)**
- ◆ **Customer Debt Limits**
- ◆ **Owner-Renter Split Incentives**
- ◆ **Occupancy Duration**
- ◆ **Application Process**

Improving EE value proposition

Key to following slides

MARKET SECTOR	
Barrier not important enough to drive design of an EE program	
Barrier may be relevant but not paramount in this sector	○
Barrier may be especially important in this sector	●
FINANCING PRODUCT	
This product does not address this barrier	
This product may address this barrier or somewhat addresses this barrier	○
This product is likely to be able to overcome this barrier	●

Improving EE value proposition: Barriers to Efficiency by Market Sector

MARKET BARRIER	SF General	SF Low-Mod Income	MF Affordable	MF Mkt rate	C&I Small Bus.	C&I Large	MUSH
Access to capital		●	●		●		
Cash flow	○	●	●	○	○	○	○
Customer debt limit		○	●		○	○	●
Owner-renter split incentives	○	○	●	●	●	●	
Occupancy duration	○	○	○	○	○	○	
Application process	●	●	●	○	●	○	○

Improving EE value proposition

Barriers addressed by various financing products

MARKET BARRIER	UN-SECURED	SECURED	LEASING	ON-BILL	PACE	SAVINGS-BACKED
Access to capital	○	○	○	●	○	○
Cash flow	○	●	○	○	●	●
Customer debt limits			○	○	○	○
Owner-renter split incentives				○	○	
Occupancy duration				●	●	
Application process	●		●	●		

Conclusion

- ◆ Decision makers need to understand the relative merits of both traditional and specialized financing product options open to consumers
- ◆ Different products may be more useful for certain market sectors and for overcoming particular barriers; policymakers should weigh the features of each product in light of their own jurisdiction's needs
- ◆ Traditional financing products likely account for far more investment in efficiency than specialized products
 - Need more quantitative data & a study on market activity to know with certainty
- ◆ Most programmatic efficiency financing efforts generate low annual lending volumes

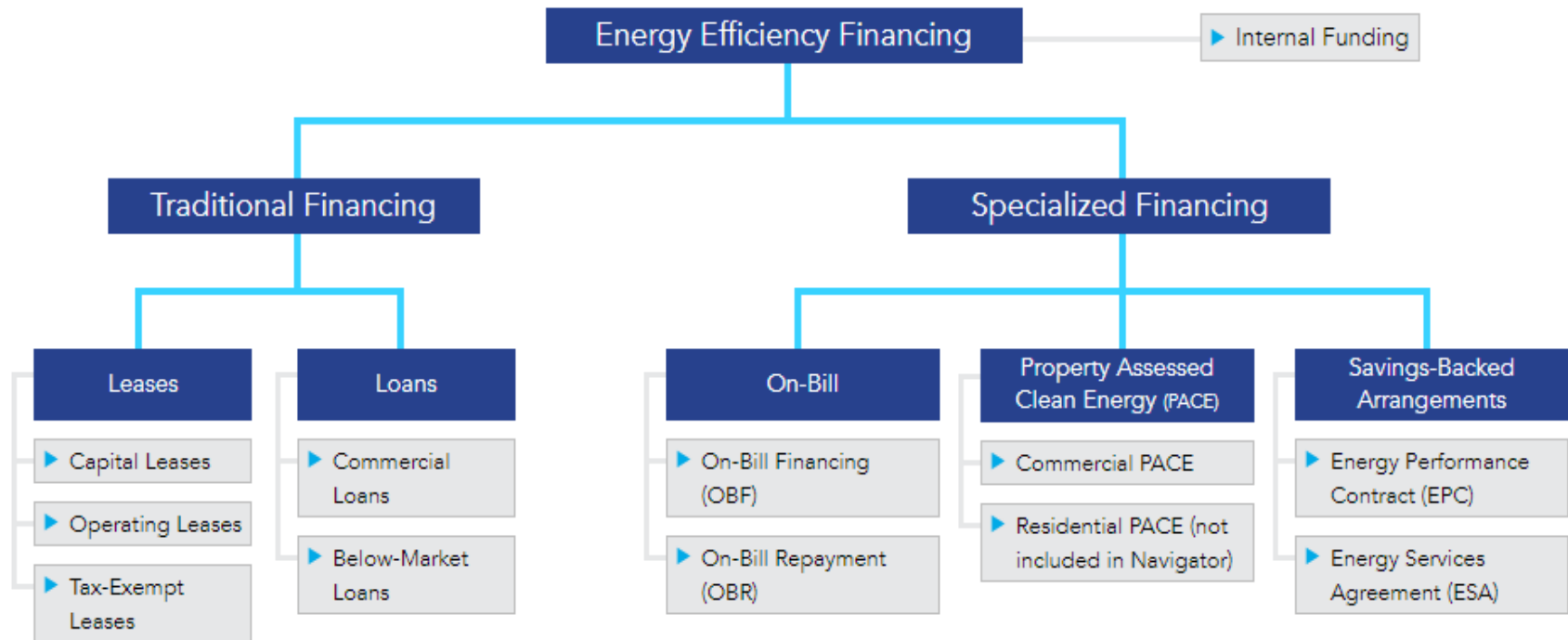
Resources

- ◆ DOE State and Local Solutions Center:
energy.gov/eere/slsc/state-and-local-solution-center
- ◆ LBNL programmatic financing quantification:
Energy Efficiency Program Financing (Deason et al 2016): <http://eetd.lbl.gov/sites/all/files/lbnl-1005754.pdf>
- ◆ Upcoming C-PACE research, will be posted here:
<https://emp.lbl.gov/projects/financing-energy>
- ◆ Better Buildings Energy Efficiency Financing Navigator

Energy Efficiency Financing Navigator



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