



Workshop

Energy Efficiency Finance: Understanding the Building Blocks to Success

May 17, 2017
Better Buildings Summit

Resources

State and Local Solution Center



November 2016

LBNL-1006406

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

Primary authors

Greg Leventis

Emily Martin Fadrhonc

Chris Kramer

Charles Goldman

This work was supported by the Department of Energy, Office of Energy Efficiency and Renewable Energy, Office of Weatherization and Intergovernmental Programs Contract No. DE-AC02-05CH11231.

**ERNEST ORLANDO LAWRENCE
BERKELEY NATIONAL LABORATORY**



Speakers and Moderators

- **Speaker**
 - Chris Kramer – Energy Futures Group
- **Moderators**
 - Greg Leventis – Lawrence Berkeley National Lab
 - Sean Williamson – U.S. Department of Energy



FINANCING WORKSHOP: OVERVIEW OF FINANCING PRODUCTS

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Chris Kramer, Energy Futures Group

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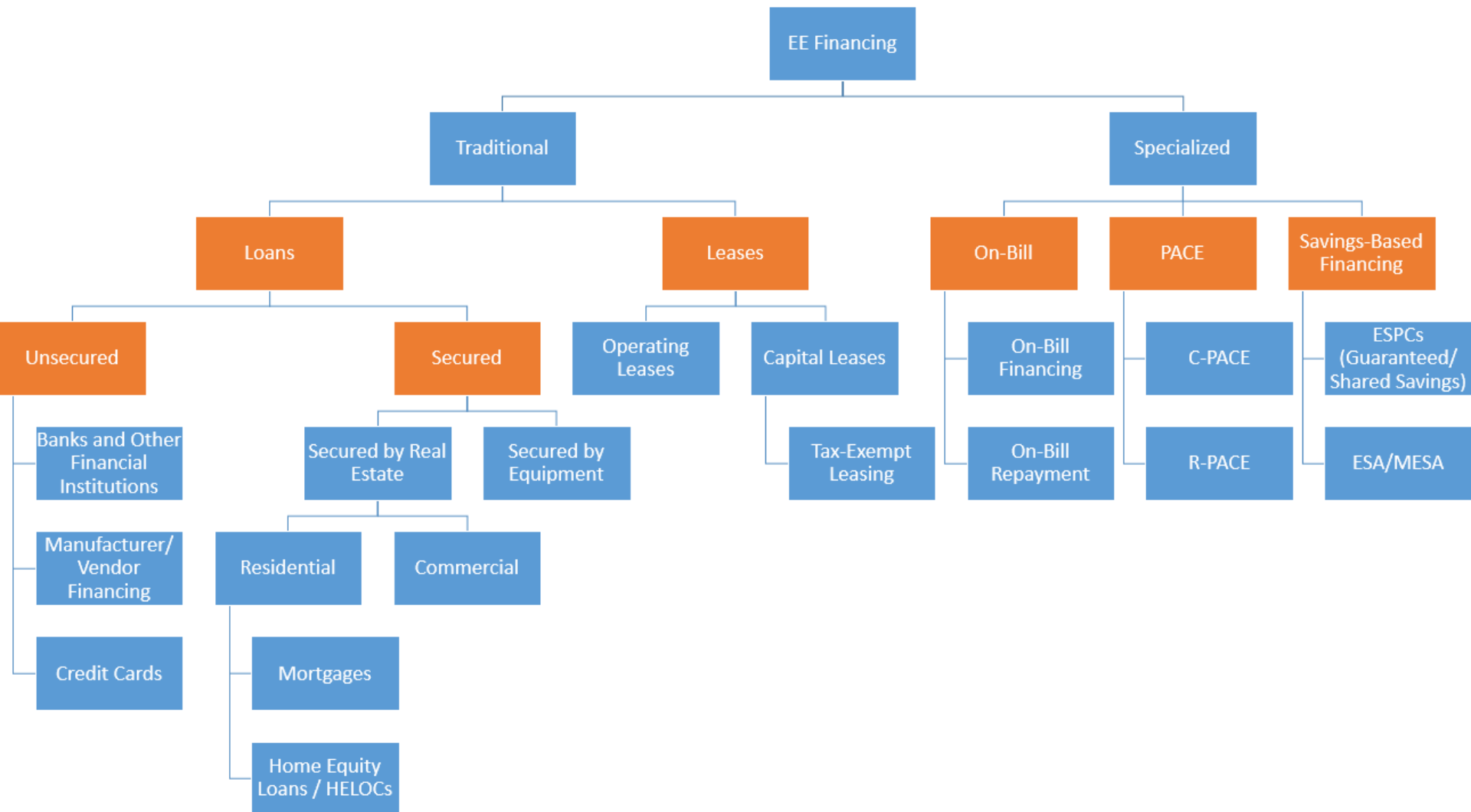
Barriers to Energy Efficiency Investments

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1. Awareness/Information
2. Total Cost
3. Hassle
4. Competing Priorities
5. Uncertainty of Savings
6. Distrust
7. **Access to Financing**
8. Split Incentives
9. Health and Safety
10. Aesthetics

Financing Product Overview

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Product Features:

Special Features/Basic Features

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| | MARKET BARRIER | UN-SECURED | SECURED | LEASING | ON-BILL | PACE | PERFORMANCE-BASED |
|-------------------------|-------------------|------------|---------|---------|---------|------|-------------------|
| Special Features | Access to Capital | ~ | ~ | ~ | ✓ | ~ | ~ |
| | Cash Flow | ~ | ✓ | ~ | ~ | ✓ | ✓ |
| | Payback Period | X | X | X | ✓ | ✓ | ~ |
| | Debt Limits | X | X | X | ~ | ~ | ✓ |
| | Split Incentives | X | X | X | ~ | ~ | X |
| Basic Features | Familiarity | ✓ | ✓ | ✓ | ~ | X | X |
| | Complexity | ✓ | ~ | ✓ | ~ | X | X |
| | Convenience | ✓ | ~ | ✓ | ✓ | X | X |

Markets and Financing Barriers

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| Market Barrier | Single Family (Market Rate) | Single Family (Low-Mod Income) | Multi-Family (Market Rate) | Multi-Family (Low-Mod Income) | Small Business | Large Business | Muni, Uni, Schools, & Hospitals (MUSH) |
|-------------------|-----------------------------|--------------------------------|----------------------------|-------------------------------|----------------|----------------|--|
| Access to Capital | Green | Red | Green | Red | Red | Green | Green |
| Cash Flow | Yellow | Red | Yellow | Red | Yellow | Yellow | Yellow |
| Payback Period | Yellow | Yellow | Yellow | Yellow | Yellow | Yellow | Green |
| Debt Limits | Green | Yellow | Yellow | Red | Yellow | Yellow | Red |
| Split | Green | Yellow | Red | Red | Red | Red | Green |

Features Specific to Each Jurisdiction

| Market Features | Specific Considerations |
|--------------------------|---|
| Customer Characteristics | <ul style="list-style-type: none">• Target Market/Sub-Segment• Income Levels• Access to Credit• Debt Capacity |
| Building Characteristics | <ul style="list-style-type: none">• Building Stock• Ownership Structure |
| Program Environment | <ul style="list-style-type: none">• Available Capital• Financial Partners• Utility Programs• Other Available Resources• Enabling Legislation (PACE) |

Q&A

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APPENDIX 1: Capital Sources

Potential Capital Sources

- **Public**



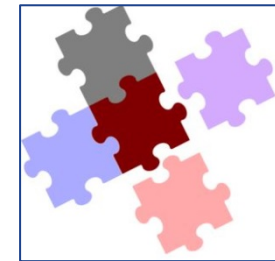
- **Private**



- **Utility**



- **Hybrid**



Capital Sources:

Federal Public Funding



- USDA:
 - [Energy Efficiency and Conservation Loan Program](#): Low-interest loan for utilities serving rural areas (pop. <20K)
 - [Rural Energy Savings Program](#): 0% interest loan program for utilities serving rural areas (pop. <20K); \$52M available
- HUD: [Community Development Block Grant](#):
 - Formula block grants to local jurisdictions (plus a few additional programs).
 - Energy efficiency is an eligible use of funds and can be used for loan programs.
 - Must apply through local jurisdiction; some have formal application processes, others use open solicitations.
 - Eligible activities: [Larger Communities](#) (Sec. 5.10); [Smaller Communities](#) (Ch. 2)
- EPA: [Clean Water State Revolving Fund](#)
 - Funds state agencies primarily for large clean water infrastructure projects
 - Some of these agencies have invested in EE programs that reduce pollutants
 - Requires establishing a formal partnership with clean water agency
 - Examples: PA ([PENNVEST/Keystone HELP](#)); NY ([NYSERDA/NY EFC](#))

Capital Sources: State/Local Public Funding



- State and Local Agencies
 - [State and Local Energy Offices](#)
Example: [Nebraska Energy Office “Dollar and Energy Savings” Loans](#)
 - [State and Local Housing Authorities](#)
Example: [Minnesota Housing Finance Agency](#)
 - [State and Local Economic Development Agencies](#)
Example: Iowa Economic Dev. Authority and City of Dubuque
 - [Qualified Energy Conservation Bonds](#) (accessed through local/state agencies; federal subsidy reduces cost, but process can be complex)
- Regional Sources
 - [Regional Greenhouse Gas Initiative](#) (Northeast) (e.g., NYSERDA)
 - Other Regional Funds (e.g., [Southeast Energy Efficiency Fund](#))
- Other Resources
 - Repurposed ARRA funds
 - VW settlement funds? (still unclear)

Capital Sources: Utility Funding

■ Examples:

- Energize CT Heating Loan
- Midwest Energy's How\$mart Kansas (hybrid)
- SC Help My Home (hybrid)

■ Factors to consider:

- Ratepayer-funded
- Requires utility cooperation
- Typically (but not always) repaid on-bill
- Flexibility in interest rate and other terms
- Consumer protection issues (disconnection, etc.)
- Other regulatory issues



Capital Sources: Private Debt (“Market-Based”)



- **Banks**

- Example: [TVA Energy Right Solutions](#) (Regions Bank)

- **Crowd sourcing / Fin tech**

- Example: [Connecticut Green Bank – Sungage/Mosaic](#)

- **Specialized Clean Energy Capital Pools**

- Examples: WHEEL (hybrid)

Capital Sources: Private Debt (“Mission Driven”)

- **Mission-driven**

- **Credit Unions**

- **Examples:**

- [Mass Save HEAT Loan](#) (utilities + ~80 local banks/credit unions)
 - [Smart-E](#) (CT) (CT Green Bank + 11 credit unions and local lenders)

- **Community Development Financial Institutions**

- **Examples:**

- Craft3 (OR, WA) ([Enhabit](#) Program)
 - Capital for Change (CT) ([Energy Conservation Loan Program](#)—income-tiered interest rates)
 - [Solar and Energy Loan Fund](#) (FL)

- **Foundations**

- **Examples:**

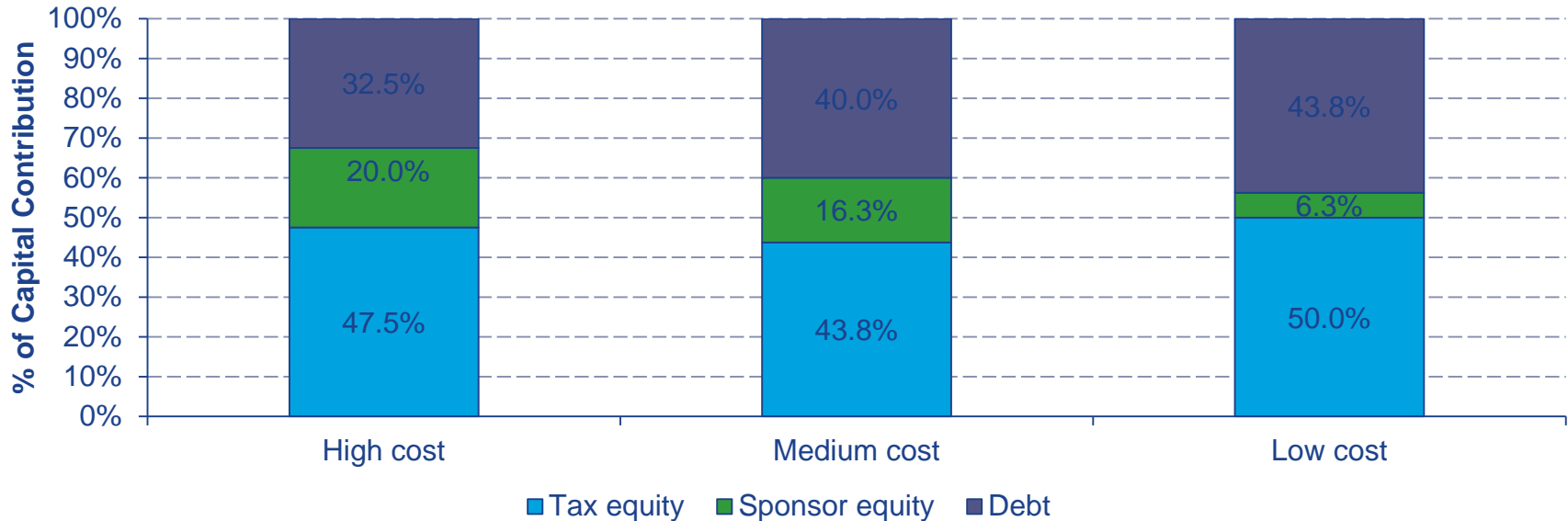
- Bank of America Foundation
 - MacArthur Foundation



Capital Sources for Solar Projects

Debt and Equity Sources

Capital Contribution



- Solar projects look to different of sources of capital to finance a project
 - Tax equity is currently the most expensive source of capital and debt is the cheapest
- Equity Investments have historically come from large investment banks, or other corporate entities looking to lower their tax bills, as the investor will claim the majority of the Investment Tax Credit.
- Debt is a much more flexible source of capital that can come from a variety of organizations (e.g. banks, gov't loans, institutional investors).
- An experienced developer will use different sources of capital to maximize both profits and incentives.

Issues and Tradeoffs

| | PUBLIC | UTILITY | PRIVATE |
|--------------|--------|---------|---------|
| AVAILABILITY | Lower | Medium | Higher |
| COST | Lower | Lower | Higher |
| FLEXIBILITY | Higher | Higher | Lower |
| SCALABILITY | Lower | Lower | Higher |

Hybrid capital pools can help address these tradeoffs, but may introduce complexity.

APPENDIX 2: Finance Primer

FINANCE PRIMER

The Goal of the this Short
Presentation is to Describe the
Who and *How* of EE Finance
Programs

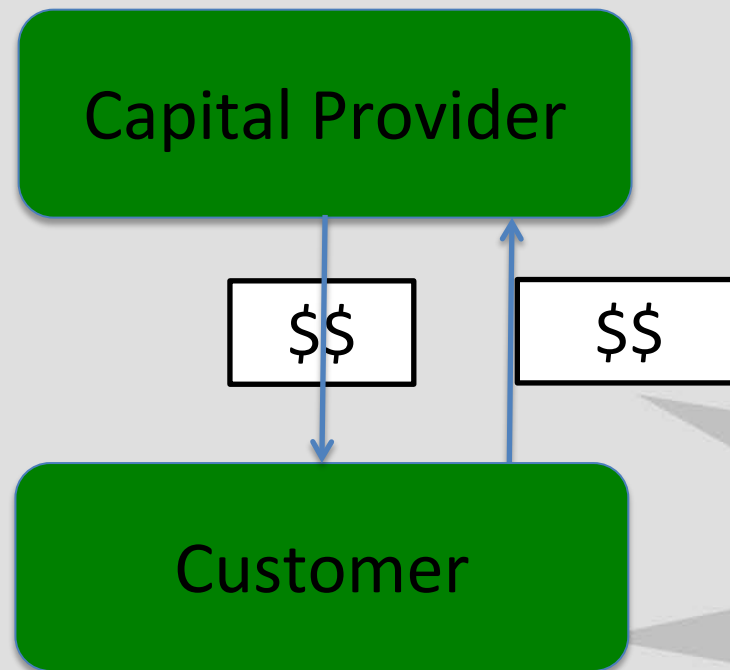


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ENERGY & FINANCE

FINANCE: A Means to Get Money from a Capital Provider

To a Customer — and Back from the Customer Over Time



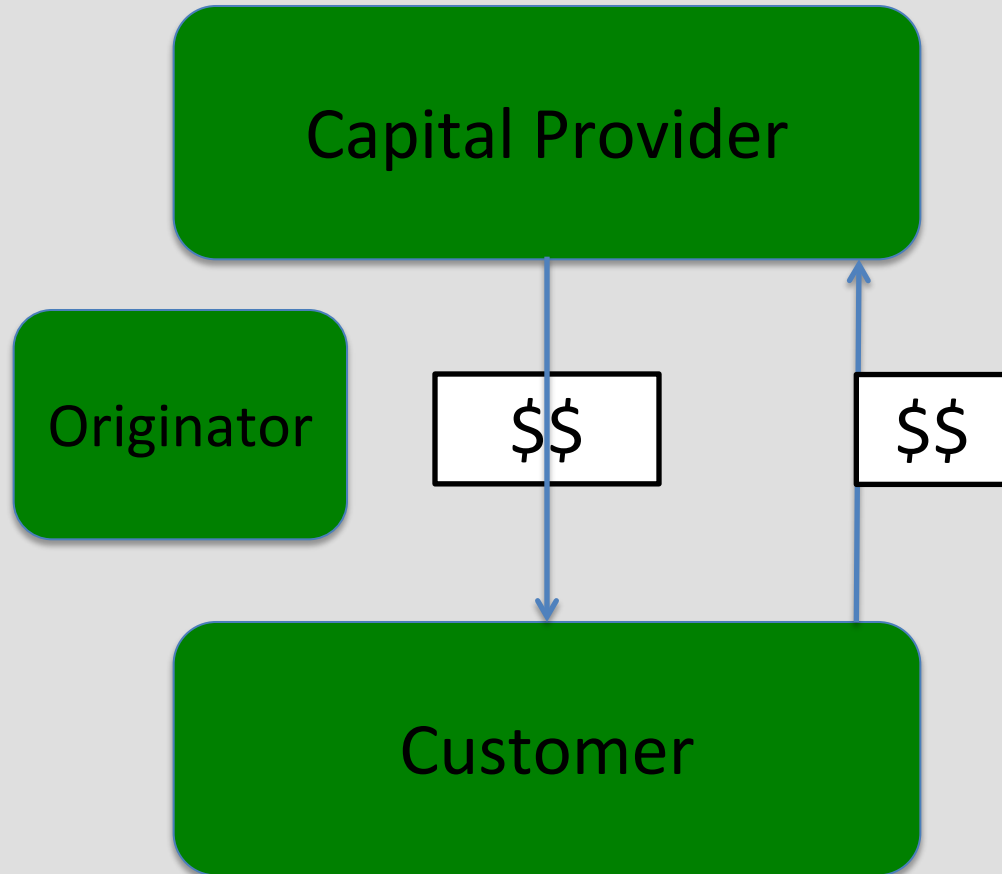
CAPITAL PROVIDER

It All Starts with the "Who"

Questions to Consider

1. Whose money are you deploying? (sometimes more than 1 source)
2. What is the purpose or mission of the money?
3. How much money do you have?
4. How much money do you need?
5. What is the risk associated with the money?(credit, interest rate, and counterparty risk)

Who Manages the Flow of Money?

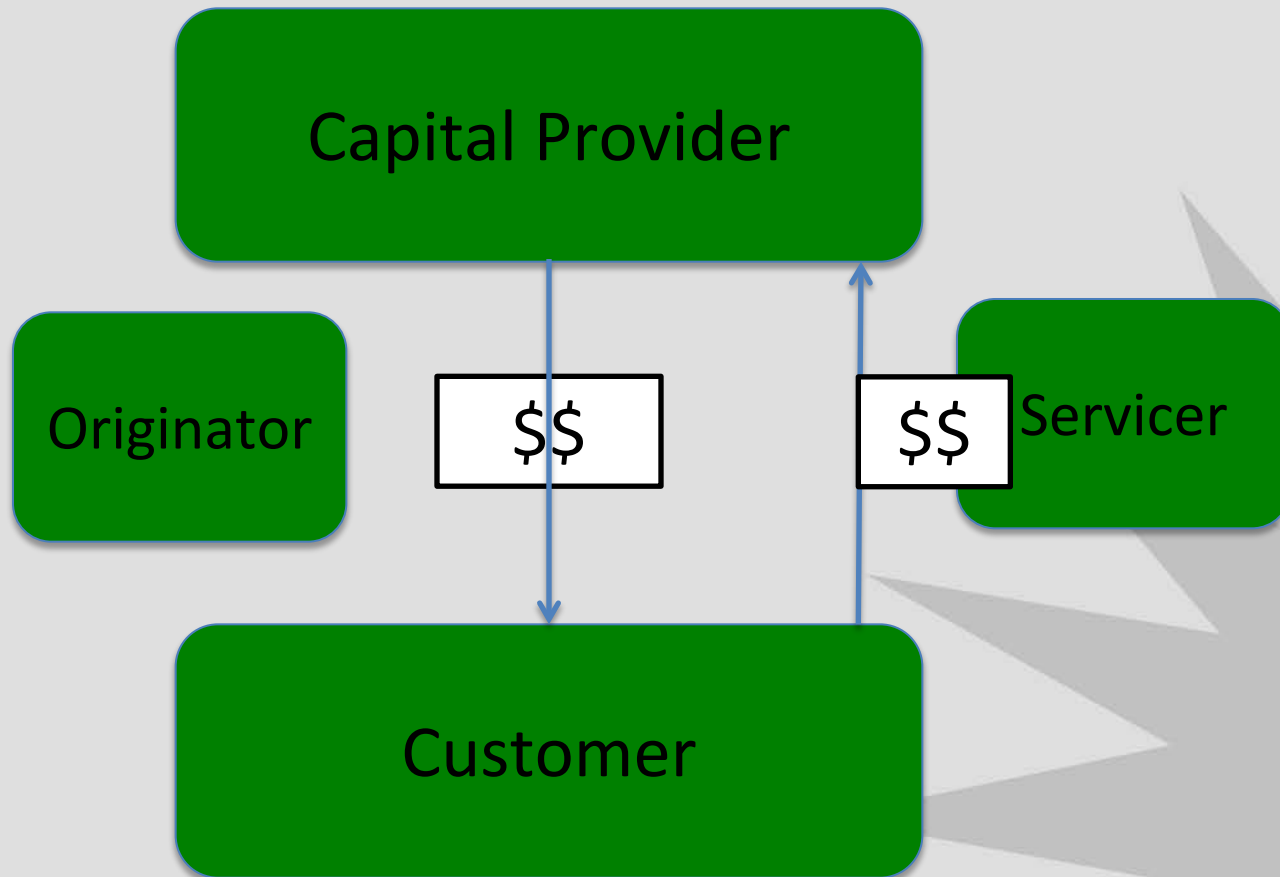


AN ORIGINATOR:

1. Takes in the financing application
2. Underwrites the application (pulls credit scores, files liens if necessary etc.)
3. Creates and documents the finance instrument.
4. A finance instrument is a contract to pay back capital over time. Typically a loan, a lease or a service agreement (eg. a tariff)
5. This obligation **MUST** comply with all applicable regulations and laws.
6. **Who originates?** Regulated financial institutions (credit unions, banks, CDFIs) OR 3rd party originators (WECC, AFC First)



Who Manages the Flow of Money?

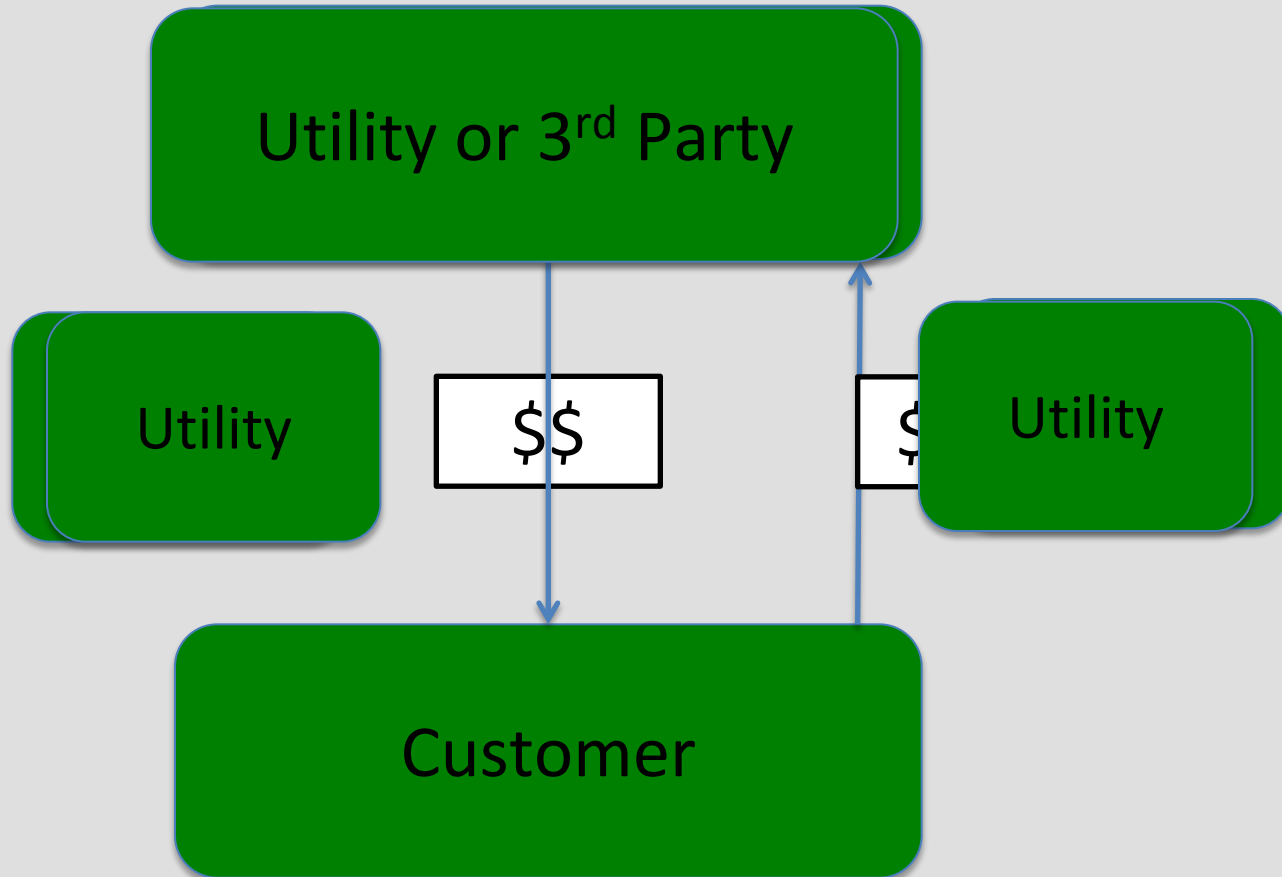


SERVICER

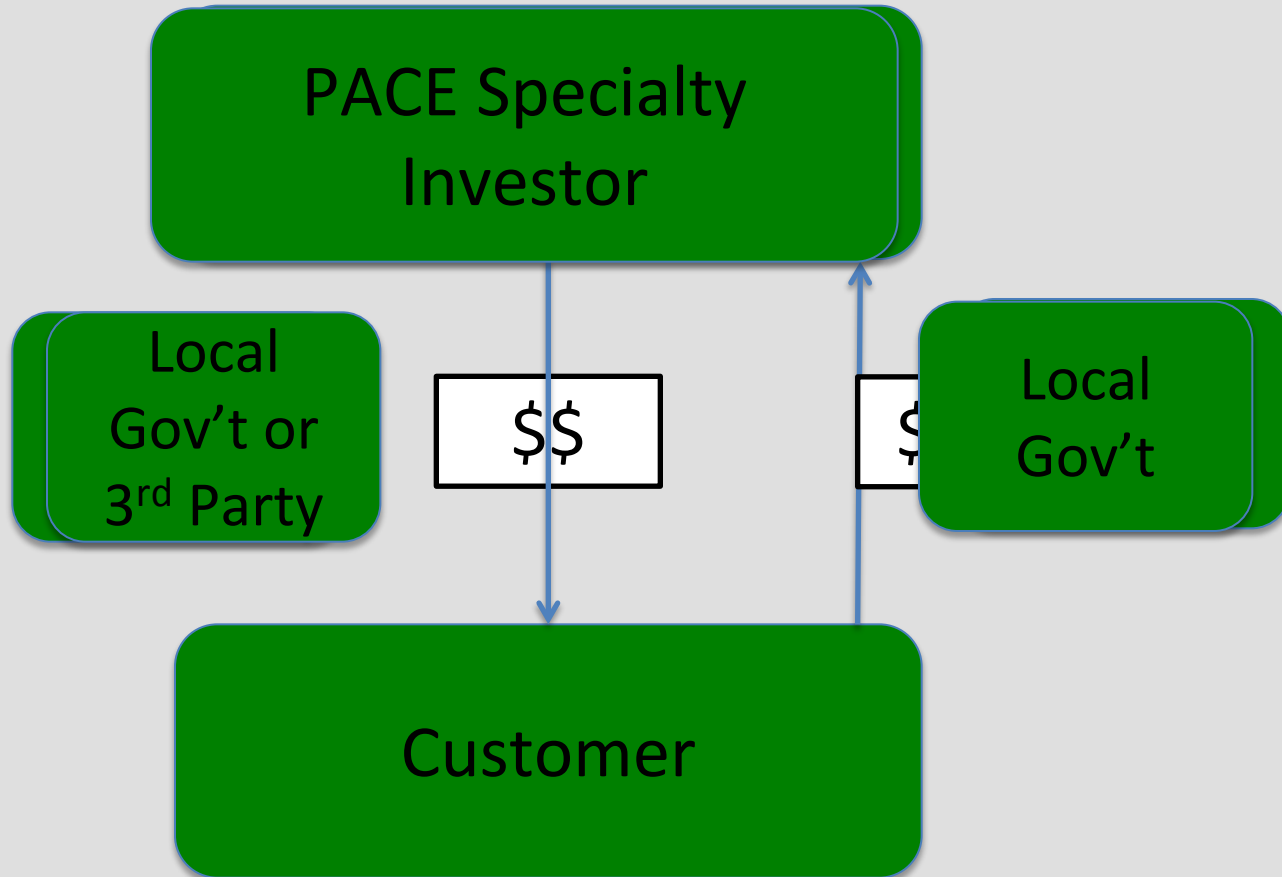
1. A servicer calculates payments due, adjusts payments due/dates due in the case of pre-payments, tracks/reports on delinquencies, addresses charge-offs, collections after charge-off, provides reporting etc.
2. Complies with relevant lending laws and regulations.
3. Who services? Regulated financial institutions (credit unions, banks, CDFIs) OR 3rd part servicers. (They don't have to have their own capital)



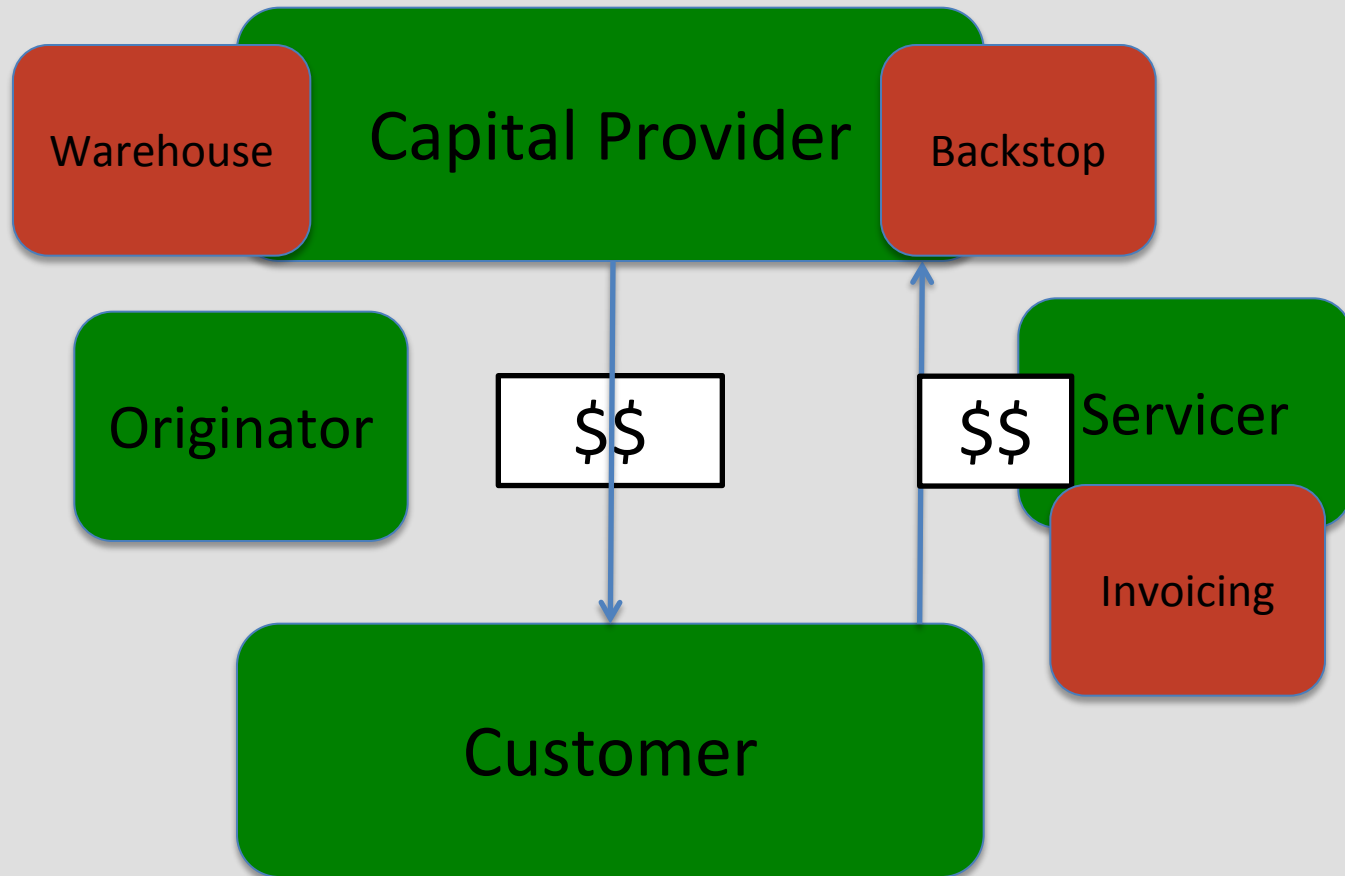
What About Utility On-Bill Programs?



What About PACE Programs?



What Role for the Gov't or Utility?



Conclusion

- EE finance invokes a limited universe of functions.
- EE finance is unique in that it can overlay these functions with other non-finance servicing, origination or capital provision.
- The roles of utilities or governments can vary tremendously based on financial, personnel and other resources, policy goals, tolerance for risk etc.



RESOURCE SIDES

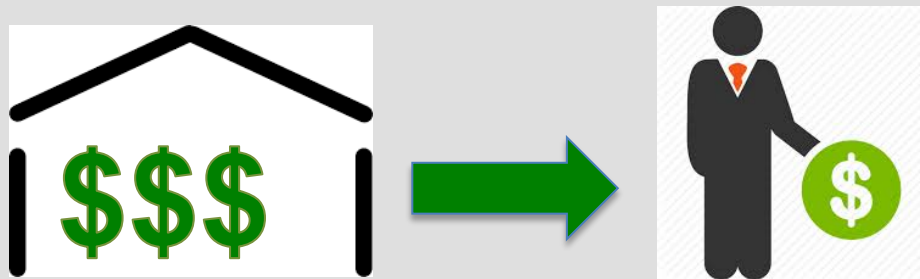


BELLS & WHISTLES

Warehouse

A means to access additional capital:

Originate a pool of loans, put them into a “warehouse” and then sell them to an investor(s).



* Investors do not want to buy every loan in a portfolio, they want yield related to risk. Every loan they buy has to comply with 1) their return expectations and 2) regulations regarding what they can hold on their books. If there is a mis-match, there will need to be a credit enhancement...

BELLS & WHISTLES

Credit Enhancement

A credit enhancement supports backstops a bundle of financing and provides assurance that the capital provider will be repaid.

Credit enhancements reduce credit/default risk and expand underwriting and reduce interest rates or lengthen term.

Come in a variety of forms:

- Loss reserves
- Guarantees.

Credit enhancements make investors willing to purchase bundles of loans that they otherwise would not consider purchasing.



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Spectrum of Utility Roles in On-Bill Programs

On-Bill Invoice

3rd Party Bill
(utility capital -
credit
enhancement)

3rd Party Bill
(utility
capital/ware
house)

3rd Party Bill
(utility
capital)

On-Bill
Finance
(utility
operated,
utility risk,
utility
capital)

3rd Party Bill - 3rd party originates and services

The graphic illustrates the spectrum of options for utility engagement in efficiency financing (only one of which involves a utility engaging in all three roles of providing loan capital, origination and servicing).