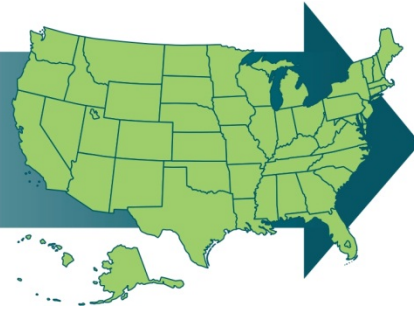


BLUEPRINT FOR EFFICIENCY

Yale *Center for Business and the Environment*

Energy Efficiency Financing Programs: Financing Energy Improvements on Utility Bills





SEE Action

STATE AND LOCAL ENERGY EFFICIENCY ACTION NETWORK

**SEE Action
Financing Solutions Working Group
(FSWG)**

**Bruce Schlein
Co-Chair, SEE Action FSWG**

June 2, 2014

State Energy Efficiency Action Network (SEE Action Network)

- Network of 200+ leaders and professionals, led by state and local policymakers, bringing energy efficiency to scale
- Support on energy efficiency policy and program decision making for:
 - Utility regulators, utilities and consumer advocates
 - Legislators, governors, mayors, county officials
 - Air and energy office directors, and others
- Facilitated by DOE and EPA; successor to the National Action Plan for Energy Efficiency



The SEE Action Network is active in the largest areas of challenge and opportunity to advance energy efficiency



Priority Solutions and Actions to Achieve Goals

Long-term Goal

Increase EE financing program confidence, capital and convenience by providing state and local government decision makers and financial institutions the tools and information needed to create, implement and sustain successful financing programs.

Five Pillars

Facilitate EE Financing Performance Data Collection & Access

Identify Specific Financing Gaps & Program Targeting Opportunities

Support Testing the Efficacy of Novel Financing Tools & Capital Sources

Identify Opportunities to Test Financing's Ability to Deliver Program Leverage

Identify Opportunities to Facilitate Resolution of Regulatory Issues

Priority Solution Areas

- 1. Data taxonomy & collection protocols:** develop a list of data fields for EE financing program administrators to collect, and protocols for data collection and protection.
- 2. Data library:** explore the development of a national, public library of EE loan performance data.

- 3. Improve alignment of program strategies with customer needs:** develop suite of "how to" briefs – overviews of EE financing program strategies and benefits, design considerations, and how to get started.

- 4. Explore whether new financing tools and capital sources are needed:** develop resources on the effectiveness of emerging finance tools and models in meeting the unique barriers of EE financing.

- 5. Share lessons learned through experimental design:** facilitate testing of the opportunities and limits of EE financing through experimental program design, and share lessons learned.

- 6. Clarify the regulatory treatment of ratepayer-funded EE financing initiatives:** identify how state PUCs are treating financing initiatives under the regulatory framework, share lessons learned and best practices.



In Case You Missed them...

Energy Efficiency Finance 101 & 201

Financing Solutions for Energy Efficiency: From Policy to Practice
Financing Solutions for Energy Efficiency: Credit Enhancements

Why Run an EE Financing Program?



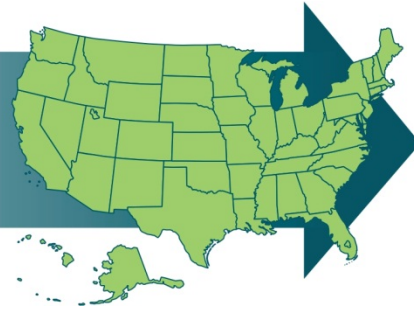
Access the Webcasts via Vimeo or iTunes here:

<http://cbey.yale.edu/academics/blueprint-for-efficiency>



SEE Action
STATE AND LOCAL ENERGY EFFICIENCY ACTION NETWORK

www.seeaction.energy.gov



SEE Action

STATE AND LOCAL ENERGY EFFICIENCY ACTION NETWORK

**Financing Energy Improvements on Utility Bills:
Market Updates and Key Program Design Considerations for
Policymakers and Administrators**

Mark Zimring

**Greg Leventis, Merrian Borgeson, Charles Goldman,
Peter Thompson and Ian Hoffman**

Lawrence Berkeley National Laboratory

June 2, 2014

Today's Agenda

- Background
- What is On-Bill Financing?
- Why Offer On-Bill Financing Programs?
- Report Motivation, Approach & Objectives
- On-Bill Program Landscape
- 4 Key On-Bill Program Design Considerations
- Discussion

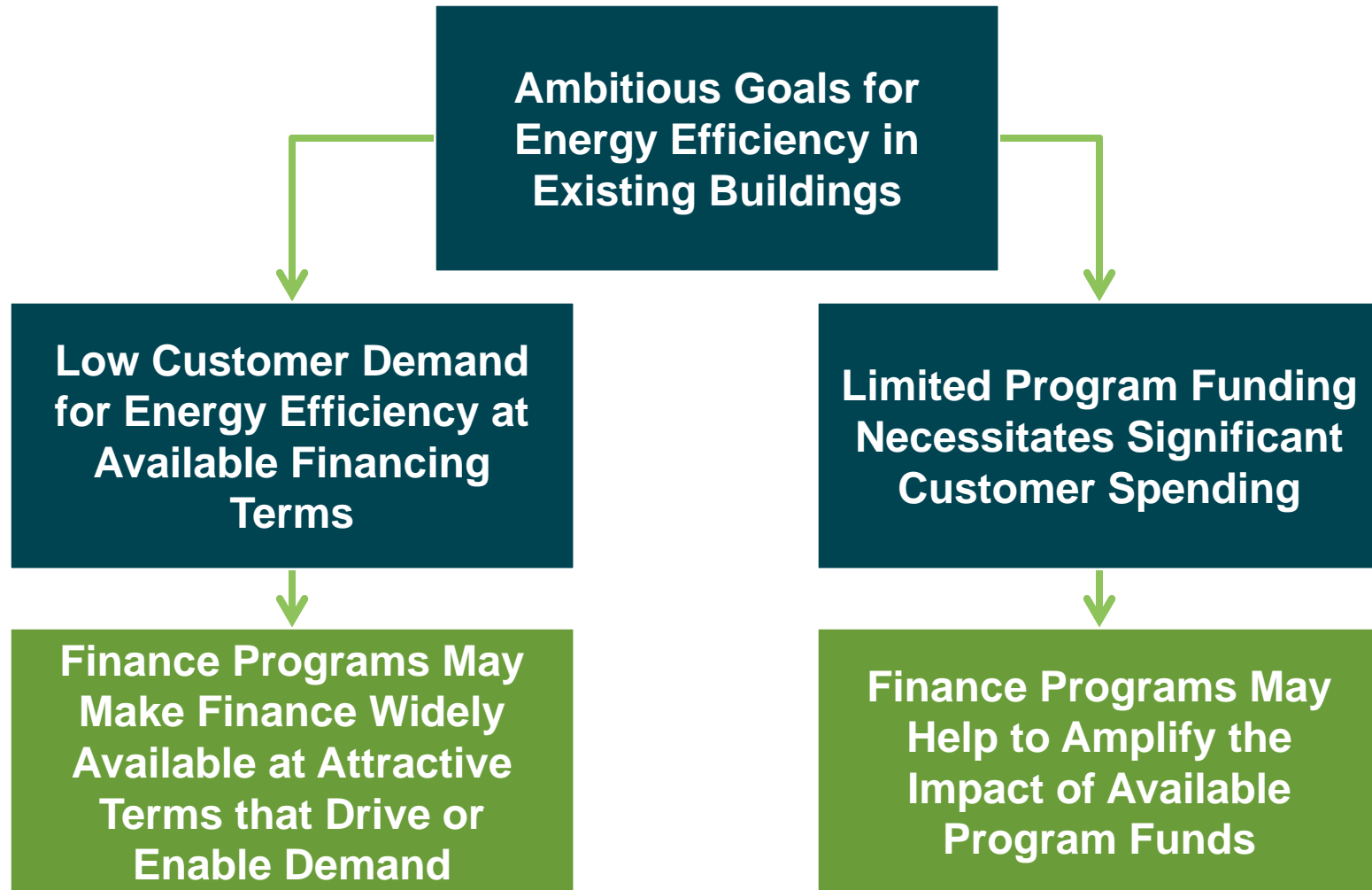


SEE Action
STATE AND LOCAL ENERGY EFFICIENCY ACTION NETWORK

www.seeaction.energy.gov

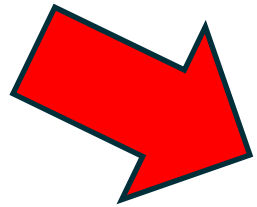
Background:

Why Run an EE Financing Program?



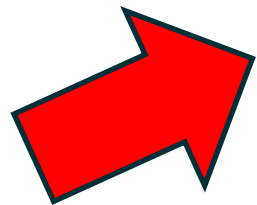
Background:

Why Run an EE Financing Program?



**More Attractive
Financing Products**

**Standardize
Processes and
Protocols**



**Expanded Customer
Access to Capital**

**Catalyze Lender/
Investor
Participation**



SEE Action
STATE AND LOCAL ENERGY EFFICIENCY ACTION NETWORK

www.seeaction.energy.gov

What is On-Bill Financing?

- On-bill programs involve repaying financing for energy-related improvements on the consumer's utility bill.
- Programs can take many forms. Four key program design considerations.

How is the Product Structured?

Who is Eligible?

Where Does the \$\$ Come From?

What Can Participants Finance?



Why Run an On-Bill Program?

Objectives have evolved through time as perceived market needs have shifted.



Webinar Participant Poll

Poll: What is the most important objective in running an on-bill program?

1. Affordability
2. Access to Capital
3. Drive Demand
4. Increase Leverage



Report Motivation, Approach & Objectives

Motivation:

- Interest in on-bill programs increasing. Review of existing programs necessary to provide context & insight to new programs.
- Regulatory or legislative action often necessary to launch programs. “Locks in” program design features. Important to understand range of design choices and trade-offs.

Objective:

- Provide updated review of current experience w/ on-bill and offer actionable insights on key program design considerations.

Approach:

- Review previous studies & literature
- Collect data on 30 programs with detailed case studies on 13 programs



Webinar Participant Poll

Poll: Estimate the total value of loans reported across the 30 programs:

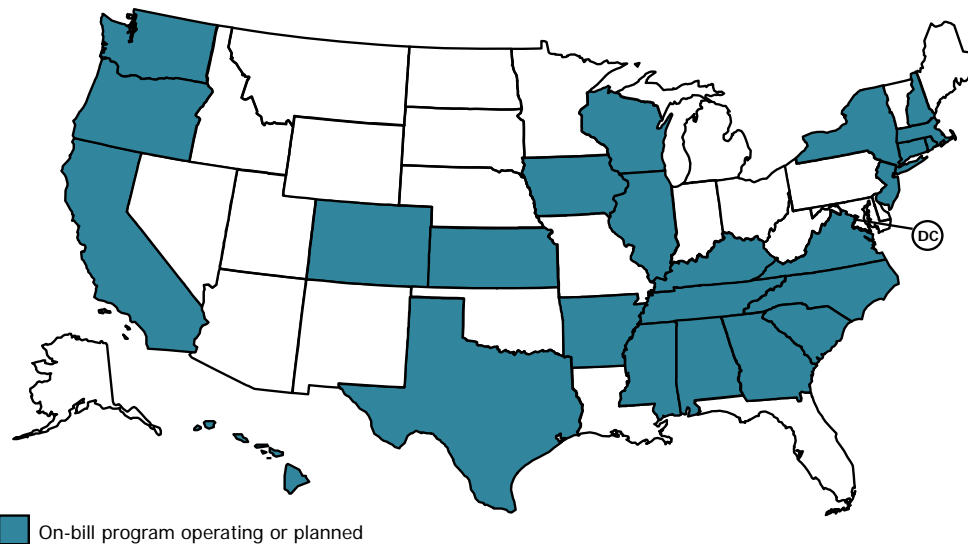
1. \$10-100m
2. \$100-500m
3. \$500m-\$1bn
4. \$1bn-\$2bn



On-Bill Program Landscape

As of January 2014, operating in at least 25 states, some for several decades

In aggregate, 30 on-bill programs in report delivered over \$1.8 billion to over 200,000 participating consumers.



SEE Action
STATE AND LOCAL ENERGY EFFICIENCY ACTION NETWORK

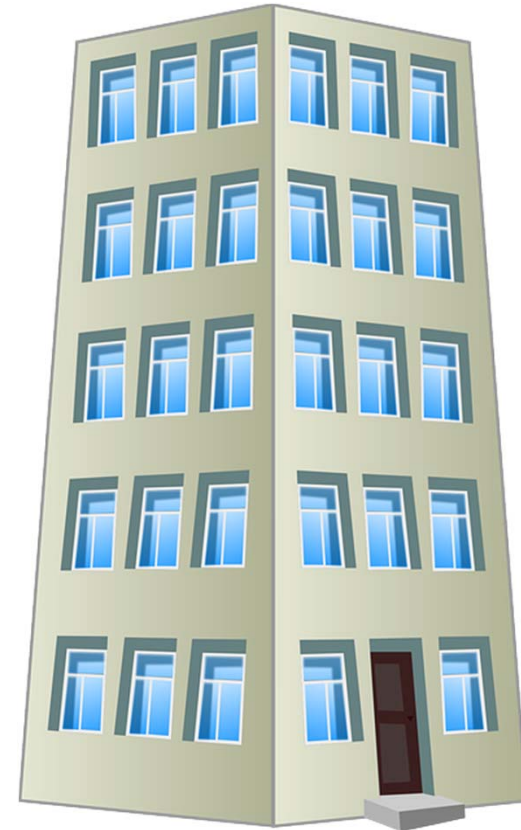
www.seeaction.energy.gov

On-Bill Program Landscape

22 Residential Programs



8 Non-Residential Programs



SEE Action
STATE AND LOCAL ENERGY EFFICIENCY ACTION NETWORK

www.seeaction.energy.gov

On-Bill Program Landscape

Sector	# Participants	Lifetime Volume (\$)	n	Average Loan Size (\$)
Res	182,324	\$1.055B	20	\$5,787
Non-Res	50,339	\$775M	7	\$15,400
Total	232,663	\$1.83B	27	\$7,867

^[1] Three programs discussed in this report (California’s emerging on-bill pilots, Hawaii’s emerging on-bill pilot and Oregon’s just-launched MPower pilot) are not included in the summary statistics because data was not available as of December 2013.

^[2] Default rates are not included either because programs have yet to launch (2), or have less than one year of data (5), or failed to provide data (1).



Webinar Participant Poll

Poll: Estimate the median lifetime default rate reported by the programs;

1. 0%- 0.5%
2. 0.5% - 1.0%
3. 1.0%- 2.0%
4. 2.0% - 5.0%



On-Bill Program Landscape

Sector	Median value and range of default rates	n
Res	0.08% (0 to 3%)	15
Non-Res	0.9% (0.6 to 2.9%)	7
Total	N/A	22



On-Bill Program Landscape

Across a broad range of program design features, default rates were consistently low—including from a number of programs that have been around a decade or more and weathered multiple financial cycles.

**How is the
Product
Structured?**

Who is Eligible?

**Where Does the
\$\$ Come From?**

**What Can
Participants
Finance?**



On-Bill Program Landscape

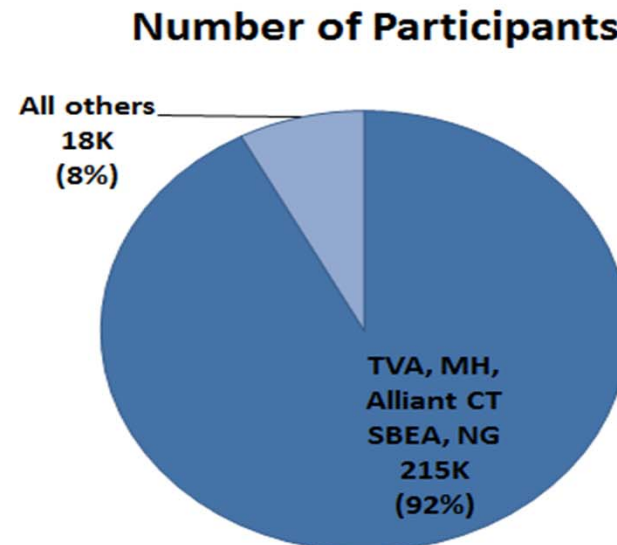
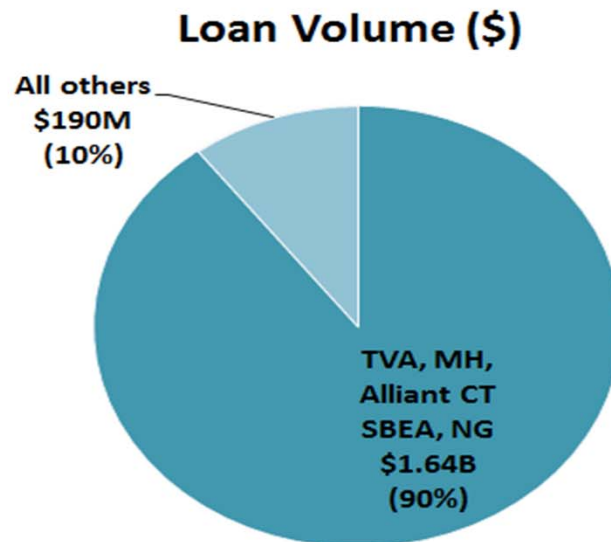
- Average age of programs is 5 years. Non-residential programs tend to have longer operating histories.
- In the residential sector, programs <5 years old average .09% market penetration. Those >5 years old average 5.28%.
- In the non-residential sector, one program has reached >25% of eligible customers and several have achieved significant market penetration.



On-Bill Program Landscape

Five programs account for approximately 90 percent of historic on-bill activity:

- Tennessee Valley Authority (TVA),
- Manitoba Hydro (MH),
- Alliant Energy Wisconsin,
- United Illuminating/Connecticut Light & Power (CT SBEA)
- National Grid (NG)



On-Bill Program Landscape

	TVA	Manitoba Hydro	Alliant Energy	CT Small Business Energy Advantage	National Grid
Target Sector	Res	Res	Non-Res	Non-Res	Non-Res
Year Launched	1978	2001	1987	2000	1993
Lifetime Volume	\$500M	\$351M	\$524M	\$138M	\$69M
2012 Volume	\$45M	\$34.7M	\$393K	\$15.8M	\$31M
Interest Rate	6%-8%	4.8%	0%-3%	0%	0%
Max Loan Term	10 years	15 years	5 years	4 years	2 years
Default Rate	3%	0.48%	2.68%	0.9%	2.9%



4 Key Program Design Considerations

**How is the
Product
Structured?**

Who is Eligible?

**Where Does the
\$\$ Come From?**

**What Can
Participants
Finance?**



SEE Action
STATE AND LOCAL ENERGY EFFICIENCY ACTION NETWORK

www.seeaction.energy.gov

How is the Product Structured?

How is the Product Structured?

Line Item Billing

No threat of disconnection, not attached to the utility meter

Loan with Disconnection

Disconnection permitted, not attached to the utility meter

On-Bill Tariff

Disconnection permitted, attached to the utility meter.



Webinar Participant Poll

Poll: Which product structure is most able to overcome financing barriers?

1. Line item billing
2. Loan with Disconnection
3. On-Bill Tariff



SEE Action
STATE AND LOCAL ENERGY EFFICIENCY ACTION NETWORK

www.seeaction.energy.gov

Where Does the \$\$ Come From?

Where Does the
\$\$ Come From?

On-Bill Financing (OBF).

Public, Utility or Ratepayer Capital

On-Bill Repayment (OBR)

Non-Utility Investor Capital

Several OBR Variations;

1. Warehousing Model
2. Up-Front Capital Raise Model
3. Open-Market Model



Who is Eligible?

Who is Eligible?

Traditional Underwriting Standards

- Example: Min 640 FICO, Max 50% DTI

Expanded Underwriting Standards

- Example: Min 600 FICO, Max 70% DTI

Alternative Underwriting Standards

- Example: Strong Utility Bill Repayment History

Hybrid Underwriting Standards

- Example: Min 600 FICO, Strong Utility Bill Repayment History



What Can Participants Finance?

What Can Participants Finance?

Types of Measures (e.g., EE/RE)

Single Measure v Comprehensive Upgrades

Utility Bill Impacts (e.g., bill neutrality)



Webinar Participant Poll

Poll: Bill neutrality is a critical element of on-bill program design?

1. Yes
2. No



SEE Action
STATE AND LOCAL ENERGY EFFICIENCY ACTION NETWORK

www.seeaction.energy.gov

Summary of Key Program Design Considerations

How is the Product Structured?

Who is Eligible?

Where Does the \$\$ Come From?

What Can Participants Finance?



SEE Action
STATE AND LOCAL ENERGY EFFICIENCY ACTION NETWORK

www.seeaction.energy.gov

Next Webcast

MORE TO COME!!

Detailed On-Bill Program Design Considerations and Findings

Case Study Presentations from:

- Jeff Pitkin, Treasurer, NYSERDA
- Yuri Yakubov, Program Manager, PG&E
- Becky Radtke, Program Manager, Manitoba Hydro

June 11, 2014

2-3:30 PM Eastern

Sign-up to follow



SEE Action
STATE AND LOCAL ENERGY EFFICIENCY ACTION NETWORK

www.seeaction.energy.gov

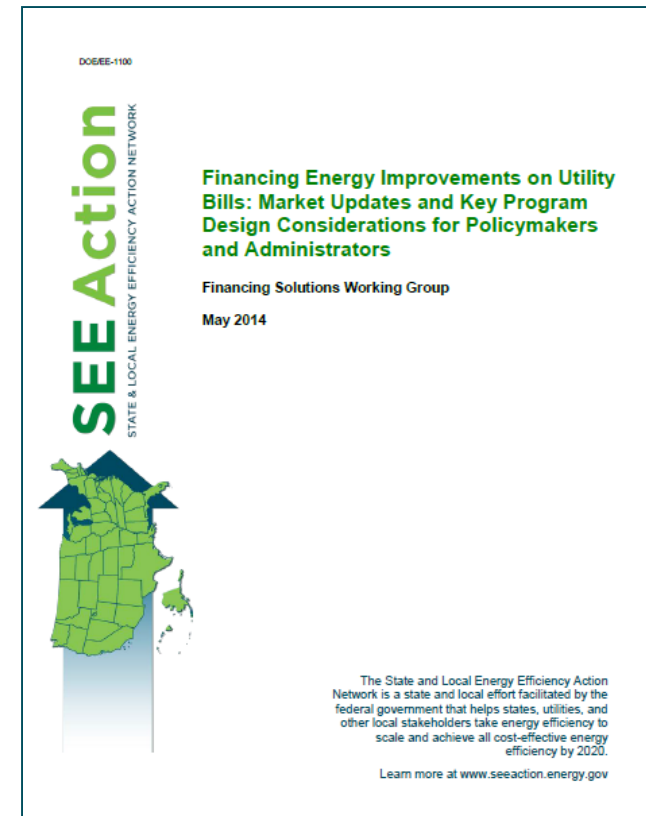
Download the Report

Download the Report Here:

www.seeaction.energy.gov/financing_improvements

Separate Downloads Available For:

- 16 Page Executive Summary
- 13 Detailed Case Studies, including on the UK's Green Deal



SEE Action
STATE AND LOCAL ENERGY EFFICIENCY ACTION NETWORK

www.seeaction.energy.gov

Discussion: Technical Assistance

Contact LBNL staff (Charles Goldman) if you are interested in technical assistance on On-Bill Programs



Mark Zimring
mzimring@lbl.gov



Charles Goldman
510-486-4637
cagoldman@lbl.gov



Greg Leventis
510-486-5965
glevantis@lbl.gov

