



Environmental Energy Technologies Division Lawrence Berkeley National Laboratory

Financing Energy Improvements on Utility Bills:

Market Update and Key Program Design
Considerations for Policymakers and Administrators

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Motivations, Approach & Objectives

Motivations:

- Interest in on-bill programs is increasing among states and other EE stakeholders around the country; an updated review of existing programs is needed to provide context and insight to new programs
- Regulatory or legislative action is often necessary to enable these programs and may “lock in” program design features; it is therefore important for policymakers and administrators to understand the range of program design choices and the trade-offs among them, as it can impact program efficacy

Approach:

- Review previous studies and relevant literature
- Collect data on 30 existing on-bill programs, with interviews and detailed case studies on 13 of these programs

Objectives:

- Provide an updated review of current experience with on-bill loan programs
- Offer policymakers and program administrators actionable insights on key program design considerations



On-bill loan programs have been operating for over 30 years, but **have evolved** as program administrator (PA) and policymaker objectives and market needs have changed. We observe four key PA and policymaker program objectives over time:

- **Affordability**—Interest rates were much higher when the first on-bill programs began. In today's low interest context, the need for lower cost, longer term financing—and its impacts on customer EE adoption—have become less certain. The current upsurge of on-bill programs reflects the emergence of a broader set of PA and policymaker objectives
- **Access to capital**—Many customers have limited access to capital for overcoming first cost barriers to EE. Access was restricted during the recent recession as consumers faced financial hardship and lenders tightened underwriting. Some on-bill programs are being targeted to underserved populations (e.g., small biz, middle income households)
- **Driving demand**—Some recently launched on-bill programs include provisions targeting a broader range of barriers to customer EE adoption (e.g., tenant-owner split incentives, balance sheet treatment of debt, long project paybacks and others) to drive demand for EE
- **Increasing leverage of program funds**—More PAs and policymakers are looking to use private capital to fund on-bill programs in order to stretch the impact of limited program funds

On-Bill Landscape: Historic Activity

The on-bill programs surveyed for this report have delivered over \$1.8 billion of financing to over 200,000 participating customers with very low default rates to date

Sector	Number of Participants	Lifetime Loan Volume (nominal \$)	<i>n</i> =	Average Size of Loan	Median Value and Range of Default Rates	<i>n</i> =
Residential	182,324	\$1.055B	20	\$5,787	0.08% (0%-3%)	15
Non-residential	50,339	\$775M	7	\$15,400	0.9% (0.57%-2.9%)	7
Total	232,663	\$1.83B	27	\$7,867		22*

*Note: Not all programs reported default rates

How Is the Product Structured?

Two fundamental on-bill design questions are a) whether nonpayment leads to disconnection of energy service, and b) whether the product is attached to the meter. We divide these product structures into three types:

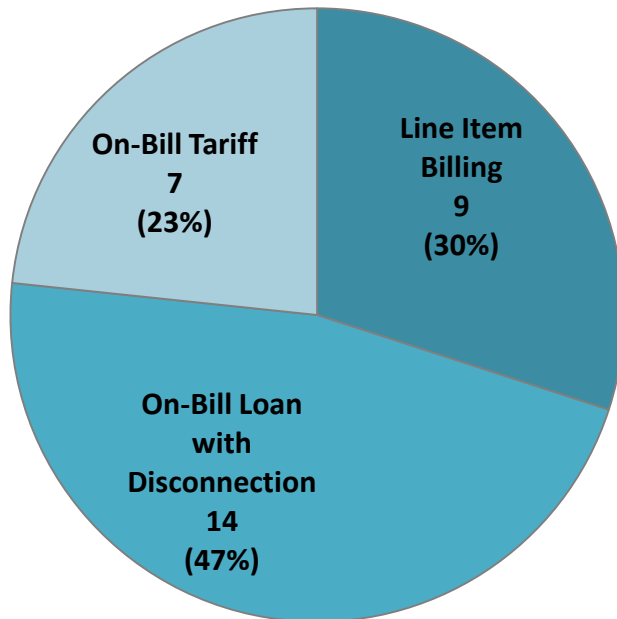
Feature	Line Item Billing	On-Bill Loan with Disconnection	On-Bill Tariff
Debt of Utility Meter or Customer/Property?	Customer/Property	Customer/Property	Meter
Consequences of On-Bill Financial Product Non-Payment	No Threat of Utility Service Disconnection	Utility Service Disconnection	Utility Service Disconnection
Survives Bankruptcy/Foreclosure?	No	Unlikely	Maybe
Transferable?	Yes, with consent (if program rules allow)	Yes, with consent (if program rules allow)	Yes, automatic
Garners Off-Balance Sheet Treatment?	No	Maybe	Maybe

Disconnection and Meter Attachment

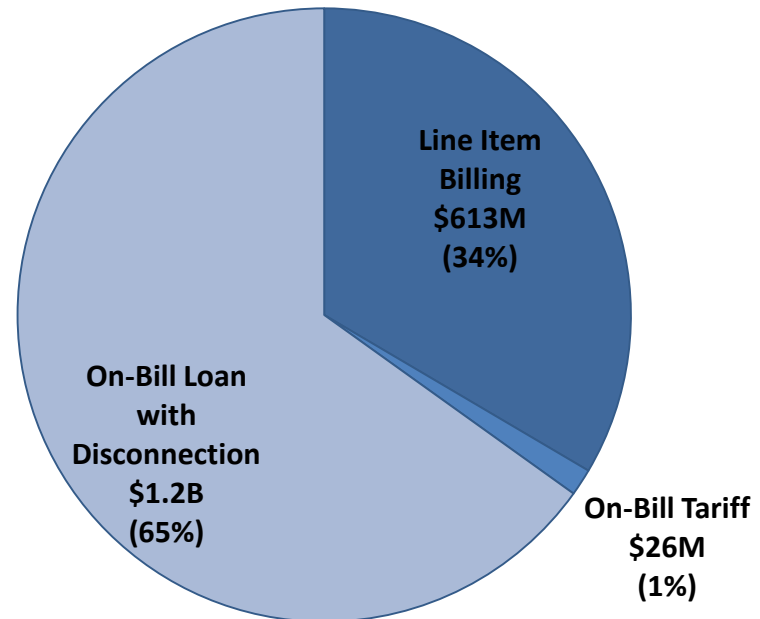
Program Trends:

- Among the 30 on-bill programs, nine offer line-item billing, 14 offer on-bill loans with disconnection, and seven offer on-bill tariffs
- Nearly all on-bill volume (99 percent by dollar volume) has taken place through programs using on-bill loans with disconnection or line item billing

**Number of Programs by
Disconnection/Meter Attachment**



**Loan Volume (\$) by
Disconnection/Meter Attachment**



Key Findings:

- The threat of utilities disconnection has uncertain benefit in reducing consumer default rates relative to financial products that are not repaid on the utility bill or are repaid on the utility bill without the threat of disconnection
 - Utilities disconnection may be an important feature for accessing secondary markets as rating agencies and investors may otherwise be reluctant to rely on historic utility bill payment trends
- And despite increasing attention, substantial uncertainty remains about the effectiveness of on-bill tariffs:
 - Legal treatment (i.e., do courts treat it like a loan in bankruptcy proceedings?)
 - Accounting treatment (i.e., do regulators permit off-balance sheet treatment?)
 - Value of automatic transferability (i.e., if subsequent tenants/owners do not value improvements, does transferability have value?)

Where Does the \$\$ Come From?

Programs can also be differentiated, based on the capital source used to fund the on-bill financial products:

On-Bill Financing (OBF): Utility bill payer, utility shareholder or public funds

On-Bill Repayment (OBR): Private investor funds

OBR programs can further be divided into three basic categories:

- 1. Program Administrator as Warehousing Entity.** Utility shareholder, utility bill-payer or public capital used to fund financial products up-front. These financial products are aggregated by a program administrator then sold to investors
- 2. Program Administrator Raises Private Capital Up-Front.** Raise capital up-front from investors and use that capital to fund on-bill financial products
- 3. Open Market.** Any qualified financial institution may leverage the utility bill for repayment of participant debt. Financial institutions underwrite individual customers and deliver financial products and capital directly to them through the bill

Key Findings: Considerations for OBR

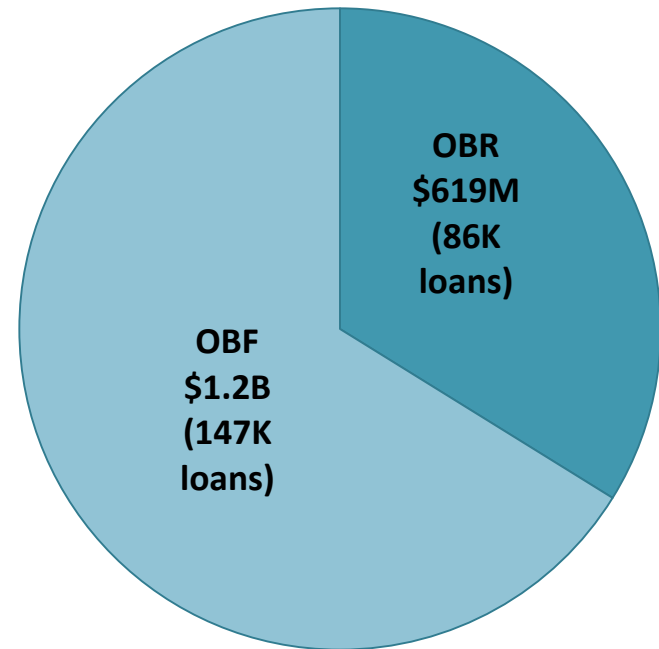
- **Role of the Program Administrator.** The first two OBR strategies (warehousing and up-front capital raise) entail a substantial program administrator role in raising private capital. Open market approach involves a smaller role for the PA as financial institutions manage the provision of capital, but will require investments in infrastructure
- **Role of Credit Enhancements.** In practice, the first two OBR strategies, which have delivered almost all OBR volume, have typically relied on substantial credit enhancements (CEs) to private investors in the form of 1) guarantees to investors against losses or 2) the right to tap utility bill-payer charges to cover losses
- **Risk Tolerance.** Each OBR model entails different types of risk. The warehousing model requires administrators to have an initial source of capital but enables them to pre-negotiate terms of loan pool sales to secondary purchasers. The upfront model provides certainty that large pools of capital are available but raises risks should participation be low. The open market model necessitates centralized infrastructure, which may be expensive to setup and create risk should volume not materialize.

Key Findings: OBF vs OBR

	OBF	OBR
Flexibility	<ul style="list-style-type: none">• Often provides more flexibility in program design, but can include more rigorous cost-effectiveness requirements than private funding	<ul style="list-style-type: none">• Least flexible source, as private capital providers seek predictable and low risk loan performance
Cost	<ul style="list-style-type: none">• Bill-payer funding can be low cost; Utility shareholder capital may be expensive (interest rate buydowns can be equivalent to a rebate of 10-20% of project costs)	<ul style="list-style-type: none">• Varies, but often higher cost depending on the market served
Leverage	<ul style="list-style-type: none">• Little or no up-front leverage of program funds, but raising large pools of utility shareholder capital may be possible	<ul style="list-style-type: none">• May achieve substantial leverage of program funds

- Of the 30 programs, two-thirds are OBF and an equivalent percentage of cumulative program volume by \$ value (see right) has been through OBF initiatives
- Of these OBF programs, just over half (11) rely primarily on utility capital for funding
 - These 11 programs account for 86% of the total dollar volume for OBF programs in the report
- There has been a shift towards OBR—of the 16 programs launched since 2009, seven have been OBR
- But, OBF still delivers the lion's share of volume—in 2012, \$128M compared to OBR's \$62M

Loan Volume (by dollar amount and number of loans) for OBF and OBR Programs



OPTIONS FOR ASSESSING CUSTOMER CREDITWORTHINESS

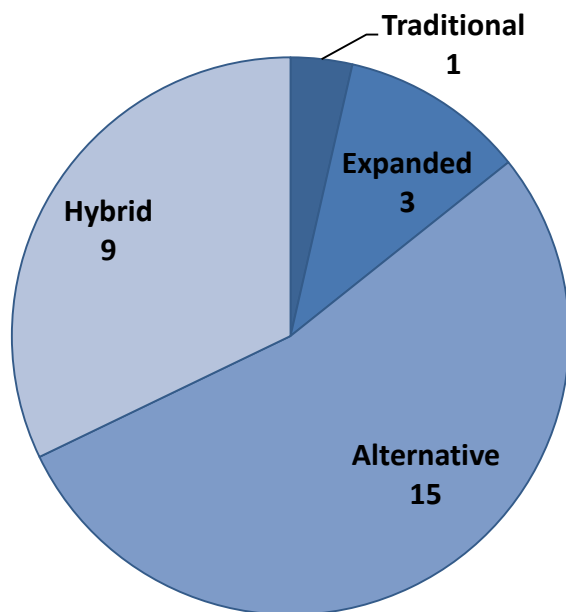
- **Traditional underwriting standards:** Administrators rely on traditional metrics that are used for underwriting other types of financial products
Example: In the residential market, lenders often require a minimum credit score of 640 and a maximum debt-to-income ratio (DTI) of 50% for unsecured loan products
- **Expanded underwriting standards:** The administrator starts with traditional metrics but relaxes the minimum standards for applicant approval in order to increase the number of target customers that can qualify for financing
Example: Minimum credit score of 600 and a maximum DTI of 70%
- **Alternative underwriting standards:** Program administrator uses alternative metrics (e.g., strong history of on-time utility bill payment) in order to increase the number of applicants that are approved for financing and/or reduce the cost of the underwriting process (less time and \$\$)
Example: Using the customer's utility bill payment history as a proxy for creditworthiness.
- **Hybrid underwriting standards:** Program administrator relies on a blend of alternative underwriting standards and traditional or expanded underwriting metrics
Example: Minimum credit score of 600 and a strong history of on-time utility bill payment

Customer Creditworthiness

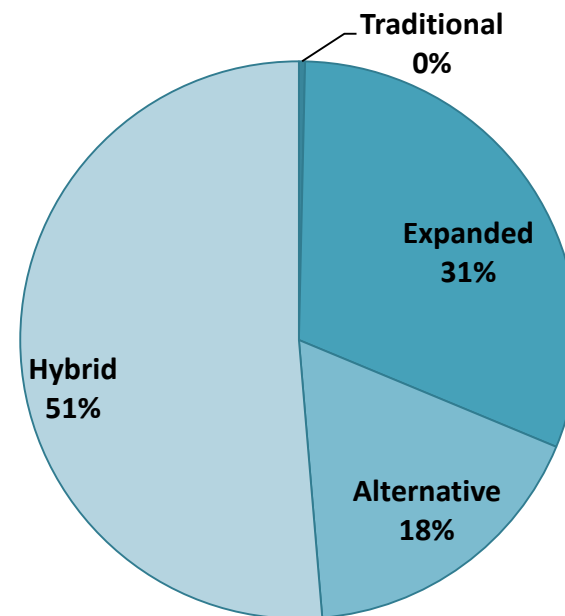
Program Trends:

- Over 50% of the programs reporting underwriting criteria use alternative approaches to assessing customer creditworthiness (left)
- When weighted by program loan volume, programs using hybrid underwriting approaches account for just over half of loan volume for programs in this report, followed by programs that rely on expanded underwriting (right)

Number of Programs Using Underwriting Criteria



Percent Overall \$ Volume of Programs Using Underwriting Criteria



Key Findings:

- The choice of ***underwriting criteria appears to influence a financing program's application approval rate***
 - The one program that relies exclusively on traditional underwriting criteria rejected over eight times more applications than the average number rejected in programs that relied primarily on utility bill payment history
- Yet, in comparing existing on-bill programs, we found ***no clear association between a program's underwriting criteria and participant default rates***
 - Default rates were quite low across program designs suggesting that a range of underwriting approaches may lead to low participant default rates
- Underwriting criteria choice ***may also influence ability to attract private capital providers***
 - While repayment trends in the OBF/OBR programs have been quite strong, those programs that have successfully leveraged private capital have provided robust credit enhancements and investors may be reluctant to accept (or require a discount for) loans not underwritten using standard metrics.

What Can They Do: Eligible Measures

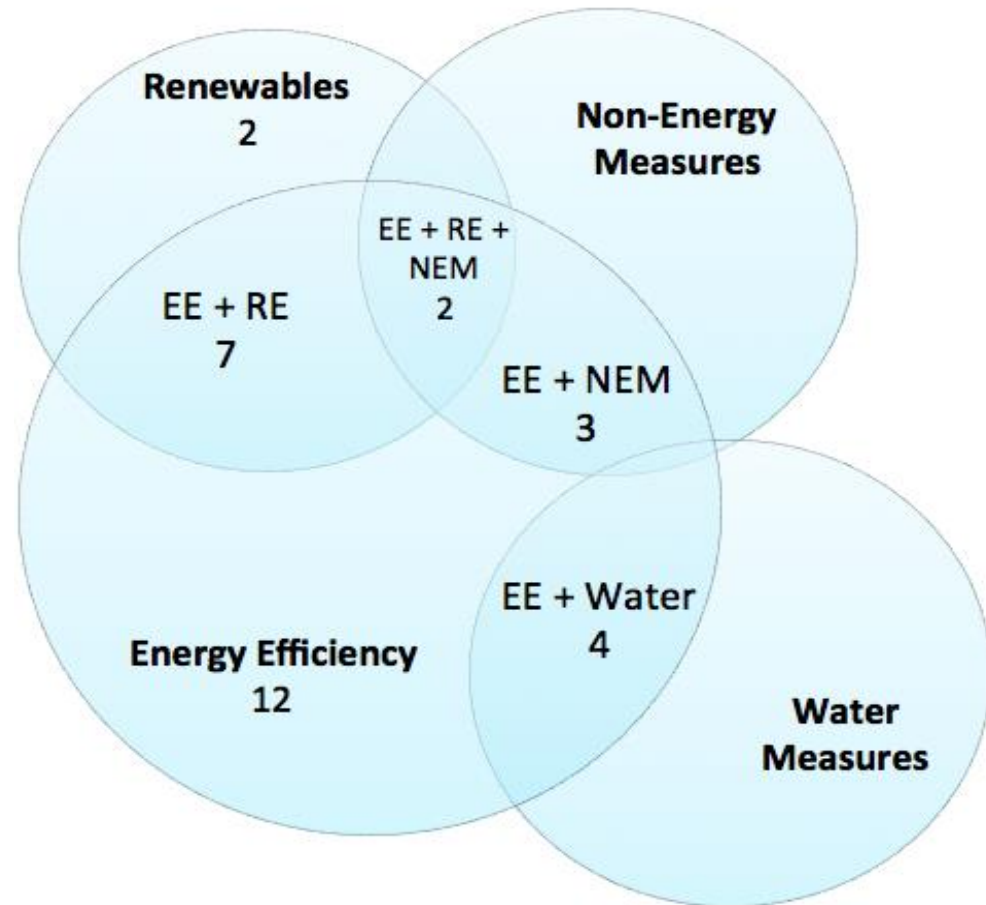
- Choice of eligible measures requires balancing the objectives of enabling (or driving demand for) cost-effective energy efficiency and/or renewable energy adoption with a range of other program design or policy goals
- Three key considerations for program administrators in setting measure eligibility are:
 1. Types of measures
 2. Single measure vs. comprehensive retrofits
 3. Utility bill impacts



Types of Measures & Single v. Comp.

- Programs may include a range of DSM technologies; in some cases non-energy efficiency measures (NEMs) are also permitted and **may be an important demand driver** for some customer segments
- Among the 30 programs, 12 limit eligibility to EE improvements, 11 permit RE and 5 allow NEMs
- **Most on-bill programs with significant loan volume have permitted single-measure energy improvements** and have tended not to place much emphasis on more comprehensive improvements
- **Those programs that have successfully driven both substantial customer participation and deeper, multi-measure EE projects, have coupled on-bill eligibility with substantial financial incentives**

Number of Programs Allowing Different Types of Measures



- Some on-bill programs require “bill neutrality” — i.e., over the loan term, expected energy savings from improvements cover the loan repayment cost
- Majority of on-bill program loan volume has occurred in programs that do **not** require bill neutrality
- ***Policymakers should carefully consider ‘bill neutrality’ provisions given the program experience to date examined by this report:***
 - **Bill-neutral and non-bill-neutral programs have both exhibited strong loan performance trends.** Bill neutrality has been put forward as a consumer protection, but there is uncertainty about whether expected bill neutrality requirements provide protections for individual consumers or whether additional consumer protections are necessary.
 - **Bill neutrality features may raise practical challenges that constrain consumer program participation** (by limiting the types of EE improvements that can be financed) and **may be a barrier to consumers taking on projects that achieve deeper energy savings**
 - However, an expected bill neutrality requirement may be an effective tool for rationing limited program funding to those projects that deliver the most energy savings relative to program cost to achieve them

- On-bill programs are potentially ***promising initiatives for responsibly expanding consumer access to attractive capital*** for making EE improvements
- ***Default rates were low for all financing programs (0%-3%)*** regardless of the various design features used (e.g., disconnection, type of underwriting criteria)
- Program design choices are likely to have important impacts on:
 - ***Customer participation rates***
 - ***The ability of customers to qualify for the program***
 - ***A program's ability to scale as demand increases***
 - ***The costs and risks to program administrators of operating a program***

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