Consumer Financing of Beneficial Electrification

Comparative Analysis Results

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ACCELERATING THE CLEAN ENERGY TRANSITION

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Study Context & Approach

Study Context

Project Context

- LD 1724 An Act to Enact the Beneficial Electrification Policy Act was recently passed.
- This requires the MPUC to
  - "…conduct a study on how to **cost-effectively provide consumer financing of beneficial electrification projects**, including products for energy efficiency, home or business energy storage, electric vehicle charging equipment and other distributed energy projects through methods including, but not limited to, on-bill financing by standard-offer service providers or competitive electricity providers, or through some combination thereof."
- This study includes a survey of national best practices for financing beneficial electrification and associated distributed energy resources, such as solar PV and energy storage, as well as a review of on-bill lending options, to potentially supplement existing financing solutions.
- The **comparative analysis** provides quantitative scoring (5-point scale) and qualitative assessment of each type of financing option, focusing on beneficial electrification considerations.

Study Context

The Study

The National Best Practices and On-Bill Lending reviews, paired with the **comparative analysis of financing options**, will identify financing models to help accelerate beneficial electrification across Maine, and will also specifically consider on-bill lending in the context of Maine's electricity suppliers and distributors.

The Approach

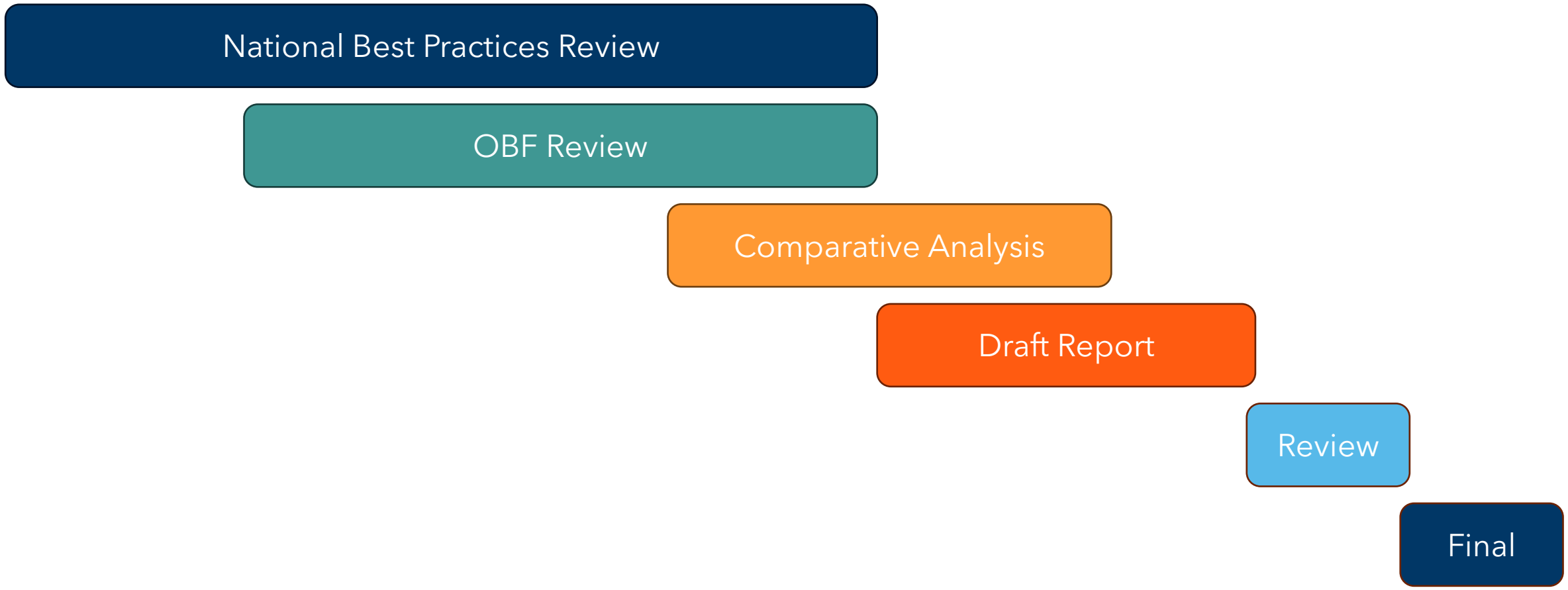
- **Desktop research** to determine programs of most relevance and interest to the State of Maine.*
- Targeted **interviews** with program administrators of consumer financing programs in other states*.
- **Comparative analysis** of financing options, focusing on beneficial electrification considerations.

Comparative Analysis

This report will provide a quantitative and qualitative analysis of finance options, considering various inputs including the ability to overcome barriers in key markets; technology types, potential sources of capital, administrative cost and complexity, consumer protection and underwriting provisions, cost-effectiveness consideration, and alignment with Maine's current statutory requirements.

**Note that a full list of programs included in the desktop research and targeted interviews is available in the appendix.*

Project Timeline



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Financing for Beneficial Electrification

- With the ambitious targets set in Maine's climate action plan, "**Maine Won't Wait**", consumer financing programming for beneficial electrification could be an important tool to reduce building-related greenhouse gas emissions.

- Consumer financing programs, if designed appropriately, can help consumers **overcome barriers** to adopting beneficial electrification and energy efficiency projects in their homes or buildings.

- There are various forms of consumer financing programs, including traditional lending, on-bill lending and more. One of the main differentiators between program models is their **repayment vehicles** and if they offer **credit enhancement**.

Financing for Beneficial Electrification

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Several barriers exist for consumers to pursue beneficial electrification: **financial, process, and practical barriers**. Access to financing can address some of these barriers, providing increased opportunity for beneficial electrification at the consumer level.

Barriers to beneficial electrification	How financing can address barriers
Financial barriers: High upfront costs and scarce low-cost funding options make accessing beneficial electrification products challenging. Furthermore, longer term lengths often required for electrification projects creates risks for traditional lenders they may not be willing to take on.	**Financing provides the capital homeowners need by covering the full upfront cost of the project.** By spreading upfront costs over time, consumers are more easily able to manage payments and often balance the energy savings with additional monthly financing costs.
Process barriers: It is difficult for renters to access loans due to transferability issues and split incentives between tenants and landlords. Additionally, traditional loan products often have strict lending criteria that limits access to low/medium-income consumers.	**Holistic financing programs can address multiple gaps in existing market interventions** through flexible underwriting and easy repayment and transferability (e.g., tied to the property instead of owner of the building).
Practical barriers: Even when homeowners have access to capital, they may choose between competing projects (e.g. prioritizing cosmetic renovations over electrification). Additionally, there may be a lack of knowledge of electrification products among key actors and thus lack of supply.	**There is an opportunity to pair energy upgrades with other home renovations that improve comfort, health and safety, home value** and other considerations. As demand increases for these upgrades through financing programs, supply and knowledge will also improve.

Financing for Beneficial Electrification

Financing programs have **many strengths**, though they come with their own set of **challenges,** which are important to keep in mind during program design. These challenges differ depending on the type of financing offered (i.e. on-bill or other), opportunities for credit enhancement, and how the program fits with the existing system.

Strengths

- ✓ **Addresses** financial and other barriers to undertake beneficial electrification projects
- ✓ **Complements** existing federal, state actor and utility policies and programs
- ✓ **Facilitates** improved efficiency, which can reduce energy costs and help meet GHG emissions reductions targets
- ✓ **Supports** multiple goals and co-benefits
- ✓ **Reduces** dependencies on public subsidies
- ✓ **Creates cost offsets** through energy savings in some cases

Challenges

- **High cost of capital** offloaded to participants
- **Availability** of skilled trades to meet demand
- **Balancing** flexible underwriting with consumer protection to avoid over-leveraging homeowners
- **Complex** applications and restrictive eligibility criteria
- **Complex** to setup program infrastructure
- **Low uptake** can impact administration costs
- **Requires buy-in** and trust between the consumer and the entity offering the financing
- **Cost-effectiveness** requirements can exclude costlier beneficial electrification measures that don't directly contribute to energy efficiency

Addressing Barriers to Beneficial Electrification: Rebates versus Financing

Addressing the significant upfront cost barrier to beneficial electrification requires a **strategic combination of rebates or incentives and financing** options. Ensuring the coexistence of both support mechanisms is **essential for maximizing the adoption** of beneficial electrification products.

	Key strengths	Key challenges
Rebates	Rebates (also referred to as incentives) help increase the business case of beneficial electrification products by reducing the upfront costs at the point-of-sale or shortly afterwards.	Does not increase access to capital and typically only covers a portion of upfront costs. Customers using rebates still require the necessary upfront capital to pay for products, therefore rebates still disproportionately go to middle-and upper-income households[1].
Financing	Financing helps reduce the requirement for upfront capital to access beneficial electrification products by spreading out costs over time.	Designing financing so it is easy to access and does not introduce process barriers can sometimes be challenging. Low-and-medium income customers have historically faced process barriers to accessing financing due to below-average credit scores or because they are renters.

Combining rebates with inclusive financing helps **consumers and businesses without the necessary upfront costs or credit to afford the difference** between the cost of a measure and the rebate offered

[1]Beneficial Electrification Toolkit. "Incentives and Financing". Accessed March 28, 2024.

Financing for Beneficial Electrification: Key Elements

Our comparative analysis is **centered on evaluating the repayment vehicles** necessary to deliver a financing program. Although not covered in detail in this report, examining potential sources of capital and processes for loan origination and administration are also equally important when designing a financing program.

Key elements to consider when designing a financing program:

Repayment vehicle	Repayment vehicles influence factors such as program eligibility and accessibility, volume, and risk profile. For example, on-bill financing can offer ease-of use and expanded eligibility, while soft loans can also expand access to capital and lower borrowing costs.
Source of capital and credit enhancements	Whether capital comes from public or private funds, utility ratepayer or shareholder funds, or a mix of these, directly impacts the accessibility of financing programs. Public funds can be more flexible and cheaper, but they are typically limited. Over the long term, it's advisable to use public funds strategically to attract private investment. Additionally, credit enhancements are also important to consider as they help mitigate risk and reduce the cost of capital.
Origination and General Loan Administration	Designing an accessible and user-friendly loan origination process is crucial, encompassing application processing, underwriting, and fund disbursement. Equally important is determining which entities are responsible for origination and general day-to-day administration tasks such as customer support, payment processing, and loan management, to ensure satisfaction and program appeal.

While our report primarily assesses repayment vehicles and touches briefly on credit enhancements, evaluating sources of capital and procedures for loan origination and administration is also essential to ensure success of a financing program.

Financing Models: Overview

On-Bill lending

Homeowner repays **the utility** through energy bills

Requires strong collaboration and alignment with the **utility or utilities**

Loan default and recovery through **utility bill;** utility's responsibility

Direct lending

Homeowner repays **financial institution** through a loan agreement

Requires strong collaboration and alignment with a **financial institution**

Loan default and recovery through **loan agreement;** financial institution's responsibility

Financing for Beneficial Electrification: Repayment Vehicles

Repayment Vehicle	Description
On-Bill Lending Programs	Financing program where utility or private lender supplies capital to a customer to help fund beneficial electrification or energy efficiency projects and is repaid **through an existing utility bill**.
Soft Loans	Preferential loans provided by government or quasi-public institutions (e.g. Green Banks). Preferential terms may include lower interest rates, longer loan terms, etc. These are typically repaid **directly to the lender**.
Energy Service Agreement	Private sector financing tool where **repayments are set as a portion of demonstrated energy savings** and monthly charges are off-balance sheet for the borrower. Primarily used for the commercial sector or for public buildings.

Financing for Beneficial Electrification: On-Bill Lending

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There are **three major categories** of on-bill lending programs, depending on where capital is sourced and who is accountable for the loan. These inputs can have consequences on other aspects of the program design.

	Provider of Capital	Owner of Asset	Charge on Monthly Bill	Eligibility	Underwriting Criteria	Consequence of non-payment
On-Bill Financing (OBF)	Utility	Building owner or homeowner	Debt payment	Building owners and homeowners only	Set by the utility, typically based on payment history	Can include disconnection depending on state regulations
On-Bill Repayment (OBR)	Third-party (e.g. financial institution)	Building owner or homeowner	Debt payment	Building owners and homeowners only	Traditional underwriting based on credit score and debt-to-income ratio	Can include disconnection depending on state regulations
Tariff On-Bill (TOB)	Varies	Utility (repayment tied to meter)	Cost recovery fee	Building owners, homeowners and renters	Not necessary	Can include disconnection depending on state regulations

Financing for Beneficial Electrification: Credit Enhancement

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Credit enhancements are tools that can **make the loan terms more attractive to the consumer**, either by decreasing financing costs, or by de-risking the investment for the capital provider, which allows them to provide funding via more flexible terms (e.g. lower credit score required for eligibility, offering preferential rates for all).

	Description	Benefit to Consumers	Challenges
Loan Loss Reserve (LLR)	A reserve is set aside to provide partial risk coverage to lenders in the event of loan defaults (typically 80%-90% of demonstrated losses)	Lenders may approve loans to consumers with riskier profiles (i.e. lower credit scores or other eligibility considerations), improving access, and possibly lowering interest costs to higher risk borrowers.	Can be difficult to obtain concrete rate reductions from lenders, and LLR capacity may sit unused if programs lending ends up skewing to higher credit score participants.
Loan Guarantee	The entirety of the lender's potential losses are covered by a third-party (usually the state).	Lenders may approve loans to consumers with riskier profiles (i.e. lower credit scores or other eligibility considerations). improving access.	The guarantor's risk can be unbounded, thereby requiring significant capital, and it may not lead to concrete reductions in borrowing costs for consumers
Interest Rate Buy-Down (IRB)	A third-party (state or other entity) provides capital to buy down the interest rate on the loan.	Lower monthly payment for the consumer, which makes the business case more attractive.	May not improve access to loans, and it can be costly, especially for longer term loans (5 years or more)

Financing for Beneficial Electrification: Maine Context

Utilities

- Maine's electricity supply needs are primarily served by Standard Offer Providers (SOPs), while about 10% of residential customers are served by Competitive Electricity Providers (CEPs).
- There are two investor-owned transmission and distribution utilities – **Central Maine Power and Versant**, and some smaller cooperatives that serve rural areas. Both supply and delivery charges are consolidated onto on bill for the consumer.
- **Efficiency Maine Trust (EMT)** plays a central role in pursuit of Maine's climate action plans, including driving the adoption of beneficial electrification. Their current offerings including low-interest home energy loans and other rebate programs. They also run the state's **Green Bank**.

Financing for Beneficial Electrification: Maine Context

- Maine is considered the **most rural state in the US**; **40% of the population** lives in one of Maine's 11 rural counties, with many using heating oil today to heat their homes
- **Mobile/manufactured homes** make up a higher share of the housing stock (at around 8%, or 72,000 units) in Maine than in any other northeastern US state
- **27% of Maine's housing units are rented**
- Median income of renters is $34,000 versus $72,000 for homeowners
- Individuals and businesses in these demographics **encounter unique barriers in accessing beneficial electrification** that need to be considered when designing a financing program

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Financing for Beneficial Electrification:
Comparative Analysis

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As part of this study, five financial models were analysed and compared for various criteria to determine how they fit with beneficial electrification priorities*.

Beneficial electrification priorities:

1. Ability to **address barriers faced in key markets** (residential, commercial, under-resourced, etc.) and for **specific technology types**
2. Potential sources of **capital**
3. Administrative **cost and complexity**
4. Common **consumer protection** and underwriting provisions: balancing access with risk-mitigation
5. Potential **cost-effectiveness** considerations
6. Fit with **Maine's current statutory requirements**, and any specific impediments to adopting the financial solution in Maine.

**Note that a full list of programs included in the desktop research and targeted interviews for this review is available in the appendix.*

Financing for Beneficial Electrification: Comparative Analysis

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Program ability to address barriers faced in **key markets** (residential, commercial, under-resourced, etc.) and for **specific technology types**

- The financing program model and design features will typically can have implications on which segments of the market are able to access financing.
- For example, **Low-to-Moderate Income (LMI) households** are less likely to have access to capital at favorable rates, and are less likely to be able to absorb an increase in monthly energy bills. Program design elements (e.g. including interest-rate buy-downs to lower the cost of borrowing, or guarantee cost-effectiveness of that reduce monthly payments measures so that their bills do not increase) can address barriers for these households.
- **Rural households** may also face unique barriers to accessing financing programs, including access to labor (e.g. contractors, energy auditors) or additional cost barriers. Program design could include special consideration to ensure rural households see adequate uptake.
- **Specific technology types** may also be more difficult to implement through financing programs. For energy efficiency measures (e.g. weatherization, demand-reduction tools) there is often a straightforward cost-effectiveness that ensures the cost of servicing the loan is outweighed by the cost savings due to electricity-use reduction. For **beneficial electrification** measures that require longer payback periods to reach cost-effectiveness or that have less certainty in their ability to generate energy savings (e.g. ground-source heat pumps, solar PV), it may be more difficult to meet a cost-effectiveness test. Programs that want to include these types of technologies need to consider how to best test for cost-effectiveness.

Financing for Beneficial Electrification: Comparative Analysis

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Potential sources of **capital**

- In order to provide financing, programs need to source capital that can then be lent out to program users for beneficial electrification projects.
- **Private capital** would typically come from a traditional financial institution, credit union or other lender. Using private capital may add challenges, as the program administrator may need to take on the risk of paying back the funds to the lender and take on additional costs to do so, depending on the terms of the agreement.
- **Public capital** may be available for beneficial electrification financing programs at the state, regional or federal level. For example, the Regional Greenhouse Gas Initiative (RGGI) is a cooperative effort among 11 northeast states to cap and reduce power sector carbon emissions, and currently provides funding to NYSERDA's beneficial electrification loans program. Public capital may also come from quasi-governmental institutions, like Efficiency Maine Trust's Green Bank.
- In the case of an on-bill financing program, **ratepayer funds** may also be used as a source of capital. This differs from on-bill repayment programs, in which a third-party (public or private) source of funds is used to fund projects. This model can give the utility more flexibility and control of eligibility and underwriting terms (e.g. using bill payment history instead of traditional underwriting criteria), which can help improve access to groups who would typically not qualify for a private loan.

Financing for Beneficial Electrification: Comparative Analysis

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Administrative **Cost and Complexity**

- Administrative cost and complexity can be a major barrier to implementation of a successful consumer lending program for beneficial electrification.
- **On-bill programs**, regardless of type, all require strong coordination with the utilities to be successful. Utilities may face technical challenges, such as technology set-up required to add a line item on the consolidated bill for the ratepayer.
- As well, programs may have **regulatory uncertainty,** particularly regarding the waterfalling of partial payments. This may also raise questions regarding potential shut-offs due to non-payment of the loan if the rest of the utility bill is covered.
- Some administrators – particularly those that are smaller – may have more administrative flexibility to implement a new program in a short-term period, while a larger entity may face more complex challenges.
- Depending on the source of capital and the program type, if the administrator is a utility, they may also be required to **build new capacity** with incremental expertise to assess loan applications and apply underwriting criteria, which can add to administrative costs.
- In non-on bill programs, where utilities are not implicated, the administrative cost and complexity for government or government-like entities decreases, but there may be additional cost and complexity barriers for private sector or other stakeholders in creating these programs.

Financing for Beneficial Electrification: Comparative Analysis

Underwriting criteria: balancing **access** with **risk mitigation**

- Program administrators use a range of approaches to underwriting, which can be grouped into four categories[1]:
  1. **Traditional underwriting standards**: Traditional metrics used in the market such as requiring minimum credit score of 640 and maximum debt-to-income (DTI) ratio of 50%
  2. **Expanded underwriting standards**: Uses traditional metrics such as credit score and DTI ratio but relaxes standards (e.g. NYSERDA On-Bill Recovery Loan requires minimum credit score of 540)
  3. **Alternative underwriting standards**: Alternative metrics such as utility bill repayment history and shut-off notice history. **Main approach used for on-bill lending programs**.
  4. **Hybrid underwriting standards:** A blend of traditional and alternative underwriting standards are used, for example requiring a minimum credit score and strong utility bill repayment history
- Striking a **balance between increasing access and mitigating risk** is a crucial aspect of underwriting.
  - Programs that use **traditional underwriting reject applications eight times more** on average than programs that rely on utility payment history
- Requiring **credit scores adds complexity to the process**. Using alternative underwriting standards helps streamline the process for approval and reduces friction during the application process.
- Many on-bill programs include the **threat of utility service disconnection** to encourage repayment. In practice, programs with shut-off do not have significantly different default rates than those that do not[2]

[1]State and Local Energy Efficiency Action Network. (2014). Financing Energy Improvements on Utility Bills: Market Updates and Key Program Design Considerations for Policymakers and Administrators. Prepared by: Mark Zimring, Greg Leventis, Merrian Borgeson, Peter Thompson, Ian Hoffman and Charles Goldman of Lawrence Berkeley National Laboratory

[2]Chris Kramer, Consultant to The Connecticut Energy Board. (2014). Disconnection and On-Bill Repayment

Financing for Beneficial Electrification: Comparative Analysis

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Common **consumer protection** provisions

- Consumer protection features are **designed to safeguard customers from fraudulent or unfair practices** in the marketplace
- Almost all programs **only allow pre-approved eligible measures** (e.g. high efficiency HVAC or DHW) to be installed and some require energy savings-to-investment ratios of greater than 1 (see cost-effectiveness slide)
- A widespread consumer protection practice is the **requirement for borrowers to use approved contractors** to ensure contractors are educated about the program, properly trained to install and maintain equipment, and not involved in fraudulent schemes
  - Program administrators may also choose to **set caps on what the contractors can charge** for installation and the cost of the equipment
  - Certain programs may also require that the contractor is responsible for maintenance and repairs over the financing term
- Some programs go further and require **assurance of performance for installed measures** through energy audits or annual measurement and verification to guarantee savings for their customers
- For **tariff on-bill programs, disclosure requirements** are typically put in place to ensure that when the property is sold, new homeowners are informed of the existing loan tied to their property

Financing for Beneficial Electrification: Comparative Analysis

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Potential **cost-effectiveness** considerations

- Not all programs include cost-effectiveness tests on an individual customer basis, but many have internal standards for cost-effectiveness which impact their **list of eligible measures**. Some programs go further and specify minimum efficiency required for measures.
- **Cost-effectiveness is important** in ensuring program **funds are directed to projects that yield energy savings**, but it's crucial to strike the right balance to ensure accessibility and encourage wider eligibility of measures
- Programs that include cost effectiveness tests typically look for a **savings-to-investment ratio (SIR) of at least 1**, which requires savings to be at least equal to costs, commonly called **"bill neutrality"**
- Rationale for requiring bill neutrality is usually for the following reasons: **(1)** it may act as a consumer protection **(2)** may help ration program funding to projects that deliver the most energy savings **(3)** may help drive increased adoption of the program[1]
    - Requiring **bill neutrality can constrain consumer adoption instead of increase it**, as seen with NYSERDA's programs; 70% of loans have gone to the Smart Energy Loan, while 30% has gone to the On-Bill Recovery program which requires a SIR > 1
- Bill neutrality can also overlook other important factors that may be important to the customer and may limit the overall impact of the program. Relying on metrics that assess ability to pay as a customer protection, rather than bill neutrality, can mitigate this risk.

[1]State and Local Energy Efficiency Action Network. (2014). Financing Energy Improvements on Utility Bills: Market Updates and Key Program Design Considerations for Policymakers and Administrators. Prepared by: Mark Zimring, Greg Leventis, Merrian Borgeson, Peter Thompson, Ian Hoffman and Charles Goldman of Lawrence Berkeley National Laboratory

Financing for Beneficial Electrification:
Comparative Analysis

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Fit with **Maine's current statutory requirements**, and any specific impediments to adopting the financial solution in Maine

- For on-bill lending programs, it is likely that **legislation and regulatory amendments are required**, specifically to address **payment waterfall procedures and utility shut-off policies** for non-payment of loans currently governed by regulation for utilities in Maine.
- Utility shut-off is commonly used in on-bill programs to encourage timely repayment. This approach **can pose significant risks**, especially to those in LMI groups. In practice, data shows that default rates do not change significantly when shut-off is used as a threat for those that do not repay.
- Maine's **investor-owned utilities and cooperatives would be best fit** to provide an on-bill lending program, if on-bill was decided as the appropriate financing program type, as they bill most customers in Maine, regardless of who supplies their electricity.
    - **Flexibility can exist on who administers the program** and performs loan origination. More detail will be provided on final report with recommendations specific to Maine.
- On-bill tariff programs would require the **creation of a tariff** that is subject to approval from the MPUC and other regulators.
- Proposed financing programs must **align closely with Efficiency Maine's Green Bank** to avoid redundant offerings and possibly enable borrowers to merge loans with rebates to optimize benefits.

Financing for Beneficial Electrification: Comparative Analysis

- This comparative analysis assessed five consumer financing programming types against the aforementioned beneficial electrification priorities:
  - **On-Bill Financing**
  - **On-Bill Repayment**
  - **Tariff On-Bill**
  - **Energy-as-a-Service Programs**
  - **Soft Loan Programs**
- Application of credit enhancements has also been considered as a further program design consideration.
- The analysis and review was informed by desktop research and included interviews with program administrators and experts as well as stakeholders within Maine's existing system (utilities, Efficiency Maine Trust, etc).*
- Each program analysis includes a rating from a scale of one (1) to five (5) for each priority, where one indicates low alignment with the priority and five indicates high alignment with the priority.

Note that a full list of programs included in the desktop research and targeted interviews is available in the appendix.

On-Bill Finance Programs (OBF)

Ability to address barriers in key markets	This varies based on program design, but generally can be favorable to ensuring eligibility for LMI groups if the utility uses alternative underwriting criteria based on payment history rather than credit score or debt-to-income ratio. Program administrators can make decisions on scoping in residential and commercial buildings. Alternative underwriting can also streamline the application and approval process, which can reduce administrative barriers for all consumers and improve overall program take up and impact.	**4**
Ability to address barriers for key technology types	If there is a strong emphasis on cost-effectiveness – as there typically is for on-bill programs – this can be a hinderance for including costlier technology types, or those that are less focused on energy efficiency. This is also largely dependent on the payback period for eligible measures included in the program.	3
Potential sources of capital	OBF programs specifically source capital from the ratepayer or utility shareholder funds. This can be positive, as it allows the utility additional flexibility, but also carries danger of increasing weighted debt load of the utility or posing unforeseen complications. There may be added complexity if the regulatory environment is unclear.	3
Administrative cost and complexity	Compared to other types of on-bill lending (OBR), there is a higher perceived administrative cost and complexity, as utilities would not only have to add a line item to bills – common to both programs – but would also have to build capacity to become a lender and assess loan applications. . Flexibility does exist when third-party entities are contracted as program administrators (e.g. Slipstream) which can reduce administrative burden for utilities.	2

On-Bill Finance Programs (OBF) – cont.

Consumer protection measures	This varies based on program design. Administrators can choose robust consumer protection measures (approved contractor networks, energy audits, etc.) in the program design phase, similar to other financing programs.	3
Underwriting criteria	OBF provides the utility the flexibility to use alternative underwriting criteria, such as payment history with the utility or shut-offs within a particular timeframe, instead of depending on traditional criteria such as credit score and debt-to-income ratio. This creates a perceived additional risk for the utility, but can improve access and widen eligibility – and ultimately take-up – for the program.	**4**
Cost-effectiveness considerations	Varies based on program design, but because consumers pay back the loan on their utility bill, there is a strong expectation of cost-effectiveness for consumers. Many programs employ an internal cost-effectiveness assessment to create a list of eligible measures.	3
Fit with Maine's existing system	OBF may be challenging to implement with Maine's existing system, as it would create administrative challenges – particularly for the two large utilities, Versant and CMP. OBF would also not leverage the existing strengths of Efficiency Maine Trust, who operates the state's Green Bank and offers complimentary programming.	2

On-Bill Repayment Programs (OBR)

Ability to address barriers in key markets	This varies based on program design, but generally can seen as similar to traditional lending programs. Depending on marketing and communications, there may be some additional benefits to reaching consumers if they have feel a strong sense of trust with their utility and therefore feel additional comfort paying back the loan via their utility bill.	3
Ability to address barriers for key technology types	If there is a strong emphasis on cost-effectiveness – as there typically is for on-bill programs – this can be a hinderance for including costlier technology types, or those that are less focused on energy efficiency. This is also largely dependent on the payback period for eligible measures included in the program.	3
Potential sources of capital	OBR programs source capital from third-party sources (public or private). This can be more restrictive to the utility than an OBF program in terms of the underwriting criteria and other program design features: when he utility provides the capital themselves, as is done in OBF, they may have increased flexibility to use alternative underwriting or modify eligibility criteria. As well, utilities may perceive that OBR requires them to take on the risk for debt repayment to the third-party lender if the customer defaults on payment, which may increase their reluctance to move forward with an OBR program.	2
Administrative cost and complexity	Compared to other types of on-bill lending (OBF), there is a lower administrative cost and complexity, as utilities simply act as a medium between the consumer and the lender. There is no additional requirement to build capacity, although there is some administrative requirement and co-operation required between stakeholders. There remains a requirement to upgrade billing systems in order to include a line item for on-bill loan repayment.	3

On-Bill Repayment Programs (OBR) – cont.

Consumer protection measures	This varies based on program design. Administrators can choose robust consumer protection measures (approved contractor networks, energy audits, etc.) in the program design phase, similar to other financing programs.	3
Underwriting criteria	OBR does not typically provide the utility with the flexibility to use alternative underwriting criteria, such as payment history with the utility or shut-offs within a particular timeframe. Instead, OBR programs will usually depend on traditional criteria such as credit score and debt-to-income ratio, as required by the lender. This limits risk to the lender, but can limit consumer eligibility.	3
Cost-effectiveness considerations	Varies based on program design, but because consumers pay back the loan on their utility bill, there is a strong expectation of cost-effectiveness for consumers. Many programs employ an internal cost-effectiveness assessment to create a list of eligible measures.	3
Fit with Maine's existing system	OBR is likely easier than OBF to implement within Maine's existing system, as it would create fewer administrative challenges for large utilities like Versant and CMP, as they would not need to build additional capacity to become lenders. However, OBR may not leverage existing strengths from Efficiency Maine Trust.	3

Tariff On-Bill Programs (TOB)

Ability to address barriers in key markets	This varies based on program design, but generally can be favorable to ensuring eligibility for LMI groups if the utility uses alternative underwriting criteria based on payment history rather than credit score or debt-to-income ratio. Program administrators can make decisions on scoping in residential and commercial buildings. As well, TOB is uniquely poised to provide financing options for renters, who are unlikely to be covered in other program models, which is a significant barrier that exists across most financing programs.	**5**
Ability to address barriers for key technology types	If there is a strong emphasis on cost-effectiveness – as there typically is for on-bill programs – this can be a hinderance for including costlier technology types, or those that are less focused on energy efficiency.	3
Potential sources of capital	TOB programs typically source capital from public funds but can also leverage ratepayer or utility shareholder funds. This can be positive, as it allows the utility additional flexibility, but also carries danger of increasing weighted debt load of the utility or posing unforeseen complications.	3
Administrative cost and complexity	Compared to other types of on-bill lending (OBR / OBF), there is a higher administrative cost and complexity, as utilities would not only have to add a line item to bills, but would have to build capacity to become a lender and assess loan applications. As well, there are added perceived administrative challenges and risk to associating the loan to the meter rather than the individual, though these have been overcome in comparator jurisdictions. Flexibility does exist when third-party entities are contracted as program administrators (e.g. Slipstream) which can reduce administrative burden for utilities. There is additional regulatory processes to follow when creating a TOB program, including filing with the PUC for approval, which can add rigidity to the program if it must go back to the PUC for every program change.	2

Tariff On-Bill Programs (TOB) – cont.

Consumer protection measures	This varies based on program design. Administrators can choose robust consumer protection measures (approved contractor networks, energy audits, etc.) in the program design phase, similar to other financing programs. There may be higher standards of consumer protection associated with TOB programs compared to other on-bill programs as TOB programs have a greater chance of including shut-off as a consequence for non-payment.	3
Underwriting criteria	TOB provides the utility the flexibility to use alternative underwriting criteria, such as payment history with the utility or shut-offs within a particular timeframe, instead of depending on traditional criteria such as credit score and debt-to-income ratio. This can create perceived additional risk for the utility due to fear of customer default, but can improve access and widen eligibility – and ultimately take-up – for the program.	**4**
Cost-effectiveness considerations	Cost effectiveness is a higher priority than in comparator programs such as OBF or OBR, as the cost of the measure is considered a utility expenditure and cost recovery is tied to the meter. Most TOB program examples require that the monthly repayment cost be equal or less than the savings to avoid a scenario where a ratepayer faces higher monthly costs, which could eventually lead to non-payment and shut-off.	3
Fit with Maine's existing system	TOB may be challenging to implement with Maine's existing system, as it would create administrative challenges – particularly for the two large utilities, Versant and CMP. OBF would also not leverage the existing strengths of Efficiency Maine Trust, who operates the state's Green Bank and offers complimentary programming.	2

Energy-as-a Service programs (ESA)

Ability to address barriers in key markets	Works with customers in LMI areas, and payments are based on actual savings, which helps protect customers. ESAs also allow customers to minimize capital outlay as monthly repayment is off-balance sheet. However, ESA providers tend to look for larger project sizes ($1m and above) to realize a higher level of savings, and thus is typically limited to large commercial buildings, public buildings, or multi-family buildings.	2
Ability to address barriers for key technology types	Range of energy efficiency and clean energy measures can be bundled together to be financed (e.g. lighting, solar, batteries, geothermal, HVAC, etc.) However, given payments are based on actual savings, some technologies may not produce large enough savings to pay back the financing within a reasonable term length.	3
Potential sources of capital	Capital comes from the private sector, either through the service provider (typically an energy service company, or ESCO), a private financial institution, or a combination of both. Because private capital is used, ESAs generally have a lower risk tolerance for projects they take on, and thus eligibility is reduced.	2
Administrative cost and complexity	ESAs are offered by private companies (ESCOs), so administrative costs for government or a quasi-government institution are low. However, governments can help facilitate the uptake of ESAs for their public sector buildings.	**4**

Energy-as-a Service programs (ESA) – cont.

Consumer protection measures	Because service providers own the equipment, they are responsible for installation, maintenance, repairs, and replacement of the equipment throughout the term. Monthly payments are based on actual realized savings; if actual savings fall short of projects, ESCOs typically reimburse the difference.	**4**
Underwriting criteria	Underwriting criteria varies depending on the ESCO and financial institutions it uses. Typically need to ensure borrower can meet payment obligations over longer term lengths.	3
Cost-effectiveness considerations	Monthly payments are equal to savings, thus savings realized must be large enough that financing can be paid back within the allowed term length (typically a maximum of 15 or 20 years).	3
Fit with Maine's existing system	There are many ESCOs that exist today that operate nationwide in the US. Maine could work with these existing entities to implement beneficial electrification projects within the commercial and public sector. Some ESCOs have partnered with specific utilities in the past to identify projects in their designated service areas. However, ESAs would likely not be able to address the beneficial electrification needs of single family or smaller multi-residential buildings.	3

Soft Loan Programs

Ability to address barriers in key markets	Most soft loan programs use more lenient underwriting standards (e.g. minimum credit score requirement lower than traditional loans) and have lower interest rates, which can help expand eligibility to LMI customers.	**4**
Ability to address barriers for key technology types	Typically, because of no strong emphasis on cost-effectiveness, a range of measures are allowed to be installed (heating and cooling, water heating, renewables, home efficiency, etc.) that may be greater than in programs with a stricter focus on cost-effectiveness.	**4**
Potential sources of capital	Public capital for loan funding and cost of preferential terms (buying down interest-rate or loan loss reserve). Can also choose to provide loan funding via private capital (or a mix of private and public), which reduces cost of capital requirement from public funds.	3
Administrative cost and complexity	There is flexibility in terms of administrative approaches. Governments can choose to provide funds and work with a third-party company to provide administration, underwriting, and marketing.	3

Soft Loan Programs – cont.

Consumer protection measures	Varies based on program design. Most typical for soft loans is requiring authorized contractors.	3
Underwriting criteria	Typically looks at minimum credit score but criteria is more lenient than traditional loans. This expands consumer eligibility slightly but not as much as alternative underwriting schemes (e.g. looking at utility payment history).	3
Cost-effectiveness considerations	Typically, no specific requirements on cost-effectiveness, but most programs employ an internal cost-effectiveness assessment to create a list of eligible measures.	3
Fit with Maine's existing system	Efficiency Maine's Green Bank offers a home energy loan program specifically targeted at LMI customers, providing loans up to $7,500 with a 5.99% interest rate and term limit of 10 years. To broaden the program's reach and make terms more attractive, a soft loan approach could be beneficial. This could help enhance eligibility across other sectors (commercial, multi-family, non-LMI) and introduce favorable terms such as reduced interest rates and longer terms.	**4**

Credit Enhancements

Credit enhancements can be tied to the repayment vehicles reviewed and help **lower financing costs and create preferential terms to consumers. They help draw in more private capital** by covering risk and lowering costs.

	Structure	Key benefits
Loan Loss Reserve	A reserve is set aside (typically 10-20% of the loan value) and agreed to cover a portion of the losses (typically 80-90%). Once funds are exhausted, all further losses go to the lenders.	Improves customer eligibility through more lenient underwriting requirements such as lower credit score requirements
Loan Guarantee	Cover the entirety of the lender's losses, and thus are unconstrained in the amount they can cover, even if they only cover a percentage of the losses.	Improves customer eligibility through more lenient underwriting requirements such as lower credit score requirements
Interest Rate Buy-Down (IRB)	Capital provided to buy-down the interest rate on the loan. Acts like a rebate applied to the repayment stream rather than the upfront cost.	Helps lower the monthly interest rate for consumers, which helps expand program participation

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Discussion and Next Steps

Program type alignment with outcomes: key themes

- Across the program types analyzed, there is variety in alignment with beneficial electrification priorities. Depending on the goals that are most important to Maine, the program type and design of a consumer lending program could be tailored to maximize the most important priorities while minimizing barriers and challenges in other areas.
- **Cost-effectiveness** tends to be inversely related to **addressing barriers to key technology types**, as stringent cost-effectiveness tests will make costlier beneficial electrification measures ineligible, particularly for measures outside of energy efficiency.
- **Capital sources**, particularly for on-bill programs, have a major impact on **underwriting criteria**: when utilities don't need to rely on private sources for capital, they are able to employ alternative underwriting criteria. This, in turn, can improve **access for LMI groups**, who are less likely to qualify for loans under traditional underwriting criteria.
- **Consumer protection measures** can vary from program-to-program and depend on the specific design, but are generally similar between program types.
- **Administrative cost and complexity** grows when utilities or other entities are required to build new capacity or function outside of their existing mandate, but can be reduced by using third-party administrators or trusted partners.

Discussion and Next Steps

Next Steps: Final Report

The **final report** will include detailed analysis of programs and stakeholders included as part of this study, the on-bill financing review and the national best practices review, a map of current financing offerings in Maine to identify gaps, the comparative analysis as outlined in this presentation, and will develop recommended model(s) for Maine specifically.

Discussion and Next Steps

Next Steps: Final Report

Areas of additional focus for the final report will include:

- Overview of Maine's regulatory environment and the processes that would be required to advance various program types as studied in this comparative analysis;
- A broader view of third-party financing models (in this analysis, we have focused on ESAs);
- Understanding the importance of additional program design features, including:
  - Ideal underwriting criteria based on program type, such as the use of debt-to-income ratio when assessing ability to pay when used with strict cost-effectiveness criteria;
  - Impacts of bill neutrality on program impact and consumer accessibility;
  - Program measures to streamline application processes and impact on uptake;
  - How payback periods and other terms can be adjusted to balance cost-effectiveness and ensuring key technologies are included in programs;
  - Use of shut-off as a consequence for non-payment and impact on delinquency rates;
  - Ability to use alternative underwriting criteria in an OBR program if using public or quasi-public funding sources.

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Approach

dunsky

Programs included solely in Desktop Review:

Government & Utility	Private Sector & Thought Leaders	Maine Stakeholders
Hawaii Green Energy Investment Authority (On-Bill Tariff program)	Tom Stanton (formerly of the National Regulatory Research Institute)	Efficiency Maine Trust
Vermont Housing Finance Agency (On-Bill Financing program)	Environmental and Energy Study Institute	Versant
NYSERDA (On-Bill Recovery Loan and Smart Energy Loan)	Ecosave	Central Maine Power
Orcas Power & Light Cooperative (On-Bill Tariff program)	Chris Kramer (Independent Consultant, formerly at Energy Futures Group)	Eastern Maine Electric Cooperative
Illinois Energy Efficiency Loan Program (via Slipstream – On-Bill Financing program)		

Approach

Programs included solely in Desktop Review:

Financing Programs	Credit Enhancement Programs
PG&E On-Bill Financing and PAYS program	Mass Saves HEAT Loan Program
GoGreen Financing (California Hub for Energy Efficiency Financing)	NH SAVES Res
Ouachita Electric Cooperative On-Bill Tariff Program	Michigan Saves Home Energy Loan Program
CleanBC Better Homes Low-Interest Financing Program	GoGreen Pilots
Connecticut Green Bank Smart-E Loan	DOE Innovative Clean Energy Loan Guarantee Program
Canada Infrastructure Bank EV and Buildings Programs	
Efficiency Capital Energy Savings Performance Agreement	