# Energy Efficiency Financing Solutions

## An analysis of local barriers and opportunities

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# ACKNOWLEDGEMENTS

This report would not have been possible without the help of my exceptional mentors nor the invaluable insights, resources and guidance provided by the interviewees and contributors who offered their time and expertise to this project. Thank you to everyone who worked to bring this project to fruition and helped guide my professional development along the way; your contributions are deeply appreciated.

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# Executive Summary

This report will synthesize the results of in-depth research and stakeholder interviews, which sought to identify barriers to residential energy efficiency adoption in Concord, MA, and to provide potential solutions to some of these barriers. The primary barriers inhibiting Concord residents from undertaking energy efficiency retrofits have been identified as high upfront costs, difficulty accessing and comprehending important information, and concerns about the aesthetics of certain retrofit projects. Barriers facing potential program administrators were also assessed, and include financial and administrative burdens and legal restrictions. Having taken these barriers into consideration, a list of optimal financing models and loan programs has been assembled and includes on-bill financing programs, revolving loan funds and external partnerships; advantages and challenges associated with each program structure are outlined. The report also includes additional procedural recommendations which, while technically outside the realm of financing, could help alleviate non-financial barriers. Additional resources and case studies that were not integral to the report's main content, but are helpful and relevant to individuals interested in learning more about this topic, will be offered in the appendix.

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# Introduction

Concord, MA adopted a progressive Climate Action and Resilience Plan in 2020 that outlined the town's greenhouse gas emissions reductions goals and the various tactics the town would be utilizing to reach them. The Plan identified Concord's residential housing stock as a significant source of the town's GHG emissions, with residential buildings estimated to make up nearly a third of the town's total emissions. There are a number of ways residential buildings can be made more energy-efficient, including home insulation and air sealing, installation of ground- or air-source heat pumps, and upgrading to heat pump water heaters, among other upgrades. While Concord currently offers rebates for many energy-efficiency and clean energy projects, the town is still hoping to find new ways to encourage greater rates of implementation amongst residents and homeowners. The aim of this report is to identify and investigate the barriers that keep Concord residents from adopting energy efficiency upgrades in their homes, and to examine different strategies that could encourage greater adoption and/or combat some of the aforementioned barriers. In seeking to recommend policies and practices that will operate effectively in Concord, institutional barriers that could provide challenges to the town government or the light plant will also be analyzed. The financial mechanisms that will be outlined and recommended in the report have been selected based on extensive research, in-depth stakeholder interviews and successful case studies of such financial programs in communities similar to Concord. The advantages and challenges associated with different financial mechanisms will be provided in hopes of simplifying the process of selecting the most optimal financial program structure.

# Challenges

**This section will describe some of the challenges that residents encounter when looking to adopt energy efficiency upgrades, and the challenges that program administrators will need to take into consideration when designing a program to facilitate higher rates of residential energy efficiency projects.**

# Barriers for Residents

## Financial

High upfront costs and uncertainty about the financial returns of energy-efficiency investments makes some residents hesitate

## Informational

Existing rebates and financing options may be under-advertised, and aspects of the auditing and financing process can be confusing and inaccessible

## Personal

Aesthetics and maintenance requirements associated with certain upgrades can make residents resist certain retrofit projects

# Barriers for Residents

## Financial Impediments

Contemporary energy efficiency literature emphasizes the important role that high upfront costs often play in keeping homeowners and renters from adopting energy efficient technology and home improvements. While subsidies, rebates and tax incentives aim to reduce the cost of projects like weatherization and heat pump installation, such upgrades can still cost thousands dollars to complete.

Often, even with financing programs available to help spread out the costs of energy efficiency improvements, homeowners remain wary of taking on efficiency investments because they are unsure how long they will remain in their current homes. Interestingly, while concerns about upfront costs is not the most frequently identified barrier for Concord residents considering home upgrades, ambivalence about undertaking a long-term investment in home that they might sell before the project had paid off has been identified as a concern local homeowners may hold.

Alleviating and dispersing the financial costs that retrofits entail is likely to facilitate greater uptake of these projects, even in a community where upfront costs may not be as significant of a barrier as they can be in other areas. Decreasing total retrofit costs and finding a mechanism to allow residents to spread the costs of their upgrades out over time will make retrofits feel more feasible for homeowners.

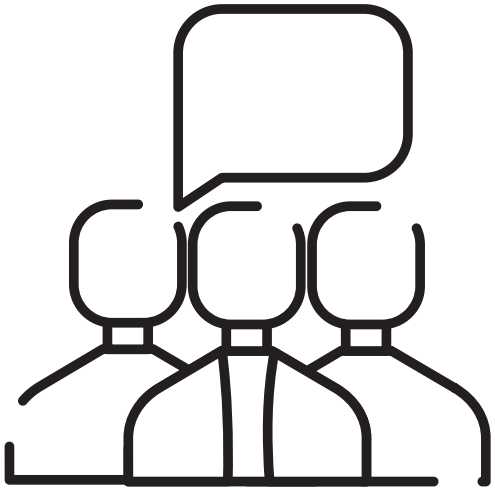
**Tackling financial tradeoffs**

**Even for homeowners for whom the upfront costs of retrofits are not an insurmountable barrier, it is still possible that some would rather invest their money in other types of home projects, such as a kitchen revamp, that is more visible or easier to enjoy on a daily basis. In seeking to demonstrate why energy efficiency upgrades should take priority, it will be beneficial for the town and/or CMLP to put together some helpful visuals to help residents understand their monetary and environmental benefits.**

# Barriers for Residents

## Personal Reservations

While the initial scope of this project was centered around combatting financial barriers to energy efficiency upgrades, it became clear during the interviewing and data-collection processes that non-financial barriers may actually play a more significant role in the hesitations of Concord residents than project costs.



Based on feedback recorded by the Concord Clean Comfort heating and cooling coaches, aesthetic preferences have been identified by residents as a significant reason that they chose not to install heat pump systems. Some residents who opted not to install heat pumps in their homes explained that they disliked the appearance of some of the units, or the appearance of having multiple outdoor units around the outside of their homes. There are ways to work around some of these concerns - for example, by installing a multi-zone system to improve outdoor appearances - but personal taste is an unanticipated barrier that can prove challenging to alter. Ongoing education and outreach about the cost savings, energy use reductions and potential environmental impacts of this type of technology may help sway residents to override their individual aesthetic preferences in certain cases.

# Barriers for Residents

## Informational Roadblocks

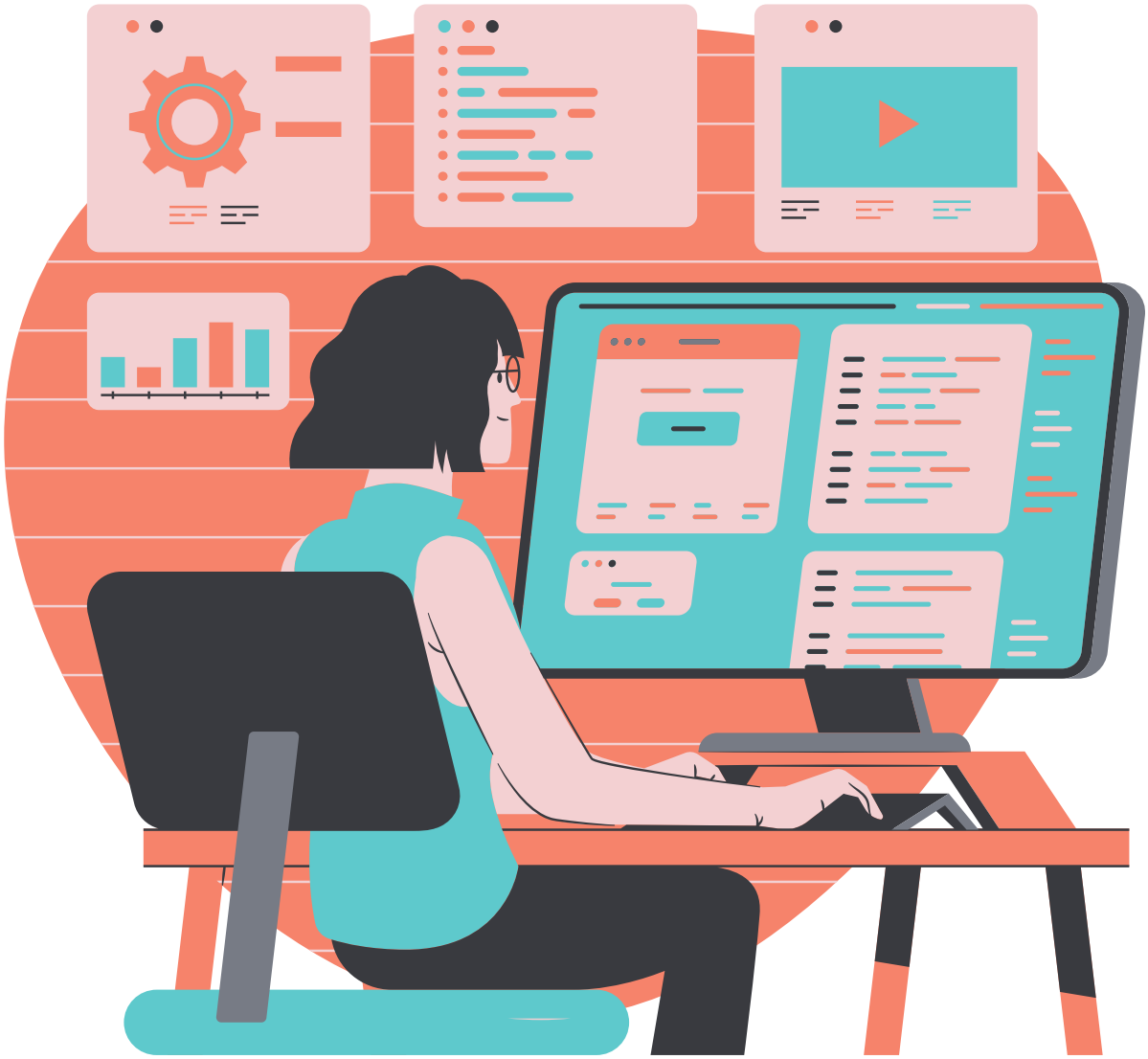
The information compiled from one-on-one interviews with residents indicates that informational barriers can impede residents from participating in energy efficiency upgrades and can create obstacles for residents who have chosen to undertake retrofits as well.

Even before the added complexity of considering or installing energy efficiency upgrades, personal energy use in general is a confusing, murky topic. For many people, fully comprehending one's utility bill and the ways in which various household appliances and features contribute to overall energy usage is no small feat. The United States' utility ratepayer system is not particularly well understood by the general public, and it can be challenging for people to discern which aspects of their house could be contributing to high energy consumption. This makes it challenging for people to ascertain the degree to which a residential building is energy efficient or inefficient without professional assistance, which often leaves people living with homes and appliances that are both inefficient and expensive.

For residents that are interested in pursuing energy efficiency retrofits, accessing information about existing rebates and financial incentives can be challenging to find on the Concord website. Consolidating home retrofit and rebate information onto fewer individual pages that are more clearly linked to one another and filed under a pull-down tab on the main page of the town website could help reduce the amount of time residents must spend navigating the site. Making the site more navigable (as well as increasing direct outreach efforts) may also entice residents that are not already actively aware of or considering energy efficiency upgrades, which will be critical as Concord continues to expand these programs.

# Barriers for Residents

Informational barriers that are more challenging for Concord to address have to do with the home audit process that precedes retrofit projects. Some residents who have received home audits found the final report and recommendation lists to be vague and unactionable, and felt that aspects of the auditing process ought to be streamlined for convenience and efficiency. While the audit process is outside the immediate purview of this project, general suggestions to improve the home audit experience will be offered later in the report.



# Barriers for Program Administrators

## Financial

Most potential financing mechanisms will require start-up capital and will entail some ongoing maintenance costs as well

## Administrative

Operating a loan program could create significant administrative burdens in a relatively small municipality with a finite staff and budget

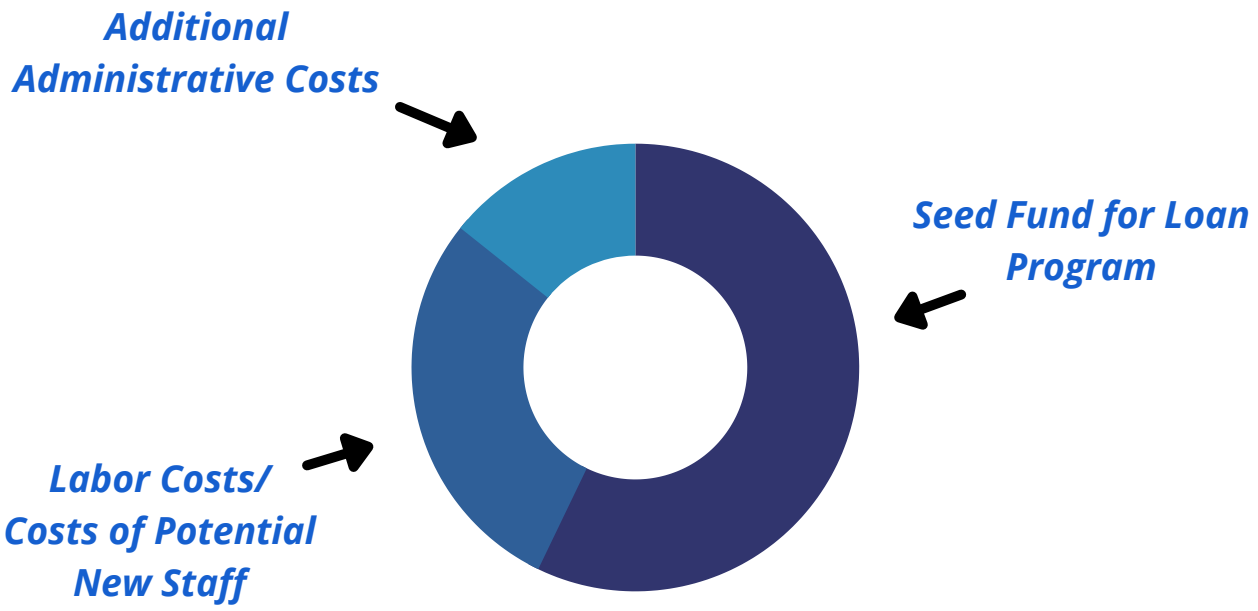
## Legal

Restrictions on the use of utility ratepayer money will inform how a financing program is funded

# Barriers for Program Administrators

## Financial Considerations

The list of optimal energy efficiency financing mechanisms for Concord to consider adopting was narrowed down to three options that will be evaluated in-depth later in this report, all of which involve the creation of some form of a loan program. By pairing Concord's existing rebates with a loan program that allows residents to split the upfront costs of energy efficiency upgrades into smaller amounts and spread out payments over time, Concord would be taking an important step in making energy efficiency upgrades available to community members of various socioeconomic backgrounds. Concord would simultaneously be making the process of paying for the upgrades feel more manageable and therefore more convenient, which should help increase energy efficiency adoption rates. The financial responsibilities associated with the operation of a loan program generally fall into two primary categories: the large, one-time cost of seeding the loan fund, and the smaller, ongoing expenses that stem from



# Barriers for Program Administrators

having to manage the loan program over time. Regardless of the type of financing model Concord decides to employ, there are a variety of avenues to source seed funding from. Some municipalities, such as the Groton and Holyoke municipal light plants, chose to partner with external donors such as green banks, credit unions or private companies to build their loan funds. Others communities have opted to allocate money from public budgets and taxpayer funds to cover start-up costs.

Even if Concord chooses to partner with a donor for seed funding, however, either the town government or the Concord Municipal Light Plant (hereafter referred to as 'CMLP') will most likely need to assign some portion of its budget to provide for administrative and operational costs. Additional staff may need to be hired to process loan applications and engage one-on-one with program participants- if this is deemed necessary, funding will need to be allocated for the salaries of these individuals.

# Barriers for Program Administrators

## Administrative Considerations

Depending on the financing model that is chosen, new administrative needs and responsibilities will likely emerge for whatever entity is managing the program. All of the programs outlined later in the report will necessitate some sort of application and approval process for individuals wishing to participate in the program. The organization managing the program will need to establish qualification standards by which program participants are selected, and generate an application for interested residents; this application could probably be modeled fairly closely off of the rebate applications that CMLP already utilizes. While it may be possible for existing administrative staff to intake and process loan applications, it may prove necessary to add additional staff members and online infrastructure to reduce the administrative burden of handling applications.

It may also benefit either the town governments or CMLP to consider adding additional staff to provide outreach services and individualized advising to Concord residents about what energy efficiency projects would most benefit their homes. These individuals would likely operate in a similar capacity as the Concord Clean Comfort heat pump coaches, but ideally would  be able to advise on the full portfolio of upgrades that Concord offers. Having employees assigned to this work will help homeowners to streamline and simplify the process of choosing upgrades, and could reduce administrative burdens on other departments by directing resident questions and advising needs to designated staff.

# Barriers for Program Administrators

## Legal Constraints

There are certain legal restrictions that Concord will have to account for in planning a new financing program. The primary constraint that will shape the development of such a program has to do with how municipal light plants are required to manage ratepayer money. Massachusetts General Law does not explicitly authorize municipalities that manage their own utilities and therefore distribute electricity (in other words, any towns with municipal light plants) to use ratepayer funds to offer loans to customers to purchase merchandise or equipment, and this can serve as a roadblock to municipalities that are considering operating energy loan programs.

However, in a ruling from a 1937 petition, the Supreme Court of Massachusetts determined that Massachusetts law *does* permit towns to assist individuals in financing and accessing equipment that is 'incidental or auxiliary to the use of electricity'; therefore, it is within the town's jurisdiction to assist its residents in installing and funding energy efficiency projects. Additionally, obtaining the upfront capital from a source other than ratepayer money (i.e., taxpayer funds, third-party donor) is another way to operate a financing program appropriately within the legal constraints of Massachusetts law.

# Solutions

**This section will explore financial mechanisms and procedural best-practices that can be utilized by program administrators to overcome several of the aforementioned barriers. Three optimal financial models (and case studies of each model) will be outlined, followed by a brief list of procedural recommendations.**

# Financial Mechanism #1: On-Bill Financing

- Upfront cost of a retrofit project is covered by a loan that is then repaid over time on recipient's utility bill

- Advantages: convenient format for loan recipients, which may increase participation

- Challenges: potentially puts administrative burdens on CMLP

# On-Bill Financing

On-bill financing, also referred to as on-bill repayment, is a loan program in which either a utility or other third-party entity typically covers the full upfront cost of an energy-efficiency project and the loan recipient pays the lender back in small increments on their monthly utility bill. This energy efficiency loan format is a popular tool for increasing energy efficiency adoption,  in part because the ease and convenience of packaging a loan into a bill that a recipient is already used to paying. On-bill programs have been deployed in various communities through the United States and have seen impressively low default rates in most case studies [1,2]. Oftentimes, program administrators have opted to use applicant's utility bill payment history, rather than traditional credit scores, as the basis for loan qualification. This trend has facilitated greater inclusion and equity in on-bill financing programs, without being associated with higher rates of loan default.

CMLP's billing co-op, NISC, possesses the requisite software infrastructure to add loan payments as a 'loan module' within the customer billing system. The relative simplicity of adding loan onto customer bills, at least from the technological side of things, suggests that the administrative burdens associated with individual loan creation and collection will be relatively low, which is an advantage of using on-bill repayment.

As CMLP is likely to be the sole program manager under this type of loan system, on-bill financing will still place administrative burdens on CMLP as the body responsible for processing and approving loan applications. CMLP is working to evaluate whether such a program will be administratively feasible for their staff.

# On-Bill Financing

## Case Study: Shrewsbury, MA

**Shrewsbury Electric and Cable Operations (SELCO) has utilized on-bill repayment for their energy efficiency loan program since 2007. Shrewsbury residents who are interested in upgrading their homes can apply for a zero-interest loan to cover the upfront costs of certain energy efficiency projects, and will then repay the loan principal over the following 12 months as a line-item that is added to their utility bills. During the first decade of its operation, the program distributed more than 80 loans to finance weatherization, solar installation and heating system replacement projects [3].**

**Currently, any Shrewsbury resident that is interested in participating in the loan program must have at least a year's worth of credit history with SELCO and cannot have had more than one late payment in the last 12 months. SELCO does not incorporate credit scores in their evaluation of loan eligibility, indicating a recognition of the importance of equitable loan access for residents of diverse economic histories and backgrounds. SELCO has mechanisms in place to manage loan defaults. although SELCO has reported very little trouble with loan repayment [3].**

# Financial Mechanism #2: Revolving Loan Fund

- Loan pool that is doled out to pay for energy efficiency upgrades and replenished as loans are repaid

- Advantages: capital is recycled through loan program, which increases access and reduces costs

- Challenges: optimal program administration is not clear and payback periods could slow impact

# Revolving Loan Fund

A revolving loan fund involves the creation of a base pool of funds (often referred to as a 'seed fund') that is used to distribute the first set of energy efficiency retrofit loans. The repayment of this first set of loans replenishes the fund and makes money available for future loans.

One of the main appeals of this style of loan program is that the initial capital is continually cycled through the program, reducing the need for large amounts of additional funding in the future. While some revolving loan administrators have opted to appropriate additional money to their funds on a regular basis to cover gaps while the previous cycle of loans are being repaid, the ability of the loan fund to eventually replenish itself means that these kind of loan programs tend to be relatively financially stable.

Where the creation of a revolving loan funds gets complicated, at least for Concord, is determining a funding source and program administrator. it is possible that, because of the aforementioned limitations on how CMLP can use ratepayer money, it would probably be logistically simpler to have the town government create and manage a revolving loan fund, or for the town to establish a non-profit to oversee the program. These management structures will likely make the raising of funds less legally complicated; if one of these options is pursued, the town may need to consider hiring new staff (especially if the non-profit model was chosen).

# Revolving Loan Fund

## Case Study: Holyoke, MA

**Holyoke, MA has utilized a revolving loan fund to help finance local energy efficiency projects for over a decade. Like Concord, Holyoke's utilities are provided by a municipal light plant, Holyoke Gas and Electric (HG&E), which is responsible for overseeing the city's clean energy and energy efficiency initiatives.**

**HG&E offers free audits and 0% interest loans for residents through its Residential Energy Conservation program, to which the town has allocated $1 million. The loans can be used to finance air source heat pumps, select high-efficiency water heaters, weatherization and insulation, solar PV and other energy efficiency projects; customers can pair loans with rebates if HG&E provides rebates for the chosen project.**

**The program has not experienced significant issues with maintaining its funding levels because loan recipients have been very consistent in making their payments [4]. Part of the reason that loans are repaid so consistently may have to do with the loan terms, which places on lien on the loan recipient's home as collateral (the town has made arrangements for when homes are sold or when loans are in default). The program had 65 loan recipients in 2019 and 50 recipients in 2020 and has over a hundred thousand dollars circulating through to program participants in any given year [4].**

# Financial Mechanism #3: Third-Party Partnership

- Partner with external organization to fund or manage a program

- Advantages: potential to significantly increase the amount of available capital

- Challenge: lack of oversight and authority over program, divergent stakeholder priorities

# Third-Party Partnerships

Although this is not a specific financing mechanism, a third possibility for Concord to consider in selecting the most optimal program structure is to partner with an external third-party to fund and operate the town's energy efficiency financing program. Many communities have utilized third-party partnerships of varying forms to alleviate or avoid the financial costs and administrative burdens of operating a loan program. Holyoke, MA formed a partnership with Sparkplug Power to deploy a residential battery storage program, while Groton, MA collaborated with Workers Credit Union to fund their no-interest residential energy conservation loans [5].

Other communities, however, have taken external partnerships a step farther and essentially allowed their third-party partners to act as primary program administrators. The Hawaii GEM$ program, which has provided millions of dollars for solar PV loans for low- and middle-income Hawaiians, is funded and managed by a green bank, Hawaii Green Infrastructure Authority [6]. This program has only been in operation since 2018 but approved 8 substantial commercial and residential projects in its first year alone and is available to nearly 95% of the Hawaiian population [6].

Third-party partnerships offer the advantage of externalizing fiscal costs and managerial burdens. This can be especially helpful for smaller municipalities, like Concord, with particularly finite budgets and staffs. However, external partnerships also introduce a whole new community of stakeholders and priorities. A third-party partner, particularly one that is a private entity, is very likely to have their own goals and bottom-line in mind when operating a financing program, and these will shape how a program is deployed and managed within a community. As a result of potentially competing interests, there can also be a problematic lack of transparency and accountability in terms of how a partner organization is operating a program. While seeking external financial support may be necessary for Concord, exporting program oversight or management to an external organization should be considered with a great deal of caution.

# Third-Party Partnerships

## Potential Partner: Massachusetts DOER

**The Massachusetts Department of Energy Resources (DOER) is considering piloting a loan program designed to aid municipal light plant communities in offering energy efficiency loans. DOER plans to offer no-interest loans to municipal light plants that are financially prepared to participate in the program and that agree to adopt some sort of standardized program format that will ensure that the projects that qualify for loans are consistent across communities. Currently, DOER is envisioning that the loan program will operate as a matching-funds situation, with participating municipalities matching a certain percentage of DOER's contributions, likely in the form of rebates. Aspects of the program have yet to be solidified, so CMLP may need to wait for further information before deciding whether a partnership with DOER would be advantageous for Concord.**

# Procedural Recommendations

- Conducting a survey to assess residents' awareness about financing options could inform outreach efforts

- Streamlining and simplifying the auditing process could increase participation - convenience is key

- Eventually, Concord may want to consider hiring additional paid staff to liase one-one with residents

# Procedural Recommendations

## Outreach and Assessment

As discussed previously, informational barriers play an important role in inhibiting greater uptake of energy efficiency upgrades. To gain a better understanding of how pervasive these informational barriers are, CMLP might consider deploying a mail or electronic survey to a) ascertain if residents know about the retrofit and financing options currently available to them and b) allow resident to provide feedback on areas that need improvement. The results of such a survey could inform further targeted marketing and outreach efforts to increase participation in energy efficiency improvement projects.

## Increasing Accessibility & Convenience

Feedback obtained from interviews with residents indicated that the auditing process and the post-audit recommendation reports could benefit from streamlining efforts. This is a complicated undertaking, as Concord and CMLP do not have authority over the MassSave audit program and although CMLP is a part-owner of Energy New England (ENE), it would be challenging and time-consuming to revise a program that ENE has invested considerable time and resources into. Nonetheless, it could be beneficial for local stakeholders to provide feedback to the auditing organizations about some of the areas for improvement that residents who have participated in the audit programs have identified. Additionally, reorganizing the town website to make audit, contractor and financing information more interconnected and accessible can improve user experience for residents.

## Expanding Staff

As discussed in previous sections, some of the recommended financing models may require the addition of new administrative staff and retrofit financing experts to ensure that the program runs smoothly and does not introduce undue burdens on current staff members. Appropriating funding for additional salaries could be burdensome when taken in combination with having to fund the program itself, so town staff will have to evaluate the necessity of adding employees once a program format has been chosen.

# Appendix

## Helpful Resources & Materials

MassSave Technical Reference Manual - this database compiled by MassSave offers a comprehensive toolkit for calculating energy and cost savings associated with different energy efficiency measures and technology. The savings from each efficiency measure are scaled depending on the type of system that the efficient appliance or upgrade is replacing and the different levels of savings, as well as the formulas used to make the calculations, are listed in tables. Mass Save also publishes quarterly reports on the energy efficiency progress being made in the programs it oversees, which help synthesize the data found in the manual.

'Municipal Light Plants in Massachusetts: Spotlight on Clean Energy Initiatives' - this 2016 white paper compiled by Metropolitan Area Planning Council staff members provided an overview of innovative energy efficiency programs and financing methods in municipal light plant communities. Representatives from some of the towns included in the paper were interviewed for this report, and the paper gives a great overview of communities like Concord that have successfully implemented creative energy efficiency promotion strategies.

# Appendix

## Helpful Resources & Materials

City Energy Project - a virtual library offering factsheets, guides and case studies on energy efficiency policies and financing best-practices. The breadth and depth of the materials housed on the site are extensive, making this a great starting point for energy efficiency research.

American Council for an Energy Efficient Economy - a research organization focusing on energy efficiency policy formation. Their site provides toolkits, scholarly articles and other research materials pertinent to the subject of energy efficiency financing and development.

Environmental and Energy Study Institute - a non-profit, research-focused organization concentrated on clean energy policy. Their site provides numerous case studies, primer and toolkits related to innovative energy efficiency financial mechanisms, particularly on-bill financing.

# Appendix

## Additional Case Studies

**Wellesley, MA** - Wellesley, another Massachusetts municipal light plant community, has taken a creative approach to promoting local sustainability. The Wellesley Municipal Light Plant launched the Power to Choose program nearly a decade ago; this initiative allows customers to opt into a renewable energy program that offsets their fossil fuel consumption by paying 4 cents more per kWh [5]. Volunteer third-party partnerships with local universities who provided education and outreach about the program contributed significantly to its success [5].

**Fort Collins, CO** - Fort Collins, like Concord, is served by a municipal utility. In 2012, Fort Collins Utilities partnered with a local credit union, Energy Smart Partners, to organize an on-bill financing program to offer Fort Collins residents loans for home energy efficiency upgrades [7]. Energy Smart Partners funds and operated the on-bill program that was later merged with other Fort Collins projects to create the Epic Homes program, which is now recognized as a highly innovative and equitable on-bill financing project serving mainly low-income households [7].

**Holland, MI** - Holland initiated an on-bill financing program in 2016 and has directed millions of dollars towards loans for residential energy efficiency upgrades. Holland chose to establish a non-profit entity, the Holland Energy Fund, Inc., to oversee program operations and disburse funds for the on-bill program and other sustainability initiatives [8]. Holland is another community that uses utility bill repayment history, rather than credit scores, in determining eligibility for loan program participation, and offers loans of up to $30,000 to qualified residents [8].

# Works Cited


1. Leventis, G., Martin Fadrhonc, E., Kramer, C., & Goldman, C. (2016). Current practices in efficiency financing: an overview for state and local governments. (LBNL-1006406). Ernest Orlando Lawrence Berkeley National Laboratory. https://emp.lbl.gov/sites/all/files/lbnl-1006406.pdf
2. Interstate Renewable Energy Council. (2016). Shared renewable energy for low- to moderate-income consumers: policy guidelines and model provisions. http://www.irecusa.org/wp-content/uploads/2016/03/IREC-LMI-Guidelines-Model-Provisions_FINAL.pdf
3. Roy, Christopher. Personal Interview. 28 June 2021.
4. Theroux, Sophie. Personal Interview. 20 June 2021.
5. Peterson, C., Duffy, N., Henry, A & Ito, K. (2016). *Municipal light plants in Massachusetts: spotlight on clean energy initiatives*. Metropolitan Area Planning Council. https://www.mapc.org/wp-content/uploads/2017/10/MAPC_MLPWhitePaper_Jul2016.pdf
6. "Hawaii: Green Energy Money $avers (GEM$) On-Bill Program." Environmental and Energy Study Institute, https://www.eesi.org/obf/case-study/hawaii. Accessed June 31, 2021.
7. "Colorado: Fort Collins Utilities Epic Homes Program." Environmental and Energy Study Institute, https://www.eesi.org/obf/case-study/FortCollins. Accessed June 28, 2021.
8. "Michigan: Holland On-Bill Program." Environmental and Energy Study Institute, https://www.eesi.org/obf/case-study/hollandMI. Accessed June 25, 2021.