The Cape Light Compact's Low-Income Energy Efficiency Programs

Challenges and Opportunities

Prepared for The Cape Light Compact

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AUTHORS

Erin Malone
Danielle Goldberg
Shelley Kwok
Tim Woolf

Synapse Energy Economics, Inc.

485 Massachusetts Avenue, Suite 3
Cambridge, Massachusetts 02139

617.661.3248 | www.synapse-energy.com

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EXECUTIVE SUMMARY

Massachusetts law requires electric energy efficiency Program Administrators to spend at least 10 percent of their budget on low-income programs.[1] Since 2014, the Cape Light Compact JPE (Compact) has struggled to meet this requirement due in large part to territory-specific circumstances, highlighted below.

- The Compact has few low-income customers, representing about 5 percent of the Compact's customer base. The Compact has significantly fewer low-income customers than other electric Program Administrators.[2]
- About half of the Compact's low-income customers heat with gas and therefore National Grid Gas is their primary energy efficiency Program Administrator, not the Compact. Starting in 2012, the Program Administrators' statewide protocol for serving low-income customers stipulates that customers who heat with gas can only be provided envelope measures and heating systems – the most expensive measures – by the gas Program Administrator.
- Combined, these factors mean the Compact is required to spend 10 percent of its term budget on 2.5 percent of its customers.

Notwithstanding these challenges, the Compact has consistently provided equitable service to its low-income customers, which has resulted in direct energy efficiency benefits to participants and ratepayers. Since the Compact began providing energy efficiency programs in 2001, the Compact has successfully reached most of its eligible low-income customers. Synapse Energy Economics (Synapse) analyzed Compact customer and participant data from 2004 through 2021 and found the following results.

- As of 2021, there were about 10,000 customers (including mutual customers of the Compact and National Grid Gas) eligible to participate in the Compact's low-income programs. Through implementation of its programs in 2004 through 2021, the Compact served about 7,000 of the 10,000 eligible customers (or about 70 percent of eligible customers).
- Of the remaining roughly 3,000 non-participants, about half are mutual customers of the Compact and National Grid Gas that the Compact is not able to serve comprehensively.[3]

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[1] Throughout this report, we use the terms "low-income" and "income-eligible" interchangeably.

[2] Throughout this report, we regularly use the terms "customer," "participant," and "accounts." We generally use these terms interchangeably to mean unique customer account number.

[3] About one-third of these customers went onto the utility discount rate for the first time in 2020 or 2021.

- If we remove the 1,500 non-participants whom the Compact cannot serve because they are mutual customers from the Compact's pool of eligible customers, then the Compact's participation rate is closer to 85 percent instead of 70 percent.
- There are approximately 1,500 non-participants, or 15 percent of eligible participants, that the Compact has not yet served.
- Even if the Compact served all 1,500 non-participants during the 2022–2024 plan term and spent the same amount per participant as spent historically on each participant (about $3,000 per participant), the Compact still would not be able to spend 10 percent of its budget on low-income programs per year or for the term.

Given the Compact's relatively small population of eligible low-income customers and its historically successful program implementation, the Compact is unlikely to meet the statutory low-income spending requirement of 10 percent with the current program and policy landscape.

1. BACKGROUND

Since 2001, the Compact has implemented energy efficiency programs on Cape Cod and Martha's Vineyard.[4] The Compact coordinates program design and implementation with the Massachusetts electric and gas utilities, collectively the Program Administrators.[5] The Compact's service territory overlaps Eversource's electric service and National Grid's gas service.

Beginning with the first three-year energy efficiency plans in 2010, Massachusetts law requires that "at least 10 per cent of the amount expended for electric energy efficiency programs… shall be spent on comprehensive low-income residential demand side management and education programs."[6]

Consistent with this statute, since 2010, the Compact has planned to spend 10 percent of its energy efficiency budget on low-income programs and services. However, the Compact has not always spent its planned budget. Figure 1 illustrates the Compact's actual spending for the low-income sector for 2010 through 2021. Starting in 2014, the Compact has struggled to meet the 10 percent spending requirement.

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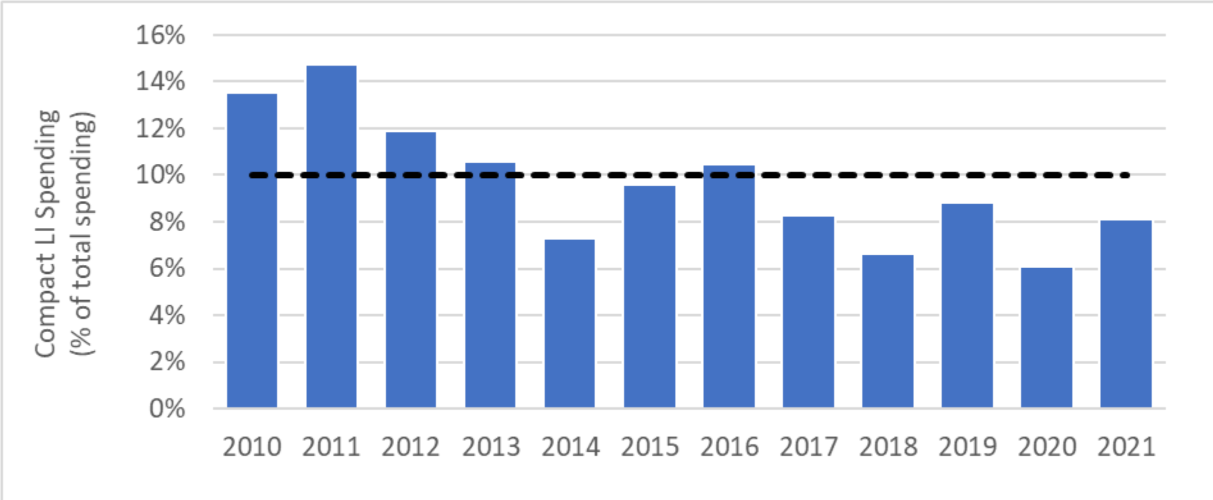
[4] The towns of Aquinnah, Barnstable, Bourne, Brewster, Chatham, Chilmark, Dennis, Edgartown, Eastham, Falmouth, Harwich, Mashpee, Oak Bluffs, Orleans, Provincetown, Sandwich, Tisbury, Truro, West Tisbury, Wellfleet and Yarmouth, and Dukes County organized and operating collectively as the Cape Light Compact JPE.

For more information on the Compact's history, including its community aggregation plan, see https://www.capelightcompact.org/governing-documents/.

[5] The other energy efficiency Program Administrators are the Berkshire Gas Company, Fitchburg Gas & Electric Light Company d/b/a Unitil, Liberty Utilities (New England Natural Gas Company) Corp. d/b/a Liberty, Massachusetts Electric Company, Nantucket Electric Company, Boston Gas Company and former Colonial Gas Company, each d/b/a National Grid, NSTAR Electric Company, and NSTAR Gas Company and Eversource Gas Company of Massachusetts, each d/b/a Eversource Energy.

[6] MA G.L. c 25 § 19, https://malegislature.gov/Laws/GeneralLaws/PartI/TitleII/Chapter25/Section19.

Figure 1. Compact actual low-income spending as a percent of total spending, 2010–2021



Source: www.MassSaveData.com.

1.1. Department's concerns

In its order on the 2022–2024 Three-Year Energy Efficiency Plans, the Massachusetts Department of Public Utilities (Department or DPU) articulated its concerns regarding the Compact's historical spending on low-income programs. The Department stated that it "questions the Compact's ability to deliver equitable services to all of its customers and, therefore, we will carefully examine the Compact's low-income program spending in its 2019–2021 Term Report."[7]

Since the Department issued its order in January 2022, the Compact has been assessing customer and energy efficiency program data both internally and with assistance from third-party vendors, including Synapse and DNV.

1.2. This report

The Compact commissioned Synapse to investigate some of the Department's concerns regarding the Compact's service to low-income customers. This report provides our analysis and results. We identify some of the challenges the Compact faces in spending 10 percent of its budget on low-income programs and analyze the Compact's historical low-income program participation.

Synapse worked closely with Compact staff in developing this report to obtain programs details and ensure data accuracy. Synapse primarily relied on data from the Compact's tracking system to complete

[7] D.P.U. 21-120 through D.P.U. 21-129, pages 300-301.

the analysis in this report. We also reviewed data from MassSaveData and DNV's energy efficiency database that it maintains for the Program Administrators.

1.3. Income-eligible energy efficiency programs

The Program Administrators offer energy efficiency programs to both residential and low-income customers, targeting the new construction, retail, and home retrofit markets. The Program Administrators offer additional measures and services to low-income customers beyond what is available to residential customers. All low-income measures are provided at no cost (i.e., a 100 percent incentive) to participants who qualify for the low-income programs, which is typically higher than the incentives available within the residential programs.

Low-income customers can participate in either the residential or low-income programs, or both, depending on the program. The Compact and other Program Administrators strongly encourage customers who qualify to be served through the low-income programs because they will receive the most services at no cost.

Residential customers are eligible to participate in the low-income energy efficiency retrofit programs if their household income is equal to or less than 60 percent of state median income in the participation year. [8,9] The Compact identifies this eligibility in one of the three following ways:

- The customer receives fuel assistance and therefore has already been screened and determined to be low-income-eligible by the Low-Income Home Energy Assistance Program (LIHEAP).
- The customer is on the electric or gas utility low-income discount rate (the R-2 and R-4 electric rates) and therefore has already been means-tested as low-income-eligible. Customers qualify for the utility discount rate annually by being enrolled in the Fuel Assistance program or by meeting the eligibility requirements for other means-tested programs, such as Chapter 115 Veterans' Service Benefits, Supplemental Security Income (SSI), or Supplemental Nutrition Assistance Program (SNAP) services.
- The customer's income has been verified by the Compact as being at or below 60 percent of the state median income. The Compact verifies income directly in its customer call center through an application process and customer-provided financial documentation.

[8] For single-family (1-4 unit) buildings, income eligibility is determined using state median income. For multifamily (5+ units) buildings, income eligibility is determined using area median income, and at least 50 percent of the building occupants must meet this criterion. Details are available in the 2022–2024 Three-Year Plan at 108-109.

[9] Updated state median income numbers by household size are issued annually by the U.S. Department of Housing and Urban Development (HUD) in preparation for the October 1 start of the heating season/fiscal year. Numbers for Massachusetts for a given fiscal year can be found on the Mass.gov website along with information on the LIHEAP program at: https://www.mass.gov/service-details/learn-about-low-income-home-energy-assistance-program-liheap.

2. COMPACT-SPECIFIC CHALLENGES

In this section we identify some of the key challenges the Compact faces when attempting to spend 10 percent of its budget on low-income programs. The Compact's territory-specific barriers are its relatively small number of low-income customers, its service limitations to mutual gas and electric customers, and cumulatively high participant rates.

2.1. The Compact has few low-income customers

A Program Administrator's ability to spend 10 percent of its budget on low-income programs will depend on the number of low-income customers in its service territory relative to the number of residential and commercial and industrial (C&I) customers.

For the Compact, its customer demographics are heavily weighted towards residential customers, with few low-income or C&I customers. As summarized in Table 1, low-income customers comprise 5 percent of the Compact's total customers, and about 6 percent of the Compact's total residential customers (the sum of low-income and residential customers).[10]

Table 1. Compact's 2021 customers by customer sector

Customer Sector	2021 Customers	Percent of Total Customers	Percent of Total Residential Customers
Low-Income	10,244	4.9%	5.7%
Residential	169,921	81.9%	94.3%
Commercial & Industrial	27,357	13.2%	n/a
Total	**207,522**	**100%**	**n/a**

Source: Compact customer data.

To put the Compact's customer demographics into statewide context by comparing to the other electric Program Administrators, we would ideally analyze customers within each customer sector for all Program Administrators. Unfortunately, we could not find public data with customer counts by residential, low-income, and C&I sector for the other electric Program Administrators. As a proxy for customers, we analyzed residential and low-income sales data, which the Program Administrators provide in energy efficiency plans.[11]

Figure 2 summarizes residential and low-income sales as a percent of total residential and low-income sales for each PA and statewide based on forecasted 2022–2024 sales. About 6 percent of the Compact's

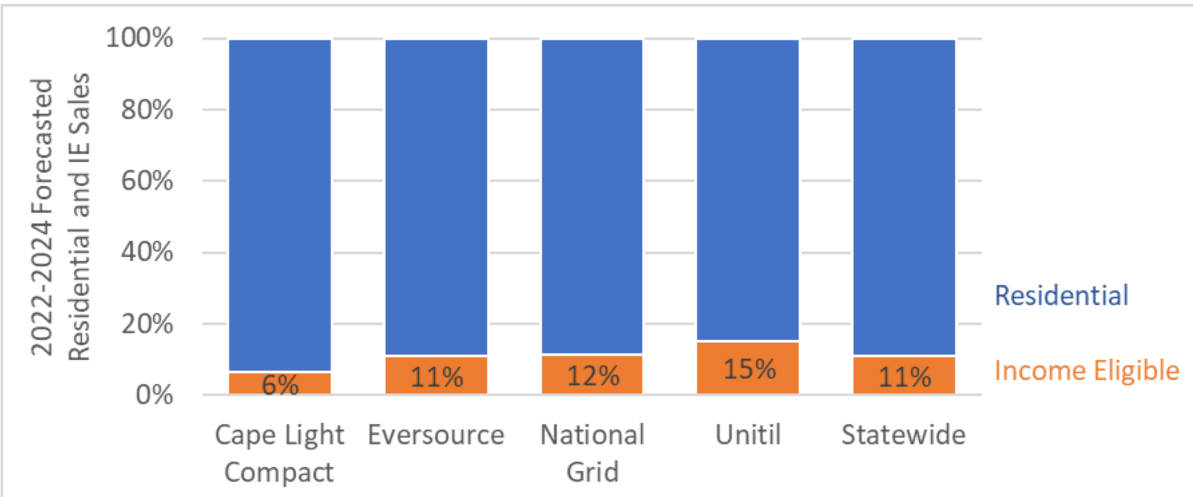
[10] See also, e.g., the Compact's 2018 Energy Efficiency Surcharge filing, where the Compact explains it has few low-income customers in its territory. D.P.U. 17-165, Exhibit 1, at 7 (October 26, 2017).

[11] We did not include C&I sales in this analysis because C&I sales can vary significantly by C&I customer, and sales would likely not be a representative proxy for customers.

total residential sales are from low-income customers, which is consistent with the ratio of low-income to total residential customers presented in Table 1.

Statewide, low-income customers comprise 11 percent of total residential sales, which is almost twice as much as the Compact's low-income customers represent. The Compact's low-income sales as a percent of total residential sales are lowest among all electric Program Administrators, with the other Program Administrators seeing percentages that range from 11 to 15 percent. We concluded that the Compact has roughly half as much opportunity to serve low-income customers as other electric Program Administrators.

Figure 2. Electric residential and low-income sales as a percent of total residential sales, 202–2024 forecasted

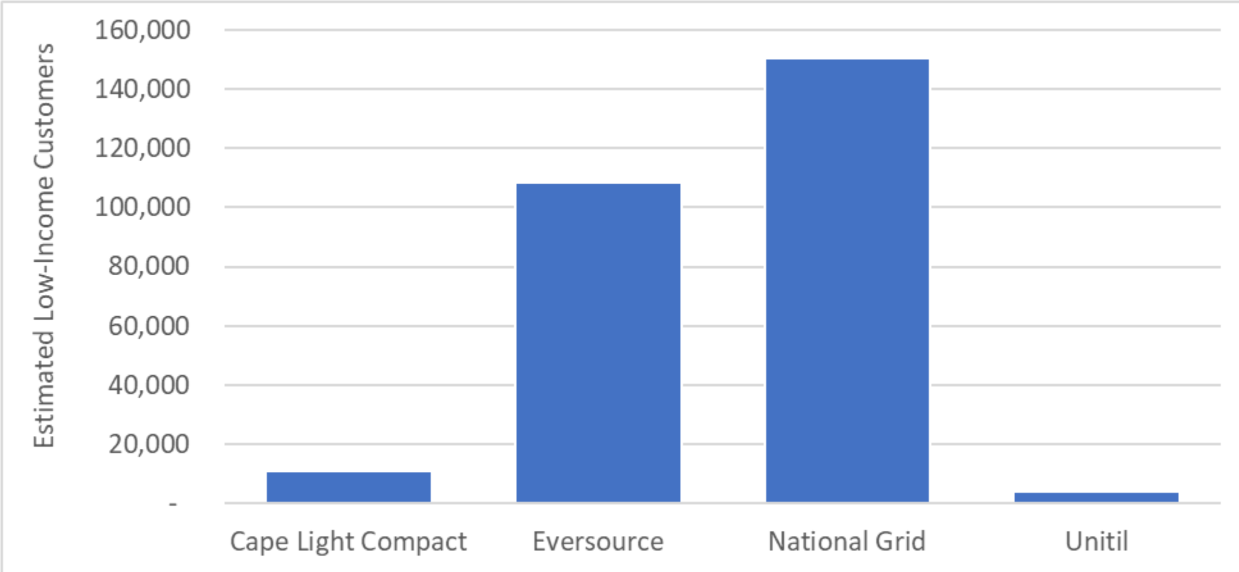


Source: www.MassSaveData.com.

Using the same sales data, we roughly estimated the number of low-income customers in each Program Administrator's territory by assuming each low-income customer uses 550 kWh per month.[12] As shown in Figure 3, compared to the Compact, Eversource has about 10 times as many low-income customers while National Grid has almost 14 times as many low-income customers. Unitil has the lowest number of low-income customers, but the highest percentage of sales from low-income customers as shown in Figure 2. This further confirms the Compact has few low-income customers relative to other electric Program Administrators.

[12] Assuming 550 kWh per month results in 10,782 low-income customers for the Compact per year in 2022–2024, which compares to the Compact's 10,244 low-income customers in 2021.

Figure 3. Estimated number of income-eligible customers



Source: www.MassSaveData.com.

Based on the above analysis, it will continue to be a challenge for the Compact to spend 10 percent of its budget on low-income customers year after year when the Compact has few customers on which to spend the money.

2.2. Mutual customer participation dynamics

The Compact implements its energy efficiency programs in a portion of National Grid's gas service territory. Starting mid-2012, the Program Administrators agreed that gas Program Administrators would provide comprehensive services (weatherization and heating system services) to low-income customers who heat with gas, while the electric Program Administrators would serve the non-gas-heated customers.

As a result of this protocol, the Compact and National Grid coordinate energy efficiency services to mutual customers who heat with gas.[13] Below, consistent with the statewide model, we explain how the two Program Administrators coordinate when a low-income customer who is also a mutual customer wishes to participate in the energy efficiency programs.

- **Customer service.** The Compact completes all initial customer service activities for the customer regardless of heating fuel type. The Compact enrolls the customer in the energy efficiency programs and handles phone calls and troubleshooting for the

[13] For residential market-rate retrofit programs, the Compact supports serving all electric customers for all measures, including those customers who heat with gas and prefer to be served by the Compact. This investigation is pending before the Department. See, D.P.U. 16-169.

participant. If the low-income customer is a mutual customer and gas-related decisions arise, then the Compact directs the customer to National Grid for further customer service.

- **Audit and fees.** The Compact completes and pays for the home energy assessment or audit for all low-income customers, regardless of heating fuel type.

- **Energy efficiency measures.** If the low-income mutual customer requires weatherization work or heating system upgrades, then National Grid pays for and claims savings for those measures. Weatherization and heating system upgrades are typically the most expensive energy efficiency measures and provide significant savings to the customer. If the low-income mutual customer requires measures that only have electric savings, such as lighting or appliances, then the Compact pays for and claims savings for those measures.[14] These measures are lower cost and provide fewer savings than weatherization measures and heating systems.

As explained in Section 2.3, about half of the Compact's already limited low-income customers are mutual customers. The Compact will have a difficult time spending 10 percent of its budget on low-income customers since it cannot provide almost half of its low-income customers with the most expensive energy efficiency measures. As shown in Figure 1, the transition away from serving mutual customers in 2012 contributed to the Compact's decline in spending on low-income as a percent of total spending.[15]

This issue compounds with the previously mentioned challenge of the Compact having few low-income customers to begin with. Considering low-income customers represent about 5 percent of the Compact's customers and given that the Compact cannot serve about half of these customers, that leaves about 2.5 percent of customers on which the Compact would spend 10 percent of its budget.

2.3. Low-income participation trends

In this section we analyze the Compact's historical low-income participation rates as well as non-participant demographics and opportunities.

Historical participation rate

There are multiple ways to assess energy efficiency program participation, and each method has its pros and cons. None of the possible methods represent an industry-standard practice; and some methods can produce flawed or incongruous results, especially if the underlying data has errors or

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[14] Appliances could include refrigeration, clothes washers, window air conditioning units, or dehumidifiers.

[15] Other factors contributed to the Compact's decline in low-income spending as a percent of total spending during the roughly 2012 to 2015 timeframe, including increasing residential and C&I budgets and transitioning the low-income new construction program into the residential new construction program.

inconsistencies. Long-term participation estimates are especially complicated due to changes in eligible customers, changes in program designs, and repeat participation across years and programs.

Synapse took a simplified approach to assessing participation by asking: Of the Compact's current low-income customers, which have participated in past energy efficiency programs? In answering this question, we could assess program participation rates (participants divided by eligible customers) and identify non-participants (eligible participants less participants).

We analyzed data from the Compact's customer and participant databases from 2004 through 2021.[16] We defined current low-income customers as the 9,925 unique electric accounts taking service on the utility discount rate (Eversource's R-2 and R-4 electric rate classes) as of January 2021. This is the pool of customers who could participate in the Compact's low-income retrofit energy efficiency programs ("eligible customers").

We then found that, of those 9,925 accounts eligible to participate in the income-eligible programs, 7,026 accounts are associated with addresses that have participated in either an income-eligible or residential program from 2004 to 2021.[17,18] This indicates that over the past 18 years, the Compact has served 71 percent of its low-income customers. Table 2 summarizes our results.

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[16] The customer database is an accumulation of data regularly provided to the Compact by Eversource. It includes, by electric meter number, customer account number, name, address, rate code, and monthly usage. The participant database consists of outputs from the Compact's energy efficiency tracking systems. It includes, by measure, customer account number, name, address, measure savings, measure costs, among many other data points.

While the participant database extends through 2001, the year the Compact began implementing energy efficiency programs, the customer database extends through 2004. That is why we started our analysis in 2004, rather than 2001.

[17] We first looked at whether an address participated in the low-income programs, as those programs provide the most comprehensive services at no cost to the customer. We found 5,203 accounts participated in the low-income programs. We then looked at whether the remaining addresses participated in the residential programs, to the extent we had account level participation data for the residential programs. We found an additional 1,823 accounts participated in the residential programs. If the address previously participated in either a low-income or residential program, we assumed there are few remaining efficiency opportunities for the current customer.

[18] We used an iterative matching process between the customer and participant databases to identify participating addresses and associated account numbers. The street address nomenclature and syntax are consistent across years within the customer database. However, the street addresses within the participant database are not as clean and vary across years and when compared to the customer database. Given that account numbers can change when customers move, the addresses within the customer database are the only constant data across the 18-year period of our study.

We first matched account numbers by year between the two databases. Matching by year helps mitigate data lost when account numbers change. Once the account numbers were matched between databases, we could connect addresses from the customer database to participant account numbers. We then removed duplicate addresses over the study period to isolate for unique participants. We matched those unique participant addresses to the addresses associated with the January 2021 low-income account numbers (i.e., the eligible customers). Using those results, we determined whether current low-income customers were living at an address that had participated in an energy efficiency program, regardless if that exact customer had directly participated.

Table 2. Compact participation analysis

a	2021 accounts on utility discount rate	9,925
b	Participating accounts, 2004-2021	7,026
b/a	Participation rate (%)	71%
a-b	Non-participant accounts	2,899

Source: Compact customer and participant databases.

Caveats

This simplified approach to estimating participation is not a perfect representation of the Compact's low-income program participation. There are multiple caveats to keep in mind when reviewing the results, some of which we explain below.

Frequently changing customer data

January 2021 is a snapshot in time. Customers regularly move in and out of income ranges, rate classes, and homes. However, for each year since 2015, there have been between 9,000 and 10,000 accounts on the low-income discount rates within the Compact's service territory. While the 9,925 accounts eligible to participate identified through our analysis is likely within the correct range of customers, the exact customers and homes vary annually, even monthly.

We chose the month of January because many customers go on Fuel Assistance in the fall or winter to help mitigate high winter heating bills. We assumed that by January most customers have enrolled in Fuel Assistance and have transitioned to the discount rate. Therefore, January provides the largest pool of eligible low-income customers. We chose 2021 because it is the most recent year for which we have complete participant and customer data.

Eligible customers are limited

Using the number of accounts on the electric utility discount rate is not a complete approximation of customers who could participate in the low-income programs. The Program Administrators use the discount rate as the primary method to screen for income eligibility, but it is not the only method. A customer could be on a residential rate and participate in the income-eligible programs. The number of accounts on the discount rate likely underrepresents eligible customers.

We relied on accounts on the discount rates because it is the most common approach for screening income eligibility, most customers that participate in the low-income programs are on the discount rate, and we could compare eligible customers to the participant data using account numbers.

Participants are limited

We maintained consistency with the eligible customer calculations by only including participants who were on the low-income discount rate as of January 2021. We excluded the 1,027 accounts that participated in the 2004–2021 low-income programs who were on a residential rate as of January 2021. Those customers participated in the low-income programs and the Compact determined they were income-eligible to participate at that time. Therefore, while we underestimate eligible customers, we also underestimate participants.

Mutual customers

The most significant caveat is that we do not account for the impact of mutual customers in this analysis.

Ideally, we would remove mutual customers from both eligible customers and participants, as there is little spending or savings opportunities for the Compact at homes that heat with gas. While the Compact could claim lighting or appliance measures from mutual customers, those measures do not fully reflect the Compact's efforts to serve customers through the low-income program. It would be more appropriate to assume the Compact cannot serve those customers, and thereby remove them from the analysis (both from eligible customers and any participants).

We reviewed two data sources to estimate the number of mutual accounts in the Compact's territory, which we discuss below. Neither source accurately indicates which electric accounts heat with gas, but they provide useful bookends from which we could draw conclusions.

National Grid indicated to the Compact there are approximately 5,000 low-income single-family gas accounts in the Compact's territory. This represents about half of the Compact's eligible customers. However, gas accounts may not equate to electric accounts. If we assume there are more electric accounts associated with a gas account on average due to multifamily buildings, then there are likely more electric accounts associated with the 5,000 gas accounts indicated by National Grid. This would imply more than half of the Compact's electric accounts heat with gas.

Conversely, DNV maintains a statewide database of accounts for the Program Administrators. Synapse used that data and determined there are approximately 2,500 non-heating low-income electric accounts (i.e., customers on the R-2 rate) that also have a gas account.[19] This represents about one-quarter of the Compact's eligible customers. Compact staff spot checked the DNV data by comparing addresses to local property databases. For multiple addresses, the local property database indicated the home heated with gas, but the DNV database did not. Based on this, Synapse suspects the DNV data underestimates total mutual customers, perhaps significantly.

To mitigate some of the account-level inconsistencies, we looked at premise information within the DNV data. For Eversource, the first six digits of an electric account number represent a premise number that remains constant when an account number changes. A premise can include 1–20 accounts, although most premises include 1–10 accounts and many just have one account. Using the same DNV parameters (i.e., accounts on the R-2 rate class), we looked at premises that have at least one account with a gas account and assume all accounts within that premise heat with gas. This simplification could

[19] We looked only at R-2 rates because we assumed that low-income heating rates (i.e., customers on the R-4 rate) are unlikely to also heat with gas.

overestimate the number of accounts that heat with gas, but nonetheless provides a useful benchmark. This analysis indicates that approximately 6,000 accounts heat with gas, or about 60 percent of the Compact's eligible low-income customers.

The above data points indicate that, at a minimum, 25 percent of the Compact's eligible customers heat with gas, although the true number is likely at or above 50 percent. Based on this, we comfortably assume about half of the Compact's income-eligible customers heat with gas.

Non-participant demographics

As indicated in Table 2, there are 2,899 accounts in the Compact's territory that could be eligible for but have not participated in the income-eligible programs. Synapse explored who these customers might be and why they have not yet participated.

<u>Mutual customers</u>. Compact staff individually researched the addresses associated with all 2,899 non-participating accounts in local property databases to identify which addresses heat with gas.[20] They found that 1,435 accounts heat with gas while 1,308 accounts do not heat with gas, and there were 156 accounts that could not be found or for which the property database did not indicate the type of home heating. Therefore, 1,435 accounts, or about half of the approximately 3,000 low-income non-participants in the Compact's territory, heat with gas and are served primarily by National Grid Gas rather than the Compact. This leaves 1,464 accounts (the sum of the non-gas heating and uncertain accounts) that the Compact could potentially serve.

Table 3. Non-participant accounts by heating type

Heating type	Accounts	Percent of total (%)
Gas heat	1,435	49.5%
Non-gas heat	1,308	45.1%
Uncertain	156	5.4%
Total	**2,899**	**100%**

Source: Compact customer and participant databases.

If we remove from the Compact's pool of eligible customers these approximately 1,500 non-participants whom the Compact cannot serve because they are mutual customers, then the Compact's participation rate is closer to 85 percent instead of 70 percent.

<u>New to the utility discount rate</u>. Of the 2,899 non-participant accounts, 610 accounts (which is about 20 percent of non-participants) went on the utility discount rate for the first time in 2021. An additional 413 accounts went on the utility discount rate for the first time in 2020, meaning 35 percent of non-participants have enrolled in the utility discount rate within the past two years. These new low-income customers could be harder to reach, at least initially, for participation. Conversely, of the 1,411 total

[20] See, e.g., gis.vgsi.com/yarmouthma/Search.aspx, www.axisgis.com/TisburyMA/, or tobweb.townofbarnstable.us/Departments/Assessing/Property_Values/Property-Look-Up.asp

accounts that went on the utility discount rate for the first time in 2021, 151 accounts (or about 11 percent of new discount rate customers) participated in either the low-income or residential efficiency programs in 2021.

2.4. Serving all non-participants

There are approximately 1,500 non-participant low-income customer accounts that the Compact could serve. If the Compact endeavored to serve all these customers during the current 2022–2024 plan term, it could serve about 500 accounts each year. For comparison, in 2021, the Compact served approximately 875 accounts that were on the utility discount rate in 2021 and spent only 8 percent of the total budget on income-eligible programs.[21] On average from 2014–2021—the years for which the Compact has struggled to meet the low-income spending target—the Compact has served over 800 accounts per year. Reaching all non-participants is not enough to push the Compact over the 10 percent spending threshold.

Said another way, the Compact spends on average about $3,000 per low-income participant per year. If the Compact spent the same amount on each of the 1,500 non-participants, the Compact's budget would be about $4.5 million in customer incentives. Again, for 2021, the Compact spent $4.1 million in total on the income-eligible programs (not just customer incentives) and only spent 8 percent of the total budget.

Even if the Compact served every non-participating customer currently on the low-income discount rate in its service territory during the 2022–2024 plan term, the Compact is unlikely to meet the 10 percent spending requirement per year or for the term.

[21] The 875 participating accounts include both new and repeat address participation, whereas the 1,500 non-participant accounts are at addresses that have not previously participated.

3. STATEWIDE CHALLENGES AND CONSIDERATIONS

In addition to the Compact-specific challenges discussed in Section 2, the Compact faces other challenges in spending 10 percent of its budget on low-income customers. These challenges are potentially faced by all Program Administrators, not just the Compact. Given the Compact-specific challenges, however, these statewide challenges are exacerbated within the Compact's territory and further contribute to the Compact's depressed low-income budgets.

3.1. Low-income participants within the residential programs

As explained in Section 1.3, low-income customers can and do participate in the residential programs if they choose to. This makes it difficult for Program Administrators to assess the true amount spent on low-income customers. The Program Administrators typically divide the low-income sector budget by the total budget to assess whether it has spent 10 percent of its budget on low-income customers. This will understate the amount spent on low-income customers because it does not include the amount spent on low-income customers who participate in the residential programs.

It is not possible to determine the amount a Program Administrator spends on low-income customers who participate in the residential programs. For the new construction and retail programs, the Program Administrators do not require income verification for program participation; the measures and services are available to all residential customers regardless of income. Low-income customers can participate in these residential programs, but their participation cannot be tracked. For the retrofit programs, the Program Administrators make every effort to direct customers to the low-income retrofit programs, but some low-income customers may still participate in the residential retrofit program.

It is a challenge for all Program Administrators, including the Compact, to identify exact spending on low-income customers. The percentages calculated in planning and reporting documents likely underestimate spending on low-income customers.

3.2. Comprehensive programs by design

The low-income programs are designed to provide comprehensive energy efficiency services at little or no cost to the customer. By design, the low-income home energy assessment identifies all efficiency opportunities in a home, and contractors install all recommended measures and services. Therefore, once a customer participates, it has few efficiency opportunities or motivation to participate again. This is especially true if the home is fully weatherized and the heating system is up-to-date.

The energy efficiency programs have evolved to provide new or different measures and services, and a customer's once new energy efficiency measures will eventually decay or expire. Over an extended period, customers may repeat participation. With each participation experience, however, there are likely fewer opportunities to improve the home's energy efficiency, especially with more expensive upgrades like weatherization or heating systems.[22]

The challenge here is that the successful implementation of comprehensive programs will naturally result in fewer savings opportunities over time, absent expansions of program offerings. Energy efficiency programs are intended to transform customer behavior and markets, and when successful, customers have no reason to re-participate in the programs. For the Compact specifically, with few low-income customers to begin with, the pool of eligible customers further shrinks annually with each participant that is comprehensively served. As analyzed in Section 2.3, the Compact has already successfully served most of its low-income customers.

3.3. Other Program Administrators

The Compact is not the only Program Administrator to have difficulty meeting the low-income spending requirement. The gas Program Administrators are required to spend 20 percent of their budgets on low-income programs, compared to 10 percent for the electric Program Administrators. Since 2010, there have been multiple instances of gas Program Administrators not meeting the 20 percent spending requirement.

As shown in Table 4, between 2010 and 2021, all gas Program Administrators missed the 20 percent spending threshold at least once on an annual basis, with some Program Administrators falling short between four and nine times (blue shaded cells in Table 4 indicate the Program Administrator spent less than 20 percent of total costs for the year).[23] In most cases, the gas Program Administrator managed to compensate for an annual shortfall in other years, such that the Program Administrator met the threshold for the three-year term. However, for the 2010–2012 term both Berkshire Gas and Columbia Gas spent 14.9 percent and 19.4 percent on low-income programs, respectively, while for the 2016–2018 term Columbia Gas spent 17.9 percent on low-income programs (yellow shaded cells in Table 4 indicate the Program Administrator spent less than 20 percent of total costs for the plan term). For the 2019-2021 term, most of the gas Program Administrators did not spend 20 percent of their budget on low-income programs due to the impacts of the global COVID-19 pandemic.

This illustrates that there are often Program Administrator-specific circumstances that create challenges in meeting the low-income spending threshold.

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[22] See, e.g., D.P.U. 19-96, Cape Light Compact 2016-2018 Term Report, Exhibit 1, Part Two, page 8 where the Compact explained for the Low-Income Single Family Retrofit core initiative: "The downward trend in weatherization is a result of the Compact having previously provided weatherization services to many customers identified on the low-income discount rate. Unlike many energy efficiency measures that evolve with changing technology, once a home is weatherized (insulation and air sealing) there is less opportunity to provide additional weatherization measures to these customers." See also, D.P.U. 19-96, the Compact's response to DPU 1-5; D.P.U. 20-50, Exhibit 1, Appendix 1, page 5; and D.P.U. 21-70, Exhibit 1, Appendix 1, page 5.

[23] The 2021 values included here are based on near-final draft results for inclusion in the 2019-2021 Term Report due to be filed August 1, 2022. The numbers here may not align exactly with final filed results for each Program Administrator.

Notwithstanding the shortfalls in annual and term-level low-income spending, the Department has approved, and for the 2013–2015 and 2016–2018 term reports has even stamp-approved, each gas Program Administrators annual and/or term reports and associated spending.[24]

Table 4. 2010–2021 Gas Program Administrator low-income spending as a percent of total spending

Year	Berkshire	Columbia Gas of MA[25]	Eversource Gas (NSTAR)	Liberty	National Grid Gas	Unitil Gas	Statewide Total
2010	8.9%	15.7%	22.7%	24.5%	19.4%	22.4%	19.2%
2011	13.5%	16.3%	27.0%	20.8%	18.5%	39.8%	19.9%
2012	19.0%	24.0%	22.8%	22.9%	27.1%	27.0%	25.6%
2010-2012	**14.9%**	**19.4%**	**24.2%**	**22.7%**	**22.8%**	**30.1%**	**22.4%**
2013	22.9%	24.8%	24.0%	28.1%	21.5%	25.6%	22.8%
2014	18.4%	21.5%	23.9%	22.8%	22.2%	26.6%	22.4%
2015	20.3%	18.7%	22.2%	20.2%	21.6%	32.4%	21.2%
2013-2015	**20.5%**	**21.4%**	**23.3%**	**23.4%**	**21.8%**	**28.1%**	**22.1%**
2016	15.4%	17.4%	21.2%	19.8%	19.4%	28.5%	19.4%
2017	23.1%	19.6%	20.3%	19.2%	23.9%	29.6%	22.3%
2018	24.6%	17.0%	22.8%	24.0%	21.0%	19.1%	20.8%
2016-2018	**21.3%**	**17.9%**	**21.5%**	**21.3%**	**21.4%**	**25.1%**	**20.8%**
2019	20.0%	16.3%	21.2%	29.1%	21.0%	31.5%	20.3%
2020	11.7%	14.8%	9.9%	17.3%	15.9%	22.4%	14.6%
2021	15.5%	19.4%	20.1%	18.4%	20.7%	27.1%	20.2%
2019-2021	**15.6%**	**17.1%**	**17.7%**	**21.8%**	**19.3%**	**27.3%**	**18.6%**

Source: www.MassSaveData.com.

[24] See, e.g., D.P.U. 19-90, D.P.U. 13-113, and D.P.U. 13-112.

[25] For 2021, the Columbia Gas numbers are for Eversource Gas (EGMA).

4. A WAY FORWARD

Regarding the Compact's struggles to meet the 10 percent spending requirement, we conclude the following:

- the Compact has served a majority (70–85 percent) of eligible customers,
- the remaining non-participants are predominately mutual customers whom the Compact cannot serve comprehensively, and
- serving all non-participants will not guarantee the Compact spends 10 percent of its budget on low-income customers.

Given these findings, in what ways could the Compact meet the statutory minimum spending on low-income customers?

4.1. Alternative program designs

The statewide low-income energy efficiency programs already offer customers a 100 percent incentive: they provide free measures and services. The Compact cannot offer enhanced incentives above and beyond the statewide programs to entice further participation. Given the challenges explained in Section 2, the Compact is unlikely to spend 10 percent of its budget on low-income programs by only implementing the statewide low-income energy efficiency programs.

In recognition of this situation, the Compact has previously proposed creative program solutions to increase spending on low-income customers.

The Compact's Cape and Vineyard Electrification Offering (CVEO), first proposed in the 2019–2021 plan, and again in the 2022–2024 plan, would have allowed low-income customers in the Compact's territory to install comprehensive energy efficiency measures, heat pumps, solar PV, and battery storage at little to no cost to the customer. The proposed budget for CVEO would have likely allowed the Compact to exceed the 10 percent spending requirement while providing direct benefits to low-income customers. The Department denied CVEO on multiple grounds.[26]

For the 2022–2024 plan term, the Compact proposed and the Department approved an enhancement to the statewide residential new construction core initiative that is focused on low- and moderate-income customers.[27] The Compact plans to offer incentives up to 100 percent for low- and moderate-income residential multifamily new construction projects for envelope measures and non-fossil-fuel heating systems, as well as funding for engineering studies and operations and maintenance contracts. The costs

[26] See, D.P.U. 18-116, D.P.U. 20-40, and D.P.U. 21-126. The Compact's appeal of the Department's denial of CVEO is pending before the Supreme Judicial Court.

[27] D.P.U. 21-126, Exhibit 1, Appendix G.1.

for this program will reside within the residential sector budgets and will not be captured in the 10 percent spending requirements because there is no statewide low-income new construction program. Nonetheless, the Compact is providing comprehensive services to low-income customers.

As another option, the Compact could more aggressively promote electrification through adoption of heat pumps. Specifically, the Compact could revisit previous participants who have oil, propane, or electric baseboard heating and investigate whether full or partial conversion to efficient heat pumps is appropriate. Since 2020 and as part of the 2022-2024 Plan, the Compact is already promoting and installing heat pumps through the income eligible programs. However, the strategy proposed here implies early retirement of relatively efficient heating systems that were previously (perhaps recently) installed through the energy efficiency programs. This approach could add significant costs due to both the direct participant incentive and the time and effort required by the Compact and its vendors to determine whether a heat pump is appropriate for the customer. Such costs could push the Compact closer to the 10 percent spending requirement, but at the risk of few savings. A new heat pump relative to an already efficient fossil fuel heating system may not provide substantial savings or benefits, or the Compact may find heat pumps are not an optimal choice for many customers. This approach could result in income eligible programs that are not cost-effective.

An alternative program implementation strategy would be for the Compact to set the residential and C&I budgets based on the low-income budget. The Compact could establish the low-income budget needed to serve its low-income customers, then set the residential and C&I budgets such that the low-income budget is 10 percent of those budgets. This would result in significantly reduced spending on the residential and C&I customer sectors, which is likely not the intent of low-income spending statute and would not provide equitable service to all customers. Synapse does not recommend this approach.

4.2. Alternative policy approaches

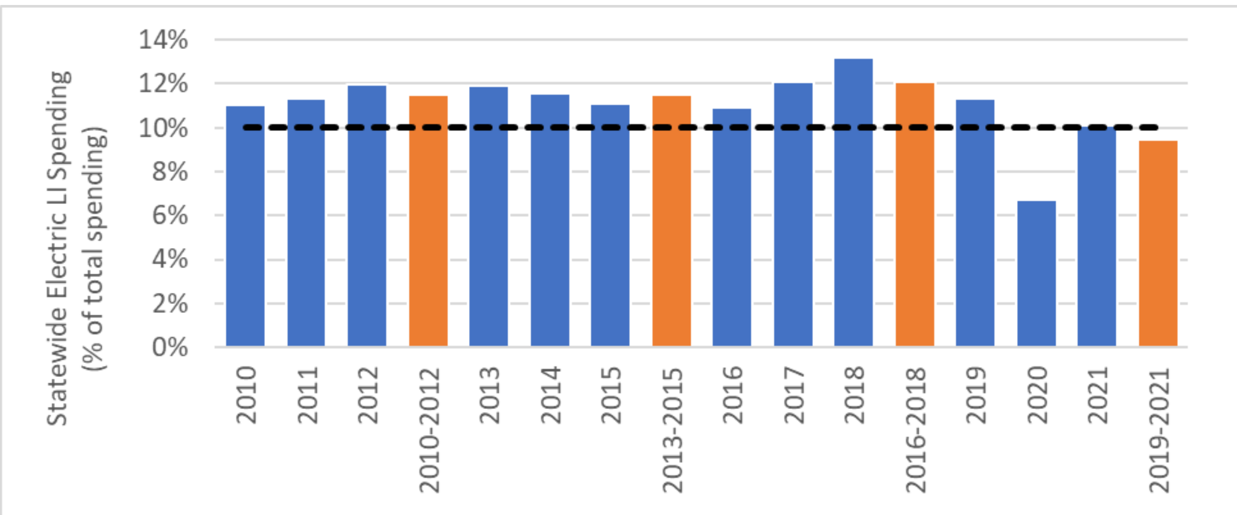
Should program design solutions continue to result in the Compact falling short of the minimum spending requirement for low-income customers, then the Department could consider alternative policy views to implement the statutory requirement.

The Department could recognize that the amount spent on low-income customers is not fully accounted for in the low-income sector budgets. The Program Administrators serve low-income customers through the residential programs as well as the low-income programs, so the current low-income calculations may be artificially low.

Additionally, the Department could recognize that the statutory requirement is 12 years old, and that the Compact has essentially achieved the goal of this requirement—to comprehensively and consistently serve low-income customers—over those 12 years. The legislators may not have expected the Compact to be as successful in this period; but, given the information the Department now has available, it could waive this requirement for the Compact going forward.

Finally, the Department could review statewide low-income spending to assess whether 10 percent of the statewide electric budget was spent on low-income customers. Figure 4 summarizes statewide electric spending on the low-income sector for each year from 2010 through 2021.[28] With the exception of the 2019-2021 term due to the impacts of the global COVID-19 pandemic, the electric Program Administrators have successfully spent at least 10 percent on the low-income sector for each year and for each three-year plan term.[29] Electric Program Administrators spent 11.5 percent on low-income customers for the 2010–2012 and 2013–2015 terms, and 12.1 percent on low-income customers for the 2016–2018 term. Low-income customers within Massachusetts are being comprehensively and equitably served, and the statute is being fulfilled on a statewide basis despite circumstances unique to each Program Administrator's service territory that have presented challenges in individually meeting the spending targets.

Figure 4. 2010–2021 statewide low-income spending as a percent of total spending



Source: www.MassSaveData.com.

4.3. Conclusion

Although the Compact has not spent its planned low-income budgets, it has consistently provided direct benefits to participants and ratepayers. Since the first three-year plans began in 2010, for both planning and reporting, the Compact's low-income programs have been cost-effective at the customer sector level with benefit-cost ratios greater than 1.0 using the Massachusetts Total Resource Cost Test.

[28] The 2021 values included here are based on near-final draft results for inclusion in the 2019-2021 Term Report due to be filed August 1, 2022. The numbers here may not align exactly with final filed results for each Program Administrator.

[29] The gas Program Administrators have also spent at least 20 percent on the low-income sector statewide for each three-year term, excepting the 2019–2021 term, which is likely to be underspent. See Table 4.