FINAL REPORT

Commercial and Industrial 2011-2016 Mid-size Customer Assessment

Massachusetts Program Administrators and Energy Efficiency Advisory Council

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1 EXECUTIVE SUMMARY
This Executive Summary provides a high-level review of the results of the Commercial and Industrial (C&I) 2011-2016 Mid-size Customer Assessment Study (2017 study). In this section, we state the study objectives, summarize the evaluation approach, and present key findings, conclusions, and recommendations.

1.1 Overview of objectives and approach
This study expands on the Mid-size Customer Needs Assessment completed in 2013 (2013 study). ¹ The 2013 study analyzed mid-size electric accounts in the 2011 C&I Evaluation Database and concluded that mid-size electric accounts presented opportunities for the Massachusetts Program Administrators (PAs) to increase savings. The 2013 study found that opportunities for increased savings from mid-size accounts may consist of:

- Expanded use of project expeditors, who may provide more comprehensive services than direct install contractors
- Increased training and expertise for vendors to provide comprehensive services
- Increased coordination among vendors to identify and utilize firms with differing expertise to provide more comprehensive solutions
- Improving the classification of mid-size gas accounts that were previously classified as small accounts based on electric demand and serviced only by direct install electric contractors
- Engaging nonparticipating vendors

Since the 2013 study, the PAs have reported that they have taken measures to increase savings for these accounts. The 2014 C&I Customer Profile suggested that these changes could be responsible for an increased proportional share of savings relative to the proportional share of consumption for mid-size electric accounts, as well as an increased proportional share of participation relative to the population. ² The 2017 study documented and evaluated the changes made by the PAs to address mid-size accounts from 2011-2016.

The overarching goals of this study were to:

- Provide an evaluation of the impact of steps PAs have taken to improve service to mid-size accounts from 2011-2016
- Examine changes in performance indicators over that time
- Determine whether there is a relationship between changes in PA practices and changes in performance indicators

To address these goals, DNV GL:

² This is defined as the contribution ratio in the 2014 C&I Customer Profile Report.
• Identified changes in the PAs’ approach towards addressing the needs of mid-size customers from 2011-2016
• Refined the definition or classification of mid-size accounts to reflect differences across fuels, PAs, and industries
• Described the population of mid-size accounts in terms of industry, facility, and system characteristics
• Contrasted differences in the awareness of program benefits, participation, and achieved savings ratios of mid-size electric and gas accounts relative to other size and customer segments over time (e.g., industry or geographic region)
• Determined whether changes in PA or contractor practices reduced, eliminated, or altered the need for more targeted services to the mid-size accounts, or various sub-groups within that classification

A high-level synopsis of the research approach is as follows:

• **Identify current practices through PA interviews** – The 2013 study identified a number of recommendations to the PAs to improve service to mid-size customers. The PAs affirmed having adopted many of these recommendations since that report was completed. DNV GL completed a series of 9 in-depth interviews (IDIs), engaging staff at each of the PAs, to identify changes to PA practices since the 2013 study that could impact service to mid-size accounts.

• **Identify trends in mid-market needs through market actor interviews/review of previously collected on-site data** – Through interviews with key market actors, the 2013 study provided valuable insights about the divergent needs of customers in the mid-size market. DNV GL conducted a series of 52 IDIs with market actors to assess progress made regarding these insights.

• **Exploratory data analysis** – DNV GL worked with the PAs and Energy Efficiency Advisory Council (EEAC) Consultants to identify key performance indicators (KPIs) for electric and gas accounts, to identify how those KPIs have evolved between 2011 and 2016, and to determine whether that evolution corresponds to changes in PA marketing or other engagement practices, and/or changes to mid-size participant perceptions.

1.2 Conclusions

At the statewide population level, mid-size electric and gas accounts are no longer underperforming large and small accounts in terms of contribution ratio, and have outperformed large accounts during some recent program years. However, there are still opportunities for some PAs to improve service to these accounts.

Figure 1-1 and Figure 1-2 show the contribution ratio of electric and gas accounts by size over time.
Figure 1-1. Contribution ratio over time by size segment, electric

Figure 1-2. Contribution ratio over time by size segment, gas
**PAs have changed their criteria for classifying accounts by size.**

Most electric PAs have changed their primary size criteria from peak demand to annual energy consumption for all size accounts, including mid-size. This matches a similar shift for the small business core initiative starting in January 2016. The Massachusetts Three-Year Plan 2016-2018 defined the limit for this initiative as an aggregate annual usage of less than 1.5 million kWh and/or 40,000 therms.

Three years ago, peak demand was the most common criterion for segmenting electric customers by size and differentiating marketing approaches, but the PAs did not apply this criterion consistently. The former upper bound for defining eligibility for the small business core initiative was less than 300 kW. Currently, only National Grid reported using peak demand (1,000 kW) to help differentiate accounts managed by its strategic sales team, although it also differentiates large accounts based on the strategic importance of the accounts.

While Eversource segments its customers according to usage similarly to other PAs, it is unique in also segmenting its customers according to usage quartiles, where mid-size accounts constitute the second lowest quartile (Q3) of usage among its accounts.

**National Grid, Eversource, and Cape Light Compact have developed specific customer engagement practices based on industry segments, many of which include a lot of mid-size accounts. Other PAs have begun targeting specific industry segments, and have expressed interest in or intent to target additional industry segments.**

National Grid assigns individual customers to specific account representatives based on industry segment. Many of these industry segments contain numerous mid-size accounts.

Eversource has implemented a mid-size business group to directly engage its Quartile 3 (mid-size) accounts, consisting of account representatives, project engineers, energy efficiency consultants, and project expediters to serve the needs of each industry segment. This strategy came from lessons learned through work with its larger Q1 and Q2 accounts.

The channel-specific groups at these PAs have allowed them to identify best practices by industry segment and educate vendors on how those practices apply to mid-size customers based on their industry segment. These PAs also report greatly increasing their number of qualified trade allies who are able to offer a wide range of electric and gas expertise to customers (although many trade allies remain focused on lighting and hot water measures).

While the smaller PAs indicate they do not have a large enough customer base, and therefore a need, to segment their mid-size or large customers by industry or other criteria, some PAs have expressed interest in or intent to target certain business segments. The smaller PAs can use the new size criteria to track these customers’ performance relative to large and small businesses in the future. For example, while Berkshire Gas has not typically segmented its accounts by industry, it recently targeted food service establishments (and other sectors with potentially large kitchens) to install more high-efficiency food service equipment.

As another example, while Cape Light Compact did not recognize a mid-size segment in 2013, it now has a group consisting of high-usage accounts that still qualify for the small business core initiative (less than the state-wide usage threshold of 1.5M kWh), has targeted grocery and hospitality, and is developing additional
industry-specific initiatives to work with this part of its customer base. Although Unitil does not have a specific mid-size account approach, it speculates that its high-usage small accounts (approximately 50 electric and 20 gas accounts) may be worth engaging as a separate group.

**While PA and vendor communication has improved in many ways, some vendors remain confused about PAs’ segmentation approaches and vendor roles.**

Our IDIs indicated that PAs have increased their communication with vendors about targeting customers who are mid-size, including pushing for more comprehensive solutions, and that vendors have increased their communication with customers about energy efficiency. Many vendors said that the PAs do a good job of helping identify opportunities, and of informing customers and vendors about the programs, application process, and rebates. Our data analysis suggests that this effort has positively impacted participation in the mid-size segment since the 2013 study. For mid-size, unmanaged electric accounts, participation rates increased year over year from 2011-2015, driven primarily by additional accounts participating in the PAs’ upstream lighting and upstream HVAC offerings.

At the same time, some vendors reported frustration with inconsistencies across PAs and the perceived frequency of changes to program definitions. While most vendors could identify some specific changes PAs had made to internal organization and resources, they had less clarity about how these changes fit into the broader context of PA strategies and vendor roles.

**Some vendors could benefit from additional PA support/communication in the areas of engineering, training, and customer engagement.**

Some vendors indicated that the PAs did not provide adequate engineering support, but the nature of their desired support varied. While most vendors we interviewed who serve mid-size customers offer engineering and design build services, and have professional engineers on staff, some vendors said their engineering staff does not have enough experience with the latest energy efficiency technologies, and would like more training. Other vendors have the necessary engineering expertise as well as the necessary energy efficiency experience, but do not necessarily have the bandwidth to design comprehensive energy efficiency solutions for all customers. Finally, there are a few vendors who believe they have greater experience and expertise than PA engineering staff, and would like to submit and discuss their project proposals to PA staff with comparable experience.

Vendors expressed concern about PA staff turnover and about inconsistency in the levels of knowledge and competency among PA staff, both within a PA and across PAs. Vendors said that with frequent changes to PA staff and program offerings, more experienced staff leave and are replaced by staff lacking technical expertise and customer knowledge, and who are more focused on the administrative, accounting, and marketing aspects of the programs. Vendors also cited inconsistency in the availability and responsiveness of PA staff.

Vendors are enthusiastic about the training offered by the PAs, including the monthly project expeditor meetings, the PA-sponsored webinars, and the Energy Efficiency Expo event at Gillette Stadium, which also offered networking opportunities. Vendors find training to be more focused on selling than technology, which some like and some don’t.
Some vendors said that there has not been effective communication about the role of contract project expeditors. While many vendors feel that partnering with others is essential to servicing mid-size accounts, they are not aware of resources offered by the PAs to assist with partnering opportunities apart from trade shows.

In terms of targeting customers for energy efficiency engagement, generally, larger vendors feel they don’t need the PAs to help them determine whom to target, while some smaller vendors want more assistance from the PAs in this area.

**Upstream programs have had a substantial impact on participation of mid-size accounts.**

Our analysis of the program data found that the Upstream Lighting program, launched in 2011, has effectively served the needs of many mid-size customers. Our review of the 2016 data also confirms that the upstream hot water offering (first available in 2015) positively impacts mid-size gas participation.

A few contractors say the upstream program adversely impacts them by sending profits to manufacturers and distributors. Some contractors are also concerned that it erodes their ability to achieve more substantial savings: When a customer installs all new upstream lighting, for example, it becomes less likely that they will want to install more comprehensive lighting measures like lighting control systems. Further, they indicate the market has been flooded with many contractors only selling upstream lighting, so that by the time they approach a customer to perform a more comprehensive project, they have already received multiple proposals for upstream projects.

**The 2013 study recommended that PAs encourage more custom/comprehensive energy efficiency projects to increase depth of savings. Our findings indicate a need for further attention to this.**

While the data show that more custom/comprehensive measures are being installed since the 2013 study, these measures still represent a very small portion of overall energy efficiency installations. Data analysis found that often, contractors are installing upstream lighting rather than custom/comprehensive solutions; vendor IDIs found that vendors are still heavily focused on lighting retrofits, and do not segment or target specific industries. Among gas installations, custom HVAC and comprehensive design have taken on a much more substantial role since the 2013 study, increasing participant depth of savings for some accounts, though not enough to compensate for the fact that most gas installations are still prescriptive hot water at the population level. Additionally, customers appear to only be considering equipment replacement (replace on failure, early replacement) rather than system optimization. System optimization is a good potential avenue to achieve greater HVAC savings for customers who cannot currently afford capital upgrades.

There was substantial variation from segment to segment as to whether the trend in participant savings achieved was positive, negative, or relatively flat from 2011-2016. Yet, most segments have seen decreases in participant savings achieved over the past 2 to 3 years. Importantly, patterns of measure installation within industry segments are consistent with how the PAs say they have targeted industries for various measures since the 2013 study. For example, in accommodation and food service, a large spike in gas custom hot water installations and food service during 2014-2015 corresponds with a gas PA effort to get custom measures into hotel laundry and food preparation facilities.
Our data analysis shows that on average, 64% of each electric PA's active mid-size account base has participated since 2011, and 27% of each gas PA's active mid-size account base has participated since 2011 (see Figure 1-3 and Figure 1-4).

**Figure 1-3. Aggregate percent of 2016 active mid-size electric accounts participating over time**
Our customer IDIs show that the majority of customers who previously installed measures said they still want to install more.\(^3\) The majority of customers also said there are no real barriers to doing more energy efficiency work.\(^4\) For those who cited barriers, customers seem to be more concerned with expeditious and accurate ROI and the administrative burden of doing projects than on the actual upfront monetary costs of projects.\(^5\) The overwhelming majority of customers said that either a PA or a vendor helped them make decisions about what energy efficiency measures they could install, and whether or not to move forward with a project, including assisting with the calculation of ROI for their projects. For a majority of customers, ROI is a primary concern in whether a project will move forward, potentially stopping a project even if there are other good reasons to move forward, due to company policies requiring payback within a certain period. They rely on the PAs and vendors to provide them with accurate savings estimates, and may be less likely to participate in the future if savings estimates from a past project turned out to be incorrect.

**In other words, the PAs have a range of opportunities to influence depth of savings by encouraging more custom/comprehensive projects.** Since so much of the mid-size electric market consists of customers who have already participated in PA energy efficiency programs, most mid-size customers who have participated want to install more measures, and mid-size customers are heavily influenced by PAs and vendors in choosing which measures to install, electric PAs have an opportunity to

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\(^3\) Those who had installed electric measures most frequently cited wanting to install motors and drives, followed by HVAC. The majority of those who had installed gas measures had also installed electric measures (typically lighting), and most frequently cited wanting to install HVAC, followed by controls and food service.

\(^4\) This notably contradicts the vendor IDIs, in which nearly all vendors cite project cost as the primary barrier to participation. This difference could be due simply to customers speaking differently to different audiences.

\(^5\) Some of those who completed previous project cited a lack of trust in savings estimates, as they were incorrect in the past.
steer repeat mid-size participants in the direction of custom/comprehensive projects. Since less of the mid-size gas market consists of customers who have already participated in programs, and we have seen targeted gas custom offerings increase mid-size custom gas installations, gas PAs have an opportunity to 1) engage new mid-size participants through targeted custom offerings and 2) steer repeat mid-size participants in the direction of custom/comprehensive projects.

1.3 Considerations

This study led us to develop the following considerations:

- PAs who have developed criteria for defining mid-size accounts have had success targeting specific industries for energy efficiency projects.
- PAs who have already begun segmenting by industry should continue to do so.
- PAs who have not developed industry-specific engagement strategies should consider doing so. Even small PAs with few mid-size customers could benefit from industry-specific targeting. Cape Light Compact’s industry-specific engagement strategy has resulted in higher customer participation than the strategies of other small PAs.
- A state-wide logic model might help define a strategy for engaging mid-size customers and the vendors serving those customers. We were unable to glean such a model from the interviews we completed with the PAs and vendors, but this might lead to more consistent results across PA territories.

Some vendors expressed concern regarding consistent knowledge levels at the PAs, as well as how vendors fit into the PAs‘ customer engagement strategies. These concerns could be addressed with three changes:

- PAs could improve communication regarding project roles and strategies. For example, some PAs are bringing in vendors to serve in the role of technical expert, but these vendors may not fully recognize that this is their role. Improved communication could eliminate any confusion.
- The PAs could increase their internal training of staff to ensure that all staff has comparable knowledge of customers and customer solutions.
- The PAs could use a third-party technical expert firm to support vendors state-wide. This firm could provide engineering review for energy efficiency projects, to ensure consistency of projects and expediency of review.

As in the 2013 study, vendors continue to indicate that cost is a substantial barrier to participation in energy efficiency initiatives, while customers indicated they were more concerned about ROI. Our interviews yielded some possible solutions:

- The PAs could simplify the incentive process. With the work required to determine savings on custom projects, this may not be feasible, but any change that reduced the time burden on the vendors and customers would likely be welcome.
- Where possible, the PAs could consider providing on-bill financing for a greater number of projects.

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6 Interviews highlighted two different vendor roles. One was delivering energy efficiency programs to certain PAs’ customers. The other was the conducting technical assistance studies to inform customers of the best path forward in completing their energy efficiency project.
The PAs could help vendors coordinate to ensure that comprehensive projects move forward, and are completed as quickly as feasible to minimize business impacts. This could be facilitated by the PAs allowing project management to be an approved project cost. The PAs could also provide resources such as a directory of vendors, their specialties, past projects, and ratings to improve coordination efforts on part of the vendor community. The PAs may also provide lists of firms who could serve the role of general contractor.

Some customers are wary of repeat participation, since the projected ROI from their first project did not materialize. The PAs could consider requiring more detailed project planning, as well as commissioning throughout the project or measure installation, to make sure that the proposed project will save as much energy as feasible. As an example of something the PAs could consider to help communicate project impacts, a pro forma ROI tool might give customers a realistic idea of the project’s potential impact on their bottom lines, provided the project is completed according to the initial design.

Finally, to encourage continued improvement in the quality of energy efficiency installations, the PAs could make changes to the vetting of contractors and selling practices, to make sure that contractors are encouraging completion of comprehensive projects that meet more of the customer’s energy efficiency needs, versus only encouraging easier projects like upstream lighting. The PAs and vendors indicated that such communication is already occurring, but the data show increasing amounts of mid-size customer participation coming from the upstream programs.

### 1.4 Future research

Our interviews with mid-size participants highlighted customers’ desire to pursue a diverse set of additional energy efficiency projects in the future, as long as they’re economically feasible. These interviews also highlighted that there is a tendency to pursue capital/equipment replacement projects, versus projects that focus more on system optimization. Despite the short measure life, retro-commissioning projects may represent an opportunity for mid-size customer savings in the future, but none of the customers answering our open-ended question indicated that this is something they were considering as an energy efficiency project. Future research could explore why customers aren’t expressing greater interest in these system optimization projects.
2 INTRODUCTION

This 2011-2016 Mid-size Customer Assessment Study (2017 study) expands on the Mid-size Customer Needs Assessment Study completed in 2013 (2013 study), which analyzed mid-size electric accounts in the 2011 C&I Evaluation Database. The 2013 study concluded that mid-size electric accounts presented opportunities for the Massachusetts Program Administrators (PA) to increase savings, as mid-size accounts (defined in that study as those with demand between 300 kW and 750 kW) had neither the depth of savings of small accounts (<300 kW) nor the high participation rate of large accounts (>750 kW). Specifically, the 2013 study concluded that opportunities for increased savings from mid-size accounts may steam through:

- Expanding the use of project expeditor contractors, who may provide more comprehensive services than direct install contractors
- Increasing training and expertise for vendors to provide comprehensive services
- Increasing coordination among vendors to identify and utilize firms with differing expertise to provide more comprehensive solutions
- Improving the classification of mid-size gas accounts that were previously classified as small accounts based on electric demand and therefore serviced only by direct install-electric contractors
- Engaging nonparticipating vendors

Since the 2013 study, the PAs have reported taking measures to increase savings for these accounts. The 2014 C&I Customer Profile study suggested that these changes could be responsible for an increased proportional share of savings relative to the proportional share of consumption for mid-size electric accounts, as well as an increased proportional share of participation relative to the population. The 2017 study documents and evaluates the changes made by the PAs to address mid-size accounts from 2011-2016.

2.1 Study objectives

The goals of this study were to:

- Provide an evaluation of the impact of steps PAs have taken to improve service to mid-size accounts from 2011-2016
- Examine changes in performance indicators over that time
- Determine whether there is a relationship between changes in changes in PA practices and changes in performance indicators

To address these goals, DNV GL:

- Identified changes in the PAs’ approach towards addressing the needs of mid-size customers from 2011-2016
- Refined the definition or classification of mid-size accounts to reflect differences across fuels, PAs, and industries

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8 This is defined as the contribution ratio in the 2014 C&I Customer Profile Report.
• Described the population of mid-size accounts in terms of industry, facility, and system characteristics
• Contrasted differences in the awareness of program benefits, participation, and achieved savings ratios of mid-size electric and gas accounts relative to other size and customer segments over time (e.g., industry or geographic region)
• Determined whether changes in PA or contractor practices reduced, eliminated, or altered the need for more targeted services to the mid-size accounts, or various sub-groups within that classification.

2.2 Explanation of terms
This section presents brief explanations of various key terms used throughout this report.

**Customer** – The decision-maker controlling one or more gas or electric accounts. In the case of chains and franchises, this may be the corporate parent rather than a particular franchise owner.

**Account** – A record of energy consumption tied to a specific physical meter and location

**Sub-account** – An account falling under a particular customer

**Market actor** – Individual or company who is involved in some aspect of the energy efficiency process. In this report, market actors include those on the demand side (e.g., customers) and those on the supply side (e.g., PAs and contractors).

**Segmentation criteria** – The way that the PAs categorize accounts by size based on annual account consumption; sometimes referred to in this report as “size criteria”

**Trade allies** – A group of contractors, engineers, energy-saving product wholesalers, distributors, or retailers who potentially support the PAs’ energy efficiency initiatives in the course of their business

**Vendors** – Companies that the PAs partner with to help them administer their energy efficiency initiatives

2.3 Organization of report
The remainder of this report is organized as follows:

• **Section 3: Methodology** – This section presents DNV GL’s approach to the following:
  - Identifying current practices through PA interviews
  - Identifying trends in mid-market needs
  - Exploratory data analysis

• **Section 4: PA in-depth interview findings** - This section presents the findings from our IDIs about:
  - Customer segmentation criteria and the effects of segmentation changes
  - The various PAs’ customer engagement approaches

• **Section 5: Supply side market actor in-depth interview findings** – This section presents results from the IDIs with PA marketing staff and contractors serving mid-size customers.
• Section 6: Customer interview findings – This section presents results from the IDIs with mid-size gas and electric program participants.

• Section 7: Exploratory data analysis - This section presents performance metrics by size segment and industry, and compares performance metrics with market actor interview findings

• Section 8: Conclusions and Considerations - This section integrates the findings from the interviews and data analysis and presents DNV GL’s conclusions, recommendations, and considerations based on these findings.

• APPENDIX A: Initial PA in-depth interview guide

• APPENDIX D: Customer guides

• APPENDIX E: Contractor guide

• APPENDIX F: PA staff in-depth interview guides
3 METHODOLOGY

DNV GL’s methodology began with identifying any changes the PAs had made to their approach to serving mid-size accounts since 2011 (or since the analysis period of the 2013 study). We achieved this by conducting interviews with both PAs and key market actors. Once we had identified the changes, we conducted data analysis and primary research to evaluate the effectiveness of the altered practices on certain performance indicators, such as account participation and achieved population savings, for both gas and electric accounts over multiple years. While we group accounts together under customers for some analyses, we typically focused on account-level metrics rather than customer-level data analysis chiefly because account-level analysis allowed us to directly compare results to the 2013 study, which was also conducted at the account level.

The analyses we conducted for this study leveraged data in the C&I Evaluation Database. They expanded on the 2013 study by including accounts from 2011 to 2016, and by examining both electric and gas accounts, instead of electric only.

3.1 Identifying current practices though PA interviews

The 2013 study made a number of recommendations for improving service to mid-size accounts. The PAs affirmed having adopted many of these recommendations since the 2013 study report was completed. DNV GL conducted a series of 9 IDIs, engaging staff at each of the PAs, to identify changes to PA practices since the 2013 study that could impact service to mid-size accounts.

3.1.1 In-depth interview guide development

DNV GL drafted IDI guides to address the following research objectives:

- Define criteria for segmenting electric and gas accounts by size and other factors for their current efforts.
- Identify changes to strategies adopted by PAs since 2011 to address the needs of mid-size accounts and/or segments that contain a large share of mid-size accounts, exploring how these strategies differ between PAs, fuel types, and industries over time.
- Determine how practices differ by sub-segments.

3.2 Identifying trends in mid-market needs through market actor interviews and review of previously collected onsite data

Through interviews with key market actors, the 2013 study provided the following valuable insights about the divergent needs of customers in the mid-size market:

- **Need for improved marketing support** – The PAs should increase education, training, and marketing to energy service providers to ensure that firms have the necessary specialized expertise to identify and service unique customer needs.
- **Need for more contractors sufficiently trained in comprehensive solutions** – Our research indicated that there is an insufficient number of contractors trained in comprehensive or custom solutions available to service the needs of mid-size customers.
• **Mid-size customers are less profitable for contractors to pursue** – Attracting more qualified firms to address mid-size customer needs will require reducing the cost barriers to qualifying comprehensive projects, enabling firms to remain price-competitive. This is more of an issue for the larger PAs, who rely on third-party support.

• **Project expeditors need more/better-qualified leads for mid-size customers** – Because project expeditors frequently have to partner with other firms to meet the needs of mid-size firms, it is important that they receive qualified leads from the PAs, detailing the electric and gas measures to expect.

DNV GL conducted a series of 50 IDIs with market actors to assess progress made regarding these insights. Whereas the PA IDIs focused on refining the definition of mid-size customers and on overall changes to practices used to address these customers’ needs, the market actor IDIs assessed changes to practices as perceived by market actors from 2011-2016, and allowed for comparison to objective performance indicators developed through this study’s exploratory data analysis.

### 3.2.1 In-depth interview guide and sample development

DNV GL conducted 52 IDIs with both supply side and demand side market actors to contextualize the increased performance among mid-size accounts that was seen in the 2014 C&I Customer Profile. We prepared two interview guides: one for supply-side market actors and one for demand-side market actors. Further, we developed a sample design targeting customers and vendors in each PA’s territory to ensure a diversity of responses.

• **Supply-side market actors:**
  - PA internal staff (9 IDIs) – Account representatives and sales representatives are individuals internal to the PAs who interact directly with customers. The former oversees the management of large and mid-size accounts to ensure that the PAs are meeting customers’ business needs, including energy efficiency. The 2013 study found that the latter consisted of internal representatives focused specifically on meeting customers’ energy efficiency needs.
  - Contractors (11 IDIs) – Some PAs offer third-party contractors to assist mid-size customers in identifying and scoping their energy efficiency needs. These individuals help identify the appropriate energy efficiency solutions for firms that do not have internal energy managers and may not have dedicated PA account representatives.
  - Direct install contractors (10 IDIs) – While direct install contractors are focused on small customers, the 2013 study found that these contractors often service customers that are small based on their electric consumption, but mid-size based on their gas consumption. During interviews, a number of these contractors also indicated serving mid-size customers outside of the direct install program, even though that was not their primary business.

• **Demand-side market actors:**
  - Mid-size gas and electric program participants (10 gas and 12 electric interviews) – While supply-side market actor interviews yielded insights into the changes PA marketing staff and external contractors made to further engage mid-size accounts, our interviews with samples of gas and electric program participants helped us understand how customers have perceived these changes, and whether and how those changes have driven changes in participation.
- We interviewed 7 electric and 5 gas participants who participated multiple times since 2011, to gauge changes in participant perception to PA/contractor engagement over time.

- We interviewed 5 electric and 5 gas participants who participated for the first time in 2014 or 2015 to gauge how changes in PA/contractor engagement with mid-size accounts since 2011 may have led these accounts to participate.

Table 3-1 provides a description of the vendors interviewed for this study, including the customer sizes served, PAs served, industries served, measures installed, and whether the vendor provides its customers with engineering services. Table 3-2 shows the industry sector, electric PA, gas PA, participation information, and all measures installed by interviewed mid-size customers.
Table 3-1. Description of interviewed vendors

| Vendor | Full service Engineering or Design/Build? | Small | Mid-Size | Large | Berkshire | Light | Compact | Cape | Light | Compact | Columbia | Eversource | Liberty | National Grid | Unilat | CHP | Controls/EMS | Comprehensive | HVAC | Lighting | Motors/Drives | Compressed Air | Refrigeration | Renovables | Weatherization | Government | Food Sales | Food Service | Education | Hospitality | Health care | Manufacturing | Public Assembly | Warehouse | Office | Retail |
|--------|----------------------------------------|-------|---------|-------|-----------|-------|--------|------|-------|--------|----------|------------|---------|----------------|--------|-----|-------------|---------------|------|----------|---------------|----------------|-----------|----------|---------------|-----------|-------------|--------------|---------------|----------------|-----------|-------|-------|
| 1      | Yes                                    | x     | x       | x     | x         | x     | x      | x    | x     | x      | x        | x         | x       | x              | x      | x  | x           | x              | x    | x        | x             | x            | x         | x        | x              | x          | x           | x           | x             | x             | x        | x    |
| 2      | Yes                                    | x     | x       | x     | x         | x     | x      | x    | x     | x      | x        | x         | x       | x              | x      | x  | x           | x              | x    | x        | x             | x            | x         | x        | x              | x          | x           | x           | x             | x             | x        | x    |
| 3      | Yes                                    | x     | x       | x     | x         | x     | x      | x    | x     | x      | x        | x         | x       | x              | x      | x  | x           | x              | x    | x        | x             | x            | x         | x        | x              | x          | x           | x           | x             | x             | x        | x    |
| 4      | Yes                                    | x     | x       | x     | x         | x     | x      | x    | x     | x      | x        | x         | x       | x              | x      | x  | x           | x              | x    | x        | x             | x            | x         | x        | x              | x          | x           | x           | x             | x             | x        | x    |
| 5      | Yes                                    | x     | x       | x     | x         | x     | x      | x    | x     | x      | x        | x         | x       | x              | x      | x  | x           | x              | x    | x        | x             | x            | x         | x        | x              | x          | x           | x           | x             | x             | x        | x    |
| 6      | Yes                                    | x     | x       | x     | x         | x     | x      | x    | x     | x      | x        | x         | x       | x              | x      | x  | x           | x              | x    | x        | x             | x            | x         | x        | x              | x          | x           | x           | x             | x             | x        | x    |
| 7      | No                                     | x     | x       | x     | x         | x     | x      | x    | x     | x      | x        | x         | x       | x              | x      | x  | x           | x              | x    | x        | x             | x            | x         | x        | x              | x          | x           | x           | x             | x             | x        | x    |
| 8      | Yes                                    | x     | x       | x     | x         | x     | x      | x    | x     | x      | x        | x         | x       | x              | x      | x  | x           | x              | x    | x        | x             | x            | x         | x        | x              | x          | x           | x           | x             | x             | x        | x    |
| 9      | Yes                                    | x     | x       | x     | x         | x     | x      | x    | x     | x      | x        | x         | x       | x              | x      | x  | x           | x              | x    | x        | x             | x            | x         | x        | x              | x          | x           | x           | x             | x             | x        | x    |
| 10     | Yes                                    | x     | x       | x     | x         | x     | x      | x    | x     | x      | x        | x         | x       | x              | x      | x  | x           | x              | x    | x        | x             | x            | x         | x        | x              | x          | x           | x           | x             | x             | x        | x    |
| 11     | Yes                                    | x     | x       | x     | x         | x     | x      | x    | x     | x      | x        | x         | x       | x              | x      | x  | x           | x              | x    | x        | x             | x            | x         | x        | x              | x          | x           | x           | x             | x             | x        | x    |
| 12     | Yes                                    | x     | x       | x     | x         | x     | x      | x    | x     | x      | x        | x         | x       | x              | x      | x  | x           | x              | x    | x        | x             | x            | x         | x        | x              | x          | x           | x           | x             | x             | x        | x    |
| 13     | No                                     | x     | x       | x     | x         | x     | x      | x    | x     | x      | x        | x         | x       | x              | x      | x  | x           | x              | x    | x        | x             | x            | x         | x        | x              | x          | x           | x           | x             | x             | x        | x    |
| 14     | Yes                                    | x     | x       | x     | x         | x     | x      | x    | x     | x      | x        | x         | x       | x              | x      | x  | x           | x              | x    | x        | x             | x            | x         | x        | x              | x          | x           | x           | x             | x             | x        | x    |
| 15     | Yes                                    | x     | x       | x     | x         | x     | x      | x    | x     | x      | x        | x         | x       | x              | x      | x  | x           | x              | x    | x        | x             | x            | x         | x        | x              | x          | x           | x           | x             | x             | x        | x    |
| 16     | Yes                                    | x     | x       | x     | x         | x     | x      | x    | x     | x      | x        | x         | x       | x              | x      | x  | x           | x              | x    | x        | x             | x            | x         | x        | x              | x          | x           | x           | x             | x             | x        | x    |
| 17     | Yes                                    | x     | x       | x     | x         | x     | x      | x    | x     | x      | x        | x         | x       | x              | x      | x  | x           | x              | x    | x        | x             | x            | x         | x        | x              | x          | x           | x           | x             | x             | x        | x    |
| 18     | Yes                                    | x     | x       | x     | x         | x     | x      | x    | x     | x      | x        | x         | x       | x              | x      | x  | x           | x              | x    | x        | x             | x            | x         | x        | x              | x          | x           | x           | x             | x             | x        | x    |
| 19     | No                                     | x     | x       | x     | x         | x     | x      | x    | x     | x      | x        | x         | x       | x              | x      | x  | x           | x              | x    | x        | x             | x            | x         | x        | x              | x          | x           | x           | x             | x             | x        | x    |
| 20     | No                                     | x     | x       | x     | x         | x     | x      | x    | x     | x      | x        | x         | x       | x              | x      | x  | x           | x              | x    | x        | x             | x            | x         | x        | x              | x          | x           | x           | x             | x             | x        | x    |
| 21     | Yes                                    | x     | x       | x     | x         | x     | x      | x    | x     | x      | x        | x         | x       | x              | x      | x  | x           | x              | x    | x        | x             | x            | x         | x        | x              | x          | x           | x           | x             | x             | x        | x    |

Percent of Vendors: 8% 16% 30% 1% 24% 43% 43% 16% 24% 19% 38% 33% 11% 48% 33% 32% 29% 52% 10% 16% 57% 52% 48% 76% 48% 67% 36% 48% 52% 67% 57%

---

9 The data in this table regarding PAs served is based solely on responses to our interview question regarding which PAs each contractor had worked with in the past 3 years.
Table 3-2. Description of interviewed mid-size customers

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
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<tbody>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>Electric</td>
</tr>
<tr>
<td>Accom and Food Serv</td>
<td>Eversource</td>
<td>Eversource</td>
<td>Multiyear</td>
<td>Yes</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Eversource</td>
<td>National Grid</td>
<td>Multiyear</td>
<td>Yes</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>National Grid</td>
<td>National Grid</td>
<td>Multiyear</td>
<td>Yes</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Cape Light Compact</td>
<td>National Grid</td>
<td>Single Year</td>
<td>Yes</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Eversource</td>
<td>Eversource</td>
<td>Single Year</td>
<td>Yes</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>National Grid</td>
<td>Eversource</td>
<td>Single Year</td>
<td>Yes</td>
<td>x</td>
</tr>
<tr>
<td>Educational Services</td>
<td>Eversource</td>
<td>National Grid</td>
<td>Multiyear</td>
<td>Yes</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Eversource</td>
<td>Berkshire Gas</td>
<td>Single Year</td>
<td>Yes</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>National Grid</td>
<td>Columbia Gas</td>
<td>Single Year</td>
<td>Yes</td>
<td>x</td>
</tr>
<tr>
<td>Finance and Insurance</td>
<td>National Grid</td>
<td>None</td>
<td>Single Year</td>
<td>No</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Eversource</td>
<td>Eversource</td>
<td>Multiyear</td>
<td>Yes</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>National Grid</td>
<td>None</td>
<td>Multiyear</td>
<td>Yes</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Unitil</td>
<td>Unitil</td>
<td>Multiyear</td>
<td>No</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>National Grid</td>
<td>None</td>
<td>Single Year</td>
<td>Yes</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Eversource</td>
<td>Berkshire Gas</td>
<td>Single Year</td>
<td>No</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Eversource</td>
<td>Columbia Gas</td>
<td>Single Year</td>
<td>Yes</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>National Grid</td>
<td>Eversource</td>
<td>Single Year</td>
<td>Yes</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>National Grid</td>
<td>Eversource</td>
<td>Single Year</td>
<td>Yes</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>National Grid</td>
<td>Liberty Gas</td>
<td>Single Year</td>
<td>No</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Eversource</td>
<td>National Grid</td>
<td>Multiyear</td>
<td>Yes</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>National Grid</td>
<td>National Grid</td>
<td>Multiyear</td>
<td>Yes</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>National Grid</td>
<td>Columbia Gas</td>
<td>Single Year</td>
<td>No</td>
<td>x</td>
</tr>
</tbody>
</table>

Percent of Customers (Electric Denominator = 22, Gas Denominator = 19)

5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%

3.2.2 In-depth interview administration and summary

Experienced interviewers from DNV GL conducted the IDIs via telephone. We attempted to contact and schedule each market actor in our sample 6 times. If we were unable to reach a market actor after 6 attempts, he or she was not included in the analysis. We summarized the interview findings for presentation to the monthly working group and for use in the exploratory data analysis.
3.3 Exploratory data analysis

DNV GL assessed whether services currently addressing accounts classified as mid-size, or sub-segments of those mid-size accounts, led to differences in key performance metrics. To accomplish this, we:

- Segmented the population of C&I accounts according to findings from the PA IDIs
- Calculated, summarized, and evaluated performance metrics for accounts by segmentation criteria
- Contrasted performance metrics by segment, fuel, and year
- Compared data analysis results to market actor IDI findings to determine whether there is a connection between 2011-2016 changes to practices for mid-size accounts, changes in mid-size participant perceptions, and objective performance indicators calculated using the C&I Evaluation Database.

3.3.1 Segment the population of C&I accounts

Using information gathered from the PA IDIs, DNV GL segmented the population of electric and gas C&I accounts into small, mid-size, and large accounts. We adjusted the mid-size definitions based on differences between PAs and fuel types, as the group of mid-size accounts—who can be defined as those accounts that are neither small nor large—differed between the PAs. Where possible, we identified accounts that belong to franchises, or are assigned to account managers, sales representatives, and direct install or other contractors and trade allies.

3.3.2 Calculate, summarize, and evaluate performance metrics for accounts by segmentation criteria

For this task, DNV GL examined several key performance indicators to determine how mid-size accounts differ from small and large accounts. DNV GL computed statistics like those used in the 2015 Customer Profile project, which incorporated a variety of statistics across 5 "analysis grains" (Figure 3-1).
The statistics used in the 2017 study report are:

- **Account participation** identifies the ratio of accounts within the analysis population (e.g., industry sector, PA, etc.) that participated in energy efficiency programs.

\[
\frac{\text{Number of Participating Accounts within Analysis Population}}{\text{Number of Accounts within Analysis Population}}
\]

- **Consumption-weighted participation.** This statistic looks at the consumption of participants within a segment relative to the consumption of the total segment population. It measures the breadth of participation.

\[
\frac{\text{Sum of Consumption for Participating Accounts within Analysis Population}}{\text{Sum of Consumption of all Accounts within Analysis Population}}
\]

- **Population savings achieved.** This statistic looks at the energy savings of efficiency participants within a specific analysis population (e.g., industry sector, PA, etc.) relative to the consumption of the total analysis population.

\[
\frac{\text{Sum of Savings for Participating Accounts within Analysis Population}}{\text{Sum of Savings of all Accounts within Analysis Population}}
\]

\[\text{The calculation of population savings achieved drops participants who have recorded savings exceeding their consumption for the year prior to installation and the year of installation.}\]
• **Participant savings achieved.** This statistic looks at the energy savings from participant accounts relative to the consumption for those participants only.\(^{11}\) It measures the depth of savings per participant. For each account achieving savings in the tracking data for a given year, we use consumption from the previous year as the baseline.\(^{12}\)

\[
\frac{\text{Sum of Savings for Participating Accounts within Analysis Population}}{\text{Sum of Consumption of Participating Accounts Only within Analysis Population}}
\]

• **Contribution ratio.** This statistic looks at how well each PA is saving compared to their share of consumption within the segment. It is a way of assessing performance controlling for firmographic differences. Contribution ratio is the primary statistic by which we determine PA “success” within market segments in this report.

\[
\frac{\text{Proportion of Total Savings}_{PA, Bin}}{\text{Proportion of Total Consumption}_{PA, Bin}}
\]

• **Mean consumption per account.** This statistic compares the average size of customers by PA. If the average consumption per account is higher for one PA than another, the PA has larger customers on average. We look at this metric to provide insight into the average savings potential across PAs as larger customers tend to achieve greater savings.

\[
\frac{\text{Sum of Consumption}_{PA}}{\text{Number of Total Accounts}_{PA}}
\]

### 3.3.3 Contrast performance metrics by segment, fuel, and year

DNV GL used the performance metrics calculated for account segments under the previous milestone task to examine how these metrics compare across industries, fuel types, and time for small, mid-size, and large customers. Our goal was to determine whether specific pockets of mid-size accounts have become more or less under-served from 2011-2016.

### 3.3.4 Analyzed performance metrics by installed measures

As part of the exploratory data analysis, DNV GL intended to combine recently collected onsite data from the Massachusetts C&I Market Characterization On-site Assessments (P41), as well as the Market Share and Sales Trends Study (P50) and Assessment of the Share of Incentivized High Efficiency Equipment (P61), with the PA program tracking data, with the goal of determining whether, compared to large and small C&I accounts, groups of mid-size accounts have been engaged more or less by the various energy efficiency initiatives, or have tended to install or not install certain energy efficient measures. Unfortunately, for a variety of reasons, P61 highlighted a high degree of uncertainty related to any analysis attempting to combine the PA tracking data with data from P41.\(^{13}\)

To avoid problems with our analysis related to the data issues experienced by the P61 evaluation team, we focused our measure-level analysis on the PA tracking data only. We investigated changes to measures

---

\(^{11}\) Participant savings achieved over time is based on the savings information provided in the PAs’ participant tracking data for each year. These data do not use the same baseline over time, so trends in participant savings achieved are based on what PAs are able to claim year over year, not what they would have been able to claim in the absence of baseline changes since 2011.

\(^{12}\) The calculation of population savings achieved drops participants who have recorded savings exceeding their consumption for the year prior to installation and the year of installation.

installations over time for the different size-segments and between certain industries highlighted during the PA and market actor IDIs. As an example of how we targeted this analysis, one of the findings highlighted by the 2013 study was that mid-size customers should engage in more custom and comprehensive projects to achieve greater depth of savings. As a specific example of this task, we investigated whether pockets of mid-size customers have increased participation in custom and comprehensive projects over time.

3.3.5 Compare data analysis results to in-depth interview results

A primary objective of this study was to determine whether changes to how PAs and market actors served mid-size accounts from 2011 to 2016, as well as changes to participant perceptions, are connected to changes in objective performance indicators as captured by the C&I Evaluation Database. In recording the key findings of the exploratory data analysis, we make note of how the results compare to our PA and market actor interviews when applicable.

3.4 Data limitations

As indicated above, the 2017 study calculates performance metrics using data from the Massachusetts C&I Evaluation Database. The 2016 data available in this database has not yet been vetted by all PAs through the annual Summary of Data Completeness Memo. Results presented in this report should be interpreted with this in mind.
4 PA IN-DEPTH INTERVIEW FINDINGS

In this section, we describe the results of our IDIs conducted with PA representatives to determine how PAs currently segment their customers. In section 4.1, we provide a high-level overview of the IDI results, focusing on changes to customer segmentation between 2013 and 2016 dealing exclusively with peak demand or annual consumption, and highlighting the move from demand-based size criteria among electric PAs from 2011-2016, to consumption based size criteria among electric PAs beginning in 2016. In section 4.2, we discuss new statewide definitions for small, mid-size, and large accounts and customers, and how these changes impact the way certain accounts/customers will be characterized by energy efficiency implementers and during evaluations. Section 4.3 goes into greater detail on the results of the IDIs, focusing on changes to customer segmentation outside of size criteria alone.

4.1 Account segmentation criteria

IDIs conducted with PA representatives revealed that PAs use a range of approaches to segment their accounts. Specifically, each PA uses a common criterion for defining the lower bound of usage for a mid-size customer, however, due to the substantial differences across PAs’ customer bases in terms of industry mix and size distribution, individual PAs use territory-specific criteria for defining the upper bound for what constitutes a mid-size customer. Further, the PAs have identified different approaches on how to best serve customers within the mid-size range.

Many of the PAs we spoke with reported segmenting their accounts and determining their marketing approach primarily according to energy usage (kWh or therms). This energy-based segmentation has changed little over the past 3 years, except that there has been a shift from using peak demand to using energy usage as the primary size-based segmentation criteria. Fewer PAs reported additional criteria such as electric demand, rate class, industry sub-sectors (including municipal accounts), and dual fuel (electric and gas) customers. Table 4-1 shows the changes in mid-size account segmentation from the 2013 study to the 2017 study IDIs. Section 4.2 provides an in-depth discussion of the effects of account segmentation on the electric and gas markets. Section 4.3 describes in detail the interview results and changes for each PA.

Table 4-1. Changes to mid-size segmentation

<table>
<thead>
<tr>
<th>PA</th>
<th>Mid-size account segmentation 2013</th>
<th>Mid-size account segmentation 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berkshire Gas</td>
<td>There is no specific segmentation</td>
<td>Mid-size accounts consume between 40,000-250,000 therms per year</td>
</tr>
<tr>
<td>Cape Light Compact</td>
<td>Does not classify accounts as mid-size</td>
<td>Over 1.5M kWh annual usage</td>
</tr>
<tr>
<td>Columbia Gas</td>
<td>Mid-size accounts consume between 40,000-250,000 therms per year</td>
<td>Mid-size accounts consume between 40,000-250,000 therms per year (about 4% of accounts)</td>
</tr>
<tr>
<td>Eversource</td>
<td>-Accounts with 300-750 kW peak demand</td>
<td>These are accounts in the second lowest quartile of energy usage, 'Q3' accounts mid-size accounts are also segmented vertically by business sector</td>
</tr>
<tr>
<td></td>
<td>-Customers with multiple accounts have demand aggregated. If demand is between 300-750 kW, the customer is treated as mid-size</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-NSTAR also segments accounts into quartiles based on energy consumption</td>
<td></td>
</tr>
<tr>
<td>Liberty Utilities</td>
<td>Mid-size gas accounts are in rate classes G42 or G52 and consume more than 3,000 therms per year</td>
<td>Mid-size accounts use 40,000 therms to 100,000 therms per year</td>
</tr>
</tbody>
</table>
### Mid-size account segmentation 2013

<table>
<thead>
<tr>
<th>PA</th>
<th>Mid-size account segmentation 2013</th>
<th>Mid-size account segmentation 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Grid</td>
<td>Accounts with 300-750 kW peak demand</td>
<td>Accounts with &gt;1.5 million kWh or &gt;40,000 therms, peak demand less than 1,000 kW</td>
</tr>
<tr>
<td>Unitil</td>
<td>Accounts in the G2 rate class are mid-size</td>
<td>- No official mid-size account group</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- High usage small electric accounts are likely in this group, 750,000 to 1M kWh (only 50 accounts)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- High usage small gas accounts are likely in this group, 30,000-40,000 therms (only 20 accounts)</td>
</tr>
</tbody>
</table>

#### 4.2 Effects of account segmentation changes

In this section, we discuss how the results of changes in account segmentation from 2011-2016 alter how accounts and customers are grouped into the small, mid-size, and large size bins.

Prior to 2016, the statewide definitions used to define small, mid-size, and large electric accounts during evaluations were:

- **Small** – Less than 300 kW peak demand
- **Mid-size** – Between 300 kW and 750 kW peak demand
- **Large** – Greater than 750 kW peak demand

Additionally, the 2013 study grouped accounts at the customer level in an attempt to tie multiple accounts to a single decision maker, with aggregate demand among these accounts determining under which size bin each group of accounts would be categorized. Further, accounts were grouped into segments by whether they had a specific account manager at a PA, or whether they belonged to a chain or franchise with greater than five accounts. Once assigned to a group by aggregate demand, analysis was still completed at the account level. For the 2013 study analysis, these groupings resulted in a total of six size segments:

- Small, <300 aggregate kW peak demand, unmanaged
- Small, <300 aggregate kW peak demand, managed, chain, franchise
- Mid-size, 300-750 aggregate kW peak demand, unmanaged
- Mid-size, 300-750 aggregate kW peak demand, managed, chain, franchise
- Large, >750 aggregate kW peak demand, unmanaged
- Large, >750 aggregate kW peak demand, managed, chain, franchise

As part of the 2013 study, the evaluators did not define size bins for gas accounts; however, based on the results of the IDIs from the 2017 study, along with discussions during working group meetings, we were able to define size bins for these segments based on changes to energy efficiency program definitions made in 2016. While the definitions of small, mid-size, and large are different among the individual PAs, from a data analysis standpoint, based on the stage 3 workplan, this was not a PA differences study, and so we developed the current definitions for statewide analysis:

**Electric**

- **Small** – Less than 1.5 million kWh annual consumption
- **Mid-size** – Between 1.5 million kWh and 4.5 million kWh annual consumption
- **Large** – Greater than 4.5 million kWh annual consumption
Gas

- Small – Less than 40,000 therms annual consumption
- Mid-size – Between 40,000 and 250,000 therms annual consumption
- Large – Greater than 250,000 therms annual consumption

While these new definitions best describe the PAs’ current segmentation efforts, this study’s working group decided that for the electric PAs, using the original customer statewide definitions from the 2013 was more appropriate for our exploratory data analysis, since those were the definitions used during the majority of the time period covered by this analysis, and they provide direct comparison to the 2013 study for any changes to the mid-size segments. For gas PAs, since no definitions are available from the 2013 study, we used the statewide definitions developed for the 2017 study during our exploratory data analysis.

Effects of account segmentation changes are explored in greater depth in APPENDIX A.

4.3 Customer engagement approach

There are essential differences in the way that the new statewide size criteria we established affect the smaller PAs differently than the larger PAs because smaller PAs have so few mid-size and large accounts. Cape Light Contact and Unitil essentially treat all of their midsize and large accounts as strategic accounts and reach out to them all personally. With their larger number of accounts (about 4,500 for National Grid and about 3,000 for Eversource), the larger PAs cannot reach out personally to every single one of their large and mid-size customers.

Each of the PAs made changes to its approach to engage mid-size customers over the past 3 years. We outline these changes in Figure 4-1 - Figure 4-7 below. These figures show the following changes in engagement practices toward mid-size accounts for each PA.
4.3.1 Berkshire Gas

Berkshire Gas (Figure 4-1) grouped all large and mid-size accounts together in 2013, with no specific size criteria or engagement strategy for mid-size accounts. Now, it has a mid-size segment, and while it does not have a segment specific engagement strategy for these accounts, it has been collaborating with its lead vendor, the Center for EcoTechnology, to engage mid-size customers that have not participated in programs recently. Berkshire also ran a segment-specific marketing campaign to all facilities with commercial kitchens with the intention of initiating facility assessments.

Figure 4-1. Berkshire Gas timeline of engagement practices by size

- Large and mid-size
  - No specific segmentation or marketing; incentives are the same for all customers
  - They receive leads from electric PAs and their designated implementation contractors

- Small
  - Accounts with <300kW peak demand qualify for the electric PA direct install programs
  - No specific segmentation or marketing; incentives are the same for all customers
  - Work with implementation contractors, CET, Hesnor, EDM, and RISE Engineering

- Large
  - Large customers, using >250,000 therms annually, are engaged by a key account representative

- Mid-size
  - Customers consuming 40,000-250,000 therms per year
  - There is usually no targeted segmentation of marketing; no customer base for industry-specific marketing. Berkshire plans to do segment-specific marketing in the future.
  - Mid-size accounts consist of schools, health care, and light manufacturing in Berkshire's territory, but it doesn't not target them specifically.
  - Mid-size multifamily accounts are served through the Multifamily program.

- Small
  - Small customers consume <40,000 therms per year
  - Berkshire targets small business customers through its own vendors. Initially, it began with commercial kitchens.
  - Berkshire offers extra help with the program process to several segments to encourage participation, including customers in the municipal, non-profit, and religious segments, and small buildings on large private educational campuses.
  - In 2016, Berkshire segmented small business accounts representing the top 84% of small business energy consumption, many of which are multifamily buildings.
4.3.2 Cape Light Compact

Cape Light Compact (Figure 4-2), using the statewide definition of a small account as less than or equal to 1.5M kWh usage in aggregate, has taken the approach of serving all medium and large accounts as managed accounts with dedicated resources. Because the size of this group is relatively small (approximately 10% of accounts), there is not a specific segmentation approach for the mid-size accounts. There is, however, specific industry sector segmentation for hospitality and grocery accounts, which tend to be mid-size.

Figure 4-2. Cape Light Compact timeline of engagement practices by size

<table>
<thead>
<tr>
<th>Year</th>
<th>Pre-2013 strategy</th>
<th>Current strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>Upstream program begins</td>
<td>Mid-size and large: Accounts with &gt;1.5 million kWh annual consumption</td>
</tr>
<tr>
<td>2013</td>
<td>Large: Accounts with &gt;300 kW peak demand&lt;br&gt;Cape Light Compact markets its programs through face-to-face contact with customers in its area, and with industry and trade associations</td>
<td>Mid-size and large: Accounts with &gt;1.5 million kWh annual consumption&lt;br&gt;Now, all mid-size and large accounts are managed, engaged through face-to-face contact and industry and trade associations, and receive the resources that only large accounts received in the past.&lt;br&gt;Most mid-size accounts are hospitality, office, and retail. Many chain/franchise convenience stores and aggregated to large, but would otherwise be small.&lt;br&gt;Hospitality and grocery accounts are currently segmented and targeted.&lt;br&gt;There is a separate municipal program.</td>
</tr>
<tr>
<td>2014</td>
<td>Mid-size: Does not classify accounts as mid-size</td>
<td>Small: Accounts with &lt;1.5 million kWh annual consumption&lt;br&gt;The larger accounts within the small segment are specifically targeted, with a focus on grocery and hospitality&lt;br&gt;These accounts are served with turnkey measures through the statewide small business program.</td>
</tr>
<tr>
<td>2015</td>
<td>Small: Accounts with &lt;300kW peak demand&lt;br&gt;RISE Engineering markets to these accounts; no specific business types targeted</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.3.3 Columbia Gas

Columbia Gas (Figure 4-3) continues to use the same criterion used in 2013 to define mid-size accounts. That is, mid-size accounts are those with annual consumption of 40,000-250,000 therms. While Columbia Gas has no specific marketing strategy for these accounts, it has collaborated with its contractors, GDS and the Center for EcoTechnology, to reach out to specific mid-size market segments in the past (e.g., targeting laundry facilities on hospitality premises). Columbia Gas is interested in additional account segmentation in the future.

Columbia Gas also hypothesized, and DNV GL confirmed with data analysis, that the upstream hot water program, implemented in 2015, is serving its mid-size accounts. While this upstream initiative has encouraged mid-size participation, it may not be the best way to serve mid-size customers, since upstream measures tend to produce less depth of savings that non-upstream custom and prescriptive measures.

Figure 4-3. Columbia Gas timeline of engagement practices by size
4.3.4 Eversource

Eversource (Figure 4-4) continues to segment its accounts based on energy consumption quartile but has implemented a mid-size business group to engage directly its Q3 accounts. The mid-size group has several industry-specific teams (industrial, biotech, retail, college/university, healthcare, data centers, and commercial property) to engage accounts. Each team consists of an account representative, project engineer, energy efficiency consultant, and project expeditors to serve the needs of each industry. Eversource’s goal has been to use lessons learned through serving the larger Q1 and Q2 accounts to effectively serve the Q3 mid-size group.

Figure 4-4. Eversource timeline of engagement practices by size

- **Large and mid-size grouped together**
  - Q1, Q2, and Q3 annual consumption of aggregate accounts (unless aggregating not beneficial for customer)
  - Accounts assigned to team by vertical industry
  - All teams had account rep, energy efficiency sales rep
  - All customers were offered access to a PEX vendor (relatively few PEXs)

- **Small**
  - <40,000 kW unless identified as strategically important
  - Handled by direct-install

- **Mid-size business (Q3 customers)**
  - Q3 of annual consumption: Link accounts to distinct customers (clans), then aggregate the annual consumption for each clan
  - Electric and gas are separate
  - Assigned to Q3 teams based on industry: industrial, biotech, retail, college/university, healthcare, data centers, hospitality, commercial property
  - Industry-specific team:
    - Account executives (AE): focus on customer relationship/business issues
    - Project engineer (PE): primary function is to quality energy savings
    - Energy efficiency consultant (EEC): focused on finding/implementing the right EE measures for vertical (brings info on best practices from Q1 & Q2)
    - PEX brought in based on expertise
    - Chanel team member: Advises on best practices

- **Large businesses (Q1 and Q2)**
  - Q1 and Q2 of annual consumption: link accounts to distinct customers (clans), then aggregate the annual consumption for each clan
  - They look at electric and gas separately
  - Assigned to Q3 teams based on industry: industrial, biotech, retail, college/university, healthcare, data centers, hospitality, commercial property
  - Chanel team: engages the channel to develop strategies by sector
  - Industry-specific team:
    - AE: focus on customer relationship/business issues
    - PE: primary function is to quality energy savings
    - EEC: focused on finding/implementing the right EE measures for vertical
    - Chanel team member: Advises on best practices
4.3.5 Liberty Utilities

Liberty Utilities (Figure 4-5) has not made changes to its engagement strategies for mid-size accounts since 2013. It has done targeted outreach to commercial kitchen operators. Its vendors handle most segmentation for engagement purposes.

Figure 4-5. Liberty Utilities timeline of engagement practices by size

- **Upstream program begins**

**Pre-2013 strategy**

- **Large**
  - In rate classes G42, G43, G52 or G53, and those that consume >20,000 therms per year
  - These accounts are managed by a PA representative

- **Mid-size**
  - In rate classes G42 or G52, and consume 3,000-20,000 therms per year
  - No specific marketing to mid-size accounts

- **Small**
  - Consume <3,000 therms per year
  - In rate classes G41, G42, G51, or G52

**Current strategy**

- **Mid-size**
  - Consume between 40,000-100,000 therms per year
  - Vendors segment; no internal segmentation.
  - Don't believe that specific building types make up the mid-size customer group
  - The upstream water heater program/vendors tend to engage mid-size customers
  - DCAM engages municipal buildings
  - PECI, an electric vendor in the Liberty territory working for National Grid, targets grocery stores through the Smart Grocer program. It is contacted if the account also requires gas measures.

- **Small**
  - Consume <40,000 therms per year
  - No internal customer segmentation other than by size
  - Vendors (RISE) determine segmentation for their accounts in the small business program

- **Large**
  - Consume >100,000 therms per year
  - Vendors segment; no internal segmentation. For example, vendors targeted hospitals in 2015.
  - Beginning to aggregate multiple premises to a single customer account number in customer information system for engagement. Sometimes use a name search for chains/franchises (for example, connect all McDonald’s in the service territory)
  - DCAM engages municipal buildings
  - Plans underway to link premises to single customer accounts in a new tracking (the same tracking system used by Columbia Gas)
4.3.6 National Grid

National Grid (Figure 4-6) has made several changes to the way it engages mid-size accounts, including creating a Channel Sales group specifically to handle particular customer segments composed largely of mid-size accounts. The Channel Sales group focuses on industry segments that tend to be mid-size (retail, hospitality, grocery, restaurants, municipalities, services). The Channel Sales group also includes individuals dedicated to developing relationships with specific categories of trade allies (lighting distributors, mechanical contractors, architects, engineers, etc.), some of whom serve mid-size customers. National Grid provides training and outreach to these trade allies so that they can help educate and motivate as many customers as possible to undertake energy efficiency projects. National Grid has signed up and offered training to 5,000 total trade allies since 2013, with approximately 300 different contractors serving the mid-size segment.

Figure 4-6. National Grid timeline of engagement practices by size

National Grid also looks at the consumption of linked accounts under a parent customer to determine whether it can better serve mid-size accounts through a strategic sales group with a dedicated account representative.
4.3.7 Unitil

Unitil (Figure 4-7) has not made changes to its engagement strategies specifically to address mid-size accounts since 2013 and has not done any specific segmentation or targeted particular industry groups. However, Unitil has engaged an additional vendor to serve its smaller accounts, which should benefit the “high usage small” accounts that make up their mid-size group (about 50 electric and 20 gas customers). Due to this small number, Unitil can contact each of its large and mid-size customers each year to market potential energy efficiency projects. As with other gas PAs, Unitil hypothesizes that the upstream water heater program is effectively serving the mid-size group.

Figure 4-7. Unitil timeline of engagement practices by size
5 SUPPLY SIDE MARKET ACTOR IN-DEPTH INTERVIEW FINDINGS

DNV GL conducted 51 IDIs with both supply side and demand side market actors to contextualize the increased performance among mid-size accounts that was seen in the 2014 C&I Customer Profile. In this section, we present the results of the supply side market actor, which include PA marketing and implementation staff, as well as interviews with vendors, contractors, and distributors. While the previous section dealt with the technical aspects of segmentation at each PA from an account size perspective, this section explores account segmentation in greater detail, and also explores the effects of internal and external resources, training, the upstream initiatives, and barriers to participation on mid-size account outcomes.

5.1 Segmentation – size

5.1.1 Segmentation by size – PA highlights

IDIs with the PA marketing and implementation staff generated results about segmentation by size that were consistent with our first round of IDIs with PA strategy staff—indicating that there is likely well-established knowledge regarding size segmentation among all staff internal to each PA. Individually, the PAs have made much progress toward defining mid-size accounts since the 2013 study. Each PA has established its own upper consumption limit for mid-size accounts. However, while there is a universal lower limit for mid-size accounts (1.5 million kWh for electric and 40,000 therms for gas), there is no universal upper limit.

The most notable changes since the 2013 study are presented in Table 5-1.

Table 5-1. Notable changes in the way PAs define mid-size customers

<table>
<thead>
<tr>
<th>Business size</th>
<th>Notable changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>• PAs have updated the criteria for qualifying for the Small Business Core Initiative from demand (&lt;300 kW) to annual consumption (&lt;1.5 million kWh).</td>
</tr>
<tr>
<td></td>
<td>• There is still variation in how these criteria are applied, as Eversource, National Grid, and Berkshire Gas use aggregate consumption across linked accounts and other PAs use account level data only. That means that for some PAs, a customer with multiple small businesses could be considered mid-size, while for others, they would not.</td>
</tr>
<tr>
<td></td>
<td>• There is a formalized definition of small gas accounts (&lt;40,000 therms annual usage or less), as the gas PAs now have their own Small Business offerings. This is a key change that impacts the allocation of both internal and external resources for the gas PAs.</td>
</tr>
<tr>
<td>Mid-size</td>
<td>• While there is still no universal definition of mid-size businesses, most PAs identify companies they consider mid-size.</td>
</tr>
<tr>
<td></td>
<td>• Eversource continues to group customers according to their aggregate annual consumption across linked accounts, separating them into quartiles. Mid-size accounts are defined as 3rd quartile and assigned their own distinct account management</td>
</tr>
</tbody>
</table>
Business size | Notable changes
--- | ---
| | teams. The customer segmentation model is displayed below in
| | Figure 5-1.
| | National Grid has a less of a size-oriented sales approach that assigns accounts to the Strategic Account group and other accounts to the Channel Sales group. As an example of a specific channel within the Channel Sales group, the National Accounts team handles all customers that have 8 or more accounts tied to the same parent. These customers can be either mid-size or large. Other specific segments served by members of the Channel Sales group include municipalities, hospitality, retail, and grocery.
| | Cape Light Compact defines mid-size as a portion of small accounts with usage between 100,000 kWh and 1.5 million kWh. All customers greater than the 1.5 million kWh statewide threshold receive dedicated account management.
| | Unitil has essentially no accounts fitting the standard definition of mid-size accounts.
| | For PAs serving gas customers only, all of the gas PAs interviewed use the standard definition of 40,000 to 250,000 therms for mid-size accounts.

**Figure 5-1. Eversource mid-size customer segmentation model**

5.1.2 Segmentation by size – vendor results
The vendor IDIs confirmed that the PAs have made a concerted effort to identify both electric and gas mid-size accounts. While contractors are aware of the different approaches used by the PAs to segment accounts, it creates some degree of confusion among vendors. Vendors indicated that they would like improved communication from the PAs regarding their particular segmentation approach and what role the vendors should be playing as part of the PAs’ overall strategy. A number of vendors still consider mid-size accounts
to be 300-750 kW, and a number reported frustrations with inconsistencies across PAs throughout the interview and their perceived frequency of changes to program definitions.

While the intent of this study is not to recommend changes to incentive levels, the vendors indicated they would benefit from improved communication regarding what the incentive levels are for customers within each size segment and why. This is because some vendors see the division between small and mid-size accounts as somewhat arbitrary, and as potentially not having much practical meaning in terms of the account’s ability to pay for a project or the level of complexity demanded by the necessary solutions.

5.2 Segmentation – vertical markets

5.2.1 Segmentation in vertical markets – PA highlights

Nearly all of the PAs are aware of the industry segments to which their customers belong; Eversource and National Grid have aligned their sales teams, at least in part, around industry segments. Further, Cape Light Compact identified particular marketing efforts targeting the segment-specific needs of certain customer groups. While Unitil did not identify any segment-specific sales strategies, its implementation staff was aware of the markets in which its customers operate. Columbia Gas has focused on hospitality customers through its vendor, GDS Associates. While Berkshire and Liberty described a limited mid-size customer pool, they have both done outreach to commercial kitchen operators. Berkshire has also reached out to facilities in the education segment, and Liberty has reached out to businesses occupying stick-frame buildings.

5.2.2 Segmentation in vertical markets – vendor results

The vendor IDIs revealed that the PAs are making progress toward vertical segmentation, but a number of vendors reported that it was their job, not the PAs’ job, to identify to which segment a customer belonged, and whom to target. Targeting specific segments was more important to contractors attempting to provide specialized or comprehensive solutions, such as refrigeration and HVAC upgrades to grocery stores, or laundry, food service equipment, and HVAC to hospitality. Many vendors are still heavily focused on lighting retrofits and do not segment or target specific industries. They engage with whomever they can.

The vendors spoke favorably of the division of Eversource’s account executives for the Q3 team and their ability to build relationships. They also reported working with National Grid and CLEAResult in the grocery and hospitality sectors, and working with certain chains and franchises. They reported that they were aware that Cape Light Compact reformulated its offerings and approach in 2016 to be more segment-specific, and found that their added support helped them to engage more customers.
5.3 Internal organization and resources

5.3.1 Internal organization and resources – PA highlights

The PAs attempted to address the recommendations of the 2013 study through both their approach towards and assignment of internal staff to mid-size customer efforts. The IDIs revealed wide variations in the extent to which the PAs have aligned their staff to better service mid-size customers. These are shown in Table 5-2.

Table 5-2. PA approaches to better serve mid-size customers

<table>
<thead>
<tr>
<th>PA</th>
<th>Approaches to better serve mid-size customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eversource</td>
<td>Created a separate management group that specifically targets mid-size customers and assigns them to one of three management teams, each of which handles customers pertaining to a set of vertical markets.</td>
</tr>
</tbody>
</table>
| National Grid | Targets size less directly but has also set up a separate group, the Channel Sales group, to serve accounts that are comprised largely of mid-size accounts. This group handles sales for accounts that are neither strategic accounts nor small business. Figure 5-2 shows the organization structure of the channel sales group. It is very similar to the structure of Eversource’s vertical markets group.  
  - Within the Channel Sales group, the National Accounts team directly manages all accounts with 8 or more accounts tied to a single parent customer.  
  - A number of other Channel Sales teams do not directly manage groups of accounts, but address their needs through cooperation with trade allies. |
| Cape Light Compact, Liberty, Unitil | All have very few mid-size accounts and handle them through direct one-on-one customer contact |
| Berkshire      | Has switched from direct selling to greater reliance on its trade ally, the Center for EcoTechnology (CET). |
| Columbia       | Did not mention any specific strategies for handling mid-size accounts |
Finally, a number of the PAs reported having undergone staffing changes due to retirement, turnover, or realignment. While the PAs are diligent in training new employees to ensure that they have the expertise required to serve the mid-size market, some customers reported having less trust in newer or unfamiliar PA staff, compared to the staff members they may have worked with for years.

5.3.2 Internal organization and resources – vendor results

The vendor IDIs indicate that changes to the PAs’ internal organization provided mixed results for addressing the concern identified in the 2013 study that the PAs needed to improve coordination with third-party contractors. Many of the issues identified regarding the PAs’ internal resource changes and the vendors’ role demonstrate that vendors are generally aware of changes, but would benefit from improving communication of the strategy behind these new approaches. Four of the 21 contractors interviewed said they saw no changes in the PAs’ internal organization and 6 said they do not see a difference in the level of service to mid-size accounts. However, when probed about specific areas of concern, most respondents were able to identify differences among the PAs approach since the 2013 study.
For example, respondents specifically mentioned the changes shown in Table 5-3.

**Table 5-3. Changes to PAs’ internal resources**

<table>
<thead>
<tr>
<th>PA</th>
<th>Change to PA internal resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eversource</td>
<td>There is a mid-size segmentation strategy and a team structure, with a decreased focus on contract project expeditors, moving more work in-house. Respondents generally felt this was a good change, as reps will meet with customers and set up an appointment for vendors.</td>
</tr>
<tr>
<td>National Grid</td>
<td>There are specific initiatives to address franchises, hospitality, and other segments, and an increased use of contract project expeditors.</td>
</tr>
<tr>
<td>Cape Light Compact</td>
<td>There are efforts to begin segmenting customers by vertical and a grassroots approach to program marketing.</td>
</tr>
<tr>
<td>Columbia</td>
<td>There has been a move towards using the Center for EcoTechnology to focus on direct install measures, and using GDS to focus on the hospitality industry.</td>
</tr>
</tbody>
</table>

While vendors were able to cite these specific changes, interview results revealed that there was less clarity regarding how these changes fit into the broader context of the PAs’ strategies and the vendors’ roles. A number of vendors indicated that the PAs do a good job helping identify opportunities, and informing customers and vendors about the programs, application process, and rebates. The vendor IDIs revealed that the PA staff did not provide as much support on the engineering side. This may be intentional on the PAs’ part, as they are relying on the vendors to provide engineering support that the PAs do not have the staff to provide. In other words, this is why there is more work available for the vendors to do. If this is the case, the PAs should improve their communication of roles and expectations.

When asked about PAs’ staffing levels, the vendors also offered a number of important critiques of the internal resource changes:

- A primary concern for the vendors was PA staff turnover and lack of consistency among staff regarding knowledge and competency.
- A number of respondents said that the “frequent” changes to PA staff and program offerings caused a “brain drain,” as more experienced staff left and were replaced by staff lacking technical expertise.
- Many of the vendors interviewed indicated they have been in their positions for several decades and acknowledged this can lead to push back when things change. The newer staff were believed to be less experienced in engineering solutions, less knowledgeable about the customers, and more focused on the administrative, accounting, and marketing aspects of the programs.
- Respondents indicated that there is considerable variation in the technical expertise of PA staff both within a PA and across PAs.

The changes to vendor-perceived skill sets of PA staff may, in fact, be intentional, as the 2013 study did find that there was a greater need for involvement of third-party contractors to service the diverse needs of mid-size accounts. Consequently, the PAs are making a concerted effort to rely more heavily on the market to
sell energy efficiency solutions. Nevertheless, concerns about knowledge levels can be addressed on two fronts:

1. The PAs can increase their internal training of staff to develop their knowledge of solutions and customers.
2. Improved communication regarding the PAs’ strategies, and where vendors fit into those strategies, could lessen these concerns. It is entirely possible that the PAs are bringing in the vendors to serve in role of technical expert on the project, but that vendors are not recognizing this.

Separate from issues related to PA staff experience, vendors cited a lack of consistency in the availability and responsiveness of PA staff. A number of vendors indicated:

- “It’s impossible to get anyone from [PA] to call you back” – This complaint targeted almost all PAs, depending on the vendor, without any clear pattern as to which PAs were more or less responsive.
- “It is much more difficult to get projects approved” – This critique was also voiced by separate vendors about various PAs.

Note that these responses may be the result of bad one-off experiences with the PAs, and not a pattern, since the PAs criticized by some PAs were praised by others, and vice versa.

A number of respondents indicated that the PAs’ mid-size strategy has focused less on custom measures in the past few years, focusing more on prescriptive measures. This may be in response to National Grid’s channel-based approach to serving mid-size accounts. One respondent felt this was a mistake, and believed mid-size accounts require custom solutions, which is consistent with findings from the 2013 Study.

5.4 External resources

5.4.1 External resources – PA highlights

The use of external resources (i.e., contractors, project expeditors, and other third-party service providers) is the area in which the PAs have made the most substantial changes to their approach to mid-size accounts. Eversource reports it has changed its approach to the project expeditor vendors. It now leverages internal staff from the Q3 group to service mid-size accounts more directly, and is more surgical about assigning project expeditors and other vendors, matching the customers’ needs to each vendor’s specific strengths. National Grid has continued to work with CLEAResult to assist in the grocery segment and now works extensively with Channel partners through the technology-based members of the Channel Sales group, such as lighting, industrial, and gas solutions. Meanwhile, Cape Light Compact, Columbia, Liberty, and Unitil all report increased use of third-party contractors.

One of the findings of the 2013 study was that mid-size gas accounts may be under-served because the direct install program was administered solely by the electric PAs. That study showed evidence that the electric direct install vendors may have been missing mid-size gas opportunities since they have not been looking for gas solutions, particularly more custom gas measures. Since the 2013 study, however, the gas PAs have hired their own direct install contractors, who identify direct install gas measures. The gas direct install vendors and gas PAs now meet regularly with the electric PAs and their vendors to discuss customers who may be better served through the large C&I program. The electric PAs have also begun providing leads

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14 Most often, this occurs when a customer with small electric account is also a mid-size gas account. Typically, this is driven by the high heating load in the northeast.
to the gas PAs for measures they find. In addition, each of the PAs discussed working closely with select vendors for marketing and outreach, technical support, and other services to mid-size customers. Finally, the PAs report that there has been a noticeable increase in the number of firms in the market to provide energy efficiency services.

5.4.2 External resources – vendor results

The vendor IDIs reveal that vendors are generally aware of the PAs’ efforts to increase the involvement of external service providers, but again, may not understand the PAs’ vision for the role(s) that vendors play in the market. A number of respondents found the PAs’ use of CLEAResult and other implementation vendors favorable.

The role of the contract project expeditors is one that has not been effectively communicated. One respondent indicated that they felt the “trade ally program” was no longer being used, which is likely in response to the change in Eversource’s use of project expeditor vendors. Meanwhile, another respondent noted that National Grid had increased the number of project expeditors it uses.

Several respondents indicated they were aware that there was an increase in the number of vendors being used by the programs, apart from project expeditor and direct install contractors. A few respondents reported that partnering was essential to providing the necessary comprehensive solutions to service mid-size accounts. However, these vendors were not aware of any resources being offered by the PAs to assist with partnering opportunities, apart from the trade shows. While a number of vendors indicated they “know who the good firms are,” it can be inferred from the responses that additional networking opportunities and assessments of other vendor services could provide a valuable resource to single-solution providers, such as lighting or HVAC contractors. In contrast, a small number of respondents indicated they had little interest in partnering with others, for fear of losing work to others, or bad experiences working with other contractors in the past.

The PAs could help facilitate contractors’ connections through additional networking events and a directory of firms with experience in different offerings. A number of vendors indicated there is still a need for the PAs to help facilitate vendor coordination. One suggested mirroring the direct install contractor model; however, the need for more custom solutions and variable incentives limits the ability to use that approach, which is geared more toward prescriptive solutions.

5.5 Training

5.5.1 Training – PA highlights

Training is another area that has received considerable attention from the PAs. The most widely cited trainings included the Energy Efficiency Expo at Gillette Stadium, the annual GasNetworks® Conference, MAEEP/UMass Dartmouth compressed air training, monthly project expeditor meetings, and webinars. Additionally, Eversource reports that it holds regular meetings with its mid-size staff to report best practices identified through its large account groups. These best practices are then communicated to project expeditors through separate monthly project expeditor meetings. Finally, the PAs have provided some targeted training to customers in certain verticals such as grocery workshops.

5.5.2 Training – vendor results

Training is an area that has positively impacted the vendors’ ability to serve mid-size customers. Respondents spoke favorably of a number of the PAs’ efforts, particularly the monthly project expeditor
meetings. A number of contractors also reported that the PA-sponsored webinars are valuable, but one respondent indicated it would be good to keep these in a library to watch when they have time. The Energy Efficiency Expo event at Gillette Stadium received very favorable reviews from multiple contractors, as it provided an excellent networking opportunity. Those who attended technology-specific training indicated the training was very informative and the PAs financial support helped bring down the cost which made it possible for them to attend. One respondent did indicate there were not enough customers at the trade show events, which made it “a waste of money.” A general comment on the training activities is they are more focused on selling and less focused on technology. This received both favorable and unfavorable reviews depending on the respondent.

5.6 Upstream

5.6.1 Upstream – PA highlights

There is a consensus among the PAs that the upstream lighting initiative has resulted in significantly greater energy efficiency participation among customers. Results of the upstream HVAC initiative have also been positive, but not to the same extent as the lighting initiative. The PAs are optimistic about the success of the upstream initiatives at increasing overall savings. They believe that allowing customers to participate without facing significant search or transactions costs, and avoiding the need for a potentially expensive engineering study, has resulted in increased participation from mid-size customers who have more limited financial and technical resources. The PAs do note that they need to better leverage the upstream tracking data to provide leads for the downstream programs and assess whether additional solutions are desirable. Some of the PA staff already analyze the upstream tracking records, but there are no consistently implemented protocols or approaches for capturing and analyzing the relevant information yet. However, the PAs are in very active discussions with their upstream vendors and hope to have these capabilities in place in the very near future.

5.6.2 Upstream – vendor results

Most of the non-distributor vendors had few comments on the upstream program, other than that it adversely impacts them since it sends profits to manufacturers and distributors. This was especially notable among several contractors who had previously relied on lighting for a majority of their energy efficiency business, and who are now finding the lighting market saturated. These contractors are finding fewer customers left who need or want to upgrade to LEDs, more competition among contractors who install lighting measures, and a decrease in market share resulting from the increased popularity of the upstream lighting program. Corroborating these remarks are some results for the customer interviews, where almost all interviewed (21 out of 22) had completed lighting projects at some point between 2011 and 2015, and of the 7 customers interviewed that only completed one project with the PAs from 2011-2015, 6 completed a lighting project.

Among the two lighting distributors interviewed, there was a divergence in thinking regarding the program’s impact on mid-size accounts. One distributor praised the upstream lighting program for getting more LEDs to mid-size accounts and wanted to see all other lighting programs scrapped in favor of an upstream-only lighting implementation model. This distributor believed that the success of the program is partially related to the fact that customers don’t need to fill out paperwork. The other distributor had a different view of the effect of the program, praising it for its impact on smaller customers, and generally increasing LED market share, but indicating that it would be a mistake to think the upstream lighting program could be a replacement for the non-upstream lighting retrofit programs. This distributor indicated that mid-size
customers require more time and expertise than he or his staff have to give to most customers, and believed that incentive levels available by doing a project through a non-upstream channel were probably better. Finally, he indicated that he thinks relying on upstream to increase mid-size lighting participation will simply lead to saturation of the LED market among those customers, while failing to provide the customers with other energy efficiency solutions they might need.

5.7 Small business

5.7.1 Small business – PA highlights

One of the primary ways the PAs addressed a key concern of the 2013 study was by changing how the direct install program is implemented for gas PAs. The previous study found that mid-size gas accounts were likely being missed, as the direct install program was implemented by the electric PAs’ contractors, who focused on electric solutions. Moreover, the criteria for qualifying for the direct install program were based on electric demand only (i.e., < 300 kW). Since the 2013 study, however, the gas PAs have become much more engaged in what’s now called the Small Business Core Initiative. First, there is now a formal criterion to qualify for the program based on gas consumption (< 40,000 therms/year). Second, each of the gas PAs now has its own direct install vendors, who work collaboratively with the electric direct install contractors. The PAs believe that this situation has resulted in less gas savings being left on the table, as customers are touched by both electric and gas vendors. The increased communication should decrease the likelihood that mid-size gas customers will be missed. Further, having working definitions of the size of gas customers has forced the gas PAs to at least recognize whether a customer is small, medium, or large.

On the electric side, the definition of small business changed from demand-based (i.e., < 300 kW) to consumption-based (i.e., < 1.5 million kWh/year). There are discrepancies among PAs as to whether this definition considers the aggregate consumption of linked accounts.

5.7.2 Small business – vendor results

The vendor IDIs revealed that contractors are aware of the changes made to address the small business program for gas. Unfortunately, the vendors that we interviewed typically served mid-size accounts, and had little else to add on this subject.

5.8 Barriers to participation

5.8.1 Barriers - vendor results

DNV GL asked vendors to report any barriers to customers installing energy efficiency measures through the programs, and whether they have seen any noticeable reduction in these barriers since the 2013 study. As one could expect, nearly all of the vendors reported that project costs were the primary barrier, and cited incentive levels as their proposed solution. However, vendors did cite some interesting proposed solutions to the incentive issue, which included the following:

- Bonus incentives for contractors who perform comprehensive design. Not surprisingly, this was reported by a comprehensive design contractor. However, the takeaway from this would be to set up an incentive structure for vendors to coordinate better to partner and bring comprehensive solutions to customers. This may require resources provided by the PAs such as a directory of vendors, their specialties, past projects, and ratings to improve coordination efforts on part of the vendor community. The PAs may also provide lists of firms who could serve the role of general contractor.
• Simplifying the incentive process is an issue that was cited throughout the interviews. One respondent indicated that the unpredictability of the incentive paperwork and approval process is a key barrier. They suggested making the incentive process similar to the direct install incentive process.

• Multiple vendors cited the need for on-bill financing. DNV GL is unsure whether changes were made to the availability of on-bill financing. If it is available for projects, this needs to be better communicated and the issues and limitations of the financing better understood.

Additional barriers cited by the vendors include:

• PA account executives are not calling C-Level executives (i.e., the decision makers who hold the checkbook).

• Respondents found it harder than ever to get projects initiated. Vendors would like to initiate projects, but depending on the situation, have experienced difficulty getting either the customer or the PA to act.

• Vendors indicated that for customers who are looking for comprehensive energy efficiency projects, they would like to get things done all at once in order to mitigate disruption to business activities, but lack of coordination among vendors is still a barrier. Coordinating vendors is an important factor in getting more comprehensive projects moving.

• Improved vetting of contractors and selling practices – One vendor indicated that they see many contractors pushing whatever energy efficiency projects they can, rather than trying to meet the customer’s actual needs. Customers are not interested in being “sold” anything. The selling process needs to mesh with the customer’s actual business needs.
6 CUSTOMER INTERVIEW FINDINGS

This section presents results from the IDIs with mid-size gas and electric 2011-2015 program participants. DNV GL initially planned to conduct interviews with 10 gas and 10 electric customers; however, we completed an additional 2 IDIs with customers installing electric measures, providing 22 completed IDIs.

In the sections that follow, we first present results that describe the customers who completed IDIs. Next, we review findings about respondents’ decision-making processes. Then, we summarize the customers’ experiences with PA and vendor support. Finally, we report on the measures that have already been installed and measures that represent opportunities for additional savings.

The figures in this section represent customers’ post-coded responses to the interview questions. Since most questions allowed for multiple responses, there are several figures in which the frequency of responses exceeds the number of completed IDIs (22). It should be noted that this information is not statistically significant; rather, the findings should be considered to be qualitative, much like the other IDIs conducted for this study.

6.1 Respondent profile

Figure 6-1 below shows the distribution of customer respondents by industry: 27% of the mid-size customers interviewed were in accommodations, while roughly 18% were in the public sector. Education and manufacturing each made up roughly 14% of the interview sample, and retail trade made up roughly 9%. The remaining sectors each contributed roughly 4% to the overall number of completed IDIs.

Figure 6-1. Customer interview respondents by sector
Figure 6-2 shows that nearly ¾ of interview respondents had at least 10 years of experience in their positions, while half had at least 15 years of experience. The extent of their experience, coupled with the ability of most respondents to readily answer our questions regarding energy efficiency projects in their buildings, suggests that the sample consisted of individuals who are knowledgeable about their business and facility’s energy needs.

**Figure 6-2. How many years of experience do you have in your job?**

**6.2 Mid-size customer decision-making**

We asked respondents, “How does your company determine which energy efficiency upgrades to make?” We then asked, “Which criteria are primary in the decision-making process?” Figure 6-3 presents results identifying customers’ primary motivations for installing the energy efficient equipment. The figure shows that “return on investment” was the reason cited most often for completing energy efficiency upgrades, reported by nearly 1/3 of respondents. The second most cited reason was “operational improvement,” followed by “replacing failed equipment.”
Figure 6-3. How does your company primarily determine which energy efficiency upgrades to make?

Responses that reflect program involvement include “incentives” and “influence by contractor or PA activities,” both of which were cited by 3 of the 22 respondents. This indicates that PA and vendor activities are influential, but are not the primary reason for making efficiency upgrades. It is important to note that even if changes made to address mid-size customers have been effective, we would not expect PA or contractor influence to be the primary or even secondary reason for making energy efficiency investments. Companies typically replace equipment only because the new equipment provides a greater value to their business than the existing equipment. Among those who indicated that cost was a concern, either upfront or with ROI over time, there were indications that improvements in the economy (and their bottom lines) over the past several years have prompted their participating in energy efficiency programs, since more capital is available for these projects. Many mid-size customers seem to have long-term capital improvement plans and have been waiting for the right time and resources to execute them.
Figure 6-4 reports respondents’ secondary reasons for making efficiency upgrades. The largest share (10/22) respondents reported not having a secondary motivation in making upgrades. Of those who did cite a secondary motivation, operational improvements were reported by 5 respondents. Another 4 respondents said that they made improvements for comfort or aesthetics. Two of the respondents said that making energy efficiency improvements was important to their branding, as their customers valued being “green.”

**Figure 6-4. Are there secondary reasons your company had for making energy efficiency upgrades?**

<table>
<thead>
<tr>
<th>Reason</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comfort/Aesthetics</td>
<td>2</td>
</tr>
<tr>
<td>Operational Improvement</td>
<td>4</td>
</tr>
<tr>
<td>O&amp;M Savings</td>
<td>2</td>
</tr>
<tr>
<td>Being &quot;green&quot; for branding</td>
<td>2</td>
</tr>
<tr>
<td>Availability of on-bill financing</td>
<td>1</td>
</tr>
<tr>
<td>No secondary reason</td>
<td>10</td>
</tr>
</tbody>
</table>

**6.3 Role of PAs and vendors in decision-making**

We asked respondents to describe the role of PA staff and third-party contractors in the decision-making process. Figure 6-5 shows that only 4 of 22 respondents indicated there was no outside influence on the decision-making process. Eight reported that the utility and contractor jointly impacted the decision. Another 7 reported that just the utility played a role in the decision, and 2 reported just the contractor. So, while in the previous section where customer responses did not indicate that PA involvement was among the most important reasons for deciding to engage in energy efficiency, this probing question shows a total of 17 of 22 respondents reporting some level of influence, which demonstrates that PA and contractor engagement does affect mid-size customers’ energy efficiency decisions.
Figure 6-5. Did any outside party assist you in your decision-making process?

Figure 6-6 shows ways in which PAs and contractors influence those decisions, isolating the responses of customers installing electric and gas measures. The majority of customers who reported having help installing electric measures indicated they had received helpful information as well as help procuring equipment. Meanwhile, customers installing gas measures typically just received helpful information about energy efficiency measures from the PAs or vendors.

Figure 6-6. How did the outside party influence your decision-making process?

A more detailed review of the interview responses shows that customers view the PAs’ role as primarily up-front, with the contractors being largely responsible for the execution of the projects. Customers see the PAs
as responsible for estimating savings and making initial contacts with vendors. They see the contractor as responsible for everything from proposal to project conclusion. Customers say the contractors coordinate with other vendors, procure equipment, and oversee installations. A number of respondents stated that the PA set it up and then stepped back to let the contractors run the project. They were unaware of any PA involvement to influence the decisions. This may be by design, or it may be unintentional. We did not inquire whether the customers were more or less comfortable with the PAs’ limited involvement. If being perceived as a strong influence on decision-making is important to building credibility with customers, the PAs may want to consider increasing education regarding their role in the projects.

There was acknowledgment from many of the interviewed customers that both the PAs and the contractors have been pushing more comprehensive projects over the past several years, as customers who have not had lighting measures installed decrease in number; however, these customers also stated that the proposed projects are either too expensive or would disrupt operations to such a degree as to not be worthwhile (unless equipment failed).

### 6.4 Program ability to meet customer needs

In this section, we discuss customer IDI results about whether the program and PA vendor support met the customer’s needs. In general, 17 of 22 respondents said that the program did a good job (7/22) or very good job (10/22) at meeting their needs. Four respondents indicated moderate success, as some aspects of the project were good but others were less so. Only one respondent had unfavorable remarks and said nothing favorable about their experience with the programs.

Customers were asked about which energy efficiency measures they had addressed through the program to date, and which energy efficiency needs remain. These results are presented in sections 6.4.1 and 6.4.2 for electric and gas measures, respectively.

#### 6.4.1 Completed electric energy efficiency projects and remaining needs

Figure 6-7 shows the distribution of electric measures already addressed by the PAs as reported by the sample of customers. Twelve of the 22 customers interviewed were sampled for installing electric measures. These 12 customers indicated completing 19 projects from 2011-2015. The figure shows that the majority (63%) of completed projects were lighting. Lighting projects are followed by HVAC (16%) and compressed air (11%).

Figure 6-8 shows the percentage of interviewed customers who have installed various electric measures from 2011-2016, based on the program tracking data. The "percent installed" column is shaded in green to highlight the most commonly installed measures. This shows that, in general, the interviewees' facilities had completed LED lighting measures. Additionally, this shows that interviewees’ facilities completed far more energy efficiency projects than described during the interviews, including process and refrigeration.

Figure 6-9 shows electric energy efficiency measures that remain to be addressed in respondents’ facilities, according to the IDIs. We include both electric and gas measures in this table to demonstrate the opportunities for cross-fuel engagement. The largest share of customers who installed electric measures (4/12) report that they have no additional energy efficiency needs remaining to be addressed. This implies that the program may be adequately serving the perceived needs of the many customers who have already installed electric measures. Of those participants who indicate requiring additional electric measures, there is a fair distribution of customers reporting needs for each of the remaining measure types. Interestingly, although customers report 5% of projects completed involved building shell upgrades, none of the
respondents indicated they wanted to complete a building shell upgrade as a future project when responding to this question. Without performing a more comprehensive survey with far more respondents, we cannot say how representative these responses are of the overall population of customers and their needs. The data analysis in Section 7 provides a look into how measure installations have varied over time for mid-size gas and electric accounts.

**Figure 6-7. Customers who installed electric measures - projects completed – self report**
Figure 6-8. Customers who installed electric measures – projects completed – tracking data

<table>
<thead>
<tr>
<th>Project Track</th>
<th>Measure</th>
<th>Percent Installed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upstream</td>
<td>HVAC</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Lighting - LED</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>Compressed Air</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>HVAC</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>Lighting - Fluorescent</td>
<td>32%</td>
</tr>
<tr>
<td></td>
<td>Lighting - LED</td>
<td>27%</td>
</tr>
<tr>
<td></td>
<td>Lighting Controls</td>
<td>27%</td>
</tr>
<tr>
<td></td>
<td>Motors</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Refrigeration</td>
<td>5%</td>
</tr>
<tr>
<td>Prescriptive</td>
<td>Building Shell</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>Compressed Air</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>EMS</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>Food Service</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>HVAC</td>
<td>23%</td>
</tr>
<tr>
<td></td>
<td>Lighting - LEDs</td>
<td>27%</td>
</tr>
<tr>
<td></td>
<td>Lighting Controls</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>Process</td>
<td>18%</td>
</tr>
<tr>
<td></td>
<td>Refrigeration</td>
<td>14%</td>
</tr>
<tr>
<td>Custom</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 6-9. Customers who installed electric measures: are there any other measures you want to install?
6.4.2 Completed gas energy efficiency projects and remaining needs

Figure 6-10 shows the distribution of measures already addressed by the PAs through projects on which gas measures were installed, as reported by the sample of customers. 10 of the 22 customers interviewed were sampled for installing gas measure. These 10 customers indicated completing 23 total projects from 2011-2015. Of the projects completed, 13 involved the installation of gas measures. In terms of percent of projects completed, HVAC made up the largest percentage of measures installed (61%), followed by hot water (18%), and then controls (8%). Additionally, 9 out of 10 customers who installed gas measures also indicated already completing a lighting project. This indicates that there may be coordination among the electric and gas PAs on projects, but there is also some indication that lighting is being upgraded through the upstream program while the customers are completing other gas projects. It is difficult to tell, since only one respondent knew they had participated in an upstream program, while all others could only say they had received discounted lighting, but not specifically through which program.

Figure 6-11 shows the percentage of interviewed customers who have installed various gas measures from 2011-2016, based on the program tracking data. The "percent installed" column is shaded in green to highlight the most commonly installed measures. This shows that, in general, the interviewees' facilities had completed some additional energy efficiency measures compared to what was self-reported during the interview, notably building shell and process.

Figure 6-12 shows gas energy efficiency measures that remain to be addressed in respondents’ facilities. We include both gas and electric measures in this table to demonstrate the opportunities for cross-fuel engagement. The largest share of customers (5/10) reported HVAC as their primary need, which includes some respondents who have already completed HVAC projects. The next most common need cited was controls (3/10), followed by food service equipment and motors and drives, each of which was reported by 2 customers. It is striking that only 5% of interviewed customers completed a building shell measure, that none of the interviewees self-reported completing this measure, and none of the interviewees indicated that building shell was on their list of potential future measures. Improvements to the building envelope offer the possibility of substantial gas savings, and may be an measure for the gas PAs to target to customers who had not considered completing such a project.
Figure 6-10. Customers who installed gas measures - projects completed – self report

Figure 6-11. Customers who installed gas measures - projects completed – tracking data

<table>
<thead>
<tr>
<th>Project Track</th>
<th>Measure</th>
<th>Percent Installed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upstream</td>
<td>Hot Water</td>
<td>11%</td>
</tr>
<tr>
<td>Prescriptive</td>
<td>Food Service</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Hot Water</td>
<td>32%</td>
</tr>
<tr>
<td></td>
<td>HVAC</td>
<td>16%</td>
</tr>
<tr>
<td></td>
<td>Process</td>
<td>5%</td>
</tr>
<tr>
<td>Custom</td>
<td>Building Shell</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Hot Water</td>
<td>26%</td>
</tr>
<tr>
<td></td>
<td>HVAC</td>
<td>21%</td>
</tr>
<tr>
<td></td>
<td>Process</td>
<td>11%</td>
</tr>
</tbody>
</table>
Figure 6-12. Customers who installed gas measures: are there any other measures you want to install?

6.4.3 Barriers to completing additional energy efficiency projects

After discussing remaining energy efficiency needs with customers who had installed gas or electric measures, we asked why they had not moved forward to complete the needed measures identified. Fifteen of the respondents indicated that there were no real barriers to completing additional energy efficiency work; they had simply not gotten around to doing it, they had just finished one project and were planning others, or they didn’t have any additional projects they wished to complete.

Most of the multi-year participants interviewed did not identify having much more to do in terms of installing electric measures. They believe they have gotten all the “low hanging fruit,” culminating with recent LED installations; however, these participants may not be knowledgeable regarding new technologies or the most recent program offerings, which provides an opportunity for the PAs and vendors to engage them on projects they may be unlikely to seek out on their own. Without that engagement, they indicate they may look at some other HVAC/gas equipment if it fails, but the cost is currently too high/payback isn't there for early replacement.

Seven of the respondents indicated that there were barriers to completing additional projects; 3 respondents indicated that there would be problems getting additional projects approved due to required ROI. Of these, 2 want to install HVAC but indicate that the ROI period is much longer than for lighting projects, and replacement of this equipment is unlikely unless it fails. The third respondent was concerned with ROI in general since the expected savings from their first project did not materialize.

Of the remaining 4 respondents that indicated barriers, one stated that they needed to make higher priority operational improvements before considering additional energy efficiency projects. One indicated that they were bound by a long-term capital improvement plan. Another respondent indicated that a project they wanted to complete (cogeneration) was not approved to move forward. A final respondent indicated that the management at their company was not committed to energy efficiency, and did not view it as a priority.
Among the 7 respondents indicating barriers to participation, 3 mentioned additional work on their part as a secondary reason they might hesitate to participate again, including time spent gathering information and filling out paperwork.

Finally, a few customers were upset with individual contractors who had installed their energy efficiency measures, or with specific aspects of the program:

- One was irritated at how aggressive certain vendors were in getting him to participate and questioned whether he would participate again if he had to go through the same experience.
- Two respondents were upset at the quality of work done by contractors installing lighting measures on multi-measure projects, as well as with the quality of the measures installed, but were generally satisfied by the other work done on the project. Their primary problem was with the lack of consistency in quality of work.
- Another customer had had a bad experience with the initial ROI calculations completed by their vendor. The vendor originally estimated that a $35k rebate would be available for the proposed scope of work, but after checking the vendor’s calculations and discovering the vendor had been using some incorrect values, the rebate was revised down to $15k.
- A final customer indicated that it was difficult to navigate the Mass Save website to identify what solutions might be available to his company.
7 EXPLORATORY DATA ANALYSIS

This section discusses the result of the exploratory data analysis described in the methodology section. We examine several performance indicators for small, mid-size, and large accounts for electric and gas PAs from 2011-2016, and draw comparisons between the segments and over time. These performance metrics are described in detail in section 3.3.2, and include:

- Account and customer participation
- Consumption-weighted participation
- Population savings achieved
- Participant savings achieved
- Contribution ratio

Note that for account participation and consumption-weighted participation, results are broken out between upstream, mixed-stream, and non-upstream measures. These represent measure classifications in the MAC&I Evaluation Database, with mixed stream indicating that participants engaged in both upstream and non-upstream measures in a given year. Mixed-stream does not appear for population or participant savings achieved, since we are able to total the savings separately for each measure type when calculating this metric, regardless of whether an account participated in both upstream and non-upstream measures. As part of this analysis, we examine the potential impact of growth in upstream measures to the mid-size segment, which we will show has driven increased participation among those customers, but has also led to lower depth of savings.

In addition to looking at the differences between the small, mid-size, and large account segments over time at the population level, we also examined these performance metrics over time for specific industry sectors that were the most commonly highlighted as mid-size during the PA IDIs. These industry sectors include:

- Accommodation and food service
- Education
- Healthcare
- Retail trade

As discussed in Section 4.2, we use the statewide customer size definitions from the 2013 study for this analysis. These size segments include:

**Electric**

- Small, <300 aggregate kW peak demand, unmanaged
- Small, <300 aggregate kW peak demand, managed, chain, franchise
- Mid-size, 300-750 aggregate kW peak demand, unmanaged
- Mid-size, 300-750 aggregate kW peak demand, managed, chain, franchise
- Large, >750 aggregate kW peak demand, unmanaged
- Large, >750 aggregate kW peak demand, managed, chain, franchise
Gas

- Small, <40,000 aggregate therm annual consumption, unmanaged
- Small, <40,000 aggregate therm annual consumption, managed, chain, franchise
- Mid-size, 40,000-250,000 aggregate therm annual consumption, unmanaged
- Mid-size, 40,000-250,000 aggregate therm annual consumption, managed, chain, franchise
- Large, >250,000 aggregate therm annual consumption, unmanaged
- Large, >250,000 aggregate therm annual consumption, chain, franchise

7.1 Key findings and comparisons to IDIs

This section identifies key findings from the exploratory data analysis, and compares and contrasts them with results from our PA and market actor IDIs.

- The PA, vendor, and customer IDIs, while citing some barriers to participation for mid-size accounts, highlighted a concerted effort by several of the PAs to engage mid-size customers over the past several years. For example, vendors have noticed increased communication from the PAs about targeting mid-size accounts, including pushing for more comprehensive solutions, and customers have noticed increased communication from contractors about energy efficiency. This effort appears to have positively impacted participation in the mid-size segment since the 2013 study.

  - Examining Figure 7-1, mid-size, electric accounts, saw participation rates increase year over year from 2011-2015, driven primarily by additional accounts participating in the PAs’ upstream lighting and HVAC offerings. However, downstream participation also increased during this period, albeit to a lesser degree. There was a decrease in participation in 2016, but this drop occurred as well in the small size segment, and coupled with the high contribution ratios for mid-size customers shown in Figure 8-9, does not indicate a specific concern for mid-size electric accounts.

  - Examining Figure 7-2, mid-size, gas accounts, saw participation rates follow an increasing trend from 2011-2016, with a slight dip in participation in 2014. The increase in participation from 2015-2016 appears to have been driven in part by the new upstream hot water offering; however, even in the absence of that offering, the data appear to show consistent participation in the non-upstream offerings from 2015-2016.

  - Looking at participation at the customer level for both gas and electric customers, using the red shaded area plots in Figure 7-1 and Figure 7-2, participation rates generally rose from 2011-2014 for the all size segments, while falling somewhat for the mid-size and small segments, and tapering off for the large size segment.
Figure 7-1. Electric account participation over time by size segment
Figure 7-2. Gas account participation over time by size segment

Measure Names
- Account Participation Upstream
- Account Participation Mixed Stream
- Account Participation Not Upstream
- Customer Participation (Area Plots)
The PA, vendor, and customer IDIs also highlighted the importance of the upstream lighting, HVAC, and hot water offerings to engaging mid-size customers. While many of the customers interviewed were unaware that they had received upstream lighting measures, a review of the program tracking data indicates that 50% had participated in that offering. Further, several vendors indicated a concern that the increase in delivery of energy efficiency measures through the upstream offering is making it more difficult to approach customers with more comprehensive or custom solutions. To determine whether upstream measures are driving mid-size participation, and the effect that may have on depth of savings, we examine participant savings achieved by project track over time, as well as the number of participants by project track over time. Table 7-1 and Table 7-2 show these statistics for electric customers, while Table 7-3 and Table 7-4 show these statistics for gas customers.

Examining Table 7-1, while participant savings achieved varies substantially from year to year by PA within each of the project tracks, for mid-size and large accounts, custom projects tend to achieve greater depth of savings than either prescriptive or upstream projects, with upstream projects typically saving between 10%-25% of a custom project. This pattern does not hold for small customers, who appear to achieve similar depths of savings across all the project tracks, depending on the PA.

The lower depth of savings for upstream measures installed among mid-size customers means that overall depth of savings may decrease for this segment if the number of upstream projects completed increases while the number of prescriptive and custom projects remains flat or decreases. Table 7-2 shows that this has happened for mid-size electric customers in 2016, with the number of upstream projects increasing and the number of custom and prescriptive projects decreasing. This pattern is not limited to the mid-size segment, and is occurring among the large and small segments as well.

Looking at gas participants in Table 7-3 and Table 7-4, there is not yet enough information to assess how the upstream hot water offering may impact gas energy efficiency installations for mid-size customers, but as with electric upstream measure, the gas upstream measures have resulted in lower depth of savings than the custom or prescriptive offerings in their first year.

There is additional detail regarding upstream measure installation by size segment and industry sector in APPENDIX B.
Table 7-1. Electric participant savings achieved by PA and project track\(^{15}\)

<table>
<thead>
<tr>
<th>Customer Size</th>
<th>PA</th>
<th>Prescriptive Savings Per Participant</th>
<th>Custom Savings Per Participant</th>
<th>Upstream Savings Per Participant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>Cape Light Compact</td>
<td>5.9%</td>
<td>*</td>
<td>2.8%</td>
</tr>
<tr>
<td></td>
<td>Eversource</td>
<td>1.9%</td>
<td>2.1%</td>
<td>1.0%</td>
</tr>
<tr>
<td></td>
<td>National Grid</td>
<td>2.4%</td>
<td>2.7%</td>
<td>1.7%</td>
</tr>
<tr>
<td></td>
<td>Unitil</td>
<td>3.6%</td>
<td>1.2%</td>
<td>10.9%</td>
</tr>
<tr>
<td>Mid</td>
<td>Cape Light Compact</td>
<td>6.2%</td>
<td>6.9%</td>
<td>4.5%</td>
</tr>
<tr>
<td></td>
<td>Eversource</td>
<td>5.3%</td>
<td>3.3%</td>
<td>2.4%</td>
</tr>
<tr>
<td></td>
<td>National Grid</td>
<td>7.5%</td>
<td>3.5%</td>
<td>2.4%</td>
</tr>
<tr>
<td></td>
<td>Unitil</td>
<td>7.0%</td>
<td>0.9%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Small</td>
<td>Cape Light Compact</td>
<td>19.4%</td>
<td>12.6%</td>
<td>11.5%</td>
</tr>
<tr>
<td></td>
<td>Eversource</td>
<td>23.3%</td>
<td>11.5%</td>
<td>13.0%</td>
</tr>
<tr>
<td></td>
<td>National Grid</td>
<td>20.8%</td>
<td>9.6%</td>
<td>10.9%</td>
</tr>
<tr>
<td></td>
<td>Unitil</td>
<td>25.5%</td>
<td>8.8%</td>
<td>5.5%</td>
</tr>
</tbody>
</table>

Table 7-2. Number of electric participants by PA and project track\(^{16}\)

<table>
<thead>
<tr>
<th>Customer Size</th>
<th>PA</th>
<th>Number of Prescriptive Participants</th>
<th>Number of Custom Participants</th>
<th>Number of Upstream Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>Cape Light Compact</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>Eversource</td>
<td>146</td>
<td>30</td>
<td>196</td>
</tr>
<tr>
<td></td>
<td>National Grid</td>
<td>92</td>
<td>120</td>
<td>155</td>
</tr>
<tr>
<td></td>
<td>Unitil</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Mid</td>
<td>Cape Light Compact</td>
<td>157</td>
<td>49</td>
<td>206</td>
</tr>
<tr>
<td></td>
<td>Eversource</td>
<td>393</td>
<td>433</td>
<td>327</td>
</tr>
<tr>
<td></td>
<td>National Grid</td>
<td>166</td>
<td>233</td>
<td>302</td>
</tr>
<tr>
<td></td>
<td>Unitil</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Small</td>
<td>Cape Light Compact</td>
<td>352</td>
<td>433</td>
<td>327</td>
</tr>
<tr>
<td></td>
<td>Eversource</td>
<td>3,052</td>
<td>2,476</td>
<td>4,336</td>
</tr>
<tr>
<td></td>
<td>National Grid</td>
<td>554</td>
<td>2,628</td>
<td>4,173</td>
</tr>
<tr>
<td></td>
<td>Unitil</td>
<td>32</td>
<td>61</td>
<td>85</td>
</tr>
</tbody>
</table>

\(^{15}\) An * in the table indicates that there was not enough data available to calculate a percentage for that cell.

\(^{16}\) An * in the table indicates that there were fewer than 15 participants in that cell.
Table 7-3. Gas participant savings achieved by PA and project track

<table>
<thead>
<tr>
<th>Customer Size</th>
<th>PA</th>
<th>Prescriptive Savings Per Participant</th>
<th>Custom Savings Per Participant</th>
<th>Upstream Savings Per Participant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>Berkshire</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>Columbia</td>
<td>0.1%</td>
<td>3.7%</td>
<td>2.9%</td>
</tr>
<tr>
<td></td>
<td>Eversource</td>
<td>2.6%</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>Liberty</td>
<td>*</td>
<td>*</td>
<td>3.7%</td>
</tr>
<tr>
<td></td>
<td>National Grid</td>
<td>0.2%</td>
<td>*</td>
<td>0.0%</td>
</tr>
<tr>
<td></td>
<td>Unitil</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Mid</td>
<td>Berkshire</td>
<td>2.5%</td>
<td>0.3%</td>
<td>0.2%</td>
</tr>
<tr>
<td></td>
<td>Columbia</td>
<td>0.3%</td>
<td>1.8%</td>
<td>0.5%</td>
</tr>
<tr>
<td></td>
<td>Eversource</td>
<td>3.1%</td>
<td>7.1%</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>Liberty</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>National Grid</td>
<td>2.9%</td>
<td>8.6%</td>
<td>1.0%</td>
</tr>
<tr>
<td></td>
<td>Unitil</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Small</td>
<td>Berkshire</td>
<td>23.5%</td>
<td>47.7%</td>
<td>5.1%</td>
</tr>
<tr>
<td></td>
<td>Columbia</td>
<td>14.3%</td>
<td>7.1%</td>
<td>10.6%</td>
</tr>
<tr>
<td></td>
<td>Eversource</td>
<td>16.3%</td>
<td>3.7%</td>
<td>15.2%</td>
</tr>
<tr>
<td></td>
<td>Liberty</td>
<td>14.4%</td>
<td>4.2%</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>National Grid</td>
<td>14.6%</td>
<td>10.1%</td>
<td>7.6%</td>
</tr>
<tr>
<td></td>
<td>Unitil</td>
<td>12.5%</td>
<td>9.7%</td>
<td>18.4%</td>
</tr>
</tbody>
</table>

17 An * in the table indicates that there was not enough data available to calculate a percentage for that cell.
Table 7-4. Number of gas participants by PA and project track\textsuperscript{18}

<table>
<thead>
<tr>
<th>Customer Size</th>
<th>PA</th>
<th>Number of Prescriptive Participants</th>
<th>Number of Custom Participants</th>
<th>Number of Upstream Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>Berkshire</td>
<td>* * * * * * * * * * * * * * * * * *</td>
<td>* * * * * * * * * * * * * * * *</td>
<td>* * * * * * * * * * * * * * * *</td>
</tr>
<tr>
<td></td>
<td>Columbia</td>
<td>* * * * * * * * * * * * * * * * * *</td>
<td>15 15 15 18 18 18 18 18 18 18</td>
<td>* * * * * * * * * * * * * * * *</td>
</tr>
<tr>
<td></td>
<td>Eversource</td>
<td>* * 15 * * * * * * * * * * * *</td>
<td>18 19 20 22 23 24 24 24 24 24</td>
<td>* * * * * * * * * * * * * * * *</td>
</tr>
<tr>
<td></td>
<td>Liberty</td>
<td>* * * * * * * * * * * * * * * * * *</td>
<td>* * * * * * * * * * * * * * * *</td>
<td>* * * * * * * * * * * * * * * *</td>
</tr>
<tr>
<td></td>
<td>National Grid</td>
<td>* * 7 12 11 6</td>
<td>28 25 44 34 39 56</td>
<td>* * * * * * * * * * * * * * * *</td>
</tr>
<tr>
<td></td>
<td>Unitil</td>
<td>* * * * * * * * * * * * * * * * * *</td>
<td>* * * * * * * * * * * * * * * *</td>
<td>* * * * * * * * * * * * * * * *</td>
</tr>
<tr>
<td>Mid</td>
<td>Berkshire</td>
<td>* * * * * * * * * * * * * * * * * *</td>
<td>* * * * * * * * * * * * * * * *</td>
<td>* * * * * * * * * * * * * * * *</td>
</tr>
<tr>
<td></td>
<td>Columbia</td>
<td>* * 40 23 * 54</td>
<td>15 53 * 35 113 39</td>
<td>* * * * * * * * * * * * * * * *</td>
</tr>
<tr>
<td></td>
<td>Eversource</td>
<td>30 * 19 20 21 24</td>
<td>28 22 63 56 20 23</td>
<td>* * * * * * * * * * * * * * * *</td>
</tr>
<tr>
<td></td>
<td>Liberty</td>
<td>* * * * * * * * * * * * * * * * * *</td>
<td>* * * * * * * * * * * * * * * *</td>
<td>* * * * * * * * * * * * * * * *</td>
</tr>
<tr>
<td></td>
<td>National Grid</td>
<td>57 53 121 84 70 59</td>
<td>54 49 61 82 107 117</td>
<td>* * * * * * * * * * * * * * * *</td>
</tr>
<tr>
<td></td>
<td>Unitil</td>
<td>* * * * * * * * * * * * * * * * * *</td>
<td>* * * * * * * * * * * * * * * *</td>
<td>* * * * * * * * * * * * * * * *</td>
</tr>
<tr>
<td>Small</td>
<td>Berkshire</td>
<td>46 72 125 70 84 47</td>
<td>* * 16 * * 25</td>
<td>* * * * * * * * * * * * * * * *</td>
</tr>
<tr>
<td></td>
<td>Columbia</td>
<td>143 212 719 480 96 407</td>
<td>73 261 38 85 600 86</td>
<td>* * * * * * * * * * * * * * * *</td>
</tr>
<tr>
<td></td>
<td>Eversource</td>
<td>478 252 467 315 472 295</td>
<td>38 175 370 81 51 64</td>
<td>* * * * * * * * * * * * * * * *</td>
</tr>
<tr>
<td></td>
<td>Liberty</td>
<td>22 31 24 67 26 170</td>
<td>* * * * * * * * * * * *</td>
<td>* * * * * * * * * * * * * * * *</td>
</tr>
<tr>
<td></td>
<td>National Grid</td>
<td>1,451 2,501 1,960 1,138 776 609</td>
<td>85 90 170 155 167 203</td>
<td>* * * * * * * * * * * * * * * *</td>
</tr>
<tr>
<td></td>
<td>Unitil</td>
<td>15 17 * 25 * *</td>
<td>* * * * * * * * * * * *</td>
<td>* * * * * * * * * * * * * * * *</td>
</tr>
</tbody>
</table>

\textsuperscript{18} An * in the table indicates that there were fewer than 15 participants in that cell.
The remaining detailed performance metric results from the exploratory data analysis are presented in APPENDIX B, while we present an overview of those results below:

- The PA IDIs suggested that several industry sectors tend to be mid-size, and highlighted specific efforts to target these industries since the 2013 study. As noted above, these sectors are accommodation and food service (hospitality), education, healthcare, and retail (grocery stores). As with the population overall, participation results since the 2013 study were positive for most of these industry sectors. The following are results for electric accounts in these sectors:
  - Accommodation and food service – Unmanaged electric account participation grew through 2014, peaked, and has decreased through 2016. Managed electric account participation peaked in 2014 and has generally remained stable since 2014.
  - Education – Unmanaged electric participation grew through 2014 and then fell through 2016. Most of this drop is attributed to reduced participation in the upstream offerings, while downstream participation has increased during this period.
  - Healthcare – Unmanaged electric accounts have seen year-over-year growth in participation from 2011-2016, driven substantially by upstream participation beginning in 2013.
  - Retail trade – For electric accounts, mid-size unmanaged retail electric accounts mirror the overall population, with increased participation through 2015 followed by a drop in 2016. Only mid-size managed accounts did not drop in 2016, but rather showed a 2016 increase in participation.

- Most of the gas PAs believe that the upstream hot water offering (first available in 2016) positively impacts mid-size gas participation. Based on our review of the 2016 data, they are correct. In fact, mid-size gas accounts have had a generally positive trend in account participation from 2011-2015, with this trend continuing through 2016 due to the upstream hot water offering. The following are results for gas accounts in these sectors:
  - Accommodation and food service – Unmanaged gas account participation peaked in 2013, and has decreased through 2016; this pattern is the same for large and small accommodation and food service accounts, with mid-size participation not substantially lower than large account participation in 2016. Thus, the drop in mid-size participation does not necessarily indicate that mid-size accounts are under-served, but may suggest additional potential for energy efficiency in this sector.
  - Education – Unmanaged gas saw a positive trend from 2011-2015 and then flattened out in 2016. There likely would have been a decrease in participation without the upstream hot water offering.
  - Healthcare – Gas accounts saw growth in participation from 2011-2013, dropping in 2014, and have been on an upward trend through 2016, with the upstream hot water offering maintaining this trend.
  - Retail trade – For gas accounts, participation rates peaked between 2012 and 2013, decreasing through 2015. For mid-size managed and unmanaged gas accounts, participation increased once again in 2016 and currently exceed the participation rate of large gas accounts.

- In the customer IDI results in section 6, customers installing electric measures reported that 63% of measures installed were lighting, 16% were HVAC, 11% were compressed air, 5% were building shell, and 5% were motors and drives. For those customers who said they wished to install additional energy efficiency measures, motors and drives was the most frequently listed measure,
followed by HVAC, compressed air, and controls. Figure 8-10 shows the distribution of electric measures installed over time along with the participant savings achieved by each measure type, with prescriptive HVAC, custom HVAC, and upstream HVAC making up a large percentage of the measures installed. Conversely, while a number of respondents also installed compressed air and building shell measures, these only represented a handful of measures installed at the overall population level during any given year.

- Among customers installing gas measures, the most frequent end uses were HVAC, at 61%, hot water, at 31%, and controls, at 8%. For those customers who indicated they wanted to install additional energy efficiency measures, HVAC was the most frequently listed measure, followed by controls and food service. Figure 8-16 shows the distribution of gas measures installed over time along with the participant savings achieved by each measure type, with hot water and custom hot water accounting for the majority of measures installed in any given year. This is inconsistent with our IDI results, where HVAC was cited as the most frequently installed measure. HVAC measures tend to be installed by larger than average customers within the mid-size segments.

- As noted above, vendors believe there should be a greater push to install comprehensive measures for mid-size accounts, and have seen an effort from the PAs over the past couple of years to encourage that. However, while the data show that there are more custom/comprehensive measures being installed now, these still represent a very small portion of overall energy efficiency installations. Among gas installations, custom HVAC and comprehensive design have taken on a much more substantial role over the past three years, though not enough to compensate for the fact that most gas installations are prescriptive hot water.

  - There has been an increase in diversity of measures, with more custom measures installed now than in 2011; however, these measures are not leading to a greater depth of savings, and installations remain dominated by lighting especially upstream lighting. Notably, as upstream lighting has supplanted downstream prescriptive lighting in number of measures installed, downstream lighting has achieved greater average depth of saving per project, likely because electric contractors are focusing on more comprehensive solutions.

  - Examining participant savings achieved is one way to gauge depth of savings. Here, we describe participant savings achieved for the population overall and for specific industry sectors. There was substantial variation from sector to sector as to whether the trend in participant savings achieved was positive, negative, or relatively flat from 2011-2016. Yet, most sectors have seen decreases in participant savings achieved over the past 2 to 3 years:

    - For mid-size electric accounts at the overall population level, there was a general downward trend in participant savings achieved from 2011-2016.
    - For mid-size gas accounts at the overall population level, there was a substantial decrease in participant savings achieved during 2013, with a slight year-over-year increase from 2014-2016.
    - For mid-size electric accommodation and food service accounts, there was an increase in participant savings achieved from 2011-2014, followed by a drop in 2015 and 2016.
    - For mid-size gas accommodation and food service accounts, there was a consistent increase in participant savings achieved from 2011-2015, followed by a decrease in 2016.
    - For mid-size electric education accounts, there was an increase in participant savings achieved through 2012, followed by a downward trend through 2016.
• For mid-size gas education accounts, there was a downward trend from 2011-2015, but an increase in participant savings achieved in 2016.

• For mid-size electric healthcare accounts – there was a decrease in participant savings achieved through 2014, with a spike in 2015, and another decrease in 2016.

• For mid-size gas healthcare accounts, there was a downward trend in participant savings achieved from 2011-2016.

• For mid-size electric retail trade accounts, there was a positive trend in participant savings achieved through 2014, with a slight downward trend from 2015-2016.

• For mid-size gas retail trade accounts, there was a decrease in participant savings achieved from 2011-2013, followed by a substantial increase from 2014-2015, and then a large drop in 2016.

• Finally, based on how the PAs said they had targeted industries for various measures since the 2013 study, we looked for patterns of measure installation within industry sectors that would be consistent with this targeting.

  - Accommodation and food service – A large spike in gas custom hot water installations and food service during 2014-2015 potentially corresponds with the gas PA effort cited in the IDIs to get custom measures into hotel laundry rooms and food preparation facilities. For electric, there was a push in 2013-2014 to encourage more custom measures among larger mid-size accounts, which resulted in a spike in participant savings achieved in 2014, followed by a decrease from 2015-2016, when fewer of these custom measures were installed.

  - Education – While there was a decrease in gas participant savings achieved from 2011-2015 for gas mid-size accounts, a large number of custom HVAC, custom comprehensive design, custom hot water, and custom building shell measures helped drive higher participant savings achieved. While other industry sectors are installing these custom measures, they have not installed enough of them to compensate for the low depth of savings achieved by the pervasiveness of prescriptive and upstream measures.

  - Healthcare – While the PAs suggested that healthcare facilities are typically mid-size, and Eversource specifically segments and targets healthcare accounts within its mid-size group, healthcare accounts are overwhelmingly not installing the comprehensive measures that we would expect to see with strategic accounts. Rather, the vast majority of measures installed by electric healthcare accounts from 2011-2016 were lighting measures. HVAC is the second most prevalent measure, but typically only accounts for 4-5 measures installed by mid-size accounts each year. For gas accounts, there are larger number of custom measures installed, including custom HVAC, comprehensive design, custom process, and building shell, which has helped maintain depth of savings over time, and led to an increase in depth of savings in 2016.

  - Retail trade – Several PAs indicated specifically targeting the retail trade sector, including grocery stores, for energy efficiency measures since the 2013 study. This is consistent with the electric participation data, which shows large numbers of custom refrigeration, prescriptive refrigeration, custom lighting, and HVAC installed from 2013-2015.
8 CONCLUSIONS AND CONSIDERATIONS

This section presents conclusions, considerations, and topics for future research.

8.1 Conclusions

At the statewide population level, mid-size electric and gas accounts are no longer underperforming large and small accounts in terms of contribution ratio, and have outperformed large accounts during some recent program years. However, there are still opportunities for some PAs to improve service to these accounts. Figure 8-1 and Figure 8-2 show the contribution ratio of electric and gas accounts by size over time.

Figure 8-1. Contribution ratio over time by size segment, electric

Figure 8-2. Contribution ratio over time by size segment, gas
PAs have changed their criteria for classifying accounts by size.

Most electric PAs have changed their primary size criteria from peak demand to annual energy consumption for all size accounts, including mid-size. This matches a similar shift for the small business core initiative starting in January 2016. The Massachusetts Three-Year Plan 2016-2018 defined the limit for this initiative as an aggregate annual usage of less than 1.5 million kWh and/or 40,000 therms.

Three years ago, peak demand was the most common criterion for segmenting electric customers by size and differentiating marketing approaches, but the PAs did not apply this criterion consistently. The former upper bound for defining eligibility for the small business core initiative was less than 300 kW. Currently, only National Grid reported using peak demand (1,000 kW) to help differentiate accounts managed by its strategic sales team, although it also differentiates large accounts based on the strategic importance of the accounts.

While Eversource segments its customers according to usage similarly to other PAs, it is unique in also segmenting its customers according to usage quartiles, where mid-size accounts constitute the second lowest quartile (Q3) of usage among its accounts.

National Grid, Eversource, and Cape Light Compact have developed specific customer engagement practices based on industry segments, many of which include a lot of mid-size accounts. Other PAs have begun targeting specific industry segments, and have expressed interest in or intent to target additional industry segments.

National Grid assigns individual customers to specific account representatives based on industry segment. Many of these industry segments contain numerous mid-size accounts.

Eversource has implemented a mid-size business group to directly engage its Quartile 3 (mid-size) accounts, consisting of account representatives, project engineers, energy efficiency consultants, and project expediters to serve the needs of each industry segment. This strategy came from lessons learned through work with its larger Q1 and Q2 accounts.

The channel-specific groups at these PAs have allowed them to identify best practices by industry segment and educate vendors on how those practices apply to mid-size customers based on their industry segment. These PAs also report greatly increasing their number of qualified trade allies who are able to offer a wide range of electric and gas expertise to customers (although many trade allies remain focused on lighting and hot water measures).

While the smaller PAs indicate they do not have a large enough customer base, and therefore a need, to segment their mid-size or large customers by industry or other criteria, some PAs have expressed interest in or intent to target certain business segments. The smaller PAs can use the new size criteria to track these customers’ performance relative to large and small businesses in the future. For example, while Berkshire Gas has not typically segmented its accounts by industry, it recently targeted food service establishments (and other sectors with potentially large kitchens) to install more high-efficiency food service equipment.

As another example, while Cape Light Compact did not recognize a mid-size segment in 2013, it now has a group consisting of high-usage accounts that still qualify for the small business core initiative (less than the state-wide usage threshold of 1.5M kWh), has targeted grocery and hospitality, and is developing additional
industry-specific initiatives to work with this part of its customer base. Although Unitil does not have a specific mid-size account approach, it speculates that its high-usage small accounts (approximately 50 electric and 20 gas accounts) may be worth engaging as a separate group.

**While PA and vendor communication has improved in many ways, some vendors remain confused about PAs’ segmentation approaches and vendor roles.**

Our IDIs indicated that PAs have increased their communication with vendors about targeting customers who are mid-size, including pushing for more comprehensive solutions, and that vendors have increased their communication with customers about energy efficiency. Many vendors said that the PAs do a good job of helping identify opportunities, and of informing customers and vendors about the programs, application process, and rebates. Our data analysis suggests that this effort has positively impacted participation in the mid-size segment since the 2013 study. For mid-size, unmanaged electric accounts, participation rates increased year over year from 2011-2015, driven primarily by additional accounts participating in the PAs’ upstream lighting and upstream HVAC offerings.

At the same time, some vendors reported frustration with inconsistencies across PAs and the perceived frequency of changes to program definitions. While most vendors could identify some specific changes PAs had made to internal organization and resources, they had less clarity about how these changes fit into the broader context of PA strategies and vendor roles.

**Some vendors could benefit from additional PA support/communication in the areas of engineering, training, and customer engagement.**

Some vendors indicated that the PAs did not provide adequate engineering support, but the nature of their desired support varied. While most vendors we interviewed who serve mid-size customers offer engineering and design build services, and have professional engineers on staff, some vendors said their engineering staff does not have enough experience with the latest energy efficiency technologies, and would like more training. Other vendors have the necessary engineering expertise as well as the necessary energy efficiency experience, but do not necessarily have the bandwidth to design comprehensive energy efficiency solutions for all customers. Finally, there are a few vendors who believe they have greater experience and expertise than PA engineering staff, and would like to submit and discuss their project proposals to PA staff with comparable experience.

Vendors expressed concern about PA staff turnover and about inconsistency in the levels of knowledge and competency among PA staff, both within a PA and across PAs. Vendors said that with frequent changes to PA staff and program offerings, more experienced staff leave and are replaced by staff lacking technical expertise and customer knowledge, and who are more focused on the administrative, accounting, and marketing aspects of the programs. Vendors also cited inconsistency in the availability and responsiveness of PA staff.

Vendors are enthusiastic about the training offered by the PAs, including the monthly project expeditor meetings, the PA-sponsored webinars, and the Energy Efficiency Expo event at Gillette Stadium, which also offered networking opportunities. Vendors find training to be more focused on selling than technology, which some like and some don’t.
Some vendors said that there has not been effective communication about the role of contract project expeditors. While many vendors feel that partnering with others is essential to servicing mid-size accounts, they are not aware of resources offered by the PAs to assist with partnering opportunities apart from trade shows.

In terms of targeting customers for energy efficiency engagement, generally, larger vendors feel they don’t need the PAs to help them determine whom to target, while some smaller vendors want more assistance from the PAs in this area.

**Upstream programs have had a substantial impact on participation of mid-size accounts.**

Our analysis of the program data found that the Upstream Lighting program, launched in 2011, has effectively served the needs of many mid-size customers. Our review of the 2016 data also confirms that the upstream hot water offering (first available in 2015) positively impacts mid-size gas participation.

A few contractors say the upstream program adversely impacts them by sending profits to manufacturers and distributors. Some contractors are also concerned that it erodes their ability to achieve more substantial savings: When a customer installs all new upstream lighting, for example, it becomes less likely that they will want to install more comprehensive lighting measures like lighting control systems. Further, they indicate the market has been flooded with many contractors only selling upstream lighting, so that by the time they approach a customer to perform a more comprehensive project, they have already received multiple proposals for upstream projects.

**The 2013 study recommended that PAs encourage more custom/comprehensive energy efficiency projects to increase depth of savings. Our findings indicate a need for further attention to this.**

While the data show that more custom/comprehensive measures are being installed since the 2013 study, these measures still represent a very small portion of overall energy efficiency installations. Data analysis found that often, contractors are installing upstream lighting rather than custom/comprehensive solutions; vendor IDIs found that vendors are still heavily focused on lighting retrofits, and do not segment or target specific industries. Among gas installations, custom HVAC and comprehensive design have taken on a much more substantial role since the 2013 study, increasing participant depth of savings for some accounts, though not enough to compensate for the fact that most gas installations are still prescriptive hot water at the population level. Additionally, customers appear to only be considering equipment replacement (replace on failure, early replacement) rather than system optimization. System optimization is a good potential avenue to achieve greater HVAC savings for customers who cannot currently afford capital upgrades.

There was substantial variation from segment to segment as to whether the trend in participant savings achieved was positive, negative, or relatively flat from 2011-2016. Yet, most segments have seen decreases in participant savings achieved over the past 2 to 3 years. Importantly, patterns of measure installation within industry segments are consistent with how the PAs say they have targeted industries for various measures since the 2013 study. For example, in accommodation and food service, a large spike in gas custom hot water installations and food service during 2014-2015 corresponds with a gas PA effort to get custom measures into hotel laundry and food preparation facilities.
Our data analysis shows that on average, 64% of each electric PA’s active mid-size account base has participated since 2011, and 27% of each gas PA’s active mid-size account base has participated since 2011 (see Figure 8-3 and Figure 8-4).

**Figure 8-3. Aggregate percent of 2016 active mid-size electric accounts participating over time**
Our customer IDIs show that the majority of customers who previously installed measures said they still want to install more.\(^\text{19}\) The majority of customers also said there are no real barriers to doing more energy efficiency work.\(^\text{20}\) For those who cited barriers, customers seem to be more concerned with expeditious and accurate ROI and the administrative burden of doing projects than on the actual upfront monetary costs of projects.\(^\text{21}\) The overwhelming majority of customers said that either a PA or a vendor helped them make decisions about what energy efficiency measures they could install, and whether or not to move forward with a project, including assisting with the calculation of ROI for their projects. For a majority of customers, ROI is a primary concern in whether a project will move forward, potentially stopping a project even if there are other good reasons to move forward, due to company polices requiring payback within a certain period. They rely on the PAs and vendors to provide them with accurate savings estimates, and may be less likely to participate in the future if savings estimates from a past project turned out to be incorrect.

**Figure 8-4. Aggregate percent of 2016 active mid-size gas accounts participating over time**

In other words, the PAs have a range of opportunities to influence depth of savings by encouraging more custom/comprehensive projects. Since so much of the mid-size electric market consists of customers who have already participated in PA energy efficiency programs, most mid-size customers who have participated want to install more measures, and mid-size customers are heavily influenced by PAs and vendors in choosing which measures to install, electric PAs have an opportunity to

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\(^{19}\) Those who had installed electric measures most frequently cited wanting to install motors and drives, followed by HVAC. The majority of those who had installed gas measures had also installed electric measures (typically lighting), and most frequently cited wanting to install HVAC, followed by controls and food service.

\(^{20}\) This notably contradicts the vendor IDIs, in which nearly all vendors cite project cost as the primary barrier to participation. This difference could be due simply to customers speaking differently to different audiences.

\(^{21}\) Some of those who completed previous project cited a lack of trust in savings estimates, as they were incorrect in the past.
steer repeat mid-size participants in the direction of custom/comprehensive projects. Since less of the mid-size gas market consists of customers who have already participated in programs, and we have seen targeted gas custom offerings increase mid-size custom gas installations, gas PAs have an opportunity to 1) engage new mid-size participants through targeted custom offerings and 2) steer repeat mid-size participants in the direction of custom/comprehensive projects.

8.2 Considerations

This study led us to develop the following considerations:

- PAs who have developed criteria for defining mid-size accounts have had success targeting specific industries for energy efficiency projects.
- PAs who have already begun segmenting by industry should continue to do so.
- PAs who have not developed industry-specific engagement strategies should consider doing so. Even small PAs with few mid-size customers could benefit from industry-specific targeting. Cape Light Compact’s industry-specific engagement strategy has resulted in higher customer participation than the strategies of other small PAs.
- A state-wide logic model might help define a strategy for engaging mid-size customers and the vendors serving those customers. We were unable to glean such a model from the interviews we completed with the PAs and vendors, but this might lead to more consistent results across PA territories.

Some vendors expressed concern regarding consistent knowledge levels at the PAs, as well as how vendors fit into the PAs’ customer engagement strategies. These concerns could be addressed with three changes:

- PAs could improve communication regarding project roles and strategies. For example, some PAs are bringing in vendors to serve in the role of technical expert,22 but these vendors may not fully recognize that this is their role. Improved communication could eliminate any confusion.
- The PAs could increase their internal training of staff to ensure that all staff has comparable knowledge of customers and customer solutions.
- The PAs could use a third-party technical expert firm to support vendors state-wide. This firm could provide engineering review for energy efficiency projects, to ensure consistency of projects and expediency of review.

As in the 2013 study, vendors continue to indicate that cost is a substantial barrier to participation in energy efficiency initiatives, while customers indicated they were more concerned about ROI. Our interviews yielded some possible solutions:

- The PAs could simplify the incentive process. With the work required to determine savings on custom projects, this may not be feasible, but any change that reduced the time burden on the vendors and customers would likely be welcome.

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22 Interviews highlighted two different vendor roles. One was delivering energy efficiency programs to certain PAs’ customers. The other was the conducting technical assistance studies to inform customers of the best path forward in completing their energy efficiency project.
• Where possible, the PAs could consider providing on-bill financing for a greater number of projects.

• The PAs could help vendors coordinate to ensure that comprehensive projects move forward, and are completed as quickly as feasible to minimize business impacts. This could be facilitated by the PAs allowing project management to be an approved project cost. The PAs could also provide resources such as a directory of vendors, their specialties, past projects, and ratings to improve coordination efforts on part of the vendor community. The PAs may also provide lists of firms who could serve the role of general contractor.

Some customers are wary of repeat participation, since the projected ROI from their first project did not materialize. The PAs could consider requiring more detailed project planning, as well as commissioning throughout the project or measure installation, to make sure that the proposed project will save as much energy as feasible. As an example of something the PAs could consider to help communicate project impacts, a pro forma ROI tool might give customers a realistic idea of the project’s potential impact on their bottom lines, provided the project is completed according to the initial design.

Finally, to encourage continued improvement in the quality of energy efficiency installations, the PAs could make changes to the vetting of contractors and selling practices, to make sure that contractors are encouraging completion of comprehensive projects that meet more of the customer’s energy efficiency needs, versus only encouraging easier projects like upstream lighting. The PAs and vendors indicated that such communication is already occurring, but the data show increasing amounts of mid-size customer participation coming from the upstream programs.

8.3 Future research

Our interviews with mid-size participants highlighted customers’ desire to pursue a diverse set of additional energy efficiency projects in the future, as long as they’re economically feasible. These interviews also highlighted that there is a tendency to pursue capital/equipment replacement projects, versus projects that focus more on system optimization. Despite the short measure life, retro-commissioning projects may represent an opportunity for mid-size customer savings in the future, but none of the customers answering our open-ended question indicated that this is something they were considering as an energy efficiency project. Future research could explore why customers aren’t expressing greater interest in these system optimization projects.
APPENDIX A. Effects of Account Segmentation: Electric PAs and Gas PAs

Electric PAs

Population characteristics at the account level

Table 8-1 presents the number of electric accounts that have been in each size bin from 2011-2016. As this table shows, the segmentation changes have caused large disparities in the number of accounts in each size bin. For example, in 2016, there would be 1,372 large accounts according to the old size criteria, but only 787 large accounts according to the new size criteria.

Table 8-1. Number of accounts in each size bin – electric, by year

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>Old</td>
<td>1,494</td>
<td>1,552</td>
<td>1,468</td>
<td>1,354</td>
<td>1,340</td>
<td>1,372</td>
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<tr>
<td></td>
<td>New</td>
<td>838</td>
<td>798</td>
<td>806</td>
<td>797</td>
<td>758</td>
<td>787</td>
</tr>
<tr>
<td>Mid-size</td>
<td>Old</td>
<td>3,108</td>
<td>3,006</td>
<td>3,191</td>
<td>2,910</td>
<td>2,840</td>
<td>3,075</td>
</tr>
<tr>
<td></td>
<td>New</td>
<td>2,261</td>
<td>2,193</td>
<td>2,226</td>
<td>2,227</td>
<td>2,141</td>
<td>2,266</td>
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<tr>
<td>Small</td>
<td>Old</td>
<td>341,749</td>
<td>329,748</td>
<td>345,979</td>
<td>311,351</td>
<td>331,776</td>
<td>377,555</td>
</tr>
<tr>
<td></td>
<td>New</td>
<td>343,252</td>
<td>331,315</td>
<td>347,606</td>
<td>312,591</td>
<td>333,057</td>
<td>378,949</td>
</tr>
</tbody>
</table>

Table 8-2 shows the number of electric accounts in each size bin in 2016, by PA. This table demonstrates in particular how relatively few large and mid-size accounts the small PAs have compared to the large PAs. In 2016, according to the new size criteria, Unitil and Cape Light Compact had only 4 and 8 large accounts, respectively, and 17 and 52 mid-size accounts, respectively. These low numbers allow the small PAs to engage directly with each of their large and mid-size customers every year—something the larger PAs don’t have the bandwidth to accomplish.

Table 8-2. Number of accounts in each size bin – electric, by PA

<table>
<thead>
<tr>
<th>Size</th>
<th>Cape Light Compact</th>
<th>Eversource</th>
<th>National Grid</th>
<th>Unutil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>Old</td>
<td>15</td>
<td>768</td>
<td>577</td>
</tr>
<tr>
<td></td>
<td>New</td>
<td>8</td>
<td>467</td>
<td>308</td>
</tr>
<tr>
<td>Mid-size</td>
<td>Old</td>
<td>68</td>
<td>1,436</td>
<td>1,553</td>
</tr>
<tr>
<td></td>
<td>New</td>
<td>52</td>
<td>1,188</td>
<td>1,009</td>
</tr>
<tr>
<td>Small</td>
<td>Old</td>
<td>25,759</td>
<td>168,591</td>
<td>179,424</td>
</tr>
<tr>
<td></td>
<td>New</td>
<td>25,782</td>
<td>169,140</td>
<td>180,237</td>
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</table>
Table 8-3 shows the average kWh consumption by account in 2016, by PA and size bin. Notably, the change from the old to the new size criteria increased consumption for customers falling into each new category. The reason for this is that the new size criteria shifted each category’s size boundaries upward.

It is also important to notice where the various account sizes fall relative to the upper limits of the old and new size categories. While the new size criteria designate the upper limit for small accounts at 1.5 million kWh/yr, the average size of small accounts does not come close to approaching this. By the old size criteria, the average mid-size account fell just above the 1.5 million kWh lower limit for mid-size. By the new criteria, the average mid-size account is much larger, because the size boundaries have shifted upward. The new size criteria have also caused accounts formerly classified as large to shift down into the mid-size category, which leaves the bin of large accounts with much higher average consumption than the large bin contained previously.

Table 8-3. Average kWh consumption by account – electric, by PA and size bin

<table>
<thead>
<tr>
<th>Size</th>
<th>PA</th>
<th>Cape Light Compact</th>
<th>Eversource</th>
<th>National Grid</th>
<th>Unitil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>Old</td>
<td>6,328,018</td>
<td>8,193,759</td>
<td>7,627,674</td>
<td>8,511,176</td>
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<tr>
<td></td>
<td>New</td>
<td>13,477,550</td>
<td>12,609,071</td>
<td>11,495,593</td>
<td>15,746,528</td>
</tr>
<tr>
<td>Mid-size</td>
<td>Old</td>
<td>1,665,722</td>
<td>1,682,015</td>
<td>1,664,942</td>
<td>1,640,985</td>
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<td>New</td>
<td>2,362,881</td>
<td>2,505,659</td>
<td>2,458,979</td>
<td>2,607,597</td>
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<td>Small</td>
<td>Old</td>
<td>24,199</td>
<td>41,279</td>
<td>34,417</td>
<td>26,914</td>
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<tr>
<td></td>
<td>New</td>
<td>24,478</td>
<td>44,209</td>
<td>38,570</td>
<td>29,910</td>
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Table 8-4 shows the top 10 industry sectors in order of total consumption, by size bin. Consistent with the changes shown in tables above, the new size criteria have caused average kWh consumption to rise for industries in all size bins. The new criteria have also resulted in a reordering of the top 10 industry sectors by total consumption. Retail trade has left the top 10, and finance and insurance have joined it. With the new criteria, the industries responsible for the most consumption in the various size bins are:

- Manufacturing in the large size bin
- Retail trade in the mid-size bin
- Professional, scientific, and technical services in the small bin
Table 8-4. Top ten industry sectors by total consumption – electric, by size bin

<table>
<thead>
<tr>
<th>Size</th>
<th>Top 10 Industry Sectors by Old Size Segment</th>
<th>Average kWh Consumption</th>
<th>Number of Accounts</th>
<th>Top 10 Industry Sectors by New Size Segment</th>
<th>Average kWh Consumption</th>
<th>Number of Accounts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>Manufacturing</td>
<td>8,638,560</td>
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<td>Manufacturing</td>
<td>12,861,735</td>
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<td>9,211,401</td>
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<td>13,056,701</td>
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<td>Educational Services</td>
<td>10,524,131</td>
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<td>Health Care and Social Assistance</td>
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<td>Health Care and Social Assistance</td>
<td>10,316,070</td>
<td>125</td>
<td>Educational Services</td>
<td>19,369,780</td>
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<td></td>
<td>Real Estate and Rental and Leasing</td>
<td>6,542,211</td>
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<td></td>
<td>Transportation and Warehousing</td>
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<td></td>
<td>Retail Trade</td>
<td>5,664,148</td>
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<td>Accommodation and Food Services</td>
<td>5,019,688</td>
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<td>Finance and Insurance</td>
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<td>Mid</td>
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<td>Manufacturing</td>
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<td>Manufacturing</td>
<td>2,654,614</td>
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<td>Real Estate and Rental and Leasing</td>
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<td>79</td>
<td>Finance and Insurance</td>
<td>2,787,872</td>
<td>52</td>
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</table>

23 This table does not include accounts for which an industry sector was unavailable in the Massachusetts data.
<table>
<thead>
<tr>
<th>Size</th>
<th>Top 10 Industry Sectors by Old Size Segment</th>
<th>Average kWh Consumption</th>
<th>Number of Accounts</th>
<th>Top 10 Industry Sectors by New Size Segment</th>
<th>Average kWh Consumption</th>
<th>Number of Accounts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>Professional, Scientific, and Technical Services</td>
<td>21,839</td>
<td>90,544</td>
<td>Professional, Scientific, and Technical Services</td>
<td>23,078</td>
<td>90,650</td>
</tr>
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<td>Retail Trade</td>
<td>54,119</td>
<td>30,804</td>
<td>Retail Trade</td>
<td>59,261</td>
<td>30,950</td>
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<tr>
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<td>Accommodation and Food Services</td>
<td>39,960</td>
<td>38,841</td>
<td>Accommodation and Food Services</td>
<td>42,740</td>
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</tr>
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<td>Real Estate and Rental and Leasing</td>
<td>36,762</td>
<td>32,612</td>
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<td>41,883</td>
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<td>Other Services (except Public Administration)</td>
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<td>17,656</td>
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<td>8,660</td>
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</tr>
</tbody>
</table>
Population characteristics at the customer level

Table 8-5 shows the number of customers and their sub-accounts according to the old and new size criteria, by PA. Notably, in each size category, a large number of sub-accounts collapse under parent customers for all PAs. For example, according to the new criteria, in 2016 Cape Light Compact had 1,208 sub-accounts that we were able to group under only 18 customers; National Grid had 13,020 sub-accounts that we were able to group under only 311 customers.

Table 8-5. Number of customers and their sub-accounts in each size bin with old and new size criteria – electric, by PA

<table>
<thead>
<tr>
<th>Size</th>
<th>Detail</th>
<th>Old</th>
<th>Eversource</th>
<th>National Grid</th>
<th>Unitil</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Chain/Franchise/Managed</td>
<td>Number of Customers</td>
<td>66</td>
<td>598</td>
<td>703</td>
<td>13</td>
<td>1,380</td>
</tr>
<tr>
<td></td>
<td>Old</td>
<td>18</td>
<td>280</td>
<td>311</td>
<td>8</td>
<td>617</td>
</tr>
<tr>
<td></td>
<td>Number of Sub-accounts</td>
<td>3,048</td>
<td>24,910</td>
<td>23,408</td>
<td>170</td>
<td>51,536</td>
</tr>
<tr>
<td></td>
<td>New</td>
<td>1,208</td>
<td>13,869</td>
<td>13,020</td>
<td>27</td>
<td>28,124</td>
</tr>
<tr>
<td>Large Not Chain/Franchise/Managed</td>
<td>Number of Customers</td>
<td>5</td>
<td>406</td>
<td>358</td>
<td>2</td>
<td>771</td>
</tr>
<tr>
<td></td>
<td>Old</td>
<td>2</td>
<td>248</td>
<td>177</td>
<td></td>
<td>427</td>
</tr>
<tr>
<td></td>
<td>Number of Sub-accounts</td>
<td>8</td>
<td>761</td>
<td>674</td>
<td>4</td>
<td>1,447</td>
</tr>
<tr>
<td></td>
<td>New</td>
<td>5</td>
<td>456</td>
<td>346</td>
<td></td>
<td>807</td>
</tr>
<tr>
<td>Mid Chain/Franchise/Managed</td>
<td>Number of Customers</td>
<td>147</td>
<td>828</td>
<td>934</td>
<td>19</td>
<td>1,928</td>
</tr>
<tr>
<td></td>
<td>Old</td>
<td>58</td>
<td>328</td>
<td>424</td>
<td>11</td>
<td>821</td>
</tr>
<tr>
<td></td>
<td>Number of Sub-accounts</td>
<td>1,455</td>
<td>9,318</td>
<td>10,420</td>
<td>202</td>
<td>21,395</td>
</tr>
<tr>
<td></td>
<td>New</td>
<td>1,109</td>
<td>7,210</td>
<td>6,152</td>
<td>34</td>
<td>14,505</td>
</tr>
<tr>
<td>Mid Not Chain/Franchise/Managed</td>
<td>Number of Customers</td>
<td>28</td>
<td>816</td>
<td>934</td>
<td>9</td>
<td>1,787</td>
</tr>
<tr>
<td></td>
<td>Old</td>
<td>16</td>
<td>558</td>
<td>535</td>
<td>2</td>
<td>1,111</td>
</tr>
<tr>
<td></td>
<td>Number of Sub-accounts</td>
<td>53</td>
<td>1,490</td>
<td>1,636</td>
<td>11</td>
<td>3,190</td>
</tr>
<tr>
<td></td>
<td>New</td>
<td>29</td>
<td>986</td>
<td>899</td>
<td>2</td>
<td>1,916</td>
</tr>
<tr>
<td>Small Chain/Franchise/Managed</td>
<td>Number of Customers</td>
<td>532</td>
<td>2,507</td>
<td>3,099</td>
<td>78</td>
<td>6,216</td>
</tr>
<tr>
<td></td>
<td>Old</td>
<td>669</td>
<td>3,325</td>
<td>4,001</td>
<td>91</td>
<td>8,086</td>
</tr>
<tr>
<td></td>
<td>Number of Accounts</td>
<td>2,838</td>
<td>14,301</td>
<td>17,695</td>
<td>405</td>
<td>35,239</td>
</tr>
<tr>
<td></td>
<td>New</td>
<td>5,024</td>
<td>27,450</td>
<td>32,351</td>
<td>716</td>
<td>65,541</td>
</tr>
<tr>
<td>Small Not</td>
<td>Number of Customers</td>
<td>14,454</td>
<td>96,829</td>
<td>98,610</td>
<td>2,452</td>
<td>212,345</td>
</tr>
</tbody>
</table>
Table 8-6 shows the average kWh consumption, by customer and sub-account, in 2016. It is important to note in this table that with the exception of Unitil, according to the new size criteria, the average consumption of sub-accounts is much lower than the average consumption for parent customers. The sub-accounts classified as large would not qualify for the large category by themselves, but when rolled up under their parent customers, they do. For example, in Eversource’s large category, the average consumption for sub-accounts is 450,473 kWh (low enough to classify as small), while the average consumption for parent customers is 45,018,361 kWh (well over the threshold to classify as large). Unitil is the exception to this, with an average sub-account consumption of 4,191,606 kWh (high enough to classify as large) and an average customer consumption of 17,213,217 kWh (also classified as large).
Table 8-6. 2016 average kWh consumption by customer and sub-account

<table>
<thead>
<tr>
<th>Size</th>
<th>Detail</th>
<th>Program Administrator</th>
<th>Cape Light</th>
<th>Eversource</th>
<th>National Grid</th>
<th>Unitil</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Large Chain/Franchise/Managed</strong></td>
<td>Avg. Customer Consumption (kWh)</td>
<td>Old</td>
<td>4,401,515</td>
<td>25,874,414</td>
<td>10,298,490</td>
<td>3,571,881</td>
<td>17,456,181</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New</td>
<td>8,596,635</td>
<td>45,018,361</td>
<td>17,045,560</td>
<td>17,213,217</td>
<td>30,477,255</td>
</tr>
<tr>
<td></td>
<td>Avg. Sub-account Consumption (kWh)</td>
<td>Old</td>
<td>84,233</td>
<td>276,132</td>
<td>186,163</td>
<td>750,193</td>
<td>225,468</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New</td>
<td>140,106</td>
<td>450,473</td>
<td>269,630</td>
<td>4,191,606</td>
<td>356,992</td>
</tr>
<tr>
<td><strong>Large Not Chain/Franchise/Managed</strong></td>
<td>Avg. Customer Consumption (kWh)</td>
<td>Old</td>
<td>7,853,297</td>
<td>7,384,081</td>
<td>7,882,938</td>
<td>1,147,506</td>
<td>7,601,798</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New</td>
<td>10,362,168</td>
<td>10,123,219</td>
<td>12,614,998</td>
<td>638,262</td>
<td>11,193,046</td>
</tr>
<tr>
<td></td>
<td>Average Account Consumption (kWh)</td>
<td>Old</td>
<td>4,251,172</td>
<td>4,033,051</td>
<td>3,350,080</td>
<td>638,262</td>
<td>3,706,751</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New</td>
<td>5,885,647</td>
<td>5,624,913</td>
<td>5,279,413</td>
<td>5,478,396</td>
<td>5,478,396</td>
</tr>
<tr>
<td><strong>Mid Chain/Franchise/Managed</strong></td>
<td>Avg. Customer Consumption (kWh)</td>
<td>Old</td>
<td>578,477</td>
<td>649,122</td>
<td>610,732</td>
<td>524,675</td>
<td>624,446</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New</td>
<td>2,362,591</td>
<td>2,568,331</td>
<td>2,801,244</td>
<td>2,523,434</td>
<td>2,651,281</td>
</tr>
<tr>
<td></td>
<td>Average Account Consumption (kWh)</td>
<td>Old</td>
<td>81,323</td>
<td>68,430</td>
<td>71,739</td>
<td>94,307</td>
<td>71,163</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New</td>
<td>115,675</td>
<td>107,020</td>
<td>171,331</td>
<td>833,624</td>
<td>136,677</td>
</tr>
<tr>
<td><strong>Mid Not Chain/Franchise/Managed</strong></td>
<td>Avg. Customer Consumption (kWh)</td>
<td>Old</td>
<td>1,395,580</td>
<td>1,562,575</td>
<td>1,385,763</td>
<td>1,349,978</td>
<td>1,468,389</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New</td>
<td>1,975,420</td>
<td>2,479,212</td>
<td>2,442,815</td>
<td>2,348,882</td>
<td>2,454,373</td>
</tr>
<tr>
<td></td>
<td>Average Account Consumption (kWh)</td>
<td>Old</td>
<td>458,965</td>
<td>871,177</td>
<td>789,476</td>
<td>1,101,462</td>
<td>823,222</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New</td>
<td>724,632</td>
<td>1,381,141</td>
<td>1,309,157</td>
<td>2,348,882</td>
<td>1,338,439</td>
</tr>
<tr>
<td><strong>Small Chain/Franchise/Managed</strong></td>
<td>Avg. Customer Consumption (kWh)</td>
<td>Old</td>
<td>87,300</td>
<td>114,341</td>
<td>122,913</td>
<td>126,755</td>
<td>116,610</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New</td>
<td>298,648</td>
<td>340,184</td>
<td>322,691</td>
<td>298,864</td>
<td>327,914</td>
</tr>
<tr>
<td></td>
<td>Average Account Consumption (kWh)</td>
<td>Old</td>
<td>15,361</td>
<td>18,059</td>
<td>21,131</td>
<td>19,004</td>
<td>19,396</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New</td>
<td>24,110</td>
<td>27,498</td>
<td>28,269</td>
<td>17,825</td>
<td>27,513</td>
</tr>
<tr>
<td><strong>Small Not Chain/Franchise/Managed</strong></td>
<td>Avg. Customer Consumption (kWh)</td>
<td>Old</td>
<td>31,344</td>
<td>47,189</td>
<td>43,560</td>
<td>39,607</td>
<td>44,297</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New</td>
<td>32,798</td>
<td>54,214</td>
<td>51,115</td>
<td>44,301</td>
<td>51,172</td>
</tr>
<tr>
<td></td>
<td>Average Account Consumption (kWh)</td>
<td>Old</td>
<td>18,830</td>
<td>30,903</td>
<td>27,642</td>
<td>26,429</td>
<td>28,479</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New</td>
<td>19,229</td>
<td>34,342</td>
<td>31,653</td>
<td>29,605</td>
<td>31,982</td>
</tr>
</tbody>
</table>
Gas PAs

Population characteristics at the account level

Table 8-7 shows the number of gas accounts in each size bin by year. Because there are no new gas size criteria, segmentation divisions did not change from 2011-2016. Notably, in 2016 there are about 45,000 more small accounts than in 2015; this is because National Grid and Columbia gas sent us many more accounts in 2016 than in 2015.

Table 8-7. Number of accounts in each size bin – gas, by year

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>416</td>
<td>430</td>
<td>418</td>
<td>524</td>
<td>480</td>
<td>591</td>
</tr>
<tr>
<td>Mid-size</td>
<td>3,130</td>
<td>2,684</td>
<td>3,629</td>
<td>4,214</td>
<td>4,103</td>
<td>4,535</td>
</tr>
<tr>
<td>Small</td>
<td>127,954</td>
<td>145,171</td>
<td>145,095</td>
<td>140,862</td>
<td>130,779</td>
<td>175,703</td>
</tr>
</tbody>
</table>

Table 8-8 shows the number of accounts in each size bin in 2016, by PA. As this table shows, Columbia, Eversource, and National Grid have a relatively high number of large accounts compared to Berkshire, Liberty, and Unitil.

Table 8-8. Number of accounts in each size bin – gas, by PA

<table>
<thead>
<tr>
<th>Size</th>
<th>Berkshire</th>
<th>Columbia</th>
<th>Eversource</th>
<th>Liberty</th>
<th>National Grid</th>
<th>Unitil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>15</td>
<td>136</td>
<td>155</td>
<td>13</td>
<td>263</td>
<td>9</td>
</tr>
<tr>
<td>Mid</td>
<td>140</td>
<td>1,018</td>
<td>968</td>
<td>73</td>
<td>2,282</td>
<td>54</td>
</tr>
<tr>
<td>Small</td>
<td>5,173</td>
<td>33,178</td>
<td>29,123</td>
<td>4,130</td>
<td>102,371</td>
<td>1,728</td>
</tr>
</tbody>
</table>

Table 8-9 presents the average therm consumption by account in 2016, by PA and size bin. As this table shows, the average small customer uses about 1/10 the consumption of the mid-size consumption cutoff of 40,000 therms. The average small customer is thus much smaller than any mid-size customer, which suggests that different approaches are very likely needed with accounts in the different size categories.

Table 8-9. Average therm consumption by account, by PA and size bin

<table>
<thead>
<tr>
<th>Size</th>
<th>Berkshire</th>
<th>Columbia</th>
<th>Eversource</th>
<th>Liberty</th>
<th>National Grid</th>
<th>Unitil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>528,850</td>
<td>660,758</td>
<td>1,592,972</td>
<td>880,051</td>
<td>1,002,995</td>
<td>611,243</td>
</tr>
<tr>
<td>Mid</td>
<td>83,780</td>
<td>80,101</td>
<td>84,368</td>
<td>69,687</td>
<td>78,250</td>
<td>86,419</td>
</tr>
<tr>
<td>Small</td>
<td>4,013</td>
<td>3,266</td>
<td>3,754</td>
<td>3,219</td>
<td>3,366</td>
<td>3,977</td>
</tr>
</tbody>
</table>
Table 8-10 shows the top ten industry sectors in 2016 in order of total therm consumption, by size bin. The industries responsible for the most consumption in the various size bins are:

- Manufacturing in the large size bin
- Educational services in the mid-size bin
- Accommodation and food services in the small bin

### Table 8-10. Top ten industry sectors by total therm consumption – gas, by size bin

<table>
<thead>
<tr>
<th>Size</th>
<th>Industry Sector</th>
<th>Average Therm Consumption</th>
<th>Number of Accounts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>Manufacturing</td>
<td>1,000,696</td>
<td>157</td>
</tr>
<tr>
<td></td>
<td>Administrative and Support and Waste Management and</td>
<td>16,027,195</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Remediation Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Educational Services</td>
<td>1,377,291</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>Health Care and Social Assistance</td>
<td>734,446</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>Public Administration</td>
<td>1,250,799</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Real Estate and Rental and Leasing</td>
<td>559,762</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Professional, Scientific, and Technical Services</td>
<td>499,707</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Retail Trade</td>
<td>633,988</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Wholesale Trade</td>
<td>1,356,847</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Utilities</td>
<td>1,213,262</td>
<td>6</td>
</tr>
<tr>
<td>Mid</td>
<td>Educational Services</td>
<td>79,004</td>
<td>705</td>
</tr>
<tr>
<td></td>
<td>Real Estate and Rental and Leasing</td>
<td>85,088</td>
<td>627</td>
</tr>
<tr>
<td></td>
<td>Manufacturing</td>
<td>95,526</td>
<td>371</td>
</tr>
<tr>
<td></td>
<td>Retail Trade</td>
<td>70,433</td>
<td>394</td>
</tr>
<tr>
<td></td>
<td>Health Care and Social Assistance</td>
<td>74,551</td>
<td>322</td>
</tr>
<tr>
<td></td>
<td>Professional, Scientific, &amp; Technical Services</td>
<td>77,426</td>
<td>286</td>
</tr>
<tr>
<td></td>
<td>Accommodation and Food Services</td>
<td>70,535</td>
<td>303</td>
</tr>
<tr>
<td></td>
<td>Public Administration</td>
<td>87,488</td>
<td>197</td>
</tr>
<tr>
<td></td>
<td>Other Services (except Public Administration)</td>
<td>78,824</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>Arts, Entertainment, and Recreation</td>
<td>78,692</td>
<td>106</td>
</tr>
<tr>
<td>Small</td>
<td>Accommodation and Food Services</td>
<td>5,473</td>
<td>15,050</td>
</tr>
<tr>
<td></td>
<td>Professional, Scientific, and Technical Services</td>
<td>2,956</td>
<td>21,742</td>
</tr>
<tr>
<td></td>
<td>Real Estate and Rental and Leasing</td>
<td>2,786</td>
<td>21,390</td>
</tr>
<tr>
<td></td>
<td>Retail Trade</td>
<td>2,661</td>
<td>18,600</td>
</tr>
<tr>
<td></td>
<td>Other Services (except Public Administration)</td>
<td>2,725</td>
<td>13,360</td>
</tr>
<tr>
<td></td>
<td>Educational Services</td>
<td>7,209</td>
<td>4,905</td>
</tr>
<tr>
<td></td>
<td>Manufacturing</td>
<td>4,596</td>
<td>6,038</td>
</tr>
<tr>
<td></td>
<td>Health Care and Social Assistance</td>
<td>3,335</td>
<td>8,011</td>
</tr>
<tr>
<td></td>
<td>Public Administration</td>
<td>5,806</td>
<td>3,658</td>
</tr>
<tr>
<td></td>
<td>Construction</td>
<td>2,181</td>
<td>6,149</td>
</tr>
</tbody>
</table>

---

This table does not include accounts for which an industry sector was unavailable in the Massachusetts data.
Population characteristics at the customer level

Table 8-11 shows the number of customers and their sub-accounts in each size bin, by PA. Notably, rolling up sub-accounts into their parent customers increases the number of customers classified as large and mid-size.

Table 8-11. Number of customers and their sub-accounts in each size bin – gas, by PA

<table>
<thead>
<tr>
<th>Size</th>
<th>Detail</th>
<th>Berkshire</th>
<th>Columbia</th>
<th>Eversource</th>
<th>Liberty</th>
<th>National Grid</th>
<th>Unil</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Chain/Franchise/Managed</td>
<td>Number of Customers</td>
<td>16</td>
<td>27</td>
<td>68</td>
<td>1</td>
<td>244</td>
<td>7</td>
<td>363</td>
</tr>
<tr>
<td></td>
<td>Number of Sub-accounts</td>
<td>366</td>
<td>483</td>
<td>1,464</td>
<td>282</td>
<td>3,493</td>
<td>64</td>
<td>6,152</td>
</tr>
<tr>
<td>Large Not Chain/Franchise/Managed</td>
<td>Number of Customers</td>
<td>13</td>
<td>126</td>
<td>111</td>
<td>13</td>
<td>117</td>
<td>3</td>
<td>383</td>
</tr>
<tr>
<td></td>
<td>Number of Sub-accounts</td>
<td>23</td>
<td>212</td>
<td>202</td>
<td>21</td>
<td>224</td>
<td>5</td>
<td>687</td>
</tr>
<tr>
<td>Mid Chain/Franchise/Managed</td>
<td>Number of Customers</td>
<td>41</td>
<td>151</td>
<td>163</td>
<td>5</td>
<td>867</td>
<td>19</td>
<td>1,246</td>
</tr>
<tr>
<td></td>
<td>Number of Sub-accounts</td>
<td>381</td>
<td>1,755</td>
<td>1,599</td>
<td>75</td>
<td>16,005</td>
<td>86</td>
<td>19,901</td>
</tr>
<tr>
<td>Mid Not Chain/Franchise/Managed</td>
<td>Number of Customers</td>
<td>100</td>
<td>931</td>
<td>696</td>
<td>79</td>
<td>1,680</td>
<td>44</td>
<td>3,530</td>
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<tr>
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<td>Number of Sub-accounts</td>
<td>155</td>
<td>1,347</td>
<td>1,093</td>
<td>117</td>
<td>3,005</td>
<td>71</td>
<td>5,788</td>
</tr>
<tr>
<td>Small Chain/Franchise/Managed</td>
<td>Number of Customers</td>
<td>77</td>
<td>414</td>
<td>346</td>
<td>42</td>
<td>3,639</td>
<td>17</td>
<td>4,535</td>
</tr>
<tr>
<td></td>
<td>Number of Sub-accounts</td>
<td>442</td>
<td>2,638</td>
<td>2,202</td>
<td>271</td>
<td>33,461</td>
<td>71</td>
<td>39,085</td>
</tr>
<tr>
<td>Small Not Chain/Franchise/Managed</td>
<td>Number of Customers</td>
<td>3,258</td>
<td>23,654</td>
<td>19,992</td>
<td>2,93</td>
<td>34,853</td>
<td>1,289</td>
<td>85,976</td>
</tr>
<tr>
<td></td>
<td>Number of Sub-accounts</td>
<td>3,961</td>
<td>27,897</td>
<td>23,686</td>
<td>3,45</td>
<td>48,728</td>
<td>1,494</td>
<td>109,216</td>
</tr>
</tbody>
</table>

Table 8-12 shows 2016 average therm consumption for gas customers and gas sub-accounts, by PA. In this table, the average gas sub-account rolling up into a customer classified as large would by itself be classified as mid-size. Likewise, the average gas sub-account rolling up into a customer classified as mid-size would by itself be classified as small. This stands in contrast to electric accounts, where the majority of sub-accounts rolling up into both mid-size and large customers would by themselves be classified as small. There tend to be a greater number of electric sub-accounts within each customer.

Table 8-12. 2016 average therm consumption by customer and sub-account

<table>
<thead>
<tr>
<th>Size</th>
<th>Detail</th>
<th>PA</th>
<th>Berkshire</th>
<th>Columbia</th>
<th>Eversource</th>
<th>Liberty</th>
<th>National Grid</th>
<th>Unil</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Chain/Franchise/Managed</td>
<td>Avg. Customer Consumption (Therms)</td>
<td>747,942</td>
<td>1,012,1</td>
<td>1,202,44</td>
<td>1,401,1</td>
<td>1,062,573</td>
<td>861,043</td>
<td>1,086,602</td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>Avg. Sub-</td>
<td>28,017</td>
<td>55,083</td>
<td>44,995</td>
<td>4,702</td>
<td>50,498</td>
<td>68,41</td>
<td>46,298</td>
<td></td>
</tr>
<tr>
<td>Chain/Franchise/Managed</td>
<td>Avg. Customer Consumption (Therms)</td>
<td>Avg. Sub-account Consumption (Therms)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
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<td>--------------------------------------</td>
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<td>---</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large Not Chain/Franchise/Managed</td>
<td>538,728</td>
<td>636,924</td>
<td>1,505,770</td>
<td>1,013,525</td>
<td>952,051</td>
<td>763,288</td>
<td>1,004,285</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large Not Chain/Franchise/Managed</td>
<td>202,975</td>
<td>385,140</td>
<td>1,167,750</td>
<td>592,929</td>
<td>473,723</td>
<td>408,537</td>
<td>644,559</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid Chain/Franchise/Managed</td>
<td>101,569</td>
<td>115,415</td>
<td>110,881</td>
<td>62,416</td>
<td>91,321</td>
<td>91,787</td>
<td>95,106</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid Chain/Franchise/Managed</td>
<td>9,528</td>
<td>8,453</td>
<td>10,386</td>
<td>5,529</td>
<td>4,850</td>
<td>24,686</td>
<td>5,790</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid Chain/Franchise/Managed</td>
<td>87,717</td>
<td>83,507</td>
<td>87,226</td>
<td>78,023</td>
<td>81,808</td>
<td>77,769</td>
<td>83,258</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid Chain/Franchise/Managed</td>
<td>51,703</td>
<td>56,450</td>
<td>53,601</td>
<td>43,544</td>
<td>42,658</td>
<td>43,285</td>
<td>48,202</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small Chain/Franchise/Managed</td>
<td>19,439</td>
<td>16,274</td>
<td>14,799</td>
<td>14,557</td>
<td>13,503</td>
<td>13,102</td>
<td>13,837</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small Chain/Franchise/Managed</td>
<td>2,718</td>
<td>2,063</td>
<td>1,885</td>
<td>1,789</td>
<td>1,117</td>
<td>2,422</td>
<td>1,249</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small Not Chain/Franchise/Managed</td>
<td>5,046</td>
<td>4,737</td>
<td>4,664</td>
<td>4,291</td>
<td>5,667</td>
<td>4,566</td>
<td>5,131</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small Not Chain/Franchise/Managed</td>
<td>3,431</td>
<td>3,559</td>
<td>3,450</td>
<td>2,862</td>
<td>3,651</td>
<td>3,441</td>
<td>3,548</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX B. Performance metrics by size segment

Figures in this appendix show performance metrics for the overall electric and gas markets.

Electric accounts

This section presents performance metrics for the overall electric market. Figure 8-5 shows account and customer participation by size segment. Figure 8-6 shows consumption-weighted participation by size segment. Figure 8-7 shows population savings achieved by size segment. Figure 8-8 shows participant savings achieved by size segment. Figure 8-9 shows the contribution ratio by size segment.

Figure 8-5 indicates that there are year-over-year increases in the electric account participation rate from 2011-2015 for mid-size non-managed accounts. While there was a decrease in mid-size non-managed account participation in 2016, there was also an across-the-board decrease in participation for each electric size segment, with no obvious indication that mid-size is underperforming compared to other size segments. At the customer level, the mid-size managed accounts segment showed the only increase in participation from 2015-2016 across all size-segments. While this increase in customer participation did not lead to an increase in overall account participation, there was an increase in downstream participation in this segment from 2015-2016.

Figure 8-6 shows that most size segments saw an increase in consumption-weighted participation from 2011-2015, with a decrease in consumption-weighted participation in 2016. Exceptions include an increase in consumption-weighted participation for large non-managed accounts in 2016, as well as downstream measures among mid-size managed accounts. Downstream consumption-weighted participation dropped slightly from 2015-2016 for mid-size non-managed accounts, but less so than account participation, indicating higher consuming participants on average for downstream participation in 2016 compared to 2015.

Figure 8-7 indicates that while the depth of population savings for mid-size electric accounts was lower than for the other size segments in 2011 and 2012, mid-size accounts showed an increasing depth of savings at the population level through 2015, dropping somewhat in 2016. Like with participation rate, the decrease in population savings from 2015-2016 appears to be slightly less than for the other size segments. This figure also highlights the comparatively small effect of upstream measures on mid-size population savings (~12% of total savings), despite upstream measures accounting for approximately 50% of participation.

Figure 8-8 shows that average participant depth of savings decreased year over year from 2011-2013, increasing in 2014, and then decreasing again through 2016. The only exception is among small managed accounts, which have shown an increased depth of savings since 2014. Across all size segments, managed and franchise accounts show a greater depth of savings in comparison to their non-managed counterparts.

Finally, Figure 8-9 shows the contribution ratio for each electric size segment from 2011-2016. Over the 6 years examined, larger customers tended to contribute a greater proportion of savings than consumption; however, in 2011, 2014, and 2016, mid-size non-managed accounts had a contribution ratio of greater than 1.0. While mid-size managed accounts have never had a contribution ratio of greater than 1.0, it has steadily moved closer to 1.0 from 2011-2016.
Figure 8-5. Account and customer participation by size segment – electric overall
Figure 8-6. Consumption-weighted participation by size segment – electric overall

- Consumption-Weighted Participation Upstream
- Consumption-Weighted Participation Mixed Stream
- Consumption-Weighted Participation Not Upstream
Figure 8-7. Population savings achieved by size segment - electric overall

- Population Savings Achieved Upstream
- Population Savings Achieved Not Upstream
Figure 8-8. Participant savings achieved by size segment – electric overall

- Participant Savings Achieved Upstream
- Participant Savings Achieved Not Upstream
Figure 8-9. Contribution ratio by size segment – electric overall
Performance metrics by measure

Figure 8-10 shows the change in measure mix installed by mid-size accounts from 2011-2016. The x-axis shows the average percent of prior year consumption saved by a measure, while the y-axis shows the average size of the customers installing the measures. The size of the bubbles indicates the number of measures installed. While lighting has always been a substantial part of mid-size engagement, it has tended not to achieve the depth of savings of more comprehensive projects. This changed somewhat for both prescriptive and custom downstream lighting projects between 2014-2016, as the upstream lighting initiative capture an increasing amount of mid-size account participation. As this shift occurred, it appears that downstream lighting (brown bubble) gradually moved to achieve a greater depth of savings, indicating that downstream measures have likely become more comprehensive, while upstream lighting (light green bubble) fills the space prescriptive downstream lighting used to occupy from 2011-2013.

**Figure 8-10. Performance metrics for electric measures – overall**
Gas accounts

This section presents performance metrics for the overall gas market. Figure 8-11 shows account and customer participation by size segment. Figure 8-12 shows consumption-weighted participation by size segment. Figure 8-13 shows population savings achieved by size segment. Figure 8-14 shows participant savings achieved by size segment. Figure 8-15 shows the contribution ratio by size segment.

Figure 8-11 indicates that there has been a general downward trend in gas account participation rates among small accounts beginning between 2012 and 2013. This helps explain the lower participation rates of large and mid-size managed accounts, with tend to be aggregations of smaller accounts under a parent customer. At the customer level, participation rates have increased since 2013 for the mid-size and large segments. These trends combined indicate that while more customers are participating in gas energy efficiency initiatives year over year, fewer of the accounts they control are participating in any given year.

In contrast to small gas accounts and managed/franchise accounts, participation has trended upwards for mid-size and large unmanaged accounts from 2011-2016. For mid-size accounts in 2016, participation would have decreased had it not been for the newly implemented upstream hot water offering. This ties directly to a several gas PA IDIs, which indicated that the upstream hot water program was expected to increase participation among mid-size gas customers. The amount of added participation is not as substantial as for upstream lighting or HVAC among electric offerings, but it was enough to keep mid-size gas participation in a positive trend.

Figure 8-12 shows that consumption weighted participation follows a similar trend to account participation from 2011-2016, with the exception that small accounts do not have as stable a downward trend. This is likely the result of greater numbers of higher-consuming customers participating year over year within each size segment, despite fewer participants overall.

Figure 8-13 indicates that mid-size unmanaged gas accounts have shown a positive trend in population savings achieved since 2013. This is in contrast to all other size segments, where population savings have either followed a downward trend or has jumped around from year to year. Note that although upstream hot water has taken on a noticeable portion of gas participation in 2016, it still represents an extremely small portion of program savings.

Figure 8-14 shows that average participant depth of savings has generally followed a downward trend year over year for all size segments from 2011-2016. Upstream hot water may have turned this trend for small gas accounts in 2016, and appears to be increasing depth of savings for mid-size accounts, though not yet enough to alter the overall trend. For large gas accounts, the upstream hot water measures that showed up in account participation barely appear when looking at average participant savings achieved. The measures installed under the upstream hot water offering are likely too small to substantially impact large account consumption, and appear more applicable to mid-size and small accounts.

Finally, Figure 8-15 shows the contribution ratio for each gas size segment from 2011-2016. As with electric accounts, over the 6 years examined, larger customers tended to contribute a greater proportion of savings than consumption; however, mid-size unmanaged accounts have steadily contributed more savings than consumption from 2011-2016, matching or exceeding large accounts for contribution ratio in 2015 and 2016.
Figure 8-11. Account and customer participation by size segment – gas overall

- Large Chain/Franchise/Managed
- Large Not Chain/Franchise/Managed
- Mid Chain/Franchise/Managed
- Mid Not Chain/Franchise/Managed
- Small Chain/Franchise/Managed
- Small Not Chain/Franchise/Managed

Legend:
- Account Participation Upstream
- Account Participation Mixed Stream
- Account Participation Not Upstream
- Customer Participation (Area Plots)
Figure 8-12. Consumption-weighted participation by size segment – gas overall

- Consumption-Weighted Participation Upstream
- Consumption-Weighted Participation Mixed Stream
- Consumption-Weighted Participation Not Upstream
Figure 8-13. Population savings achieved by size segment – gas overall

- Population Savings Achieved Upstream
- Population Savings Achieved Not Upstream
Figure 8-14. Participant savings achieved by size segment – gas overall

Participant Savings Achieved Upstream

Participant Savings Achieved Not Upstream
Figure 8-15. Contribution ratio by size segment – gas overall
Performance metrics by measure

Figure 8-16 below shows the change in measure mix installed by mid-size gas accounts from 2011-2016. The x-axis shows the average percent of prior year consumption saved by a measure, while the y-axis shows the average size of the accounts installing the measures. The size of the bubbles indicates the number of measures installed. Among the population of mid-size gas accounts, the primary drivers of participation have been prescriptive and customer hot water measures as well as prescriptive and custom HVAC measures. The number of prescriptive hot water measures installed grew between 2011 and 2013, decreasing from 2013-2015 as custom HVAC and custom hot water measures became more prevalent. While participants installed fewer of these measures than hot water, they were installed by accounts consuming more energy on average and provided greater depth of savings than prescriptive hot water. Beginning in 2015 and continuing through 2016, a greater number of accounts completed comprehensive design projects. Also, beginning in 2016 was the upstream hot water offering, which has had a positive impact on mid-size participation rates.

**Figure 8-16. Performance metrics for gas measures – overall**

25 There are custom refrigeration measures that appear to save gas during some program years. These likely represent insulating refrigerated case covers, which could decrease the heating load of a building, leading to gas savings.
Performance metrics by industry segment

This section presents performance metrics for the electric and gas markets by industry sector. Here we examine the same performance metrics as for the population of electric and gas accounts overall but focus separately on industry sectors both called out as typically mid-size by the PAs during our IDIs and those sectors that the PAs indicate targeting specifically for energy efficiency projects. These industry sectors include accommodation and food service, education, healthcare, and retail. The classification of accounts into industry sectors was provided in the Massachusetts C&I Evaluation Database.

Accommodation and food service

Electric accounts

The following figures show performance metrics for the electric market in the accommodation and food service sector. Figure 8-17 shows account and customer participation by size segment. Figure 8-18 shows consumption-weighted participation by size segment. Figure 8-19 shows population savings achieved by size segment. Figure 8-20 shows participant savings achieved by size segment. Figure 8-21 shows the contribution ratio by size segment.

Figure 8-17 indicates that among mid-size unmanaged accounts in the accommodation and food service industry, there is a downward trend in downstream participation beginning in 2014, as the upstream initiatives account for a growing amount of participation. Over time, upstream participation has remained relatively steady and has not made up for the decreased downstream participation. In contrast to the downward trend in account participation, at the customer level, there has been a general upward trend among managed accounts. This divergence indicates that more customers are participating year over year, but that is not increasing the number of accounts they control that receive energy efficiency measures.

Figure 8-18 shows that among mid-size unmanaged accounts, consumption-weighted participation has shared the downward trend seen in account participation. For managed accounts, consumption-weighted participation is stagnant and does not appear to follow an upward or downward trend for either mid-size or large accounts. For these managed accounts, downstream participation does appear to be decreasing, but in these cases, an increase in upstream measures has made up for the decrease.

Figure 8-19 shows that depth of population savings for mid-size unmanaged accounts increased from 2011-2013, spiked in 2014, and decreased through 2016. Among mid-size managed accounts, population savings has remained relatively stagnant from 2011-2016, with the exception of a spike in 2014. This pattern also appears in Figure 8-20, where mid-size electric accommodation and food service accounts generally show a downward trend in depth of savings, with the exception of a spike in 2014. One explanation for this may have been a targeted effort to engage hospitality accounts in energy efficiency around 2014, which was noted by some PAs during the IDIs. Figure 8-22 below shows the change in measure mix installed by this industry sector from 2011-2016. During 2014, there was a temporary shift towards installing measures that achieved a greater depth of savings than during other years, including custom HVAC, custom lighting, and refrigeration. Accounts that participated in the upstream lighting initiative also achieved a greater depth of savings during that year than in prior or subsequent years.

Finally, Figure 8-9 shows the contribution ratio for each electric size segment from 2011-2016. While large accounts tended to be the only segment with contribution ratios over 1.0 for most years, mid-size accounts accounted for a far greater share of savings than consumption in 2014, likely for the reasons discussed above.
Figure 8-17. Account and customer participation by size segment – electric – accommodation and food service
Figure 8-18. Consumption-weighted participation by size segment – electric – accommodation and food service
Figure 8-19. Population savings achieved by size segment – electric – accommodation and food service

- Population Savings Achieved Upstream
- Population Savings Achieved Not Upstream
Figure 8-20. Participant savings achieved by size segment – electric – accommodation and food service

- Participant Savings Achieved Upstream
- Participant Savings Achieved Not Upstream
Figure 8-21. Contribution ratio by size segment – electric – accommodation and food service
Performance metrics by measure

Figure 8-22 below shows the change in measure mix installed by mid-size electric accommodation and food service accounts from 2011-2016. The x-axis shows the average percent of prior year consumption saved by a measure, while the y-axis shows the average size of the customers installing the measures. The size of the bubbles indicates the number of measures installed. Since 2011, lighting has been the primary driver of account participation in mid-size electric accommodation and food service accounts. From 2011-2012, this participation was primarily with downstream prescriptive lighting, with HVAC, custom refrigeration, and custom lighting accounting for smaller numbers of installed measures, but greater depth of savings than lighting. Beginning in 2013, upstream lighting began to account for a substantial portion of overall participation, with a growing number of measures installed through 2016. It appears that upstream lighting began to displace downstream prescriptive lighting at this time; however, while upstream lighting was becoming more prevalent, downstream prescriptive lighting appears to have achieved progressively greater depths of savings, indicating more comprehensive lighting projects. From 2014-2016, other custom became more prevalent while downstream prescriptive lighting was becoming less prevalent, including custom lighting, custom HVAC, custom refrigeration, and upstream HVAC.

Figure 8-22. Performance metrics for electric measures – accommodation and food service
Gas accounts

The following figures show performance metrics for the gas market in the accommodation and food service sector. Figure 8-23 shows account and customer participation by size segment. Figure 8-24 shows consumption-weighted participation by size segment. Figure 8-25 shows population savings achieved by size segment. Figure 8-26 shows participant savings achieved by size segment. Figure 8-27 shows the contribution ratio by size segment.

Figure 8-23 indicates that as with electric accounts, there appears to be a year-over-year decrease in account participation among all size segments in this industry sector. An exception is large unmanaged accounts, which had their participation rate pushed up by the upstream hot water offering in 2016. At the customer level, participation has also tended to decrease year over year, with the exception of 2016 for mid-size and large managed accounts.

Figure 8-24 shows that consumption-weighted participation has tended to decrease from 2011-2016 for accounts in all size bins, except large managed accounts. This indicates that while fewer large managed accounts have been participating in gas energy efficiency initiatives over time, those accounts that do participate have tended to be those that consume greater amounts of energy.

Figure 8-25 indicates that depth of population has generally decreased over time, with the exception of large unmanaged accounts. This could be caused by either the decrease in participation highlighted above or changes to the average participant depth of savings highlighted in Figure 8-26. In this case, it appears that decreased participation rates are responsible for the decrease in population savings. For those mid-size accounts participating from 2011-2016, the installed gas measures have tended to offer either a stagnant or increasing account level depth of savings, with a decrease in 2016. This indicates that the gas PAs were installing increasingly comprehensive measures for their mid-size accounts for several years. This is further highlighted in Figure 8-27, which shows mid-size unmanaged accounts gradually making up a larger portion of savings than consumption over time, with the exception of 2016, when the contribution ratio drops close to 1.0 for the first time since 2011.
Figure 8-23. Account and customer participation by size segment – gas – accommodation and food service
Figure 8-24. Consumption-weighted participation by size segment – gas – accommodation and food service

![Consumption-weighted participation by size segment for gas, accommodation, and food service](chart_image)
Figure 8-25. Population savings achieved by size segment – gas – accommodation and food service
Figure 8-26. Participant savings achieved by size segment – gas – accommodation and food service

<table>
<thead>
<tr>
<th>Year</th>
<th>Large Chain/Franchise/Managed</th>
<th>Large Not Chain/Franchise/Managed</th>
<th>Mid Chain/Franchise/Managed</th>
<th>Mid Not Chain/Franchise/Managed</th>
<th>Small Chain/Franchise/Managed</th>
<th>Small Not Chain/Franchise/Managed</th>
</tr>
</thead>
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<tr>
<td>2011</td>
<td>24%</td>
<td>22%</td>
<td>20%</td>
<td>18%</td>
<td>16%</td>
<td>14%</td>
</tr>
<tr>
<td>2012</td>
<td>12%</td>
<td>10%</td>
<td>8%</td>
<td>6%</td>
<td>4%</td>
<td>2%</td>
</tr>
<tr>
<td>2013</td>
<td>6%</td>
<td>4%</td>
<td>2%</td>
<td>0%</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td>2014</td>
<td>8%</td>
<td>6%</td>
<td>4%</td>
<td>2%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>2015</td>
<td>10%</td>
<td>8%</td>
<td>6%</td>
<td>4%</td>
<td>2%</td>
<td>0%</td>
</tr>
</tbody>
</table>

- **Participant Savings Achieved Upstream**
- **Participant Savings Achieved Not Upstream**
Figure 8-27. Contribution ratio by size segment – gas – accommodation and food service
Performance metrics by measure

Figure 8-28 below shows the change in measure mix installed by mid-size gas accounts from 2011-2016. The x-axis shows the average percent of prior year consumption saved by a measure, while the y-axis shows the average size of the customers installing the measures. The size of the bubbles indicates the number of measures installed. Looking for the decrease in participation and increase in depth of savings highlighted by the metrics above, we can see the great reliance the gas programs placed on prescriptive hot water measures from 2011-2014. Beginning in 2014, there was a shift away from installing prescriptive hot water measures, to custom hot water, custom process, custom HVAC, and food service. These greater numbers of custom measures demonstrate the PAs targeting mid-size gas accommodation and food service account for more comprehensive solutions. In terms of population savings, though, this did not make up for the substantial decrease in prescriptive hot water installations. It appears that in 2016, the upstream hot water offering recovered some of this drop-off, but not as much as had been lost.

**Figure 8-28. Performance metrics for gas measures – accommodation and food service**
Education

Electric accounts

The following figures show performance metrics for the electric market in the education sector. Figure 8-29 shows account and customer participation by size segment. Figure 8-30 shows consumption-weighted participation by size segment. Figure 8-31 shows population savings achieved by size segment. Figure 8-32 shows participant savings achieved by size segment. Figure 8-33 shows the contribution ratio by size segment.

Figure 8-29 indicates that there are year-over-year increases in electric account participation rates from 2011-2014 for mid-size managed and non-managed education accounts, and a decrease in participation rates from 2015-2016. Large accounts saw increased participation through 2015 but also dropped off in 2016. Notably, among mid-size accounts, while overall participation decreased, downstream participation actually increased from 2015-2016, indicating a shift away from upstream measures and possibly toward more comprehensive downstream measures.

Figure 8-30 shows essentially the same pattern for consumption-weighted participation among mid-size unmanaged accounts. There are more substantial differences between account participation and consumption-weighted participation for large managed, mid-size managed, and small unmanaged accounts. For these size segments, consumption-weighted participation is substantially higher than account participation, indicating that the highest consuming accounts within the two size bins are more likely to participate than accounts of average size within each bin.

Looking at Figure 8-31 and Figure 8-32 for population and participant savings achieved, we see a similar pattern in participation rates. Participant savings were fairly stagnant for the mid-size segments, with population savings increasing through 2015 as a result of high levels of participation. The drop in both participation and depth of savings in 2016 led to a decrease in population savings.

Figure 8-33 shows that in contrast to the population of electric accounts overall, the small unmanaged accounts within the education sector tend to contribute a greater proportion of savings than consumption compared with other size segments. Additionally, while mid-size accounts had low contribution ratios from 2011-2013, both mid-size managed and unmanaged segments had contributions ratios close to or over 1.0 from 2014-2016.
Figure 8-29. Account and customer participation by size segment – electric – education
Figure 8-30. Consumption-weighted participation by size segment – electric – education

- Consumption-Weighted Participation Upstream
- Consumption-Weighted Participation Mixed Stream
- Consumption-Weighted Participation Not Upstream
Figure 8-31. Population savings achieved by size segment – electric – education

- Population Savings Achieved Upstream
- Population Savings Achieved Not Upstream
Figure 8-32. Participant savings achieved by size segment – electric – education
Figure 8-33. Contribution ratio by size segment – electric – education
Performance metrics by measure

Figure 8-34 below shows the change in measure mix installed by mid-size gas accounts from 2011-2016. The x-axis shows the average percent of prior year consumption saved by a measure, while the y-axis shows the average size of the customers installing the measures. The size of the bubbles indicates the number of measures installed. Notice the significant increase in upstream lighting measures installed from 2012-2016, with upstream lighting measures accounting for the single greatest number of measures installed in 2016. At the same time, downstream lighting remains a key measure for participation, with the depth of savings from these measures tending to increase over time, indicating a shift to more comprehensive projects. Additionally, this figure shows greater participation in custom lighting, HVAC, and comprehensive design projects. These appear to have been responsible for the greater depth of savings in 2014 and 2015, but with measures on average accounting for less depth of savings in 2016.

Figure 8-34. Performance metrics for electric measures – education
Gas accounts

The following figures show performance metrics for the gas market in the education sector. Figure 8-37 and Figure 8-38 show a general decrease in participant savings achieved among mid-size gas education accounts from 2011-2015, while population savings achieved followed a more positive trend, due to increases in overall participation. There appears to be a turnaround in depth of participant savings in 2016, but we would need data from 2017 to determine whether this fits into a larger trend.

Figure 8-39 indicates that mid-size gas accounts tended to account for more savings than consumption in 2011 and 2012, dropping to lower contribution ratios in 2013 and 2014, and increasing contribution once again in 2015 and 2016.

Figure 8-35 shows account and customer participation by size segment. Figure 8-36 shows consumption-weighted participation by size segment. Figure 8-37 shows population savings achieved by size segment. Figure 8-38 shows participant savings achieved by size segment. Figure 8-39 shows the contribution ratio by size segment.

Examining Figure 8-37 and Figure 8-38 show a general decrease in participant savings achieved among mid-size gas education accounts from 2011-2015, while population savings achieved followed a more positive trend, due to increases in overall participation. There appears to be a turnaround in depth of participant savings in 2016, but we would need data from 2017 to determine whether this fits into a larger trend.

Figure 8-39 indicates that mid-size gas accounts tended to account for more savings than consumption in 2011 and 2012, dropping to lower contribution ratios in 2013 and 2014, and increasing contribution once again in 2015 and 2016.

Figure 8-35, in contrast to electric accounts in the education sector, gas accounts in all size segments have generally shown an increase in participation rates from 2011-2015, with a dip in participation for mid-size managed and small accounts, a stagnation of participation rates among mid-size unmanaged accounts, and a continued increase in participation rates for large accounts. Without the introduction of the upstream hot water offering in 2016, it appears that participation rates would have also dropped for mid-size unmanaged accounts, instead of stagnating.

Figure 8-36 shows consumption-weighted participation rates that closely mirror the account participation rates, with the exception of large accounts. As with electric consumption-weighted participation, it appears that among large accounts, the highest consuming gas accounts tend to participate, pushing consumption-weighted participation much higher than account participation.

Figure 8-37 and Figure 8-38 show a general decrease in participant savings achieved among mid-size gas education accounts from 2011-2015, while population savings achieved followed a more positive trend, due to increases in overall participation. There appears to be a turnaround in depth of participant savings in 2016, but we would need data from 2017 to determine whether this fits into a larger trend.

Figure 8-39 indicates that mid-size gas accounts tended to account for more savings than consumption in 2011 and 2012, dropping to lower contribution ratios in 2013 and 2014, and increasing contribution once again in 2015 and 2016.
Figure 8-35. Account and customer participation by size segment – gas – education

[Bar chart showing account and customer participation by size segment for gas education.]
Figure 8-36. Consumption-weighted participation by size segment – gas – education

- Consumption-Weighted Participation Upstream
- Consumption-Weighted Participation Mixed Stream
- Consumption-Weighted Participation Not Upstream
Figure 8-37. Population savings achieved by size segment – gas – education

- Population Savings Achieved Upstream
- Population Savings Achieved Not Upstream
Figure 8-38. Participant savings achieved by size segment – gas – education

- Participant Savings Achieved Upstream
- Participant Savings Achieved Not Upstream
Figure 8-39. Contribution ratio by size segment – gas – education
Performance metrics by measure

Figure 8-40 shows the change in measure mix installed by mid-size gas accounts from 2011-2016. The x-axis shows the average percent of prior year consumption saved by a measure, while the y-axis shows the average size of the customers installing the measures. The size of the bubbles indicates the number of measures installed. Looking at the change in measure mix from 2011-2016, there is a pattern that explains the decrease in participant savings achieved for mid-size accounts from 2011-2015. In 2012, there appears to have been a spike in more comprehensive projects, with prescriptive and custom HVAC saving a large amount of participant consumption. Despite a move toward more custom HVAC, custom hot water, and building shell measures, depth of savings per measure dropped in 2014 and 2015. A substantial push toward comprehensive design projects among mid-size non-managed accounts appears to have stopped the downward trend in participant savings achieved.

Figure 8-40. Performance metrics for gas measures – education
Healthcare

Electric accounts

The following figures show performance metrics for the electric market in the healthcare sector. Figure 8-41 shows account and customer participation by size segment. Figure 8-42 shows consumption-weighted participation by size segment. Figure 8-43 shows population savings achieved by size segment. Figure 8-44 shows participant savings achieved by size segment. Figure 8-45 shows the contribution ratio by size segment.

Figure 8-41 indicates that there have been year-over-year increases in account participation among mid-size and large unmanaged healthcare accounts from 2012-2016. For small accounts, as well as mid-size and large managed accounts, there was increased participation from 2011-2015, but a decrease in participation in 2016. These patterns of participation are the same over time at the customer level. In Figure 8-42, consumption-weighted participation shows more variability across most size segments over time than account participation, and the generally higher levels of consumption-weighted participation suggest that higher consuming accounts within each size segment are more likely to participate. Mid-size unmanaged accounts are the only segment to show consistent increases in consumption-weighted participation year over year from 2011-2016.

Figure 8-43 and Figure 8-44 show that participant and population savings achieved generally decreased from 2011-2015 for mid-size healthcare accounts, with an increase in depth of savings for mid-size managed accounts in 2016, and an increase in mid-size unmanaged accounts in 2015. Across all size segments, managed accounts saw their depth of savings increase in 2016, while unmanaged accounts saw a decrease in depth of savings. Notably, there is a spike in the 2011 small managed population and participant savings achieved, due to an outlier lighting project that claimed to have saved approximately 2/3 of prior year consumption.

Finally, Figure 8-45 shows the contribution ratio for each electric healthcare size segment from 2011-2016. Over the 6 years examined, mid-size customers tended to have contribution ratios less than 1.0; however, this began to change in 2015, when mid-size unmanaged accounts moved to have a contribution ratio of slightly greater than 1.0, in line with large managed accounts.
Figure 8-41. Account and customer participation by size segment – electric – healthcare

[Chart showing participation by size segment and type of participation]
Figure 8-42. Consumption-weighted participation by size segment – electric – healthcare

- Consumption-Weighted Participation Upstream
- Consumption-Weighted Participation Mixed Stream
- Consumption-Weighted Participation Not Upstream
Figure 8-43. Population savings achieved by size segment – electric – healthcare

- Large Chain/Franchise/Managed
- Large Not Chain/Franchise/Managed
- Mid Chain/Franchise/Managed
- Mid Not Chain/Franchise/Managed
- Small Chain/Franchise/Managed
- Small Not Chain/Franchise/Managed

Population Savings Achieved Upstream
Population Savings Achieved Not Upstream
Figure 8-44. Participant savings achieved by size segment – electric – healthcare
Figure 8-45. Contribution ratio by size segment – electric – healthcare
Performance metrics by measure

Figure 8-46 below shows the change in measure mix installed by mid-size electric accounts from 2011-2016. The x-axis shows the average percent of prior year consumption saved by a measure, while the y-axis shows the average size of the customers installing the measures. For mid-size electric accounts, upstream lighting represents the greatest number of measure installations each year beginning in 2013. Downstream prescriptive lighting has also remained a key measure for electric healthcare accounts and has shown an increase in average participant savings achieved since the implementation of the upstream lighting initiative, potentially indicating a move to more comprehensive lighting projects. Custom lighting represents the third greatest number of measures installed, with all other non-lighting measures making up a small minority of total measures installed for mid-size electric healthcare accounts.

Figure 8-46. Performance metrics for electric measures – healthcare
Gas accounts

The following figures show performance metrics for the gas market in the healthcare sector. Figure 8-47 shows account and customer participation by size segment. Figure 8-48 shows consumption-weighted participation by size segment. Figure 8-49 shows population savings achieved by size segment. Figure 8-50 shows participant savings achieved by size segment. Figure 8-51 shows the contribution ratio by size segment.

Figure 8-47 indicates that there was a spike in gas participation among mid-size accounts in the healthcare sector between 2012 and 2013, with a decrease or stagnation in participation for mid-size managed accounts from 2013-2016, and an increase in participation for mid-size unmanaged accounts. There was an additional slight uptick in participation for mid-size unmanaged accounts in 2016 due to the new upstream hot water offering. Large accounts did not follow this pattern, with participation rates generally increasing from 2011-2016. At the customer level, participation rates decreased from 2011-2014 among mid-size healthcare customers and began to increase again from 2015-2016. In Figure 8-48, consumption-weighted participation shows a similar pattern to account participation for most size segments but differs from account participation among large unmanaged accounts. For these accounts, consumption-weighted participation decreased through 2016 from a peak in 2014. Combined with increasing account participation, this suggests that lower consuming large healthcare gas accounts have tended to participate in recent years. In contrast, the higher consumption-weighted participation among mid-size accounts, compared to account participation, suggests that higher consuming mid-size healthcare gas accounts have tended to participate in recent years.

Figure 8-49 and Figure 8-50 show that participant savings achieved has tended to decrease over time for mid-size unmanaged accounts since 2011, while mid-size managed accounts saw an increase from 2011-2013 in participant savings achieved, followed by a decrease from 2014-2016. Despite decreases in depth of participant savings, mid-size unmanaged accounts are the only gas healthcare segment to show a definite continued upward trend in population savings from 2011, due to increases in account and consumption weighted participation.

Figure 8-51 shows the contribution ratio for each healthcare gas size segment from 2011-2016. Over the 6 years examined, larger customers consistently tend to contribute a greater proportion of savings than consumption; however, mid-size unmanaged accounts are moving closer to a contribution ratio of 1.0 in 2016.
Figure 8-47. Account and customer participation by size segment – gas – healthcare
Figure 8-48. Consumption-weighted participation by size segment – gas – healthcare

- Consumption-Weighted Participation Upstream
- Consumption-Weighted Participation Mixed Stream
- Consumption-Weighted Participation Not Upstream
Figure 8-49. Population savings achieved by size segment – gas – healthcare

- Population Savings Achieved Upstream
- Population Savings Achieved Not Upstream
Figure 8-50. Participant savings achieved by size segment – gas – healthcare

- Participant Savings Achieved Upstream
- Participant Savings Achieved Not Upstream
Figure 8-51. Contribution ratio by size segment – gas – healthcare
Performance metrics by measure

Figure 8-52 shows the change in measure mix installed by mid-size gas accounts from 2011-2016. The x-axis shows the average percent of prior year consumption saved by a measure, while the y-axis shows the average size of the customers installing the measures. For mid-size gas healthcare accounts, prescriptive hot water measures have made up the majority of installations since 2013, with custom HVAC taking on an increasingly important role in savings beginning in 2013 and continuing through 2016. Custom building shell has also taken on an increasingly important role in savings from 2015-2016, potentially indicating a move toward more comprehensive measures. However, the majority of measures installed by the program are still prescriptive hot water, with upstream hot water taking on a fairly large role in participation in 2016, and with most measures installed by higher consuming gas accounts within the mid-size segment. Compared to the mid-size unmanaged accounts, mid-size managed accounts make up a comparatively small portion of total installed measures, likely because many of the managed healthcare accounts include hospitals and large outpatient chains, which are grouped together under large managed customers.

Figure 8-52. Performance metrics for gas measures – healthcare
Retail trade

Electric accounts

The following figures show performance metrics for the electric market in the retail trade sector. Figure 8-53 shows account and customer participation by size segment. Figure 8-54 shows consumption-weighted participation by size segment. Figure 8-55 shows population savings achieved by size segment. Figure 8-56 shows participant savings achieved by size segment. Figure 8-57 shows the contribution ratio by size segment.

Figure 8-53 indicates that there is a year over year increase in electric account participation rate from 2011-2015 for mid-size non-managed accounts, with a decrease in participation from 2015-2016; mid-size managed accounts saw decreased participation from 2012-2015, with an increase in participation from 2015-2016. This generally mirrors the results for the population of electric accounts overall. At the customer level, participation rates for mid-size retail accounts also generally mirror the overall population, with a decrease in participation from 2015-2016 for mid-size unmanaged accounts and an increase in participation from 2015-2016 for mid-size managed accounts.

Figure 8-54 shows that most size segments saw an increase in consumption-weighted participation from 2011-2015, with a decrease in consumption-weighted participation in 2016; this also mirrors the overall population of electric accounts.

Figure 8-55 and Figure 8-56 show that population and participant savings achieved increased for mid-size unmanaged accounts from 2011-2014, and stagnated from 2014-2016, following a pattern similar to the large and small unmanaged segments. For mid-size managed accounts, population and participant savings achieved has generally decreased year over year from 2011-2016; this does not mirror the patterns for small or large managed accounts, which generally saw increased participant and population savings achieved through 2015.

Figure 8-57 shows the contribution ratio for each electric size segment from 2011-2016. For most years, mid-size managed and unmanaged accounts had a contribution ratio of less than 1.0, indicating they were contributing proportionally less savings than consumption, while the larger size segments had contribution ratios well above 1.0. This changed in 2016, with unmanaged retail accounts achieving a contribution ratio greater than 1.0, and similar to the large retail segments.
Figure 8-53. Account and customer participation by size segment – electric – retail trade
Figure 8-54. Consumption-weighted participation by size segment – electric – retail trade

Consumption-Weighted Participation Upstream
Consumption-Weighted Participation Mixed Stream
Consumption-Weighted Participation Not Upstream
Figure 8-55. Population savings achieved by size segment – electric – retail trade

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- Population Savings Achieved Upstream
- Population Savings Achieved Not Upstream
Figure 8-56. Participant savings achieved by size segment – electric – retail trade

[Bar chart showing participant savings achieved by size segment for electric retail trade from 2011 to 2016. The chart differentiates between savings achieved upstream and not upstream.]

- Participant Savings Achieved Upstream
- Participant Savings Achieved Not Upstream
Figure 8-57. Contribution ratio by size segment – electric – retail trade
Performance metrics by measure

Figure 8-58 below shows the change in measure mix installed by mid-size retail electric accounts from 2011-2016. The x-axis shows the average percent of prior year consumption saved by a measure, while the y-axis shows the average size of the customers installing the measures. Like other industry sectors, electric retail accounts have tended to install primarily lighting measures from 2011-2016, with the majority of lighting measures being downstream prescriptive from 2011-2012, and the majority of lighting measures being upstream from 2014-2016. Also like other industry sectors, it appears that as the upstream lighting initiative has supplanted prescriptive downstream lighting measures, and the downstream lighting measures that are installed tend to be more comprehensive, achieving growing depth of savings from 2013-2016. Other frequently installed measures include custom lighting, HVAC, and custom HVAC. Additionally, there appears to have been a push to install custom refrigeration measures from 2011-2015, which is in line with PA interviews indicating that they've specifically targeted grocery stores for comprehensive lighting and refrigeration projects over the past several years.

Figure 8-58. Performance metrics for electric measures – retail trade
Gas accounts

The following figures show performance metrics for the gas market in the retail trade sector. Figure 8-59 shows account and customer participation by size segment. Figure 8-60 shows consumption-weighted participation by size segment. Figure 8-61 shows population savings achieved by size segment. Figure 8-62 shows participant savings achieved by size segment. Figure 8-63 shows the contribution ratio by size segment.

Figure 8-59 indicates there are year-over-year decreases in the gas account participation rate from 2011-2015 for mid-size non-managed accounts, with an increase in participation in 2016, driven partially by the new upstream hot water offering. In contrast to non-managed mid-size accounts, managed accounts tended to increase their participation rates over the past several years, with a decrease in participation in 2016.

Mid-size unmanaged accounts followed a similar pattern to large managed accounts, while large unmanaged accounts were more similar to mid-size managed accounts we more similar to large unmanaged accounts, with increasing participation rates through 2015, and a decrease in the participation rate in 2016. At the customer level, mid-size participation decreased through 2014, before increasing again from 2015-2016.

Looking at Figure 8-60, consumption weighted participation follows the same general pattern for mid-size accounts as account participation; however, it is different for large accounts with consumption-weighted participation decreasing while account participation increases. This indicates that accounts with lower consumption on average within the large unmanaged size have been participating over time.

Figure 8-61 and Figure 8-62 show that there has been a decrease in population savings achieved for mid-size unmanaged accounts from 2012-2016, while mid-size managed accounts have had population savings increase during that same time period. This pattern is similar to the large gas segments. Looking at participant savings achieved for managed size segments, depth of savings decreased from 2011-2015, increasing again in 2016. In contrast, for unmanaged size segments, depth of savings generally increased from 2013-2015, dropping substantially in 2016.

Finally, Figure 8-63 shows the contribution ratio for each retail gas size segment from 2011-2016. During most years, large unmanaged accounts had the greatest contribution ratio, accounting for a greater proportion of savings than consumption; however, in both 2014 and 2016, this segment saw its contribution ratio drop below 1.0, with mid-size and large managed accounts making up proportionally more savings than consumption.
Figure 8-59. Account and customer participation by size segment – gas – retail trade
Figure 8-60. Consumption-weighted participation by size segment – gas – retail trade

- Consumption-Weighted Participation Upstream
- Consumption-Weighted Participation Mixed Stream
- Consumption-Weighted Participation Not Upstream
Figure 8-61. Population savings achieved by size segment – gas – retail trade

![Chart showing population savings achieved by size segment over time for gas retail trade.](image)

- **Population Savings Achieved Upstream**
- **Population Savings Achieved Not Upstream**
Figure 8-62. Participant savings achieved by size segment – gas – retail trade
Figure 8-63. Contribution ratio by size segment – gas – retail trade
Performance metrics by measure

Figure 8-64 below shows the change in measure mix installed by mid-size gas accounts from 2011-2016. The x-axis shows the average percent of prior year consumption saved by a measure, while the y-axis shows the average size of the customers installing the measures. Looking at the gas measures installed by mid-size retail gas accounts over time, there was very little activity in this sector in 2011, with a large push to install both prescriptive and custom hot water measures in 2012. Participation in prescriptive hot water measures tapered off from 2013-2016, with an increase in diversity of measures and a shift to more custom measures from 2014-2016. These include custom HVAC, custom building shell, custom process, and comprehensive design. The upstream hot water offering provided a boost to hot water installations, and participation overall, in 2016.²⁶

Figure 8-64. Performance metrics for gas measures – retail trade

²⁶ There are custom refrigeration measures that appear as saving gas during the 2011 and 2014 program years. These likely represent insulating refrigerated case covers, which could decrease the heating load of a building, leading to gas savings.
APPENDIX C. Initial PA in-depth interview guide

IN-DEPTH INTERVIEW GUIDE FOR ENERGY EFFICIENCY PROGRAM
ADMINISTRATORS

DRAFT SURVEY TRACKING LOG

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[NOTES TO INTERVIEWER]

**PRIMARY PROJECT GOAL:** to refine the definition of mid-size customers and to identify changes to the PAs’ practices that may impact the service to mid-size accounts since the 2013 study.

**PRIMARY INTERVIEW OBJECTIVES:**

1. Define criteria to segment electric and gas accounts by size and other factors for the PAs’ current efforts.
2. Identify changes to strategies that the PAs adopted from 2013 to 2015 to address the needs of mid-size accounts and/or segments that contain a large share of mid-size customers. This includes exploring how these strategies differ among PAs, between fuel types, among industries, and over time.
3. Determine how practices differ by sub-segments identified through PA and market actor interviews.
LEAD-IN: Hello, my name is [NAME]. I work for DNV GL, an energy consulting firm. We have been hired by the Massachusetts electric and gas utilities’ Energy Efficiency Program Administrators to conduct research on energy efficiency programs serving commercial and industrial customers.

We’re focusing on the PAs’ criteria to segment commercial and industrial customers as well as PAs’ strategies to market energy efficiency programs to commercial and industrial customers. Specifically, we’ll discuss how these strategies may differ by customer size and industry and any changes your company may have made to these strategies from 2013 to 2015.

RB. Roles and Background

[PLEASE READ] Let’s start by discussing your position at <PA>. This is to put the rest of your answers in context.

[For RB1-RB4, IF PREVIOUSLY INTERVIEWED IN 2013, REQUEST UPDATE]

RB1. What do you do related to efficiency programs at <PA>?

RB2. How long have you done that?

RB3. How long have you worked on efficiency programs in general?

RB4. Do you focus on a certain size, industry, program or other class of customer? Please explain.

SC. Segmentation Criteria

[PLEASE READ] Now, I’d like to discuss how customers are segmented for C&I programs at your company.

[For SC1-SC5, IF PREVIOUSLY INTERVIEWED IN 2013, REQUEST UPDATE]

SC1. What criteria do you use to segment commercial and industrial electric and gas accounts at <PA>?

[SPECIFY IF ANSWER APPLIES TO GAS OR ELECTRIC. IF DUAL FUEL PA, RECORD ANSWERS FOR ELECTRIC AND GAS SEPARATELY]

SC1a. Do these definitions vary by industry? How so (by what criteria)?

SC2. [IF NOT MENTIONED IN SC1] Does <PA> have definitions for small, mid-size, and large accounts?

[IF YES] Please describe. [USE TABLE BELOW TO RECORD SPECIFIC DEFINITION FOR EACH SEGMENT, OR IF PA DOES NOT HAVE A SPECIFIC DEFINITION, FILL IN “NO SPECIFIC DEFINITION” AND SPECIFY WHETHER BASED ON kWh, kW, OR SOMETHING ELSE]

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<tr>
<td>Large</td>
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[PROBE] Does the definition vary by industry? How so?
[FOR SC3, BRIEFLY SUMMARIZE RESULTS FROM 2013 INTERVIEW AND REQUEST ANY UPDATES]

**SC3.** According to the 2013 interview, <PA> [does/does not] use <SC3a-SC3e> to segment mid-size customers. Is this still correct?

[PROBE] Has this changed from 2013 to 2015? When, how and why? And in 2016?

[PROBE] Any other criteria used to segment mid-size customers?

**SC3a.** Peak demand (kW)  
**SC3b.** Energy usage (kWh or therm)  
**SC3c.** Rate class  
**SC3d.** Municipal accounts  
**SC3e.** Dual fuel (electric and gas customers)

**SC4.** Does <PA> link multiple accounts by customer? How so? (To be clear, I’m asking you to distinguish between ‘accounts’ and ‘customers.’) [FOR PREVIOUSLY INTERVIEWED, MENTION 2013 INTERVIEW RESULTS AND ASK FOR UPDATE]

[PROBE] Has this changed from 2013 to 2015? When, how and why? What effect(s) have you seen from the change(s)? And any changes in 2016?

**SC5.** Does <PA> have processes for linking electric and gas customers? How so? [FOR PREVIOUSLY INTERVIEWED, MENTION 2013 INTERVIEW RESULTS AND ASK FOR UPDATE]

[PROBE] Has this changed from 2013 to 2015? When, how and why? What effect(s) have you seen from the change(s)? And any changes in 2016?

**SC6.** Are there any other criteria that <PA> uses to segment customers that we have not already discussed?  
[IF YES] Please describe.

**MS. Engagement Strategies by Customer Size**

[PLEASE READ] Next, I’d like to talk to you about engagement strategies for commercial and industrial customers. We are following up on a 2013 study (Mid-size Customer Needs) that focused on how the PAs addressed the mid-size market.

[IF PREVIOUSLY INTERVIEWED IN 2013, REQUEST UPDATE]

**MS1.** How does <PA> segment C&I accounts for engaging customers in the efficiency programs?

[PROBE] Electric vs. gas, kW vs. kWh, dual fuel, multiple accounts, rate class, municipal accounts  
[PROBE] Any differences by industry? Account size?

**MS2.** Has <PA> made any changes from 2013 to 2015 to approaches to engaging multi-account customers?  
[IF YES] When, how and why? What effect(s) have you seen from the change(s)?  
[PROBE] Electric vs. gas, kW vs. kWh, dual fuel, multiple accounts, rate class, municipal accounts

**MS3.** Which segments (e.g., industries) do you think have large shares of mid-size accounts (using their definition of mid-size accounts)?
**MS3a.** Has <PA> changed its engagement practices toward mid-size accounts or toward industry segments containing a large share of mid-size accounts from 2013 to 2015?

*IF YES* When, how and why?

*IF NOT MENTIONED* Any differences by industry? Within mid-size accounts?

*PROBE* And any changes in 2016?

**MS4.** Are there certain segments of mid-size accounts that PAs find more challenging to address?

*IF YES* Why? How are you addressing these segments?

**MS4a.** How can you overcome these challenges?

**MS5.** Are there certain segments of mid-size accounts that PAs find less challenging to address? Why?

*PROBE* How do you address these segments?

**MS6.** Which accounts receive services through the following types of customer-facing roles at your company [PEX (define, as needed)]; account managers? sales representatives? Other types of services providers?]

**MS7.** Has <PA> altered how it engages third party firms such as PEX from 2013 to 2015?

*IF YES* How, when and why?

*PROBE* What about changes internal resources (e.g., use of sales reps, others)? And external resources?

**MS8.** Has <PA> taken any actions taken to increase the number of participating contractors\(^{27}\)?

*IF YES* How, when and why?

**MS9.** Does <PA> conduct coordination between electric and mechanical (thermal) contractors?

*IF YES* Please describe.

*PROBE* Any changes from 2013 to 2015? How, when and why?

*PROBE* Do you think this has resulted in more comprehensive services on mid-size accounts?

**MS10.** Have there been efforts to decrease the difficulty with installing more complex or comprehensive measures for mid-size accounts?

*PROBE* How, when and why?

**MS11.** Have mid-size accounts increased their participation in energy efficiency audits? Why do you think so? [IF YES] Why do you think so?

*PROBE* What impact has this had on depth of savings? On B/C? On customer satisfaction? How do you know?

**MS12.** Have the PAs encouraged installation of complementary measures and repeat participation within the mid-size segment?

---

\(^{27}\) E.g. participating in the PAs energy efficiency programs. There are, for instance, HVAC contractors in MA that don't participate in the EE programs, but might benefit the program's customers. This question gets at whether there been any effort to get them on board.
[IF YES] In what way(s)?

**MS13.** From 2013 to 2015, have there been any efforts to increase mid-size account participation through upstream programs?

[IF YES] Please describe.

[IF NOT MENTIONED] Were changes made with the intent of improving the participation of mid-size accounts? What about for another reason that had the effect of increasing mid-size account participation?

**MS14.** Have the PAs changed incentives to target mid-size accounts from 2013 to 2015? And in 2016?

[IF YES] In what way(s)?

**MS15.** Do the existing C&I programs effectively serve the needs of mid-size customers/accounts in your opinion? Why or why not?

**MS16.** In what ways could mid-size customers/accounts be better served?

[PROBE] By industry? By size? By ownership type? By method of outreach? By type of incentives?

---

**RM. Recommendations Implemented**

[PLEASE READ] Next, I'd like to talk about any additional changes you may have made at your company from 2013 to 2015.

**RM1.** Has <PA> made any changes from 2013 to 2015 to recruiting and training energy services firms that offer comprehensive solutions?

[IF YES] When, how and why? What effect(s) have you seen from the change(s)?

**RM2.** From 2013 to 2015, has <PA> worked on developing a state-wide process for qualifying and coordinating energy services firms to provide comprehensive solutions?

[IF YES] When, how and why? What effect(s) have you seen from the change(s)?

**RM3.** Has <PA> made any changes from 2013 to 2015 to obtaining qualifying information for energy services companies?

[IF YES] When, how and why? What effect(s) have you seen from the change(s)?

**RM4.** Has <PA> made any changes from 2013 to 2015 to reduce the capital and administrative costs of participating in energy efficiency programs for mid-size customers and/or contractors?

[IF YES] When, how and why? What effect(s) have you seen from the change(s)?

**RM5.** Has <PA> made any changes from 2013 to 2015 to multi-measure (comprehensive) program offerings? What changes has your company made as a result?

[IF YES] When, how and why? What effect(s) have you seen from the change(s)?

---

28 For interviewer: the full recommendation reads, "The PAs could require contractors to administer simplified system inventory and gas service provider surveys when scheduling visits. Information collected by these surveys could be used to rate contractors on their thoroughness in marketing programs."
Closing Comments

CC1. Do you have any other input regarding needs, program participation, or engaging mid-size customers that we haven’t already discussed?

Those are all the questions I have. Thank you for your time and participation.
APPENDIX D. Customer guides

Customer guide for first time participants

PROJECT MANAGER: NATHAN CARON

VERSION: 2

DATE: 10/4/2016

Call Log

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NOTES TO INTERVIEWER: This interview guide is intended to provide a conversational outline and talking points for interviewers to obtain information from respondents.

This document is not a script. Interviewers will be analysts familiar with the topics of discussion and the project’s research goals. In addition, the nature of these conversations is open-ended. Thus, interviewers
are expected to probe and come up with additional questions during the interview, rather than depend solely on this guide.

**PRIMARY PROJECT GOAL:** Evaluate the impact of steps PAs have taken to improve service to mid-size accounts from 2011-2015, examine changes in performance indicators over that time, and determine whether there is a relationship between changes in performance indicators and PA practices.

**PRIMARY INTERVIEW OBJECTIVES:**

1. Understand how customers have perceived changes in PA/contractor engagement from 2011 to 2015.
2. Explore whether and how the program changes have driven changes in customer participation.
3. Explore whether customers have received the necessary technical expertise required to identify and service their needs.
4. Explore customer participation in the upstream energy efficiency programs.

**Customer Information**

[TO THE INTERVIEWER: Prior to the interview, populate the table below]

|---------------------|-----------------|----------------------|-----------------|-------------|---------------------|---------------------|---------------------|---------------------|---------------------|

**Introduction**

1. Introduce yourself. Tell them your name and that you’re calling from DNV GL on behalf of the Massachusetts electricity and gas providers
2. Introduce the project. Discuss the project’s goal:
   a. Evaluate the impact of steps PAs have taken to improve service to mid-size accounts from 2011-2015;
   b. Examine changes in performance indicators over that time (such as the participation rate of mid-size customers over times); and
   c. Determine whether there is a relationship between changes in performance indicators and changes to PA engagement of their customers.
3. We are calling this respondent because they fall into the category of ‘mid-size’, and have participated for the first time in 2015. We are trying to determine how customer experiences have changed over the past four years, versus the perception of customers who participated for the first time during 2015.

[IF NEEDED: to confirm the validity of the call, contact (PA representative name) at (PA TELEPHONE)].
RB. Roles and Background

[PLEASE READ] Let’s start by discussing your position at <COMPANY> and a little more about your company. This is to put the rest of your answers in context.

PP1. Our records show that your company participated in energy efficiency programs in Massachusetts that helped you install <MEASURES> [briefly review data from table above with respondent]. Are you familiar with these energy efficiency projects? [IF NOT AWARE, ASK FOR ANOTHER CONTACT]

RB1. Briefly, what do you do for <organization>?

RB1a. How long have you done that?

RB3. Generally, how does your company determine which energy efficiency upgrades to make?

• RB3a. What are your most important criteria? Anything else?
• RB3b. Do <PA> staff have any role in your decision-making process? In what way(s)?
• RB3c. Does the contractor have any role in the project decision-making process? In what way(s)?
• RB3d. Did you work with a Project Expediter for your energy efficiency project? Does the Project Expediter have a role in the project decision-making process? In what way(s)?

RB4. What types of energy using equipment does your organization have?

<table>
<thead>
<tr>
<th>Lighting</th>
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<tbody>
<tr>
<td>Ventilation</td>
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<tr>
<td>Motors / Drives</td>
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<td>Combined heat/power</td>
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</table>

PP. Program Participation

[PLEASE READ] Next, I’d like your thoughts about your company’s participation in the Massachusetts energy efficiency program in 2015.

PP1. How well did the program(s) meet your organization’s energy efficiency needs or goals? Why do you think so?

PP2. Please describe how [PA staff/Project Expeditors/direct install contractors been involved in the energy efficiency project(s) you completed last year.

PP2a. [PROBE] What role, if any, did the [PA staff/Project Expeditors/direct install contractors] play in encouraging you to participate in your energy efficiency projects?

PP2b. How, if at all, did [PA staff/Project Expeditors/direct install contractors] roles differ depending on the step in the process of completing your energy efficiency projects [e.g. scoping, installation, commissioning]?

PP3. What energy efficiency needs, if any, does your organization still have?
PP4. Have there been any barriers to your participation in energy efficiency programs? Why do you say that?

TA. Technical Assistance

[PLEASE READ] Next, I’d like to discuss any contact you may have had with those involved with the program such as your utility staff or third party contractors.

- **TA1.** Prior to completing your energy efficiency project, did you seek or received any technical assistance from anyone connected to the program? [IF NOT MENTIONED, PROBE FOR: PA staff, PEX, contractors, other]

- **TA1a.** [FOR EACH ENTITY NAMED IN TA1] Please describe your experience.

- [PROBE: when assistance sought/received, type of technical assistance requested/received]

- **TA2.** Has anyone connected to the program offered to provide technical assistance with more comprehensive or complex measures? [DEFINE IF NEEDED]

- **TA3.** To what extent do you need technical assistance for more comprehensive or complex measures?

M. Marketing

- **M1.** How much interaction did you have with PAs/PEX/contractors prior to the choice to install the measures in 2015? Please describe.

- [PROBE] Did the PAs/PEX/contractors market to you prior to 2015, but you decided not to implement any measures?

- **M1a.** [IF CONTACTED PRIOR TO 2015] Please describe how PA/PEX/DI contractors have typically engaged and marketed to your company, from 2011-2015.

- **M2a.** [IF CONTACTED PRIOR TO 2015] Have you experienced any changes in the way they have been engaged or marketed to by the PAs/PEX/DI contractors from 2011-2015?

[PROBE] Would you say this is more, less or about the same amount of contact in 2014-2015 compared to 2011-2013? Why do you think so?

UP. Upstream Programs

- **UP1.** Have you purchased any <MEASURE> through the upstream program? :

  - Fluorescent tubes or LEDs
  - Hot water heaters
  - Air conditioners
  - Heat pumps
  - Enthalpy controls
  - HVAC fan motors

- **UP1a.** About how many <MEASURE> have you purchased? [IF NEEDED: your best estimate is fine]
• [READ UP2 – UP2C FOR EACH MEASURE MENTIONED IN UP1]

• **UP2b.** What is the name of the distributor(s) you purchased your energy efficiency equipment from?

**Closing Comments**

**CC1.** Do you have any other input regarding your energy efficiency needs or program participation that we haven’t already discussed?

Those are all the questions I have. Thank you for your time and participation.
Customer guide for repeat participants

PROJECT MANAGER: NATAN CARON

VERSION: 2

DATE: 10/4/2016

Call Log

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PRIMARY PROJECT GOAL: Evaluate the impact of steps PAs have taken to improve service to mid-size accounts from 2011-2015, examine changes in performance indicators over that time, and determine whether there is a relationship between changes in performance indicators and PA practices.

PRIMARY INTERVIEW OBJECTIVES:

5. Understand how customers have perceived changes in PA/contractor engagement from 2011 to 2015.

6. Explore whether and how the program changes have driven changes in customer participation.

7. Explore whether customers have received the necessary technical expertise required to identify and service their needs.

8. Explore customer participation in the upstream energy efficiency programs.

Customer Information

[TO THE INTERVIEWER: Prior to the interview, populate the table below]

|---------------------|-----------------|-----------------------|-----------------|-------------|-------------------|-------------------|-------------------|-------------------|-------------------|

Introduction

4. Introduce yourself. Tell them your name and that you’re calling from DNV GL on behalf of the Massachusetts electricity and gas providers

5. Introduce the project. Discuss the project’s goal:
   a. Evaluate the impact of steps PAs have taken to improve service to mid-size accounts from 2011-2015;
   b. Examine changes in performance indicators over that time (such as the participation rate of mid-size customers over times); and
   c. Determine whether there is a relationship between changes in performance indicators and changes to PA engagement of their customers.

6. We are calling this respondent because they fall into the category of ‘mid-size’, and have participated multiple times from 2011-2015. We are trying to determine how customer experiences have changed over the past four years, versus the perception of customers who participated for the first time during 2015.

[IF NEEDED: to confirm the validity of the call, contact (PA representative name) at (PA TELEPHONE)].

RB. Roles and Background
[PLEASE READ] Let’s start by discussing your position at <COMPANY> and a little more about your company. This is to put the rest of your answers in context.

RB1. Our records show that your company participated in energy efficiency programs in Massachusetts that helped you install <MEASURES> [briefly review data from table above with respondent]. Are you familiar with these energy efficiency projects? [IF NOT AWARE, ASK FOR ANOTHER CONTACT]

RB2. Briefly, what do you do for <organization>?

RB2a. How long have you done that?

RB3. Generally, how does your company determine which energy efficiency upgrades to make?

• RB3a. What are your most important criteria? Anything else?

• RB3b. Do <PA> staff have any role in your decision-making process? In what way(s)?

• RB3c. Does the contractor have any role in the project decision-making process? In what way(s)?

• RB3d. Please describe you interaction with the following types of individuals when identifying and installing energy efficiency measures between 2013-present.

  • Program staff from your electric utility
    o Did they help you identify solutions or get you in touch with contractors who helped you?
    o Did they help you coordinate with your gas utility or gas service providers?
    o Did they provide technical assistance or training?

  • Program staff from your gas utility
    o Did they help you identify solutions or get you in touch with contractors who helped you?
    o Did they help you coordinate with your electric or electric service providers?
    o Did they provide technical assistance or training?

  • Contractors identified by your utilities
    o Did they help you identify solutions or get you in touch with other contractors who helped you with some solutions? For which measures did they provide services?
    o Did they help you coordinate with your gas utility or gas service providers?
    o Did they provide technical assistance or training?
RB4. What types of energy using equipment does your organization have?

RB5. What types of energy efficiency equipment does you organization have?

[FNY EQUIPMENT THEY HAVE THAT THEY DO NOT HAVE ENERGY EFFICIENT ASK]

RB6. Why have you not installed energy efficient [MEASURE]? Have your electric/gas providers offered services, connected you with the appropriate contractors, or offered support to help you assess energy efficient options for [MEASURE]? Please describe?

<table>
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<tr>
<th>Measure</th>
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<td>Combined heat/power</td>
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**PP. Program Participation**

[PLEASE READ] Next, I’d like your thoughts about your company’s participation in the Massachusetts energy efficiency programs.

PP1. Judging by your participation from 2011 – 2015, how well did the program(s) meet your organization’s energy efficiency needs or goals? Why do you think so?

PP2. Please describe how [PA staff/Project Expeditors/direct install contractors] have been involved in the energy efficiency projects participation history listed above.

PP2a. [PROBE] What role, if any, did the [PA staff/Project Expeditors/direct install contractors] play in encouraging you to participate in your energy efficiency projects?

PP2b. How, if at all, did [PA staff/Project Expeditors/direct install contractors] roles differ depending on the step in the process of completing your energy efficiency projects [e.g. scoping, installation, commissioning]?

PP3. What differences, if any, did you notice between your experience in 2011-2013 and 2013-2015 in terms of level of service offered by anyone connected to the program?

PP4. What energy efficiency needs, if any, does your organization still have?

PP5. Have there been any barriers to your participation in energy efficiency programs, or the installation of specific energy efficiency measures? Why do you say that?

**TA. Technical Assistance**

[PLEASE READ] Next, I’d like to discuss any contact you may have had with those involved with the program such as your utility staff or third party contractors.

- **TA1.** In the past five years, have you sought or received any technical assistance from anyone connected to the program? [IF NOT MENTIONED, PROBE FOR: PA staff, PEX, contractors, other]
TA1a. [FOR EACH ENTITY NAMED IN TA1] Please describe your experience.

[PROBE: when assistance sought/received, type of technical assistance requested/received]

TA1b. Would you say that you were contacted more often, less often or about the same by any of these program entities for offers of technical assistance in 2011-2013 compared to 2014-2015? What do you think so?

TA2. Has anyone connected to the program offered to provide technical assistance with more comprehensive or complex measures? [DEFINE IF NEEDED]

TA3. To what extent do you need technical assistance for more comprehensive or complex measures?

TA4. Have you experienced any changes in the availability of technical assistance for comprehensive or more complex measures available from the PAs/PEX/contractors from 2011-2015?

TA4a. [IF YES] How has it changed? [PROBE: increase/decrease/no change; over what time period; description/ specifics]

M. Marketing

M1. How much interaction did you have with PAs/PEX/contractors prior to your decision to install energy efficiency measures? Please describe.

M2. Please describe how PA/PEX/DI contractors have typically engaged and marketed to your company, from 2011-2015.

M2a. Have you experienced any changes in the way they have been engaged or marketed to by the PAs/PEX/DI contractors from 2011-2015?

[PROBE] Would you say this is more, less or about the same amount of contact in 2014-2015 compared to 2011-2013? Why do you think so?

UP. Upstream Programs

UP1. Have you purchased any <MEASURE> since 2011?

Where <measure> =

- Fluorescent tubes or LEDs
- Hot water heaters
- Air conditioners
- Heat pumps
- Enthalpy controls
- HVAC fan motors

[READ UP1A – UP1D FOR EACH MEASURE MENTIONED IN UP1]

UP1a. About how many <MEASURE> have you purchased since 2011? [IF NEEDED: your best estimate is fine]
• **UP1b.** Since 2011, about what percentage of these <MEASURES> did you purchase directly from distributors through upstream program compared to the percentage purchased through the standard rebate program?

• **UP1c.** How, if at all, has the percentage of these <MEASURE> purchased through distributors or the program changed over the 2011 to 2015 time period?

• **UP1d.** What is the name of the distributor(s) you purchased your energy efficiency equipment from?

**Closing Comments**

**CC1.** Do you have any other input regarding your energy efficiency needs or program participation that we haven’t already discussed?

_Those are all the questions I have. Thank you for your time and participation._
APPENDIX E. Contractor guide

PROJECT MANAGER: NATHAN CARON

VERSION: 2

DATE: 10/4/2016

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[NOTES TO INTERVIEWER]

PRIMARY PROJECT GOAL: Evaluate the impact of steps PAs have taken to improve service to mid-size accounts from 2011-2015, examine changes in performance indicators over that time, and determine whether there is a relationship between changes in performance indicators and PA practices.

PRIMARY INTERVIEW OBJECTIVES:
9. Assess the PAs efforts to provide or promote an increased level of education, training and marketing to third party contractors.

10. Explore whether the PAs have increased efforts to coordinate specialized firms to ensure customers have the necessary technical expertise required to identify and service their needs.

11. Examine changes in access to qualified leads, and identification of possible measures they will encounter.

12. Determine whether energy service providers have seen any reductions to initial paperwork burden or other cost barriers to qualifying comprehensive projects, enabling firms to remain price-competitive.

13. Identify steps taken to ensure greater cross-fuel participation.

**Introduction**

**LEAD-IN:** Hello, my name is [NAME]. I work for DNV GL, an energy consulting firm. We have been hired by the Massachusetts electric and gas utilities’ Energy Efficiency Program Administrators to conduct research on energy efficiency programs serving commercial and industrial customers.

We’re focusing on how the PAs’ have worked with third party contractors to improve customer participation and depth of savings to mid-size customers. Prior to 2016, the MA PAs defined mid-size customers as those with peak demand between 300-750 kW. We are interested in hearing how your experience working with the PAs to service mid-size customers has changed from 2013-2015. We are particularly interested in hearing about anything the PAs have done to facilitate your ability to provide energy efficiency services to mid-size customers such as:

- Increased training regarding industry specific best practices;
- Assistance in coordinating with other contractors/vendors to provide more comprehensive services;
- The extent to which mid-size customers electric and gas needs are pre-qualified and met through existing program offerings;
- Changes to paperwork and other costs constraints that reduce the profitability of serving mid-size customers;
- Any other steps taken to ensure mid-size customer’s cross fuel (electric and gas) needs are met.

**RB. Roles and Background**

[PLEASE READ] Let’s start by discussing your position at <COMPANY>. This is to put the rest of your answers in context.

**RB1.** How long have you worked for <COMPANY>?

**RB2.** Please describe what you do for <COMPANY>?

**RB3.** With which Program Administrators (PAs) have you been contracted to provide energy efficiency services to customers over the past 3 years?

- Berkshire Gas
- Cape Light Compact
- Columbia
- Eversource (electric and/or gas)
Liberty
National Grid (electric and/or gas)
Unitil (electric and/or gas)

RB3. Please describe <PAs> customers that you provided energy efficiency services to in terms of their:

RB3a. Size (i.e. large, mid-size, or small customers) [PROVIDE PA SPECIFIC SIZE CRITERIA IF NEEDED, TABLE BELOW FOR REFERENCE]

RB3a(i). Did this change from 2013-2015? [IF YES] How?

RB3b. Industry

RB3b(i). Did this change from 2013-2015? [IF YES] How?
<table>
<thead>
<tr>
<th>PA</th>
<th>Segmentation Criteria</th>
<th>Mid-size approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berkshire Gas</td>
<td>Mid-size customers consume between 40,000-250,000 therms per year</td>
<td>• No changes to its engagement strategies toward all mid-size accounts since from 2013-2015.</td>
</tr>
<tr>
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<td></td>
<td>• Has promoted food service equipment to certain mid-size accounts by reaching out to restaurants and other establishments with large kitchens.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• No specific segmentation or targeting particular industry groups</td>
</tr>
<tr>
<td>Cape Light Compact</td>
<td>Small customers – &lt;= 1.5M kWh aggregate consumption</td>
<td>• Hospitality and grocery accounts have been segmented and targeted.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Starting in 2016, serves all medium and large customers as managed accounts with dedicated resources.</td>
</tr>
<tr>
<td>Columbia Gas</td>
<td>Mid-size customers consume between 40,000-250,000 therms per year</td>
<td>• No changes to its engagement strategies toward all mid-size accounts since from 2013-2015.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• They have targeted mid-size hospitality to encourage installation of energy efficient laundry measures.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• No specific segmentation or targeting particular industry groups</td>
</tr>
<tr>
<td>Eversource</td>
<td>Segment its accounts based on energy consumption quartile and sector – Q3 is mid-size</td>
<td>• Mid-size business – Engage Q3 accounts with industry-specific teams.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Each team consists of account representative, project engineer, energy efficiency consultant, and Project expediters</td>
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<td>• Leverage best practices from serving the larger Q1 and Q2 accounts to effectively serve the Q3 mid-size group.</td>
</tr>
<tr>
<td>Liberty Utilities</td>
<td>Mid-size accounts – 40,000 therms to 100,000 therms per year</td>
<td>• Has performed outreach to commercial kitchen operators based on NAICS code data.</td>
</tr>
<tr>
<td>National Grid</td>
<td>Mid-size accounts – &gt;1.5 Million kWh or &gt;40,000 Therms, peak demand less than 1,000 kW</td>
<td>• Created the Channel Sales – Handles particular customer segments comprised largely of mid-size accounts.</td>
</tr>
<tr>
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<td></td>
<td>• This group focuses on industry segments that tend...</td>
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| | Looks at the consumption of linked accounts. | to be mid-size (retail, hospitality, grocery, restaurants, municipalities, services).  
| |  | • The Channel Sales – Develops relationships and training with trade allies active mid-market. |

**RB4.** In which PA territories, if any, did you provide energy services to customers prior to 2013? What about specifically for mid-size customers?

  - [IF PRIOR TO 2013] **RB3a.** When did you start providing energy services to customers for <PA> territory (year)?
  - [IF NOT PRIOR TO 2013] **RB3b.** What, if anything did <PA> do to encourage or assist your firm in becoming one of their energy efficiency services providers?

**RB5.** Please describe the types of services you have provided to <PAs> mid-size customers.

  - **RB5a.** Did your company change the types of services you provided from 2013-2015? [IF YES] Please describe.
  - **RB5b.** [IF YES to RB5a] What, if anything, did <PA> do to encourage/facilitate these changes?
  - **RB5c.** Has your company completed more, less or about the same number of projects for mid-size customers from 2011 to 2013 compared to 2013-2015?
    - [IF MORE] Would you say this increase primarily resulted from your company acquiring more new mid-size customers or because your company sold more projects to existing mid-size customers?

**SC.** PA assistance in marketing EE programs to mid-size customers

[PLEASE READ] Now, I’d like to discuss your engagement with each of the PAs you mentioned earlier. I am interested in hearing about the types of support you received directly from PA staff to provide services to their mid-size customers.

[IF POSSIBLE, ASK FOR EACH PA WITH WHICH THEY HAD EXPERIENCE. IF TOO MANY, THEN ASK THEM TO GENERALIZE/CONTRAST THE DIFFERENCES]

**SC1.** How would describe your experiences working with <PA> on mid-size accounts before 2013, specifically from 2011-2013.

**SC1a.** Similarly, how would you describe your experiences working with <PA> on mid-size accounts from 2013-2015?

**SC2.** What changes, if any, occurred working with <PA> on mid-size accounts between these two periods: from 2011-2013 and from 2013-2015?

**SC2a.** Did these changes impact the level of service to the customers? In what ways?

**SC2b.** Did these changes impact your costs of serving mid-size accounts? How so?

**SC3.** Please describe the support <PA> provided to you, either from their internal staff and other third party service providers, when providing services to their mid-size customers.

**SC3a.** How does this compare to your experience prior to 2013?
SC4. Do you think <PA> staff made available to you were knowledgeable about the particular client’s business, engineering, energy efficiency, and/or industry specific needs?

SC4a. How does this compare to your experience prior to 2013? Why do you say that?

SC5. Has <PA> provided the necessary expertise to meet the customer’s range of electric and gas energy needs? Why do you say that?

SC5a. How does this compare to your experience prior to 2013? Why do you say that?

SC6. Has <PA> encouraged engagement with certain industries among mid-size customers? Which industries?

SC6a. How does this compare to your experience prior to 2013? Why do you say that?

SC7. Among all the Mass Save electric programs, it has been suggested that improvement in performance indicators such as account participation and savings in the past few years has largely been the result of the upstream lighting program success. Do you agree or disagree? Why do you think so?

SC7a. [PROBE] Do you think that upstream lighting programs reach mid-size customers more effectively than downstream lighting programs? Why or why not?

SC7b. [PROBE] Do you have any direct evidence that upstream lighting programs reach mid-size customers more effectively than downstream lighting programs?

SC7c. It has also been hypothesized that the upstream hot water program has improved service for mid-size gas customers. Do you agree or disagree? Why do you think so?

SC7d. [PROBE] Do you think that upstream hot water or other upstream gas programs reach mid-size customers more effectively than other downstream programs? Why or why not?

SC7e. [PROBE] Do you have any direct evidence that the upstream hot water program has reached mid-size customers more effectively than other downstream programs?

SC8. How do you market to/engage mid-size customers? How do you encourage them to participate in energy efficiency projects?

SC8a. Does <PA> provide you with marketing materials applicable to mid-size customers? Do you produce your own marketing materials to target mid-size customers? [IF YES] Could you provide us with examples of the material following this interview?

SC8b. How does customer engagement/marketing from 2013-2015 compare to your experience prior to 2013? Why do you say that?

ET. Education and training

ET1. Did <PA> offer you any training? [IF YES] Did you participate in this training? [IF YES] Could you describe your experiences participating in this training? [IF NO, THEN SKIP TO NEXT SECTION]

ET1a. [PROBE] How did <PA> coordinate this training?
ET1b.  [PROBE] How were you contacted to participate?

ET1c.  [PROBE] How many other vendors/contractors participated with you?

ET1d.  [PROBE] Who conducted the training? Was it the PA or a third party firm?

ET2.  [PROBE] What was the content of the training?

[READ ET2a-ET2b FOR WORK WITH LARGER PA VENDOR GROUPS]

ET2a.  [PROBE] Did the training include any best practices?  [IF YES] For which measures or solutions?

ET2b.  [PROBE] [IF YES TO ET2a] Among these best practices, which were the most helpful?  For which customer segments?

[PROBE] Why do you think so?

ET3.  [PROBE] Was the training directly applicable to servicing mid-size customers?  Why do you say that?

ET4.  [PROBE] Did <PA> provide access to information regarding more comprehensive set of electric and gas needs than you were previously aware?

ET4a.  [PROBE] Did the training focus on industry specific best practices for one or more energy efficient technologies?  [IF YES] Please describe.

ET4b.  [PROBE] How did you use this information, if at all, in projects for mid-size customers?

CS.   Coordination of specialized firms to provide comprehensive solutions

[PLEAS READ] Next, I’d like you to discuss your engagement with additional third party energy services providers on projects serving <PAs> mid-size customers to meet the range of client needs.

CS1.   Please describe the extent to which your firm coordinates with other energy services firms to meet the full range of electric and gas efficiency needs of mid-size customers. How do you coordinate with other contractors or energy service firms?

CS1a.  [PROBE] How has this changed from prior to 2013?

CS2.   What, if anything, did <PA> do to help your firm with this coordination?

CS2a.  [PROBE] For example, did they initiate contact with firms they recommend or provide a list of firms who provide supplemental electric/gas services? How does <PA> segment C&I accounts for engaging customers in the efficiency programs?

CS2b.  [PROBE] Did <PA> provide adequate information to qualify the customer’s energy needs prior to your engagement?

CS2c.  [PROBE] Did you information needed to bring in the appropriate firms to support you or have the appropriate staff on hand?  Please describe.
CS3. Do you think there are remaining needs for greater coordination of service providers to meet the full range of electric and gas efficiency needs for mid-size customers? Please describe.

CS4. Have you experienced any other changes by <PA> from 2013 to 2015 that facilitated the entry of firms offering a broader range electric and gas solutions to mid-size customers? [IF YES] Please explain.

RC. Reductions to cost and other barriers for comprehensive projects

RC1. What barriers, if any, exist to mid-size customers’ ability to qualify for or take on more comprehensive energy efficiency projects? (These projects may span multiple measure and fuel types such as electric and gas.) And, have these barriers changed at all from 2011-2015?

[IF RESPONDENT ASKS FOR EXAMPLES OF COMPREHENSIVE PROJECTS]

- In an industrial facility, a comprehensive retrofit might include replacing windows with high performance glazing, installing a dedicated mechanical system to isolate spaces impacted by process loads, retro-commissioning the building HVAC system and implementing a demand control ventilation system to improve indoor air quality.

- For a grocery store, a comprehensive project might include a retrofit the refrigeration and freezer systems with high efficiency models, installation of LED case and overhead lighting with advanced controls, and retro-commissioning of the building HVAC system.

RC2. [PROBE] [IF NOT MENTIONED IN RC1] Do the up-front engineering studies impose a barrier? [IF YES] What if anything has <PA> done over the past 3 to 4 years to lessen this barrier?

RC2a. [PROBE] Has <PA> initiated any changes that reduced or increased the costs of paperwork or engineering studies over the past 3 to 4 years, relative to prior to 2013? Please explain.

RC3. [PROBE] [IF NOT MENTIONED IN RC1] Are mid-size customers profitable to pursue for comprehensive (multiple measure/electric and gas) projects? What is your answer based on?

RC3a. [PROBE] Has <PA> initiated any changes that reduced or increased the profitability of pursuing these customers over the past 3 to 4 years, relative to prior to 2013? Please explain.

RC4. [PROBE] Are there any other cost or other barriers that limit the ability of firms such as yours to provide energy efficiency services to mid-size customers? [IF YES] Please explain.

Closing Comments

CC1. Do you have any other input regarding needs, program participation, or engaging mid-size customers that we haven’t already discussed?

Those are all the questions I have. Thank you for your time and participation.
APPENDIX F. PA staff in-depth interview guides

PA interview guide – Eversource

PROJECT MANAGER: NATHAN CARON

VERSION: 2

DATE: 10/4/2016

Call Log

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Respondent Information

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[NOTES TO INTERVIEWER]
PRIMARY PROJECT GOAL: Evaluate the impact of steps PAs have taken to improve service to mid-size accounts from 2011-2015, examine changes in performance indicators over that time, and determine whether there is a relationship between changes in performance indicators and PA practices.

PRIMARY INTERVIEW OBJECTIVES:

4. Build on prior PA interviews to further assess changes in PA engagement toward mid-size customers from 2011-2015, targeting changes in specific marketing practices and engagement of specific industries for energy efficiency projects.
5. Assess whether the PAs or their affiliates provided mechanisms for coordinating with specialized firms to ensure customers have the necessary technical expertise required to identify and service their needs.
6. Build on prior PA interviews to better understand which companies received training, the entities responsible for training, and the training content.
7. Uncover any changes regarding the cost barriers to completing comprehensive projects.
8. Understand any steps small business contractors have taken to ensure that accounts qualifying for the small business program based on electric demand receive the necessary services from gas programs (or vice versa), and whether changes have resulted in greater cross-fuel participation.

Introduction

Hello, my name is [NAME]. I work for DNV GL, an energy consulting firm. We have been hired by the Massachusetts electric and gas utilities’ Energy Efficiency Program Administrators to conduct research on energy efficiency programs serving commercial and industrial customers.

We’re focusing on mid-size businesses, which are those too large to qualify for the Small Business program (e.g. > 1.5M kWh or 40k therms annually) but are still relatively small (they may not qualify for a dedicated account representative). Specifically, we’ll discuss how the level of service to these customers has changed from 2013 to the 2015 in response to approaches used by [PA] to reach these customers.

RB. Role and Background

Our understanding of the current marketing practices at [PA] includes the following. Please confirm or correct this as needed:
## Segmentation Criteria

<table>
<thead>
<tr>
<th>PA</th>
<th>Segmentation Criteria</th>
<th>Mid-size approach</th>
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<tbody>
<tr>
<td>Eversource</td>
<td>Segment its accounts based on energy consumption quartile and sector – Q3 is mid-size</td>
<td>• Mid-size business – Engage Q3 accounts with industry-specific teams.</td>
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<tr>
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<td>• Each team consists of account representative, project engineer, energy efficiency consultant, and Project expediters</td>
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<td>• Leverage best practices from serving the larger Q1 and Q2 accounts to effectively serve the Q3 mid-size group.</td>
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[PLEASE READ] Let’s start by discussing your position at <PA>. This is to put the rest of your answers in context.

**RB1-ES.** Please describe your role at Eversource and how it relates to Eversource’s Q3 Sales, Q1 and Q2 sales, and Channel Group?

[PROBE] **RB1-ESa.** How long have you been in this role? Are you familiar with how service to Q3 customers has changed between prior to 2013 and the present? Please describe?

[PROBE] **RB1-ESb.** How does your role relate to the Q3 Account Executives, Project Engineers, Energy Efficiency Consultants, or Channel Team member?

[PROBE] **RB1-ESc.** With which segments of Q3 customers are you familiar? [Industrial, Biotech, Retail, College, Healthcare, Hospitality, Data Centers, Commercial Property]?

[PROBE] **RB1-ESd.** Are familiar with how service to Q3 customers may differ from that of Q1 and Q2 customers, or Q4 accounts? Please describe?

[PROBE] **RB1-ESe.** Are you familiar with the use of trade allies (i.e. third party contractors, project expeditors) used assist in servicing Q3 customers?

[PROBE] **RB1-ESf.** Are you familiar with mid-size customers who may be served as Q3 customers who may be served as chains or franchises (i.e. customers with multiple smaller accounts that linked together make them mid-size?)

[PROBE] **RB1-ESg.** Are you familiar with training regarding best practices offered to Q3 customers or trade allies?
MC. Marketing/Engagement Practices

Next, I’d like to focus on customer response to the realignment of internal staff at Eversource to address the mid-market. We interested in how these changes have resulted in increased service to mid-size customers compared to prior to 2013.

MC1. In general, has the establishment of the Q3 group been effective at increasing participation of mid-size customers? Please describe?

MC1a. [PROBE] Please describe the various approaches taken by the different Q3 vertical groups to identify and enrol new participants?

MC1b. [PROBE] We’d like to understand how the different Q3 vertical teams convince customers to participate in non-lighting solutions? Do they use Face to face contact? Phone calls? Mailed Advertising?

MC1c. [PROBE] Have these changes occurred more, or less in specific sectors, or sub-groups such as smaller or larger mid-size customers? Why do you say that?

MC1d. [PROBE] Are there outreach practices that appear to be more/less effective in reaching customers in different sectors or sub-segments? Why do you say that?

MC1e. [PROBE] Do you measure the performance of your channel group at increasing participation? How do you do that? What are the results?

MC2. In general, has the establishment of the Q3 vertical groups been effective at increasing depth of savings for non-lighting electric, mechanical solutions, and gas solutions? Please describe?

MC2a. [PROBE] Please describe the various approaches taken by the different vertical teams to increase depth of savings in non-electric, mechanical, and gas solutions? How do these approaches differ from those used for the Strategic sales group?

MC2b. [PROBE] We’d like to understand how the different groups convince customers to participate in non-lighting solutions? Do they use Face to face contact? Phone calls? Mailed Advertising?

MC2c. [PROBE] Have these changes occurred more and less in specific sectors, or sub-groups such as smaller or larger mid-size customers? Why do you say that?

MC2d. [PROBE] Are there outreach practices that appear to be more and less effective in reaching customers in different sectors or sub-segments? Why do you say that?

MC2e. [PROBE] Do you measure the performance of your channel group at increasing depth of savings? How do you do that? What are the results?

TA. Changes to Trade Ally Best Practices

Next, I’d like to focus on customer response to including Trade Ally group and engagement of more third party contractors and manufacturers to address the mid-market. We interested in how these changes have resulted in increased service to mid-size customers compared to prior to 2013.

TA1. In general, has the information on best practices past along by the Q1/Q2 team member been effective at increasing participation of mid-size customers? Please describe?

TA1a. [PROBE] Please describe how the Q1/Q2 team member engages Q3 team members, venders, or customers to help identify and enrol new participants?

TA1b. [PROBE] For which groups of customers and/or solutions has this be most effective?
TA2. In general, has the inclusion of the Q1/Q2 team member engages Q3 team members on the Q3 team been effective at increasing depth of savings for non-lighting electric, mechanical solutions, and gas solutions? Please describe?

TA2a. [PROBE] Please describe how the Q1/Q2 team member engages team members, venders, or customers to help identify and enrol new participants?

Ta2b. [PROBE] For which groups of customers and/or solutions has this be most effective?

TA3. Are there certain groups of trade allies that are more/less active in working with you to increase service to mid-size customers? What are you doing to address that?

TA4. Do you think the current number of contractors trained to offer comprehensive solutions to mid-size and large customers is too low, too high or about right? Why do you think so?

TA4a. What else could be done to encourage trade allies to participate in energy efficiency program offered to mid-size customers?

TA. Changes to Training Services

Next, I’d like to discuss the different trainings offered to increase service to mid-size customers.

TS1. Please describe how contractors become trained to provide comprehensive solutions to Massachusetts customers.

TS2. Can you please describe the various training services offered to mid-size customers and/or trade allies who target mid-size customers?

TS2a. Can we have a list of participants in these courses?

TS2b. Which of these training courses have you seen resulted in an increase in participation by mid-size customers? Why do you say that?

TS2c. Which of these training courses resulted in increased non-lighting, mechanical, or gas solutions by mid-size customers? Why do you say that?

TA3. In your opinion, where are the gaps in training among contractors who are not sufficiently trained to offer comprehensive solutions (e.g. systems/measures)?

IP. Improvement in Performance Indicators and Upstream Programs

IP1. Among all the Mass Save electric programs, it has been hypothesized that improvement in performance indicators such as account participation and savings in the past few years has largely been the result of the upstream lighting program success. Do you agree or disagree? Why do you think so?

IP2. Do you think that upstream lighting programs reach mid-size customers more effectively than downstream lighting programs? Why or why not?

PROBE. Do you have any direct evidence that upstream lighting programs reach mid-size customers more effectively than downstream lighting programs?
IP3. It has also been hypothesized that the upstream hot water program has improved service for mid-size gas customers. Do you agree or disagree? Why do you think so?

IP4. Do you think that upstream hot water or other upstream gas programs reach mid-size customers more effectively than other downstream programs? Why or why not?

PROBE. Do you have any direct evidence that the upstream hot water program has reached mid-size customers more effectively than other downstream programs?

IP5. Next, I’d like to discuss possible implications if objective performance indicator improvement depending primarily on upstream programs. For example, do you agree or disagree that tension exists between the two objectives of doing better at serving mid-size customers and improving comprehensiveness? (That is, improving mid-size customer participation and savings appears to be largely driven by upstream lighting programs and yet one of the goals of serving mid-size customers is to improve comprehensiveness which the upstream lighting program does not deliver).

IP5a. Are there any other possible implications from improving mid-size customer participation and savings achieved largely from upstream programs rather than other downstream programs incentivizing a range of electric and gas measures?

SB. Small Business Program

SB1. Do you have any interactions with the contractors who implement the Small Business program?

SB1a. [IF YES to SB1] In your opinion, do the Small Business contractors encourage cross fuel program participation?

PROBE: Encouraging Small Business electric customers with mid-size gas accounts, or Small Business gas customers with mid-size electric accounts to participate in the larger retrofit energy efficiency programs?

SB1b. [IF YES to SB1a] Have you seen any changes to how Small Business contractors encouraged cross fuel participation from 2013-2015?

SB1c. [IF YES to SB1a] In your opinion, has this resulted in greater cross-fuel participation compared to 2011-2012?

SB2. What additional actions should the Small Business contractors take, if anything, to encourage electric SB customers to participate in gas programs, particularly those with mid-size gas accounts (or vice versa for gas SB customers with mid-size electric accounts)?

Closing Comments

CC1. Do you have any other input regarding mid-size customer needs that we haven’t already discussed?

Those are all the questions I have. Thank you for your time and participation.
# Call Log

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[NOTES TO INTERVIEWER]
**PRIMARY PROJECT GOAL:** Evaluate the impact of steps PAs have taken to improve service to mid-size accounts from 2011-2015, examine changes in performance indicators over that time, and determine whether there is a relationship between changes in performance indicators and PA practices.

**PRIMARY INTERVIEW OBJECTIVES:**

9. Build on prior PA interviews to further assess changes in PA engagement toward mid-size customers from 2011-2015, targeting changes in specific marketing practices and engagement of specific industries for energy efficiency projects.

10. Assess whether the PAs or their affiliates provided mechanisms for coordinating with specialized firms to ensure customers have the necessary technical expertise required to identify and service their needs.

11. Build on prior PA interviews to better understand which companies received training, the entities responsible for training, and the training content.

12. Uncover any changes regarding the cost barriers to completing comprehensive projects.

13. Understand any steps small business contractors have taken to ensure that accounts qualifying for the small business program based on electric demand receive the necessary services from gas programs (or vice versa), and whether changes have resulted in greater cross-fuel participation.

**Introduction**

**LEAD-IN:** Hello, my name is [NAME]. I work for DNV GL, an energy consulting firm. We have been hired by the Massachusetts electric and gas utilities’ Energy Efficiency Program Administrators to conduct research on energy efficiency programs serving commercial and industrial customers.

We’re focusing on mid-size businesses, which are those too large to qualify for the Small Business program (e.g. > 1.5M kWh or 40k therms annually) but are still relatively small (they may not qualify for a dedicated account representative). Specifically, we’ll discuss how the level of service to these customers has changed from 2013 to the 2015 in response to approaches used by [PA] to reach these customers.
RB. Role and Background

Our understanding of the current marketing practices at [PA] includes the following. Please confirm or correct this as needed:

[READ FOR THE RELEVANT PA]

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| National Grid  | Mid-size accounts – >1.5 Million kWh or >40,000 Therms, peak demand less than 1,000 kW. Looks at the consumption of linked accounts. | • Created the Channel Sales – Handles particular customer segments comprised largely of mid-size accounts.  
• This group focuses on industry segments that tend to be mid-size (retail, hospitality, grocery, restaurants, municipalities, services).  
• The Channel Sales – Develops relationships and training with trade allies active mid-market. |

[PLEASE READ] Let’s start by discussing your position at <PA>. This is to put the rest of your answers in context.

RB1. Please describe your role at National Grid and how it relates to National Grid’s Strategic Sales, Channel Group, and Trade Ally groups for addressing mid-size customers?

[PROBE] RB1a. How long have you been in this role? Are you familiar with how service to mid-size customers has changed between prior to 2013 and the present? Please describe?

[PROBE] RB1b. How does your role relate to the Account Executives, Project Engineers, Energy Efficiency Consultants, or Channel Team member used to service customers in the Channel’s group?

[PROBE] RB1c. With which segments of mid-size customers are you familiar? [Hospitality, Office, Retail, other]

[PROBE] RB1d. Are familiar with how service to customers in the channel’s group may differ from that of Strategic Accounts or small business accounts? Please describe?

[PROBE] RB1e. Are you familiar with the use of trade allies (i.e. third party contractors, project expeditors) used assist in servicing customers serviced by the Channels group?

[PROBE] RB1f. Are you familiar with customers serviced by the Channels group who may chains or franchises (i.e. customers with multiple smaller accounts that linked together make them mid-size)?

[PROBE] RB1g. Are you familiar with training regarding best practices offered to customers serviced through the channel’s group or trade allies for mid-size?

MC. Marketing/Engagement Practices

Next, I’d like to focus on customer response to the realignment of internal staff at National Grid to address the mid-market. We interested in how these changes have resulted in increased service to mid-size customers compared to prior to 2013.

MC1. In general, has the establishment of the Channel groups been effective at increasing participation of mid-size customers? Please describe?

MC1a. [PROBE] Please describe the various approaches taken by the different channel groups to identify and enrol new participants?
MC1b. **PROBE:** We’d like to understand how the different vertical teams convince customers to participate in non-lighting solutions? Do they use Face to face contact? Phone calls? Mailed Advertising?

MC1c. **[PROBE]** Have these changes occurred more, or less in specific sectors, or sub-groups such as smaller or larger mid-size customers? Why do you say that?

MC1d. **[PROBE]** Are there outreach practices that appear to be more/less effective in reaching customers in different sectors or sub-segments? Why do you say that?

MC1e. **[PROBE]** Do you measure the performance of your channel group at increasing participation? How do you do that? What are the results?

MC2. In general, has the establishment of the Channel groups been effective at increasing depth of savings for non-lighting electric, mechanical solutions, and gas solutions? Please describe?

MC2a. **[PROBE]** Please describe the various approaches taken by the different vertical teams to increase depth of savings in non-electric, mechanical, and gas solutions? How do these approaches differ from those used for the Strategic sales group?

MC2b. **PROBE:** We’d like to understand how the different groups convince customers to participate in non-lighting solutions? Do they use Face to face contact? Phone calls? Mailed Advertising?

MC2c. **[PROBE]** Have these changes occurred more and less in specific sectors, or sub-groups such as smaller or larger mid-size customers? Why do you say that?

MC2d. **[PROBE]** Are there outreach practices that appear to be more and less effective in reaching customers in different sectors or sub-segments? Why do you say that?

MC2e. **[PROBE]** Do you measure the performance of your channel group at increasing depth of savings? How do you do that? What are the results?

### TA. Changes to Trade Ally Practices

Next, I’d like to focus on customer response to the Trade Ally group and engagement of more third party contractors and manufacturers to address the mid-market. We interested in how these changes have resulted in increased service to mid-size customers compared to prior to 2013.

TA1. In general, has the establishment of the Trade Ally groups been effective at increasing participation of mid-size customers? Please describe?

TA1a. **[PROBE]** Please describe how the trade ally group engages team members, venders, or customers to help identify and enrol new participants?

TA1b. **[PROBE]** For which groups of customers and/or solutions has this be most effective?

TA2. In general, has the establishment of the Trade Ally group been effective at increasing depth of savings for non-lighting electric, mechanical solutions, and gas solutions? Please describe?

TA2a. **[PROBE]** Please describe how the trade ally group engages team members, venders, or customers to help identify and enrol new participants?

Ta2b. **[PROBE]** For which groups of customers and/or solutions has this be most effective?

TA3. Are there certain groups of trade allies that are more/less active in working with you to increase service to mid-size customers? What are you doing to address that?

TA4. Do you think the current number of contractors trained to offer comprehensive solutions to mid-size and large customers is too low, too high or about right? Why do you think so?
TA4a. What else could be done to encourage trade allies to participate in energy efficiency program offered to mid-size customers?

**TA. Changes to Training Services**

Next, I’d like to discuss the different trainings offered to increase service to mid-size customers.

**TS1.** Please describe how contractors become trained to provide comprehensive solutions to Massachusetts customers.

**PROBE:** Systems/measures covered (e.g. lighting, refrigeration, HVAC, motors and drives), coursework

**TS2.** Can you please describe the various training services offered to mid-size customers and/or trade allies who target mid-size customers?

**TS2a.** Can we have a list of participants in these courses?

**TS2b.** Which of these training courses have you seen resulted in an increase in participation by mid-size customers? Why do you say that?

**TS2c.** Which of these training courses resulted in increased non-lighting, mechanical, or gas solutions by mid-size customers? Why do you say that?

**TA3.** In your opinion, where are the gaps in training among contractors who are not sufficiently trained to offer comprehensive solutions (e.g. systems/measures)?

**IP. Improvement in Performance Indicators and Upstream Programs**

**IP1.** Among all the Mass Save electric programs, it has been hypothesized that improvement in performance indicators such as account participation and savings in the past few years has largely been the result of the upstream lighting program success. Do you agree or disagree? Why do you think so?

**IP2.** Do you think that upstream lighting programs reach mid-size customers more effectively than downstream lighting programs? Why or why not?

**PROBE.** Do you have any direct evidence that upstream lighting programs reach mid-size customers more effectively than downstream lighting programs?

**IP3.** It has also been hypothesized that the upstream hot water program has improved service for mid-size gas customers. Do you agree or disagree? Why do you think so?

**IP4.** Do you think that upstream hot water or other upstream gas programs reach mid-size customers more effectively than other downstream programs? Why or why not?

**PROBE.** Do you have any direct evidence that the upstream hot water program has reached mid-size customers more effectively than other downstream programs?

**IP5.** Next, I’d like to discuss possible implications if objective performance indicator improvement depending primarily on upstream programs. For example, do you agree or disagree that tension exists between the two objectives of doing better at serving mid-size customers and improving comprehensiveness? (That is, improving mid-size customer participation and savings appears to be largely driven by upstream
lighting programs and yet one of the goals of serving mid-size customers is to improve comprehensiveness which the upstream lighting program does not deliver).

**IP5a.** Are there any other possible implications from improving mid-size customer participation and savings achieved largely from upstream programs rather than other downstream programs incentivizing a range of electric and gas measures?

**SB. Small Business Program**

**SB1.** Do you have any interactions with the contractors who implement the Small Business program?

**SB1a.** [IF YES to SB1] In your opinion, do the Small Business contractors encourage cross fuel program participation?

PROBE: Encouraging Small Business electric customers with mid-size gas accounts, or Small Business gas customers with mid-size electric accounts to participate in the larger retrofit energy efficiency programs?

**SB1b.** [IF YES to SB1a] Have you seen any changes to how Small Business contractors encouraged cross fuel participation from 2013-2015?

**SB1c.** [IF YES to SB1a] In your opinion, has this resulted in greater cross-fuel participation compared to 2011-2012?

**SB2.** What additional actions should the Small Business contractors take, if anything, to encourage electric SB customers to participate in gas programs, particularly those with mid-size gas accounts (or vice versa for gas SB customers with mid-size electric accounts)?

**Closing Comments**

**CC1.** Do you have any other input regarding mid-size customer needs that we haven’t already discussed?

Those are all the questions I have. Thank you for your time and participation.
Call Log

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<tr>
<th>Interviewer</th>
<th>Survey Length (min.)</th>
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<th>Stop Time</th>
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Respondent Information

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<tr>
<th>Contact Name</th>
<th>Company Name/ Contractor</th>
<th>Address</th>
<th>Phone</th>
<th>Email</th>
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Call Tracking

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<tr>
<th>Date/Time</th>
<th>Notes/result/actions: (Who we spoke to, new contact info, when to call back, etc.)</th>
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[NOTES TO INTERVIEWER]

**PRIMARY PROJECT GOAL:** Evaluate the impact of steps PAs have taken to improve service to mid-size accounts from 2011-2015, examine changes in performance indicators over that time, and determine whether there is a relationship between changes in performance indicators and PA practices.

**PRIMARY INTERVIEW OBJECTIVES:**
14. Build on prior PA interviews to further assess changes in PA engagement toward mid-size customers from 2011-2015, targeting changes in specific marketing practices and engagement of specific industries for energy efficiency projects.

15. Assess whether the PAs or their affiliates provided mechanisms for coordinating with specialized firms to ensure customers have the necessary technical expertise required to identify and service their needs.

16. Build on prior PA interviews to better understand which companies received training, the entities responsible for training, and the training content.

17. Uncover any changes regarding the cost barriers to completing comprehensive projects.

18. Understand any steps small business contractors have taken to ensure that accounts qualifying for the small business program based on electric demand receive the necessary services from gas programs (or vice versa), and whether changes have resulted in greater cross-fuel participation.

**Introduction**

**LEAD-IN:** Hello, my name is [NAME]. I work for DNV GL, an energy consulting firm. We have been hired by the Massachusetts electric and gas utilities’ Energy Efficiency Program Administrators to conduct research on energy efficiency programs serving commercial and industrial customers.

We’re focusing on mid-size businesses, which are those too large to qualify for the Small Business program (e.g. > 1.5M kWh or 40k therms annually) but are still relatively small (they may not qualify for a dedicated account representative). Specifically, we’ll discuss how the level of service to these customers has changed from 2013 to the 2015 in response to approaches used by [PA] to reach these customers.

**RB. Role and Background**

Our understanding of the current marketing practices at [PA] includes the following. Please confirm or correct this as needed:

[READ FOR THE RELEVANT PA]

<table>
<thead>
<tr>
<th>PA</th>
<th>Segmentation Criteria</th>
<th>Mid-size approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berkshire Gas</td>
<td>Mid-size customers consume between 40,000-250,000 therms per year</td>
<td>• No changes to its engagement strategies toward all mid-size accounts since 2013-2015.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Has promoted food service equipment to certain mid-size accounts by reaching out to restaurants and other establishments with large kitchens.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• No specific segmentation or targeting particular industry groups</td>
</tr>
<tr>
<td>Cape Light Compact</td>
<td>Small customers – &lt;= 1.5M kWh aggregate consumption</td>
<td>• Hospitality and grocery accounts have been segmented and targeted.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Starting in 2016, serves all medium and large customers as managed accounts with dedicated services</td>
</tr>
<tr>
<td>Company</td>
<td>Description</td>
<td>Changes to Engagement Strategies</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Columbia Gas</td>
<td>Mid-size customers consume between 40,000-250,000 therms per year</td>
<td>No changes to its engagement strategies toward all mid-size accounts since from 2013-2015.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>They have targeted mid-size hospitality to encourage installation of energy efficient laundry measures.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No specific segmentation or targeting particular industry groups</td>
</tr>
<tr>
<td>Liberty Utilities</td>
<td>Mid-size accounts – 40,000 therms to 100,000 therms per year</td>
<td>No changes to its engagement strategies toward mid-size accounts since from 2013-2015.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No specific segmentation or targeting particular industry groups</td>
</tr>
<tr>
<td>Unilever</td>
<td>No official mid-size customer group - High usage small electric/gas customers are likely in this group, 750,000 to 1M kWh</td>
<td>No changes to its engagement strategies to address mid-size accounts from 2013-2015.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engaged an additional vendor to serve its smaller customers, which should benefit the ‘high usage small’ accounts that make up their mid-size</td>
</tr>
</tbody>
</table>

Let’s start by discussing your position at <PA>. This is to put the rest of your answers in context.

**RB1-ES.** Please describe your role at <PA> and how it relates to <PAs> management of customers [INSERT PA’s DEFINITION OF MID-SIZE CUSTOMERS]?

**[PROBE] RB1-ESa.** How long have you been in this role? Are you familiar with how service to [INSERT PA’s DEFINITION OF MID-SIZE CUSTOMERS] changed between prior to 2013 and the present? Please describe?

**[PROBE] RB1-ESb.** With which segments of mid-size customers are you familiar? [Hospitality, Office, Retail, other]

**[PROBE] RB1-NGc.** Are you familiar with the use of trade allies (i.e. third party contractors, project expeditors) used assist in servicing customers serviced by the Channels group?

**[PROBE] RB1-NGd.** Are you familiar mid-size customers who may be chains or franchises (i.e. customers with multiple smaller accounts that linked together make them mid-size.

**[PROBE] RB1-NGe.** Are you familiar with any training regarding best practices offered to mid-size customers?

**MC.** Marketing/Engagement Practices

Next, I’d like to focus on customer responses to internal staff at <PA> addressing the mid-market. We are interested in any changes that have occurred that may have resulted in increased service to mid-size customers compared to prior to 2013.

**MC1.** In general, have there been any changes to internal staff that have been effective at increasing participation of mid-size customers? Please describe?
MC1a. [PROBE] Please describe the various approaches taken by internal staff to identify and enrol new participants? We’d like to understand how staff convinces customers to participate in non-lighting solutions? Do they use Face to face contact? Phone calls? Mailed Advertising?

MC1b. [PROBE] Have these changes occurred more, or less in specific sectors, or sub-groups such as smaller or larger mid-size customers? Why do you say that?

MC1c. [PROBE] Are there outreach practices that appear to be more/less effective in reaching customers in different sectors or sub-segments? Why do you say that?

MC1d. [PROBE] Do you measure the performance of your staff in increasing participation of mid-size customers? How do you do that? What are the results?

MC2. In general, have there been any changes to internal staff to increase depth of savings for non-lighting electric, mechanical solutions, and gas solutions for mid-size customers? Please describe?

MC2a. [PROBE] Please describe the various approaches taken by to increase depth of savings in non-electric, mechanical, and gas solutions to mid-size customers? How do these approaches differ from those used for the large customers?

MC2b. [PROBE] We’d like to understand how staff convinces customers to participate in non-lighting solutions? Do they use Face to face contact? Phone calls? Mailed Advertising? Has this changed since 2013?

MC2c. [PROBE] Have these changes occurred more and less in specific sectors, or sub-groups such as smaller or larger mid-size customers? Why do you say that?

MC2d. [PROBE] Are there outreach practices that appear to be more and less effective in reaching customers in different sectors or sub-segments? Why do you say that?

MC2e. [PROBE] Do you measure the performance your ability to increasing depth of savings? How do you do that? What are the results?

TA. Changes to Trade Ally Practices

Next, I’d like to focus on customer responses to the Trade Ally group and engagement of more third party contractors and manufacturers to address the mid-market. We are interested in how these changes have resulted in increased service to mid-size customers compared to prior to 2013.

TA1. In general, have here been any changes to the way you engage trade allies that have been effective at increasing participation of mid-size customers? Please describe?

TA1a. [PROBE] For which groups of customers and/or solutions has this be most effective?

TA2. In general, have here been any changes to the way you engage trade allies that have been effective at increasing depth of savings for non-lighting electric, mechanical solutions, and gas solutions? Please describe?

Ta2a. [PROBE] For which groups of customers and/or solutions has this be most effective?

TA3. Are there certain groups of trade allies that are more/less active in working with you to increase service to mid-size customers? What are you doing to address that?

TA4. Do you think the current number of contractors trained to offer comprehensive solutions to mid-size and large customers is too low, too high or about right? Why do you think so?
TA4a. What else could be done to encourage trade allies to participate in energy efficiency program offered to mid-size customers?

TA. Changes to Training Services

Next, I’d like to discuss the different trainings offered to increase service to mid-size customers.

TS1. Please describe how contractors become trained to provide comprehensive solutions to Massachusetts customers.

PROBE: Systems/measures covered (e.g. lighting, refrigeration, HVAC, motors and drives), coursework

TS2. Can you please describe the various training services offered to mid-size customers and/or trade allies who target mid-size customers?

TS2a. Can we have a list of participants in these courses?

TS2b. Which of these training courses have you seen resulted in an increase in participation by mid-size customers? Why do you say that?

TS2c. Which of these training courses resulted in and increase to non-lighting, mechanical, or gas solutions by mid-size customers? Why do you say that?

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Closing Comments

CC1. Do you have any other input regarding mid-size customer needs that we haven’t already discussed?

Those are all the questions I have. Thank you for your time and participation.
ABOUT DNV GL
Driven by our purpose of safeguarding life, property and the environment, DNV GL enables organizations to advance the safety and sustainability of their business. We provide classification and technical assurance along with software and independent expert advisory services to the maritime, oil and gas, and energy industries. We also provide certification services to customers across a wide range of industries. Operating in more than 100 countries, our 16,000 professionals are dedicated to helping our customers make the world safer, smarter, and greener.