Different but the Same: Assessing the Statewide Standardization of Historically Independent Programs

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ABSTRACT

Due to legislation and a desire to offer comparable energy-efficiency programs to all Massachusetts' utility customers, the Commonwealth's eight program administrators recently began standardizing their historically independent residential programs. This process included convening program-specific working groups, developing a technical reference manual, and a Commonwealth-wide rebranding effort to market all residential programs under a single banner. To assess this nascent effort's progress, a consulting team was contracted to conduct a process evaluation and a detailed data review of the electric and gas weatherization programs offered by all eight program administrators. The process evaluation determined the majority of key design elements for both programs (i.e., measures, training, and quality control) had been standardized. However, the data review identified substantial differences regarding data collection and data management across program administrators. Although the latter finding did not inhibit the programs' successful implementation by each administrator, it presented challenges for efficiently conducting a Commonwealth-wide evaluation. Even with consistent program designs, data management inconsistencies limited the economies of scale (and associated reduced evaluation costs) typically associated with regional evaluations. For example, some evaluation tasks, such as survey sampling, had to be conducted separately for each program administrator. Given this disaggregated approach, in some ways the Massachusetts Energy Efficiency Advisory Councilmandated, commonwealth-wide evaluation more closely resembled eight separate, concurrent evaluations rather than the single Massachusetts-wide evaluation desired. With states across the country exploring standardization's potential benefits, this paper provides a case study based on the Massachusetts' experience, offering insights into standardization's complexity and impacts, both from implementation and evaluation perspectives.

Introduction

On July 2, 2008, Massachusetts's Governor Deval Patrick signed the Green Communities Act of 2008 (Green Communities Act) into law (Massachusetts Legislature, 2008). The Act designated energy efficiency as the "first fuel" option for meeting the commonwealth's electric and natural gas energy needs (EEAC, 2008). As stated by the Commonwealth of Massachusetts Department of Public Utilities, the Act also requires development and deployment of significantly expanded and innovative energy-efficiency programs, beginning in 2010 (Massachusetts Department of Public Utilities, 2009). To initiate this process, Program Administrators (PAs)—the electric and gas distribution companies and municipal aggregators providing efficiency programs to Massachusetts customers—developed three-year energy-efficiency plans that include all cost-effective energy-efficiency opportunities. These plans were largely based on demand-side management (DSM) programs already offered by the following eight electric and natural gas PAs:

- NSTAR (Electric and Gas)
- National Grid (Electric and Gas)
- Western Massachusetts Electric Company (Electric)

- Cape Light Compact (Electric)
- Unitil (Electric)
- Columbia Gas [formerly Bay State Gas] (Gas)
- Berkshire Gas (Gas)
- New England Gas (Gas)

To help achieve the Act's goals, and to assist the PAs with development, implementation, and evaluation of the expanded DSM programs required, the Act created the Energy Efficiency Advisory Council (EEAC). Eleven members compose the EEAC, representing a range of stakeholders including residential customers, commercial and industrial business operators, and energy efficiency experts. One of the EEAC's priorities is:

"In order to continue to provide increased value to customers with the availability and delivery of energy efficiency programs and to reduce program differences across the PAs, it is the Council's expectation that programs serving similar customer segments across the Commonwealth will with all deliberate speed transition to common programs with the same program characteristics, delivered either by each PA or by one or more combinations of PAs (EEAC, 2009)."

Given this priority, the EEAC and PAs began increasing their efforts to standardize the PA's historically independent residential programs, seeking to create consistent, Commonwealth-wide offerings. While these programs were designed using a collaborative process, each PA has been responsible for implementing and managing its own programs since the mid-1980s (Massachusetts Department of Energy Resources, 2008). Consequently, the programs remained relatively unique and independent, and Commonwealth-wide standardization presented a considerable challenge.

As part of a 2010 process evaluation, a consulting team analyzed the progress of two specific PA programs—Home Energy Assessment and Low Income—in transitioning towards standardization. The Home Energy Assessment program refers collectively to the PAs' non-low-income electric weatherization program (Residential Conservation Services or RCS), and the Gas Weatherization program. The consulting team was not asked to assess standardization between the two programs.

The Home Energy Assessment and Low Income programs identify energy-efficiency opportunities through home energy audits of residential customers (owners and renters) living in buildings with one to four units. While on site, auditors install instant savings measures (such as CFLs, aerators, showerheads, and programmable thermostats) and address air sealing. After the audits, participating contractors for both programs revisit the homes to install more substantial energy-efficiency measures, at the participants' discretion (e.g., insulation, water heating, and heating systems). The Low Income program does not charge participants for additional measures, while Home Energy Assessment incentives cover 75% of the measures' cost, up to an annual \$2,000 ceiling.

The programs' differences in administration, however, prove particularly relevant to standardization and regional evaluation. As shown in Figure 1, the PAs implement Home Energy Assessment using four separate implementation vendors, with one PA (Unitil) delivering the program directly to their customers. In turn, the vendors work with a commonwealth-wide network of home improvement contractors to install recommended measures. To standardize the program across Massachusetts, monthly meetings are held with PAs, vendors, representatives from Department of Energy Resources, and EEAC. Figure 1 illustrates the relationships between program stakeholders.

Figure 1. Home Energy Assessment Program Structure



To ensure consistency across the commonwealth, PAs coordinate their Low Income efforts through the Low Income Energy Affordability Network (LEAN), which was established in 1998 by member agencies of the low income weatherization and fuel assistance program network. LEAN provides the following services related to standardization (Democracy and Regulation, 1998).

- Coordination between electric utilities and gas utilities to standardize implementation.
- Coordination within the low income weatherization and fuel assistance program network (both among lead vendors and between lead vendors and sub-vendors).
- Training support for the low income weatherization and fuel assistance program network, seeking to ensure quality, cost-effectiveness, and consistency.

Currently, over 20 Community Action Program (CAP) agencies deliver the Massachusetts Low Income program. Serving an integral role in program implementation, these agencies determine eligibility as well as schedule and conduct audits, arrange for installation of energy-efficiency measures, and report progress to the PAs. However, given the number of these agencies—and that they primarily work independently of one another—their processes and procedures often vary.

Figure 2 illustrates the complex network of relationships between PAs, lead CAPs, and local agencies, in addition to global coordination with LEAN and the Best Practices Working Group (composed of PA program representatives and LEAN). Arrows delineate relationships between implementers. For example, NSTAR's lead vendor, Action for Boston Community Development (ABCD), manages multiple "local agencies" and reports program activities to NSTAR on behalf of these local agencies and their own company. As ABCD also implements the program for other PAs, they report program activities to other lead CAPs. The graphic's complexity reflects the intricate environment in which the program functions, the sheer number of stakeholders involved, and the considerable difficulty standardizing program implementation and evaluation.

Figure 2. Low Income Program Structure



Methodology

To assess the PAs' progress towards standardization, the consulting team conducted in-depth interviews with a wide range of Home Energy Assessment and Low Income stakeholders, including:

- PA program managers
- Implementation vendors
- CAP staff (Low Income only)
- Program auditors (Home Energy Assessment only)
- Program contractors (Home Energy Assessment only)

Between both programs, the consulting team interviewed more than 100 stakeholders. To maximize their value, interviews were conducted sequentially, beginning with PA program managers, then implementation vendors, through to program contractors.

Since the interviews focused on the design and management of the program, the consulting team also conducted a detailed data review for each program, assessing data collection, management, storage, and reporting practices of each PA, implementation vendor, or CAP. The reviews' objectives included:

- Assessing the standardization of specific key measure assumptions (e.g., energy savings, incentive level, effective useful life) across PAs.
- Ensuring availability of data required for current and future impact evaluations.
- Identifying data collection gaps, such as missing fields or variables.

The data review was also important for determining the consulting team's ability to conduct a true Commonwealth-wide evaluation (as mandated the EEAC) rather than multiple, concurrent PA-specific evaluations. Since regional evaluations necessitate a single program database or individual program databases that can be readily and accurately aggregated, the viability of the Commonwealth-wide evaluation approach overall—particularly for impact evaluations scheduled for the following year—largely depended on this reviews' findings.

Findings

We first present process-related evaluation findings relevant to standardization, followed by findings associated with the data review.

The process evaluation found the primary elements of both programs largely standardized (and, in many cases, had been for years). Stakeholders interviewed attributed the high level of standardization to the PA's collaborative legacy as well as to increased efforts following the passage of the Green Communities Act to leverage existing forums (RCS Working Group for Home Energy Assessment, and LEAN/Best Practices Working Group for Low Income) to minimize remaining programmatic differences. Specific program elements standardized across PAs are presented below, first for Home Energy Assessment and then for Low Income.

Home Energy Assessment

- *Measures*. In addition to offering the same rebated measures, all PA Home Energy Assessment programs delivered the same set of direct install measures during audits. These included recently adopted measures, such as up to eight hours of free air sealing.
- *Training*. Once hired, every auditor, regardless of PA or implementation vendor, attended six weeks of operational and service training, with classroom education focusing on energy conservation theory, and field work focusing on practical training. All auditors had to become Building Performance Institute-certified within six months of hire.
- *Integration with other programs*. Standardization sought to streamline integration of all residential energy-efficiency PA program offerings into an easy-to-understand package, which could be presented to customers during audits. All PAs met this goal, with many reporting auditors had been providing audited customers with a comprehensive education packet, containing information on all PA energy-efficiency programs, as well as federal and state run programs, for years.
- *Quality control*. All PAs required maintaining high quality-control levels, with most vendors performing quality-control site visits on 100 percent of their jobs.

Low Income

The Low Income programs were also found to offer the same set of program measures, training requirements, and quality control practices. Further, the consulting team identified the following Low Income-specific standardized programmatic aspects:

- *Lead CAP structure*. All PAs coordinated their program efforts through a single lead CAP. Both PAs and CAPs felt the lead CAP approach streamlined communication and minimized administrative costs.
- *Eligibility requirements.* The consulting team determined all PAs used the same income requirement (60 percent of the Massachusetts's median household income). In addition, all PAs used the same prioritization system for serving enrolled customers.

While stakeholders acknowledged actively moving toward standardized programs, significant uncertainty was expressed regarding what "standardization" specifically entailed. Stakeholders were commonly confused about which program aspects required standardization, and which could differ by PA. For example, stakeholders were unsure whether only programmatic elements related to customer experience (i.e., incentive levels or audit report templates) had to be standardized, or whether internal program design (i.e., contractor pricing or reporting processes) also had to be consistent. Without explicit direction regarding the extent of standardization, stakeholders felt they were working toward unknown goals. Stakeholders typically acknowledged the importance and benefits of standardization, they also emphasized PAs' need for sufficient autonomy to leverage their considerable experience in running these programs and fulfilling the specific needs of their customer base.

Given these findings, the consulting team recommended the RCS Working Group (Home Energy Assessment) and LEAN (Low Income) collaboratively develop documentation with the EEAC, PAs, and other important program stakeholders to explicitly state standardization goals and expectations for both programs, including timelines for achieving identified goals. To the extent possible, PAs should be actively involved in creating such a document; so all parties agree the outlined standardization goals can be achieved, and PAs can balance Commonwealth-wide standardization with their unique experiences working with program contractors and CAPs in their service territories.

Other specific, program delivery and process-related, standardization findings included:

- Different pricing structures across the state made program contractors' jobs with some PAs more profitable than with others. Nearly all program contractors interviewed, working across PAs, expressed concerns about pricing differences, stating unequal pricing structures caused some PA jobs to be less cost-effective—and therefore less attractive—than others. Contractors also noted keeping track of varying price structures proved difficult and increased administrative costs. Contractors often suggested that standardizing measure prices and labor rates to the extent possible, while accounting for regional differences in labor markets and travel expenses, could help mitigate reduce current preferences for working for certain PAs.
- Disparate data collection tools and reporting requirements across PAs increased administrative costs for vendors and contractors. Each vendor reported different data collection processes, including: methods for collecting customer data; electronic versus paper systems; systems used to organize and track data internally; methods for reporting data to PAs; channels for presenting audit recommendations to customers, and expectations for program contractors reporting back to vendors.

The 2010 Home Energy Assessment and Low Income program data review revealed program databases maintained by PAs varied in quality, specificity, and inclusion. This is not surprising given the relatively short amount of time that has elapsed since standardization was identified as a priority and the lack of clarity in the direction provided for standardization. Specifically, the data review determined the following issues:

- Many databases used different field and measure naming conventions.
- Some databases listed individual measures, while others listed groups composed of multiple measures.
- Many databases did not contain important measure details, such as specific types of insulation installed (attic, wall, or duct) or amounts added (changes in R-value and/or square footage insulated).
- Information about gas and electric measures installed in the same home were listed in separate databases, often without unique identification information allowing data to be easily and accurately merged.
- Unique measure identification fields were not used to link measure data explicitly across programs, PAs, or external reference documents (such as the Residential Technical Reference Manual).
- Little information was identified regarding expected per-unit energy savings, preexisting conditions, or incentive levels.
- Information was not provided regarding other efficiency measures installed in homes through non-PA funding (which was mainly an issue for Low Income).

These issues prevented the consulting team from aggregating individual PA databases into a comprehensive database, which could have informed an array of evaluation activities. Consequently, most evaluation activities, such as sampling, had to be conducted separately for each PA. Given this disaggregated evaluation approach, the EEAC-mandated, Commonwealth-wide evaluation more closely resembled eight separate, concurrent evaluations rather than the single, Massachusetts-wide evaluation desired. Similarly, many economies of scale typically accompanying larger, regional evaluation efforts could not be fully realized.

To ensure a Commonwealth-wide impact evaluation can be conducted for both programs in 2011, the consulting team proposed forming a Data Management Working Group (DMWG). Composed of specific consulting team members, the DMWG will directly engage each PA's implementation, evaluation, and IT staff, as well as program vendors and CAPs, to create a robust, Massachusetts-wide database to aggregate tracking systems PAs currently use for managing program data. While implementing a single tracking system for all PAs would also increase data consistency and enable a true statewide evaluation, PAs have invested in established tracking tools. Realistically, the following steps proved the most expeditious and cost-effective means for achieving the wider evaluation goals:

- Create a list of critical fields necessary to inform a robust evaluation;
- Identify those fields within each unique PA database or vendor audit data;
- Map identified, critical fields to field names contained in the aggregated database; and
- Combine mapped fields from each PA database into a proxy, Commonwealth-wide database, which can inform multiple evaluation activities.

It is hoped the DMWG's creation will facilitate a Commonwealth-wide evaluation and reduce overall evaluation costs. Another benefit of the DMWG's formation will be minimizing the number of consulting team members requesting and working with PA program data. The consolidation of data management responsibilities will reduce the total number of data requests, avoid redundant or unnecessary requests, and centralize the consulting team's Massachusetts-specific data expertise.

Conclusions

The 2010 Massachusetts' Home Energy Assessment and Low Income process evaluation provides relevant insights for other states exploring the potential benefits of program standardization and regional evaluation. While the programs have collaborated for years and increased their standardization efforts since the passage of the Green Communities Act of 2008, findings indicate small differences remain regarding program implementation, and significant differences emerged related to data collection, management, and reporting. The latter finding is of particular note. The benefits of regional evaluation, such as benchmarking and economies of scale (which minimize evaluation costs), can be partially negated by the considerable effort required to aggregate disparate program data or separately analyze multiple, PA-specific data. To address this, the consulting team recommended creating a Data Management Working Group, composed of select consulting team members working directly with PAs, implementation vendors, and CAPs to ensure all data required for robust evaluation were available and could be assembled into a single database. That working group has already identified the steps needed to create a master database from each of the separate databases currently tracking programs and archiving critical program data.

The process evaluation also identified uncertainty regarding the term "standardization." Though interviewed stakeholders seemed readily aware of the EEAC's priority to standardize the programs, they appeared unsure regarding specifics, such as exact program design elements requiring consistency and others allowed to differ by PA. Further, stakeholders did not know timelines for achieving standardization. Collectively, this uncertainty appeared to make stakeholders apprehensive about the overall standardization process. To address this issue, the consulting team recommended the RCS Working Group (Home Energy Assessment) and LEAN (Low Income) collaboratively, with the EEAC, PAs, and other important program stakeholders, develop documentation to explicitly state standardization goals and expectations for both programs, including a timeline for achieving those goals. The evaluation also established that commonwealth-wide standardization had to be balanced with appropriate levels of PA autonomy, as PAs have amassed considerable experience implementing programs within their service territories.

Overall, other states considering standardization efforts or regional evaluations will have to understand the complexity of both issues from both implementation and evaluation perspectives. For Massachusetts, this evaluation identified current gaps in standardization and next steps in the program's evolution. Similar evaluation efforts in 2011 and 2012 will provide longitudinal assessment of the program's progress, and ensure maximization of benefits from commonwealth-wide evaluation.

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