

6.1 Evaluation, Measurement, and Verification

6.1.1 Overview

Evaluation, Measurement, and Verification (EM&V) encompass systematic data collection and analysis related to the Trust's programs. EM&V activities are conducted by Trust staff and by independent third-party contractors using industry standard practices and the Trust's EM&V systems and protocols. Specifically, the Trust relies on program data maintained by the Trust in the effRT 2.0 database; the Technical Reference Manuals (TRMs) that document energy savings assumptions and methodologies; and primary and secondary data collected through research efforts.

EM&V activities produce key data to inform the Trust's short- and long-term program planning and delivery decisions, and to meet reporting requirements. Key EM&V activities include reviews of Technical Reference Manuals, effRT database maintenance, independent third-party evaluations, commissioned research and analysis, general research, Forward Capacity Market (FCM) analysis, data reporting, and quality assurance, quality control and process improvement.

6.1.2 Objectives

- To provide data-driven research, analysis and reports to inform program design and delivery strategies, verify program results, and ensure ongoing program and organizational improvement
- To meet statutory requirements for independent evaluations
- To satisfy ISO-NE market rules for the sale of capacity resources
- To continuously improve the Trust's capacity to timely and accurately track the status of efficiency projects, measure energy savings, generate reports, and maintain confidential treatment of customer information.

6.1.3 Technical Reference Manuals

Technical Reference Manuals (TRMs) document the methods and assumptions used to calculate energy and demand savings. The Retail/Residential TRM contains all the relevant references for savings measures promoted through the Home Energy Savings Program, the Consumer Products Program, and Low Income Initiatives; the Commercial/Industrial and Multifamily TRM does the same for measures promoted through programs serving non-residential customers and multifamily buildings with five or more units. Each TRM serves as a central repository and a common point of reference for the methods, formulas, assumptions, and sources that are used to estimate savings from energy efficiency measures. The TRMs provide a common platform for analyzing energy savings across measures and programs. For each measure, the TRM provides the following:

- An overview description of the measure and documentation of algorithms used to calculate gross energy savings and demand savings;
- Efficiency assumptions for the baseline and the efficient measure;
- Deemed parameter values or instructions for inputs to savings algorithms;
- Measure life and cost;

- Impact factors for calculating adjusted gross savings and net savings; and
- Notes and citations on the sources of information used to develop the TRM.

The Trust plans to continue issuing updated versions of its TRMs at least once per year. These updates will incorporate new measures as well as new results from program evaluations and other relevant research. For measures that experience more dynamic changes (such as the cost of LED bulbs), the Trust typically will reassess the TRM entries quarterly.

6.1.4 effRT Database

Historically, the Trust maintained separate databases to track progress for each of its programs. In large part, these databases evolved independently and varied in format and sophistication. During the First Triennial Plan period, the Trust initiated a significant effort to upgrade and transform its databases into a unified system supporting multiple programs with standardized internal processes, features, and quality. This initiative built on the foundation of the successful Efficiency Maine Reporting and Tracking (effRT) database system that historically supported the Business Programs to create a new, multi-program database referred to as effRT 2.0. During the Second Triennial Plan, the Trust integrated all active programs into effRT 2.0.

The effRT 2.0 platform supports the Trust's reporting and project activity tracking. The Trust will continue to build upon effRT 2.0 to take advantages of cost savings from streamlining administrative functions and automating processes. The platform will continue to support the Trust's reporting and project activity tracking. In addition, it will continue to support the Trust's participation in the Forward Capacity Market (FCM) by accurately reporting incremental capacity savings monthly and forecasting FCM bids.

6.1.5 Independent Third-Party Evaluations

Chapter 35-A, Section 10104 of Maine Statute describes that the Trust shall arrange for an independent evaluation of each major program at least once every five years. The law directs that the evaluation must analyze a program's effectiveness in meeting goals and be conducted by a competent professional with expertise in energy efficiency matters. In fulfillment of statutory requirements, at least once every five years, the Trust commissions an evaluation of any program having an annual budget greater than \$500,000. The analysis is conducted by independent third-parties who specialize in the evaluation of energy efficiency programs. Program evaluations conducted by these third-parties are designed to:

- Document and verify the program impacts on energy and demand savings;
- Assess program cost effectiveness;
- Provide recommendations for improving the accuracy of claimed savings; and
- Inform adjustments in program strategies and allocation of resources.

Each program evaluation typically includes collection and analysis of both qualitative and quantitative data and methods, through steps such as:

- Technical Reference Manual review

- Program staff interviews
- Customer telephone surveys
- Trade ally interviews (participating installers, distributors, retailers and manufacturers)
- On-site data logging and equipment verification
- Billing analysis
- Impact factors (in-service rate, realization rates) assessments
- Net impact assessment
- Cost-effectiveness assessment
- Findings review and presentation to the Executive Director and the Board
- Reassessment of TRM measures based on evaluation results, for:
 - Savings algorithms,
 - Deemed parameters,
 - Realization rates, and
 - Free-ridership and spillover rates
- Future evaluation topics and studies prioritization

During FY2020-2022, the Trust will conduct independent evaluations of its major programs. The Trust expects to begin issuing RFPs in FY2020 to select evaluators for independent third-party program evaluations. Programs most likely to be evaluated during the Triennial Plan IV period include the C&I Custom Program, the C&I Prescriptive Program, and the Small Business Initiative.

6.1.6 Commissioned Research and Analysis

During Triennial Plan III, the Trust established a group of pre-qualified research and evaluation contractors to perform targeted research and analysis of discrete issues and questions on an as-needed and ongoing basis. This research and analysis capacity is used to complement formal program evaluations and informs the Trust’s real-time program planning.

Baseline Studies

The Trust periodically conducts studies on the current vintage and efficiency of equipment installed in Maine homes and businesses. These studies help quantify savings opportunities and “ground truth” deemed values in the TRM. Baseline studies typically involve the end users of equipment.

Market Research

Market research allows the Trust to better understand current market conditions and trends. This research can involve interviewing distributors and installers on stocking practices, the types of equipment that is being offered and the reasons why, and supply chain considerations. Market research can also involve gaining access to external datasets which look at equipment sales and efficiencies at statewide, regional and national levels.

Modeling and Analysis

The Trust engages consultants and contractors to perform various modeling and analysis activities to address specific topics. The Trust has worked with contractors to better understand how incentive levels affect the cost-effectiveness of measures using price elasticity analysis. These studies compare the customer-facing price of equipment with levels of program uptake to determine free ridership at different incentive levels, and help the Trust maximize the cost effectiveness of its programs. The Trust also participates in forecasting studies like the Avoided Energy Supply Costs (AESC) studies that help determine the avoided costs used in screening for cost-effectiveness. Finally, the Trust also engages contractors to perform metering and analysis on installed measures to gain insights into usage and measure achieved savings in real-world applications.

Measure Development

The Trust occasionally engages consultants and contractors to help with the definition of new measures. These efforts can include characterization of the market and opportunity for efficient measure adoption (through primary Market Research or secondary research), surveys of existing programs in other jurisdictions, establishment of existing and future baselines (through primary Baseline Studies or secondary research), modeling and estimation of energy and demand savings and measure costs, definition of measure eligibility criteria, and development of TRM entries.

Customer Surveys

The Trust will also continue to implement near real-time surveys of customers in order to reduce the length of time between purchase and program feedback. These surveys allow the Trust to act on results more quickly and pursue more focused analysis of customer decision-making.

6.1.7 General Research

Research Forums

The Trust participates in selected regional and national forums, contributing to data collection, and participating in joint research studies, and attending informational webinars. The Trust plans to continue its participation in the Evaluation Committee of the Consortium for Energy Efficiency (CEE). Other opportunities will be reviewed on a case-by-case basis.

Standards and Codes

Standards and codes at the federal, state, and local levels can have a large impact on energy efficiency programs by shifting the baseline. Examples include changes to ENERGY STAR® eligibility criteria, the Energy Independence and Security Act (EISA) lighting standards, and local building codes. Trust staff keep up to date with these developments to ensure that the EM&V systems and the program designs accurately reflect applicable regulations and standards.

Literature Review

The Trust stays abreast of the energy efficiency market by reviewing research, evaluations, and TRMs from other energy efficiency program administrators and stakeholders

6.1.8 Forward Capacity Market Analysis

To bid energy resources into the Forward Capacity Market (FCM) at the Independent System Operator of New England (ISO-NE), the Trust must comply with the ISO-NE Manual for Measurement and Verification of Demand Resources (M-MVDR). To comply, the Trust completes specific analyses and reports, including demand resource qualification packages, measurement and verification (M&V) plans, monthly performance reports, and annual certifications of compliance with M&V Plans. Throughout the Triennial Plan IV period, the Trust will continue to complete the various analyses, documentation and reports required for its demand resources in the FCM. The Trust will enter into a contract with an independent third party to complete the required annual verification of compliance with the M&V Plan.

6.1.9 Data Reporting

The Trust reports on a variety of program and portfolio metrics through an Annual Report and through information submitted to the Legislature as part of work sessions and hearings. In addition, the Trust responds to external data requests from organizations such as the Consortium on Energy Efficiency (CEE), the Department of Energy (DOE), the Energy Information Administration (EIA), the Regional Greenhouse Gas Initiative, Inc., (RGGI Inc.), and the American Council for an Energy Efficient Economy (ACEEE).

6.1.10 Quality Assurance, Quality Control, and Process Improvement

The Trust's EM&V Staff will oversee quality assurance (QA) and quality control (QC) standards across all programs. QA/QC activities will focus on verification of methodology and savings estimates consistent with the TRMs, and verification that eligibility criteria are applied according to program manuals and consistent with statute and Trust rules. Continuous process improvement is implemented in the establishment of tools, processes and procedures designed to improve accuracy, timeliness and efficiency of data gathering and reporting.