SEE Action
STATE & LOCAL ENERGY EFFICIENCY ACTION NETWORK

Guide for States: Evaluation, Measurement and Verification Frameworks – Guidance for Energy Efficiency Portfolios Funded by Utility Customers

Why Evaluation, Measurement and Verification Frameworks Are Important

Evaluation, Measurement and Verification (EM&V) of utility customer-funded energy efficiency programs helps stakeholders understand both how much savings occurred (and for whom) and why those savings occurred—essentially showing what works and why. An EM&V framework is a primary guiding document that defines EM&V objectives, processes, and activities that constitute a jurisdiction's EM&V infrastructure. EM&V frameworks:

- Set forth a jurisdiction's fundamental evaluation goals, principles, metrics, and definitions
- Summarize budgets, schedules, and reporting expectations
- Indicate policies that define allowable EM&V baselines and methods for assessing efficiency actions and their cost-effectiveness; and
- Define the roles and responsibilities of various entities involved in EM&V.

EM&V frameworks serve two primary purposes: supporting consistent, documented, and comparable EM&V within a jurisdiction; and providing—for all stakeholders—an understanding of how EM&V is conducted within a jurisdiction, which can reduce stakeholder concerns regarding EM&V results.

How to Use This Guide

Based on a review of EM&V frameworks developed across the U.S., this guide provides recommendations for components of a jurisdiction's EM&V infrastructure, approaches to the process of developing and updating framework documents, and state EM&V framework examples.

Key Points

- EM&V frameworks lay out the core principles, assignments, and activities for determining the impact of energy efficiency programs.
- This report contains recommendations for components of an EM&V framework, approaches to develop or update a framework, and state examples.
- Providing direction within an EM&V framework often is about finding a balance between cost, accuracy, and timeliness.
- Documenting a common understanding of how EM&V is to be conducted within a jurisdiction can reduce stakeholder concerns regarding EM&V results.

The intended audience for this guide is those parties involved in creating, reviewing, and possibly approving an EM&V framework, including state-utility regulators, administrators of energy efficiency programs (including publicly owned and investor-owned utilities and government and nongovernmental organizations), efficiency program implementers, evaluation consultants, and other stakeholders, such as energy efficiency industry representatives and consumer advocates. All of these groups have a direct interest in the policies that guide efficiency portfolios and programs and the processes that are used to evaluate them.

EM&V Frameworks Address the Following Questions

Why is evaluation needed? Who will conduct EM&V, and who will use the results? When are the results needed?

What regulatory requirements and policies affect EM&V? What types of programs are being evaluation? What are their strategies/goals?

In general, what EM&V will be conducted and what approaches/assumptions will be used?

Topics Recommended for Inclusion in All EM&V Frameworks

- **Definitions**. Common terminology that is understood by all those involved in the efficiency portfolio design, implementation, and evaluation is important to ensuring that guidance indicated in a framework is clear and is not ambiguous.
- **Efficiency Portfolio Description and Goals**. What types of programs are to be evaluated (e.g., incentive programs, direct install programs, market transformation programs), their markets, and the scale (e.g., budgets) and time frame of the programs. Goals can include energy demand savings, cost effectiveness, maximizing energy or peak savings, leveraging private investments, deferring specific resources, emphasizing disadvantaged community participation, and satisfying consumers, among others.
- **Financial Incentives**. Eligibility for the utility or program administrator to receive a bonus for managing a successful portfolio – or penalty for not meeting established goals (if applicable).
- **Evaluation Principles**. Sound technical, economic, and regulatory practices that would meet the expectations of a wide range of stakeholders such as adequate EM&V budgets, independent evaluation, consistency, and balance in risk management, uncertainty, and costs.
- **Evaluation Objectives**. The intended use(s) of the information determined through evaluation activities and the intended audiences for such information including quantifying program impacts, understanding why program-induced effects occurred and ways to improve programs.
- **Metrics**. Indicators of the performance of a specific portfolio, program, project, or efficiency measure to support stakeholder needs.
- **List of Expected Deliverables**. Products and outputs of EM&V activities, which entities (e.g., implementer, evaluator, administrator, regulator) will prepare them, who will review and approve them, and schedules.
- **Roles and Responsibilities**. Who will conduct the evaluations, and high-level descriptions of roles and responsibilities.
- **Evaluation Approaches**. Methods, specific allowable approaches, and baselines - each with its own unique combination of costs, timing impacts, data requirements, and resulting rigor.
- **Baseline Definitions**. Defining baselines is a key challenge for determining the numerical values of any reported metrics, particularly energy and demand savings.
- **Expectations for Metric Reliability, Uncertainty, and Risk Assessment**. Because of the counterfactual basis for efficiency evaluations, the indicated impacts from an efficiency evaluation will always be estimates. Frameworks can address how "good" the estimates should be to meet stakeholder needs.
- **Savings Lifetimes and Persistence**. These values are essential for assessing the lifecycle benefits and cost-effectiveness of efficiency activities and for forecasting energy loads in resource planning.
- **Boundary Issues and Interactive Effects**. It is important to properly define the project boundaries (i.e., the equipment, systems, facilities, or even markets and geographic regions) that will be included in the analyses. Ideally, all primary effects (e.g., the intended savings) and secondary effects (unintended positive or negative effects) and all direct (at the project site) and indirect (at other sites) effects will be taken into account.

This report discusses additional topics including sampling design, how evaluated savings estimates are applied—retrospectively or prospectively, budget guidance, and timing of the evaluation cycles and reporting.

Read the Full Report

http://seeaction.energy.gov/emvframework

About SEE Action

The State and Local Energy Efficiency Action Network (SEE Action) is a state- and local-led effort facilitated by the U.S. Department of Energy and the U.S. Environmental Protection Agency. SEE Action offers resources, discussion forums, and technical assistance to state and local decision makers as they provide low-cost, reliable energy to their communities through energy efficiency.

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