



SEE Action
STATE & LOCAL ENERGY EFFICIENCY ACTION NETWORK

Energy Efficiency Program Impact Evaluation Guide

Why Energy Efficiency Program Impact Evaluations Are Important

Energy efficiency program impact evaluations determine and document the direct and indirect benefits resulting from end-use energy efficiency programs and portfolios of programs. Evaluations have three primary objectives:

- Document the benefits (i.e., impacts) of a program and determine whether the subject program (or portfolio of programs) met its goals
- Identify ways to improve current and future programs through determining why program-induced impacts occurred
- Support energy demand forecasting and resource planning by understanding the historical and future resource contributions of energy efficiency as compared to other energy resources.

Many energy efficiency evaluations are oriented toward developing retrospective estimates of energy savings attributable to a program to demonstrate in regulatory proceedings that public or energy consumer funds were properly and effectively spent.

Beyond documenting savings and attribution, evaluation results can be used for improving programs and providing a basis for future savings estimates in resource plans. Therefore, evaluation both fosters more effective programs and enables consideration of increased levels of investment in energy efficiency as a cost-effective, long-term, reliable energy resource.

How to Use This Guide

The audiences for this guide are program designers, implementers, administrators, evaluators, and public agency officials who oversee and implement energy efficiency programs.

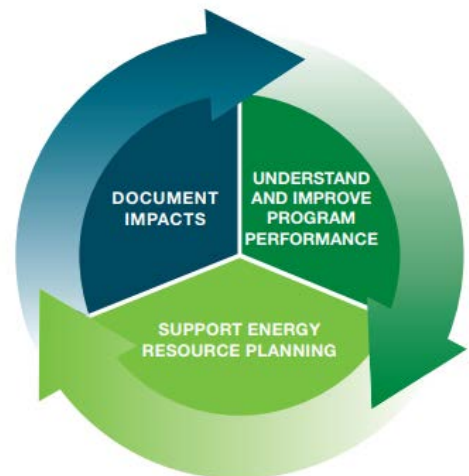
This guide's objective is to support the implementation of effective energy efficiency actions by providing information on standard procedures and best practices for planning and conducting evaluations and reporting results.

This guide:

- Defines a systematic evaluation planning and implementation process
- Describes several standard approaches for determining energy and demand savings (as well as avoided emissions and other non-energy impacts)
- Defines key terms related to energy efficiency evaluation
- Provides guidance on key evaluation issues
- Lists publicly available energy efficiency evaluation resources.

Key Points

- Impact evaluations determine energy efficiency program-specific induced effects, which include reductions in energy use (such as kilowatt-hours and therms), demand (kilowatts), and non-energy benefits.
- Documenting the benefits of efficiency using credible and transparent methods is an effective tool for supporting the adoption, continuation, and expansion of the efficient use of energy.
- This guide supports energy efficiency by providing information on standard procedures and best practices for planning and conducting program impact evaluations and reporting results.



Evaluation supports successful programs

Basic Impact Evaluation Concepts

- Savings cannot be directly measured, only indirectly determined by comparing energy use and demand after a program is implemented to what they would have been had the program not been implemented (i.e., the baseline).
- Successful evaluations appropriately balance risk management, uncertainty, and cost considerations.

Efficiency Program Process

The efficiency program process consists of three phases – planning, implementation and evaluation – each supported by savings values based on estimates.

- Plan programs → *projected savings*: Values are reported by a program implementer or administrator before the efficiency activities are completed.
- Implement programs → *claimed savings*: Values are reported by a program implementer or administrator after the efficiency activities have been completed.
- Evaluate programs → *evaluated savings*: Values are reported by an independent third-party evaluator after the efficiency activities and impact evaluation have been completed. The designation of “independent” and “third-party” is determined by those entities involved in the use of the evaluations and may include evaluators retained, for example, by the program administrator or a regulator.

Impact Evaluation Process

The basic steps in the evaluation process are:

- Set the program evaluation objectives in the context of the program policy objectives
- Select an impact evaluation savings determination approach, define baseline scenarios, and prepare a plan that takes into account the critical issues
- Determine energy and demand savings
- Determine non-energy benefits (as needed)
- Report the evaluation results and, as appropriate, work with program administrators to implement recommendations for current or future program improvements and/or resource planners and demand forecasters to support their efforts.

Impact Evaluation Metrics

- **Estimates of gross (energy and/or demand) savings.** These are the changes in energy consumption and/or demand that result directly from program-related actions taken by participants in an efficiency program, regardless of why they participated.
- **Estimates of net (energy and/or demand) savings.** These are the changes in energy consumption or demand that are attributable to an energy efficiency program. Considerations that account for the difference between net and gross savings are free riders (i.e., those who would have implemented the same or similar efficiency projects without the program) and participant and non-participant spillover (i.e., savings that result from actions taken as a result of a program’s influence but which are not directly subsidized or required by the program). Net savings may also include consideration of market effects (changes in the structure of a market).
- **Estimates of non-energy benefits (NEBs).** These are the impacts associated with program implementation or participation aside from energy and demand savings. Some examples include reduced emissions and environmental benefits, productivity improvements, jobs created and local economic development, reduced utility customer disconnects, greater comfort for building occupants, lower maintenance costs due to better equipment, or increased maintenance costs due to new and more complex systems.

Read the Full Report

<http://seeaction.energy.gov/impacetevaluation>

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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