



# National Action Plan for Energy Efficiency

[www.epa.gov/  
eeactionplan](http://www.epa.gov/eeactionplan)

## Overview of EE Program Impact Evaluation Guide

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## Topics

- Why the Guide is needed
- Evaluation definitions
- Why we evaluate
- Basics of impact evaluation
- Gross and net savings
- Other topics covered
- Evaluation planning
- Resources for more info



## Why is the Guide Needed?

- **Emerging state/regional policies and markets require consistent program evaluation**
  - New state policies for reducing and measuring greenhouse gas (GHG) and other emissions
  - Markets for peak load reductions that allow bids from demand resources including energy efficiency
  - Increasing interest in Energy Efficiency Portfolio Standards
- **Two recent surveys of the efficiency industry indicated a need for a program evaluation Guide**



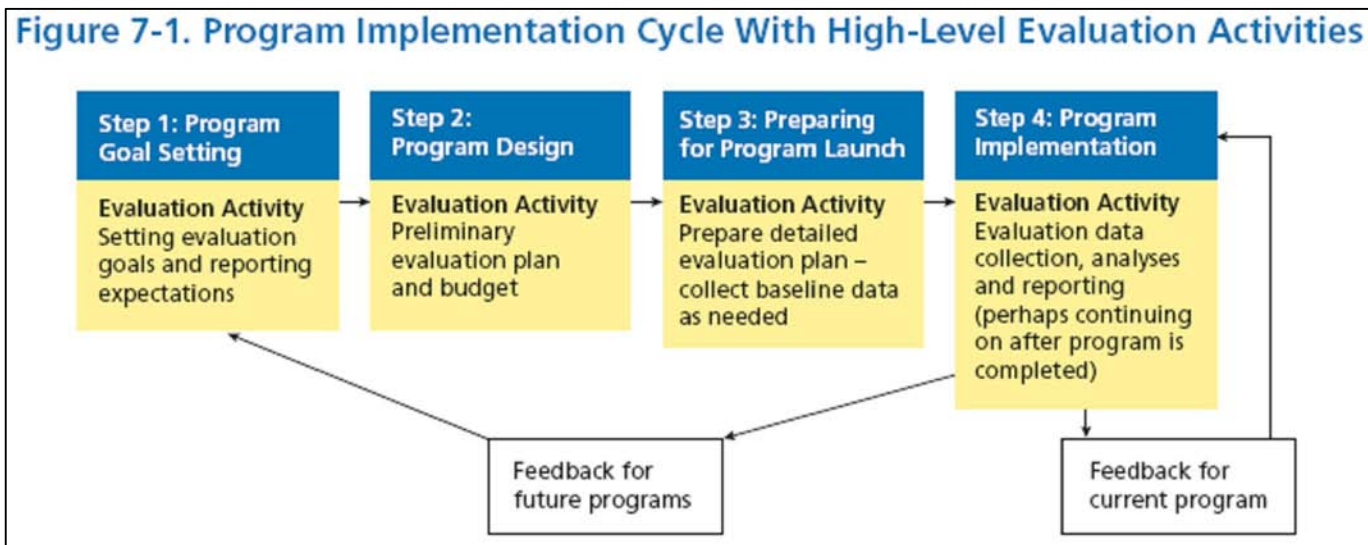
## Guide Establishes Consistent Definitions

- **Evaluation** - The performance of studies and activities aimed at determining the effects of a **program**
- **Measurement and Verification** - Data collection, monitoring, and analysis associated with the calculation of gross energy and demand savings from **individual sites or projects**. M&V can be a subset of program evaluation.
- **EM&V** - The term “evaluation, measurement, and verification” is frequently seen in evaluation literature. EM&V is a catchall acronym for **determining both program and project impacts**.



## Guide Describes *Why We Evaluate*

- Quantify Results: Document and measure the energy savings of a program in order to determine how well it has met its goals
- Understand why program effects occurred and identify ways to improve current and future programs as well as select future programs



**This feedback loop is what makes evaluation useful.**



## Emphasis on Measuring Efficiency Programs

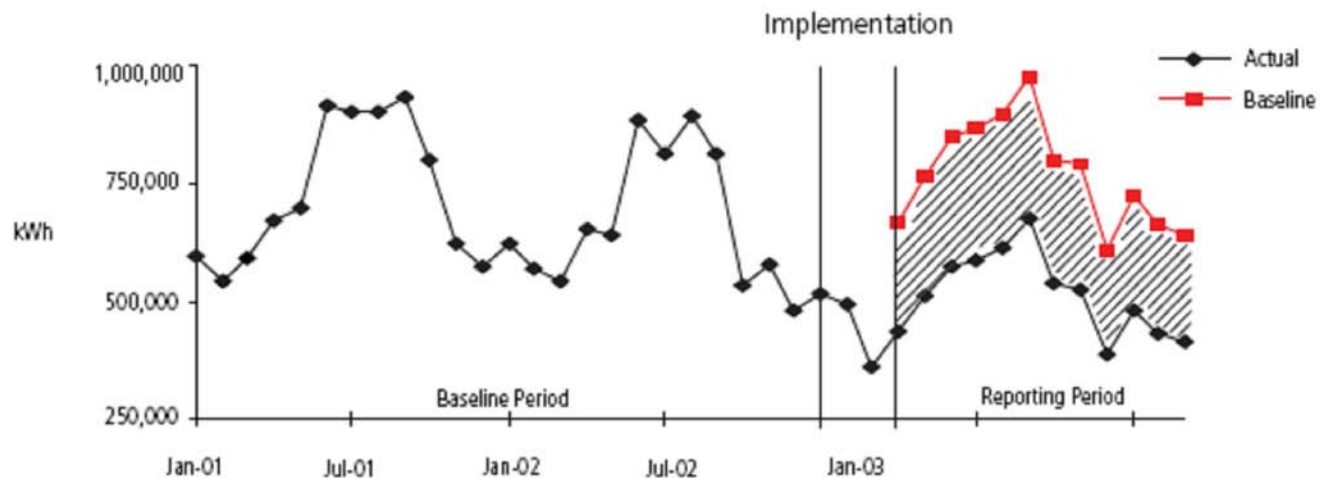
- There are widely recognized protocols for the measurement and verification (M&V) of energy savings from single *projects*
  - e.g., International Performance Measurement Verification Protocol (IPMVP)
- Similar widely accepted protocols or guidance documents for measuring energy savings from *programs* do not exist
  - M&V protocols do not address issues unique to program evaluation
- Program types addressed:
  - Primary focus is resource acquisition, downstream energy efficiency programs
  - Secondary focus is other demand-side programs and several supply-side programs



## Focus on Impact Evaluation

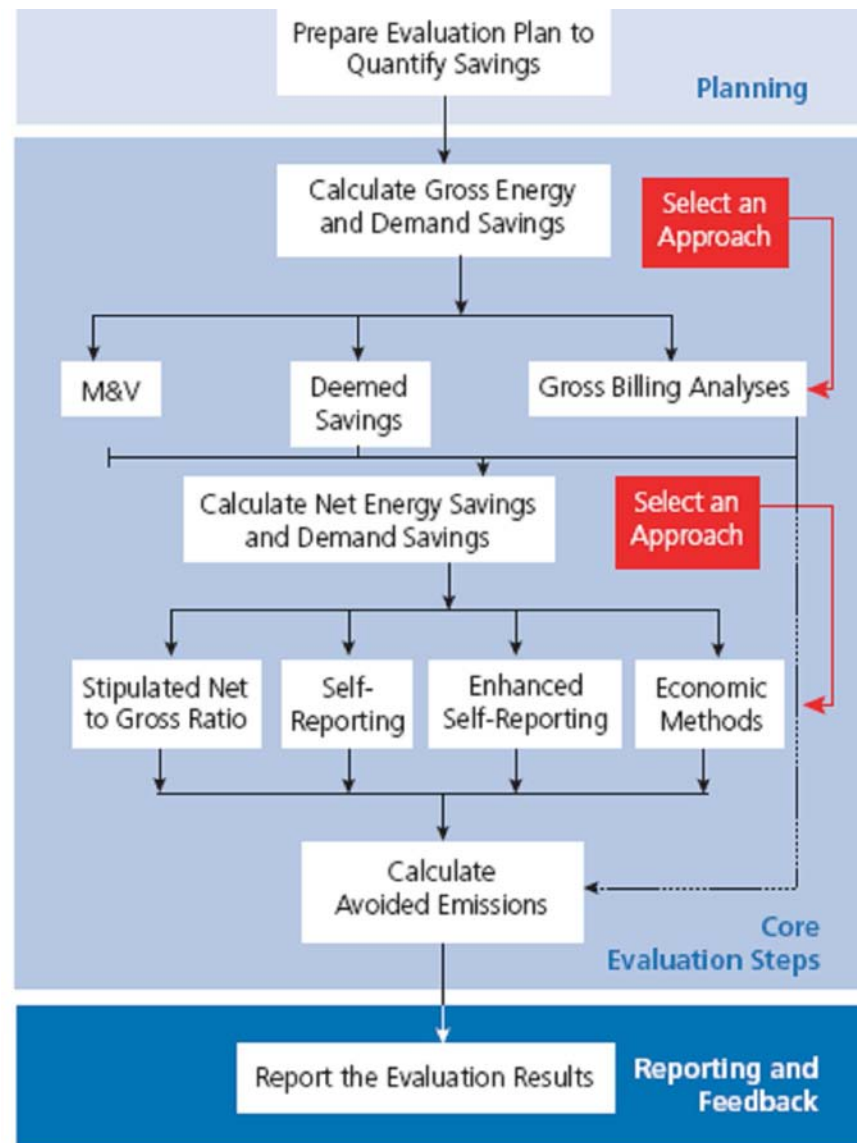
- Impact evaluations are used for determining directly achieved program benefits, e.g., kWh, kW, avoided emissions
- Savings cannot be directly measured, only indirectly determined by comparing actual energy use to a baseline
- **Impact = Actual<sub>post</sub> – Projected<sub>pre</sub> ± Adjustments**

Figure 4-1. Comparison of Energy Use Before and After a Program is Implemented.





# Approaches for Determining Gross and Net Energy Savings







# Additional Topics Covered

<i>Part 1</i>	<b>Executive Summary</b>
<i>Part 2</i>	<b>Chapter 1: Introduction</b> <b>Chapter 2: Energy Efficiency Program Evaluation</b> <b>Chapter 3: Impact Evaluation Basics</b>
<i>Part 3</i>	<b>Chapter 4: Calculating Gross Energy and Demand Savings</b> <b>Chapter 5: Calculating Net Energy and Demand Savings</b> <b>Chapter 6: Calculating Avoided Air Emissions</b>
<i>Part 4</i>	<b>Chapter 7: Planning An Impact Evaluation</b>
<i>Part 5</i>	<b>Appendix A: Leadership Group List</b> <b>Appendix B: Glossary</b> <b>Appendix C: Other Evaluation Types</b> <b>Appendix D: Uncertainty</b> <b>Appendix E: Resources and References</b> <b>Appendix F: Renewables and Combined Heat and Power Program Evaluation</b> <b>Appendix G: References</b>

**Also includes about  
40 “sidebars” and 25  
figures and tables**



## Key Use for Guide: Planning an Impact Evaluation

- **The Guide helps entities identify and address key issues encountered when initiating a program impact evaluation :**
  - Defining evaluation goals and scale, and which benefits to evaluate
  - Setting time frame for evaluation and reporting expectations
  - Setting spatial boundary for evaluation (i.e. what energy uses, emission sources, etc. will be included in the analyses)
  - Defining baseline, baseline adjustments, and data collection requirements
  - Establishing a budget vis-à-vis expectations for quality of reported results
  - Selecting impact evaluation approaches for gross and net savings calculations and avoided emissions calculations
  - Selecting who (or which type of organization) will conduct the evaluation



## For More Information

The National Action Plan's [Model Energy Efficiency Program Impact Evaluation Guide](#) is a resource that utilities, ISO's, states, cities, private companies, and others can use as a framework to define their own "institution-level" or "program-level" evaluation requirements.

- Final version available at: [www.epa.gov/eeactionplan](http://www.epa.gov/eeactionplan)
- Hard copies available upon request
- Contact:

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## References: *Resources for Program Evaluation*

- 2007 NAPEE Model Energy Efficiency Program Impact Evaluation Guide. [www.epa.gov/cleanrgy/documents/evaluation\\_guide.pdf](http://www.epa.gov/cleanrgy/documents/evaluation_guide.pdf)
- 2006 California Energy Efficiency Evaluation Protocols. [http://www.calmac.org/publications/EvaluatorsProtocols\\_Final\\_AdoptedviaRuling\\_06-19-2006.pdf](http://www.calmac.org/publications/EvaluatorsProtocols_Final_AdoptedviaRuling_06-19-2006.pdf)
- 2004 The California Evaluation Framework. [http://www.calmac.org/publications/California\\_Evaluation\\_Framework\\_June\\_2004.pdf](http://www.calmac.org/publications/California_Evaluation_Framework_June_2004.pdf)
- 2007 US DOE Impact Evaluation Framework for Technology Deployment Programs. [http://www.eere.energy.gov/ba/pba/km\\_portal/docs/pdf/2007/impact\\_framework\\_tech\\_deploy\\_2007\\_main.pdf](http://www.eere.energy.gov/ba/pba/km_portal/docs/pdf/2007/impact_framework_tech_deploy_2007_main.pdf)
- 2006 International Energy Agency. Evaluating Energy Efficiency Policy Measures & DSM Programmes. <http://dsm.iea.org>



## References: *Resources for M&V and Evaluation*

- 2007 International Performance Measurement and Verification Protocol (IPMVP). [www.evo-world.org](http://www.evo-world.org)
- 2000 Federal Energy Management Program M&V Guidelines. <http://ateam.lbl.gov/mv/docs/26265.pdf>
- 2002 ASHRAE Guideline 14 Measurement of Energy and Demand Savings. [www.ashrae.org](http://www.ashrae.org)
- Databases for evaluation reports and guidance documents:
  - CALifornia Measurement Advisory Council (CALMAC): [www.calmac.org](http://www.calmac.org)
  - CEE Market Assessment and Program Evaluation (MAPE) Clearinghouse: [www.cee1.org/eval/clearinghouse.php3](http://www.cee1.org/eval/clearinghouse.php3)
- Other Sites:
  - IEPEC: [www.iepec.org](http://www.iepec.org)
  - ACEEE: <http://www.aceee.org>
  - Efficiency Valuation Organization (EVO): [www.evo-world.org](http://www.evo-world.org)