



## Improving EM&V for Energy Efficiency Programs

The U.S. Department of Energy (DOE) is developing a framework and a set of protocols for determining gross energy savings from energy efficiency measures and programs. The protocols represent a refinement of the body of knowledge supporting energy efficiency evaluation, measurement, and verification (EM&V) activities. They have been written by technical experts within the field and reviewed by industry experts.

### Why Is This Project Under Way?

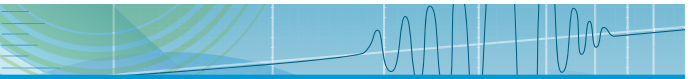
Current EM&V practice allows for multiple methods for calculating energy savings. These methods were developed to meet the needs of energy efficiency program administrators and regulators. Although they served their original objectives well, they have resulted in inconsistent and incomparable savings results—even for identical measures.

The goal of the Uniform Methods Project is to strengthen the credibility of energy savings determinations by improving EM&V, increasing the consistency and transparency of how energy savings are determined.

### What Will This Project Accomplish?

The protocols provide a clear, accessible reference for recommended EM&V practices. In addition, the protocols include:

- A description of the measure and application conditions
- An algorithm for estimating savings
- An example of a typical program offering and alternative delivery strategies
- Considerations for the measurement and verification process, including an International Performance Measurement and Verification Protocol (IPMVP) option



### View the Protocols Online

You can find the first set of protocols on the Uniform Methods Project Website at:

[eere.energy.gov/ump](http://eere.energy.gov/ump)

- Data requirements for verification and recommended data collection methods
- Recommended program evaluation elements
- Fall-back options for lower cost EM&V approaches.

The protocols provide a straightforward method for calculating gross energy savings for the most common residential and commercial energy efficiency measures in utility-sponsored programs in the United States, including:

- Commercial and industrial lighting
- Commercial and industrial lighting controls
- Small commercial and residential unitary and split system efficiency upgrade
- Residential boilers and furnaces
- Residential lighting
- Residential refrigerator recycling
- Residential whole-building retrofits with billing analysis

In addition, the protocols address cross-cutting issues for energy efficiency programs. Cross-cutting protocols include:

- Metering
- Peak demand and time-differentiated energy savings
- Sample design
- Survey design and implementation
- Assessing persistence and other evaluation issues

A second set of protocols is being developed and are scheduled for publication in 2014.



DOE is developing the EM&V protocols for energy efficiency programs in collaboration with energy efficiency program administrators, stakeholders, and EM&V consultants—including the major firms that perform up to 70% of energy efficiency evaluations in the United States.

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## Who Will Benefit?

Adoption of the protocols is voluntary, but there are significant benefits for those who adopt them. Uniform EM&V protocols make the calculation of savings for energy efficiency programs more consistent and increase the credibility of savings estimates. This makes it easier and less costly for efficiency programs to quickly establish good EM&V practices because they no longer have to develop protocols from scratch.

Increased consistency simplifies the comparison of savings resulting from similar programs in different jurisdictions. This supports the development of best practices for energy efficiency programs.

Uniform EM&V protocols increase the transparency of savings determinations, which helps a number of stakeholders manage various types of uncertainties associated with energy efficiency programs. Benefits include:

- Helping utility-run programs manage regulatory uncertainties.
- Enabling resource planners to more clearly assess the validity of energy savings estimates, which allows energy efficiency to be treated on par with new generation in resource plans.
- Increasing investor confidence in energy savings calculations, which reduces the financial risk to underwriters.

Clearly identifying the parameters used in measuring and determining the results of energy efficiency programs allows administrators to set EM&V data requirements early on, which will improve alignment between implementation and evaluations.

The protocols can also provide a basis for complying with energy efficiency resource standards. And uniform protocols provide a good technical foundation for organizations or staffs that are either new to or expanding into EM&V.

## How Is This Project Organized?

DOE has convened stakeholders to facilitate a process to develop the protocols: the Uniform Methods Project Steering Committee, technical advisory groups, and teams of technical experts. The Uniform Methods Project Steering Committee provides guidance to the protocols development process and is composed of the major stakeholders in U.S. energy efficiency programs, including:

- Energy efficiency program administrators
- Regulators from public service commissions
- Investor-owned, public, and cooperative electric and gas utilities
- Electric utility associations
- Evaluators
- Federal and state agencies involved in energy efficiency programs
- Energy efficiency advocates
- Regional energy efficiency organizations.

DOE has asked the National Renewable Energy Laboratory to manage day-to-day aspects of the project. The Cadmus Group is organizing protocol development by working with technical experts throughout the industry.



U.S. DEPARTMENT OF  
**ENERGY**

This project is managed by the U.S. Department of Energy Office of Electricity Delivery and Energy Reliability and Office of Energy Efficiency and Renewable Energy.

**For more information, visit:** [eere.energy.gov/ump](http://eere.energy.gov/ump)

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