

Measuring and Verifying Energy Savings

By: Efficiency Valuation Organization

To properly manage the results of any energy efficiency activity, program or specific project (“**EEP**”), the results must be fairly measured and transparently reported without bias.

Unfortunately, energy savings cannot be measured with a simple meter like kiloWatt hours generated from a power project because energy savings reflect the *absence of energy use*. The absence of energy use can only be accurately determined from measurement before and after an EEP has been implemented.

A simple direct comparison of metered energy use before and after an EEP is implemented reflects many other variables unrelated to the EEP. Since reliable energy efficiency evaluation should report savings attributable to the EEP alone, independent of other factors, it must identify and separate irrelevant effects from actual savings. This can only be done with the development of a savings measurement and verification (“**M&V**”) plan that establishes a realistic ‘**Energy Baseline**’ of the conditions in existence prior to the implementation of the EEP. Applied M&V of an EEP is equivalent to metered kWh’s generated in a power project and is the only true method to report achieved savings in a ‘fair and transparent’ way.

The International Performance Measurement and Verification Protocol (“**IPMVP**”) was created over 17 years ago by the US Department of Energy as a guideline for development of M&V plans for EEPs implemented in its federal facilities. IPMVP has evolved to become an international guideline through a consensus-based committee of practicing energy engineers and experts managed by Efficiency Valuation Organization (“**EVO**”), a non-profit volunteer-led corporation. IPMVP is updated and maintained by EVO and is freely available on its website at:

www.evo-world.org/index.php?option=com_content&view=article&id=272&Itemid=279&lang=en

IPMVP is recognized as the ‘**go to**’ place for defining methods, terminology and report contents applicable to M&V of EEPs. IPMVP defines such things as the methods of adjusting metered energy to account for variables unrelated to efficiency, such as production rate, weather or occupancy.

M&V Plans for EEPs implemented within industrial facilities typically apply Option A or Option B of the IPMVP, which isolates the EEP from the rest of the energy consumed at the facility. This is needed to remove all the operating variables in a manufacturing process such as number of shifts, type of product, etc. Having an energy management system in place to measure and compare results of an EEP with a constantly varying Energy Baseline cannot only ensure the transparent application of a good M&V Plan, but also provide a tool to make ongoing modifications to the EEP that improve its performance.