

## **ABOUT SOUTH ASIA CMVP TRAINING & EXAMINATION**

*Organized by Efficiency Valuation Organization (EVO) and Alliance for an Energy Efficient Economy (AEEE)*

This course is designed in part to provide a useful preparatory vehicle for **Certified Measurement and Verification Professional (CMVP)** programme of the Efficiency Valuation Organization, and the Association of Energy Engineers, USA.

Proven energy savings are now considered necessary in any project or scheme so that the authorities concerned can assess the success or otherwise of the project, scheme or target achievement. M&V also plays a significant role in financing energy management programmes, whether through energy performance contracts or through emission trades under schemes such as the clean development mechanism of the UNFCCC. While interest in savings data is growing, the state of the art in determining savings has also been rapidly evolving. This training will examine current methods of determining and documenting savings, specifically reviewing the 2012 edition of the International Performance Measurement & Verification Protocol (IPMVP). Attendees will learn the process of designing a proper M&V programme for their projects, including cost/accuracy tradeoffs, baseline adjustments, the role of estimates, maintaining space conditions, the role of verifiers, and the data needed for emission trading. Examples of specific techniques will be presented, along with common pitfalls which can result in unreliable data. Class time will include problem solving and debate. Candidates should bring a Calculator. However, use of Mobile telephones and other internet devices are prohibited, particularly during the Examination.

Through participating in a "fundamentals" course, persons experienced in M&V will also appreciate the assembly of all of the issues, the debates, and engagement at their own level with expert instructors.

The CMVP examination will be administered at the close of instruction on day three of each seminar to those who have qualified in advance by submitting a completed CMVP application and fee. Advance reading of IPMVP Volume I (available at [www.evo-world.org](http://www.evo-world.org)) would be useful reading before the exam, though not required.

### **ABOUT CMVP CERTIFICATION**

Please Note: In order to qualify to attend the CMVP examination, you must submit your completed CMVP Application, included in CMVP Application Kit or write to [bhairav@aeee.in](mailto:bhairav@aeee.in) or [akshay@aeee.in](mailto:akshay@aeee.in) for the same. The Fee for the Training and Certification Examination is to be forwarded to AEEE-India along with the AEEE Registration Form.

The Efficiency Valuation Organization (EVO), in cooperation with the Association of Energy Engineers, established the Certified Measurement and Verification Professional (CMVP) programme with the dual purpose of recognizing the most qualified professionals in this growing area of the energy industry, and raising the overall professional standards within the measurement and verification field. The IPMVP, first established by the U.S. Department of Energy, and now maintained by EVO has become the internationally recognized protocol for performance measurement and verification (M&V) in the energy efficiency field. More information about EVO can be found at [www.evo-world.org](http://www.evo-world.org).

## TRAINING OUTLINE

### REASONS FOR M&V

- Types of uses for M&V
- M&V's role in financing

### CURRENT M&V PROTOCOLS

- Relationship of IPMVP and other guidelines

### IPMVP 2014

- Its evolution
- Overview of IPMVP Options A, B, C & D

### DEVELOPING AN M&V PLAN

- Principles of M&V
- Scope of energy to be monitored
- Differences between M&V for industry and for buildings
- "Cost avoidance" or "normalized savings?"
- Choosing independent variables for adjustments
- Sources of data
- M&V budgets
- Selecting the baseline period and data
- Measurement systems design, commissioning & maintenance
- Baseline analysis methods
- Various forms of savings computation
- Valuing savings
- Routine procedures and QC
- Managing the uncertainty created by sampling, metering, modeling and unknowns
- Bias • Rounding
- Reporting procedures
- Coordinating with other purposes
- When to do the M&V Plan

### CURRENT ISSUES IN M&V

- Coping with missing data
- Cost/uncertainty tradeoffs
- Monitoring IAQ

### EMISSION TRADING

- The role of EE in emission markets
- Emission factors for site fuel savings and electricity savings
- Additionality • Ownership • Protocols

### BASELINE ADJUSTMENTS

- Why they are necessary
- Who does what, when

### KEY ELEMENTS OF SUCCESS: THEORY & EXAMPLES OF IPMVP 2009 OPTIONS

- Details of IPMVP methods
- Retrofit isolation (IPMVP Options A & B): Instrumentation issues
- Whole facility (IPMVP Option C): Utility billing issues
- Calibrated simulation (IPVMP Option D): Simulation issues
- Lessons from tough experience

### SELECTING OPTIONS: WHICH ONE IS BEST SUITED FOR MY PROJECT.

### ADHERENCE WITH PROTOCOLS AND CONTRACTS

## TRAINING HOURS

*Note:* Below are standard seminar hours. Please refer to your registration confirmation letter to confirm actual seminar hours for the programme for which you have registered.

**(Advance Registration is essential)**

Training Hours Day 1:	09:00 am - 05:00 pm
Training Hours Day 2:	08:30 am - 05:30 pm
Training Hours Day 3:	08:30 am - 01:00 pm
Exam on Day 3 Following Training:	02:00 pm - 06:00 pm

## **PRE-APPLICATION REQUIREMENT**

Separate CMVP Pre-Application is required in order to appear for the CMVP Examination. The CMVP Pre-Application Form is included in the CMVP Application Kit. You can also write to Bhairav ([bhairav@aeec.in](mailto:bhairav@aeec.in)) or Akshay ([akshay@aeec.in](mailto:akshay@aeec.in)).

## **ABOUT AEEE, EVO AND AEE**

### **Alliance for an Energy Efficient Economy (AEEE-India)**

Alliance for an Energy Efficient Economy (AEEE) advocated for data-driven evidence based Energy Efficiency policies to enable a vibrant market in Energy Efficiency services and products. AEEE is an Indian Affiliate of Efficiency Valuation Organization (EVO) and facilitates the CMVP certification in India and South Asia.

AEEE aims to transform India into a global leader in the field of energy efficiency by helping reduce the country's energy intensity to have a globally competitive and environmentally sustainable economy and shape India as one of the most attractive markets for companies with the best available energy-efficient technologies.

For more information, visit: [www.aeee.in](http://www.aeee.in)

### **Efficiency Valuation Organization (EVO)**

EVO is the only non-profit organization in the world solely dedicated to creating measurement and verification (M&V) tools to allow efficiency to flourish. EVO's vision is a global market that properly values the efficiency resource, enabling and assisting the optimal investment in these opportunities. To help achieve this goal EVO offers products and services like the International Performance Measurement and Verification Protocol (IPMVP) and customized trainings and workshops.

EVO supports a global base of knowledge in the field of resource efficiency measurement and verification (M&V). EVO understands that building an international community is critical to the global promotion of the efficient use of natural resources - and invites all likeminded organizations to be a part of this community.

For more information visit: [www.evo-world.org](http://www.evo-world.org)

### **Association of Energy Engineers**

AEE offers a full array of informational outreach programs including seminars (live and internet based), conferences, journals, books, and certification programs. The *AEE Energy Insight* is a high-quality online newsletter that focuses on the accomplishment of the Association and its members. AEE also publishes three technical journals: *Energy Engineering*, *Strategic Planning for Energy & the Environment*, and *Cogeneration & Distributed Generation Journal*. These publications are complimentary to all AEE members.

For more information visit: [www.aeecenter.org](http://www.aeecenter.org)