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# FUNCTIONALITY OF THE MEASUREMENT AND VERIFICATION SPECIALIST

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**ONLINE TRAINING BY KRISHNAJI PAWAR**

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MODULE

**16**

## Definitions of IPMVP Options

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# FUNCTIONALITY OF THE MEASUREMENT AND VERIFICATION SPECIALIST

The International Performance Measurement and Verification Protocol (IPMVP) is a framework developed by the Efficiency Valuation Organization (EVO) to ensure consistent, transparent, and credible performance measurement and verification (M&V) of energy savings and efficiency projects. It provides guidelines for practitioners to quantify energy savings associated with energy efficiency measures and renewable energy projects.

# Learning Objectives

- Instrument metering and calibration
- Fieldwork: formal accreditation, safety, OSHA, and NFPA
- Data accessibility, communication, and valuation
- Reporting on Measurement and Verification (M&V) Projects
- Definitions of IPMVP Options
- The future of measurement and verification
- Sample M&V Plan
- Sample M&V Report
- ESCO's Guide to Measurement and Verification
- Summary and Resources



## INTRODUCTION

- The IPMVP is a framework developed by the Efficiency Valuation Organization (EVO) to ensure consistent, transparent, and credible performance measurement and verification (M&V) of energy savings and efficiency projects.
- It provides guidelines for practitioners to quantify energy savings associated with energy efficiency measures and renewable energy projects.
- The IPMVP facilitates the validation of energy savings claims, enhancing the reliability of such projects in various sectors.
- The primary purpose of the IPMVP is to provide a systematic approach to measuring and verifying energy savings.
- The IPMVP fosters trust among stakeholders, encourages investment in energy efficiency, and supports policy initiatives aimed at reducing greenhouse gas emissions.

# INTERNATIONAL PERFORMANCE MEASUREMENT AND VERIFICATION PROTOCOL (IPMVP) OVERVIEW

- Established by the Efficiency Valuation Organization (EVO) to measure and verify energy and water savings in projects.
- Provides a consistent methodology for determining actual savings from energy efficiency measures, renewable energy projects, and water conservation initiatives.
- Offers four primary options for measurement and verification (M&V), each suited to different project types, goals, and complexities.
- Option A: Retrofit Isolation - Key Parameter Measurement: Involves isolating specific retrofit measures and using direct measurements to determine energy or water savings.
- Option B: Retrofit Isolation - All Parameter Measurement: Measures all relevant parameters that affect energy or water savings, providing a comprehensive view of the system's performance.
- Option C: Whole-Building Measurement: Takes a holistic approach by measuring the overall energy or water consumption of an entire building before and after the implementation of energy-saving measures.
- Selection of an appropriate IPMVP option depends on project complexity, data availability, accuracy required, and resources allocated for measurement and verification.



# M&V Options as per the IPMVP

OPTION A

Retrofit Isolation with Key Parameter Measurement

E.g.; Lighting retrofit projects

OPTION B

Retrofit Isolation with All Parameter Measurement

E.g.; Installation of new electric motor with a variable-speed drive and associated controls

OPTION C

Whole Facility Measurement

E.g.; Replacement of a chiller plant and lighting

OPTION D

Calibrated Simulation

E.g.; Comprehensive retrofit involving multiple interactive conservation measures in a large building with lack of utility data

# KEY COMPONENTS OF IPMVP



- M&V Options: Four distinct options (A, B, C, and D) for measuring and verifying energy savings.
- Baseline Energy Consumption: An accurate baseline represents the energy consumption that would have occurred in the absence of the energy-saving measures.
- Project Implementation: Accurate documentation of the implementation of energy-saving measures is crucial.
- Reporting and Verification: Results must be comprehensively reported once M&V activities are completed.

# EXAMPLE APPLICATION+



- A commercial office building undergoing a comprehensive energy efficiency retrofit can apply the IPMVP.
- The project team selects Option C (Whole-Building Approach) as multiple measures are implemented simultaneously.
- After one year of operation, the team collects energy consumption data for the building and compares it to the baseline.
- An independent third party reviews the report, assesses the methodologies used, and confirms the reported energy savings.

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# THANK YOU

