BEYOND SMART CITIES



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PERFORMANCE MEASUREMENT AND VERIFICATION ANALYST - PMVA OVERVIEW
ONLINE TRAINING BY KRISHNAJI PAWAR
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MODULE 7

Protocols and Advantages of M&V

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PERFORMANCE MEASUREMENT AND VERIFICATION ANALYST - PMVA OVERVIEW

Advanced M&V uses large data sets, real-time feedback, and non-linear analytical methods for building meter-based savings calculations. Protocols ensure credibility and technical details, while guidance provides best practices for applications.

Learning Objectives

- Introduction
- Knowing the Process of PMVA Credentialing
- Basic Concepts of Measurement & Verification
- Organizational Fundamentals
- Measurement and Verification Process
- Specialist Certification in Measurement and Verification
- Protocols and Advantages of M&V
- Summary and Resources

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INTRODUCTION

Advanced M&V: Large data sets, near real-time, ongoing feedback, non-linear analytical methods, whole building meter-based savings calculations, frequent intervals.(Similar but different from traditional billing analysis andapplicable to portfolios, some programs, and individual sites, for program implementation and evaluation).

- Protocols: Set of concepts and commonly accepted conditions ensuring credibility of a product. Technical details.
- Guidance: How to meet conditions set forth by protocols.
- Advice on best practices for applications. Often locally agreed upon.



Why need M&V?

Orgnizations

To demonstrate that the energy conservation projects were successful

Project Partners

To prove that the energy savings projects have been successful

Energy conservation measures (ECM)

To quantify the performance of ECM by measuring and verifying the energy savings

Savings

Projects with strong M&V result in a substantially higher level of savings.

Context of M&V

- M&V is usually used when the savings need to be verified, such as in
- Energy Efficiency (EE) Project
- Energy Performance Contracts
- Regulated EE programs
- When the owner of the building wants this verification for internal accounting purposes



M&V PROTOCOLS

- INTERNATIONAL PERFORMANCE MEASUREMENT AND VERIFICATION PROTOCOL (IPMVP)
- AMERICAN SOCIETY OF HEATING, REFRIGERATING, AND AIR CONDITIONING ENGINEERS (ASHRAE) GUIDELINE 14,
- US DOE FEDERAL ENERGY MANAGEMENT PROJECT (FEMP) M&V GUIDE FOR US GOVERNMENT BUILDINGS
- CALIFORNIA ENERGY EVALUATION PROTOCOLS
- ABU DHABI MEASUREMENT AND VERIFICATION PROTOCOL

Purpose of M&V

- Increase energy savings
  - Document financial transactions
    - Enhance financing for efficiency projects
- Improve engineering design and facility operations and maintenance
  - Manage energy budgets
- Enhance the value of emission-reduction credits
  - Support the evaluation of regional efficiency programs
    - Increase public understanding of energy management as a public policy tool.

Principles of M&V

Accurate

M&V report should be accurate as the M&V budget will allow
M&V costs should be small relative to the cost

Complete

Reporting of energy saving should consider all significant effects

Conservative

M&V involves uncertainty
Procedures/calculation should be designed to under estimate saving

Consistent

Reporting of an energy project's effectiveness should be consistent between different typeof energy efficiency project, energy professionals and periods

Relevant

Savings should measure relevant parameters
Less significant parameters should be estimate

Transparent

All M&V activities should be clearly and fully disclosed

BENEFITS OF MEASUREMENT AND VERIFICATION (M&V) PROCESS

- Specifies energy efficiency measures and programs that have met objectives.
- Identifies cost-effective measures and potential improvements.
- Allows project managers to adjust project direction as issues arise, promoting proactive performance improvement.
- Provides verifiable results for future project improvements.
- Identifies measures with highest realized energy savings.



BENEFITS OF MEASUREMENT AND VERIFICATION (M&V) PROCESS +

- Highlights implementation problems requiring improvement.
- Confirms the measure's cost-effectiveness.
- Provides an overall risk assessment for future energy efficiency programs.
- Identifies non-energy benefits like economic impact on job creation, local economic spending, tax revenue, and improvements in air quality.



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THANK YOU

