

Measurement Tools & Verification of Savings Calculations

H. Developing the M&V Plan

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- When to develop and M&V Plan?
- M&V Plan contents

When to do an M&V Plan?

- The M&V Plan should be developed *while* the EEMs are being designed in order to:
 - include the cost of M&V when deciding project economics, and
 - record baseline data and methodology for savings calculations while baseline conditions are still measurable before any savings happen.
- The design of the data collection plan and procurement of any new metering equipment is done concurrently with the audit or while the EEM designs are being completed.

M&V Plan Contents

- Document:
 - The purpose of each EEM and its impact on operating conditions
 - The measurement boundaries for each EEM (note there can be one or multiple measurement boundaries in a project)
 - Interactive effects, if any, beyond the boundary
 - Baseline energy/demand
 - Identification of independent variables and their values during the baseline
 - Conditions within the boundary during the baseline period
 - Used as a basis for determining non-routine adjustments
 - Reporting responsibilities in the reporting period

M&V Plan Contents, cont.

- Document
 - The reporting period
 - The adjustments to baseline and how they will be made
 - Identify which Options will be used and describe the analysis methods
 - Define the energy price or rates to be used
 - Identify the measurement and metering points and procedures
 - Define the quality assurance procedures (i.e. how will bad data be addressed, etc.)
 - Estimate the expected costs and accuracy
 - Define the report formats and frequency

M&V Plan Contents, conclusion

Specifically for Option A:

- Document the justification of the non-key parameters used
- Define the periodic inspections that will be made after installation of equipment

For Option D:

- Document the name and software version used for simulation
- Provide the input data files and describe the method of measuring any parameters used to support input values
- Provide the output from software
- Describe how the simulation was calibrated (reference calibration criteria)

BEST Center Curricula, Resources & Recordings

Academic Programs

Georgia Piedmont Technical College - Building Automation Systems

Milwaukee Area Technical College - Sustainable Facilities Operations

Laney College - Commercial HVAC Systems

City College San Francisco - Commercial Building Energy Analysis & Audits

Professional Development Materials, Presentations & Videos

National Institutes

Building Automation Systems Instructor Workshops

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