

Table of Contents

1.	Introduction to IPMVP Core Concepts – Application Guides	1
2.	Introduction – M&V Purpose and Process Overview	3
2.1.	Purposes of <i>M&V</i>	4
2.2.	The <i>M&V</i> Design and Reporting Process.....	6
3.	M&V Option Selection Guide	9
4.	Common <i>M&V</i> Issues	11
4.1.	Applying Energy Prices	11
4.2.	Non-Routine Adjustments.....	13
4.3.	Advanced M&V Methods	14
4.4.	The Role of Uncertainty.....	15
4.5.	Cost.....	17
4.6.	Balancing Uncertainty and Cost	18
4.7.	Review by an Independent Verifier	20
4.8.	Data for Emission Trading	21
4.9.	Minimum Operating Conditions.....	21
4.10.	Weather Data	22
4.11.	Minimum Energy Standards	22
4.12.	Measurement Issues	22
4.13.	Data Collection Errors and Lost Data	22
4.14.	Use of Control Systems for Data Collection	25
4.15.	Significant Digits	26
5.	Measurement and Verification Application Examples	29
5.1.	Pump/Motor Efficiency Improvement: Option A	30
5.2.	Boiler Efficiency Improvement: Option A	32
5.3.	Lighting Efficiency: Option A	34
5.4.	Lighting Operational Control: Option A	38
5.5.	Street Light Efficiency and Dimming: Option B	40
5.6.	Compressed-Air Leakage Management: Option B	42
5.7.	Turbine/Generator Set Improvement: Option B	44

5.8. Pump/Motor Demand Shifting: **Option B** 46

5.9. Whole-Facility Energy Accounting Relative to Budget: **Option C** 47

5.10. Multiple ECMs in a Building without Energy Meters in the Baseline Period: **Option D** 49

5.11. New Building Designed Better Than Code: **Option D**..... 52