



Alternative Financing Track, Session 9 Managing Risks: M&V

Venkat Kumar
Johnson Controls
(414)524-4700
venkat.kumar@jci.com

Alternative Financing Track, Session 9 Managing Risks: M&V



AGENDA

- I. Standardized (draft) Formats
 - I. Draft M&V Plan Outline (Jun 3,'04)
 - II. Draft Post-Installation Report Outline (Feb 26,'04)
 - III. Draft Annual M&V Report Outline (Apr 1,'04)
- II. Case Study of M&V Report, compares Report format with Standardized Format
- III. Wrap up - what do these improvements mean and what are we trying to accomplish with their use
- IV. Questions & Answers

Alternative Financing Track, Session 9 Managing Risks: M&V



Development of Standardized Formats

- Standardized (draft) Formats
 - Draft M&V Plan Outline (Jun 3,'04)
 - Draft Post-Installation Report Outline (Feb 26,'04)
 - Draft Annual M&V Report Outline (Apr 1,'04)
- Documents being revised through efforts of "Plan & Reporting Integration Working Group"
- Review of and Response to Drafts by ESCOs currently in progress
- Plan format requires identification of key topics and Report formats require discussion on them; allows government and ESCO to identify M&V risks in advance so that they may be managed

**Alternative Financing Track, Session 9
Managing Risks: M&V**



Standardized (draft) Format

M&V Plan Outline

- 1. Executive Summary / M&V Overview**
 1. Annual Savings Overview
 2. M&V Approach Summary
- 2. Whole Project Data / Global Assumptions**
 1. Risk & Responsibility
 2. Utility Rate Data
 3. Schedule & Reporting for Verification Activities
 4. O&M Reporting Requirements
 5. Dispute Resolution
- 3. ECM Specific M&V Plan (develop for each ECM)**
 1. Overview of ECM and M&V plan for ECM
 2. Energy Baseline Development
 3. Energy Savings Calculations
 4. Operational & Maintenance Cost Savings
 5. Total Annual Savings For ECM
 6. Post-Installation M&V Activities
 7. Periodic / Interval Verification Activities

**Alternative Financing Track, Session 9
Managing Risks: M&V**



Standardized (draft) Format

Post-Installation Report Outline

Contract # / Modification #: _____ Performance Period Dates Covered: _____ to _____

1. Executive Summary

- 1.1 Project Background
- 1.2 Brief project and ECM descriptions (Note any changes in project scope)
- 1.3 Projected energy & cost savings for first year of performance period
- 1.4 Summary of any energy and/or cost savings adjustments required.
- 1.5 Summary of construction period savings

2. Details for each ECM

- 2.1 Overview of ECM
- 2.2 Installation Verification
- 2.3 Detail of commissioning activities, or reference report if separate submittal.
- 2.4 Overview of M&V plan for ECM
- 2.5 Post-installation measurements, monitoring & inspections conducted
- 2.6 Details of O&M Savings (if applicable)
- 2.7 Details of other savings (if applicable)
- 2.8 Detail commodity (e.g. energy, water, etc.) rate(s) used in calculations
- 2.9 Technical details of all calculations made.

**Alternative Financing Track, Session 9
Managing Risks: M&V**



Standardized (draft) Format

Annual Report Outline

Contract # / Delivery Order #: _____ Performance Period Dates Covered: _____ to _____; Contract year #: _____

1. Executive Summary

- 1.1 Project Background
- 1.2 Brief project and ECM descriptions
- 1.3 Summary of energy & cost savings results
- 1.4 Summary of any energy and/or cost savings adjustments required
- 1.5 Summary of operations and maintenance (O&M) activities
- 1.6 Performance and O&M issues identified

2. Summary of contractor payments and verified savings

- 2.1 Payment schedule for duration of contract – invoiced \$ & verified \$
- 2.2 Verified savings for project to date in energy units

3. Details for each ECM

- 3.1 Overview of ECM & Overview of M&V plan for ECM
- 3.2 Measurements and inspections conducted this reporting period
- 3.3 Details of O&M & Other Savings and detail O&M Activities
- 3.4 Detail commodity (e.g. energy, water, etc.) rate(s) used in calculations
- 3.5 Technical details of all calculations made

**Alternative Financing Track, Session 9
Managing Risks: M&V**



Case Study of M&V Report - page (i)

Contract # Provided / D.O. # Provided
Performance Period: Feb 1,'03 to Jan 31,'04; Contract Year #: 4

("black text" shows the requirement in the standardized format and "green text" shows the information provided in the case study report)

1. Executive Summary

- 1.1 Project Background – Covered in "Introduction"
- 1.2 Brief project and ECM descriptions – Covered once, in ECM-specific M&V section "ECM Description & Yr 4 Energy Savings" and not twice
- 1.3 Summary of energy & cost savings results – Covered in Energy & Cost Savings Results
- 1.4 Summary of any energy and/or cost savings adjustments required – Covered within individual ECM Descriptions and Energy Savings write-ups.
- 1.5 Summary of operations and maintenance (O&M) activities – Covered in a standalone section titled "Operations and Maintenance"
- 1.6 Performance and O&M issues identified – Covered in a standalone section titled "Operations and Maintenance"

**Alternative Financing Track, Session 9
Managing Risks: M&V**



Case Study of M&V Report - page (ii)

Contract # Provided / D.O. # Provided
Performance Period: Feb 1,'03 to Jan 31,'04; Contract year #: 4

2. Summary of contractor payments and verified savings

- 2.1 Payment schedule for duration of contract – invoiced \$ & verified \$ Savings are provided in a tabular and graphic form up to current performance year are the savings. Invoice amounts and Payment schedule not tracked in the M&V report.
- 2.2 Verified savings for project to date in energy units -- Provided in a tabular form for all elapsed performance years

**Alternative Financing Track, Session 9
Managing Risks: M&V**



Case Study of M&V Report - page (iii)

Contract # Provided / D.O. # Provided
Performance Period: Feb 1,'03 to Jan 31,'04; Contract year #: 4

3. Details for each ECM

- 3.1 Overview of ECM & Overview of M&V plan for ECM - Provided
- 3.2 Measurements and inspections conducted this reporting period – Documented in section titled M&V Activities & Results with backup info in Appendices
- 3.3 Details of O&M & Other Savings, and detail O&M Activities – Customer determined level of detail of O&M savings. O&M Activities detailed in a separate section
- 3.4 Detail commodity (e.g. energy, water, etc.) rate(s) used in calculations – Provided with calculations in Appendices
- 3.5 Technical details of all calculations made - detail provided in Appendices supporting calculations, level of detail has been acceptable

**Alternative Financing Track, Session 9
Managing Risks: M&V**



Wrap up

- What are we trying to accomplish with use of standard formats??
 - Attempt to reduce M&V Report review time and effort
 - Attempt to improve the documentation of O&M Responsibilities, Activities & Reporting (for both government & ESCO)
 - Attempt for consistency in content of M&V Plans & Reports submitted by various ESCOs under various ESPC contracts
 - Attempt to organize the information to facilitate site and agency review of post-installation & annual M&V Reports
 - Attempt to make M&V reports be more 'stand alone'
 - Attempt to bring a new (customer) ESPC participant, up to speed, through reading & review of the M&V report
 - Attempt to put in context, ESPC \$ savings versus site utility expense reduction; including descriptions of baseline adjustments, etc.
 - Attempt to track site actual utility unit costs against that proposed, so changes give site customer a perspective on changes in their utility bills

**Alternative Financing Track, Session 9
Managing Risks: M&V**



Wrap up

- Discussion Issues
 - Additional documentation requirement will increase the cost of M&V. DOE support will be required to help ESPC sites recognize the value of these additional content & format requirements.
 - M&V Report Review Resources / Capabilities should be discussed during (DES / Phase II, etc.) project development.
 - Since the format requirements are intended to facilitate easier review of M&V Reports, there should be discussion on the M&V Report review process, sites plan to follow. Regular reviews allow there to be an understanding of the M&V related issues for the site.
 - Site should determine if there is need for reconciliation of ESPC savings versus site utility bill and have ESCO include this service, if required, as part of M&V plan and M&V activities.
