



Measurement and Verification Guidelines for the Arkansas Energy Performance Contracting Program

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1. Arkansas State Law requirements for Measurement & Verification (M&V)

Arkansas State Code 19-11-1207.1B states that the Arkansas Energy Office (AEO) shall promulgate rules for Energy Performance Contracting for State Agencies including:

- standards for measuring and verifying the performance of energy cost savings measures and;
- the adoption of the International Performance Measurement and Verification Protocol (IPMVP) and specify the version of IPMVP to be used.

2. Importance of M&V

Measurement and verification of guaranteed savings is critical to the success of the Arkansas Energy Performance Contracting (AEPC) Program and its Clients' projects. A Client's satisfaction with, even enthusiasm about, facility improvements can be undermined by a process that does not address operational deficiencies as soon as possible, or an untimely M&V Report that does not clearly communicate performance against guarantee. The goal of the M&V Guidelines and is to ensure the success of every EPC project.

The goal of measurement and verification (M&V) is to reduce the risk to agencies by providing a mechanism to evaluate the performance of a project throughout the term of the contract. The savings guarantee is defined by the M&V activities, whose function is to reduce agency risk. The challenge of M&V is to balance M&V costs with the value of increased certainty in the cost savings from the ESPC.

3. Overview of M&V Requirements for Projects in the AEPC Program

3.1 Requirements and Recommendations in AEPC Program Documents

- **Throughout AEPC Program Documents:** M&V is an integral part of Energy Performance Contracting. Requirements for M&V for all AEPC projects are embedded in the process via the program documents and procedures. All AEPC projects must thus adhere to these guidelines as well as any references in other program documents.
- **AEPC M&V Guidelines:** All AEPC projects must follow the requirements in this M&V Guidelines document. Projects are also encouraged to follow the recommendations herein.

3.2 Protocols Used

- **IPMVP:** Projects within the AEPC Program must adhere to the most current version of the IPMVP in place at the time of the execution of an Investment Grade Audit contract. The IPMVP document can be downloaded for free at www.evo-world.org.

- **FEMP M&V Guidelines:** While IPMVP is a protocol, the Federal Energy Management Program (FEMP) Measurement & Verification Guidelines document is an application guide. Projects in the AEPC Program must adhere to the most recent version of the FEMP Measurement & Verification Guidelines, or the ‘state-friendly’ version if available, in place at the time of the execution of an Investment Grade Audit contract. Refer to the FEMP page for Energy Savings Performance Contract Resources for documents: <http://energy.gov/eere/femp/resources-implementing-energy-savings-performance-contracts>

3.3 Required Plan and Report Formats

Projects in the AEPC Program are required to follow the M&V steps and use the plan and report formats specified in the most current version of FEMP Measurement & Verification Guidelines (or the state-friendly version of these guidelines if available) for each of the following deliverables:

- Risk and Responsibilities Matrix (FEMP M&V Table 3-1) – develop during audit phase
- M&V Plan and Reporting Outline (FEMP M&V Appendix C) – completed during IGA and attached as Schedule E of the EPC.
- Post-Installation Report Outline (FEMP M&V Appendix D) – delivered at the end of construction
- Annual M&V Report Outline (FEMP M&V Appendix E) – delivered annually at the end of each performance year

Additional resources from FEMP:

- Sample M&V Plan: <http://energy.gov/eere/femp/downloads/example-measurement-verification-plan-super-espc-project>
- Training Course: Measurement and Verification in ESPCs: Discusses key issues in the measurement and verification (M&V) of ESPCs to help agencies negotiate for better M&V in their ESPC projects.
<https://www4.eere.energy.gov/femp/training/training/measurement-and-verification-espcs>

3.4 Review Process for Key Documents

- For each key document in an EPC project, ESCO will include a review by AEO. This includes: the IGA contract, the IGA (including the M&V Plan), the EPC, the Post-Installation Report, and Annual M&V Reports.
- For each document, the ESCO shall send a copy to AEO and agency for review.
- The ESCO shall address and include AEO and agency comments where reasonable, and issue another draft.
- Prior to an agency accepting a key document, the document must be reviewed by AEO.

3.5 Additional Requirements of the AEPC Program

In addition to adhering to the FEMP M&V Guidelines, projects within the AEPC Program must also:

- Include AEO in all M&V meetings and key M&V correspondence.
- Adhere to the review process for key documents (detailed above).
- Ask candidate ESCOs about their M&V practices and experience during ESCO solicitation and interviews.
- Hold an M&V meeting with the agency and AEO during the beginning of the IGA development and prior to finalization of the IGA. Explain risks and responsibilities for ensuring savings. Include a broad representation of facilities and financial interests, and if appropriate, key occupant representatives to ensure all setpoints and schedules are agreed upon and understood.
- Use the Risks and Responsibilities Matrix to discuss and agree upon strategies for the EPC project.
- Ensure that the baseline is understood and agreed upon and that adjustments to the baseline have been discussed with facilities and financial staff.
- Allow the agency the option to choose 0% escalation rate, if desired. Discuss the pros and cons of higher escalation rate choices of larger scope versus future financial impacts.
- Include a minimum frequency of quarterly site visits in the M&V Plan during the first year.
- Include a minimum of annual site visits in the M&V Plan for each year of M&V services.
- During M&V Plan development, discuss options for engaging occupants, communicating with staff and ensuring persistence of savings through innovative strategies such as remote monitoring, online diagnostics, occupant engagement, dashboards, annual commissioning, or continuous commissioning.
- Avoid use of the term “actual” or “verified” savings to report savings that were claimed by the ESCO if there is evidence that the agency did not achieve the savings. In these cases, ESCO must use the term “claimed” and separately present “actual” savings.
- Avoid use of the term “excess” savings for simply removing a safety factor. “Excess” savings must be verified with more rigorous methods.
- Hold a Post-Installation Report meeting to discuss findings and agree on any changes to the baseline or savings guarantee.
- Hold an M&V Kick-Off Meeting prior to the M&V Performance Period start date to familiarize facilities and finance staff of responsibilities, inspection schedule and other issues such as trending or remote monitoring.
- Submit Annual M&V Reports for ESCO and agency review promptly within 60 days of the end of the performance period.
- Provide adequate notice when scheduling site visits to ensure agency staff availability and participation. Schedule site visits in advance. Include a pre-inspection and post-

inspection meeting with the client. Within 24 hours of each site visit, inform agency by email or letter of any issues identified that may impact agency savings, even if this does not impact the guarantee.

- Add a section to the Executive Summary and the body of the report of the Post-Installation Report and M&V Annual Reports noting any deficiencies identified that may result in agency not achieving savings.
- Include a utility bill analysis in the Annual M&V Reports to help agency understand utility bill impacts, in addition to savings guarantee. Add a section to the Executive Summary and the body of the report of the Annual M&V Reports presenting the utility bill analysis. Describe differences between actual utility bills and guaranteed savings.

4. Key M&V requirements in the AEPC Program Documents

M&V is an integral part of the EPC process, so it is difficult to cite every instance of M&V requirements. Following are some of the key M&V requirements in the program documents:

- IGA: Investment Grade Audit and Project Development Contract:
 - Exhibit A: Scope of Work and Deliverables
 - The annual guarantee is recommended for the entire financing term, or three years minimum.
 - ESCO must develop a preliminary M&V Plan.
- EPC: Energy Performance Contract:
 - Section 2.3: Contractor shall provide the M&V Services as defined in Schedule D, for every year of the contract term.
 - Section 2.7: ESCO shall provide an annual review and reimbursement/reconciliation report within 90 days of receipt of all data for the previous year for each anniversary of the Performance Commencement Date.
 - Section 2.9 M&V Fee: Throughout the Term of this Contract, Agency shall pay Contractor an annual M&V Fee according to Schedule D for measuring the Savings. The M&V period begins after the agency signs the Notice of Final Acceptance as set forth in Exhibit III (iii).
 - Schedule E Measurement and Verification Plan including Baseline Energy Consumption, Savings Measurement and Calculation Formulae, Methodology to Adjust Baseline: ESCO shall develop a final M&V Plan according to the specifications in Schedule E and this document.
 - Exhibit III (i) Notice of Acceptance – Investment Grade Audit and Measurement and Verification Plan: Agency accepts the IGA and M&V Plan.
- AEPC Program Manual:
 - AEPC Project: Step 3 – Investment Grade Audit and Project Development
 - (The IGA includes the Measurement & Verification Plan.)
 - 3e: Agency submits IGA to AEO for approval prior to acceptance.
 - AEPC Project: Step 5 – Construction and Commissioning
 - 5f: ESCO submits Post-Installation Report. ESCO updates counts, runtime and other assumptions to match installed conditions and issues a Post-

Installation Report. This required report provides the final, as-built cost and savings figures. AEO review is required before final acceptance of report. Final report is sent electronically to AEO.

- AEPC Project: Step 6 – Project Performance Monitoring
 - 6a: ESCO performs ongoing project monitoring (recommended quarterly during the first year) and notifies Agency of any problems.
 - 6b: Agency informs ESCO of any significant changes in operation that could affect the savings calculations.
 - At the end of each performance year, for which M&V is included, follow this procedure:
 - 6c: ESCO submits annual draft Measurement and Verification report via electronic copy to Agency and AEO.
 - 6d: Agency and AEO review report.
 - Agency and AEO review and provide comments to ESCO.
 - 6e: ESCO finalizes report
 - ESCO addresses Agency and AEO comments, finalizes report and sends an electronic copy to Agency and AEO.

- Project Metrics and Marketing Reporting Requirements
 - ESCO must submit IGA Contract, IGA, EPC, Amendment, PIR and annual M&V reports to AEO electronically.
 - ESCO must report annually on all project metrics and at key junctures.