Attachment F – Technical Energy Audit & Project Proposal Contract

The Energy Services Coalition offers a collection of model procurement and contracting documents that represent Best Practices for state energy offices (SEOs) to launch and administer programs to increase energy efficiency through energy performance contracting. The documents draw from successful programs in various states and are continually updated to incorporate the latest strategies. They can be easily customized to meet the needs of any SEO or similar government department.

DESCRIPTION –Technical Energy Audit and Project Proposal Contract:

This Contract for Technical Energy Audit & Project Proposal is the first of two contracts with the selected Contractor. The Contractor will complete an investment grade technical energy audit that will include an analysis of each proposed project with projected energy and cost savings and itemized project cost. The Contractor will also propose terms for the energy performance contract and present a proposal that includes recommended projects, financing term and projected annual cash-flow analysis. The results of the audit will form the basis for a subsequent Energy Performance Contract.

This is a model document only and does not attempt to identify or address all circumstances or conditions you may encounter or desire. Consult with your legal counsel and procurement staff to adapt it to meet your needs.

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TECHNICAL ENERGY AUDIT & PROJECT PROPOSAL CONTRACT

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TECHNICAL ENERGY AUDIT AND PROJECT PROPOSAL CONTRACT

This Technical Energy Audit & Project Proposal Contract (the "Contract") is made and entered into as of Date, between ESCO Name (“Contractor”), having its principal offices at Contractor Address, and Institution Name and/or name of authorizing Board hereinafter referred to as (“Institution”), Institution Address.

W I T N E S S E T H

WHEREAS, This Contract was created for use of institutions to obtain a technical energy audit of a facility from a private energy service company (ESCO).

WHEREAS, Authority exists in the law rot Institution to enter into this contract, and funds have been budgeted, appropriated and otherwise made available ; a sufficient unencumbered balance thereof remains available for payment; and the required approval, clearance and coordination have been accomplished from and with appropriate agencies.

WHEREAS, Contractor is a company with experience and technical and management capabilities to provide for the discovery, engineering, procurement, installation, financing, savings guarantee, maintenance and monitoring of energy and water saving measures at facilities similar in size, function and system type to Institution’s facilities; and

WHEREAS, Contractor has submitted a Contractor Response, in response to Institution’s Request for Proposals (RFP), pertaining to the discovery, engineering, procurement, installation, financing, savings guarantee, maintenance and monitoring of energy and water saving measures at Institution’s facilities; and

WHEREAS, Institution has selected Contractor to provide the services described herein; and

WHEREAS, Institution desires to enter into a Contract to have Contractor perform a **Technical Energy Audit and Project Proposal** to determine the feasibility of entering into an **Energy Performance Contract** to provide for installation and implementation of energy and water saving measures at Institution’s facilities.

WHEREAS, if energy and water saving measures are determined to be feasible, and if the amount of savings can be reasonably sufficient to cover all costs, as defined by Institution, associated with an energy performance contracting project, the parties intend to negotiate an Energy Performance Contract under which the Contractor will design, procure, install, implement, maintain and monitor such energy and water saving measures. However, this intent does not commit Institution to entering into such Energy Performance Contract.

THEREFORE, the parties agree as follows:

1. Technical Energy Audit and Project Proposal Contract

Contractor agrees to perform a Technical Energy Audit in accordance with the Scope of Work described below. Contractor agrees to complete the Technical Energy Audit and tender to Institution a final report within Number of Days –120 days recommended depending on size and complexity of facilities and time needed to review the audit calendar days from the execution of this Contract.

Institution agrees to assist the Contractor in performing the **Technical Energy Audit** in accordance with the Scope of Work described below. Institution agrees to work diligently to provide full and accurate information. Contractor agrees to work diligently to assess validity of information provided and to confirm or correct the information as needed. The parties contemplate that this will be an iterative process and that Institution will have a reasonable amount of time to review and determine acceptance before issuing the **Notice of Acceptance (Exhibit B)**.

Contractor agrees to offer an **Energy Performance Contract Proposal** with a package of energy and water saving measures and with details as specified in the Scope of Work below.

2. Compensation to Contractor

Contractor shall be compensated as follows:

a. **Basis and Maximum Amount.** Except as provided for in **Subsections 2(b), 2(c), or 2(d)** below, within Number of Days: 120 days recommended days after Institution's acceptance of the final **Technical Energy Audit and Project Proposal Contract**, Institution shall pay to Contractor a sum not to exceed Dollar Amount in Words ($ dollar amount) based on a maximum of square footage to be audited gross square feet at cost per square foot per square foot of audited square-footage, as per **Exhibit B: Cost and Pricing**. Institution shall only pay for square-footage actually audited. Areas deemed by Contractor not to be audited will not be charged to Institution.

b. **Payment through Performance Contract.** Institution shall have no payment obligations under this contract provided that Contractor and Institution execute an Energy Performance Contract within Number of Days – 120 days suggested, allowing sufficient time for contract negotiation, attorney review, and Institution processing days, after issuance of the **Notice of Acceptance (Exhibit B)** of the final **Technical Energy Audit and Project Proposal Contract**, but the fee indicated above shall be incorporated into Contractor’s project costs in the Energy Performance Contract and paid through the Energy Performance Contract funding mechanisms.

c. **Project With Insufficient Savings.** Institution shall have no payment obligations under this Contract in the event that Contractor's final **Technical Energy Audit and Project Proposal Contract** does not contain a package of energy and water saving measures which, if implemented and as meeting terms of **Exhibit A: Scope of Work, (b) Guidelines and Requirements**, will provide the Institution with cash savings sufficient to fund Institution’s payments of all costs and fees associated with the Energy Performance Contract, including 1) the fee associated with the Technical Energy Audit, 2) all monthly payments on a lease purchase agreement to finance the measures, 3) any annual fees for monitoring and maintenance incurred by the Contractor. Should the Contractor determine at any time during the Technical Energy Audit that savings cannot be attained to meet these terms, the Technical Energy Audit will be terminated by written notice by the Contractor to Institution. In this event this Contract shall be cancelled and Institution shall have no obligation to pay, in whole or in part, the amount specified in this **Section 2(a)**.

3. Scope of Work

The Technical Energy Audit and Energy Performance Proposal Contract shall be performed as described in **Exhibit A: Scope of Work**.

4. Termination

This Contract may be terminated at any time as described below by:

a. <u>Termination for Default/Cause</u>

1) Default.
If the Contractor refuses or fails to timely perform any of the provisions of this contract, with such diligence as will ensure its completion within the time specified in this contract, the procurement officer may notify the Contractor in writing of the non-performance, and if not promptly corrected within the time specified, such officer may terminate the Contractor's right to proceed with the contract or such part of the contract as to which there has been delay or a failure to properly perform. The Contractor shall continue performance of the contract to the extent it is not terminated and shall be liable for excess costs incurred in procuring similar goods or services elsewhere.

2) Contractor's Duties
Notwithstanding termination of the contract and subject to any directions from the procurement officer, the Contractor shall take timely, reasonable and necessary action to protect and preserve property in the possession of the Contractor in which the purchasing institution has an interest.

3) Compensation
Payment for completed services delivered and accepted by Institution shall be at the contract price. The purchasing institution may withhold amounts due to the

Contractor as the procurement officer deems to be necessary to protect the purchasing institution against loss because of outstanding liens or claims of former lien holders and to reimburse the purchasing institution for the excess costs incurred in procuring similar goods and services.

4) Excuse for Nonperformance or Delayed Performance
The Contractor shall not be in default by reason of any failure in performance of this contract in accordance with its terms if such failure arises out of acts of God; acts of the public enemy; acts of the State and any governmental entity in its sovereign or contractual capacity; fires; floods; epidemics; quarantine restrictions; strikes or other labor disputes; freight embargoes; or unusually severe weather. Upon request of the Contractor, the procurement officer shall ascertain the facts and extent of such failure, and, if such officer determines that any failure to perform was occasioned by any one or more of the excusable causes, and that, but for the excusable cause, the Contractor's progress and performance would have met the terms of the contract, the delivery schedule shall be revised accordingly, subject to the rights of the purchasing institution.

5) Erroneous Termination for Default
If after notice of termination of the Contractor's right to proceed under the provisions of this clause, it is determined for any reason that the Contractor was not in default under the provisions of this clause, or that the delay was excusable, the rights and obligations of the parties shall be the same as if the notice of termination had been issued pursuant to the termination for convenience clause.

b. Termination for Convenience

1) Termination
The Institution may, when the interests of the institution so require, terminate this contract in whole or in part, for the convenience of the institution. The Institution shall give written notice of the termination to the Contractor specifying the part of the contract terminated and when termination becomes effective. This in no way implies that the purchasing institution has breached the contract by exercise of the Termination for Convenience Clause.

2) Contractor's Obligations
The Contractor shall incur no further obligations in connection with the terminated work and on the date set in the notice of termination the Contractor will stop work to the extent specified. The Contractor shall also terminate outstanding orders and subcontracts as they relate to the terminated work. The Contractor shall settle the liabilities and claims arising out of the termination of subcontracts and orders connected with the terminated work. The Institution may direct the Contractor to assign the Contractor's right, title, and interest under terminated orders or subcontracts to the purchasing institution. The Contractor must still complete and deliver to the purchasing institution the work not terminated by the Notice of Termination and may incur obligations as are necessary to do so.

3) Compensation

a) The Contractor shall submit a termination claim specifying the amounts due because of the termination for convenience together with cost or pricing data bearing on such claim. If the Contractor fails to file a termination claim within 90 days from the effective date of termination, the Institution may pay the Contractor, if at all, an amount set in accordance with subparagraph C of this Section.

b) The Institution and the Contractor may agree to a settlement provided the Contractor has filed a termination claim supported by cost or pricing data and that the settlement does not exceed the total contract price plus settlement costs, reduced by payments previously made by the purchasing institution, the proceeds of any sales of supplies and manufactured materials made under agreement, and the contract price of the work not terminated.

c) Absent complete agreement, under subparagraph B of this Section, the Institution shall pay the Contractor the following amounts, provided the payments agreed to under subparagraph B shall not duplicate payments under this subparagraph:

(1) Contract prices for supplies or services accepted under the contract;

(2) Costs incurred in preparing to perform the terminated portion of the work plus a fair and reasonable profit on such portion of the work (such profit shall not include anticipatory profit or consequential damages) less amounts paid to or to be paid for accepted supplies or services; provided, however, that if it appears that the Contractor would have been sustained a loss if the entire contract would have been completed, no profit shall be allowed or included and the amount of compensation shall be reduced to reflect the anticipated rate of loss.

(3) Costs of settling and paying claims arising out of the termination of subcontracts or orders pursuant to the Contractor's obligations paragraph of this clause. These costs must not include costs paid in accordance with subparagraph B of this Section.

(4) The reasonable settlement costs of the Contractor including accounting, legal, clerical, and other expenses reasonably necessary for the preparation of settlement claims and supporting data with respect to the terminated portion of the contract and for the termination and settlement of subcontracts thereunder, together with reasonable storage, transportation, and other costs incurred in connection with the terminated portion of this contract.

(5) The total sum to be paid the Contractor under this subparagraph C shall not exceed the total contract price plus settlement costs, reduced by the amount of payments otherwise made, the proceeds of any sales of supplies and manufacturing materials under subparagraph B, and the contract price of work not terminated.

d) Cost claimed or agreed to under this section shall be in accordance with applicable sections of the State Procurement Code.

c. Available Funds – Contingency - Remedies

The Institution is prohibited by law from making fiscal commitments beyond the term of its current fiscal period. Therefore, Contractor's compensation is contingent upon the continuing availability of institution appropriations.. Payments pursuant to this contract shall only be made from available funds encumbered for this Contract, and the Institution's liability for such payments shall be limited to the amount remaining of such encumbered funds. If institution or federal funds are not appropriated, or otherwise become unavailable to fund this Contract, the Institution may immediately terminate the Contract in whole or in part without further liability in accordance with the Termination for Cause subsection of the Remedies section of this Contract. All payments are subject to the general Remedies section of this Contract.

d. At any time as described in Section 2.b above.

5. Insurance

Note to Institution: Coordinate insurance requirements and amounts of coverage with existing policy amounts and coverages and modify below as needed.
Before commencing any Work under this Contract, Contractor shall file with Institution certificates of insurance evidencing the coverage's as specified below:

a. It is agreed and understood Contractor shall maintain in full force and effect adequate commercial general liability insurance and property damage insurance, as well as workmen's compensation and employer's liability insurance pursuant to the State insurance requirements as defined below.
b. The Contractor shall obtain, and maintain at all times during the term of this Agreement, insurance in the following kinds and amounts.
   1) Standard Workers' Compensation and Employer's Liability as required by State statute, including occupational disease, covering all employees at the work site.
   2) General Liability (minimum coverage)
      a) Combined single limit of $600,000 written on an occurrence basis.
      b) Any aggregate limit will not be less than $1,000,000.
      c) The Contractor must purchase additional insurance if claims reduce the annual aggregate below $600,000.
   3) Automobile Liability (minimum coverage) in the amount of $600,000 combined single limit
   4) The Institution shall be named as an additional insured on each commercial general liability policy.
   5) The insurance shall include provisions preventing cancellation without 30 calendar days prior written notice, by certified mail to the Principal Representative
   6) Contractor shall be responsible for all claims, damages, losses or expenses, including attorney's fees, arising out of or resulting from the

performance of the Services contemplated in this Contract, provided that any such claim, damage, loss or expense is caused by any negligent act, error or omission of Contractor, any Consultant or associate thereof, or anyone directly or indirectly employed by Contractor. Contractor shall submit a Certificate of Insurance at the signing of this Contract and also any notices of Renewal of said Policy as they occur.

6. Energy Performance Contract

The Parties intend to negotiate an Energy Performance Contract under which the Contractor will design, install and implement energy and water saving measures which the Parties have agreed to, and provide certain maintenance and monitoring services. However, nothing in this Contract should be construed as an obligation on any of the Parties to execute such a contract. The terms and provisions of such an Energy Performance Contract will be set forth in a separate contract.

7. Extent of Agreement

a. This Contract represents the entire and integrated agreement between Institution and Contractor and supersedes all prior negotiations, representations or agreement, either written or oral. This Contract may be amended only by written instrument signed by the Institution.
b. The Institution and Contractor understand and agree the attachment and exhibits hereto are and shall be an integral part of this Contract and the terms and provisions thereof are hereby incorporated, made a part of and shall supplement those recited herein. In the event of any conflict, or variance, the terms and provisions of this printed Agreement shall supersede, govern and control.

8. Term

The term of this Contract will become effective upon approval by the Controller and acceptance by the Principal Representative**.** The term shall end number of days plus 15 days to allow for processing of check (suggest 135 days) after signing of the **Notice of Acceptance (Exhibit B)** of the Final Technical Energy Audit Report by the Principal Representative.

9. Order of Precedence

In the event of conflict or inconsistency between this contract and its exhibits or attachments, such conflicts or inconsistencies shall be resolved by reference to the documents in the following order of priority:

1. State Special Provisions *These Special Provisions are required for State institution/institution projects.*
2. Contract - general terms and conditions
3. Other exhibits or attachments

10. Institution's Special Provisions

Insert as required or as available.

THE PARTIES HERETO HAVE EXECUTED THIS CONTRACT

IN WITNESS WHEREOF, and intending to be legally bound, the parties hereto subscribe their names to this Contract on the date first written above.

Institution

By______________________________________
Principal Representative

(Corporate Seal)

CONTRACTOR
By:

____
ATTEST
Name
Title

____

____
Secretary
Signature

____
Address

____

City, State, Zip

____
Social Security Number or Federal ID Number

APPROVED:

EXHIBIT A
Scope of Work

NOTE: It is tempting to develop a prescribed scope of work fo the Contractor, detailing exactly what projects the Contractor should undertake in your facilities. This is not recommended, however, because it is very valuable to use the Contractor's technical expertise to help identify and assess the opportunities that are most cost-effective or most valuable for your facilities instead of pre-determining the scope.

a. **<u>Process</u>**

This will be an interactive approach in working with Institution, following these steps:

1) Preliminary Assessment of Needs and Opportunities

   a) Meet with Institution to establish interests, plans, problems, etc. related to facilities and operation of facilities.
   b) Collect data and background information on buildings, equipment and facilities operation
   c) Perform a preliminary walk-through of facilities and interview staff and occupants to identify potential measures
   d) Meet with Institution to present prelminary findings and establish agreement on measures to analyze

2) Preliminary Analysis of Measures
   a) Establish base year consumption and reconcile with end-use consumption estimates
   b) Conduct a preliminary analysis of potential measures
   c) Meet with Institution to present preliminary findings and establish agreement on measures to further analyze

3) Further Analysis and Audit Report
   a) Further analyze measures
   b) Develop a draft Technical Energy Audit Report
   c) Meet with Institution to present results
   d) Prepare final Technical Energy Audit Report

4) Energy Performance Contract Proposal
   a) Develop energy performance contract proposal
   b) Meet with Institution to present results and negotiate final terms

b. **<u>Scope Guidelines and Requirements</u>**

1) Energy Performance Contract Term. The Energy Performance Contract Term shall have a term no greater than 25 years and no greater than the

cost-weighted average lifetime of the equipment. Institution's goal is for a term no greater than Desired Financing Term years.

NOTE: Refer to legislation where the maximum financing term may be set. A generally recognized maximum is 25 years, as used by the federal government. A typical term is 12-17 years and is governed by financing availability, longevity of installed measures, and ability for savings to allow a cash-flow to pay for the desired scope of projects. The ESC recommends not to otherwise restrict the financing term at this stage as it reduces the project potential.

2) Annual Guaranteed Energy and Cost Savings. The annual guarantee is required for the entire financing term, however Institution has the option to terminate the guarantee at any time after the first three years of the contract term provided the annual guaranteed energy and cost savings were achieved each prior year. The guarantee is based on cost savings attributable to all energy saving measures, and must equal or exceed all project costs each year during the contract period. Annual project costs include debt service, Contractor fees, maintenance services, monitoring services, and other services.

3) Contractor shall reserve up to 2% of annually guaranteed savings for Institution to hire an independent third-party professional to review the ESCO's monitoring and verification reports and advise Institution of compliance in monitoring and verifying savings.

4) Excess Savings. Annual cost savings beyond the guaranteed minimum savings will be retained by Institution, and will not be allocated to shortfalls in other years.

5) Annual Savings Estimates: The annual savings estimates for all measures must be estimated for each year during the contract period.

6) Allowable cost and savings factors approved for consideration.: Institution will provide Contractor with sufficient guidance to develop savings estimates.

   a) Payment sources that can be incorporated:
      1. Energy and water cost savings
      2. Material/commodity savings, including scheduled replacement of parts (only for years that these cost savings are applicable)
      3. Outside labor cost savings, including maintenance contracts
      4. In-house labor costs
      5. Deferred maintenance cost
      6. Offset of future capital cost
      7. Outside incentive funds (utility incentives, grants, etc.)
      8. Any savings related to maintenance and operation of the facilities will be limited to those that can be thoroughly documented.

   b) Payment sources that may also be considered and negotiated:

c) Additional factors related to establishing savings that cover all costs:
   1. Escalation rates that apply to each payment source. These are rates to be used in cash flow projections for project development purposes. NOTE: Use federal government guidelines on utility escalation rates to ensure reasonableness.
   2. Interest rates (municipal tax-exempt rates for public institutions)
   3. Institution cash outlay (Institution's sole discretion)

d) The markup costs are presented in **Exhibit D: Cost and Pricing**. These rates will be used in the Technical Energy Audit and subsequent Energy Performance Contract.

c. **<u>Collect data and background information from Institution</u>** concerning facility operation and energy use for the most recent <u>three</u> years from the effective date of this Contract as follows.

1) Building square footage.
2) Construction data of buildings and major additions including building envelope
3) Utility company invoices
4) Occupancy and usage information
5) Description of all energy-consuming or energy-saving equipment used on the premises, as available.
6) Description of energy management procedures utilized on the premises
7) Description of any energy-related improvements made or currently being implemented
8) Description of any changes in the structure of the facility or energy-using or water-using equipment
9) Description of future plans regarding building modifications or equipment modifications and replacements
10) Drawings, as available (may include mechanical, plumbing, electrical, building automation and temperature controls, structural, architectural, modifications and remodels)
11) Original construction submittals and factory data (specifications, pump curves, etc.), as available
12) Operating engineer logs, maintenance work orders, etc., as available
13) Records of maintenance expenditures on energy-using equipment, including service contracts
14) Prior energy audits or studies, if any

Institution agrees to work diligently to furnish Contractor, upon request, accurate and complete data and information as available. Where information is not available from Institution, Contractor will make a diligent effort to collect such information through the facility inspection, staff interviews, and utility companies.

Contractor agrees to work diligently to assess validity of information provided and to confirm or correct the information as needed.

d. **<u>Identify potential measures</u>**

1) Interview the facility manager, maintenance staff, subcontractors and occupants of each building regarding:
    a) Facility operation, including energy management procedures
    b) Equipment maintenance problems
    c) Comfort problems and requirements
    d) Equipment reliability
    e) Projected equipment needs
    f) Occupancy and use schedules for the facility and specific equipment.
    g) Facility improvements – past, planned and desired
2) Survey major energy-using equipment, including lighting (indoor and outdoor), heating and heat distribution systems, cooling systems and related equipment, automatic temperature control systems and equipment, air distribution systems and equipment, outdoor ventilation systems and equipment; exhaust systems and equipment; hot water systems, electric motors, transmission and drive systems, special systems (kitchen/dining equipment, etc.), renewable energy systems, other energy using systems, water consuming systems (restroom fixtures, water fountains, irrigation systems, etc.)
3) Perform "late-night" surveys outside of normal business hours or on weekends to confirm building system and occupancy schedules, if deemed necessary.
4) Develop a preliminary list of potential energy and water saving measures. Consider the following for each system:
    a) Comfort and maintenance problems
    b) Energy use, loads, proper sizing, efficiencies and hours of operation
    c) Current operating condition
    d) Remaining useful life
    e) Feasibility of system replacement
    f) Hazardous materials and other environmental concerns
    g) Institution’s future plans for equipment replacement or building renovations
    h) Facility operation and maintenance procedures that could be affected
    i) Capability to monitor energy performance and verify savings

Institution will allow Contractor reasonable access to facility staff to ensure understanding of existing systems and opportunities.

Contractor agrees to work diligently to assess validity of information provided and to confirm or correct the information as needed.

e. **<u>Establish base year consumption and reconcile with end use consumption estimates</u>**.

1) Establish base year consumption by examining utility bills for the past <u>three</u> years for electricity, gas, steam, water, etc. Present base year consumption in terms of energy units (kWh, kW, ccf, Therms, gallons, or other units used in bills), in terms of dollars, and in terms of dollars per square foot. Describe the process used to determine the base year (averaging, selecting most representative contiguous 12 months, etc.). Consult with facility personnel to account for any anomalous schedule or operating conditions on billings that could skew the base year representation. Contractor will account for periods of time when equipment was broken or malfunctioning in calculating the base year.
2) Estimate loading, usage and/or hours of operation for all major end uses of total facility consumption including, but not limited to: lighting, heating, cooling, motors (fans and pumps), plug loads, and other major energy and water using equipment. Where loading or usage are highly uncertain (including variable loads such as cooling),
   Contractor will use its best judgment, spot measurements or short-term monitoring. Contractor should not assume that equipment run hours equal the operating hours of the building(s) or facility staff estimates.
3) Reconcile annual end-use estimated consumption with the annual base year consumption. This reconciliation will place reasonable "real-world" limits on potential savings.
4) Propose adjustments to the baseline for energy and water saving measures that will be implemented in the future.

f. **<u>Develop a preliminary analysis of potential energy and water saving measures.</u>**

This list shall be compiled and submitted to Institution within 90 calendar days of the execution of this Contract.

1) List all potential opportunities, whether cost-effective or not. Consider technologies in a comprehensive approach including, but not limited to: lighting systems, heating/ventilating/air conditioning equipment and distribution systems, controls systems, building envelope, motors, kitchen equipment, pools, renewable energy systems, other special equipment, irrigation systems, and water saving devices.
2) Identify measures which appear likely to be cost effective and therefore warrant detailed analysis
3) For each measure, prepare a preliminary estimate of energy or water cost savings including description of analysis methodology, supporting calculations and assumptions used to estimate savings.

g. **<u>Meet with Institution to present preliminary findings</u>** prior to thorough analysis. Describe how the projected project economics meet the Institution's terms for completing the Technical Energy Audit and Proposal Contract. Discuss assessment of energy use, savings potential, project opportunities, and potential for developing an energy performance contract. Develop a list of recommended measures for further analysis. The Institution shall have the option to reject calculations of savings, potential savings allowed, or project recommendations.

h. **<u>Analyze savings and costs for each energy and water saving measure.</u>**
   1) Follow the methodology of ASHRAE or other nationally-recognized authority following the engineering principle(s) identified for each retrofit option
   2) Utilize assumptions, projections and baselines which best represent the true value of future energy or operational savings. Include accurate marginal costs for each unit of savings at the time the audit is performed, documentation of material and labor cost savings, adjustments to the baseline to reflect current conditions at the facility, calculations which account for the interactive effects of the recommended measures.
   3) Use best judgment regarding the employment of instrumentation and recording durations so as to achieve an accurate and faithful characterization of energy use
   4) Use markups and fees stated above in all cost estimates.
   5) Develop a preliminary measurement and verification plan for each measure
   6) Follow additional guidelines for analysis and report preparation given below
   7) Include cost to provide services and complete application for Energy Star Label, LEED-EB certification for Existing Buildings, or other certification. Also include cost for EPA's Tools for Schools or other such program related to improved air quality.

i. **<u>Prepare a draft Technical Energy Audit Report</u>**. The report provides an engineering and economic basis for negotiating a potential Energy Performance Contract between the Institution and the Contractor. The report shall be completed within **90** calendar days of the date of execution of this Contract. The report shall include:
   1) Overview
      a) Contact information
      b) Summary table of recommended energy and water saving measures, with itemization for each measure of total design and construction cost, annual maintenance costs, the first year cost avoidance (in dollars and energy units), simple payback and equipment service life
      c) Summary of annual energy and water use by fuel type and costs of existing or base year condition
      d) Calculation of cost savings expected if all recommended measures are implemented, and total percentage savings of total facility energy cost.
      e) Description of the existing facility, mechanical and electrical systems

f) Summary description of measures, including estimated costs and savings for each as detailed above
g) Discussion of measures considered but not investigated in detail
h) Conclusions and recommendations

2) Base year energy use
   a) Description and itemization of current billing rates, including schedules and riders.
   b) Summary of all utility bills for all fuel types and water
   c) Identification and definition of base year consumption and description of how established
   d) Reconciliation of estimated end use consumption (i.e. lighting, cooling, heating, fans, plug loads, etc) with with base year (include discussion of any unusual findings)

3) Full description of each energy and water saving measure including:
   a) Written description
      (1) Existing conditions
      (2) Description of equipment to be installed and how it will function
      (3) Include discussion of facility operations and maintenance procedures that will be affected by installation/implementation.
      (4) Present the plan for installing or implementing the recommendation.
   b) Savings calculations
      (1) Base year energy use and cost
      (2) Post-retrofit energy use and cost
      (3) Savings estimates including analysis methodology, supporting calculations and assumptions used.
      (4) Annual savings estimates. The cost savings for all energy saving measures must be estimated for <u>each year</u> during the contract period. Savings must be able to be achieved <u>each year</u> (cannot report average annual savings over the term of the contract).
      (5) Savings estimates must be limited to savings allowed by the Institution as described above.
      (6) Percent cost-avoidance projected
      (7) Description and calculations for any proposed rate changes
      (8) Explanation of how savings interactions between retrofit options is accounted for in calculations.
      (9) Operation and maintenance savings, including detailed calculations and description. Ensure that maintenance savings are only applied in the applicable years and only during the lifetime of the particular equipment.
      (10) If computer simulation is used, include a short description and state key input data. If requested by Institution, access will be provided to the program and all assumptions and inputs used, and/or printouts shall be provided of all input files and important output files and included in the Technical Energy Audit with

documentation that explains how the final savings figures are derived from the simulation program output printouts

(11) If manual calculations are employed, formulas, assumptions and key data shall be stated.

(12) Conclusions, observations, caveats

c) Cost estimate -- detailed scope of the construction work needed, suitable for cost estimating. Include all anticipated costs associated with installation and implementation. Provide specifications for major mechanical components as well as detailed lighting and water fixture counts.

(1) Engineering/design costs

(2) Contractor/vendor estimates for labor, materials, and equipment; include special provisions, overtime, etc., as needed to accomplish the work with minimum disruption to the operations of the facilities.

(3) Permit costs

(4) Construction management fees

(5) Environmental costs or benefits (disposal, avoided emissions, handling of hazardous materials, etc.)

(6) Note that all markups and fees stated in this Contract shall be used in the cost estimates, unless otherwise documented and justified due to change in scope or size of project or other unforeseen circumstances.

(7) Conclusions, observations, caveats

(8) Other cost categories as defined above under "markups" in Section 3b above.

d) Other

(1) Estimate of average useful service life of equipment

(2) Preliminary commissioning plan

(3) Preliminary measurement and verification plan, following the International Performance Measurement and Verification Protocol (IPMVP), explaining how savings from each measure is to be measured and verified (stipulated by Contract, utility bill analysis, end-use measurement and calculation, etc.). The Preliminary M&V plan shall follow the format provided in **Exhibit C: Guidelines for Draft Monitoring and Verification Plan.**

(4) Discussion of impacts that facility would incur after contract ends. Consider operation and maintenance impacts, staffing impacts, budget impacts, etc., and identify who is responsible for maintenance.

(5) Compatibility with existing systems. NOTE: Include the name of the existing controls system, if new controls systems will have to be compatible with an existing brand of controls. Also note if if a sole-source vendor is established for controls systems.

(6) Complete appendices that document the data used to prepare the analyses. Describe how data were collected.

j. **Meet with Institution** to:
Review the recommendations, savings calculations and impact of the measures on the operations of the facility. Describe how the projected project economics meet the Institution's terms for completing the Technical Energy Audit and Performance Contract Proposal. Discuss the willingness and capability of Institution to make capital contributions to the project to improve the economics of the overall project.

k. **Revise Audit as directed by Institution**.

l. **Prepare an Energy Performance Contract Proposal (Term Sheet).** In anticipation of Contractor and Institution entering into an Energy Performance Contract to design, install, and monitor the energy and water saving measures proposed in the Technical Energy Audit Report, Contractor shall prepare a proposal for terms to be incorporated in a Energy Performance contract to include:

1) Project Cost is the total amount Institution will pay for the project and Contractor's services. Costs must be consistent with maximum markups and fees established above. Costs may include but are not limited to: engineering, designing, packaging, procuring, installing (from Technical Energy Audit Report results); performance/payment bond costs; construction management fees; commissioning costs; maintenance fees; monitoring fees; training fees; legal services; overhead and profit; other markups.
2) Include a List of Services that will be provided as related to each cost.
3) Expected term of the Energy Performance Contract.
4) Description of how the project will be financed including available interest rates and financing terms, based on interest rates likely available to Institution at this time, and based on a 60-day and 90-day lock option.
5) Explanation of how the savings will be calculated and adjusted due to weather (such as heating and cooling degree days), occupancy or other factors. Monitoring and verification methods must be consistent with the International Performance Monitoring and Verification Protocol 2000.
6) Analysis of annual cash flow for Institution during the contract term.

EXHIBIT B
Notice of Acceptance of Technical Energy Audit Report

Notice of Acceptance

Date of Notice ___________

Notice is hereby given that ***Institution*** accepts the Technical Energy Audit and Project Development Proposal by Contractor, as contemplated in **Section 2 of the Technical Energy Audit and Project Proposal Contract** dated ________.

Institution Name

By ___________________________

Date

When completely executed, this form is to be sent by certified mail to the Contractor by Institution Name.

EXHIBIT C
Guidelines for Draft Monitoring and Verification Plan

Measurement & Verification for Performance Contracts

Why Measure and Verify?

Energy performance contracts are based on "guaranteed savings." Any authentic guarantee of energy and cost savings includes adequate measurement and verification (M&V) activities.

There are many reasons to use measurement & verification strategies that go far beyond satisfying the law. Properly applied, measurement & verification can:

- Accurately assess energy savings for a project;
- Allocate risks to the appropriate parties;
- Reduce uncertainties to reasonable levels;
- Ensure that the institution achieves utility budget savings;
- Monitor equipment performance;
- Find additional savings;
- Improve operations & maintenance;
- Verify savings guarantee is met;
- Allow for future adjustments, as needed.

Energy Savings Depend on Performance and Usage

There are two fundamental factors that drive energy savings: performance and usage. Performance describes the amount of energy used to accomplish a specific task, and may also be referenced as efficiency or rate of energy use. Usage describes the operating hours, or total time, that a piece of equipment runs.

The energy consumption is generally determined by multiplying performance (or efficiency) by usage (or operating hours). In all cases, both performance and usage factors need to be known to determine energy consumption and savings, as shown in Figure 1.

Savings are determined by comparing the energy use of the pre-retrofit case, called the *baseline*, with the post-retrofit energy use. This means that the performance and usage factors must be know for both the baseline and post-retrofit cases in order to determine energy savings.

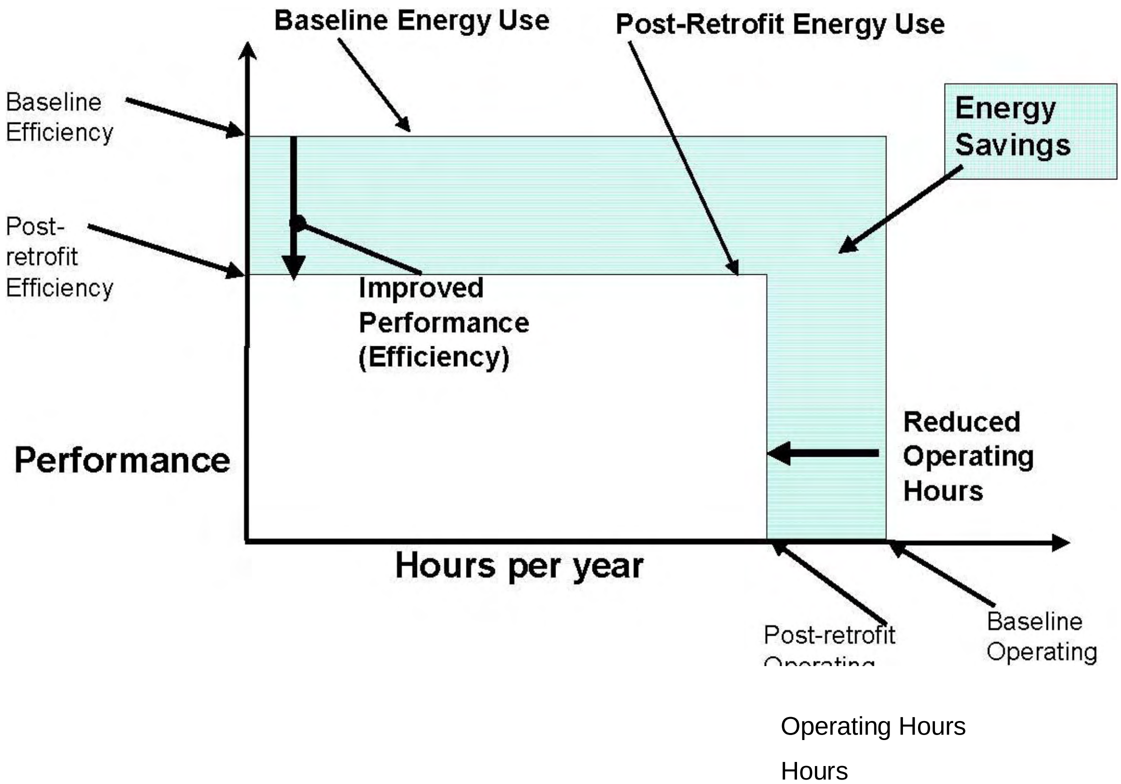


Figure 1: Energy Savings Depend on Performance and Usage

Both performance and usage factors need to be known to determine energy consumption and savings, as shown in Figure 1. Lighting provides a simple example: performance would be the watts required to provide a specific amount of light; usage would be the operating hours per year. Lighting energy used is equal to watts * operating hours.

A chiller is a more complex system: performance is defined as kW/ton, which varies with load; usage is defined by cooling load profile and ton-hours. Chiller energy must be analyzed on an hourly basis because equipment efficiency varies with loading, and is equal to Sum [kW/ton * ton/hours].

Using M&V To Allocate Risk

One of the primary purposes of M&V is to reduce risk to an acceptable level, which is a subjective judgment based on the institution's priorities and preferences. In performance contracts, risks are allocated between the ESCO and the owner. Allocation of risk is accomplished through carefully crafted M&V strategies.

"Risk" in the M&V context refers to the uncertainty that expected savings will be realized. Assumption of risk implies acceptance of the potential monetary consequences. Both ESCOs and agencies are reluctant to assume responsibility for factors they cannot control, and stipulating certain parameters in the M&V plan can assign responsibility to each party for the parameters they are best able to control. For example, usage factors under the institution's control such as lighting operating hours and thermostat setpoints are typically stipulated. Using stipulations means that the ESCO and institution agree to use a set value for a parameter throughout the term of the contract, regardless of the actual behavior of that parameter.

If no stipulated values are used and savings are verified based entirely on measurements, then more of the risk resides with the ESCO, who must show that the guaranteed savings are realized, or prove how contributing factors effected the result. Alternatively, the institution assumes the risk for the parameters that are stipulated. In the event that the stipulated values overstate the savings, the institution will not be able to claim the actual shortfall from the ESCO's guarantee. If the actual savings are greater than expected due to underestimated stipulated values, the institution benefits from the surplus savings.

Risk related to usage stems from uncertainty in operational factors. For example, savings fluctuate depending on weather, how many hours equipment is used, user intervention, or maintenance practices. Since ESCOs often have no control over such factors, they are usually reluctant to assume usage risk. The institution generally assumes responsibility for usage risk by either allowing baseline adjustments based on measurements, or by agreeing to stipulated equipment operating hours or other usage-related factors.

Performance risk is the uncertainty associated with characterizing a specified level of equipment performance. The ESCO is ultimately responsible for selection, application, design, installation, and performance of the equipment and typically assumes responsibility for achieving savings related to equipment performance. To validate performance, the ESCO must demonstrate that the equipment is operating as intended and has the potential to deliver the guaranteed savings.

Using stipulations in savings estimates can be a practical, cost-effective way to minimize M&V costs and allocate risks. Stipulations used appropriately do not jeopardize the savings guarantee, the institution's ability to pay for the project, or the value of the project to the government. However, stipulations shift risk to the institution, and the institution should thoroughly understand the potential consequences before accepting them. Risk is minimized through carefully crafted M&V requirements including diligent estimation of the stipulated values.

Primary Steps To Verify Savings

Regardless of the M&V strategy used, similar steps are taken to verify the potential for the installed energy conservation measures (ECMs) to generate savings. Verifying the potential to generate savings can also be stated as confirming that:

Step 1: The baseline conditions were accurately defined,

Step 2: A suitable project specific M&V plan was developed,

Step 3: Proper equipment/systems were installed and are performing to specification, and

Step 4: The equipment/systems continue to have the potential to generate the predicted savings.

These 4 steps are discussed in detail below.

Step 1: Define The Baseline

Typically the ESCO defines the baseline as part of a Technical Energy Audit. Baseline physical conditions (such as equipment inventory and conditions, occupancy, nameplate data, energy consumption rate, control strategies, and so on) are typically determined through surveys, inspections, spot measurements, and short-term metering activities. Baseline conditions are established for the purpose of calculating savings by comparing the baseline energy use to the post-installation energy use. Baseline data are used to account for any changes that may occur during the performance period, which may require baseline energy use adjustments. It is the institution's responsibility to ensure the baseline has been properly defined.

In almost all cases after the measure has been installed, one cannot go back and re-evaluate the baseline. It no longer exists! Therefore, it is very important to properly define and document the baseline conditions. Deciding what needs to be monitored, and for how long, depends on factors such as the complexity of the measure and the stability of the baseline, including the variability of equipment loads and operating hours, and the number of variables that affect the load.

Step 2: Develop Project Specific Measurement & Verification Plan

The project specific M&V plan is developed during contract negotiations. The M&V plan is the single most important item in an energy savings "guarantee."

The project specific M&V plan includes project-wide items as well as details for each ECM, including:

- Details of baseline conditions and data collected
- Documentation of all assumptions and sources of data
- What will be verified

- Who will conduct the M&V activities
- Schedule for all M&V activities
- Discussion on risk and savings uncertainty
- Details of engineering analysis performed
- Detail baseline energy and water rates.
- Provide performance period adjustment factors for energy, water, and O&M rates, if used[3].
- How energy and cost savings will be calculated
- Detail any operations & maintenance (O&M) cost savings claimed
- Define O&M reporting responsibilities
- Define content and format of all M&V reports (Post-Installation Commissioning and M&V, Annual or periodic)
- How & why the baseline may be adjusted
- Define preventive maintenance responsibilities

[3] Use NIST data to determine maximum allowable utility escalation factor. See Energy Escalation Rate Calculator (EERC 1.0-04) at http://www.eere.energy.gov/femp/information/download_blcc.cfm.

Although the M&V plan is usually developed during contract negotiations, it is important that the institution and the ESCO agree upon general M&V approaches to be used prior to starting the Technical Energy Audit. The M&V method(s) chosen can have a dramatic affect on how the baseline is defined, determining what activities are conducted during the audit.

It is strongly recommended that the format of M&V plan included in the Technical Energy Audit follows the Annual Report Outline[4] developed by FEMP.

Step 3: Post-Installation Verification

Post-installation verification is conducted by both the ESCO and the institution to ensure that proper equipment/systems were installed, are operating correctly, and have the potential to generate the predicted savings. The verification is accomplished through commissioning and M&V activities.

Commissioning of installed equipment and systems should be required. Commissioning ensures that systems are designed, installed, functionally tested in all modes of operation, and capable of being operated and maintained in conformity with the design intent regardless of energy impact. Commissioning is generally completed by the ESCO and witnessed by the institution. In some cases, however, it is contracted out to a third party.

After system start-up and commissioning activities are completed, the acceptance testing (M&V) activities specified in the contract are implemented. Verification methods may include surveys, inspections, spot measurements, and short-term metering.

The results of the commissioning and M&V activities are usually presented in reports delivered by the ESCO prior to final project acceptance, as discussed below.

Post-Installation and Commissioning Reports

The results of the installation verification activities are presented in a Post-Installation Report delivered by the ESCO to the institution prior to final project acceptance. This report also documents any changes in the contracted project scope and energy savings based on the actual installed conditions. The commissioning report details the commissioning activities conducted to assure equipment was properly installed and is operating to specification.

For projects using any stipulated values[5] to calculate energy savings, the post-installation verification is the most important M&V step since any measurements to substantiate the savings

[4] FEMP M&V Outlines are available through http://www.eere.energy.gov/femp/financing/superespcs_mvresources.cfm.

[5] Using stipulations means that the ESCO and institution agree to use a set value for a parameter throughout the term of the contract, regardless of the actual behavior of that parameter.

guarantee are made only once. Thereafter, inspections may be conducted to verify that the 'potential to perform' exists.

The Post-Installation Report includes:

- Project description
- Installation verification – list of installed equipment
- Details of any changes between Contract and as-built conditions, including energy impacts
- Documentation of all post-install verification activities and performance measurements conducted
- Performance verification – how performance criteria were met
- Expected savings for the first year

The Commissioning Report includes:

- Commissioning results and documentation

It is strongly recommended that the format of the Post-Installation Report follows the Post-Installation Report Outline[6] developed by FEMP.

Step 4: Periodic Performance Period Verification

For at least the first two or three years[7] after installation, the ESCO is required to submit an annual report documenting the savings actually achieved. Inspections should confirm that the installed equipment/systems have been properly maintained, continue to operate correctly, and continue to have the potential to generate the predicted savings. In many cases, equipment performance measurements should be used to substantiate savings.

Sometimes, more frequent verification activities can be appropriate. This ensures that the M&V monitoring and reporting systems are working properly, it allows fine-tuning of measures throughout the year based on operational feedback, and it avoids surprises at the end of the year.

At the institution's option, the savings guarantee can be extended beyond the legislatively required 2 to 3 years. For more complex projects, ongoing M&V activities can help ensure the persistence of savings.

At the end of each performance year (as specified in the contract), the contractor submits an Annual Performance Report to demonstrate that the savings have occurred. Typically, only overall savings guarantee has to be met on a cumulative basis for all ECMs. It is appropriate, however, to itemized the 'actual' savings for each ECM.

The Annual Performance Reports should include:

- Results/documentation of performance measurements and inspections
- Realized savings for the year (energy, energy costs, O&M costs, other)
- Comparison of actual savings to the guaranteed amounts
- Details of all analysis and savings calculations, including commodity rates used and any baseline adjustments performed

[6] FEMP M&V Outlines are available through http://www.eere.energy.gov/femp/financing/superespcs_mvresources.cfm.

- Summary of operations and maintenance activities conducted
- Details of any performance or O&M issues that require attention

It is strongly recommended that the format of Annual Report follows the Annual Report Outline[8] developed by FEMP.

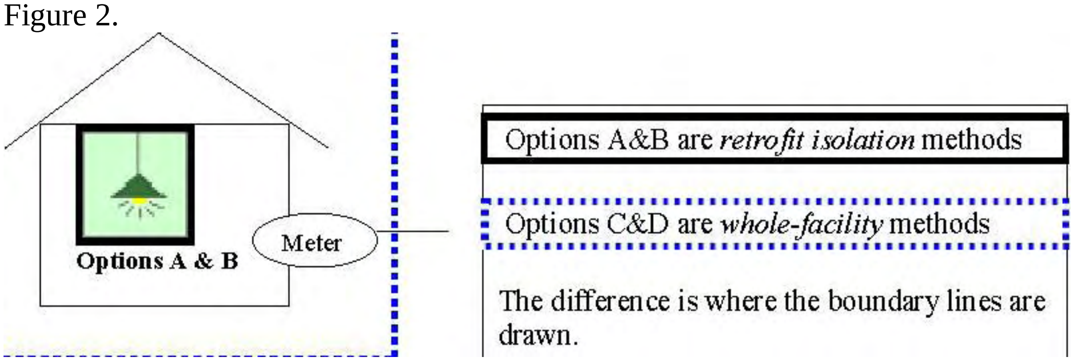
M&V Protocols and Methods

Measuring and verifying savings from performance contracting projects requires special project planning and engineering activities. M&V continues to evolve with the performance contracting industry, although common practices exist. These practices are documented in several guidelines including the *International Performance Measurement & Verification Protocol* (IPMVP, 2001), FEMP *M&V Guidelines: Measurement and Verification for Federal Energy Projects* Version 2.2 (2000), and ASHRAE *Guideline 14: Measurement of Energy and Demand Savings* (2002). (FEMP M&V Outlines are available through http://www.eere.energy.gov/femp/financing/superespcs_mvresources.cfm.)

Many industry professionals consider the *International Performance Measurement & Verification Protocol* (IPMVP) the standard protocol for conducting M&V on energy saving projects. IPMVP is available through http://ipmvp.org/.

IPMVP groups M&V methodologies into four categories: Options A, B, C, and D. The options are generic M&V approaches for energy and water saving projects. Having four options provides a range of approaches to determine energy savings depending on the characteristics of the ECMs being implemented, and balancing the accuracy in energy savings estimates with the cost of conducting M&V activities.

M&V approaches are divided into two general types: retrofit isolation and whole facility. Retrofit isolation methods look only at the affected equipment or system independent of the rest of the facility; whole facility methods consider only the total energy use while ignoring specific equipment performance. Options A and B are retrofit isolation methods; Option C is a whole facility method. Option D can be used as either, but is usually applied as a whole facility method. The differences in these approaches are shown in Figure 2.



Options C & D
Figure 2: Retrofit Isolation vs. Whole-Facility M&V Methods

The four generic M&V options are described in more detail below. Each option has advantages and disadvantages based on site-specific factors and the needs and expectations of the institution. While each option defines a savings determination approach, all savings are estimates since savings cannot be directly measured. Generally, the accuracy of savings estimates improves as more measurements are used in defining the baseline and monitoring the post-installation conditions. The improved accuracy in savings estimates must be weighed against higher M&V costs.

Option A – Partially Measured Retrofit Isolation

Option A is a retrofit isolation approach designed for projects in which the potential to generate savings must be verified, but the actual savings can be determined from short-term data collection, engineering calculations, and stipulated factors. Post-installation energy use, equipment performance, and usage are NOT measured throughout the term of the contract. Post-installation and baseline energy use is estimated using an engineering analysis of information that does not involve long-term measurements.

The intent of Option A is to verify performance through pre- and post-retrofit measurements. Usage factors can be measured or stipulated based upon engineering estimates, operating schedules, operator logs, typical weather data, or other documented information source. Post-retrofit measurements are made only once. Thereafter, inspections verify that the ‘potential to perform’ exists. So long as the ‘potential to perform’ is verified, the savings are as originally claimed and do not vary over the contract term.

Option A methods are appropriate for less complex measures whose performance and operational characteristics are well understood and are unlikely to change. An Option A approach can also be suitable when the value of the measure’s cost savings are low. Examples of projects where Option A may be appropriate include one-for-one lighting replacement measures, high efficiency motors with constant loads, or measures with small percentage of overall cost savings.

Additional information on the proper application of Option A methods are discussed in *Detailed Guidelines for FEMP M&V Option A* available through http://ateam.lbl.gov/mv/docs/OptionADetailedGuidelines.pdf.

Option B – Retrofit Isolation

Option B is a retrofit isolation or system level approach, and requires continuous measurement to provide long-term verification of the savings. This method is intended for retrofits with performance factors and operational factors that can be measured at the component or system level and where long-term performance needs to be verified. Option B is similar to Option A but uses periodic or continuous metering. Short-term periodic measurements can be used when variations in the measured factor are small. Continuous monitoring information can be used to improve or optimize the operation of the equipment over time, thereby improving the performance of the retrofit.

The intent of Option B is to verify performance periodically or continuously with long-term measurements. Usage factors may be stipulated as in Option A or measured continuously.

Option B methods are appropriate for complex systems whose load or operating conditions are not well know or are highly dependent on external factors. Examples of projects where Option B may be appropriate include variable frequency drive installations, modifications to control systems, chiller system upgrades, or measures with high percentage of overall cost savings.

Option C – Whole Facility Energy Use

Option C is a whole-building verification method. Savings are based on actual energy consumption as measured by the utility meter(s) and/or regression modeling. Estimated savings will vary over the contract term.

Option C verification methods determine savings by studying overall energy use in a facility. The evaluation of whole-building or facility-level metered data is completed using techniques ranging from simple billing comparison to multivariate regression analysis. Regression analysis can be used to account for weather and other factors to adjust the baseline and determine savings.

Option C is an appropriate and cost-effective method ONLY if facility operation is stable and savings are expected to exceed 20% of total energy consumption. However, Option C cannot verify the performance of individual measures but can verify the total performance of all measures including interactions

Option C methods are appropriate for projects whose measures have a high degree of interaction that would be difficult to predict, when overall energy savings are very large, or when dedicated utility meters are available for retrofitted equipment or systems.

Option D – Calibrated Simulation

Option D is primarily a whole-building method but can be used at the component level. Savings are based on the results of a calibrated computer simulation model. Estimated savings may vary over the contract term if real weather data is used.
Option D uses a calibrated computer simulation models of component or whole-building energy consumption to determine energy savings. Linking simulation inputs to baseline and post-installation conditions completes the calibration, and may involve metering performance and operating factors before and after the retrofit. Specialized software packages, such as DOE-2, are used in Option D and the development of accurate building models requires substantial time and expertise.

Option D methods are appropriate for complex projects where complex system interactions need to be tracked. Due to the expense of properly conducting Option D, suitable projects should have substantial cost savings or major building renovations such as window replacements and building insulation.

Recommended Measure Specific M&V Methods

Recommended M&V approaches are provided in this section for some of the most common measures, including: lighting upgrades, variable speed drives, constant speed motors, water measures, controls measures, boiler replacements, and chiller replacements.

Lighting Upgrades

Option A

Measure operating hours for duration of 2 – 3 weeks during audit phase, during non-holiday timeframe. Use sampling plan with 80 / 20 confidence / precision

(11 samples per group).

If hours of operation are well documented and stable, then conservative stipulated hours are acceptable if backed up with some monitoring during the audit.

Fixture powers based on standard tables (utility or EPRI lighting tables) only if inventory of equipment is very accurate (including lamp & ballast types); Measure power of unknown or unusual fixture types.

Use diversity factor to determine demand reduction (% lights on during utility peak)

Heating penalty, cooling bonus are allowable where appropriate. Provide detailed calculation methodologies.

Variable Speed Drives

Option B

Baseline operating hours should be measured. Baseline power should be measured; spot measurements acceptable for constant loads.

Post-retrofit operating hours and power (or speed) should be continuously measured (by EMCS), since demand savings are not guaranteed with VSDs (100% speed = 100% load). Adjust the baseline for actual use conditions if needed.

Constant Speed Motors

Option A

Baseline operating hours should be measured. If hours of operation predictable (i.e. 24 hrs/day), stipulate post-retrofit operating hours. If hours of operation are variable or change, measure post-retrofit motor runtime.

Measure baseline and post-retrofit motor powers (depends on load factor, which vary); spot measurements okay for constant loads.

Water Measures

Option C

If metering exists and usage is being affected by more than 20% then use Option C.

Establish statistically significant relationship between use and dependent factors (weather, occupancy and/or other use factors) using regression analysis during audit (R2 >0.8). Adjust baseline using post-retrofit conditions or normalize post-retrofit data to typical year data.

Option A

Use if Option C is not applicable.

Assume consumption (i.e. flushes/day) and ensure water consumption model accounts for

no more than 75% of the water bill (result is conservative load assumptions)

If irrigation exists then use winter only data to extrapolate to all months.

Measure pre and post-retrofit fixture flow on a sampling basis (80% / 20%)

Controls Measures

Option B Baseline conditions should be verified through short-term measurements (i.e. document operating hours; demonstrate no economizer or reset).

Energy Management Control System (EMCS) should be used to collect all relevant post-retrofit load data (i.e. operating hours, actual cooling delivered by economizer, the hours of temperature reset). Use data in engineering calculations to determine savings.

Monthly monitoring of data collection recommended.

Boiler Replacement

Option C

Savings should exceed 20% of metered usage.

Establish a statistically significant relationship between utility use and weather and/or other dependent factors (occupancy and/or other use factors) using regression analysis during audit (R2 >0.8).

Post-retrofit use from utility bills or sub-metered data. Adjust baseline using actual weather or normalize post-retrofit data to typical year weather data.

Option A / B

Use if Option C is not applicable.

Operating hours and load should be measured and verified with analysis of utility data.

Baseline combustion efficiency should be measured. Post-retrofit combustion efficiency

should be measured every year.

Establish relationship between use and weather and/or other dependent factors using regression analysis during audit. Adjust baseline using actual weather or normalize post-retrofit data to typical year weather data.

Chiller Replacement

Option B

Range of baseline efficiencies should be determined through measurements (kW/ton) If baseline efficiency is stipulated, the original (un-degradated) equipment efficiency should be used Use measured data to develop regression for weather vs. load Post-retrofit: continuously measure load and energy use Apply baseline efficiency to measured load data to determine savings. Adjust baseline using actual weather or normalize post-retrofit data to typical year weather data.

EXHIBIT D
Cost and Pricing

The response to the Cost and Pricing section of the Secondary Selection Process should replace the content from the solicitation that is provided below.

2.0 COST AND PRICING

Responses to this section only will remain proprietary.

Maximum rates were established for your company in your initial response and later negotiations in contracting with the SEO/EPCP. Propose rates for this specific project that are equal to or less than your company's stated maximum rates, in recognition that rates can vary with the project size, scope and location of the specific project. All other guidelines presented in the initial RFP for presenting markups and fees shall apply.

2.1Markups

Markups shall be calculated as a percentage added to the base cost for the project. The use of margins in lieu of markups is not acceptable. Use only the categories shown. Ranges for markups are not acceptable.

MARK-UPS		
CATEGORY OF MARK-UP	***MARK-UP APPLICATION***	***% MARK-UP***
Overhead		
Profit		
Labor – Internal		
Equipment Purchased		
Materials Purchased		
Subcontract Labor		
Subcontract Material		

2.2 Fees

Use only the categories shown. Ranges for fees are not acceptable.

FEES		
CATEGORY OF FEE	***HOW DETERMINED AND USED***	***YEARS APPLIED (One-time, Annual, etc.)***
Technical Energy Audit and	$ ________ per Square Foot	One time

Project Development		
Solicit & Evaluate Project Financing Proposals		
Design	(Example) ___% of __________	
Contingency		
Permits		
Performance Bond		
Project Management		
Commissioning		
Training		
Monitoring and Verification		
Warranty Service		
Maintenance on Installed Measures		

2.3 Best Value

Briefly describe how the company's approach to performance contracting delivers best value for the investment. The responding company shall also describe any utility rebates or other financial incentives or grants it can potentially provide and/or facilitate.