

Performance Contract for Operating Cost-Saving Measures Appendix & Schedules

DESCRIPTION – Examples and Tables for Schedules in the Performance Contract

This provides process descriptions, examples and tables related to the Energy Savings Performance Contract's Schedules. The Schedules provide the critical details that define the project, operations and management.

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 other authorities to adapt it to meet your needs.

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SAVINGS GUARANTEE SCHEDULES

SCHEDULE A. SAVINGS GUARANTEE

Fully describe all provisions and conditions of the ESCO's energy saving guarantee. The guarantee should be defined in units of energy to be saved for the duration of the contract term. Reference to the annual reconciliation of achieved vs. guaranteed savings should be included (there is also language in the body of the contract regarding annual reconciliation See **Section 3.2 (Annual Review and Reimbursement/Reconciliation)**).

SCHEDULE B. BASELINE ENERGY CONSUMPTION; METHODOLOGY TO ADJUST BASELINE

The baseline energy consumption is the "yardstick" by which all savings achieved by the installed project will be measured.

B.1. Baseline Energy Consumption

Present the methodology and all supporting documentation used to calculate the baseline including unit consumption and current utility rates for each fuel type. Also include baseline documentation regarding other cost savings such as material savings (e.g. bulbs, ballasts, filters, chemicals etc.), and cost savings associated with the elimination of outside maintenance contracts.

Energy and Water Baseline Development - Describe in general terms how the baseline for this ECM is defined.

- Describe variables affecting baseline energy or water use. Include variables such as weather, operating hours, set point changes, etc. Describe how each variable will be quantified, i.e., measurements, monitoring, assumptions, manufacturer data, maintenance logs, engineering resources, etc.
- Define key system performance factors characterizing the baseline conditions. Include factors such as comfort conditions, lighting intensities, temperature set points, etc.
- Define requirements for Institution's witnessing of measurements if different than whole project data requirements.
- Provide details of baseline data collected, including: Parameters monitored, Details of equipment monitored, i.e., location, type, model, quantity, etc., Sampling plan, including details of usage groups and sample sizes, Duration, frequency, interval, and seasonal or other requirements of measurements, Personnel, dates, and times of measurements, Proof of Institution's witnessing of measurements (if required), Monitoring equipment used, Installation requirements for monitoring equipments (test plug for temperature sensors, straight pipe for flow measurement etc.), Certification of calibration/calibration procedures followed, Expected accuracy of measurements/monitoring equipment, Quality control procedures used, Form of data (.xls, .csv, etc.), Results of measurements (attach appendix and electronic forma as necessary), Completed data collection forms, if used.
- Provide details of baseline data analysis performed, including: Analysis using results of measurements, Weather normalized regressions, Weather data used and source of data

B.2 METHODOLOGY TO ADJUST BASELINE.

Periodically (at least on an annual basis), the baseline will be adjusted to account for the prevailing conditions (e.g., weather, billing days, occupancy, etc.) during the measurement period. All methodologies y used to account for any adjustments to the baseline needs to be clearly defined.

SCHEDULE C. SAVINGS MEASUREMENT AND VERIFICATION PLAN; POST-RETROFIT M&V PLAN; ANNUAL M&V REPORTING REQUIREMENTS

The monitoring and verification (M&V) process is divided into three phases:

C.1 Savings Measurement and Verification Plan

C.2 Post-Installation M&V Plan

C.3 Annual M&V Reporting Requirements

Also see **Schedule B (Baseline Energy Consumption; Methodology to Adjust Baseline)**.

The latest version of the *International Performance Monitoring and Verification Protocol (IPMVP)* is used as the basis of the savings calculation and verification methodology.

To help ensure plans and reports are complete and consistent, use the process and tables provided.

C.1 SAVINGS MEASUREMENT AND VERIFICATION PLAN.

A preliminary measurement and verification plan would typically have been developed in the Financial Grade Operational Audit process. In the Energy Savings Performance Contract process this plan is finalized.

Include a description of the energy savings measurement, monitoring and calculation procedures used to verify and compute the savings performance of the installed equipment. Include methods to compare the level of energy that would have been consumed without the project referred to as the "Baseline") with the amount of energy that was actually consumed during a specific time period (monthly, quarterly, etc.). Explicitly describe all methods of measuring savings including engineered calculations, metering, equipment run times, pre- and post-installation measurements, etc. for all equipment installed. Provide a clear methodology for converting energy savings into energy cost savings. Define the utility rates to be used for the baseline and actual energy costs. Clearly describe how the calculations are affected by rising or lowering utility rates. Clearly predictable annual variations are usually handled through established procedures for each identified factor (e.g., weather, billing days, occupancy, etc.) in the savings formulas. Explicitly define any routine adjustments that will be made during the performance period. Non-routine adjustments may be required for issues such as changes in production shifts, facility closures, adding new wings or loads (such as computer labs) require a conceptual approach versus a method to cover each eventuality. Specify how permanent changes, such as changes in square footage, will be handled. Options include use of agreement clauses that allow predictable or expected changes and/or through a "re-open" clause that allows either party to renegotiate the baseline. A Facility Changes Checklist or other method may be provided by the ESCO for the Institution to notify the ESCO of any changes in the facility that could have an impact on energy use (occupancy, new equipment, hours of use, etc.).

Prepare the M&V Plan as presented below.

List of Processes and Tables:

Risk, Responsibility and Performance Matrix.

M&V Plan and Savings Calculation Methods

- Proposed Annual Savings Overview
- Site Use and Savings Overview (Optional)
- M&V Plan Summary
- Schedule of Verification Reporting Activities
- Proposed Annual Savings For ECM
- Expected Year 1 Savings for ECM
- ENERGY STAR Ratings

Risk, Responsibility and Performance Matrix.

The ESCO shall complete and include the matrix below to summarize the allocation of responsibility for key items related to M&V.

RESPONSIBILITY/DESCRIPTION	CONTRACTOR PROPOSED APPROACH
1. Financial	
<p>a. Interest rates: Neither the contractor nor the Institution has significant control over prevailing interest rates. Higher interest rates will increase project cost, financing/project term, or both. The timing of the TO signing may impact the available interest rate and project cost.</p>	
<p>b. Construction costs: The contractor is responsible for determining construction costs and defining a budget. In a fixed-price design/build contract, the Institution assumes little responsibility for cost overruns. However, if construction estimates are significantly greater than originally assumed, the contractor may find that the project or measure is no longer viable and drop it before TO award. In any design/build contract, the Institution loses some design control. Clarify design standards and the design approval process (including changes) and how costs will be reviewed.</p>	
<p>c. M&V confidence: The Institution assumes the responsibility to determine the confidence that it desires to have in the M&V program and energy savings determinations. The desired confidence will be reflected in the resources required for the M&V program, and the ESCO must consider the requirement prior to submittal of the final proposal. Clarify how project savings are being verified (e.g., equipment performance, operational factors, energy use) and the impact on M&V costs.</p>	
<p>d. Energy Related Cost Savings: The Institution and the contractor may agree that the project will include savings from <i>recurring</i> and/or <i>one-time</i> costs. This may include one-time savings from avoided expenditures for projects that were appropriated but will no longer be necessary. Including one-time cost savings before the money has been appropriated may involve some risk to the Institution. Recurring savings generally result from reduced O&M expenses or reduced water consumption. These O&M and water savings must be based on actual spending reductions. Clarify sources of nonenergy cost savings and how they will be verified.</p>	
<p>e. Delays: Both the contractor and the Institution can cause delays. Failure to implement a viable project in a timely manner costs the Institution in the form of lost savings, and can add cost to the project (e.g., construction interest, re-mobilization). Clarify schedule and how delays will be handled.</p>	
<p>f. Major changes in facility: The Institution controls major changes in facility use, including closure. Clarify responsibilities in the event of a premature facility closure, loss of funding, or other major change.</p>	
2. Operational	

<p>a. Operating hours: The Institution generally has control over operating hours. Increases and decreases in operating hours can show up as increases or decreases in “savings” depending on the M&V method (e.g., operating hours multiplied by improved efficiency of equipment vs. whole-building/utility bill analysis). Clarify whether operating hours are to be measured or stipulated and what the impact will be if they change. If the operating hours are stipulated, the baseline should be carefully documented and agreed to by both parties.</p>	
<p>b. Load: Equipment loads can change over time. The Institution generally has control over hours of operation, conditioned floor area, intensity of use (e.g., changes in occupancy or level of automation). Changes in load can show up as increases or decreases in “savings” depending on the M&V method. Clarify whether equipment loads are to be measured or stipulated and what the impact will be if they change. If the equipment loads are stipulated, the baseline should be carefully documented and agreed to by both parties.</p>	
<p>c. Weather: A number of energy efficiency measures are affected by weather. Neither the contractor nor the Institution has control over the weather. Should the Institution agree to accept risk for weather fluctuations, it shall be contingent upon aggregate payments not exceeding aggregate savings. Clearly specify how weather corrections will be performed.</p>	
<p>d. User participation: Many energy conservation measures require user participation to generate savings (e.g., control settings). The savings can be variable and the contractor may be unwilling to invest in these measures. Clarify what degree of user participation is needed and utilize monitoring and training to mitigate risk. If performance is stipulated, document and review assumptions carefully and consider M&V to confirm the capacity to save (e.g., confirm that the controls are functioning properly).</p>	
<p>3. Performance</p>	
<p>a. Equipment performance: The contractor has control over the selection of equipment and is responsible for its proper installation, commissioning, and performance. The contractor has responsibility to demonstrate that the new improvements meet expected performance levels including specified equipment capacity, standards of service, and efficiency. Clarify who is responsible for initial and long-term performance, how it will be verified, and what will be done if performance does not meet expectations.</p>	
<p>b. Operations: Performance of the day-to-day operations activities is negotiable and can impact performance. However, the contractor bears the ultimate risk regardless of which party performs the activity. Clarify which party will perform equipment operations, the implications of equipment control, how changes in operating procedures will be handled, and how proper operations will be assured.</p>	

SITE USE AND SAVINGS OVERVIEW

	Total energy savings (MBtu/yr)	Electric energy savings (kWh/yr)	Electric demand savings (kW/yr)*	Natural gas savings (MBtu/yr)**	Water savings (gallons/yr)	Other energy savings (MBtu/yr)**
Total proposed project savings						
Usage for entire site**						
% Total site usage saved						
Project square footage (KSF)						
Total site square footage (KSF)						
% Total site area affected						
Notes MBtu=10 ⁶ Btu *Annual electric demand savings (kW/yr) is the sum of the monthly demand savings. **If energy is reported in units other than MBtu, provide a conversion factor to MBtu for link to cost schedules (e.g., 0.003413 MBtu/kWh). ***Define usage period. KSF = 10 ³ square feet.						

M&V PLAN SUMMARY

ECM No.	ECM Description	M&V Option Used*	Summary of M&V Plan

*M&V options include A, B, C, and D of the International Performance Measurement and Verification Protocol (IPMVP).

SCHEDULE OF VERIFICATION REPORTING ACTIVITIES

Item	^a Recommended time of submission	^a Institution's review and acceptance period
Post-Installation Report	30 to 60 days after acceptance	30 days
Annual Report	30 to 60 days after annual performance period	30 days

^aTimes are recommended based on industry practice; modify as needed.

PROPOSED ANNUAL SAVINGS FOR EACH ECM

[Include all applicable fuels/commodities for project, such as: electric energy, electric demand, natural gas, fuel oil, coal, water, etc.]

	Total energy use (MBtu/yr)	Electric energy use (kWh/yr)	Electric energy cost, Year 1 (\$/yr)	Electric demand* (kW/yr)	Electric demand cost, Year 1 (\$/yr)	Natural gas use (MBtu/yr)**	Natural gas cost, Year 1 (\$/yr)	Water use (gallons/yr)	Water cost, Year 1 (\$/yr)	Other energy use (MBtu/yr)**	Other energy cost, Year 1 (\$/yr)	Other energy-related O&M costs, Year 1 (\$/yr)	Total costs, Year 1 (\$/yr)
Baseline use													
Post-installation use													
Savings													
Notes													
*Annual electric demand savings (kW/yr) is the sum of the monthly demand savings.													
MBtu = 10 ⁶ Btu.													
**If energy is reported in units other than MBtu, provide a conversion factor to MBtu for link to cost schedules (e.g., 0.003413 MBtu/kWh).													

ECM-SPECIFIC M&V PLAN AND SAVINGS CALCULATION METHODS

Develop section for each ECM.

- Summarize the scope of work, location, and how cost savings are generated. Describe source of all savings including energy, water, O&M, and other (if applicable).
- Specify the M&V guideline and option used from the International Performance Measurement and Verification Protocol (IPMVP).
- Provide an overview of M&V Activities for ECM. Explain intent of M&V plan, including what is being verified.
- Provide an overview of savings calculations methods for ECM. Provide a general description of analysis methods used for savings calculations.

Proposed Energy and Water Savings Calculations and Methodology

- Provide detail description of analysis methodology used. Describe any data manipulation or analysis that was conducted prior to applying savings calculations.
- Detail all assumptions and sources of data, including all stipulated values used in calculations.
- Include equations and technical details of all calculations made. (Use appendix and electronic format as necessary.) Include description of data format (headings, units, etc.).
- Details of any savings or baseline adjustments that may be required.
- Detail energy and water rates used to calculate cost savings. Provide post-acceptance performance period energy and water rate adjustment factors.
- Detail proposed savings for this energy conservation measure for post-acceptance performance period. Include table - Proposed Annual Savings for Each ECM.

Operations and Maintenance Cost Savings

- Provide justification for O&M cost savings. Describe how savings are generated. Detail cost savings calculations.
- Provide post-acceptance performance period other cost savings adjustment factors.

Details of other savings (if applicable)

- Provide justification for cost savings. Describe how savings are generated. Detail cost savings calculations.
- Provide post-acceptance performance period other cost savings adjustment factors.

Post-Installation M&V Activities - Describe the intent of post-installation verification activities, including what will be verified.

- Describe variables affecting post-installation energy or water use. Include variables such as weather, operating hours, set point changes, etc. Describe how each variable will be quantified, i.e., measurements, monitoring, assumptions, manufacturer data, maintenance logs, engineering resources, etc.
- Define key system performance factors characterizing the post-installation conditions such as lighting intensities, temperature set points, etc.
- Define requirements for Institution witnessing of measurements if different than whole project data requirements.
- Provide details of post-installation data to be collected, including: Parameters to be monitored, Details of equipment to be monitored (location, type, model, quantity, etc.), Sampling plan, including details of usage groups and sample sizes, Duration, frequency, interval, and seasonal or other requirements of measurements, Monitoring equipment to be used, Installation requirements for monitoring equipment, Calibration requirements/procedures, Expected accuracy of measurements/monitoring equipment, Quality control procedures to be used, Form of data to be collected (.xls, .cvs, etc.), Sample data collection forms (optional)
- Detail data analysis to be performed.

Post-Acceptance Performance Period Verification Activities

- Describe variables affecting post-acceptance performance period energy or water use. Include variables such as weather, operating hours, set point changes, etc. Describe how each variable will be quantified, i.e., measurements, monitoring, assumptions, manufacturer data, maintenance logs, engineering resources, etc.
- Define key system performance factors characterizing the post-acceptance performance period conditions. Include factors such as comfort conditions, lighting intensities, temperature set points, etc.
- Describe the intent of post-acceptance performance period verification activities – what will be verified.
- Provide detailed schedule of post-acceptance performance period verification activities and inspections.
- Define requirements for Institution witnessing of measurements if different than whole project data requirements.
- Provide details of post-acceptance performance period data to be collected, including: Parameters to be monitored, Details of equipment to be monitored (location, type, model, quantity, etc.), Sampling plan, including details of usage groups and sample sizes, Duration, frequency, interval, and seasonal or other requirements of measurements, Monitoring equipment to be used, Installation requirements for monitoring equipment, Calibration requirements/procedures, Expected accuracy of measurements/monitoring equipment, Quality control procedures to be used, Form of data to be collected (.xls, .cvs, etc.), Sample data collection forms (optional)
- Detail data analysis to be performed.
- Define O&M and repair reporting requirements. Detail verification activities and reporting responsibilities of Institution and contractor on operations and maintenance items. Define reporting schedule.

ENERGY STAR: For each building included in the project, ESCO will provide a Portfolio Manager rating. Also, for applicable buildings, ESCO includes the cost to provide services and complete the annual application for a building ENERGY STAR label. ESCO shall provide a Portfolio Manager rating and energy performance target score estimate. For each eligible building, ESCO shall provide a pre-retrofit Energy Performance Rating using EPA ENERGY STAR's Portfolio Manager, the weather normalized energy intensity in kBtu/SF, and an estimated post-retrofit Energy Performance Rating. If the building type is not eligible for rating in Portfolio Manager, then the normalized source EUI will suffice. ESCO shall provide a completed Cash Flow Opportunity Calculator (CFO Calculator) for the project, with variables inserted that represent the most likely options available to the customer. This will enable the ESCO and the customer to have an agreed-upon format for discussing project financing options and the potential costs of project delays. The CFO Calculator will be provided in both hard copy and electronic format, so that the agency can run its own analyses on financing options in the agreed format. ESCO will submit a completed Cash Flow Opportunity spreadsheet using the Cash Flow Opportunity Calculator (CFO Calculator) for the total project which shall include all facilities to be improved.

C.2. POST-INSTALLATION M&V PLAN.

The Post-Installation M&V Plan updates the M&V Plan and includes detailed measurements, monitoring, and inspections.

List of Processes and Tables:

- Proposed Annual Savings Overview
- Expected Savings Overview for First Performance Year
- Impact to Energy Cost Savings from Changes between Final Proposal and As-Built Conditions for ECM
- Expected Year 1 Savings for ECM
- ENERGY STAR Ratings

POST-INSTALLATION REPORT OUTLINE

Post-Acceptance Performance Period Dates Covered: _____ to _____

EXECUTIVE SUMMARY

Project Background - Provide an overview of project background, including:

- Dates of relevant contract modifications
- Post-acceptance performance period dates covered
- Project acceptance date (actual or expected)

Brief Project and ECM Descriptions

- Provide an overview what was done and how savings are generated.
- Note any changes in project scope between the final proposal (including any relevant contract modifications) and as-built conditions.

Proposed and expected energy and cost savings for Year 1 of the post-acceptance performance period

- Proposed Annual Savings Overview.

- Compare expected savings for first performance year to first year guaranteed cost savings. State whether guarantee is expected to be fulfilled for first year.

Note: Expected savings are prediction for first year based on post-installation M&V activities. Verified savings for first year of post-acceptance performance period will be documented in annual report. The proposed savings for each ECM are included in TO-4 of the contract.

Proposed Annual Savings Overview

[Include all applicable fuels/commodities for project, e.g., electric energy, electric demand, natural gas, fuel oil, coal, water, etc.]

ECM	Total energy savings (MBtu/yr)	Electric energy savings (kWh/yr)	Electric demand savings (kW/yr)*	Natural gas savings (MBtu/yr)**	Water savings (gallons/yr)	Other energy savings (MBtu/yr)**	Total energy and water cost savings, Year 1 (\$/yr)	Other energy-related O&M cost savings, Year 1 (\$/yr)	Total cost savings, Year 1 (\$/yr)
Total savings									

Notes
 MBtu=10⁶ Btu.
 *Annual electric demand savings (kW/yr) is the sum of the monthly demand savings.
 **If energy is reported in units other than MBtu, provide a conversion factor to MBtu for link to cost schedules (e.g., 0.003413 MBtu/kWh).

Expected Savings Overview for 1st Performance Year

[Include all applicable fuels/commodities for project, e.g., electric energy, electric demand, natural gas, fuel oil, coal, water, etc.]

ECM	Total energy savings (MBtu/yr)	Electric energy savings (kWh/yr)	Electric demand savings (kW/yr)*	Natural gas savings (MBtu/yr)**	Water savings (gallons/yr)	Other energy savings (MBtu/yr)**	Total energy and water cost savings, Year 1 (\$/yr)	Other energy-related O&M cost savings, Year 1 (\$/yr)	Total cost savings, Year 1 (\$/yr)
Total savings									

Notes
 MBtu=10⁶ Btu.
 *Annual electric demand savings (kW/yr) is the sum of the monthly demand savings.
 **If energy is reported in units other than MBtu, provide a conversion factor to MBtu for link to cost schedules (e.g., 0.003413 MBtu/kWh).

Guaranteed Cost Savings for First Performance Year

First Year Guaranteed Cost Savings:	\$ <input type="text"/>
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Energy, Water, and O&M Rate Data

- Detail energy and water rates used to calculate cost savings for this period.
- Provide post-acceptance performance period rate adjustment factors for energy, water, and O&M cost savings, if used.
- Report actual energy and water rates at site for same period (optional).

Savings Adjustments

- Provide summary of any energy and/or cost savings adjustments required between final proposal (including any relevant contract modifications) and as-built conditions.
- Describe the impact in changes between the final proposal (including any relevant contract modifications) and as-built conditions based on post-installation M&V results.

Construction Period Savings

- Provide a summary of construction period savings, if applicable.
- Provide overview of how construction period savings are calculated.

Status of Rebates - Include if applicable.

- Provide a summary of the source of any third-party rebates or incentives provided on this project.
- Provide status of any third-party rebates or incentives.

ECM-SPECIFIC M&V ACTIVITIES AND EXPECTED FIRST YEAR SAVINGS

Develop section for each ECM.

Overview of ECM, M&V Plan, and Savings Calculation for ECM

- Summarize the scope of work, location, and how cost savings are generated.
- Describe source of all savings including energy, water, O&M, and other (if applicable).
- Provide an overview of M&V activities for ECM. Explain the intent of M&V plan, including what is being verified.
- Provide an overview of Savings Calculation Methods for ECM. Provide a general description of analysis methods used for savings calculations.

Installation Verification

- Detail any changes between final proposal (including any relevant contract modifications) and as-built conditions.
- Provide details of energy and cost savings impact from changes between final proposal (including any relevant contract modifications) and as-built conditions based on post-installation M&V results. Include Impact to Energy and Cost Savings from Changes between Final Proposal and As-built Conditions for each ECM.

Impact to Energy and Cost Savings from Changes between Final Proposal and As-built

Conditions for Each ECM

	Total energy savings (MBtu/yr)	Electric energy savings (kWh/yr)	Electric energy cost savings, Year 1 (\$/yr)	Electric demand savings* (kW/yr)	Electric demand cost savings, Year 1 (\$/yr)	Natural gas savings (MBtu/yr)**	Natural gas cost savings, Year 1 (\$/yr)	Water savings (gallons/yr)	Water cost savings, Year 1 (\$/yr)	Other energy savings (MBtu/yr)**	Other energy cost savings, Year 1 (\$/yr)	Other energy - related O&M cost savings, Year 1 (\$/yr)	Total cost savings, Year 1 (\$/yr)
Proposed													
Expected													
Variance													
Notes MBtu = 10 ⁶ Btu. *Annual electric demand savings (kW/yr) is the sum of the monthly demand savings. **If energy is reported in units other than MBtu, provide a conversion factor to MBtu for link to cost schedules (e.g., 0.003413 MBtu/kWh).													

Note: Expected savings are prediction for first year based on post-installation M&V activities. Verified savings for first year of post-acceptance performance period will be documented in the annual M&V report. The proposed savings for each ECM are included in the contract.

- Describe construction period savings (if applicable). Include date ECM was in effect, and reference acceptance documentation.
- Detail savings calculations for construction period savings.

Post-Installation M&V Activities Conducted - Detail measurements, monitoring, and inspections conducted in accordance with M&V plan (include all that apply for each one):

- Measurement equipment used.
- Equipment calibration documentation.
- Dates/times of data collection or inspections, names of personnel, and documentation of Institution witnessing.
- Details to confirm adherence to sampling plan.
- Include all post-installation measured values. Include periods of monitoring and durations and frequency of measurements. (Use appendix and electronic format as necessary). Include description of data format (headings, units, etc.).
- Describe how performance criteria have been met.
- Detail any performance deficiencies that need to be addressed by ESCO or Institution.
- Note impact of performance deficiencies or enhancements on generation of savings.

Expected Savings Calculations and Methodology

- Provide detailed description of analysis methodology used. Describe any data manipulation or analysis that was conducted prior to applying savings calculations.

- Detail all assumptions and sources of data, including all stipulated values used in calculations.
- Include equations and technical details of all calculations made. (Use appendix and electronic format as necessary.) Include description of data format (headings, units, etc.).
- Details of any baseline or savings adjustments made.
- Detail energy and water rates used to calculate cost savings. Provide post-acceptance performance period energy and water rate adjustment factors, if used. Report actual energy and water rates at site for same period (optional).
- Detail expected savings for this energy conservation measure for first year. Include Expected Year 1 Savings for ECM.

Details of O&M Savings (if applicable)

- Describe source of savings.
- Describe verification activities.
- Provide post-acceptance performance period O&M cost savings adjustment factors, if applicable.

Details of other savings (if applicable)

- Describe source of savings.
- Describe verification activities.
- Provide post-acceptance performance period adjustment factors, if applicable.

Note: Expected savings are prediction for first year based on post-installation M&V activities. Verified savings for first year of post-acceptance performance period will be documented in the annual report. The proposed savings for each ECM are included in Schedule TO-4 of the contract.

Expected Year 1 Savings for ECM

[Include all applicable fuels/commodities for project, e.g., electric energy, electric demand, natural gas, fuel oil, coal, water, etc.]

	Total energy use (MBtu/yr)	Electric energy use (kWh/yr)	Electric energy cost (\$/yr)	Electric demand* (kW/yr)	Electric demand cost (\$/yr)	Natural gas use (MBtu/yr)*	Natural gas cost (\$/yr)	Water use (gallons/yr)	Water cost (\$/yr)	Other energy use (MBtu/yr)*	Other energy cost (\$/yr)	Other energy - related O&M costs (\$/yr)	Total costs (\$/yr)
Baseline use													
Post-installation use													
Savings													

Notes
 MBtu = 10⁶ Btu.
 *Annual electric demand savings (kW/yr) is the sum of the monthly demand savings.
 **If energy is reported in units other than MBtu, provide a conversion factor to MBtu for link to cost schedules (e.g., 0.003413 MBtu/kWh).

ENERGY STAR Ratings:

For each building included in the project, ESCO will provide an updated Portfolio Manager rating. Also, for applicable buildings, ESCO includes the cost to provide services and complete the annual application for a building ENERGY STAR label.

C.3. ANNUAL M&V REPORTING REQUIREMENTS

Summarize the project including energy, water and operational cost savings (in dollars and MMBTUs) for the annual reporting period, annual emission reductions and ENERGY STAR rating (if applicable). This summary information is useful for tracking and reporting on annual project performance.

Prepare the Annual Report as presented below.

List of Processes and Tables:

- Annual Report Overview
- Proposed Annual Savings Overview
- Verified Savings Overview for Performance Year #
- Verified Savings for Performance Period to Date
- Verified Annual Savings for ECM for Performance Year #

Annual Report Overview

Institution Name/Institution Contact (Include Email and Phone Number)	
Facility Name/Facility Contact (Include Email and Phone Number)	
ESCO Name/ESCO Contact (Include Email and Phone Number)	
Total Square Footage of Project Site/Contract Start Date/Contract End Date	
Current Repayment Year (ex. Yr. 3/ 2005)	
Reporting Timeframe (ex. Jan 1-Dec. 31)	
Installed Project Cost (no financing costs)	
Total Contract Value of Guaranteed Savings	

Annual Value of Guaranteed Savings	
Measured Energy Savings	
Operational Savings	
Avoided Capital Cost (if applicable)	
Annual Dollar Value of Achieved Savings	
Total Annual Achieved Energy Savings (MMBTU)	
Electric	
Natural Gas	
Oil	
Coal	
Steam	
Other	
Annual Water Savings (kgal)	
Annual Avoided NOx Emissions (Tons)	
Annual Avoided SOx Emissions (Tons)	
Annual Avoided CO2 Emissions (Tons)	
ENERGY STAR Rating	

ENERGY STAR Ratings: For each building included in the project, ESCO will provide an updated Portfolio Manager rating to be included in the Measurement and Verification report at the conclusion of each year of project operation (alternately, at the conclusion of each of the first xx years of project operation). Also, for applicable buildings, ESCO includes the cost to provide services and complete the annual application for a building ENERGY STAR label.

ANNUAL MEASUREMENT AND VERIFICATION REPORT OUTLINE

Post-Acceptance Performance Period Dates Covered: _____ to _____

Contract year #: _____

EXECUTIVE SUMMARY

Project Background - Provide an overview of project background, including:

- Date of Contract Execution and primary parties to the contract
- Dates of relevant contract modifications
- Post-acceptance performance period dates covered
- Project acceptance date (actual or expected)

Brief Project and ECM Descriptions - Provide an overview including what was done and how savings are generated.

Summary of proposed and verified energy and cost savings. Compare verified savings for Performance Year # to Guaranteed Cost Savings for Year #. State whether guarantee is fulfilled for year. If not, provide detailed explanation.

- Define post-acceptance performance period.
- Include Proposed Annual Savings Overview.

Proposed Annual Savings Overview

[Include all applicable fuels/commodities for project, e.g., electric energy, electric demand, natural gas, fuel oil, coal, water, etc.]

ECM	Total energy savings (MBtu/yr)	Electric energy savings (kWh/yr)	Electric demand savings (kW/yr)*	Natural gas savings (MBtu/yr)**	Water savings (gallons/yr)	Other energy savings (MBtu/yr)	Total energy and water cost savings, Year # (\$/yr)	Other energy-related O&M cost savings, Year # (\$/yr)	Total cost savings, Year # (\$/yr)
Total Savings									

Notes

MBtu = 10⁶ Btu.

*Annual electric demand savings (kW/yr) is the sum of the monthly demand savings.

**If energy is reported in units other than MBtu, provide a conversion factor to MBtu for link to cost schedules (e.g., 0.003413 MBtu/kWh).

Note: The proposed savings for each ECM are included in the contract as well as the guaranteed savings.

Verified Savings for Performance Year

[Include all applicable fuels/commodities for project, e.g., electric energy, electric demand, natural gas, fuel oil, coal, water, etc.]

ECM	Total energy savings (MBtu/yr)	Electric energy savings (kWh/yr)	Electric demand savings (kW/yr)*	Natural gas savings (MBtu/yr)**	Water savings (gallons/yr)	Other energy savings (MBtu/yr)	Total energy and water cost savings, Year # (\$/yr)	Other energy-related O&M cost savings, Year # (\$/yr)	Total cost savings, Year # (\$/yr)
Total savings									

Notes

MBtu = 10⁶ Btu.

*Annual electric demand savings (kW/yr) is the sum of the monthly demand savings.

**If energy is reported in units other than MBtu, provide a conversion factor to MBtu for link to cost schedules (e.g., 0.003413 MBtu/kWh).

Savings Adjustments - Provide summary of any energy and/or cost savings adjustments required.

Performance and O&M Issues

Note impact of operating deficiencies or enhancements on generation of savings.
 Note impact of maintenance deficiencies on generation of savings.
 Detail any deficiencies needed to be addressed by contractor or Institution.

Energy, Water, and O&M Rate Data

Detail energy and water rates used to calculate cost savings for this period.
 Provide post-acceptance performance period rate adjustment factors for energy, water and O&M, if used.

Report actual energy and water rates at site for same period (optional).

Verified Savings To Date - Include Table 3.

Verified Savings for Post-Acceptance Performance Period to Date

[Include all applicable fuels/commodities for project, e.g., electric energy, electric demand, natural gas, fuel oil, coal, water, etc.]

Year #	Total energy savings (MBtu/yr)	Electric energy savings (kWh/yr)	Electric demand savings (kW/yr)*	Natural gas savings (MBtu/yr)**	Water savings (gallons/yr)	Other energy savings (MBtu/yr)	Total energy and water cost savings, Year # (\$/yr)	Other energy-related O&M cost savings, Year # (\$/yr)	Total cost savings, Year # (\$/yr)	Guaranteed cost savings for year
Total savings										

Notes
 MBtu = 10⁶ Btu.
 *Annual electric demand savings (kW/yr) is the sum of the monthly demand savings.
 **If energy is reported in units other than MBtu, provide a conversion factor to MBtu for link to cost schedules (e.g., 0.003413 MBtu/kWh).

DETAILS FOR EACH ECM

Develop section for each ECM.

Overview of ECM, M&V Plan, and Savings Calculation for ECM

- Summarize the scope of work, location, and how cost savings are generated. Describe source of all savings including energy, water, O&M, and other (if applicable).
- Provide an overview of M&V Activities for ECM. Explain the intent of M&V plan, including what is being verified.
- Provide an overview of savings calculation methods for ECM. Provide a general description of analysis methods used for savings calculations.

M&V Activities Conducted This Period - Detail measurements, monitoring and inspections conducted this reporting period in accordance with M&V plan (include all that apply for each one):

- Measurement equipment used.

- Equipment calibration documentation.
- Dates/times of data collection or inspections, names of personnel, and documentation of Institution witnessing.
- Details to confirm adherence to sampling plan.
- Include all measured values for this period. Include periods of monitoring and durations and frequency of measurements. (Use appendix and electronic format as necessary). Include description of data format (headings, units, etc.).
- Describe how performance criteria have been met.
- Detail any performance deficiencies that need to be addressed by ESCO or Institution. Note impact of performance deficiencies or enhancements on generation of savings.

Verified Savings Calculations and Methodology

- Provide detailed description of analysis methodology used. Describe any data manipulation or analysis that was conducted prior to applying savings calculations.
- Detail all assumptions and sources of data, including all stipulated values used in calculations.
- Include equations and technical details of all calculations made. (Use appendix and electronic format as necessary.) Include description of data format (headings, units, etc.).
- Details of any baseline or savings adjustments made.
- Detail energy and water rates used to calculate cost savings. Provide post-acceptance performance period energy and water rate adjustment factors, if used. Report actual energy and water rates at site for same period (optional).
- Detail verified savings for this energy conservation measure for performance year.

Details of O&M Savings (if applicable)

- Describe source of savings.
- Describe verification activities.
- Provide post-acceptance performance period O&M cost savings adjustment factors, if applicable.

Details of other savings (if applicable)

- Describe source of savings.
- Describe verification activities.
- Provide post-acceptance performance period adjustment factors, if applicable.

Verified Annual Savings For ECM for Performance Year #

[Include all applicable fuels/commodities for project, e.g., electric energy, electric demand, natural gas, fuel oil, coal, water, etc.]

	Total energy use (MBtu/yr)	Electric energy use (kWh/yr)	Electric energy cost, Year # (\$/yr)	Electric demand* (kW/yr)	Electric demand cost, Year # (\$/yr)	Natural gas (MBtu/yr)**	Natural gas cost, Year # (\$/yr)	Water use (gallons/yr)	Water cost, Year # (\$/yr)	Other energy use (MBtu/yr)	Other energy cost, Year # (\$/yr)	Other energy-related O&M costs, Year # (\$/yr)	Total costs, Year # (\$/yr)
Baseline use													
Performance Year # use													
Savings													
<u>Notes</u>													

MBtu = 10⁶ Btu.

*Annual electric demand savings (kW/yr) is the sum of the monthly demand savings.

**If energy is reported in units other than MBtu, provide a conversion factor to MBtu for link to cost schedules (e.g., 0.003413 MBtu/kWh).

O&M Activities

Operating requirements

1. State organization(s) responsible for equipment operations. If appropriate, detail how responsibilities are shared.
2. Detail any deficiencies needed to be addressed by contractor or Institution.
3. Note impact of operating deficiencies or enhancements on generation of savings.

Preventive Maintenance requirements - State organization(s) responsible for performing maintenance. If appropriate, detail how responsibilities are shared.

Verification of scheduled maintenance items completed by ESCO or Institution

1. Detail any deficiencies needed to be addressed by contractor or Institution.
2. Note impact of maintenance deficiencies on generation of savings.

Repair and replacement requirements

1. State organization(s) responsible for performing maintenance. If appropriate, detail how responsibilities are shared.
2. Summary of activities conducted this period by contractor or Institution.
3. Detail any deficiencies needed to be addressed by contractor or Institution.
4. Note impact of maintenance deficiencies on generation of savings.

SCHEDULE D. DATA COLLECTION AND REPORTING BY ESCO – Using eProject Builder (ePB)

Background

eProject Builder ("ePB") is a web-based tool managed on behalf of the Department of Energy by The University of California/Lawrence Berkeley National Laboratory (LBNL). ePB enables ESCO and their contracting agencies or other entities to:

- (1) upload and track project-level information;
- (2) generate basic project reporting materials (e.g. task order schedules) that may be mandated by local, state, and/or federal agency requirements; and
- (3) benchmark proposed Energy Savings Performance Contract (ESPC) projects against historical project data.

See the following site for more information: <http://eprojectbuilder.lbl.gov>

ESCO agrees to deliver to LBNL, on behalf of Institution and with approval of Institution, all required project-level information as described on the ePB website, dated June 1, 2014, and as amended from time to time.

Based on information identified above that has been and will be provided by the ESCO, the parties agree that the data required to be delivered to LBNL under this clause has commercial value whose disclosure would cause competitive harm to the commercial value or use of the data. LBNL intends to withhold such data from disclosure under 10 C.F.R. 1004.3(e)(2). The use of this data is governed by the provisions of this contract. Unless compelled by a court of competent jurisdiction, there may be no release of this data to the public without the written consent of the Recipient and DOE. Aggregate data that does not identify project-specific metric information may be released as set forth in the contract. Other information required to be delivered under this contract, but not covered under this Commercially Valuable ESPC Project Data clause, shall be delivered in accordance with this contract.

Data for ESCO to Collect and Report

The ESCO will collect and report the following data, as relevant and as directed and approved by the Institution, at the following times:

1. Upon contract execution provide proposed project data from the following schedules.
2. At the end of each performance year provide data related to actual performance of the project.

Summary Schedule—Basic Project Information:

- Customer Name
- Cabinet Agency Name
- Utility
- Project Name; Zip
- Floor area
- Average annual energy consumption of affected buildings
- Federal Contract Type (if applicable: Department of Energy-IDIQ, U.S. Army Corps of Engineers-MATOC, UESC, Other)
- Market Segment (Federal Government, State/Local Government, Healthcare, K-12 Schools, University/College, Other, Industrial, Commercial (Leased), Commercial (Owner-occupied), Public Housing, Residential, Retail (Leased), Retail (Owner-occupied), Hotel/Hospitality)
- List of sites
- Number of buildings
- List of buildings
- Project Facilitator Institution
- Finance Specialist Institution
- Financing Institution
- ESCO Name
- Task Order Number (if applicable)
- ESCO Contract Number (if applicable)
- Construction Period (Months)
- ESCO-Contact name (Project Builder); ESCO-Contact email; ESCO-Contact phone
- Customer-Contact name (Project Initiator); Customer-Contact email; Customer-Contact phone
- Project Facilitator-Contact name; Project Facilitator-Contact email; Project Facilitator-Contact phone
- Financing Specialist-Contact name; Financing Specialist-Contact email; Financing Specialist-Contact phone
- Financier-Contact name; Financier-Contact email; Financier-Contact phone
- Payment type (Annual) (Beginning, Arrears)

- Project agreement type (Guaranteed Savings, Guaranteed Payout Term, Asset Ownership/Chauffage, Shared, Pay-from-savings, Design/Build, Fee-for-service, Fixed Price, Other)
- Type of project financing (Appropriation, Cash, Partial Cash, Term Loan, State/Local Bond, Lease, Combination, Other)
- Bonded amount
- Issue date
- Financing quote effective through date
- Financing Procurement Price (\$) - construction interest
- Financing Procurement Price (\$) - other expenses
- Applicable Financial Index
- Index Rate (%)
- Added Premium (%)
- Guarantee % of Estimated Savings

Project-level Annual Dollar Savings Escalation Rates:

Specify the escalation rates for each performance year in the term for the following utilities:

- Electricity
- Electric demand
- Natural gas
- Water
- Other Savings 1
- Other Savings 1 Type (Coal, Diesel, Gasoline, Heating Oil, Jet Fuel, Purchased Steam, Chilled Water, Other)
- Other Savings 2
- Other Savings 2 Type (Coal, Diesel, Gasoline, Heating Oil, Jet Fuel, Purchased Steam, Chilled Water, Other)
- O&M
- Other Non-Energy Savings

Schedule #1: Cost Savings and Contractor Payments

For the Implementation Period, list:

- Implementation Period Payments
- Estimated cost savings for implementation period
- Guaranteed cost savings for implementation period

Schedule #2: Implementation Price by Energy Conservation Measure:

For each ECM (defined by an ECM #), provide:

- Project Development costs
- Project Margin %
- ECM Number (if applicable)
- ECM Description-Title
- ECM Size
- ECM Coverage
- M&V Expense
- Implementation Expense - Initial costs
- Implementation Expense - Applied Incentives

Schedule #3: Performance Period Cash Flow:

Provide the following data for each of the performance years in the contract

- Incentives (Annual)
- Management/Administration - Performance Period Expense (Annual)
- Operation - Performance Period Expense (Annual)
- Maintenance - Performance Period Expense (Annual)

- Repair and Replacement - Performance Period Expense (Annual)
- M&V - Performance Period Expense (Annual)
- Other 1 - Performance Period Expense (Annual)
- Other 1 - Performance Period Expense Type (Permits and Licenses, Insurance, Property Taxes, Other)
- Other 2 - Performance Period Expense (Annual)
- Other 2 - Performance Period Expense Type (Permits and Licenses, Insurance, Property Taxes, Other)
- Performance Period Margin (%)

Schedule #4: First Year Estimated Annual Cost Savings by ECM

- M&V Methodology (IPMVP Option A, IPMVP Option B, IPMVP Option C, IPMVP Option D, Other, Unknown)
- Baseline-Electricity use (kWh)
- Baseline-Electricity demand (kW/mo)
- Baseline-Water use (kgal)
- Baseline-Natural gas use (MMBtu)
- Baseline-Other 1 energy use (MMBtu)
- Baseline-Other 2 energy use (MMBtu)
- Baseline- Energy and resource use (\$)
- Baseline-O&M costs (\$)
- Baseline-Other non-energy costs (\$)
- Specify type of other non-energy costs (Capital Costs, Pollution Costs, Other Costs)
- Estimated annual savings - Electricity use (kWh)
- Estimated annual cost savings - Electricity use (\$)
- Estimated annual savings - Electricity demand (kW/mo)
- Estimated annual cost savings - Electricity Demand (\$)
- Estimated annual savings - Water use (Kgal)
- Estimated annual cost savings - Water use (\$)
- Estimated annual savings - Natural gas (MMBtu)
- Estimated annual cost savings - Natural Gas (\$)
- Estimated annual savings - Other 1 energy (MMBtu)
- Estimated annual cost savings - Other1 energy (\$)
- Estimated annual savings - Other 2 energy (MMBtu)
- Estimated annual cost savings - Other2 energy (\$)
- Estimated annual savings - Avoided O&M costs (\$)
- Estimated annual savings - Other avoided non energy costs (\$)

Schedule #5: Cancellation Ceilings

For each year, and by month, list the cancellation ceilings to establish the maximum termination liability for that time period.

- Cancellation ceiling payments

Actual Performance Data from Annual M&V reports

At the end of each performance year provide data related to actual performance of the project. Provide the following actual ECM yearly performance data for each (N) of the performance period in the contract:

- Year N annual savings - Electricity use (kWh)
- Year N annual savings - Electricity savings (\$)
- Year N annual savings - Electricity demand (kW/mo)
- Year N annual savings - Electricity demand (\$/yr)
- Year N annual savings - Water use (KGal)
- Year N annual savings - Water (\$/yr)

- Year N annual savings - Natural gas (MMBtu)
- Year N annual savings - Natural gas (\$)
- Year N annual savings - Other energy 1(MMBtu)
- Year N annual savings - Other energy 1 (\$)
- Year N annual savings - Other energy 2 (MMBtu)
- Year N annual savings - Other energy 2 (\$)
- Year N annual savings - Avoided O&M costs (\$)
- Year N annual savings - Other avoided non-energy costs (\$)

SCHEDULE E. Measurement and Verification Plan – Sample

This document is a comprehensive M&V Plan for a fictitious energy performance contract project. This document is intended to serve the following purposes:

- Provide examples of M&V Plans for common ECMs that comply with the requirements set forth in the FEMP M&V guidelines, Version 2.21, and
- Provide and promote use of a consistent format for M&V Plans for Federal ESPC projects, as detailed by the M&V Plan Outline2.

This document contains M&V Plans for three measures, using Options A and B, at a fictitious federal office building. The ECMs include lighting, energy management and control system (EMCS) installation, and a chiller retrofit:

- Lighting Efficiency Measure – Option A, FEMP Method LE-A-02
- Energy Management Control System Installation – Option B, FEMP Method GVL-B-01
- Chiller Replacement Measure – Option B, FEMP Method CH-B-02

This document was developed for the U.S. Department of Energy’s Federal Energy Management Program (FEMP) and is posted on FEMP’s website at:

[Sample M&V Plan](#)

(http://energy.gov/sites/prod/files/2013/10/f3/sample_mv_plan.pdf)

SCHEDULE F. Measurement and Verification Guidelines

This document provides guidelines and methods for measuring and verifying energy, water, and cost savings associated with federal energy savings performance contracts (ESPCs). This document was developed for U.S. Department of Energy’s Federal Energy Management Program (FEMP) for federal projects. The guidelines are also applicable to non-federal projects and are posted on FEMP’s website at:

[M&V Guidelines](#)

(http://energy.gov/sites/prod/files/2013/10/f3/sample_mv_plan.pdf)

SCHEDULE G. Left blank for optional schedule related to Savings Guarantee

PAYMENTS SCHEDULES

SCHEDULE H. FINAL PROJECT COST & PROJECT CASH FLOW ANALYSIS

This schedule contains a spreadsheet depiction of the expected financial performance of the project throughout the entire contract term. The documentation should clearly identify all financial components of the project, including interest rates, current fuel prices, any escalation rates, guaranteed savings figures, ESCO compensation figures, cash-flow projections, and projected Net Present Value of any cumulative positive cash flow benefits to the Institution. Savings projections should be delineated by utility/fuel type and should identify ongoing annual service fees provided over the contract term. Project cost breakdowns should identify both hard costs (labor costs, subcontractor costs, cost of materials and equipment, and miscellaneous costs like permits, bonds taxes, insurance, mark-ups, overhead and profit, etc.).

SCHEDULE I. FINANCING AGREEMENT AND PAYMENT SCHEDULE

This schedule contains a copy of the project financing agreement or terms and conditions of whatever financing vehicle is used (lease, COPs, bank financing etc.). An amortization and payment schedule should also be included as well as the progress payment disbursement schedule that will be used to pay the ESCO during the Interim Period (construction and installation) for the agreed-upon percentages of work completed.

SCHEDULE J. COMPENSATION TO ESCO FOR ANNUAL SERVICES

This should contain the amount and frequency of any payments that may be made to the ESCO for maintenance, monitoring or other services negotiated as part of the contract. It should contain information about how the compensation is calculated, and if an annual inflation index is to be used to escalate fees over the duration of the contract term. An hourly fee structure will also likely be included to cover ESCO costs for any services provided beyond the scope agreed to at the time of contract execution.

SCHEDULE K. REBATES, INCENTIVES AND GRANTS

List and describe any rebates, incentives and grants related to this project.

SCHEDULE L. CONTINGENCY FUND

Institution's Contingency:

- The Financial Grade Operational Audit report details the cost of the work and identifies the funds in the contingency budget.
- The owner's contingency may be increased from applicable utility rebates, tax credits or tax rebates.
- Contingency Funds, if applicable, shall mean State funds not included in the Fixed Limit of Construction Cost and set aside for the State to release to Contractor or any Third-party Lessor in the event the State desires to add to or change the scope of Contractor's work or reduce the State's obligation to any Third-party Lessor.

- The State may authorize the disbursement of Contingency Funds to Contractor through a Change Order or other state contract modification procedure.
- The addition of contingency funds to a project may impact or modify the competition date, utility savings, the guarantee of savings, project collateralization, operation and maintenance requirements, training requirements, and other items.
- Each modification should be tracked with the appropriate documentation.

SCHEDULE M. Left blank for optional schedule related to Payments and Schedule

SCHEDULE N. Left blank for optional schedule related to Payments and Schedule

SCHEDULE O. Left blank for optional schedule related to Payments and Schedule

SCHEDULE P. Left blank for optional schedule related to Payments and Schedule

DESIGN, AUDIT AND CONSTRUCTION PHASE SCHEDULES

SCHEDULE Q. DESCRIPTION OF PROJECT SITE(S); PRE-EXISTING EQUIPMENT INVENTORY

This schedule contains basic information about the condition of the Project Site(s) at the time of contract execution. Such information would include facility square footage, building construction, use, occupancy, hours of operation etc., and any special conditions that may exist.

The inventory is important to include for the purpose of identifying what equipment was in place and how it was configured at the time of contract execution. This schedule is important to the accurate establishment of baseline, savings measurement and may need to be referred to in the later years of the contract.

This is not a statement on the layout of the information, but a listing on important information that should be included in any description of the buildings, infrastructure, or other items identified in the original client request. The list should only list facilities that were included in the final energy performance contract agreed scope of work.

- Name of the building.
- Photograph of the exterior of the building.
- Short description of the building (occupancy type, occupancy schedule, construction type, etc)
- Size, age (original and any major additions).
- Short descriptions of the mechanical and electrical systems within the building (heating, cooling, HVAC, lighting, air compressors, controls, plumbing, etc). Indicate the age or date of any component may have been replaced or upgraded.
- List of utility meters connected to the building.
- Indicate the envelope components of the building if important to any final energy conservation measure. (Windows, roof, insulation levels, etc).
- Indicate of the client's facilities are heated/cooled by a central distribution system and include a map (if applicable).

- Infrastructure information as necessary (tunnels, steam, chilled water, condensate, compressed air lines, etc).
- Existing Service Contracts

SCHEDULE R. EQUIPMENT TO BE INSTALLED BY ESCO

This schedule should specify all of the newly installed equipment including manufacturer, quantity, location and warranties (you can also have a separate schedule for warranties). This schedule should also describe any modifications that may have been made to existing equipment, if applicable.

Include a table that indicates which measures are installed in which building. The description of each measure then follows the table. Only list the measures that are included in the final accepted energy savings performance contract. Recognize that the audit does not determine the scope of work but is now an attachment to the contract for reference purposes.

MEASURE name	Building 1	Building 2	Building 3	Building 4
Convert T12 to T8 (lamps and ballast)	X	X	X	
Boiler Replacement			X	X
Chiller Replacement	X			

For the description, indicate the following (the more details the better):

- Detailed description of the MEASURE
- Preferred type of equipment to be installed (by product name) or approved equal.
- List all major and minor components replaced, upgraded, or modified.
- All Operation and Maintenance changes (if O&M savings are being considered in the financial performance, justify why these savings are valid and achievable).
- Indicate potential interaction with other MEASURES.
- For de-lamping work, ESCO will need to guarantee that the light levels in the areas containing the fixtures will meet the standards set by the IESNA.
- Indicate if any hazardous materials are included in the work or by MEASURE (i.e. disposal of lamps/ballast).
- Indicate when the client is responsible for any identified hazardous material remediation (removal of asbestos insulation).
- For lighting work, include a spreadsheet or table indicating by room/location the work.

SCHEDULE S. CONSTRUCTION AND INSTALLATION SCHEDULE

Include the timetables and milestones for project construction and installation. If so desired, document required insurance, subcontractor lists and any MBE/WBE required subcontracts or break out into a separate schedule. NOTE: It is important that the

construction/installation phase of the project be treated in compliance with individual institutional requirements and the appropriate governing statutes. Since construction is just one component of the overall project, a separate construction contract may be desirable and in some cases necessary. The construction contract would then be referred to in the body of the contract and attached as an exhibit, appendix or other type of attachment. Another approach would be to consolidate the appropriate construction language for inclusion in the body of the final contract. This will need to be decided as appropriate on a case-by-case basis.

The schedule should include the duration and the start/finish date for each major item and measure. The design, procurement, construction, commissioning, and final acceptance for the work should be indicated. Any critical important seasonal dates, academic calendar, heating/cooling system schedule should be indicated. The level of detail depends on the complexity of the measure. The issuance of any Notice to Proceed for Construction will be dependent on the initial schedule being refined and finalized during the design phase.

SCHEDULE T. SYSTEMS START-UP AND COMMISSIONING OF EQUIPMENT; OPERATING PARAMETERS OF INSTALLED EQUIPMENT

Specify the performance testing procedures that will be used for start-up and commissioning of the installed equipment and total system. Define procedures for developing and implementing a commissioning plan and specify any requirements for the Institution and/or third party review and approvals, pre-functional inspections, use of manufacturers' start-up procedures, and for executing functional performance tests. Include operating parameters should for the operation of the installed equipment such as temperature setbacks, equipment run times, load controlling specifications and other conditions for the operation of the equipment.

Provide a general commissioning schedule, including any seasonal testing, and outline commissioning tracking and reporting requirements, including periodic and final commissioning reports, and any other required submittals such as a systems manual. Prescribe any requirements for warranty walk-through or other commissioning follow-up procedures.

Include specific provisions on how the Institution's project requirements or design intent for each measure or system will be defined. Define any requirements for certification that the tests followed the specified procedures and met or exceeded the expected results.

Define the qualifications and affiliation of the commissioning agent, and provide an overview of the roles and responsibilities of the commissioning agent, ESCO and the Institution in the commissioning process.

Provide for the Institution to be notified of and present during all commissioning procedures. Include a provision for the documentation of the Institution's attendance at

the various tests and the Institution's approval that the tests followed the specified procedures and met or exceed the expected results.

Because of the design-build nature of ESPCs, the details of the commissioning activities are developed along with the project scope, rather than being explicitly defined at the beginning of the project. Commissioning requirements must be: 1) specified in the contract, 2) defined explicitly after design, 3) implemented during construction, 4) completed prior to final project acceptance, and 5) followed-up on after acceptance.

Specify commissioning that will be completed during the following stages:

- Commissioning Process Defined at the Time of Contract Execution
- Defining Commissioning Activities During Project Design
- Implementing Commissioning Activities During Construction
- Completing Commissioning Activities Prior to Project Acceptance

PHASE 1 – CONTRACT DEVELOPMENT

Outline the project's specific commissioning requirements including:

- Qualifications and affiliation of the Commissioning Agent (CxA);
- Roles and responsibilities of CxA, ESCO and Institution, including witnessing of Cx activities;
- Process that will be followed to document the design intent or Institution's project requirements for each energy conservation measure (MEASURE) or system;
- Requirements for Institution or 3rd party design reviews or submittal approvals;
- Schedule for developing and approving a Cx plan, including expected content such as:
 - Pre-functional inspections,
 - Functional testing procedures,
 - Required use of manufactures' start-up procedures,
- Plan for seasonal testing and conditional acceptance, if needed;
- Contents and timing of periodic project reports, Final Cx Report, and
- Systems Manual;
- Requirements for CxA oversight of O&M training; and
- Plan for warranty walk-through or other follow-up procedures.

Designate both the affiliation and qualifications of the Commissioning Agent (CxA) that will lead the commissioning process for the project. The key responsibilities of the CxA are: 1) Directing the commissioning team in the completion of the commissioning requirements; 2) Overseeing or performing the commissioning tests; and 3) Verifying the adequacy of the commissioning results.

Develop a written design intent for each system or MEASURE installed documenting the Institution's project requirements. Specific operational parameters, design details, performance requirements (conditions in addition to energy savings), or other provisions that are established by a design intent are:

- Operational parameters, such as temperature setback capabilities or operator interface features;

- Requirements for design details or ancillary items, such as sensors, valves, access, electrical, existing equipment demolition, etc.;
- Performance requirements, such as equipment efficiencies, or ton-hours of chilled water to be delivered.

PHASE 2 – PROJECT DESIGN

Commissioning related activities performed by the Cx team in the design phase include:

- ESCO completes project design;
- Institution and CxA review design and approve equipment submittals;
- ESCO and Institution document the design intent for each MEASURE or system;
- CxA develops a draft Cx Plan, including the specifics of all pre-functional inspections and functional performance tests;
- CxA develops Cx specifications for project (if needed);
- Institution and ESCO review and accept Cx documents;
- CxA issues Final Commissioning Plan and specifications.

PHASE 3 – CONSTRUCTION

Commissioning related activities that occur during the construction phase include:

- Construction observation by Institution’s Cx representative and Commissioning Agent;
- Periodic Cx meetings are held with the project team;
- Cx progress reports are submitted by the CxA;
- Pre-functional inspections are completed and certified by the ESCO prior to equipment start-up and functional testing;
- Manufacturers’ start-up procedures are completed by the ESCO or manufacturer’s representative.

Commissioning related activities that occur during the construction phase should also include ESCO development and submittal of “as-built” construction documents for completed MEASURES in each impacted building or facility.

PHASE 4 – PROJECT ACCEPTANCE

In this phase the functional performance tests are executed and the procedures are documented by the CxA, explicitly including how the Institution’s project requirements or design intent prescribed for each system were met. Any items that did not pass shall be tracked and presented to the project team in a deficiency log. The ESCO will rectify the items and then perform a retest in the presence of the CxA to confirm that the items have been fixed. The deficiency log is then updated by the CxA, noting the date and corrective action taken. The Institution may choose to specify consequences for multiple failed retests to limit the possibility of excessive use of the CxA’s time. The ESCO then assembles the Final Commissioning Report or a Systems Manual including, at minimum, the following:

- Commissioning summary report;
- ESCO certified pre-functional checklists;
- Completed manufacturers start-up sheets;

- Results of functional testing and verification of system performance;
- Detailed operating procedures / sequences of operations;
- Closed out deficiency log;
- Overview of training provided to O&M staff.
- Some Agencies may prefer to receive a more comprehensive Systems Manual, which is required for LEED certification. A systems manual typically brings together comprehensive project documentation:
- Institution's project requirements or design intent;
- Schematic system drawings;
- Approved submittals;
- Recommended record keeping procedures;
- Maintenance procedures & schedules;
- Test requirements for ongoing commissioning.

PHASE 5 – POST-ACCEPTANCE PHASE

Commissioning activities that typically extend beyond Project Acceptance include deferred functional testing and warranty verification. Some functional testing may be postponed until seasonal conditions are appropriate to evaluate the system. When some functional testing has been deferred, acceptance of the project is conditional upon the success of the scheduled tests. Most equipment installed will have a one-year warranty provided by the manufacturer. A warranty check-out with the ESCO after 8 to 10 months of operation is a recommended commissioning activity. Reviewing the equipment warranties and performing a site walkthrough at this time can identify any problems that may still be covered by a manufacturer's or contractor's warranty.

COMMISSIONING PLAN

A Commissioning Plan should involve the following:

- Written as a user-friendly document that defines the flexibility requirements and migration path of the proposed system
- Provides complete documentation of how system design intent will meet the owner's needs
- Includes design review and post-acceptance project monitoring
- Defines design objectives for the functional use of the system
- Provides an adequate set of pre-functioned test checklists to verify installation compliance with design intent
- Provides an adequate description of functional performance tests (e.g. step by step procedures)
- Do functional performance tests verify that the controls function as an integrated system congruent with design intent
- Do functional performance tests cover equipment startup, seasonal changeovers, and shut down
- Do performance tests cover system normal, alarm, and failure sequences
- Requires a master list of deficiencies and status of resolution for each item
- Are sensor accuracy tests performed with a standardized instrument
- Does performance testing include both hardware and software

- Provides effective operations and maintenance training for building operators
- Contains equipment data sheets and commissioning logs
- Contains equipment startup checklists
- Requires production of a systems manual with full documentation of the control logic in addition to O&M manuals
- Requires a final commissioning report and recommissioning schedule or continuous commissioning plan

SCHEDULE U. STANDARDS OF COMFORT

Explicitly describe the standards of comfort to be maintained for heating, cooling, lighting levels, hot water temperatures, humidity levels and/or any special conditions for occupied and unoccupied areas of each building.

SCHEDULE V. ESCO'S TRAINING RESPONSIBILITIES

Describe the ESCO's training program or sessions for facility personnel including the duration and frequency of the specified training. Describe any provisions for on-going training, commitments to train newly hired facility personnel, and training with respect to possible future equipment or software upgrades. Also specify any fees associated with the Institution's request for training beyond what the ESCO is contractually bound to provide.

Describe your firm's proposed approach to providing technical training for Facility personnel. Indicate the proposed number of personnel to be trained and the type and frequency of training to be provided for the duration of the Agreement. Indicate how your firm shall address any turnover of key Facility personnel as it relates to project performance.

The Training Approach is customized to meet the specific needs of the Customer in a cost effective manner. It is a systematic process for identifying and implementing operational and maintenance improvements and for ensuring their continued performance over time. The content of the work scope is developed to focus on optimizing the building's systems and protecting the significant investment made by the Customer. This work scope will result in improved occupant comfort, maximum energy and operational savings and will be accomplished in a cost-effective manner.

As part of ensuring continued performance over time, the Customer should consider implementing an Asset Management software solution to optimize training and maintenance procedures. Turnover is a key concern for every building management team and an automated technology solution will assist in training maintenance personnel by automating preventive maintenance scheduling, work orders and inventory management. Maintenance personnel receive step-by-step procedures and the required parts to complete a planned or unplanned maintenance activity. In addition to saving money on unnecessary or repeated trips to equipment, the directions provide assistance to facilities personnel that do not have experience with a particular piece of equipment.

The overall goal of a Training Approach process is to assure that the HVAC, electrical and safety systems in the building are operating in accordance with the proper design intent and to maintain staff and visitor comfort during the life of the building. The process will accomplish the following:

- Building HVAC, electrical and plumbing systems will operate in accordance with the design intent that best suits the needs of the occupants and will provide a comfortable, safe and healthy environment
- Energy and operating costs will be reduced due to systems operating at maximum efficiency and through the implementation of energy efficient measures through the application of current technology
- Maintenance staff will be adequately trained to operate and maintain HVAC, electrical, plumbing and other systems in accordance with the proper design intent
- Reduction in occupant complaints reducing maintenance service calls
- Improvement in the overall building environment
- Extended service life of existing HVAC, electrical, plumbing and other systems and equipment

The key steps in the Training Approach processes are outlined as follows:

- Define and document the service requirement for each system and component. Each work scope item will include the following:
 - Identify the actual work scope that is required
 - Define the frequency of service procedures
 - Identify materials required
 - Identify any special tools or skills required
 - Identify the approximate time required to perform the service
 - Identify the safety concerns for the specific work scope
- Identify the specific service scope that can be performed by in-house staff. These work items will be selected based on the following factors:
 - Availability of in-house staff.
 - Expertise required by in-house staff
 - Tools required to perform work
 - Time required to perform work
- Train the in-house staff to perform specific service scope work items. The benefits of work completion by in-house staff include:
 - The Customer will realize cost savings by self-performing work items
 - The Customer will not be dependent on outside vendors
 - Enhanced understanding of system/equipment operation by in-house staff
 - Improved job satisfaction for in-house staff due to increased responsibilities
- Identify the specific service scope to be performed by external service providers. These work items will be selected based on the following factors:
 - Requirement of specific expertise
 - Risk management of asset life
- Recommend service providers to perform work scope items. These providers will be selected based on the following factors:
 - Local presence.
 - Knowledge of Customer facilities

- Warranty requirements
- Specific system/equipment expertise
- Cost of service

SCHEDULE W. Retro-commissioning

Good candidates for retro-commissioning are buildings with:

- Complex systems
- Consumption exceeds commercial building energy consumption survey benchmarks
- A history of operating problems
- Incomplete prior commissioning efforts
- Advanced DDC control systems
- High air change rates
- Dedicated facilities manager
- Permanent web-based metering
- Systems sub-meters
- Historical low-profile data
- Large, single HVAC systems
- Use of water-side economizers
- VAV systems
- Data collection to support condition-based maintenance
- Trend data from EMS
- Good utility baseline data
- Motivated and capable facility staff
- Extensive use of control strategies

Recommendations for Monitored Retro-Commissioning

- Review EMS trend logs
- Review energy use profiles
- Set alarms for savings persistence
- Continuous monitoring and optimization
- Benchmark all buildings
- Invest in staff training
- Major opportunities to resolve air system distribution noise, laboratory operational issues, better temperature control, and controls calibration
- Improved ventilation effectiveness
- Improved chiller sequence
- Improved reset controls and VAV static controls

Examples of trend logs to collect may include:

- Supply air vs. return air
- Chiller schedule
- Chiller outdoor air lockout
- Hot water supply temperature reset
- Hot water pump outdoor air lockout
- kW demand monitoring vs. outdoor air temperature

- Chiller kW vs. outdoor air temperature
- Ton hours vs. outdoor air temperature
- kWh vs. ton hours
- kW vs. outdoor air temperature
- Run hours of ventilation fans

Monitored retro-commissioning involves three steps:

- A performance persistence tracking system
- A performance degradation review process
- A persistence problem resolution process

Examples of points that may be archived include:

- Fan static pressure
- Schedule for the fan control signal
- Air and water temperatures
- Lobby schedules
- Chiller sequences
- Chilled water valve cycling
- Supply air temperature reset

SCHEDULE X. Left blank for optional schedule related to Design and Construction Phase

SCHEDULE Y. Left blank for optional schedule related to Design and Construction Phase

SCHEDULE Z. Left blank for optional schedule related to Design and Construction Phase

SCHEDULE AA. Left blank for optional schedule related to Design and Construction Phase

POST-CONSTRUCTION SCHEDULES

Also see Schedule T: Start-Up Commissioning

SCHEDULE BB. ESCO'S MAINTENANCE RESPONSIBILITIES

Include a complete description of the ESCO's specific operations and maintenance responsibilities along with the time intervals for their performance of the stated O&M activities.

The description shall include but is not limited to:

- Description of ESCO's operations and maintenance responsibilities.
- Performance period for ESCO's performance of the stated operating and maintenance activities.
- Period of time for Maintenance during or after warranty period.
- Payment terms for Maintenance: annually and for how much.

Following is a template that can be developed in a spreadsheet.

**ESCO's Maintenance Responsibilities - Contractual Terms
Sample Checklist**

Equipment Designation	Equipment Type	Equipment Location	Description of ESCO's Maintenance Responsibilities	Frequency by ESCO	Retro-commissioning Service - detail frequency (if applicable)	Any Activity required by Client, if applicable.
AHU-1 AHU-2	Single Zone Air handler	Floor 1 Mech. Room # 101	Lubricate fan bearings	Annual		Yes
Period of time for maintenance during warranty period:						
Period of time for maintenance after warranty period:						
Annual Fee:						

SCHEDULE CC. INSTITUTION'S MAINTENANCE RESPONSIBILITIES

Describe the operations and maintenance responsibilities that may be assigned to facility staff as agreed to by both parties. In some instances this will contain no more than a description of routine O&M currently being performed on existing energy consuming equipment in the facility. In other cases, facility staff may be used to provide some maintenance on the new equipment installed under the performance contract, with the ESCO providing any specialized services as needed.

The description shall include but is not limited to:

- Description of the Institution's operations and maintenance responsibilities
 - Existing maintenance and operations
 - Additional maintenance and operations necessitated by the Work

Institution shall provide all maintenance tasks on all existing equipment at all times. Institution shall provide all maintenance duties on new equipment after Substantial Completion. Maintenance Duties will be outlined in Operation and Maintenance Manuals, which will be provided by ESCO.

Following is a Client Maintenance Template for use in a spreadsheet.

**Client's Maintenance Responsibilities
Sample Checklist**

Equipment Designation	Equipment Type	Equipment Location	Maintenance Activity by Client	Frequency by Client	Any Activity required by ESCO? (If yes, see Sched. BB)
Existing Equipment:					
AHU-2	Single Zone Air handler	Floor 2 Mech. Room # 202	Routine maintenance	Every 6 months	No
New Equipment:					
AHU-1	Single Zone Air handler	Floor 1 Mech. Room # 101	Change Filters	Every 6 months	Yes
Period of time for maintenance during warranty period:					
Period of time for maintenance after warranty period:					

SCHEDULE DD. FACILITY MAINTENANCE CHECKLIST

This checklist is a method by which the ESCO may record and track the Institution's compliance with any of the maintenance procedures being performed by facility personnel. The checklist typically specifies simple list of tasks and the corresponding schedule for the performance of the prescribed procedures. Facility staff will complete the checklist and forward it to the ESCO, usually on a monthly basis. (This checklist is a very useful tool for both the ESCO and Institution to verify that the required maintenance activities are being performed at the scheduled intervals).

Following is a Facility Maintenance Checklist for use in a spreadsheet.

Facility Maintenance Checklist Sample

Existing Equipment:						
Equipment Designation	Equipment Type	Equipment Location	Maintenance Activity by Client	Date Performed	Performed by:	Notes
AHU-2	Single Zone Air handler	Floor 2 Mech. Room # 202	Routine maintenance	6/1/2013	MJO	

New Equipment:						
Equipment Designation	Equipment Type	Equipment Location	Maintenance Activity by Client	Date Performed	Performed by:	Notes
AHU-1	Single Zone Air handler	Floor 1 Mech. Room # 101	Change Filters	6/1/2013	MJO	High filter loading - consider more frequent changes if this continues

SCHEDULE EE. Left blank for optional schedule related to Post-Construction Phase

SCHEDULE FF. Left blank for optional schedule related to Post-Construction Phase

SCHEDULE GG. Left blank for optional schedule related to Post-Construction Phase

SCHEDULE HH. Left blank for optional schedule related to Post-Construction Phase

SCHEDULE II. Left blank for optional schedule related to Post-Construction Phase

ADMINISTRATION SCHEDULES

SCHEDULE JJ: Alternative Dispute Resolutions

It should be a mutual goal of the ESCO and agency to voluntarily resolve any performance problems that may arise. Because of cost and time delays, it is not advisable to delegate a technical dispute to attorneys or others. But it is important to fully disclose all pertinent information and not allow frustration to result in the parties losing focus on the project value and their real interests.

EPC projects require a cooperative effort between the agency and ESCO to achieve energy and cost saving goals, effective equipment maintenance and building comfort. Maintaining high quality performance results over a 10- or 20-year contract requires effective communication, a mutual understanding and the fulfillment of contract responsibilities.

The voluntary resolution of performance problems is facilitated when both parties are committed to seeking resolution based on good faith. Pertinent facts should be fully disclosed early in the resolution process with the ESCO and the agency devoting sufficient time and resources to the proper evaluation of viable options. The ESCO and the agency must realistically evaluate the potential risk and cost of seeking legally binding involuntary resolution. Litigation and formal arbitration are usually very expensive and involve lengthy procedures by judges or arbitrators who often have inadequate expertise to understand complex technical issues. Alternative dispute resolution (ADR) that requires the use of mediation should be included as a standard contract provision to minimize the high cost of resolving performance problems.

To ensure a successful relationship and reduce the potential for conflict, the following should be considered:

Document and Explain Adjustments Made to the Base Year Projections

Mutual duties should be explicitly defined in the contract. Any contractual conditions that affect the savings guarantee must be realistic and technically sound. It is important to document and explain any adjustments made to the base year projections. If unsound technical data are used for project analysis and planning, there will be problems with the project performance.

Document Equipment Technical Performance Requirements

Adequate staff training and accurate documentation of equipment technical performance requirements are a must for a successful project. Continuous monitoring and regular performance reviews provide important feedback to keep the project on track. Also, coordination of energy performance contracts with other construction projects helps to minimize conflicts between project goals.

Put All Project Changes IN WRITING

It is important to keep thorough and precise written records of approvals for all changes to the project. Individual memories are often unreliable and staff turnover is unavoidable. The resolution of problems through prompt and effective action by both the ESCO and the agency is essential to avoiding disputes. Sound technical solutions, transparent to both parties, should satisfy the legitimate interests of both the agency and the ESCO. It is advisable to have a process in place to confirm, by mutual sign-off, that performance problems are solved.

Create Explicit Definitions of Technical and Economic Data and Performance Measurement Methods

Since vague definitions of technical and economic data and methods of performance measurement invite misunderstanding and differing perceptions, it is important that clear definitions be provided. Definitions and contract standards should be fair, economically viable, technically sound, transparent and mutually approved. All technical calculations should be double-checked for data input and math errors and fully documented to explain any base year adjustments.

Encourage Open and Timely Communication

Open and timely communication between the ESCO and agency staff charged with performance responsibilities is crucial to a project success, especially during project commissioning. Each party needs to fully describe project performance concerns and objectively evaluate the merits of available options in order to fairly and efficiently resolve performance problems

SCHEDULE KK: Life of Contract Plan – Document Management

A Life of Contract (LOC) Plan captures the performance data from the acceptance phase of the contract, to provide guidance on how to manage the contract for its remaining term to ensure proper performance of the equipment and the verification of savings guarantees for the life of the contract.

Data collection is organized chronologically to:

- Document the Operation and Maintenance (O&M) and Repair and Replacement (R&R) requirements to monitor and verify that necessary actions are conducted to maintain equipment performance, ensuring that savings are realized.
- Define activities to support annual M&V and true-up processes to allow confirmation that all testing and inspections are accomplished and that the M&V report can be accepted or rejected annually for the life of the contract.
- Document results of initial commissioning of the project equipment and subsequent commissioning of controls.

Personnel responsible for the project's success can use these documents to monitor and document activities over the contract term. This documentation provides continuity in the event of personnel changes. See the following resource developed by the Hawaii Energy Office with funding from U.S. DOE.

[ESPC Life of Contract \(LOC\) Plan - Hawaii](#)

This document was developed by the Hawaii Energy Office with funding from U.S. DOE. It provides guidance to project staff members during the ESPC's post-installation performance period.

<http://energy.hawaii.gov/wp-content/uploads/2012/06/ESPC-Life-of-Contract-Plan.-12-19-12.pdf>

SCHEDULE LL: Role of the Third Party Consultant

Independent Third-Party Review is required for review of operating cost-saving measures and may be required by Owner for review of annual M&V reports (Nevada Local Governments – NRS 332.430, .431; Nevada State Governments – NRS 33A.086).

SCHEDULE MM: Prevailing Wage Requirement

The prevailing wage is required for skilled, semi-skilled, and unskilled workers as given in NRS 33A.020 to .090 inclusively (Nevada Local Governments NRS 332.390; Nevada State Governments – NRS 333A.020-0.90, .120)

OPTIONAL SCHEDULES

PRE-EXISTING SERVICE CONTRACTS

Information regarding the scope and cost of pre-existing equipment service contracts should be located in this schedule. This gives both the Institution and ESCO information about how and when the existing equipment is being serviced. As well, if the ESCO is credited with any maintenance savings or is taking over any existing service contracts, the scopes and costs of such Contracts will be useful in tracking the performance of the ESCO in providing the required services and documenting any attributable cost savings.

ENERGY SAVINGS PROJECTIONS

This schedule should contain the projected energy savings in units for each year of the contract. Oftentimes these projections are broken down on a measure by measure basis although some measures may be aggregated into general categories such as lighting or HVAC. If there are several buildings involved in the project, this schedule should contain projections for each facility, even though they may all be covered under a single guarantee.

FACILITY CHANGES CHECKLIST

A "Facility Changes Checklist" or other method may be provided by the ESCO for the Institution to notify the ESCO of any changes in the facility that could have an impact on energy consumption (e.g. occupancy, new equipment acquisition, hours of use etc.). This checklist is generally submitted on a monthly basis or quarterly basis.

The "Facility Changes Checklist" should also be used as a preliminary "evaluation tool" during annual reconciliations for the Monitoring and Verification (M&V) process because it should be reasonable to ASSUME (in very general overview terms): annual energy consumption records (such as: cumulative totals for kilo-watt-hours charged on a

“building-by-building” or a “facility-by-facility” basis) for the “mutually agreed to” baseline year less the ESCO’s guaranteed energy savings (in terms of reduced annual consumptions) under the Guaranteed Energy Savings contractual agreement that are adjusted (+/-) in accordance with energy consumption increases or decreases associated with the “Facility Changes Checklist” should stay within 10% of the actual energy consumption records (cumulative totals) for each year of the performance guarantee period.

CURRENT AND KNOWN CAPITAL PROJECTS AT FACILITY

If there are any current or planned capital projects to be implemented in the facility, that information should be contained in this schedule. This information could prove to be very useful in the out-years of the contract to avoid potential disputes over long-term energy savings performance, overall facility energy consumption and costs.

EXHIBITS

- | | |
|------------------|--|
| EXHIBIT I | PERFORMANCE BOND/CONSTRUCTION BOND |
| EXHIBIT II | LABOR AND MATERIAL PAYMENT BOND <i>if required</i> |
| EXHIBIT III (i) | CERTIFICATE OF ACCEPTANCE—FINANCIAL GRADE OPERATIONAL AUDIT REPORT |
| EXHIBIT III (ii) | CERTIFICATE OF ACCEPTANCE—INSTALLED EQUIPMENT |

EXHIBIT IV EQUIPMENT WARRANTIES

Provide a full description or schedule of equipment warranties. Include manufacturer warranty dates and periods as well as ESCO warranty dates and periods, if they differ.

If the ESCO warranty starts prior to the commencement of energy savings, provide the client of warranty start criteria (i.e. – “beneficial use”), and warranty duration by MEASURE.

Extended warranties may be available; if so, indicate if such warranties are for labor and material, or material only. Include detailed warranty instructions if an extended warranty will transfer the warranty relationship from the ESCO to the client. Provide manufacturer contact information, return addresses and instructions.

Warranty commencement, whether by MEASURE or for the project as a whole, must be initiated with a letter to the client detailing all of the above information.

If completed MEASUREs are accepted in incremental phases (such as by buildings or facilities) prior to final acceptance for all of the MEASUREs under the Guaranteed Energy Services contractual agreement, then the project schedule for equipment, workmanship/installation, and product warranty considerations should clearly identify

when the ESCO's warranty period starts and ends for completed MEASUREs in each impacted building or facility. The project schedule should also clearly identify when the ESCO performance guarantee period for all of the completed and accepted MEASUREs starts (which should typically be from the date of final acceptance for all of the completed MEASUREs) and ends, as well as incorporate provisional language on what happens if the final acceptance date for all completed MEASUREs is processed earlier or later than anticipated.

EXHIBIT IV Equipment Warranties

EXHIBIT V Record of Reviews by Institution

OPTIONAL EXHIBITS

Manifest of Ownership
Minority and Woman-Owned Business Certification
Certification that Financing Term is no Longer than the
Aggregated Equipment Lifetime
Notice of Substantial Completion
Notice to Proceed with Construction Phase
Record of Reviews by Institution

APPENDICES

APPENDIX A RFP FOR ESCO SOLICITATION
APPENDIX B ESCO PROPOSAL
APPENDIX C FINANCIAL GRADE OPERATIONAL AUDIT AND
PROJECT PROPOSAL CONTRACT
APPENDIX D FINANCIAL GRADE OPERATIONAL AUDIT REPORT

NOTE: THESE SCHEDULES CAN BE INCLUDED AS OPTIONAL AND INCLUDED OR COMBINED WITH OTHERS OR MAY BE CONTAINED IN THE AUDIT REPORT AS DESIRED.