**ENERGY PERFORMANCE CONTRACT**

CONTRACT ATTACHMENT A: Schedules

*Examples and Tables*

*This document is part of a collection of model procurement and contracting documents that represent Best Practices for state energy offices (SEOs) to launch and administer programs to increase energy efficiency through Energy Performance Contracting. The documents draw from successful programs in various states and are continually updated to incorporate the latest strategies. They are customized to meet the needs of the SEO.*

*DESCRIPTION –Examples and Tables for Schedules in the Energy Performance Contract*

*This provides process descriptions, examples and tables related to the Energy 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 procurement staff to adapt it to meet your needs.

**EPC ATTACHMENT A: SCHEDULES**

**TABLE OF CONTENTS**

**SCHEDULES**

**SAVINGS GUARANTEE**

**Schedule A Baseline Consumption and Guaranteed Savings**

1. **Savings Guarantee**
2. **Baseline Consumption**
3. **Methodology to Adjust Baseline**

**Schedule B Measurement and Verification Plan and Reporting Requirements**

1. **Risk and Responsibility in M&V**
2. **Measurement and Verification Plan**
3. **Post-Installation Report Outline**
4. **Annual M&V Report Outline**

**PAYMENTS SCHEDULE**

**Schedule C Project Financials**

1. **Final Project Cost & Project Cash Flow Analysis**
2. **Financing Agreement and Payment Schedule**
3. **Compensation to ESP for Annual Services**
4. **Rebates, Incentives and Grants**
5. **Contingency Fund**

**DESIGN AND CONSTRUCTION PHASE**

**Schedule D Scope of Work**

1. **Description of Project Site(s)**
2. **Pre-existing Equipment Inventory**
3. **Equipment to be Installed by ESP**
4. **Construction and Installation Schedule**

**Schedule E Standards of Comfort**

**PROJECT CLOSEOUT AND POST-CONSTRUCTION**

**Schedule F Systems Start-Up and Commissioning**

1. **Commissioning Plan**
2. **Operating Parameters of Installed Equipment**
3. **ESP’s Training Responsibilities**
4. **Retro-Commissioning**

**Schedule G Maintenance Responsibilities**

1. **ESP’s Maintenance Responsibilities**
2. **Entity’s Maintenance Responsibilities**

**Schedule H Facility Maintenance Checklist**

**ADMINISTRATION**

**Schedule I Alternative Dispute Resolution Procedures**

**OPTIONAL SCHEDULES**

**Pre-Existing Service Contracts**

**Energy Savings Projections**

**Facility Changes Checklist**

**Current and Known Capital Projects**

# SAVINGS GUARANTEE

## Schedule A Baseline Consumption and Guaranteed Savings

### Savings Guarantee

Guaranteed cost savings are the guaranteed annual measurable monetary reduction in utility and operation and maintenance (O&M) costs for each year of the guarantee period resulting from cost-saving measures.

Fully describe all provisions and conditions of the ESP’s utility saving guarantee. The guarantee must be defined in units to be saved for the duration of the contract term. Baseline utility rates must also be defined, together with any floor and ceiling rates. Baseline rates are the utility rates in effect at the time of the IGA. Escalation rates, if used, shall be defined and noted if they are or are not guaranteed. Reference to the annual reconciliation of achieved vs. guaranteed savings must be included. The body of the contract includes language regarding annual reconciliation – see Section 3.2 (Annual Review and Reimbursement/Reconciliation).

Utility rates may not be stipulated. Either the baseline rates or the actual rates are used to verify the actual utility savings for each year of the guarantee period.

**Table 1. Guaranteed Annual Savings**

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

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CSM | Total energy savings (MBtu/  year) | Electric energy savings  (kWh/ year) | Electric demand savings  (kW/  year)\* | Natural gas savings  (MBtu/  year)\*\* | Water savings (gallons/year) | Other energy savings  (MBtu/ year)\*\* | Total energy & water cost savings Year 1 ($/year) | Energy-related O&M cost savings Year 1 ($/year) | Total cost savings Year 1 ($/year) |
|  |  |  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |  |
| Total Savings |  |  |  |  |  |  |  |  |  |
| **First Year Guaranteed Cost Savings: $** | | | | | | | | | |

Notes:

MBtu=106 Btu.

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

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

ESP shall pay Entity the amount of any verified annual guaranteed cost savings shortfall each year until guaranteed cost savings are achieved for all years in the initial monitoring period. In the case of a shortfall, ESP and Entity may negotiate the terms of M&V reports and the shortfall payment for the remainder of the finance term.

The total project cost includes all costs for the EPC – the IGA, cost-saving measures, design, contingency, M&V and all other fees and services provided under the EPC.

Clearly state what portion and/or components of the total project cost are covered by the savings guarantee. State what portion and/or components of the total project cost are not covered by the savings guarantee.

### Baseline 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. lamps, ballasts, filters, chemicals etc.), and cost savings associated with the elimination of maintenance contracts.

*The IGA report contains the monthly utility data and baseline data. Table 2 is included here to provide an annual summary of utility use and cost. Table 2 shall be completed for each metered site or facility.*

**Table 2. Baseline Use and Cost**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Electric Energy  (kWh/ year) | Electric Demand  (kW/  year)\* | Electric Cost  ($/year) | Natural Gas  (MBtu/  year)\*\* | Natural Gas  Cost  ($/year) | Water (gallons/ year) | Water Cost ($/year) | Other Energy  (MBtu/ year)\*\* | Other Energy cost ($/year) | Total Energy (MBtu/  year) | Total Cost ($/year) |
| Utility Data Year 1 |  |  |  |  |  |  |  |  |  |  |  |
| Utility Data Year 2 |  |  |  |  |  |  |  |  |  |  |  |
| Utility Data Year 3 |  |  |  |  |  |  |  |  |  |  |  |
| Baseline |  |  |  |  |  |  |  |  |  |  |  |
| Baseline Rate | $ /kWh | $ /kW |  |  | $ /MBtu |  | $ /Gal |  | $ /MBtu |  |  |

***Energy and Water Baseline Development*** *- Describe in general terms how the baseline for this cost-savings measure 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 Entity’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; Dates and times of measurements; Monitoring equipment used; 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 forms 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*
* *Present baseline consumption in forms consistent with the M&V plan as described below.*

### Methodology to Adjust Baseline

*Periodically (at least annually), the baseline will be adjusted to account for the prevailing conditions (e.g., weather, billing days, occupancy, etc.) during the measurement period. All methodologies used to account for any adjustments to the baseline need to be clearly defined. The methodologies must be consistent with the IPMVP as well as the M&V plan. The ESP may adjust the baseline only through the static factors and independent variables factors and adjustment methodology included in the M&V plan. All factors used to adjust the baseline must be identified.*

## Schedule B Measurement and Verification Plan and Reporting Requirements

*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 Cost-Saving Measures*
* *Expected Year 1 Savings for Cost-Saving Measures*

### Risk and Responsibility in M&V

*One of the primary purposes of M&V is to reduce the risk of nonperformance to an acceptable level, which is based on the Entity’s priorities and preferences. Risk refers to the uncertainty that the expected savings will be realized. Fundamental principles that can be applied to the allocation of responsibilities in EPC contracts include:*

* *Logic and cost-effectiveness drive the allocation of responsibilities*
* *The responsible party predicts its likely tasks and associated costs to fulfill its responsibilities and makes sure these are covered in the EPC or Entity’s budget.*
* *Any unforeseen costs are paid by the party that caused the costs or by the party responsible for that risk area.*
* *Stipulating certain parameters in the M&V plan can align responsibilities, especially for the items no one controls.*

*Risks in achieving energy savings can be allocated to use and performance factors. Risk related to use stems from uncertainty in operational factors such as weather, hours of operation, user intervention, and equipment loads. Because ESPs often have no control over such factors, they are usually reluctant to assume usage risk. The Entity generally assumes responsibility for usage risk by either allowing baseline adjustments based on measurements or by agreeing to stipulated equipment operating hours or other usage-related factors. By using stipulations the ESP and Entity agree to a set value for a parameter for the term of the contract, regardless of the actual behavior of that parameter.*

*The use of stipulations is a cost-effective way to reduce M&V costs and allocate risks. Stipulations used appropriately do not jeopardize the savings guarantee, the Entity’s ability to pay for the project, or the overall value of the project to the Entity. However, stipulations have the potential to shift risk to the Entity, and the Entity should understand the potential consequences before accepting them. Risk is minimized and optimally allocated through carefully crafted M&V requirements, including diligent estimation of any stipulated values.*

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

**RISK AND RESPONSIBILITY MATRIX**

|  |  |
| --- | --- |
| **RESPONSIBILITY/DESCRIPTION** | **ESP PROPOSED APPROACH** |
| **1. Financial** |  |
| **a. Interest rates**: Neither the ESP nor the Entity has significant control over prevailing interest rates. Higher interest rates will increase project cost, financing term, or both. The timing of the EPC signing may impact the available interest rate and project cost. |  |
| **b. Utility prices**: Neither the ESP nor the Entity has control over actual utility prices. For calculating savings, the value of the saved energy may either be constant or change at a fixed escalation rate Actual rates should be used for verified savings per IPMVP. |  |
| **c. Escalation rates**: Neither the ESP nor the Entity has control over actual escalation rates. The increase of commodity or O&M costs may have a significant impact on the total cost savings for the project. Escalation is permitted by statute and is applied to determine shortfall payments to the Entity. **Clarify how escalation rates shall be determined by the ESP using the EERC and the impact to the project if projected rates differ from actual rates.** |  |
| **d. Construction costs:** The ESP is responsible for determining construction costs and defining a budget. In a fixed-price EPC contract, the Entity assumes little responsibility for cost overruns. However, if construction estimates are significantly greater than originally assumed, the ESP may find that the project or measure is no longer viable and drop it before EPC award. In any EPC contract, the Entity loses some design control. **Clarify design standards and the design approval process (including changes) and how costs will be reviewed.** |  |
| **e. M&V confidence:** The Entity 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 M&V, and the ESP 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.** |  |
| **f. Energy Related Cost Savings:** The Entity and the ESP may agree that the project will include savings from recurring and/or one-time 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 Entity. 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 non-energy cost savings and how they will be verified.** |  |
| **g. Delays:** Both the ESP and the Entity can cause delays. Failure to implement a viable project in a timely manner costs the Entity 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.** |  |
| **h. Major changes in facility:** The Entity 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.** |  |
| **2. Operational** |  |
| **a. Operating hours:** The Entity 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 must be carefully documented and agreed to by both parties. |  |
| **b. Load:** Equipment loads can change over time. The Entity 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. |  |
| **c. Weather:** Some cost-saving measures are affected by weather. Neither the ESP nor the Entity has control over the weather. Should the Entity 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.** |  |
| **d. User participation:**  Many cost-saving measures require user participation to generate savings (e.g., control settings). The savings can be variable and the ESP 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). |  |

|  |  |
| --- | --- |
| **3. Performance** |  |
| **a. Equipment performance:** The ESP has control over the selection of equipment and is responsible for its proper installation, commissioning, and performance. The ESP has the 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.** |  |
| **b. Operations:** Performance of the day-to-day operations activities is negotiable and can impact performance. However, the ESP 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.** |  |
| **c. Preventive Maintenance:** Performance of day-to-day maintenance activities is negotiable and can impact performance. However, the ESP bears the ultimate risk regardless of which party performs the activity. **Clarify how long-term preventive maintenance will be assured, especially if the party responsible for long-term performance is not responsible for maintenance (e.g., ESP provides maintenance checklist and reporting frequency). Clarify who is responsible for performing long-term preventive maintenance to maintain operational performance throughout the contract term. Clarify what will be done if inadequate preventive maintenance impacts performance.** |  |
| **d. Equipment Repair and Replacement:** Performance of day-to-day repair and replacement of ESP-installed equipment is negotiable; however, it is often tied to project performance. The ESP bears the ultimate risk regardless of which party performs the activity. **Clarify who is responsible for performing replacement of failed components or equipment replacement throughout the term of the contract. Specifically address potential impacts on performance due to equipment failure. Specify expected equipment life and warranties for all installed equipment. Discuss replacement responsibility when equipment life is shorter than the term of the contract.** |  |

### Measurement and Verification Plan

*Measurement and verification (M&V) is the basis for guaranteed savings that pay for the project financing. A preliminary M&V plan would typically have been developed in the Investment Grade Audit process. This plan is finalized in the EPC. Also see Schedule A Part 2 Baseline Energy Consumption and Schedule A Part 3 Methodology to Adjust Baseline.*

*As a minimum, the M&V plan shall be referenced in Schedule B relative to its format and adherence to the IPMVP and the FEMP Guidelines. The final M&V plan may be issued as a separate document under the EPC.*

*By Montana statute an EPC requires M&V for a minimum of three years following completion of the project. The cost for M&V is paid for by the Entity during the initial monitoring period. If there is a shortfall in savings for any year of the monitoring period, the ESP pays for M&V until 1) the guaranteed savings are met for consecutive years equal to the initial monitoring period or 2) the Entity and the ESP negotiate a settlement regarding the shortfall payment for all future years of the contract term.*

*The use of stipulated calculations (permissible only in Option A) should be kept to a minimum. Stipulated values must be based on reliable, traceable and documented sources of information, such as:*

* *Standard lighting tables from major manufacturers*
* *Equipment Manufacturer’s specifications*
* *Building occupancy schedules*
* *Maintenance logs*
* *Performance curves published by national organizations*
* *Weather data from government agencies*
* *Standard performance degradation curves*

*Utility rates may not be stipulated. Actual rates should be used to verify the savings for each year of the guarantee period. Potential shortfalls use the baseline rate escalated (if escalation rates are used) to the year of the guarantee period.*

*The EPC will define the methods used for M&V. These are to comply with the latest version of the International Performance Measurement and Verification Protocol (IPMVP). FEMP has published guidelines for M&V (M&V Guidelines: Measurement and Verification for Performance-Based Contracts) that includes procedures for applying the IPMVP. The FEMP guidelines are to be used throughout the M&V process.*

*The IPMVP includes four approaches for operational verification that are applied to the M&V options of the IPMVP. Operational verification serves as a low-cost initial step for realizing savings potential and should precede savings verification activities. Operational verification is summarized in Table 1.*

***Table 1 Operational Verification Approaches***

|  |  |  |
| --- | --- | --- |
| ***Operational Verification Approach*** | ***Typical ECM Application*** | ***Activities*** |
| *Visual Inspection* | *CSM will perform as anticipated when properly installed; direct measurement of CSM performance is not possible.*  *Examples: wall insulation, windows* | *View and verify the physical installation of the CSM* |
| *Sample Spot Measurements* | *Achieved CSM performance can vary from published data based on installation details or component load.*  *Examples: fixtures/lamps/ballasts, fans, pumps* | *Measure single or multiple key energy use parameters for a representative sample of the CSM installations* |
| *Short-Term Performance Testing* | *CSM performance may vary depending on actual load, controls, and/or interoperability of components.*  *Examples: Daylighting sensors and lighting dimming controls, VSD fans, Demand-control ventilation* | *Test for functionality and proper control. Measure key energy-use parameters. May involve conducting tests designed to capture the component operating over its full range or performance data collection over sufficient period of time to characterize the full range of operation.* |
| *Data Trending and Control-Logic Review* | *CSM performance may vary depending on actual load and controls. Component or system is monitored and controlled through the BAS or can be monitored through independent meters.* | *Set up trends and review data and/or control logic. Measurement period may last for a few days to a few weeks, depending on the period needed to capture the full range of performance.* |

*The IPMVP offers four options for measuring and verifying performance and energy and water savings. These options, (A, B, C, and D), are the cornerstones of the standardized set of procedures contained in the IPMVP. In brief, Options A and B focus on the performance of specific CSMs. Option C assesses the energy savings at the whole-facility level by metering and analyzing utility costs before and after the implementation of CSMs. Option D is based on computer models of the energy performance of equipment or the whole facility, calibrated against historical utility consumption data to verify the accuracy of the simulation model.*

*Factors that affect the appropriate choice of M&V option include:*

* *Value of projected savings*
* *Cost of M&V options*
* *Level of savings uncertainty*
* *Number and complexity of savings measures*
* *Quality of baseline data available*

*Each M&V option and its relative accuracy and cost is explained in further detail in Table 2.*

***Table 2 Description of IPMVP Options***

| ***IPMVP Option*** | ***Description, Relative Accuracy and Cost*** | ***How Savings Are Calculated*** | ***Typical Applications*** |
| --- | --- | --- | --- |
| ***A. Retrofit Isolation: Key Parameter Measurement*** | *Savings are determined by field measurement of the key performance parameter(s) which define the energy use of the CSM. Measurements are taken at the component or system level for both the baseline and retrofit conditions.*  *Measurement frequency ranges from short-term to continuous, depending on the expected variations in the measured parameter, and the length of the reporting period.*  *Parameters not selected for field measurement are estimated (stipulated). Estimates can based on historical data, manufacturer’s specifications, or engineering judgment. Documentation of the source or justification of the parameter is required. Used when highly accurate measurements are not necessary or economically viable.*  *Typically lowest cost option.* | *Engineering calculation of baseline and reporting period energy from:*   * *short-term or continuous measurements of key operating parameter(s); and* * *estimated values.*   *Routine and non-routine adjustments as required.* | *A lighting retrofit where power draw is the key performance parameter that is measured periodically.*  *Estimate operating hours of the lights based on facility schedules and occupant behavior.* |
| ***B. Retrofit Isolation: All Parameter Measurement*** | *Savings are determined by field measurement of the energy use of the CSM.*  *Measurement frequency ranges from short-term to continuous, depending on the expected variations in the savings and the length of the reporting period.*  *Medium to high cost* | *Short-term or continuous measurements of baseline and reporting period energy, and/or engineering computations using measurements of proxies of energy use.*  *Routine and non-routine adjustments as required.* | *Application of a variable speed drive and controls to a motor to adjust flow.*  *Measure electric power with a kW meter installed on electrical supply to motor, reading power every minute. In the baseline period this meter is in place for a week to verify constant loading. The meter is in place throughout the reporting period to track variations in power use.* |
| ***C. Whole Facility*** | *Savings are determined by measuring energy use at the whole facility or sub-facility level.*  *Continuous measurements of the entire facility’s energy use are taken throughout the reporting period.*  *Medium to high cost* | *Analysis of whole facility baseline and reporting period (utility) meter data.*  *Routine adjustments as required, using techniques such as simple comparison or regression analysis.*  *Non-routine adjustments as required.* | *Multiple CSMs affecting several systems in a facility. Measure energy use with the gas and electric utility meters for a twelve month baseline period and throughout the reporting period.* |
| ***D. Calibrated Simulation*** | *Savings are determined through simulation of the energy use of the whole facility, or of a sub-facility.*  *Simulation routines are demonstrated to adequately model actual energy performance measured in the facility.*  *This Option usually requires considerable skill in calibrated simulation.*  *Medium to high cost* | *Energy use simulation, calibrated with hourly or monthly utility billing data. (Energy end use metering may be used to help refine input data.)* | *Multiple CSMs affecting several systems in a facility but where no meter existed in the baseline period.*  *Energy use measurements, after installation of gas and electric meters, are used to calibrate a simulation.*  *Baseline energy use, determined using the calibrated simulation, is compared to a simulation of reporting period energy use.* |

*Further information regarding measurement and verification can be found in the M&V Guidelines document published by the Federal Energy Management Agency (FEMP) and accessed at http://www1.eere.energy.gov/femp/pdfs/mv\_guidelines.pdf and the M&V Resource List, a frequently updated document that provides an extensive collection of resources and tools available to help users apply the IPMVP. Use the most recent version.*

**M&V Plan Outline**

*The M&V Plan Outline is provided as a separate document for ease of use by the ESP. The M&V Plan must be developed and included as part of this Contract. As the implementation of the EPC continues to completion, the M&V Plan may change with the written approval of the Entity. The final M&V Plan, that which is in effect at the signing of the Implementation COA, must be included by reference or attachment to this Contract.*

### Post-Installation Report Outline

*The M&V Post-Installation Report Outline is provided as a separate document for ease of use by the ESP. This report is completed after the installation is complete, generally at the time of the Implementation COA. This report must be included by reference or attachment to this Contract.*

### Annual M&V Report Outline

*The M&V Report Outline is provided as a separate document for ease of use by the ESP. This report must be provided for each year during which M&V is performed. Each report must be included as part of this Contract.*

# PAYMENTS SCHEDULES

## Schedule C Project Financials

### Final Project Cost and Project Cash Flow

*This schedule contains a spreadsheet that depicts the final cost estimate for each CSM included in the Work. For each CSM the ESP shall provide costs for:*

* *Design and engineering;*
* *Equipment and materials;*
* *Installation;*
* *Maintenance;*
* *Repairs;*

*The ESP shall provide costs for commissioning, M&V, and training, either for individual CSMs or the Work.*

*This schedule contains a spreadsheet depicting the expected financial performance of the project for the contract term. Documentation must identify all financial components of the project, including total project cost, initial capital outlay by the Entity, financed portion of the Work, interest rates, current utility prices, any escalation rates, guaranteed savings, ESP compensation figures, cash-flow projections, and projected Net Present Value of any cumulative positive cash flow benefits to the Entity. Savings projections must be delineated by utility/fuel type and should identify ongoing annual service fees over the contract term. Project cost breakdowns must identify hard costs (labor costs, subcontractor costs, cost of materials and equipment), and other costs like permits, bonds taxes, insurance, mark-ups, overhead and profit, etc.*

### Financing Agreement and Payment Schedule

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

The financing agreement is required to be part of the EPC prior to signing the Contract as it indicates that the Entity has the financial commitment to enter into this Contract.

### Compensation to ESP for Annual Services

This must contain the amount and frequency of any payments that may be made to ESP for maintenance, monitoring, M&V, or other services that are part of the contract. It must contain information about how the compensation is calculated, and if an annual inflation index is used to escalate fees over the contract term. An hourly fee structure must be included to cover ESP costs for any services provided beyond the scope agreed to at the time of contract execution.

### Rebates, Incentives and Grants

List and describe any rebates, incentives, and grants related to this project. Describe the disposition of these funds such as paid directly to the Entity or deducted from the contract price if paid to ESP.

### Contingency Fund

*Contingency is a predetermined amount or percentage of the contract held for unpredictable changes in the project. It serves three core purposes:*

* *To account for errors and omissions in the construction documents*
* *To modify or change the scope of the project*
* *To pay for unknown conditions*

*Contingencies are often made separately by the owner and the ESP. The Entity’s contingency, controlled solely by the Entity, should address change in scope, although some contingency may be made for unforeseen conditions. Under EPC, the design and contractor contingencies are controlled by the ESP with written authorization from the Entity to spend these funds. Any remaining contingency must be returned to the Entity.*

*The IGA report details the estimated cost for each CSM considered for the Work. Schedule C Part 1 of this contract provides the final costs for each CSM and the total project, including any contingency.*

*Entity’s Contingency:*

* *Entity Contingency funds, if applicable, shall mean Entity funds not included in the EPC project cost and set aside for the Entity to release to ESP or any Third-party Lessor in the event the Entity desires to add to or change the scope of ESP’s work or reduce the Entity’s obligation to any Third-party Lessor.*
* *The Entity’s contingency may be increased from applicable utility rebates, capital budget, tax credits, or tax rebates.*
* *The Entity may authorize the disbursement of contingency funds to the ESP through a change order or other contract modification procedure.*
* *The addition of contingency funds to a project may impact or modify the completion date, utility savings, the guarantee of savings, project collateralization, operation and maintenance requirements, training requirements, and other items.*
* *Each modification must be tracked with the appropriate documentation.*

*Project Contingency*

*The ESP typically includes a contingency as part of their pricing for the EPC. It is included as part of the guaranteed maximum price and managed by the ESP with authorization from the Entity. ESP shall:*

* *Inform the Entity when expenditures from the project contingency are necessary through a change order or other contract modification procedure (Entity approval is required);*
* *Maintain records for project contingency expenditures; and*
* *Entity will retain any excess project contingency funds.*

# DESIGN AND CONSTRUCTION PHASE

## Schedule D Scope of Work

### Description of Project Site(s)

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

*This is not a statement on the layout of the information, but a listing of important information that should be included in any description of the buildings, infrastructure, or other items identified in the original Entity request. The list should only list facilities that are included in the final energy performance contract 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).*
* *List of utility meters connected to the building.*
* *Indicate the envelope components of the building if important to any final cost-saving measure. (Windows, roof, insulation levels, etc.).*

### Pre-existing Equipment Inventory

*The inventory is important for 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 later years of the contract.*

* *Short descriptions of the mechanical and electrical systems (heating, cooling, HVAC, lighting, air compressors, controls, plumbing, etc.). Indicate the age or date of any component that may have been replaced or upgraded.*
* *Indicate if the Entity’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*

### Equipment to be Installed by ESP

This schedule should specify all new equipment including manufacturer, quantity, location, and warranties (you can also have a separate Schedule for warranties). This schedule should describe any modifications made to existing equipment.

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CSM 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 CSM*
* *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 CSMs.*
* *For de-lamping work, ESP 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 CSM (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/table indicating work by room/location.*

### Construction and Installation Schedule

Include the timetables and milestones for project construction and installation. If desired, document required insurance, subcontractor lists, and any required subcontracts or break out into a separate schedule. NOTE: It is important that the installation phase of the project be treated in compliance with individual Entity 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 indicted. Any critical important seasonal dates, academic calendar, heating/cooling system schedule should be indicated. The level of detail depends on the complexity of the CSM. The issuance of any Notice to Proceed will be dependent on the initial schedule being refined and finalized during the design phase.*

## Schedule E 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. Also identify schedules and other factors that are related to equipment and system operation that impact cost-saving measures implemented in the project.

# PROJECT CLOSEOUT AND POST-CONSTRUCTION

## Schedule F Systems Start-up and Commissioning

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 Entity 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 for the installed equipment such as temperature setbacks, equipment run times, load controlling specifications and other conditions for 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 Entity’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, ESP and the Entity in the commissioning process.*

*Provide for the Entity to be notified of and present during all commissioning procedures. Include a provision for the documentation of the Entity’s attendance at the various tests and the Entity’s approval that the tests followed the specified procedures and met or exceed the expected results.*

*Because of the design-build nature of EPCs, 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*
* *Follow-up on Commissioning Activities After 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, ESP and Entity, including witnessing of Cx activities;*
* *Process that will be followed to document the design intent or Entity’s project requirements for each cost-saving measure or system;*
* *Requirements for Entity 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 manufacturers’ start-up procedures,*
* *Plan for seasonal testing and conditional acceptance, if needed;*
* *Contents and timing of project reports, Final Cx Report, and Systems Manual;*
* *Requirements for CxA oversight of O&M training; and*
* *Plan for warranty walk-though or other follow-up procedures.*

*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 cost-saving measure installed documenting the Entity’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:*

* *ESP completes project design;*
* *Entity and CxA review design and approve equipment submittals;*
* *ESP and Entity document the design intent for each cost-savings 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);*
* *Entity and ESP 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 Entity’s Cx representative and CxA;*
* *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 ESP prior to equipment start-up and functional testing;*
* *Manufacturers’ start-up procedures are completed by the ESP or manufacturer’s representative.*

***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 Entity’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 ESP 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 Entity may choose to specify consequences for multiple failed re-tests to limit the possibility of excessive use of the CxA’s time. The ESP then assembles the Final Commissioning Report or a Systems Manual including, at minimum, the following:*

* *Commissioning summary report;*
* *ESP 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 Entities may prefer to receive a more comprehensive Systems Manual, which is required for LEED certification. A systems manual typically brings together comprehensive project documentation:*
  + *Entity’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 ESP 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-functional 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*

### Operating Parameters of Installed Equipment

Operating parameters should for the operation of the installed equipment such as sequence of operation, temperature setbacks, equipment run times, load controlling specifications and other conditions for the operation of the equipment.

### ESP's Training Responsibilities

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

*Describe your firm’s proposed approach to providing technical training. 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 Entity personnel as it relates to project performance.*

*The Training Approach is customized to meet the specific needs of the Entity. It is a systematic process for identifying and implementing operational and maintenance improvements and for ensuring continued performance over time. The work scope is developed to focus on optimizing the building’s systems and protecting the significant investment made by the Entity. 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 Entity 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 comfort during the life of the building. The process will accomplish the following:*

* *Building HVAC, electrical and plumbing systems will operate according to 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 Entity will realize cost savings by self-performing work items*
  + *The Entity 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 Entity facilities*
  + *Warranty requirements*
  + *Specific system/equipment expertise*
  + *Cost of service*

### Retro-Commissioning

*Good candidates for retro-commissioning are buildings with:*

* *Complex systems*
* *Consumption exceeding commercial building energy consumption 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*
* *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*
* *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 G Maintenance Responsibilities

### ESP's Maintenance Responsibilities

Include a complete description of the ESP'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:*

1. *Description of ESP’s operations and maintenance responsibilities.*

*2. Performance period for ESP’s performance of the stated operating and maintenance activities.*

*3 Period of time for Maintenance during or after warranty period.*

*4 Payment terms for Maintenance: annually and for how much.*

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

**ESP's Maintenance Responsibilities - Contractual Terms**

**Sample Checklist**

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

### Entity’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 ESP providing any specialized services as needed.

The description shall include but is not limited to:

*1 Description of the Entity’s operations and maintenance responsibilities.*

* 1. *Existing maintenance and operations*
  2. *Additional maintenance and operations necessitated by the Work*

*Entity shall provide all maintenance tasks on all existing equipment at all times. Entity 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 ESP. Following is the Entity’s Maintenance Template for use in a spreadsheet.*

**Entity's Maintenance Responsibilities**

**Sample Checklist**

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

## Schedule H Facility Maintenance Checklist

This checklist is a method by which the ESP may record and track the Entity’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 ESP, usually on a monthly basis. (This checklist is a very useful tool for both the ESP and Entity 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:** | | | | | | |
| **Equip ID** | **Equip Type** | **Equip Location** | **Maintenance Activity by Client** | **Date Performed** | **Performed by:** | **Notes** |
| AHU-2 | Single Zone Air handler | Floor 2 Mech. Rm # 202 | Routine maintenance | 6/1/2013 | MJO |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **New Equipment:** | | | | | | |
| **Equip ID** | **Equip Type** | **Equip 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 |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

# ADMINISTRATION

## Schedule I Alternative Dispute Resolution Procedures

*It should be a mutual goal of the ESP and entity 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 entity and ESP 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 ESP and the entity devoting sufficient time and resources to the proper evaluation of viable options. The ESP and the entity 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 ESP and the entity is essential to avoiding disputes. Sound technical solutions, transparent to both parties, should satisfy the legitimate interests of both the entity and the ESP. 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 ESP and entity 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*

# 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 Entity and ESP information about how and when the existing equipment is being serviced. As well, if the ESP is credited with any maintenance savings or is taking over any existing service contracts, the scopes and costs of such Contracts will useful in tracking the performance of the ESP in providing the required services and documenting any attributable cost savings.*

## Utility Savings Projections

*This schedule should contain the projected utility 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 ESP for the Entity to notify the ESP 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 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 ESP’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 or Known Capital Projects

*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.*

*NOTE: These schedules can be included as optional and included or combined with others or may be contained in the audit report as desired.*