**DRAFT**

**UESC Project Development   
Report Template**

The objectives of this draft utility energy services contract (UESC) project development report template are to encourage the use of a concise, comprehensive, and consistent reporting format; provide sufficient information essential to a strong technical proposal; improve the clarity of subcontractor competition and the uniformity of savings and cost details illustrating fair and reasonable pricing; and complete enough to prove the implementation of the project is in the best interest of the government.

The tables within the body of this draft document have not been finalized. They are eProject Builder tables with suggested revisions for UESC project use. Consider them conceptual and adapt to meet specific needs of the project. FEMP Utility Team is working with Lawrence Berkley Laboratory eProject Builder team to develop a UESC-specific option for eProject Builder.

February 2019

# Utility Energy Services Contract

Department, Agency, Sub-Agency Name:

Agency Site(s):

Project Title:

Utility Name:

Report Delivery Date:

# Contacts

**This report was developed by:** **Utility Name**

##### Utility Team

UESC Program Manager

Name:

Phone:

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UESC Project Manager

Name:

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Utility Federal Government Representative

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Phone:

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**Utility Affiliate or Subcontractors:**

ESCO Project Manager (energy service company (ESCO) as applicable)

Name:

Company name:

Phone:

Email:

Performance Assurance Plan Lead (e.g. commissioning agent certified, experienced, as applicable)

Name:

Company name:

Phone:

Email:

**This report was delivered to:** Agency Name

Contracting Officer

Name:

Address:

Phone:

Email:

Project Manager

Name:

Phone:

Email:

February 2019

Reviewers and Users:

Thank you for making time to review this template and provide feedback.

When using this template, we recommend starting with a discussion between the agency and utility to set expectations for the level of detail for each report deliverable such as the preliminary assessment (e.g. 35%), the investment grade audit (e.g. 70%), and the final proposal.

Template objectives:

1. Include information essential to assessing the technical and financial proposals and meeting the requirements of federal contracting
2. Establish a uniform presentation of the information to ease tasks of writing and reviewing
3. Present analysis, engineering, and design with strong narrative as solutions to problems, stakeholder benefits, and leveraging existing budgets for technical teams
4. Emphasize subcontractor competition and open book pricing
5. Address performance assurance plan elements which may be presented within the report or as a separate document
6. Schedules are ePB-modified for UESC there is a FEMP effort to create an option within eProject Builder specifically for UESC projects
7. The CTS template is also included as an attachment.

Sincerely,

Deb Vasquez and FEMP Utility Team

Please send comments to [deb.vasquez@nrel.gov](mailto:deb.vasquez@nrel.gov).

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# Utility Energy Service Contract Contracting Structure and Process

The following are brief descriptions of contracting structures, process, and resources are offered in greater detail within the UESC Enabling Documents,[[1]](#footnote-1) the UESC Contracting Guide,[[2]](#footnote-2) and the UESC training materials.[[3]](#footnote-3)

## Contracting Structure

### **GSA Areawide Contract**[[4]](#footnote-4)

The majority of UESC projects are structured as a Task Order (TO) under an existing Areawide Contract (AWC). AWCs are specific to the utility and include exhibits for establishing bilateral agreements for services. The utility services exhibits will list commodity-based offerings such electricity, natural gas service, demand side management (DSM), or utility infrastructure improvements. The exhibit for “energy management services” is focused on efficiency and managing demand and will list offerings such as preliminary assessment, feasibility study, engineering and design, and energy conservation measure (ECM) installation.

While FAR Part 41 requires agencies to use the AWC when it exists, it also includes provisions for agencies to use alternative structures for acquiring utility services. When there is not an AWC in place, agencies may work with General Services Administration (GSA) to obtain technical assistance when establishing a Standalone Contract for energy management services.

### **Basic Ordering Agreement**2

A BOA is placed by the GSA or a federal agency with delegated authority with their serving utilities to establish the general terms and conditions for future contracts.

### Separate Contract[[5]](#footnote-5)

If there is neither an AWC nor a BOA in place, an agency can develop a separate contract for energy management services with the agency’s serving electric, natural gas, or water utility. GSA is available to support the negotiation of separate contracts.

### **Interagency Agreement**[[6]](#footnote-6)

An Interagency Agreement (IAA) is between two federal agencies. For example, Bonneville Power Administration (BPA), U.S. Army Corps of Engineers (USACOE), and Tennessee Valley Authority (TVA).

### **Model Agreement[[7]](#footnote-7)**

The Model Agreement was developed to provide agencies and utilities with a set of functionally proven terms and conditions (T&C) for their UESC projects whether the agency will be using an existing AWC, establishing a BOA, or developing a Standalone Contract for energy management services.

## Project Development Process

One of the primary motivators for developing this template is to ease the burden of determining that a project proposal is:

* Technically sound (measures solve existing issues, optimizes efficiencies, and leverages existing budget);
* Financially fair and reasonable (fair consideration between qualifying utilities, open book pricing, competition-based subcontractor selections, and reasonable markups), and
* In the best interest of the government (accomplishes mandates set by Congress, improves site resiliency, and serves the local community with improved power availability and quality and provides local jobs).

Currently, this report follows the UESC training process:

1. Agency Acquisition Plan: Clarify project objectives, consider funding sources, and document decision.
2. Provide Fair Consideration to Eligible Utilities: Select utility partner; draft Justification and Approval (J&A) for nod to move forward, and issue TO for “no cost” or “low cost” Preliminary Assessment (PA).
3. PA: High-level analysis calculating energy and water baselines, identifying opportunities, agency selects from identified ECM set, and issues TO for Feasibility Study (FS).
4. FS: Detailed study and subcontractor bids for ECM set, final report becomes the technical proposal, (design completeness varies from “design-build” to near 100%), and financial proposal is added to complete the project proposal. (The FS is also known as an investment grade audit (IGA))
5. Performance assurance plan
6. Award for final Design and Installation (D&I)
7. Prove Performance and Acceptance.
8. Post Acceptance Performance Assurance Activities
9. Project Closeout: occurs when debt is paid in full and post-acceptance services are completed.

# UESC Report Content

The content of this report was modeled using sample UESC reports and referencing the Federal Energy Management Program (FEMP) guidance on energy audits for meeting the requirements of 42 USC 8253, eProject Builder financial schedules, and ASHRAE Audit Standard for the purpose of obtaining concise and consistent information within UESC report submissions. It is intended that agencies will use this template to discuss and agree upon detail levels for the preliminary assessment (PA), the feasibility study (FS) or investment grade audit (IGA) and the final proposal; require the use of a project-specific version of this template in TO language; and that utilities will in turn use the project-specific version of this template to provide written results.

## Project Overview - 1 *paragraph*

Provide a brief description of the objectives of the project (e.g., achieving mandates, resolving issues, replacing old equipment, capturing incentives, etc.), the process for developing the technical scope and pricing and the partnership approach and benefits of implementing this project scope through a UESC.

## Executive Summary - 2-5 pages

Within the executive summary, include an introduction, project description, ECM summary tables, recommendations, schedule, agency identified measures, and conclusions.

### Introduction

Briefly address the authorizing legislation (42 U.S.C. 8256 and 10 U.S.C. 2913 and 2866) and the agency’s decision to select this utility. Name the sites, buildings, systems included in the audit. Name any key partners providing the audit and the strategy used to select ESCO-partner and ECM subcontractors.

### Project Description

Provide a brief technical narrative describing the scope of the project (e.g., multiple sites, focus on central plant, comprehensive energy and water efficiency with screening for viable renewable energy options). Narratives introducing and explaining each summary table referencing sections, page numbers, appendices, etc., where more detail is provided.

### ECM Summary Tables

As a group, the tables should provide high level insight supported by the body and appendices of the report capture essential information to inform reviewers and decision makers. In developing an audit report, consider the most appropriate approach for the size, scope, and complexities of the project.

1. Economic Summary Table: List the ECMs, MMBTU savings, water savings, utility cost savings, O&M cost savings, estimated implementation cost or subcontractor bids, simple payback, agency appropriations identified or needed to accomplish priority measures, estimated cost to finance. When applicable, identifying the agency’s priority designation for each ECM may assist reviewers and decision makers.
2. Utility Type Summary Tables: Provide a table for each utility type impacted and include the estimated savings. The summary table can get very long when trying to include all of the necessary information in a single table. For this reason, consider breaking out the details by utility type into separate tables.
3. Operations and Maintenance Savings and Utility Incentives Table: Operations and maintenance (O&M) savings may be one-time savings or annual savings, and the incentives are available in accordance with utility and or PUC program parameters. The estimated O&M and incentives savings potentially skew the project economics until amounts and timing of inclusion can be confirmed. The agency will determine O&M savings are “real and verifiable” and the utility or state PUC conservation program manager will determine and perhaps commit financial incentives availability. Maintaining a separate list of these possible financial “credits” may support process of confirmation and appropriate inclusion into the project economics and payment schedules.
4. ECMs Investigated and Not Recommended Table: Include all agency-identified ECMs and show the findings and or reasons for not recommending.
5. Tables should address consumption, demand, incentives, energy, water, and related cost savings. Include in narratives related assumptions, issues that may be requiring a high factor of safety on estimates, etc.
6. Implementation price, including design, construction, project management, performance assurance costs, subcontractor bids, mark-ups, bonding, overhead and profit, etc. Keep in mind that UESC projects are open book and these reports are an opportunity for the utility to provide information essential to an agency making a determination of a technically sound and fair and reasonably priced project.
7. Financial Summary
8. Results of Renewable Energy Analysis or Screening

The following set of tables is intended to ensure essential information is provided and organized to support agency reviews, decision making, and reporting. The suggested information was drawn from FEMP guidance on 42 U.S.C. 8253, current UESC examples, ASHRAE Standards on Auditing, and the FEMP reporting tools the Compliance Tracking System (CTS) and eProject Builder.

### ECM Cost and Funding Summary

Include narrative explaining the table and referencing the source and location in this document and notes.

****Table 1. Annual Cost and Funding Summary by ECM****

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **ECM** | **Electric**  **Cost**  **Savings1** | **Natural**  **Gas**  **Cost**  **Savings1** | **Water**  **Cost**  **Savings1** | **O&M Cost Savings2** | **Total**  **Cost**  **Savings1** | **Direct Cost**  **Sub-contract**  **Bid or Estimated**  **Cost** | **Indirect**  **Costs** | **Capital**  **Cost3** | **Simple**  **Payback** | **Agency’s**  **Project**  **Objective**  **Priority4** | **Published**  **Equipment**  **Life5** |
|  | **Units** | **$/yr** | **$/yr** | **$/yr** | **$** | **$/yr** | **$** | **$** | **$** | **Years** |  | **Years** |
| 1 | Lighting |  |  |  |  |  |  |  |  |  |  |  |
| 2 | HVAC Controls |  |  |  |  |  |  |  |  |  |  |  |
| 3 | Commissioning6 |  |  |  |  |  |  |  |  |  |  |  |
| 4 | Chilled Water |  |  |  |  |  |  |  |  |  |  |  |
| 5 | HVAC |  |  |  |  |  |  |  |  |  |  |  |
| 6 | Heating |  |  |  |  |  |  |  |  |  |  |  |
| 7 | Transformer Replacement |  |  |  |  |  |  |  |  |  |  |  |
| 8 | Solar Thermal Heating |  |  |  |  |  |  |  |  |  |  |  |
| 9 | Water |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Project Development |  |  |  |  |  |  |  |  |  |  |  |
|  | Project Management |  |  |  |  |  |  |  |  |  |  |  |
|  | Overhead |  |  |  |  |  |  |  |  |  |  |  |
|  | Profit |  |  |  |  |  |  |  |  |  |  |  |
|  | Bonding, Taxes, etc.,7 |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **Totals** | **$** | **$** | **$** |  | **$** | **$** | **$** | **TBD** | **Years** |  | **Years** |

Note 1: Cost savings are escalated to “performance year 1”, first year after acceptance

Note 2: Accounting of O&M savings, specify whether a) savings are counted to show savings are greater than costs or b) savings will be actual dollars available for making one-time payment

Note 3: Sum of direct and indirect costs; before subtracting incentives

Note 4: Ranking value is set by the agency to reflect the priority placed on measures

Note 5: Equipment Manufacturer’s published life of major equipment component(s) of each ECM

### Note 6: Commissioning includes retrocommissioning, recommissioning

### Note 7: List each on a separate line

### Electricity Consumption, Demand Savings, and Cost Savings

Include narrative and notes explaining the table and referencing source and location in this document

Table 2. Summary of Annual Electricity Energy and Cost Savings

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **ECM** | **Electric**  **Consumption**  **Savings** | **Electric**  **Consumption**  **Cost**  **Savings** | **Electric**  **Demand**  **Savings1** | **Electric**  **Demand**  **Cost**  **Savings** | **Electric**  **O&M**  **Savings2** | **Total**  **Electric**  **Cost**  **Savings** | **Agency’s**  **Project**  **Objective**  **Priority3** |
|  | **Units** | **kWh/yr** | **$/yr** | **kW/yr** | **$/yr** | **$** | **$/yr** | **Ranking Value** |
| 1 | Lighting |  |  |  |  |  |  |  |
| 2 | HVAC Controls |  |  |  |  |  |  |  |
| 3 | Commissioning4 |  |  |  |  |  |  |  |
| 4 | Chilled water |  |  |  |  |  |  |  |
| 5 | HVAC |  |  |  |  |  |  |  |
| 6 | Heating |  |  |  |  |  |  |  |
| 7 | Transformer replacement |  |  |  |  |  |  |  |
| 8 | Solar thermal heating |  |  |  |  |  |  |  |
| 9 | Water |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  | **Totals** |  | **$** |  | **$** |  | **$** |  |

Note 1: Annual electric demand savings (kW/yr) is the sum of the monthly demand savings.

Note 2: Accounting of O&M savings, specify whether a) savings are counted to show savings are greater than costs or b) savings will be actual dollars available for making one-time payment.

Note 3: Ranking value is set by the agency to reflect the priority placed on measures.

### Note 4: Commissioning includes retrocommissioning, recommissioning

### Natural Gas Consumption and Cost Savings

Include narrative and notes explaining the table and referencing source and location in this document.

Table 3. Summary of Natural Gas Energy and Cost Savings

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **ECM** | **Natural**  **Gas (NG)**  **Energy**  **Savings** | **NG**  **Cost**  **Savings** | **NG**  **O&M**  **Savings1** | **Total**  **NG**  **Cost**  **Savings** | **Agency’s**  **Project**  **Objective**  **Priority2** |
|  | **Units** | **Therms/yr** | **$/yr** | **$** | **$/yr** | **Ranking Value** |
| 1 | Lighting |  |  |  |  |  |
| 2 | HVAC Controls |  |  |  |  |  |
| 3 | Commissioning**3** |  |  |  |  |  |
| 4 | Chilled water |  |  |  |  |  |
| 5 | HVAC |  |  |  |  |  |
| 6 | Heating |  |  |  |  |  |
| 7 | Transformer replacement |  |  |  |  |  |
| 8 | Solar thermal heating |  |  |  |  |  |
| 9 | Water |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  | **Totals** |  | **$** |  | **$** |  |

Note 1: Accounting of O&M savings, specify whether a) savings are counted to show savings are greater than costs or b) savings will be actual dollars available for making one-time payment.

Note 2: Ranking value is set by the Agency to reflect the priority placed on each measure.

### Note 3: Commissioning includes retrocommissioning, recommissioning

MBtu=106 Btu. If energy is reported in units other than MBtu, provide a conversion factor to MBtu, (e.g., 0.003413 MBtu/kWh).

### Water Consumption and Water Cost Savings

Include narrative and notes explaining the table and referencing source and location in this document.

Table 4. Summary of Water and Water Cost Savings

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **ECM** | **Water**  **Consumption**  **Savings** | **Water**  **Consumption**  **Cost**  **Savings** | **Water**  **O&M**  **Savings****1** | **Total**  **Water**  **Cost**  **Savings** | **Agency’s**  **Project**  **Objective**  **Priority2** |
|  | **Units** | **kGal/yr** | **$/yr** | **$** | **$/yr** | **Ranking Value** |
| 1 | Lighting |  |  |  |  |  |
| 2 | HVAC controls |  |  |  |  |  |
| 3 | Commissioning**3** |  |  |  |  |  |
| 4 | Chilled Water |  |  |  |  |  |
| 5 | HVAC |  |  |  |  |  |
| 6 | Heating |  |  |  |  |  |
| 7 | Transformer Replacement |  |  |  |  |  |
| 8 | Solar Thermal Heating |  |  |  |  |  |
| 9 | Water |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  | **Totals** |  | **$** | **$** | **$** |  |

Note 1: Accounting of O&M savings, specify whether a) savings are counted to show savings are greater than costs or b) savings will be actual dollars available for making one-time payment.

Note 2: Ranking value is set by the agency to reflect the priority placed on each measure.

### Note 3: Commissioning includes retrocommissioning, recommissioning

### Operations and Maintenance Saving

Include narrative and notes explaining the table and referencing source and location in this document.

Table 5 - Summary of Actual and Verifiable O&M Savings

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **ECM** | **O&M Savings Description** | **Annual**  **O&M**  **Savings1** | **One-Time**  **O&M**  **Savings1** | **Year that**  **One-Time**  **O&M Savings**  **Apply** |
|  | **Units** |  | **$/yr** | **$** | **Term Year** |
| 1 | Lighting |  |  |  |  |
| 2 | HVAC controls |  |  |  |  |
| 3 | Commissioning**2** |  |  |  |  |
| 4 | Chilled water |  |  |  |  |
| 5 | HVAC |  |  |  |  |
| 6 | Heating |  |  |  |  |
| 7 | Transformer replacement |  |  |  |  |
| 8 | Solar thermal heating |  |  |  |  |
| 9 | Water |  |  |  |  |
|  |  |  |  |  |  |
|  | **Totals** |  | **$** | **$** |  |

Note 1: Accounting of O&M savings, specify whether a) savings are counted to show savings are greater than costs or b) savings will be actual dollars available for making one-time payment.

### Note 2: Commissioning includes retrocommissioning, recommissioning

### Rebates and Incentives

Include narrative and notes explaining the table and referencing source and location in this document.

Table 6. Summary of Rebates and Incentives

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **ECM** | **Rebate**  **Value1** | **Non-Monetary**  **Incentives2** | **Conditions**  **Of**  **Qualification** | **Applied** | **Reserved** |
|  | **Units** | **$** |  |  | **Date** | **Date** |
| 1 | Lighting |  |  |  |  |  |
| 2 | HVAC controls |  |  |  |  |  |
| 3 | Commissioning**3** |  |  |  |  |  |
| 4 | Chilled water |  |  |  |  |  |
| 5 | HVAC |  |  |  |  |  |
| 6 | Heating |  |  |  |  |  |
| 7 | Transformer replacement |  |  |  |  |  |
| 8 | Solar thermal heating |  |  |  |  |  |
| 9 | Water |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  | **Totals** | **$** |  |  |  |  |

Note 1: Explain whether the value of rebate is included in the project economics and if so, how it will be applied and in what year of the contract.

### Note 2: Non-monetary incentives, describe extraordinary conditions or benefits derived from measure that influences decision.

### Note 3: Commissioning includes retrocommissioning, recommissioning

## Site Information

### Observations and Reasoning

As appropriate, include observations and reasoning that may support benefits and urgencies of implementing the recommended ECMs via UESC.

### Site Information

(ASHRAE Level 1 Forms in Normative Annex C)[[8]](#footnote-8):

1. Building name and identification
2. Client name (e.g., building owner, operator, or tenant)
3. Key contacts
4. Site address
5. Gross floor area
6. Annual heating and cooling degree days (with base temperatures noted)
7. Classification of the uses of the building; if multiple uses, record the fraction of total floor area for each use
8. Space function breakdown by space type
9. Number of stories
10. Year constructed/occupied and dates of renovations/additions
11. Occupied hours and number of occupants (occupancy profile)
12. Date of previous energy audit or engineering study
13. Problems or needs identified in walk-through survey, including revisions to O&M procedures

### Notable Conditions

(List observed conditions at the facility that indicate):

1. Comfort or health concerns, including indoor environmental quality deficiencies
2. Need for repairs
3. Opportunities to improve maintenance practices
4. Other conditions causing unusual operating costs

### Utilities Rate Analysis

Explain the process and findings of the rate analysis for each utility type.

### Utility Usage Analysis

Explain the process and findings of the consumption analysis for each utility type.

### Milestones, Activities, and Timeline

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| # | Lead | Milestone | Activity | Deliverable | Due Date | Status | Comments |
| 1 | Agency | Facility(ies) Assessment(s) | Per 42 U.S.C. 8253, agencies audit the top 80% of energy using buildings | Audit reports with identified ECMs | 4-year cycle |  | Utility audits count toward this 2007 mandate |
| 2 | Agency | Initial project scope and Acquisition Plan | Agency to determine buildings and identified ECMs |  |  |  |  |
| 3 | Agency | Select utility and initiate the PA | Process for fair consideration and selection  Negotiate scope and price of PA | Letter of interest, J&A, selection, and non-selection letters, and TO for PA | 2 weeks |  | Natural gas,  electricity, and  water utilities qualify as designated in 42 U.S.C. 8256 |
| 4 | Utility | Assess Opportunities | PA | Provide analysis findings and ECM recommendations in a written report | 4-8 weeks |  | This analysis is typically a high-level screening |
| 5 | Agency | PA decision to move forward | Review and comment | Comment resolution | 2 weeks from PA delivery |  | Determine which ECMs make sense |
| 6 | Utility | Analysis and design of ECMs | FS | Detailed analysis, at least 35% design, open book pricing with subcontractor bids, in a written report | 2-12 months |  | Provide details including design, performance assurance plan (baseline, commissioning, O&M, training), and pricing |
| 7 | Agency | FS decision to move forward | Review and comment | Comment resolution | 3-4 weeks from FS delivery |  | Finalize the technical scope and discuss the pricing |
|  | Input project data | | | | | | |
| 8 | Agency | CTS reporting |  |  |  |  |  |
| 9 | Utility | eProject Builder |  |  |  |  |  |
| 10 |  | Request for proposal | Agency project objectives and priorities |  |  |  | At a minimum the level of design should provide for a cost-competitive design-build implementation package |
| 11 |  | Provide engineered technical proposal | Agency project objectives and priorities |  |  |  | At a minimum the level of design should provide for a cost competitive design-build implementation package |
| 12 |  | Provide fair pricing |  |  |  |  | The pricing proposal must be fair and reasonable, open book, and supportable with subcontract bids or detailed pricing information |
| 13 |  | Approval to negotiate |  |  |  |  |  |
| 14 |  | Award |  |  |  |  |  |
| 15 |  | Assignment of claims |  |  |  |  |  |
|  | Input project data | | | | | | |
| 16 | Agency | CTS reporting |  |  |  |  |  |
| 17 | Utility | eProject Builder |  |  |  |  |  |
| 18 |  | Assignment of claims |  |  |  |  |  |
|  | Utility | Final design |  |  |  |  |  |
|  | Utility | Installation |  |  |  |  |  |
|  | Agency | Acceptance |  |  |  |  |  |
|  | Agency | Performance period |  |  |  |  |  |
|  | Agency | Project close out |  |  |  |  |  |

## Conclusions

If the key decision maker read only one paragraph, this would be it. Discuss leveraging energy savings …

### Recommended Next Steps

This is a subset of the milestones with more detail and emphasis on immediate activities. List essential activities and deliverables and name the responsible organization, date due, and impact of delay. (Could be a table)

[end of executive summary]

# Technical Assessment

The level of detail generally varies between a Preliminary Assessment and a Feasibility Study. Provide a detailed narrative and include assumptions, calculations, particular issues and benefits, interplay with other measures, etc. In other words, make the case for implementing each measure, or not.

## ECM Description

Provide sufficient narrative for each ECM proposed and for ECMs considered and not proposed with explanation for the decision. Include the following at a minimum.

1. ECM Title and Narrative Description
2. Location(s) Affected
3. Baseline Consumption and Costs: How it was calculated, assumptions, accuracy; include utility bill and rate review findings
4. Projected Consumption, Costs, and Savings: Assumptions, calculations, and reference and explain conclusions supported by life cycle cost analysis
5. Performance Assurance Plan: Requirements and strategies for training, commissioning, operations and maintenance, and performance verification (refer to Performance Assurance Planning template)
6. ECM interface with agency equipment and detailed description of existing energy consuming equipment and systems.
7. Utility Interruptions: Specify the extent of any utility interruptions needed for the installation of the proposed ECM
8. Agency Support Required: Specify any agency support required during implementation of the ECM
9. Describe potential environmental impacts and National Environmental Policy Act compliance actions resulting from the installed ECM
10. Provide information about potential utility rebates and other incentives. If applicable, specify ECM financial incentive(s) available, source, estimated payment amount; how and when payment or financing reduction will be applied; impact on project cash flow (e.g., ancillary payment before acceptance, reducing implementation price, and tax-based financing amount), and proposed percentage of estimated financial incentive payment or financing reduction

## Investigated Measures

List of identified energy and water efficiency measures prioritized based on federal life cycle cost methodology (NIST-developed BLCC software, see <https://www.energy.gov/eere/femp/building-life-cycle-cost-programs>). The following data points will be required for the web-based tracking system.

1. Description of Measure
2. Estimated Cost of Measure
3. Estimated Annual Energy Consumption, O&M Cost Savings, and Energy Cost Savings
4. Estimated Annual Water Consumption, O&M Cost Savings, And Cost Savings
5. Estimated Life-Cycle Energy/Water Savings (may be in PA, definitely in FS)
6. Estimated Life-Cycle Cost Savings (may be in PA, definitely in the FS)
7. Savings-to-Investment Ratio (SIR)
8. Payback Period
9. Summary of the Economics of Bundled ECMs with Total Interactive Life Savings, SIR, and Payback Period

## Project Implementation Schedule

|  |  |  |  |
| --- | --- | --- | --- |
| **Milestone / Activity** | **Duration** | **Start Date** | **End Date** |
| Task Order for Feasibility Study   * Request Technical Scope and Financial Pricing (RFP) |  |  |  |
| Feasibility Study submitted |  |  |  |
| Review and comment resolutions |  |  |  |
| Technical and pricing discussion (Negotiation) |  |  |  |
| Award Task Order for final design and installation |  |  |  |
| Notice to proceed with design phase |  |  |  |
| Design complete |  |  |  |
| Notice to proceed with Construction |  |  |  |
| O&M training |  |  |  |
| Commissioning and proof of performance report submitted |  |  |  |
| Report reviewed and all punch list items complete |  |  |  |
| Government acceptance complete |  |  |  |
| Initiate post-acceptance performance assurance activities and reporting |  |  |  |
| Invoices to government and payments (assignment of claims) |  |  |  |
| Project close out |  |  |  |

## Project Management

Include the process, organization, and address quality control and quality assurance. Clarify roles and responsibilities of the utility, ESCO partner, and any subcontractors.

## Performance Assurance Plan

A performance assurance plan[[9]](#footnote-9) should include all aspects of ensuring sustained performance of each ECM in the project, including activities and deliverables for an accurate baseline, serviceable design, operations strategies, a maintenance plan, comprehensive training, functional testing and commissioning, and post acceptance performance verification through appropriate O&M and retrocommissioning activities.

The performance assurance plan is generally prepared by *(utility or 3rd party commissioning agent)* for the *(agency)* to provide methodologies, schedules, and specific activities specific to each ECM to sustain, verify, adjust, and document performance. The determination of the party responsible for implementing the performance assurance plan is ultimately at the discretion of the contracting officer (CO) and will be based on site-specific factors such as the agency’s O&M strategies, abilities, and resources.

FEMP provides recommendations for ***minimal*** performance assurance activities. The recommendations are as follows.

1. Start-up performance verification (per commissioning plan[[10]](#footnote-10))
2. Performance verification at the end of warranty period (per retrocommissioning plan)
3. O&M training (developed specifically for each project to provide knowledge of the project, O&M requirements and performance metrics, and experience with ECM activities to verify performance and retune equipment and or controls to ensure sustained performance of each ECM)
4. Provision of continuing training throughout the contract period as specified in the contract as determined by the needs of the facility
5. Periodic inspections and verification of appropriate O&M performance
6. Performance discrepancy resolution

## Conclusions and Recommendations

Considering the agency’s project objectives and priorities, present the conclusions of the assessment, recommendations for implementation strategies, and suggested next steps.

## Project Objectives

Restate the agency’s project objectives.

## Conclusions

How do the findings support or oppose accomplishing the objectives? Address ECM subcontractor competition, use of appropriations and financing, key milestones and timeline.

## Recommendations

What strategies, funding and otherwise, would support implementation? What are the next steps?

# Financial Assessment

## UESC Project Schedules Template

*Based on UESC-adapted eProject Builder schedules. For discussion with FEMP utility team and LBNL eProject Builder team, the following pages are drafted as a guide chapter using adaptations of eProject Builder schedules. Each schedule is sectioned to fit due to its size.*

As required by 42 U.S. Code § 8253 Energy Management Requirements[[11]](#footnote-11), DOE FEMP has established two web-based tools for energy project management and benchmarking of federal energy and water conservation projects. Subsection (f), “Use of Energy and Water Efficiency Measures in Federal Buildings” instructs facility energy managers to post measures identified by facility energy and water evaluations into the Compliance Tracking System (CTS)[[12]](#footnote-12) and to follow up on the implementation and performance of energy and water efficiency investments in eProject Builder (ePB) [[13]](#footnote-13) at least annually.

### Current Reporting

Reported data is never released to a third-party without consent and is securely maintained. Since 1995, UESC project data demonstrates the success of agencies and their partner utilities having completed nearly 2000 projects with a combined investment of over $2.3 billion. Currently agencies and Utilities submit their project information in the format presented at: <http://energy.gov/eere/femp/federal-utility-partnership-working-group> and emailed to Susan Courtney at [scourtney@alleghenyst.com](mailto:scourtney@alleghenyst.com).

### Future Reporting

The “draft schedules” in the following pages have been adapted from those in eProject Builder (ePB) and illustrate the data to be collected for UESC projects and uploaded to ePB.

eProject Builder enables Federal Agencies and their partner Utilities (or utility’s energy service company (ESCO) subcontractor) to upload and track project-level information; generate basic project reports; and benchmark new Utility Energy Service Contract (UESC) projects against historical data.

**UESC Project Schedules**

**Template**

### Summary Schedule

*Adapted for UESC*

***Table to follow in two sections.***

Important information:

1. These schedules should not be altered or changed in any way. Please consult ePB documentation for assistance with completing these schedules, terminology, etc.
2. If selected, the contractor shall complete the installation of all proposed ECMs not later than the implementation period identified in the contract.
3. Contractor shall propose bonded amount representing the basis of establishing performance and payment bonds.
4. Performance bond amount is assumed to include markup applied to implementation expenses above, unless otherwise specified by contractor.
5. Prior to award, the stated interest rate is an indicative one only. The final interest rate will be based on market conditions at the time of award. The rate will be locked at time of award and will be fixed through the performance period.
6. **Input “0” value for no guaranteed savings.** [Guaranteed % of estimated savings is share of project estimated savings that ESCO is guaranteeing.]

***Summary Schedule***

**Section 1**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***Summary Schedule - Basic Project Information*** | | | | | | | |
| ***Project Contact Information*** | **Role** | **Institution** | | **Name** | **Title** | **Email** | **Phone** |
| Project  Facilitator |  | |  |  |  |  |
| Customer (Project Initiator) |  | |  |  |  |  |
| Utility or ESCO (Project Builder) |  | |  |  |  |  |
| Finance Specialist |  | |  |  |  |  |
| Primary Financier |  | |  |  |  |  |
|  |  |  | |  |  |  |  |
| ***Project Identification & Characteristics*** | **Project Identification** | | |  |  | **Project Characteristics** | |
| Task /Purchase Order # | |  |  |  | List of Sites in Project (separated by commas) |  |
| Contract # | |  |  |  | Number of Buildings in Project |  |
| Project Name | |  |  |  | List of Buildings in Project (separated by commas) |  |
| Primary  Project Location City | |  |  |  | Market Segment |  |
| Primary Project Location-State | |  |  |  | Total Floor Area Affected by project (Square Feet) |  |
| Primary Project  Location-Zip code | |  |  |  | Average Annual Energy Consumption of Affected Buildings (MMBtu/yr) |  |
| Agency Name\* | |  |  |  | Implementation Period(months)\* |  |
| Sub Agency Name /Region | |  |  |  |  |  |
| Project ID # | |  |  |  |  |  |

***Summary Schedule***

**Section 2**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***Costs & Financials*** | **Financing Terms** | |  |  | **Project Capitalization** | |
| Applicable Financial Index |  |  |  | Total Implementation Price (from Schedule-2 Total) | $ |
| Contract Term (years) | 0-25 |  |  | PLUS, Financing Procurement Price --capitalized construction period interest ($) \* |  |
| **Index Rate\*** |  |  |  | PLUS, Financing Procurement Price --other expenses ($) \* |  |
| Added Premium (adjusted for tax incentives) \* |  |  |  | LESS Implementation Period Payments (from Schedule-1, (c)) | $ |
| Project Interest Rate (sum of two above inputs) | 0.00% |  |  | Total Amount Financed (Principal) | $ |
| Financing Issue Date (mm/dd/yyyy) |  |  |  | Performance Bond Amount |  |
| Project Award Date (mm/dd/yyyy) |  |  |  | **Start date of loan (mm/dd/yyyy)\*** |  |
| Effective Through (mm/dd/yyyy) |  |  |  |  |  |
| Primary Type of  Financing (choose from list) |  |  |  | **Project Financial Summary** | |
| Secondary Type of  Financing (choose from list) |  |  |  | Annual Estimated Energy Savings (MMBtu) |  |
| Project Agreement Type (choose from list) |  |  |  | Annual Estimated Water Savings (kGal) |  |
| Payment Timing (beginning or end of  performance year) \* |  |  |  | Total Estimated Cost Savings | $ |
|  |  |  |  |  | Stated Cost Savings based on Performance Metrics |  |
| ***Other Information*** | When savings guarantee is offered, % of the  Estimated Savings\* |  |  |  | Total Payments |  |
| Federal Contract Type  Task Order under AWC |  |  |  |  |  |
| Primary Electric Utility |  |  |  |  | |
| Primary Natural Gas Utility |  |  |  |  |  |
| Primary Water Utility |  |  |  |  |  |

#### Annual Dollar Savings Escalation Rate

*Adapted for UESC*

Important information:

1. "Implementation start through first year" reflects cumulative escalation occurring during the length of the implementation period through the first year of savings. This may represent an annual escalation figure that is compounded or another formulation (e.g., actual forecasts from utility companies).
2. All estimated cost savings numbers reported in Schedule 4 ("First year estimated cost savings by ECM") are assumed to have already incorporated the "Implementation start through first year" escalation rates reported above.
3. Please select other savings types from dropdown menu provided above, if applicable.

***Annual Dollar Savings Escalation Rates***

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Performance Period (year)** | **Electric Energy** | **Natural Gas** | **Other Savings Type 1: Other** | **Other Savings Type 2: Other** | **Water** | **O&M** | **Other Non-Energy Savings** |
| Implementation start through first year |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |  |
| 7 |  |  |  |  |  |  |  |
| 8 |  |  |  |  |  |  |  |
| 9 |  |  |  |  |  |  |  |
| 10 |  |  |  |  |  |  |  |
| 11 |  |  |  |  |  |  |  |
| 12 |  |  |  |  |  |  |  |
| 13 |  |  |  |  |  |  |  |
| 14 |  |  |  |  |  |  |  |
| 15 |  |  |  |  |  |  |  |
| 16 |  |  |  |  |  |  |  |
| 17 |  |  |  |  |  |  |  |
| 18 |  |  |  |  |  |  |  |
| 19 |  |  |  |  |  |  |  |
| 20 |  |  |  |  |  |  |  |
| 21 |  |  |  |  |  |  |  |
| 22 |  |  |  |  |  |  |  |
| 23 |  |  |  |  |  |  |  |
| 24 |  |  |  |  |  |  |  |
| 25 |  |  |  |  |  |  |  |

## Schedule 1 - Cost Savings and Payments

*Adapted for UESC*

Important information:

1. Implementation period savings (both estimated (“stated”) and guaranteed (“verified”)) can represent two things: 1) construction period savings (where savings from some ECMs start accruing before construction is complete on the greater project), and 2) customer buydown amounts. Customer buydowns are counted as savings because they constitute offsets to capital expenses in the project.
2. The verified annual cost savings are based on the “performance metrics” defined in the project design and in the performance assurance plan, specifically in the commissioning and recommissioning subplans proposed for the project.
3. The total of annual payments represents the task order price and should be supported by information submitted.
4. If applicable, prior to the performance period, implementation period payments and energy savings are one-time amounts only.
5. The verified cost savings based on performance metrics during the implementation and performance periods should exceed the payments.
6. Escalation rates (see Annual Escalation Rates) applied to initial estimated annual cost savings in column (d).

***Schedule 1***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| |  | | --- | | **Schedule 1 - Cost Savings and Payments** | | | | | |
|  |  |  |  |  |
| **Implementation Period (Year 0)** | **(a)** | **(b)** | **(c)** |  |
| **Estimated Cost Savings\***  Stated Cost Savings based on Performance Metrics | Verified Cost Savings based on Performance Metrics**Indicate when Guaranteed Cost Savings are offered\*** | **Payments\*** |  |
|  | **$0** |  |  |
| **Performance Period (Year)** | **(d)** | **(e)** | **(f)** | **(g)** |
| **~~Estimated Annual Cost Savings~~**  Stated Annual Cost Savings based on Performance Metrics | Verified Annual Cost Savings based on Performance Metrics**Indicate when Guaranteed Annual Cost Savings are offered** | **Annual Payments** | **Annual Dollar Savings Retained by Customer** |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
| **…** |  |  |  |  |
| 22 |  |  |  |  |
| 23 |  |  |  |  |
| 24 |  |  |  |  |
| 25 |  |  |  |  |
| **Total Performance Period:** | **$0** | **$0** | **$0** | **$0** |
| **Total Implementation & Performance Period** | | **Total Verified Indicate when Guaranteed Cost Savings are offered (b+e)** | **Total Payments (c+f)** |  |
|  |
| **~~$0~~** | **$0** |  |

## Schedule 2 - Implementation Price by Conservation Measure

*Adapted for UESC*

***Add “Life of ECM” in years, e.g. major equipment or system average life or manufacturer’s stated life.***

Important information:

1. This schedule is not to be altered or changed in any way.
2. Implementation expense shall include only direct costs for each ECM and no post-acceptance performance period expenses. Markup % will be applied to the sum of direct expenses for all ECMs and project development to calculate total implementation price (d) for the project.
3. Contractor shall attach adequate supporting information detailing total implementation expenses.
4. Attached supporting information shall be presented to identify portions of ECM or project expenses included in proposed bonded amount.
5. For the following ECMs, enter the total installed capacity of new equipment in the units specified (e.g., chillers-150); chillers and packaged units in tons, VFDs in hp, boilers and furnaces in input Btu/hr, BAS/EMCS in number of points, transformers in kVA, generators in kW. For lighting ECMs, specify baseline kW treated.
6. ECM coverage (%) represents the percentage share of the total project floor area (see Summary Schedule) affected by the ECM.

***Schedule 2***

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Schedule 2 - Implementation Price by Conservation Measure** | | | | | | | | | | |
| Life  Of  ECM1  (Years) | ECM Technology Category\* | ECM No. | ECM Description – Title\* | ECM Size | ECM Coverage  (%) | Performance Assurance2 [M&V Expense] ($) | ( a ) | (b) | ( c ) | ( d ) |
| Implementation Price: |
| Implementation Cost (Direct)\* | Project Implementation Markup (%)\* | Applied Incentives |
| [a\*(1+b)] - c |
|  |  |  | Project development costs (e.g., IGA) |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  | **Totals:** | | | | | **$0** | **$0** | **$0** | **$0** | **$0** |

Note 1: Expressed as manufacturer’s stated life or industry average

Note 2: Performance assurance encompasses M&V through commissioning and recommissioning

## Schedule 3 - Performance Period Cash Flow

*Adapted for UESC*

***Table to follow in two sections.***

Important information:

1. The Implementation Period payment will be applied to reduce the principal repayment.
2. Examples of "Performance Period Incentives and Other Payments" include: RECs proceeds, DR payments, and extra customer payments. Incentives and payments are assumed to occur at the same time (beginning or arrears) that was identified in the "Summary Schedule."
3. Future payments to project facilitators are one example of uses for dollar savings retained by the customer.

***Schedule 3 - Performance Period Cash Flow***

***Section 1***

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Performance Period Cash Flow** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | **Term (year)** | **Implementation Period (Year 0)** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** | **Totals** |
| **Debt Service /Performance Period Payments** | Principal Repayment |  | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Performance Period Incentives and Other Payments |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $0 |
| Dollar savings retained  by customer  (can use $0) |  | $1 | $1 | $1 | $1 | $1 | $1 | $1 | $1 | $1 | $1 | $1 | $1 | $1 | $1 | $1 | $1 | $1 | $1 | $1 | $1 | $1 | $1 | $1 | $1 | $1 |  |
| Interest ($) |  | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| *Total Debt Service (a)* |  | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Performance Period Expenses[[14]](#footnote-14)** | **Management /Administration** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Operation** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Maintenance** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Repair and Replacement** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Performance Assurance** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Other PP Expense 1: Permits and Licenses** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Other PP Expense 2: Insurance** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

### Schedule 3 - Performance Period Cash Flow

***Section 2***

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | *Subtotal before Markup* |  | $0 | $0 | $0 | | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 |
| **Performance Period Markup (%)\*** |  |  |  |  | | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |
| Performance Period Markup ($) |  | $0 | $0 | $0 | | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 |
| *TOTAL Performance Period Expenses (b)* |  | $0 | $0 | $0 | | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Annual Cash Flow (Performance Period) | ***Total Annual Payments (a)+(b)*** | **$0** | **$0** | **$0** | **$0** | | | **$0** | | **$0** | | **$0** | | **$0** | | **$0** | | **$0** | | **$0** | | **$0** | | **$0** | | **$0** |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | Term (year) | Implementation Period (Year 0) | 14 | 15 | | 16 | 17 | | 18 | | 19 | | 20 | | 21 | | 22 | | 23 | | 24 | | 25 | | Totals | |
| Debt Service /Performance Period Payments | Principal Repayment |  | $0 | $0 | | $0 | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | |
| Performance Period Incentives and Other Payments |  |  |  | |  |  | |  | |  | |  | |  | |  | |  | |  | |  | | $0 | |
| Dollar savings retained  by customer |  | $1 | $1 | | $1 | $1 | | $1 | | $1 | | $1 | | $1 | | $1 | | $1 | | $1 | | $1 | |  | |
| Interest ($) |  | $0 | $0 | | $0 | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | |
| *Total Debt Service (a)* |  | $0 | $0 | | $0 | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | |
|  |  |  |  |  | |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |
| Performance Period Expenses | Management /Administration |  |  |  | |  |  | |  | |  | |  | |  | |  | |  | |  | |  | | $0 | |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | |

***Schedule 3 - Performance Period Cash Flow***

***Section 3***

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Operation |  |  |  |  |  |  |  |  |  |  |  |  |  | $0 |
| Maintenance |  |  |  |  |  |  |  |  |  |  |  |  |  | $0 |
| Repair and Replacement |  |  |  |  |  |  |  |  |  |  |  |  |  | $0 |
| Performance Assurance Activities [M&V\*] |  |  |  |  |  |  |  |  |  |  |  |  |  | $0 |
| Other PP Expense 1: Permits and Licenses |  |  |  |  |  |  |  |  |  |  |  |  |  | $0 |
| Other PP Expense 2: Insurance |  |  |  |  |  |  |  |  |  |  |  |  |  | $0 |
| *Subtotal before Markup* |  | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| **Performance Period Markup (%) \*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Performance Period Markup ($) |  | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| *TOTAL Performance Period Expenses (b)* |  | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Annual Cash Flow (Performance Period) | ***Total Annual Payments (a)+(b)*** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Important information:** | | | | | | | | | | | | | | | |
| (1) The Implementation Period payment will be applied to reduce the principal repayment. | | | | | | | | | | | | | | | |
| (2) Examples of "Performance Period Incentives and Other Payments" include: RECs proceeds, DR payments, and extra customer payments. Incentives and payments are assumed to occur at the same time (beginning or arrears) that was identified in the "Summary Schedule." | | | | | | | | | | | | | | | |
| (3) Future payments to project facilitators are one example of uses for dollar savings retained by the customer. | | | | | | | | | | | | | | | |
| **ADDITIONAL NOTES:** | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | |

## 

## Schedule 4 - First Year Estimated Cost Savings by Energy Conservation Measure

*Adapted for UESC*

***Table to follow in three sections.***

Important information:

* + 1. Energy conversion factors for MMBtu: MMBtu=1,000,000 Btu; 1 kWh of Electricity = 0.003413 MMBtu; 1 therm of Natural Gas = 0.1 MMBtu; 1 gal of #2 Heating Oil = 0.13859 MMBtu; 1 gal of Gasoline = 0.12048 MMBtu; 1 gal of Diesel = 0.13738 MMBtu; 1 short ton of Coal (2,000 pounds) =19.548 MMBtu; 1 gal of Propane=0.091333 MMBtu.
    2. At least one of the savings fields is required to compute the contract term.
    3. User should enter an average kW reduction figure for electricity based ECMs. Demand savings can (and usually do) vary by season and in their conversion rate to dollar savings.
    4. All estimated cost savings numbers reported in this schedule are assumed to have already incorporated the "Implementation start through first year" escalation rates reported in the Annual Escalation Rates schedule.

***Schedule 4 – Baseline Energy Consumption and Non-Energy Costs***

***Section 1***

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ECM** | | | **Schedule 4 - Baseline Energy Consumption and Non-Energy Costs** | | | | | | | | | | |
| **ECM No.** | **Short Description** | **Performance assurance plan activities (Recommissioning or M&V Option\*)** | **Electricity use** | **Electricity demand** | **Natural gas use** | **Other energy use** | **Water use** | **Energy and resource costs** | **O&M costs** | **Other non-energy costs** | **Type of other non-energy costs** | **Electric energy savings** |
| **(kWh/yr)** | **(kW/mo)** | **(MMBtu/yr)** | **(MMBtu/yr)** | **(kGal/yr)** | **($/yr)** | **($/yr)** | **($/yr)** |  | **(kWh/yr)** |
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| **TOTALS:** | | | **-** | **-** | **-** | **-** | **-** | **$0** | **$0** | **$0** |  | **-** |

***Schedule 4 – Baseline Energy Consumption and Non-Energy Costs***

***Section 2***

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **b1** | **b2** | **c1** | **c2** | **d1** | **d2** | **e1a** | **e2a** | **e1b** | **e2b** |
| **Electric energy savings** | **Electric demand savings** | **Electric demand savings** | **Natural gas savings** | **Natural gas savings** | **Other savings Type 1: Other** | **Other savings Type 1: Other** | **Other savings Type 2: Other** | **Other savings Type 2: Other** | **Total energy savings** |
| **($/yr)** | **(kW/mo)** | **($/yr)** | **(MMBtu/yr)** | **($/yr)** | **(MMBtu/yr)** | **($/yr)** | **(MMBtu/yr)** | **($/yr)** | **(MMBtu/yr)** |
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***Schedule 4 – Baseline Energy Consumption and Non-Energy Costs***

***Section 3***

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **f = b1+d1+e1a+e1b** | **g = b2+c2+d2+e2a+e2b** | **h** | **i** | **j** | **k** | **l = g+i+j+k** | **m** | **n = m/l** |
| **Total energy cost savings** | **Water savings** | **Water cost savings** | **O&M cost savings** | **Other non-energy cost savings** | **Estimated annual cost savings** | **Implementation price** | **Simple Payback** |  |
| **($/yr)** | **(Kgal/yr)** | **($/yr)** | **($/yr)** | **($/yr)** | **($/yr)** | **($)** | **(years)** |  |
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| **$0** | **-** | **$0** | **$0** | **$0** | **$0** | **$0** |  |  |

## 

## Schedule 5 - Cancellation Ceilings

Important information:

1. This schedule should only be completed if required by the contract.
2. Cancellation ceilings for each time period specified below establish the maximum termination liability for that time period and include the remaining unamortized principal of the total amount financed for each time period specified above plus any prepayment charges. Actual total termination costs will be negotiated.
3. In the event of contract cancellation or termination for convenience, and if applicable, FAR 52.217-2 or 52.249.2 will apply.
4. End of the year annual cancellation ceiling costs should be shown in month 12 (column N).
5. In the event of TO cancellation, specify the cancellation ceiling as a percentage of remaining principal balance in "Additional Notes" below.

***Schedule 5 – Cancellation Ceilings***

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Schedule 5 - Cancellation Ceilings** | | | | | | | | | | | | |
| **End of  Performance Period  (Year)** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| Project Acceptance |  |  |  |  |  |  |  |  |  |  |  |  |
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### eProject Builder Data Collection Schedules Key

*This started as CTS; updating to ePB with adaptions for UESC.*

***Add “Life of ECM” major equipment or system average life or manufacturer’s stated life.***

|  |  |
| --- | --- |
| **Column Heading** | **Data to Input** |
| Agency | Enter the main agency and sub agency if applicable (e.g. DOI, National Park Service) |
| Facility | Input the installation name or site name where project completed (e.g. Kirtland Air Force Base) |
| Utility | Enter utility company |
| Contract Type | Enter contract type (Agency Specific Contract, BOA, BPA, DSM, UESC) |
| Contract Term | Input the length of the contract in years, if applicable |
| TO/DO | Include a DO/TO number if appropriate |
| Award Date | Enter the date contract was signed |
| Completion Date | Enter the date the project was completed or plans to be completed |
| ECMs | **Input description of technologies installed - please list each type of technology installed from the categories below:**  Analysis Boiler/Chiller Central Plant Comprehensive Upgrades Controls/Upgrades/Repairs Distributed Generation Renewables HVAC/Motors/Pumps Insulation/Building Envelope Lighting  Lighting and Mechanical Systems Water Conservation Other |
| Project  Capital Cost  ($) | Input the total capital cost of the project (full dollar amount). This is the implementation price (for survey, study, design, construction, commissioning to acceptance, and markup—which includes indirect costs, such as rebates, OH and profit) the contractor charges to develop and implement the project. **Do not include costs related** to M&V during performance period, financing costs, O&M, or administrative costs to the government. |
| Percent of  Total Cost  3rd Party Financed | Input the total percentage of cost that was financed through the utility or an outside lender - anything under 100% will show the site used appropriated money to buy down the project. This will show the principal loan amount that is borrowed to implement the project. This value is the total investment amount minus any rebate or incentives received by the utility and/or any appropriated funding used to "buy-down" the cost of the principal loan (government pre-performance period payments plus any capitalized interest costs). Do not include interest rates. |
| Rebate Amount ($) | Input any rebate or incentives received from the utility if applicable (full dollar amount). |
| Estimated Annual Cost Savings ($) | Input the annual cost savings of the project which include energy, demand, water, and O&M (include all commodities such as natural gas, electricity, oil). (full dollar amount) |
| Estimated kWh Savings | Enter estimated annual site electric kWh savings if this breakout if available |
| Estimated KW Savings | Provide demand savings if applicable |
| Estimated Annual Natural Gas savings (cubic feet) | Enter the estimated total annual natural gas savings in cubic feet |
| Estimated Annual Oil savings (gallons) | Enter the estimated total annual oil savings in gallons |
| Estimated  Annual water savings  (gallons) | Enter the estimated total annual water savings in gallons |
| Total Annual  Energy Savings | Enter total annual energy savings for all energy types |

## Conclusions and Recommendations

Considering the agency’s project objectives and priorities, present the conclusions of the assessment, recommendations for implementation strategies, and suggested next steps.

### Project Objectives

Restate the agency’s project objectives.

### Conclusions

How do the findings support or oppose accomplishing the objectives? Address ECM subcontractor competition, use of appropriations and financing, key milestones and timeline.

**Recommendations**

What strategies, funding and otherwise, would support implementation? And what are the next steps?

# Attachments

1. Abbreviations and Definitions
2. UESC Task Order Deliverables
3. Unit Conversion Protocol
4. Compliance Tracking System (CTS)

## Attachment 1: Abbreviations and Definitions

### Abbreviations

AWC Areawide Contract

BOA Basic Ordering Agreement

CFR Code of Federal Regulations

CO Contracting Officer, (a.k.a. KO)

COR Contracting Officer’s Representative

COTR Contracting Officer’s Technical Representative

CTS Compliance Tracking System

D&I Design and Installation

DOE U.S. Department of Energy

DSM Demand Side Management

E&D Engineering and Design

ECM Energy Conservation Measure

ECP Energy Conservation Project

EMCS Energy Management Control System

EMSA Authorization for Energy Management Services

EO Executive Order

EPAct Energy Policy Act of 1992 & 2005

FAR Federal Acquisition Regulation

FEMP Federal Energy Management Program

FBO Federal Business Opportunities (FedBizOpps)

FFP Firm-Fixed-Price

FS Feasibility Study

GSA U.S. General Services Administration

HVAC Heating, Ventilating, and Air Conditioning

IGA Investment Grade Audit – equivalent to an ASHRAE Level – 2 audit

J&A Justification and Approval

IRR Internal Rate of Return

LBNL Lawrence Berkeley National Laboratory

LCCA Life Cycle Cost Analysis

M&V Measurement & Verification

NIST National Institute of Standards and Technology

NREL National Renewable Energy Laboratory

O&M Operations and Maintenance

OH Overhead

PA Preliminary Assessment

PUC Public Utility Commission

SOW Statement of Work

T&C Terms and Conditions

TO Task Order

UESC Utility Energy Service Contract

U.S.C. United States Code

### Definitions

Commissioning (Cx) of ECM: Can be defined as the process of ensuring equipment and systems are designed, installed, functionally tested, and capable of being operated and maintained to perform as intended.

Recommissioning (rCx) of ECM: Can be defined as the process of ensuring equipment and systems are operated and maintained and as needed to be adjusted and or repaired to sustain perform as intended over time.

## Attachment 2: UESC Task Order Deliverables

This version reflects ESPC requirements; verify usefulness for UESC or remove.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Frequency | Due | Delivered to: |
| 001 | CTS Evaluation Upload Template | Once; By Agency  every 4 years thereafter | Upon IGA delivery; | Completed/uploaded to:  <http://www1.eere.energy.gov/femp/regulations/facility_templates.html> |
| 002 | CTS Project Data Upload Template | One time | Upon Task Order Award | Completed/uploaded to:  <http://www1.eere.energy.gov/femp/regulations/facility_templates.html> |
| 003 | CTS Follow-up Data Upload Template | Annually | In conjunction with completion of the initial and annual performance assurance (or M&V) reports | Completed/uploaded to:  <http://www1.eere.energy.gov/femp/regulations/facility_templates.html> |
| 004 | Signed Task Order | One time | Upon receipt from Agency | Agency Contracting Officer (CO)  DOE FEMP Project Facilitator |
| 005 | Certificate of Insurance | One time | 15 days after award of task order | CO  Site Point of Contact (SPOC) |
| 006 | Performance Bond | One time | 30 days after award of task order | “ “ |
| 007 | Payment Bond | One time | 30 days after award of task order | “ “ |
| 008 | Work Schedule | Monthly | 10 business days before work start | CO  SPOC  Region POC  Contracting Officer's Representative (COR) |
| 009 | Work - Outside Normal Hours | Per occurrence | 10 business days before work start | “ “ |
| 010 | Design/Construction Package  (ECM Installation Plan) | Two; Initial and Final | 90-120 days to be determined prior to award | “ “ |
| 011 | ECMs Installation Quality Control Inspection Program | One time | With Item 007 above | “ “ |
| 012 | Performance Assurance Plan (with sub-plans for Commissioning and if required M&V) | One Time | After Approval of Item 007 above | CO  Region POC  SPOC  COR  DOE Project Facilitator |
| 013 | Safety and Health Plan | One Time | With Item 007 above | CO  Region POC  SPOC  COR |
| 014 | Notification of Utility Interruption; submittal of outage request form | Per occurrence | 15 working days prior to outage | SPOC  COR |
| 015 | Government Personnel Training Plan (sub-element of Performance Assurance Plan) | One time | 10 working days prior to start of first class | “ “ |
| 016 | Operation Work Procedures (sub-element of Performance Assurance Plan) | Per occurrence | With training class | “ “ |
| 017 | Maintenance Work Procedures, Requirements and Checklists (sub-element of Performance Assurance Plan) | Per occurrence | With training class | “ “ |
| 018 | O&M Manuals and Recommended Spare Parts List | One time | Prior to Agency acceptance of project | “ “ |
| 019 | Performance Assurance Report (or Commissioning Report) | One Time | Prior to Agency acceptance of project and Upon ECM installation and commissioning | CO  Region POC  SPOC  COR  DOE PF |
| 020 | Annual Performance Assurance Report (or performance verification report) | 1-5 years or as directed in the TO | Annually beginning 1 year plus 3 months from Government acceptance for as many years as negotiated in the TO | “ “ |
| 021 | Maintenance Procedures  Changes to Government-owned equipment | Per occurrence | 30 days prior to installation completion; if after installation, 30 days prior to effective date of new procedures | SPOC  COR |
| 022 | ECMs Installation Completion/Acceptance | Per ECMs | Upon ECMs installation completion | “ “ |
| 023 | Manufacturer's Warranty | One time | Upon acceptance of project | SPOC |
| 024 | UESC Project Completion/Acceptance | One time | Upon completion of implementation and acceptance | CO |
| 025 | As-built Drawings | Per ECMs | 90 to 120 days after ECMs installation acceptance | SPOC  COR |
| 026 | Report showing Cost per building, by ECM | One time | Upon completion of implementation and acceptance | CO/ACO  COR |
| 027 | Annual M & V Report on ECM Performance  (Refer to item #3 above) | Annually | 30 days after performance period anniversary | CO/ACO  Region POC  SPOC  COR  DOE PF 1st Year Only |
| 028 | TO Modifications | Per modification | Upon receipt of signed modification | BOP CO/ACO  DOE CO  DOE COR |

## Attachment 3: Conversion Factors

Here are the factors that the U.S. Department of Energy (DOE) uses to determine site Btu equivalents from native units for energy types not typically reported as Btu.

|  |  |  |
| --- | --- | --- |
| **Conversions** | | |
| Energy Type | Convert to Btu | MMBtu=106 Btu  Btu to MMBtu |
| Electricity | 1 MWh = 3,412,000 Btu | 3.412 MMBtu |
| Electricity | 1 kilowatt-hour = 3,412 Btu | 0.003412 MMBtu |
| Electricity | 1 watt = 3.412 Btu | 0.000003412 MMBtu |
|  |  |  |
| Natural Gas | 1 cubic foot = 1,028 Btu | 0.001028 MMBtu |
| Natural Gas | 1,000 cf = 1,028,000 Btu | 1.028 MMBtu |
| Natural Gas | 1 Mcf = 1,028,000,000 | 1,028 MMBtu |
|  |  |  |
| Fuel Oil (Distillate No. 2) | 1 gallon = 137,381 Btu | 0.138 MMBtu |
| Fuel Oil (Distillate No. 2) | 1000 gallon = 137,381,000 Btu | 137.381 MMBtu |
|  |  |  |
| Propane & Liquid Propane | 1 gallon = Btu | 92,000 |
|  |  |  |
| Steam | Btu/pound | 1,000 |

|  |  |  |
| --- | --- | --- |
| **Common Energy Units** | | |
|  |  | **Scientific notation** |
| British thermal unit [(Btu)](http://www.eia.gov/glossary/glossary_b.htm#Btu) | 1.0 | 1.0 |
| Millions of Btu | 1,000,000.0 | 1.0E+06 Btu |
| Therm | 100,000.0 | 1.0E+05 Btu |
| Billions of Btu | 1,000,000,000.0 | 1.0E+09 Btu |
| Quad | 1,000,000,000,000,000.0 | 1.0E+15 Btu |
|  |  |  |
| Megajoule | 1,000,000.0 | 1.0E+06 Joule |
| Joule | 1.0 | 1.0 Joule |
| Gigajoule | 1,000,000,000.0 | 1.0E+09 Joules |
| Terajoule | 1,000,000,000,000.0 | 1.0E+12 Joules |
|  |  |  |
| Watthour | 1.0 | 1.0 |
| Kilowatt-hour (kWh) | 1,000.0 | 1.0E+03 watthour |
| Megawatt hour (mWh) | 1,000,000.0 | 1.0E+06 watthour |
| Gigawatt hour (gWh) | 1,000,000,000.0 | 1.0E+09 watthour |
| Terawatt hour (tWh) | 1,000,000,000,000.0 | 1.0E+12 watthour |

## Attachment 4: Compliance Tracking System Template

### Compliance Tracking System

Public Law 110-140 (2007), the Energy Independence and Security Act, Section 432 Management of energy and water efficiency in Federal buildings, amended 42 USC 8253(f) including, reporting and benchmarking.

### 42 USC 8253: Energy management requirements, (f) Use of energy and water efficiency measures in Federal buildings

**(3) Energy and water evaluations**

(A) Evaluations. Complete a comprehensive energy and water evaluation for approximately 25 percent of the facilities of each agency that meet the criteria under paragraph (2)(B) ensuring an evaluation of each such facility is completed at least once every 4 years. (B) Recommissioning and retrocommissioning. As part of the evaluation under subparagraph (A), identify and assess recommissioning measures (or, if the facility has never been commissioned, retrocommissioning measures) for each such facility.

**(4) Implementation of identified energy and water efficiency measures**

Each energy manager may, (A) implement any energy- or water-saving measure identified in the evaluation conducted under paragraph (3) that is life cycle cost-effective; and (B) bundle individual measures of varying paybacks together into combined projects.

**(5) Follow-up on implemented measures**

Each energy manager shall ensure that, (A) equipment, including building and equipment controls, is fully commissioned at acceptance to be operating at design specifications; (B) a plan for appropriate operations, maintenance, and repair of the equipment is in place at acceptance and is followed; (C) equipment and system performance is measured during its entire life to ensure proper operations, maintenance, and repair; and

(D) Energy and water savings are measured and verified.

**Compliance Tracking System, 42 USC 8253, EISA 432**, using the generic Excel templates will provide federal clients with reports in the format agencies are required to use. The agency acronym and facility identifying data contained in these templates must correspond to the existing IDs used in the EISA 432 Compliance Tracking System. Contractors populating these templates for agency clients should contact the appropriate agency facility energy coordinator to obtain this information, or the agency can fill in this data prior to uploading.

To submit UESC project data to FEMP, download the CTS Project Template. All information received is kept confidential and never released to third parties without consent. If you are a utility interested in offering UESC to your federal customers, there are many ways to get started. FEMP offers live webinars, on-demand training, on-site training, advanced workshops, and strategic partnership meetings.

To submit project data or to inquire about UESC data, contact [Susan Courtney](mailto:scourtney@alleghenyst.com). For questions about how to complete the template, contact [Chris Tremper](https://energy.gov/Chris.Tremper%40ee.doe.gov%E2%80%9D) or [Michael Brauch](https://energy.gov/Michael.Brauch%40ee.doe.gov%E2%80%9D).

<https://energy.gov/eere/femp/downloads/eisa-432-compliance-tracking-system-data-upload-templates>

Send completed form to [scourtney@alleghenyst.com](mailto:scourtney@alleghenyst.com)

Visit the FEMP Training Catalog page to browse offered training: <https://www4.eere.energy.gov/femp/training/>.

**The Compliance Tracking System (CTS)**

DOE FEMP has prescribed that the CTS templates be used for UESC reporting.

The Compliance Tracking System for reporting on facility evaluations, implementing and reporting efficiency measures, and benchmarking facilities see <https://energy.gov/eere/femp/federal-agency-facility-reporting-requirements-and-performance-data>.

|  |
| --- |
| **Project Upload Template Instructions** |
| First Sheet - Instructions |
| Second Sheet - Project Upload Template |
| * Populate this sheet with data to be imported into CTS |
| * Data uploaded for projects which exist in CTS will update the data in CTS |
| * "Sub-Agency Acronym" and "Agency Designated Covered Facility ID" MUST correspond to the existing acronym and IDs used in CTS |
| * All columns with red headers are required and must be filled out |
| * DO NOT EDIT any information above the third row |
| * DO NOT ADD ADDITIONAL COLUMNS to the sheet |
| * Click on a column header to be taken to the data dictionary for more information |
| Third Sheet - Data Dictionary |
| * This sheet contains information relevant to the Project Module data fields |
| * In here you will find terms and definitions to help explain columns in the upload template |
| * If you still have any questions after reviewing the Data Dictionary please send an email to: |
| [eere\_cts@ee.doe.gov](mailto:eere_cts@ee.doe.gov) |

### CTS Project Template

**Proposed Annual Savings Overview**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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) |
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|  |  |  |  |  |  |  |  |  |  |
| Total savings |  |  |  |  |  |  |  |  |  |
| Notes: Include all applicable fuels/commodities for project, e.g., electric energy, electric demand, natural gas, fuel oil, coal, water, etc.  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). | | | | | | | | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 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 = 106 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). | | | | | | | | | | | | | |

**Covered facility identification information**

1. Sub-agency acronym required – may be different or identical to the agency name
2. Agency designated covered facility identification, recovered – must correspond to existing acronym and IDs used in CTS; may be numbers, letters, and special characters; will link CTS and Portfolio Manager; may have multiple buildings associated with one “CTS Covered Facility”
3. Facility name – may be a building, campus, installation; owned, leased, or contractor operated.

**Project identification**

1. Project name required – descriptive name; may be one or multiple ECMs.
2. Agency designated project identification required – identifier will link follow-up activity to existing projects in CTS during batch uploads.

**Project status**

1. Project initiation date, required, yyyy-mm-dd; if in-house project, enter the date equipment was purchased/installed
2. Project implementation date, optional, yyyy-mm-dd
3. Project acceptance date, optional, yyyy-mm-dd

**Project implementation cost by funding source – [Awarded contract amount = implementation cost + financing costs]**

At least one funding source or Total project implementation cost is required for project to be valid.

1. Direct centralized capital funding, optional, dollars – appropriations or other funding from centralized agency accounts for capital-intensive-projects; e.g., agency infrastructure improvement funds under ARRA, DoD ECIP, and GSA federal buildings fund.
2. Direct ARRA, optional, dollars
3. Decentralized operating budgets, optional, dollars – O&M budgets administered by agency regions and sites
4. Utility Energy Service Contract (UESC), optional, dollars – A UESC is a contract between a Federal agency and a local utility providing energy distribution services, and water, as well as provision of technical services and/or upfront project financing for energy efficiency, water conservation, and renewable energy investments, allowing Federal agencies to pay for the services from the savings generated from improvement projects over time, either on their utility bill, or through a separate agreement. Agency sites should leverage existing relationships with servicing utility especially if demand side incentives are available from the utility. Agencies can also use a GSA Utility Area wide master contract to procure utility services and to finance energy efficiency projects with generated savings.
5. ESPC, optional, dollars – use $0, an ESPC is a contract (such as a task order under DOE’s multiple award, indefinite-delivery, indefinite-quantity (IDIQ) umbrella contract and awarded to an energy service company) that provides for the performance of services for the design, acquisition, financing, installation, testing, operation, and maintenance and repair, of an identified energy, water conservation, or renewable energy measure or series of measures, at one or more locations. Such contracts shall provide that the contractor must incur costs of implementing energy savings measures, including at least the cost (if any) incurred in making energy audits, acquiring and installing equipment, and training personnel in exchange for a predetermined share of the value of the energy savings directly resulting from implementation of such measures during the term of the contract. Payment to the contractor is contingent upon realizing a guaranteed stream of future energy and cost savings, with any savings in excess of that guaranteed by the contractor accruing to the Federal Government. Agency sites should work with project facilitators and financing experts at DOE FEMP and other agencies to package potential ECMs together to make the effort attractive to energy service companies and private sector investment.
6. Power purchase agreement (PPA), optional, dollars – $0, agencies should strongly consider the use of Power Purchase Agreements, where permitted, to finance the development of renewable (or other) energy projects at their facilities. As defined by FEMP, under a PPA, a developer installs a renewable or other energy system on agency property, pursuant to a contract that the agency will purchase the power generated by the system. The agency pays for the system through these power payments over the life of the contract. After installation, the developer owns, operates, and maintains the system for the life of the contract. By purchasing renewable power, the facility can obtain a percentage of its energy from renewable sources and meet the Federal renewable energy goal.
7. Enhanced use lease (EUL), optional, dollars - $0; An Enhanced Use Lease is an authority by which some Federal agencies can lease underutilized real property to the public or private sector as a means of obtaining services, facilities, revenue, space, etc., that enhance their mission. Under a EUL agreement, underutilized agency land or facilities can be leased to a developer, or energy service company in exchange for a wide variety of energy improvements, including large or long-term renewable energy and cogeneration projects.
8. Incentive program, optional, dollars – most States and Utilities have energy incentive programs that help offset energy costs while promoting EE and RE technologies. Public purpose programs administered by utilities, state agencies, or other third parties and paid for by utility ratepayers, typically through a non-by-passable system benefits charge instituted as part of restructuring legislation or rules. Utility programs administered by the local utility and paid for by utility ratepayers through their bundled rates. Programs sponsored by state agencies that are designed to promote energy efficiency and renewable energy and which are usually funded out of general tax revenues. Demand response and load management programs provide incentives to curtail demand during peak energy usage periods in response to system reliability or market conditions. Agencies can participate to reduce usage and control costs.
9. Other funding source, optional, dollars

**Total project implementation cost**

1. Total project implementation cost, optional, dollars – does not include financing and interest payments

**Total financing cost**

If applicable for ESPC or UESC,

1. Total financing cost, optional, dollars – Typically the total awarded contract value less the project implementation cost. **[Total awarded contract value – project implementation cost]**

**Project cost effectiveness**

1. Estimated LCC net savings, optional, dollars
2. Life of project, optional, years

**Estimated annual energy savings**

At least one savings type is required for project to be valid.

1. Electricity savings, optional, kwh
2. Natural gas savings, optional, thousand cubic feet
3. Coal anthracite, optional, short tons
4. Coal bituminous, optional, short tons
5. Coal coke, optional, short tons
6. Distillate, fuel oil #1, optional, gallons
7. Distillate, fuel oil #2, optional, gallons
8. Distillate, fuel oil #4, optional, gallons
9. Distillate, fuel oil #5, optional, gallons
10. Distillate, fuel oil #6, optional, gallons
11. Propane, optional, gallons
12. Liquid propane, optional, gallons
13. District steam, optional, thousand pounds
14. Chilled water absorption, optional, ton hours
15. Chilled water electric driven, optional, ton hours
16. Chilled water engine driven, optional, ton hours
17. Kerosene, optional, gallons
18. Diesel, optional, gallons
19. Other fuel type, optional, million Btu

**Estimated energy / water savings**

1. Combined estimated annual energy savings, optional, million Btu
2. Estimated annual water savings, optional, thousand gallons
3. Estimated annual renewable electricity output, optional, kwh
4. Estimated annual renewable thermal output, optional, million Btu

**Energy and water conservation measures implemented**

Insert ECM count per technology category. At least one ECM is required for the project record to be valid.

1. Boiler plant improvements
2. Chiller plant improvements
3. Building automation systems, EMCS
4. Other HVAC
5. Lighting improvements
6. Building envelope modifications
7. CW, HW, Steam distribution systems
8. Electric motors and drives
9. Refrigeration
10. Distributed generation
11. Renewable energy systems
12. Energy, utility distribution systems
13. Water and sewer conservation systems
14. Electrical peak shaving and load shifting
15. Rate adjustments – e.g., change to more favorable rate schedule, lower energy cost supplier(s), energy service billing and meter auditing recommendations.
16. Energy related process improvements
17. Advance metering systems
18. Appliance and plug-load reductions
19. Commissioning measures
20. Other

### CTS M&V Template

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Implemented Project Follow-up Measurement and Verification - Data Fields | | | | |
| Follow-up Activity Date | Indicate date of this M & V report | Date (mm/dd/yyyy) | Required |  |
| M&V Methodology | Identify the M & V Methodology used: | Select:  (list) | Required |  |
| Option A: Key Parameter monitoring (short term metering/ spot measurements of key parameter) |
| Option B: All Parameter monitoring (long term monitoring of all parameters normalizing for weather occupancy etc.) |
| Option C: Whole Building monitoring |
| Option D: Calibrated Computer Simulation |
| Measured Annual Energy Savings | Measured Savings (converted to Million Btu from fuel savings entered by Fuel Type in native units below): | Numeric:  (Million Btu) | Required  (if applicable)  At least one: Energy or Water or Renewable Savings, is required. |  |
| Measured Savings By Fuel Type | Measured Energy Saving reported by fuel type in native units. | Numeric:  (units as indicated) | “ “ |  |
| Electricity Savings | Electricity Savings (kwh) [0.0034123 MBtu/kwh] | Numeric  (kwh) | Required  (if applicable) |  |
| Natural Gas Savings | Natural Gas Savings (thou cu ft) [1.028 MBtu/kscf] | Numeric  (thou cu ft) | “ “ |  |
| Coal - Anthracite | Coal - Anthracite (short tons) [25.09 MBtu/short ton] | Numeric  (short tons) | “ “ |  |
| Coal - Bituminous | Coal - Bituminous (short tons) [24.93 MBtu/short ton] | Numeric  (short tons) | “ “ |  |
| Coal - Coke | Coal - Coke (short tons) [24.80 MBtu/short ton] | Numeric  (short tons) | “ “ |  |
| Distillate Fuel Oil #1 | Distillate Fuel Oil #1 (gallons) [0.139 MBtu/gallon] | Numeric (gallons) | Required  (if applicable) |  |
| Distillate Fuel Oil #2 | Distillate Fuel Oil #2 (gallons) [0.138 MBtu/gallon] | Numeric (gallons) | “ “ |  |
| Distillate Fuel Oil #4 | Distillate Fuel Oil #4 (gallons) [0.146 MBtu/gallon] | Numeric (gallons) | “ “ |  |
| Distillate Fuel Oil #5 | Residual Fuel Oil #5 (gallons) [0.14 MBtu/gallon] | Numeric (gallons) | “ “ |  |
| Distillate Fuel Oil #6 | Residual Fuel Oil #6 (gallons) [0.15 MBtu/gallon] | Numeric (gallons) | “ “ |  |
| Propane | Propane  (gallons) [0.091 MBtu/gallon] | Numeric (gallons) | “ “ |  |
| Liquid Propane | Liquid Propane  (gallons) [0.092 MBtu/gallon] | Numeric (gallons) | “ “ |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| District Steam | District Steam  [1.194 MBtu/thous lb] | | Numeric  (thous lb) | | | “ “ | | | |  |
| Chilled Water - Electric Driven | Chilled Water - Electric Driven  [0.012 MBtu/ton hours | | Numeric  (ton hours) | | | “ “ | | | |  |
| Chilled Water - Absorption | Chilled Water – Absorption [0.012 MBtu/ton hours] | | Numeric  (ton hours) | | | “ “ | | | |  |
| Chilled Water - Engine Driven | Chilled Water - Engine Driven  [0.012 MBtu/ton hours] | | Numeric  (ton hours) | | | “ “ | | | |  |
| Kerosene | Kerosene  (gallons) [0.135 MBtu/gallon] | | Numeric (gallons) | | | “ “ | | | |  |
| Diesel | Diesel  (gallons) [0.138 MBtu/gallon] | | Numeric (gallons) | | | “ “ | | | |  |
| Other | Other  (million Btu) | | Numeric | | | “ “ | | | |  |
| Measured Annual Water Savings | Measured Annual Water Savings | | Numeric: (Thou. Gallons) | | | Required  (if applicable; see note for Annual Measured Energy Savings) | | | |  |
| Measured Renewable Savings (Electricity) | Measured Annual Renewable Electricity Output (Solar PV, Wind, etc.) Savings | | Numeric: (Kwh) | | | “ “ | | | |  |
| Measured Renewable Savings (Thermal) | Measured Annual Renewable Thermal Output (Geothermal, Active/Passive Solar Biomass, etc.) Savings | | Numeric: (Million Btu) | | | “ “ | | | |  |
| Measured Energy  /Water Savings |  | |  | | | Required | | | |  |
| Covered Facility Characteristics - Data Fields | | | | | | | | | | |
| Facility Characteristics |  |  | | |  | | |  | | |
| Agency Name | The Department/agency or sub-agency/bureau to which the covered facility is associated. | Selection  (list) | | | Required | | | Sub-agencies designated by the same acronym as the top-tier agency (e.g. DOE/DOE) may be used to represent facilities that reside at the headquarters level of an agency or for facilities in agencies that are not broken down by sub-agency. | | |
| Facility Name | The name of the Covered Facility | Text:  (75 char max) | | | Required | | | The Covered Facility may be any building, installation, structure, or other property (including any applicable fixtures) owned or operated by, or constructed or manufactured and leased to, the Federal Government. The Covered Facility may consist of a group of facilities at a single location or multiple locations managed as an integrated operation; or contractor-operated facilities owned by the Federal Government. | | |
| Agency Designated Covered Facility ID | Agency assigned internal covered facility identifier. Must be unique across the top-tier agency. | Text:  (25 char max) | | | Required | | | Choose an identifier that is meaningful to your agency. The identifier may contain numbers, letters and special characters. This identifier provides the link between CTS and buildings entered into Portfolio Manager. There may be multiple buildings associated with one CTS Covered Facility. | | |
| Implemented Project - Data Fields | | | | | | | | | | |
| Project Identification |  | | |  | | |  | |  | |
| Project Name | The agency designated implemented project name. | | | Text:  (100 char max) | | | Required | | A project may consist of the implementation of one or multiple ECMs. | |
| Agency Designated Project ID | Internal agency defined project identifier.  Unique across the sub-agency. | | | Text:  (50 char max) | | | Required | | This identifier is used to link follow-up activity to existing projects in CTS during batch uploads. | |

### CTS Evaluations Template

**Covered facility identification information**

1. Agency designated covered facility identification – must correspond to existing acronym and IDs used in CTS; may be numbers, letters, and special characters; will link CTS and Portfolio Manager; may have multiple buildings associated with one “CTS Covered Facility”
2. Sub-agency acronym – may be different or identical to the agency name
3. Facility name – may be a building, campus, installation; owned, leased, or contractor operated.

**Aggregated findings of comprehensive evaluations estimated annual data**

1. Evaluation name required – descriptive name
2. Evaluation completion date, optional – the date when 100% of the facility’s GSF has been evaluated
3. Retro/re- commissioning assessment required – indicate if completed as part of the evaluation; must be included for covered facilities >50k sf
4. Gross evaluated square footage, required – thousands of S.F. evaluated
5. Estimated implementation cost of measure(s) required – dollars
6. Estimated annual energy savings, required – million Btu, include ECM(s) for validation
7. Estimated annual energy cost savings, required – dollars
8. Estimated annual water savings, required – thousand gallons, include ECM(s), estimated annual water savings
9. Estimated annual water cost savings, required – dollars
10. Estimated other annual ancillary cost savings, optional – dollars

**Aggregated findings of comprehensive evaluations estimated life-cycle data**

1. Estimated life-cycle energy savings, optional – million Btu – estimated site-delivered Btu energy savings expected from all identified EE measures over the collective life spans of the measures
2. Estimated present value life-cycle energy cost savings, optional – dollars – estimated present value energy cost savings expected from all ECMs over the collective life spans of the measures
3. Estimated life-cycle water savings, optional – thousand gallons – estimated water savings expected from all water use and disposal (sewer) efficiency measurers over the collective life spans of the measures, optional – thousand gallons
4. Estimated present value life-cycle water cost savings, optional – dollars – estimated present value water cost savings expected from all identified water use and disposal (sewer) efficiency measures over the collective life spans of the measurers.
5. Estimated other present value life-cycle ancillary cost savings, optional – dollars – estimated other ancillary present value cost savings expected from all identified efficiency measures over the collective life spans of the measures. These may include savings due to reduced maintenance, operational costs, repairs, etc.

**Potential measures identified; by category, required as applicable**

1. Boiler plant improvement – improve/retrofit/replace controls, equipment, and distribution or decentralization
2. Chiller plant improvements – improve/retrofit/replace controls, equipment, and distribution
3. Building automation systems / EMCS – improve/retrofit/replace, pneumatics to direct digital control
4. Other HVAC, other than boiler, chiller, EMCS improve/retrofit/replace – packaged or window AC, damper/ controller, cooling tower, install economizer, trim fans and pumps impeller, variable air volume
5. Lighting improvements – improve/retrofit/replace intelligent controls, occupancy sensors, LED, day-lighting, spectrally enhanced, fiber optic
6. Building envelope modifications – improve/retrofit/replace insulation, weatherization, windows, reflective solar window tinting
7. CW / HW / Steam distribution systems – repair/replace piping insulation, HW heater, steam trap, condensate return systems
8. Electric motors and drives – replace with high efficiency
9. Refrigeration - replace ice and refrigeration equipment with high efficiency units
10. Distributed generation – install cogeneration, micro-turbines, fuel cells
11. Renewable energy systems – install photovoltaic, solar hot water, solar ventilation preheat, wind energy, passive solar heating, landfill gas, waste water treatment plant digester gas, coal bed methane power plant, wood/organic waste stream heating or power plant, and ground coupled heat pump installations
12. Energy and utility distribution systems – install transformers, gas distribution system, upgrade power quality, correct power factor,
13. Water and sewer conservation systems – install low flow faucets, showerheads, plumbing equipment, water efficient irrigation and on-site sewer treatment systems
14. Electrical peak shaving / load shifting – thermal energy storage and gas cooling
15. Rate adjustments – change to more favorable rate schedule, lower energy cost supplier(s), and energy service billing and meter auditing recommendations
16. Energy related process improvements – improve manufacturing, production, and industrial processes, recycle and waste stream reduction,
17. Advance metering systems
18. Appliance and plug-load reductions – replace air-cooled ice and refrigeration equipment, de-lamp vending machines, use plug timers, install energy star products
19. Commissioning measures
20. Other – any measures that do not fit above
21. Comments / explanations

Email questions related to CTS to [eere\_cts@ee.doe.gov](mailto:eere_cts@ee.doe.gov)

1. The UESC Enabling Documents clarifies the authority and provides opinions and guidance, <https://energy.gov/eere/femp/downloads/utility-energy-service-contracts-enabling-documents>. [↑](#footnote-ref-1)
2. The UESC Contracting Guide provides contract document samples and templates for acquisition teams, <https://energy.gov/eere/femp/downloads/uesc-contracting-guide>. [↑](#footnote-ref-2)
3. UESC training offerings can be viewed at https://www4.eere.energy.gov/femp/training/?keyword=&topic%5B0%5D=167. [↑](#footnote-ref-3)
4. GSA AWCs are specific to each electric and natural gas utility that has entered into an “AWC” with GSA. A PDF of each current AWC can be downloaded at <https://www.gsa.gov/portal/content/184627>. Also available is a GSA Guide, <https://www.gsa.gov/portal/mediaId/240463/fileName/Procurement_Guide_for_Public_Utility_Services_08-2015.action>). [↑](#footnote-ref-4)
5. Separate Contracts, as described in FAR Part 41.205—Separate Contracts, are permissible when an AWC is not in place, and require additional documentation in accordance with the FAR provision. [↑](#footnote-ref-5)
6. Interagency Agreements, FAR Part 41.206—Interagency Agreements, are used when acquiring utility service or facilities from other Government agencies, such as Tennessee Valley Authority and Western Area Power Administration, for example. [↑](#footnote-ref-6)
7. The Model Agreement was developed by the Federal Utility Partnership Working Group (FUPWG) and approved and updated periodically by the FUPWG Steering Committee and membership at large. It begins on page 144 of the UESC Enabling Documents, <https://energy.gov/eere/femp/downloads/utility-energy-service-contracts-enabling-documents>. [↑](#footnote-ref-7)
8. ASHRAE Standard 211P, Public Review Draft, Standard for Commercial Building Energy Audits, August 2016 [↑](#footnote-ref-8)
9. Performance assurance planning for UESCs; see <https://www.energy.gov/sites/prod/files/2019/02/f59/uesc_performance_assurance_planning.pdf> [↑](#footnote-ref-9)
10. Addendum to OMB Memorandum M-98-13 on Federal Use of Energy Savings Performance Contracts (ESPCs) and Utility Energy Services Contracts (UESC); see full documentation at <https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2012/m-12-21.pdf> [↑](#footnote-ref-10)
11. [EISA Federal Covered Facility Management and Benchmarking Requirements](https://energy.gov/eere/femp/eisa-federal-facility-management-and-benchmarking-reporting-requirements): Reporting to meet the requirements of section 432 of the Energy Independence and Security Act of 2007 (EISA 432) and access to the EISA 432 Compliance Tracking System for reporting on facility evaluations, implementing and reporting efficiency measures, and benchmarking facilities per EISA 432 (42 U.S.C. 8253(f)). See <https://energy.gov/eere/femp/federal-agency-facility-reporting-requirements-and-performance-data>. [↑](#footnote-ref-11)
12. The Compliance Tracking System is a public database and information can be accessed at <https://ctsedwweb.ee.doe.gov/CTSDataAnalysis/Default.aspx?ReturnUrl=%2fCTSDataAnalysis%2fComplianceOverview.aspx> [↑](#footnote-ref-12)
13. <https://eaei.lbl.gov/tool/eproject-builder> eProject Builder was developed by LBNL for DOE FEMP, to request use and training, follow the links on the homepage. [↑](#footnote-ref-13)
14. Performance period expenses are estimated costs and are not included in the financed value. [↑](#footnote-ref-14)