U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

# Using ENABLE in a UESC

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# Presentation Overview

- Overview ESPC ENABLE
- Using ENABLE Tools in an UESC
  - Basic Concept of an ENABLE UESC
  - Proposed ENABLE Process
    - IGA Tool
    - Final Proposal
    - Award Design and Installation
    - Performance Assurance and Acceptance

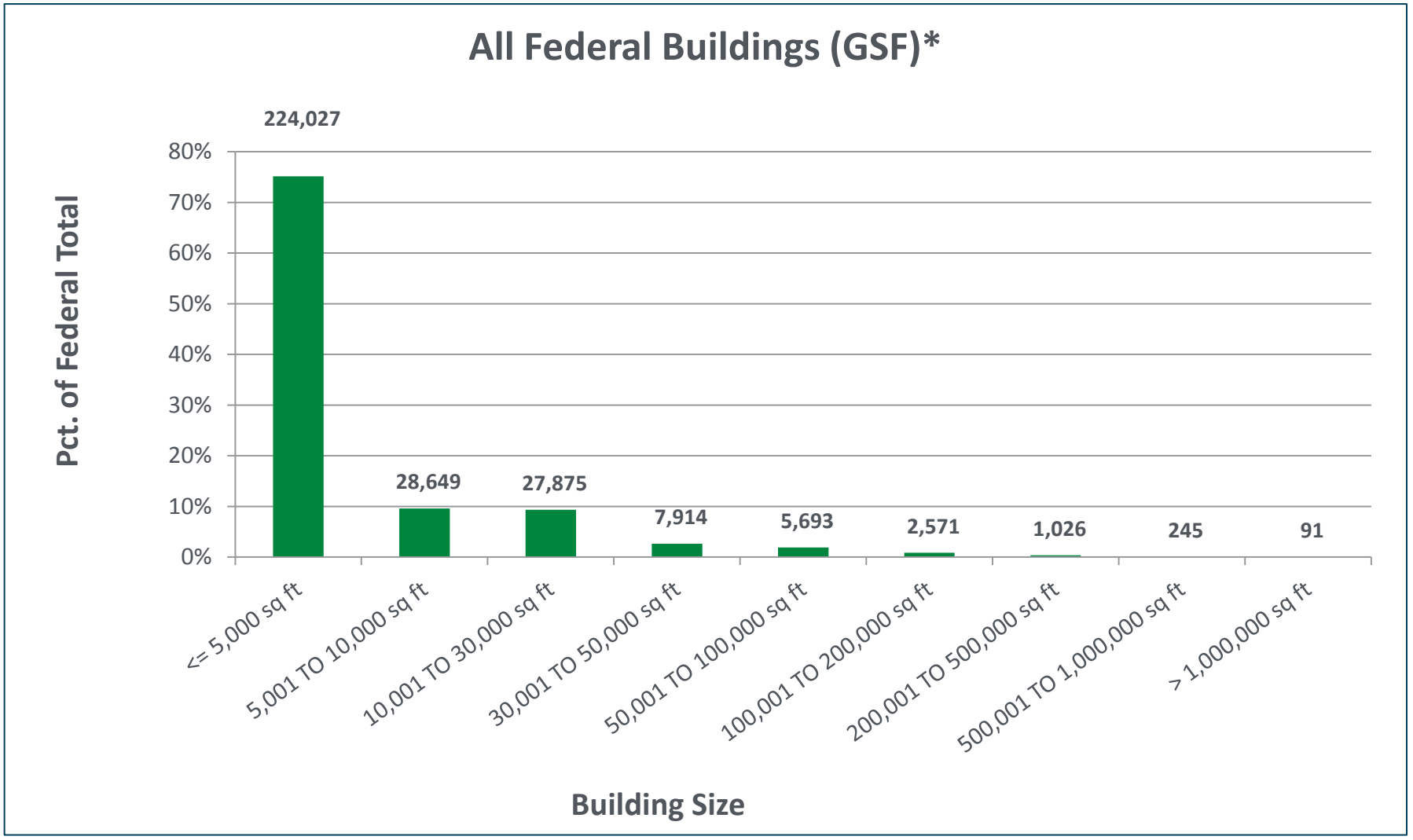
# ESPC ENABLE: Overview

- ESPC ENABLE is FEMPs new project-funding offering intended to fill existing program gaps
  - Specifically designed to support the needs of small Federal sites through a reduced ECM scope and streamlined process
  - Intended for facilities with buildings under 200,000 square feet (traditionally an underserved market)
  - Or, where ESPC ENABLE presents the best or only option for the agency to fund an efficiency project
- Officially launched in June 2012
  - Pilot projects underway with growing pipeline
  - FEMP offering technical and contracting resources for all projects (free of charge through FY13)

# ESPC ENABLE: Program Components

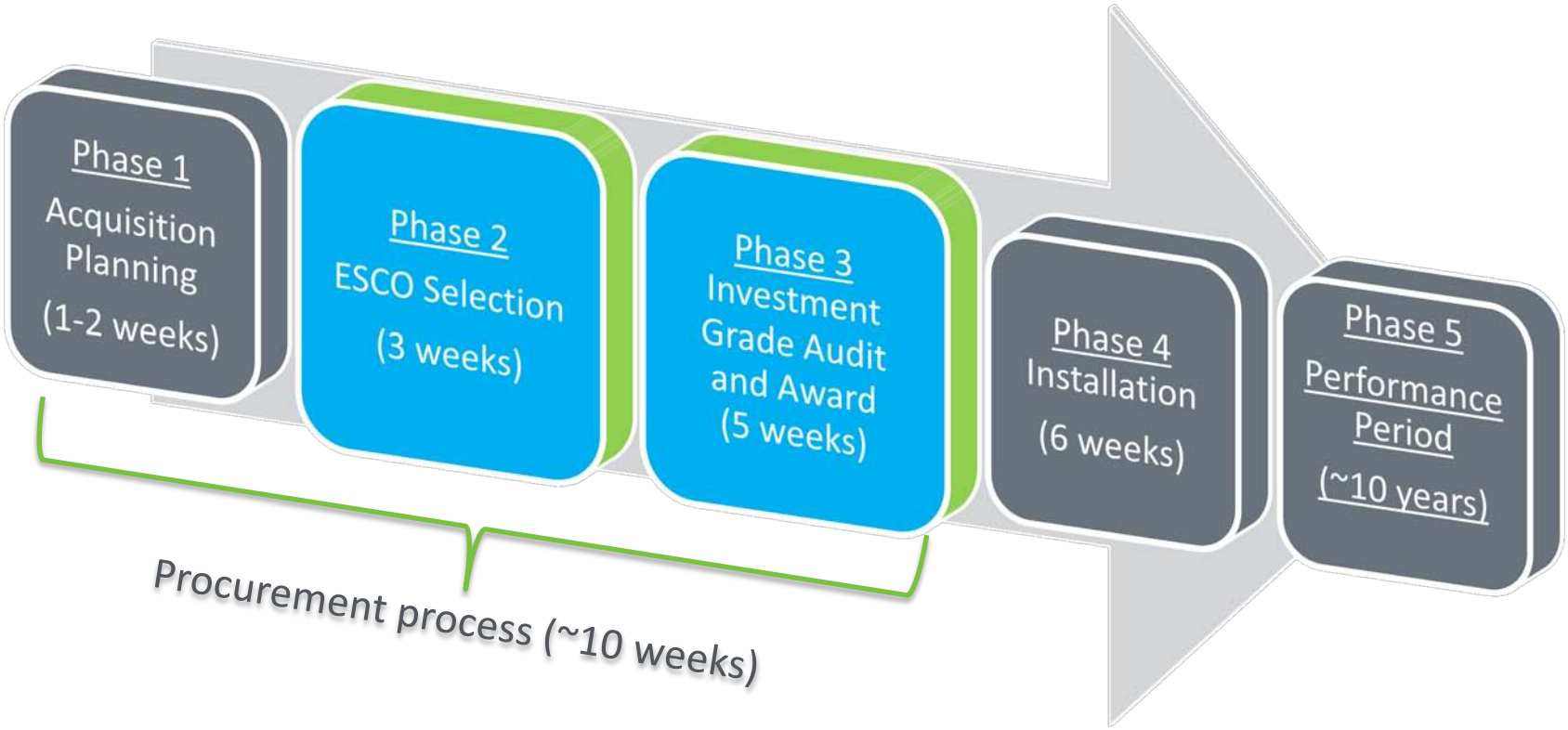
- **Guaranteed savings (option A), no up-front costs for Federal agencies**
- **Standardized and streamlined process** to quickly award projects and realize savings using GSA Schedule 84, SIN 246-53
- Targets **straight-forward ECMs** including lighting upgrades, water conservation, and basic HVAC controls
- **FEMP-provided tools and templates** assist agencies and ESCOs with project development and contracting
- Prescribed **basic measurement and verification (M&V)** for each ECM

# ENABLE Potential Market - Federal Government




*Data extracted from GSA Federal Real Property Profile (FRPP) 2011

# ESPC ENABLE: Procurement Process




- *Projects can be awarded in as little as 8 weeks from date of NOO release.*
- *Project can achieve energy/cost savings in less than 6 months.*

# Basic Concept of an ENABLE UESC

- There is no need for special authority or a new program
- Utilize streamlined selection procedures if there is more than one serving utility
- Utilize ENABLE IGA Tool to identify ECM's energy and cost savings
- Use outputs from ENABLE IGA Tool and utility's Technical Proposal as attachments to an Authorization for Energy Management Services under an existing GSA Areawide Contract to form UESC Task Order

# Proposed UESC ENABLE Process

# IGA Kickoff Meeting/Call

- Once utility is selected, agency should schedule a IGA Kickoff Meeting/Call (preferred)
- The agency should provide a draft Scope of Work (SOW) document defining the areas to be audited prior to the meeting/call
- ENABLE IGA is more like a Preliminary Assessment under a normal UESC
- Because the process is so simple it is likely that the utility would be willing to complete it at no risk or obligation to the agency

# IGA/Award: Site Visit

- Agency and utility hold brief site visit coordination meeting to finalize any logistical issues
- Utility performs the site audit to collect data and assess savings potential for the three ECMs
- Agency and utility hold site visit wrap-up meeting and discuss any follow up or action items required

# IGA/Award: IGA Software Tool

- Once the utility has conducted the site visit, utility enters data into the FEMP IGA Tool
- The tool will be used to identify pre- and post-retrofit conditions and estimate energy and cost savings for the project
- The IGA Tool has a separate module for each ECM category
- Tool auto-generates summary data tables and audit findings
- Tool outputs can form the basis for contract documents

# Audit Tool: Outputs

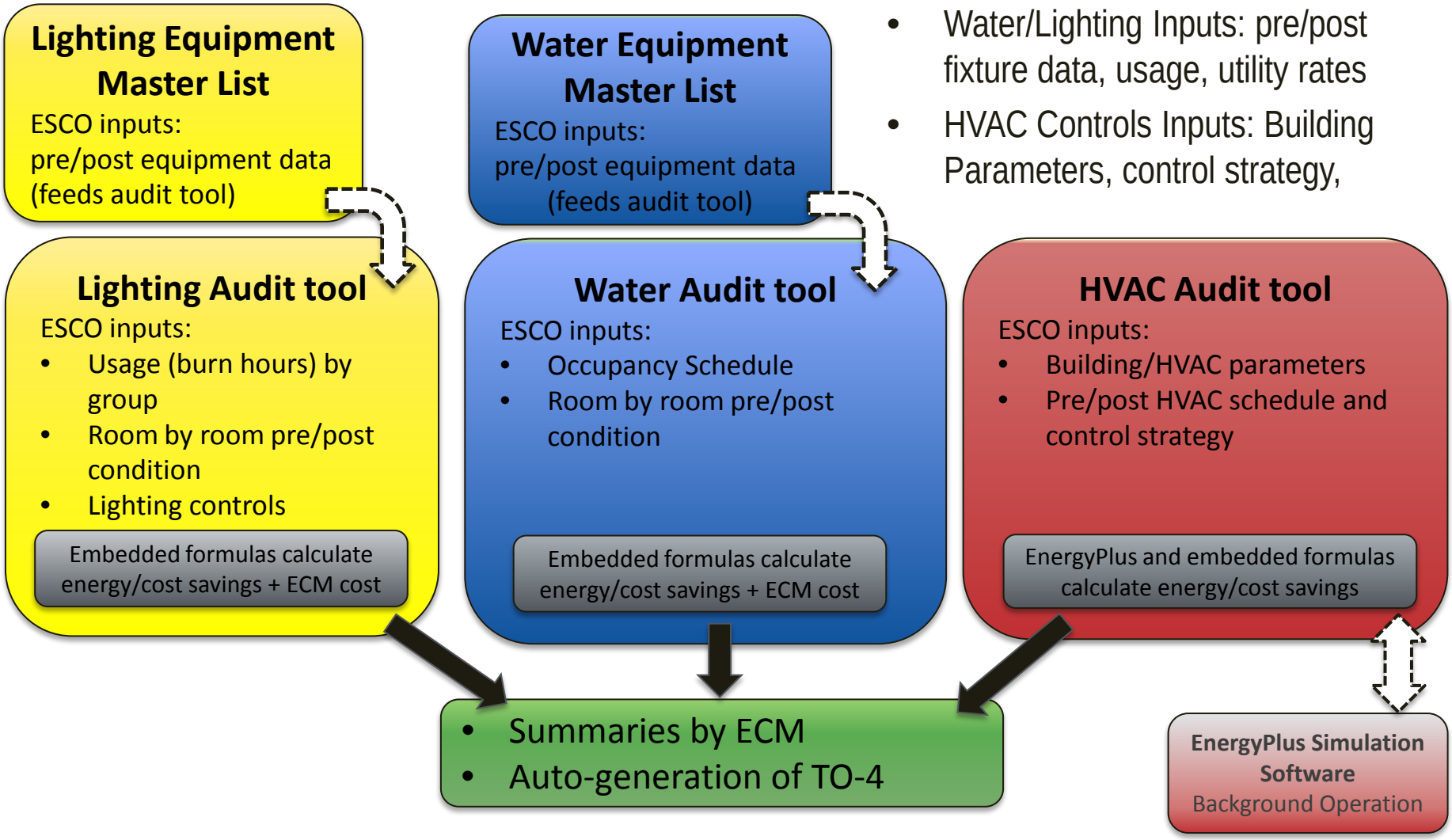
FEMP audit tool auto-generates several outputs for use in contractual documentation and agency review:

- Savings Summary Tables
- Retrofit Summary Tables
  - Lighting and Water fixture summaries by retrofit type, including quantities, and direct costs (unit/extended)
  - HVAC controls strategies by building
- Task Order Schedule 4 (TO-4)

Agency should review the outputs and provide any changes in project scope to utility before the utility prepares the Final Proposal

# IGA Tool Structure

- Excel based coupled w/EnergyPlus
- Water/Lighting Inputs: pre/post fixture data, usage, utility rates
- HVAC Controls Inputs: Building Parameters, control strategy,



# IGA Tool Outputs: Energy & Cost Savings Summary

ECM and Project Level energy and cost savings totals for use in:

- Final Proposal
- Post Installation Report
- Annual M&V Reports

***The following tables are for use in the Final Proposal (M&V Plan), Post Installation Report and Annual M&V Report as indicated***

**Proposed Annual Savings Summary**
**ALL ECMs**

*Table utilized in:*
*- **M&V Plan** (ref. M&V Template, Table 1-1)*
*- **Post Installation Report** (ref. M&V Report Outline Table 1)*
*- **Annual M&V Report** (ref. Annual Report Outline, Table 1)*

| ECM | Total energy savings (MMBtu/yr) | Electric energy savings (kWh/yr) | Electric demand savings (kW-yr)* | Natural gas savings (MMBtu/yr) | Water savings (gallons/yr) | Other energy savings (MMBtu/yr)** | Total energy & water cost savings, Year 1 ($/yr) | O&M cost savings, Year 1 ($/yr) | Total cost savings, Year 1 ($/yr) |
|---|---|---|---|---|---|---|---|---|---|
| 1-Lighting | 303 | 88,679 | 158 | 0 | 0 | | $9,362 | $0 | $9,362 |
| 2-Water | 12 | 0 | 0 | 12 | 1,732,029 | | $6,006 | $0 | $6,006 |
| 3-HVAC Controls | 0 | 0 | 0 | 0 | 0 | | $0 | $0 | $0 |
| **Total Savings** | **315** | **88,679** | **158** | **12** | **1,732,029** | **0** | **$15,368** | **$0** | **$15,368** |
| First Year Guaranteed Cost Savings: $0 | | | | | | | | | |

Notes

MMBtu = $10^6$ Btu = 293 kWh

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

KSF = $10^3$ square feet.

**If energy is reported in units other than MBtu, provide a conversion factor to MBtu for link to delivery order schedules (e.g. 0.004313 MMBtu / kWh).

# IGA Tool Outputs: ECM Expanded Summaries

**Lighting Retrofit Summary by Retrofit Code**

| | | | Unit | | | | Extended | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Post Retrofit Code | Description | Total Quantity | Unit Material Cost | Unit Labor Cost | Unit Disposal Cost | Total Unit Costs | Extended Material Costs | Extended Labor Costs | Extended Disposal Costs | Extended Incidental | Total Costs |
| ARETRO | Relamp and Reballast w (4) F28T8 Lamps & (1) Electronic Ballast | 3 | $41.89 | $32.64 | | $74.53 | $125.67 | $97.92 | | | $223.59 |
| AWNEW | New 4' Wrap Fixture w (3) F28T8 Lamps & (1) Electronic Ballast | 55 | $87.32 | $61.85 | | $149.17 | $4,802.60 | $3,401.75 | | | $8,204.35 |
| AINEW | 8' Industrial Fixture w/ (4) F28 T8 Lamps & (1) Electronic Ballasts | 3 | $41.89 | $61.85 | | $103.74 | $125.67 | $185.55 | | | $311.22 |
| CT8RETROFIT | Relamp and ballast w/ (2) F28T8 Lamps & (1) Electronic Ballast | 143 | $35.23 | $32.64 | | $67.87 | $5,037.89 | $4,667.52 | | | $9,705.41 |
| DWNEW | NEW 1'X4' Wrap Fixture w/ (2) FO28/841/XV/SS/ECO & (1) QTP2X32UNV/PSX | 102 | $84.39 | $61.85 | | $146.24 | $8,607.78 | $6,308.70 | | | $14,916.48 |
| ESNEW | NEW 1'X4' Strip Fixture w/ (2) FO28/841/XV/SS/ECO & (1) QTP2X32UNV/PSX | 14 | $39.46 | $61.85 | | $101.31 | $552.44 | $865.90 | | | $1,418.34 |

**HVAC Controls Summary**

| Building ID | Setback | Cooling Setback Temp | Heating Setback Temp | Cooling Setpoint Temp | Heating Setpoint Temp | Weekday Occupancy Start Time | Weekday Occupancy End Time | Weekend Occupancy | Weekend Occupancy Start Time | Weekend Occupancy End Time | Night Cycle | Demand Ventilation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Building-1 | No->Yes | N/A->80 | N/A->60 | 74->75 | 72->70 | 06:00->07:00 | 22:00->NC | No->NC | N/A->NC | N/A->NC | CycleOnAny->NC | No->NC |
| Building-2 | No->Yes | N/A->80 | N/A->60 | 74->75 | 72->70 | 06:00->07:00 | 22:00->NC | No->NC | N/A->NC | N/A->NC | CycleOnAny->NC | No->NC |
| Building-3 | No->Yes | N/A->80 | N/A->60 | 74->75 | 72->70 | 06:00->07:00 | 22:00->NC | No->NC | N/A->NC | N/A->NC | CycleOnAny->NC | No->NC |
| Building-4 | No->Yes | N/A->80 | N/A->60 | 74->75 | 72->70 | 06:00->07:00 | 22:00->NC | No->NC | N/A->NC | N/A->NC | CycleOnAny->NC | No->NC |

# IGA Tool Output: Financial Task Order Schedule (TO-4)

IGA tool auto-populates TO-4 (Energy and cost savings by ECM and technology category

**SCHEDULE TO-4**
**Task Order Performance First Year Estimated Annual Cost Savings, by Energy Conservation Measure and Technology Category**

| Project Site: | | Delivery Order No: | | Contractor Name: | | Project Square Footage (KSF): | |
|---|---|---|---|---|---|---|---|

| Tech Cat. | ECM No. | (a) ECM Energy Baseline (MMBTU/yr) | (b1) Electric Energy Savings (kWh/yr) | (b2) Electric energy Savings ($/yr) | (c1) Electric Demand Savings (kW/yr) | (c2) Electric Demand Savings ($/yr) | (d1) Natural Gas Savings (MMBTU/yr) | (d2) Natural Gas Savings ($/yr) | (f)=0.003413* b1+d1+e1 Total Energy Savings (MMBTU/yr) | (g)=b2+c2+d2 +e2 Total Energy Cost Savings ($/yr) | (i) Water Savings (1000 gal/yr) | (j) Water savings ($/yr) | (k) = (g)+(h)+(j) Estimated Annual Cost Savings ($/yr) | (l) Implementation Price ($) | (m)= (l) / (k) Simple Payback (yrs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | Lighting | 487 | 88,679 | $8,425 | 158 | $1,465 | 0 | $0 | 303 | $ 9,890 | | | $ 9,890 | $ 60,000 | 6.1 |
| 13 | Water | 44 | 0 | $0 | 0 | $0 | 12 | $117 | 12 | $ 117 | 1,732 | $5,889 | $ 6,006 | $ 40,000 | 6.7 |
| 3 | HVAC Cntrl | 4,276 | 0 | $26,683 | 0 | $0 | 128 | $1,922 | 128 | $ 28,605 | | | $ 28,605 | $ 10,000 | 0.3 |
| | | | | | | | | | | | | | | | |
| TOTAL | | 4,808 | 88,679 | $35,107 | 158 | $1,465 | 140 | $2,039 | 443 | $38,612 | 1,732 | 5,889 | $44,501 | $110,000 | 2.5 |

# Final Proposal

Once the final scope of the project has been determined the agency will request the utility to prepare the FP which would include:

- Utility Technical Proposal (derived from the SOW)
  - ECM descriptions
  - Measurement and Verification Plan
  - Management approach
- Price Proposal (TO Schedules) with financing if applicable

# IGA/Award: Award

Upon receipt and review of an acceptable Final Proposal the agency can make Task Order Award for Design and Installation.

The elements of the Award would be:

- An Executed Exhibit “C” Authorization for Energy Management Services with the following attached
  - Agency Scope of Work / Statement of Work
  - Technical Proposal
  - Price Proposal (TO Schedules)

# Installation, Performance Assurance and Acceptance

- Hold post-award conference call/meeting*
  - Establish functions and authority of government (i.e. COR/COTR)
  - installation schedule, access, outages, staging, etc
- ECMs installed according to Final Proposal plans and installation schedule
- ECMs commissioned per Cx & M&V plan* in Final Proposal
- ECMs are inspected by utility and agency COR/COTR
  - Punch list
- 30 day Performance Assurance Test Period
- Utility submits Post-Installation Cx & M&V Report*
- Project Acceptance Checklist*

* - Denotes FEMP template available

# Wrap-up/Key Points

- The ESPC Program has done a lot of work creating useful tools
- We should take advantage of them
- I have not fully hatched the idea of exactly how it will work
- I need your thoughts and input
- Hopefully we can develop templates to insert into the COs Guide
- The idea is quick easy projects at small sites so let's try to make it as simple as possible

# Question and Answer