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Energy Savings Performance Contract (ESPC)



CE PLAYBOOKS

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Table of Contents

Chapter 1	Introduction.....	4
1.1	Playbook Scope	4
1.1.1	Limitations	4
1.1.2	Applicability	4
Chapter 2	ESPC Background, Authority, Financing and Funding.....	5
2.1	ESPC Background	5
2.2	Authority	5
2.3	Financing ESPC's.....	6
2.3.1	Energy Cost Savings	6
2.3.2	Annual Reconciliation	8
2.3.3	Budgeting for ESPC Contracts	8
2.3.4	Buy-down	9
2.4	Funding Requirements.....	9
2.4.1	Type of Savings	9
2.4.2	Other Types of Savings (O&M)	10
2.4.3	Capital Funding Sources for ESPCs.....	10
2.4.4	FSRM Projects and Requirements	11
2.4.5	ERCIP Requirements	11
2.4.6	Additional Funding Rules	12
2.4.7	Interconnection Agreement & Costs	12
2.4.8	Buyout.....	13
2.5	Operation and Maintenance Related to the TO	13
2.6	Repair and Replacement Related to the TO	14
2.7	Pricing of TO Work	14
2.8	Equipment Ownership	15
2.9	Infrastructure Privatization.....	15
2.10	ESCO Quality Control.....	15
Chapter 3	ESPC Roles and Responsibilities	17
3.1	AFCEC/CND Roles and Responsibilities.....	17
3.2	PF Roles and Responsibilities	18
3.3	CO Roles and Responsibilities	18
3.4	DLA Energy Roles and Responsibilities (If selected as the acquisition agent)	18
3.5	HNC, United States Army Corps of Engineers (USACE) Roles and Responsibilities (If selected as the acquisition agent)	19
3.6	ESCO Roles and Responsibilities	19
3.7	Base Champion (BC) Roles and Responsibilities	20
3.8	Base COR Roles and Responsibilities	21
Chapter 4	ESPC Process	21
4.1	ESPC Initiation	22
4.2	Contracting Process	24
4.2.1.	DLA Energy Contracting Process	25



4.2.2.	USACE Contracting Process	29
Chapter 5	ESPC Post Award	33
5.1	Construction.....	33
5.2	Performance Period Management	35
Chapter 6	ESPC Business Practice	37
6.1	M&V Plan	37
6.2	Baseline Development	39
6.2.1.	Meter Plan	39
6.3	Commission Plan.....	40
6.4	Post Installation Savings Validation	41
6.5	Annual Reconciliation Plan (Audit of Savings)	41
Appendix A - Acronyms and Definitions.....		42
Appendix B - ESPC Acquisition Timeline.....		44
Appendix C - Risk & Responsibility Checklist.....		45
Appendix D - Risk & Responsibility Matrix (EXAMPLE)		48
Appendix E - AFCEC ESPC Development Checklist		49
Appendix F - ESPC Considerations for Base Champion		51
Appendix G - ESCO Engagement Guidance		53
Appendix H - ESPC Technology Categories and Associated ECMs.....		54
Appendix I - AFCEC Escalation Rate Guidance		57
Appendix J - ASD Policy Letter for Performance Contracts		58
Appendix K - Energy Management Systems Recommendation and Requirements		60
Appendix L - Master List of Links.....		63



Chapter 1 Introduction – Energy Savings Performance Contracts (ESPC)

1.1 Playbook Scope

The objective of the ESPC Playbook is to provide the parameters, requirements, and guidance used by the United States Air Force (AF) for implementing an ESPC. This Playbook replaces all previous versions of the AF ESPC Playbooks. This Playbook defines the ESPC program, primary roles and responsibilities, step-by-step instructions, job aids, and reference documents to ensure ESPC procedures are followed. Requirements in this ESPC Playbook are mandatory. Per the [Department of Air Force Instruction \(DAFI\) 90-1701, *Installation Energy and Water Management*](#), AFCEC serves as the central authority and execution agent for all AF ESPCs and UESC. AFCEC centrally manages and oversees all AF ESPC and UESC projects, to include providing reviews and approvals for all stages of the projects and maintaining responsibility for acquisition budgets, schedules, and compliance requirements. Job Aids, resources, and reference materials are provided digitally in links and modified as required by AFCEC/CND.

1.1.1 Limitations

This Playbook does not replace, supersede, or circumvent existing Department of Defense (DoD) or AF policy.

1.1.2 Applicability

This Playbook is written for the following personnel: Air Force Civil Engineer Center Program Development (AFCEC/CND); Base Champion (BC), Base Civil Engineers (BCE); Base Energy Managers (BEM); Base Financial Managers (BFM); Contracting Officers (CO); Resource Efficiency Managers (REM); Assistant Secretary of the Air Force Installations, Environment, and Energy (SAF/IE); Energy Services Company (ESCO) personnel; and Air Force Installation and Mission Support Center (AFIMSC) personnel.



Chapter 2 **ESPC Background, Authority, Financing, and Funding**

2.1 **ESPC Background**

The ESPC statutory authority allows the AF to implement infrastructure improvements without current year funds. An ESPC is a contract in which an ESCO designs, constructs, implements, operates, maintains, and arranges the necessary funding of improvements that reduce energy and water consumption and promotes the use of renewable energy technologies. ESPCs enable the AF to improve energy performance through a budget-neutral approach while addressing resiliency, aging infrastructure concerns, and reducing consumption.

ESPCs reduce energy consumption at an installation through improvements to infrastructure, facilities, and facility systems. ESPCs can be used to replace inefficient energy and water-consuming equipment, including Heating, Ventilation, Air Conditioning (HVAC), lighting, electrical power generation, renewable energy, etc. A complete listing of available technologies is provided in the technical categories section.

ESPCs can also be used to reduce process energy within buildings including, but not limited to, process equipment or research, development, test, and evaluation (RDT&E) equipment. Any initiative that results in a net decrease in future tangible energy or water costs can be considered for ESPC or other third-party financing options. Under an ESPC, the ESCO:

- a. Identifies the building and equipment energy savings potential.
- b. Finances the capital costs using private sector funding.
- c. Acquires, installs, operates, and maintains the equipment for the life of the contract.
- d. Guarantees savings for the life of the task order (TO).
- e. Provides annual measurement & verification (M&V) actions to confirm energy savings.

The ESCO receives a payment from the agency's utility service account based on meeting the guaranteed energy savings until the individual TO is paid off. The AF takes ownership of the equipment upon completion of installation/construction.

2.2 **Authority**

The following table lists the statutory authorities, Executive Orders (E.O.), directives, and policies that mandate and support the AF ESPC program:

Statutory Authorities, Executive Orders (E.O.), Directives, and Policies
Air Force Policy Directive (AFPD) 32-10, Installations and Facilities
Title 42, United States Code (U.S.C.), Section 8287, National Energy Conservation Policy Act
Title 10 U.S.C. 2911-13, Energy Performance Goals and Plans for Department of Defense
Title 42 U.S.C. 8253, Energy Policy Act of 1992



Statutory Authorities, Executive Orders (E.O.), Directives, and Policies
E.O. 14057 – Catalyzing Clean Energy Industries and Jobs Through Federal
Energy Policy Act of 2005
Title 10 Code of Federal Regulations (CFR) 436, Federal Energy Management and Planning Programs
Energy Independence and Security Act (EISA) of 2007

Table 1: Authority Documents Mandating and Supporting the AF ESPC Program

2.3 Financing ESPC's

The [National Energy Conservation Policy Act \(42 U.S. Code 8287\)](#) provides legislative authority for federal agencies to enter an ESPC, including:

- The AF can acquire contracts with ESCOs to obtain energy-conserving infrastructure improvements.
- ESCO contracts must guarantee savings, and overall utility costs to the installation cannot increase because of the contract.
- The savings generated by the infrastructure improvements must result from the ESCO's efforts and investment.
- The use of an ESPC requires a detailed understanding of its basic principles, how costs are assessed, and how risks are managed.

ESPC projects are funded solely from the cost savings they generate. All ESPC costs, including mid-contract replacement of capital equipment, are funded from tangible savings. An installation's post-ESPC utility costs (i.e., energy, water/wastewater, operations, and maintenance (O&M)) plus the cost of the ESPC project cannot exceed the budget costs prior to implementation of the ESPC project. Thus, the ESPC costs cannot exceed the tangible savings (i.e., energy and O&M) generated by the projects, nor may it negatively impact the Facilities Operations Account with added expenses (e.g., interconnect agreements, adding to privatized utility contract expense, increased O&M, etc.). The payment to the ESCO is contingent upon annual verification by the government that the guaranteed savings have been realized.

The ESCO is responsible for the design, acquisition, installation, Measurement and Verification (M&V), and maintenance of the project's equipment or systems that produce the savings. An ESPC requires the ESCO to guarantee the savings generated by and the operation of the installed equipment. This guarantee must be satisfied and verified at the acceptance of the equipment and revalidated annually throughout the life of the TO.

2.3.1 Energy Cost Savings

Energy Costs Savings can be one-time or recurring energy cost savings that can be utilized to fund an ESPC. An ESPC is budget neutral; actual funds need to be saved or generated to pay the ESCO. The funds can be generated from cancellation of vendor contracts, elimination/reduction in capital expenses (e.g., Air Logistics Centers payments to CE), or just utility savings. Installations should be aware that revectoring of resources does not generate



fiscal savings (e.g., ESPCs do not impact manpower, and thus manpower savings cannot be claimed). Types of cost savings that can be utilized include the following:

- a. Reductions in expenses (other than energy costs) related to energy-consuming equipment affecting capital expenses (e.g., Air Logistics Centers) and costs of existing vendor/service contracts. These types of expenses must be audited to determine validity, with auditing consisting of previous work orders, prior purchase orders, vendor contacts, etc. In addition, the reduction of expenses must provide tangible savings and identify the source of the funding that can be vectored to pay for the ESPC.
- b. Reduction in utility commodity consumption, in comparison to normalized baseline, for natural gas, electrical, water, sewer, propane, etc.

Certain risks are associated with implementing an ESPC for both the AF and the ESCO; therefore, it is essential the AF does not assume any of the ESCO's risks.

AF risks during the life of the TO	ESCO risks during the life of the TO
Utility rates	ECM performance
Hours of operations	ECM maintenance
Mission changes	Guaranteed savings

Table 2: ESPC Risks

The ESCO will provide a guarantee of energy savings to the AF and establish payment schedules reflecting this guarantee. The ESCO provides payment and savings values for each year of the TO. The actual payment to the ESCO is based on an agreed percentage of the calculated energy savings. The awarded TOs contain fixed price payment schedules, like utility bills, and are “must-pay” requirements that are programmed into the annual utility budget process.

Aggregate annual payments by the AF under an ESPC may not exceed the amount the agency would have paid for utilities, plus other expenses, without an ESPC during the TO term. ESPC costs can never exceed the savings. Forecasted energy costs and the discount rate (present value of future cash flows) are major factors in determining ESPC savings. [Title 10 CFR 436, *Federal Energy Management and Planning Programs*](#), provides detailed instructions for ESPCs, including the calculation of life cycle costs. Guidance from the Federal Energy Management Program (FEMP) states that the escalation rates for ESPCs are based on the Nominal Escalation Rate for each commodity as calculated by latest version of the National Institute for Standards and Technology (NIST) software program called the Energy Escalation Rate Calculator (EERC). ESPCs must use the direction provided in AFCEC Escalation Guidance in Appendix I for determining escalation rates per the EERC. The provisions in 10 CFR 436.14 are mandatory and failure to comply results in the contract deemed legally insufficient.



2.3.2 Annual Reconciliation

As part of the Investment Grade Audit (IGA), an M&V Plan is prepared by the ESCO for the AF to identify methodologies and performance assurance actions that are technically appropriate, economically viable, within the power of the ESCO to honor, and effective in identifying the actual energy savings generated by each ECM. The key component to any M&V plan is it must have a path that results in failure (e.g., savings not met); without such, the plan is invalid. Every effort should be made to minimize the extent and cost of performance assurance without sacrificing energy savings guarantees. After the ECM installation is complete, the responsible party inspects (e.g., Base HVAC shop, electrical shop, etc.) the installation in the presence of a Base Contracting Officer Representative (COR) to confirm the ECMs meet specifications and are performing per design and awarded TO. Any changes are recorded by Base COR and ESCO, and the energy savings are recalculated based on actual installation, with shortfalls in energy savings addressed by the ESCO. Additional guidance regarding baseline and M&V actions are provided in Section 6 of this playbook.

Commissioning is conducted as each system is installed, including equipment tests, validation of controls functions, and a trend run to include graph proofs of energy savings (i.e., EMCS control strategies). The results of these activities are included in a commissioning report documenting performance of the installed systems. The results of the commissioning report are used in companionship with post-installation measurements/metering data for comparison to the guaranteed savings set forth in the TO. The subsequent M&V activities determine whether the ECM is maintained at the parameters from the commissioning baseline, validating each ECM is performing its function and energy savings are being achieved. The M&V requirement is intended to provide documentation regarding the cost-effectiveness of the technologies employed.

Annual M&V reconciliation and reporting are required for an ESPC during the performance period. Verification of energy savings reconciliation must be accomplished for each awarded TO, annually. This requirement includes an approved M&V plan using, at a minimum, the current [International Performance Measurement and Verification Protocol \(IPMVP\)](#) at the time the TO is awarded. Metered savings are required when using option B or option C savings, with the determination of equipment/facility metering protocols as set forth in Section 6.0 during the annual reconciliation. Annually the ESCO will confirm the adequacy of maintenance and provide specific details of any deficiencies found ([See paragraph \(a\)\(2\)\(A\) of 42 U.S.C. 8287](#)). The BEM validates and witnesses that the ESCO annual reconciliation actions onsite follow the agreed-upon M&V plan per the TO. The annual M&V report must be provided to AFCEC/CND for validation. Usage of Option D is prohibited on AF third-party financed projects (e.g., UESC, ESPC).

2.3.3 Budgeting for ESPC Contracts

As part of the final submittal, the installation will receive a “PAYMENT, AMORTIZATION, AND TERMINATION LIABILITY SCHEDULE”, is often identified as TO-5A in the financial schedules. The schedule shall contain payment due date, interest, principal, balance, annual O&M and M&V costs, termination fees, and most importantly, the total annual government



payment. The annual payment must be budgeted as part of the installation's annual utility costs to AFIMSC. The installation will receive funds to pay this "must-pay" annual expense for the term of the contract. At award of the TO the Base COR shall engage with the Base Resource Manager to ensure ESPC payments are included in the annual Base budget (i.e., ExPlan).

If the installation obtained approval to utilize O&M dollars (i.e., funds other than utility dollars, [See Section 2.4](#)), those dollars are allocated from the budget identified in the agreement (e.g., Base O&M budget, ALC budget, etc.) on an annual basis. AFIMSC will not up-fund to cover these annual costs/savings from other funding sources, as claimed savings should be realized from the budget identified.

The installation is responsible for sending the funds at award and/or annually for project payments. Funds are normally transferred to the contracting agent (e.g., DLA-E or CENHC) via Military Interdepartmental Purchase Request (MIPR), which is completed by the installation. Base COR shall coordinate with Installation Financial Managers and Contracting Office on the MIPR process prior to award, to ensure proper engagement, and avoid delayed payments.

2.3.4 Buy-down

At award, ESPC costs may be partially funded to buy down part of the TO or a specific requirement (e.g., ERCIP, FSRM). These one-time funds should be put on contract at the time of award with payment to the ESCO at the time of acceptance of the project and commencement of the performance period. Buy-downs allow for a lower financed amount and shorter-term, thereby reducing interest costs over the term. If funds are used to buy down a portion of the TO at award, several steps are necessary:

- a. Funds must be identified as soon as possible during the development of the ESPC, and CE leadership must confirm the availability of the funds to the AFCEC/CND PMO. Additionally, the Contracting Agent may require the funds or fund assurance prior to letting the ESCO include the funds in the financial structure of the project.
- b. If funds are not available at the time of award, they can alternatively be applied to buy down of the principle during the performance period but would not be part of the financial structure of the TO (e.g., would result is buy down of principle).

2.4 Funding Requirements

2.4.1 Type of Savings

Cost savings which may be included in an ESPC include:

- a. Reduction in utility commodity consumption, in comparison to normalized baseline, for natural gas, electrical power, water, sewer, propane, etc. The utility savings must be tangible and rate structures such as CBL, WAPA, SWAPA, etc. shall be taken into consideration for the determination of the actual utility dollar savings.
- b. One-time energy-related cost savings resulting from avoided expenditures, because of the ESPC project. The savings must represent a project or opportunity with tangible funding source available to pay the ESPC bill.



- c. Demand-related savings, such as peak shaving.
- d. One-time or re-occurring utility rebates / incentives. As rebates / incentives are outside of the control of both the AF and often the ESCO. If the funds from the rebates / incentives are to be part of the long-term financial structure of the project, the ESCO must guarantee these dollars. If the ESCO does not take responsibility (e.g., guarantee) for the rebates / incentives, the funds can still be utilized in the project, but shall not be part of the project's financial structures and are used as buy down dollars when/if they become available. The AF shall not accept liability for funding rebates / incentives that are not under AF control / purview.

2.4.2 Other Types of Savings (O&M)

[Title 42 U.S.C. 8287](#) specifies that repayment of financed costs be made from funds available to a military department for the purchase of utility services. ESPC savings must be real (tangible) and verifiable, so the installation does not run the risk of a funding shortfall. Funding sources that encompass O&M-type savings or other Base level savings that have been found do not eliminate actual budgetary costs and place an undue burden on already reduced installation budgets, and O&M savings shall not be included in an ESPC. Civilian/Military personnel wages/costs are also not allowed as a savings mechanism for ESPC projects. Additionally, the revectoring of labor resources does not generate actual dollar savings and shall not be considered for savings.

2.4.3 Capital Funding Sources for ESPCs

Use caution if applying anticipated cost savings to the ESPC due to reduction in capital funds expenditure that result from the execution of the ESPC (Example: Air Logistics Centers (ALC) expenditures vectored to Base CE that are now part of the ESPC scope). The costs/savings associated with these actions require validation prior to consideration in the project. Historical data (e.g., work orders) may not be able to back up expenditures, and the costs/savings must be documented as a future budgeted expense that is being eliminated that can now be moved to the ESPC. If the usage of these capital type funding is considered, the following protocols must be adhered too also.

- a. Base MSG leadership and Agency providing funding (if different) will engage in a signed agreement detailing the amount, term, and validation of the savings, along with COAs analysis regarding the proposed scope/project impact. Identification of the availability of funding either one time or for the term of the contract will be included. The signed agreement must be submitted to AFCEC/CND PMO.
- b. AFCEC/CND PMO will review signed agreement for approval or denial. The review will include if the savings have been validated at tangible, level of risk acceptable/appropriate in regard to the proposed scope that would be achieved, and COAs presented and reasonable.
- c. Upon AFCEC/CND PMO approval, then AFCEC/CC will be engaged for comment and approval or denial on the basis that the additional funding is warranted and an acceptable risk to the AF.

Prior to consideration of other funding sources, the Base shall coordinate with AFCEC/CND. Any funding other than utility dollar funding requires CO approval prior to consideration for



usage in the ESPC project. The ESCO shall not consider or include other cost savings until authorized by the CO, as doing so can provide unwarranted expectations. If these expenditures are included as part of the annual payment structure in the ESPC (versus a one-time payment), they become a “must-pay” bill from the appropriate funding account, not the utility account.

2.4.4 FSRM Projects and Requirements

FSRM Projects that have Construction Task Ordering (CTO) funding authority may be included within an ESPC. Refer to the most current *AFCAMP Business Rules and Scoring Guidance* on the AFCEC CE website regarding FSRM projects. The savings generated by the FSRM project, executed by the ESCO, can be vectored into the ESPC for usage in funding of additional scope.

Optimally the FSRM project and ESPC are awarded in the same fiscal year, though the FSRM can be awarded ahead of the ESPC. If the FSRM project is awarded post ESPC award, the inclusion of the energy savings from the FSRM may not be financially optimal within the ESPC (i.e. require rework of project financials / interest rate). The identification and inclusion of an FSRM project into an ESPC must be early in the project development, preferably as part of the PA, as it will affect the financial structure of the project. The Base CE leadership must provide written concurrence to AFCEC/CND PMO that the selected FSRM project(s) are to be included in the ESPC project. Energy savings from the FSRM project can only be captured within the ESPC if the equipment is installed by the ESCO and the ESCO remains responsible for the performance and savings.

Once the FSRM project is selected for inclusion, the Base shall follow the protocols set out in the AFCAMP business rules (e.g., adjust Time on Target (ToT)) to align with the ESPC development schedule. As part of the IGA submission, the ESCO will provide competitive subcontractor bids and costs for the scope of work for the identified FSRM project for usage in the Request for Fund (RFF) process. Upon receipt of funds, the Base must MIPR the funds to the Procurement CO to enable award as part of the ESPC. The Base CE should engage prior to with the Base FM and Contracting Office to determine requirements to ensure the MIPR is not delayed.

As part of including an FSRM or other funded project(s) in an ESPC, the Base shall not share [DD Form 1391](#)'s or other budgeting documentation regarding the projects with the ESCO. As part of IGA, the ESCO must provide the AF competitive pricing for the scope of work defined in the funded project, allowing the AF to request the funds associated with the requirement. Most often the pricing of these type projects are included as an appendix in the IGA and include necessary back-up pricing documentation.

2.4.5 Energy Resiliency & Conservation Investment Program (ERCIP) Requirements

ERCIP is a MILCON funded program used to implement resiliency initiatives at federal installations. Usage of ERCIP funding is now authorized in conjunction with third-party financed projects. The noted benefit to inclusion of an ERCIP requirement within an ESPC is that savings generated in the ESPC can provide for the ESCO O&M of the ERCIP installed equipment or allow funding of additional scope.



Installations shall follow the ERCIP business rules for these actions. If an ERCIP opportunity has been identified for inclusion in the ESPC project, then the installation should engage with OEA and AFCEC/CND on the proposed resiliency opportunity. Often an ERCIP opportunity is identified by the Installation and OEA prior to the start of the ESPC, and becomes the defining scope for the project. As part of including an ERCIP requirement in the ESPC, the installation shall not share DD Form 1391's or other budgeting documentation regarding the projects with the ESCO. The ESCO must provide the AF with separate competitive pricing for the scope of work defined in the funded project.

2.4.6 Additional Funding Rules

Usage of other funding sources outside of Base CE has the following additional funding rules, which apply:

- a. Military Construction (MILCON) funds cannot be applied to an ESPC, except for ERCIP. MILCON projects cannot be accomplished under an ESPC. Use of MILCON funds for a purpose outside appropriated use would result in a violation of the [Purpose Act \(31 U.S.C. 1301 - Application\)](#).
- b. Non-appropriated Fund (NAF) functions may be authorized to use appropriated O&M funds. NAF Category C ECMs must use savings only from other NAF ECMs to avoid subsidizing or being subsidized by funds other than NAF-funded sources. All actions affecting funding must be coordinated with the NAF funds manager. The NAF funding and payments are self-funding and tracked on separate financial schedules within the ESPC TO. It is required that prior to the inclusion of NAF facilities a Memorandum of Agreement (MOA) is in place and signed by NAF leadership, agreeing to fund their portion of the ESPC. An MOA must be signed and enforced prior to any NAF facilities being included in any project actions.
- c. Military Family Housing (MFH) funds are appropriated separately and used specifically for MFH purposes. MFH ECMs must use savings only from other MFH ECMs to avoid subsidizing or being subsidized by funds other than MFH-funded sources. Use of MFH funds for a purpose outside their appropriated use would result in a violation of the Purpose Act (31 U.S.C. 1301). The MFH funding and payments are self-funding and tracked on separate financial schedules within the ESPC TO. An MOA must be signed and enforced prior to any MFH facilities being included in any project actions.
- d. Reimbursable customers require separate accounting procedures to ensure that adequate payments are being applied to their accounts. Reimbursable customers must agree to an MOA or equal to provide payments for the term of the contract. Funding and payments are self-funding and tracked on separate financial schedules within the ESPC TO. An MOA must be signed and enforced prior to any reimbursable facilities being included in any project actions.

2.4.7 Interconnection Agreement & Costs

On Base generation assets (e.g., solar PV, prime power generators, cogeneration, etc.) require interconnection agreements and actions with the serving utility. The interconnection agreement can require engineering, design, studies, and reports (e.g., load



study, power study, etc.), in addition to physical upgrades of infrastructure (e.g., switchgear, transformers, etc.). The costs for any actions regarding the interconnection agreement shall be burdened within the finances of the ESPC, and not borne by the AF to fund separately. The full scope/requirements of the interconnection agreement may not be known at the time of award. Considering this, the ESCO may request to place an estimated amount in escrow within the TO. The amount in escrow shall be utilized as needed to execute the interconnection actions, per agreement of the CO. At the conclusion of construction actions, any unused portion of the escrow account would be used as a buy down on the project or address outstanding costs/modification. Due to the AF having the contract with the utility requiring the interconnection, any interconnect discussions with the serving utility shall only occur in partnership with the AF.

2.4.8 Buy-out

Facilities under an ESPC may require a buy-out before non-ESPC work is conducted (e.g., renovation, demolitions, etc.). Government actions (post-award) on a building that will impact, alter, or dismantle ESPC material or equipment, rendering that part of the ESPC contract invalid, require buy-out of the applicable portion of the contract. Examples include demolition, upgrades, construction, and privatization. Whenever possible, buy-out funds are programmed with the same fund source as the project altering the condition of the facility. Any demolition, upgrades, construction, or privatization are identified to the ESPC CO for evaluating and determining appropriate contract action.

If during the performance period the installation determines that part or all the TO is desired to be bought out, then the following steps are required.

- a. Economics must be considered (e.g., is it a good deal for the AF?). Contact AFCEC and AFIMSC to receive guidance on the current business rules for economic analysis of a buy-out. Often buy-out dollars are appropriated through AFIMSC. Generally, the economic analysis will consider the life expectancy of the equipment being considered for a buy-out.
- b. Actual buy-out costs, including prepayment penalties, which will be identified/provided by the ESCO per a request from the CO.

2.5 Operation and Maintenance Related to the TO

The ESCO is responsible for all costs relating to the energy savings guarantee, including labor, supplies, parts, and materials for the TO term. In addition, ESCOs are responsible for all maintenance and repairs of installed equipment/systems during the duration of the TO. All O&MRR is an ESCO responsibility of installed ECMs and is to be conducted by the ESCO for the TO term per OSD policy (Appendix J). The installation can request deviation and take on O&M via a signed letter/memo from the Base MSG Commander to AFCEC. Installation may only take responsibility for O&M for energy-related equipment (including computer software systems) where there is no connection between ECM performance and associated ECM maintenance (e.g., lighting has little to no required maintenance). The installation shall not take on O&M where the installation actions are directly related to generation of savings and/or ensuring of performance of ECMs (e.g., deploying generators in regard to demand response). Depending on the risk nature of the ECM and O&M tasks AFCEC can allow or deny the request for deviation. The BC should coordinate with AFCEC/CND on any proposed O&M actions



prior to engagement with Base leadership. The risk and responsibility matrix ([Appendix C](#) and [Appendix D](#)) in the TO defines ESCO and Installation responsibilities. In facilities and areas where ESCO and installation equipment operate, a clear line of demarcation needs to be identified in the IGA/TO. ECMs requiring increased manpower or technologies outside of the current AF training regime, such as Cogeneration, Solar PV, Prime Power, etc., shall not have their O&M responsibilities transferred to the AF.

In simple cases (such as lighting) and only after approval by AFCEC, the installation may conduct maintenance; however, the installation must carefully consider the consequences if it is unable to perform in accordance with the maintenance schedule. Since the ESCO is ultimately responsible, the ESCO determines if the government is meeting the TO requirements. If the installation fails to perform proper maintenance, the ESCO may take over the maintenance and charge the installation for performance. This requires modifying the TO, reworking the TO's financial provisions, and possibly extending the TO's term length or a buyout if the TO term cannot be extended. When the installation assumes maintenance, the ESCO provides a detailed O&M schedule reflecting when, how often, and by whom the maintenance is to be performed and is detailed in the IGA report.

If O&M responsibility transfer is approved by Installation MSG leadership and AFCEC/CND, the installation may require the ESCO to provide all parts and materials needed to accomplish O&M tasks defined in the TO. All parts and materials required to maintain and repair an ECM must be paid from or captured from savings within the ESPC.

Additionally, since all costs must be accounted for, the estimated cost of the ESCO performing the maintenance, repair, and replacement shall be captured in the IGA proposal and reflected in the cost analysis and financial schedules, which are provided on the TO-3 schedule.

2.6 Repair and Replacement Related to the TO

All Repair and Replacement (R&R) is an ESCO responsibility of installed ECMs and is to be conducted by the ESCO for the TO term. The ESCO may address R&R by providing the installation a certain percentage of bench stock (e.g., replacement light fixtures) to allow execution of warranty actions and general repair/replacement over the life cycle, if the Base has assumed part or all of the O&M. The responsibility for storage of bench stock and/or surplus material needs to be clearly defined in the TO. The installation can request deviation and take on R&R via a signed letter/memo from the Base MSG Commander to AFCEC, the R&R request can be part of the same letter for the O&M. Depending on the risk nature of the ECM and R&R tasks, AFCEC can allow or deny the request for deviation. The TO defines ESCO and Base O&M responsibilities. The final disposition of R&R takes into the estimated life cycle of the proposed ECMs and cost/risk associated with the R&R.

2.7 Pricing of TO Work

As part of the IGA submission, the ESCO provides detailed supporting documentation to determine price reasonableness. ESCO provides firm fix pricing for each ECM and identifies all major costs including, but not limited to:

- Labor
- Design
- Maintenance
- Repair



- Equipment & Parts
- Overhead and profit (OH&P)
- Travel
- M&V
- Competitive Subcontractor Quotes

The government prepares an independent estimate. ESCO contingencies are clearly identified and negotiated for each ECM. Contingency costs mitigate a project's risk, which is a factor in the profit negotiated. Refer to the [FAR 31.205-7, Contingencies for Additional Information](#).

Note: Contingency costs are generally not allowed. The final negotiated savings and costs must be applied to the ESPC contract.

2.8 Equipment Ownership

Generally, the AF owns the equipment post-construction and must update real property records to show ownership of the utility installed equipment. The ESCO is required to provide to the AF, prior to contract completion, O&M manuals, maintenance training, and the [DD Form 1354, Material Inspection and Receiving Report](#). On rare occasions, due to taxes and/or rebates, the ESCO may retain ownership post-construction for some pre-designated time within the TO. In either case, the ownership determination is defined and agreed within the TO.

The ESCO shall engage with the Base COR to determine the DD Form 1354 requirements associated with installed ECMs.

2.9 Infrastructure Privatization

Any utility system or family housing being considered for privatization is not included in ESPC efforts. "Any utility system" is defined as infrastructure outside the 1.5-meter (5-foot) line of the using facility and includes production and distribution assets.

If it is necessary for the ECMs to interact with a privatized utility system, the ESCO must identify this early in the development of the IGA. The ESCO works with the BC to engage with the appropriate Base personnel and the Utility Privatization (UP) Contractor. If the ESPC project requires connection to or modification of the UP-contractor's system, these costs are included within the ESPC and shall not be differed to the UP Contract. The IGA must clearly define the work to be executed on the UP system to ensure the proper AF UP personnel can account for modification to the UP system to avoid the AF being double charged for the efforts. Often the most appropriate methodology to modify a UP system is for the ESCO to contract directly with the UP Contractor (e.g., the UP contractor acts a subcontractor to the ESCO) to implement the modifications and conduct O&M. Arrangements for any modification, operations, maintenance, repair, or replacement of the UP system must be clearly defined in the IGA and costs incurred included in the IGA and subsequent TO. The ESCO may not represent the government to negotiations/discussions with Installation's utility company or the UP contractor. The ESCO requests meetings and correspondence with the Base's utility companies and UP contractor via the BC and coordination with AFCEC/CND and the CO.

If the ECM contains elements that interact or are part of a Base's utility system and that utility system becomes privatized, then the installation shall engage with the UP CO, ESPC CO,



AFCEC/CND, and AFCEC/CI to ensure the proper steps are taken to buy out (if necessary) the ESPC portion and convey to the AF.

2.10 ESCO Quality Control

The AF requires ESCOs to provide consistency in submittals, including all parts of the PA, IGA, and construction actions. Inaccurate, incomplete, or inconsistent information provided in submittals from ESCOs results in unnecessary extensions or delays in ESPC projects. ESCOs need to ensure they have the proper quality controls in place and must describe their quality assurance process within each ESCO submittal during the ESPC process. An often-notable impact to the ESCO QC is the hand-off from the ESCO development team to the construction team. Often this results in many knowledge gaps and has led to both AF and ESCO delays during construction. The ESCO is to ensure the adequate transition of team members during the execution of projects.

Another common impact is the lack of in-house ESCO technical capabilities for certain technologies and thus relying solely on vendor/subcontractor for technical resources. If an ESCO identifies a knowledge gap, it may be warranted for the ESCO to obtain an agreement with a third-party engineering/technology firm to conduct QC to protect the ESCO and AF.



Chapter 3 ESPC Roles and Responsibilities

This chapter provides an in-depth explanation of the roles and responsibilities associated with the ESPC process.

3.1 AFCEC/CND Roles and Responsibilities

As part of the execution of an ESPC, AFCEC/CND has the following roles and responsibilities.

- a. Serves as the AF Centralized ESPC Development & Execution Office and centrally manages all AF ESPCs.
- b. Executes the ESPC requirement once transitioned from OEA to AFCEC/CND for execution.
- c. Provides initial vetting, approves each stage of project development prior to moving to the next phase/stage, manages the evaluation process, and assists installations in the development of the ESPC project through completion of the TO term. Provides technical review and approval of all ESPC projects.
- d. Designates, coordinates, and supports the contracting agent. Validates installation acquisition data package, gathers stakeholder concurrence, and directs contract authority regarding contractual execution.
- e. Develops ESPC procedures/guidance and provides ESPC training to the appropriate installation personnel. AFCEC, to some extent, follows the general guidelines of the [Department of Energy \(DoE\) Federal Energy Management Program \(FEMP\) ESPC program](#) but has default protocols that are in the best interest of the AF.
- f. Acts as the center of expertise for third-party financed contracts, specifically UESC/ESPC contracts. Provides tools and expertise to assist in implementing an ESPC. It is the central clearinghouse for ESPC lessons learned.
- g. Maintains oversight and compliance with AF policies and interprets guidance for the installation's ESPC program.
- h. Reviews and approves technical aspects of the annual M&V reports.
- i. Provides all required reporting of project data and metrics to SAF and OSD.
- j. Ensures all ESPC project scope aligns with SAF direction and intent.
- k. AFCEC provides project managers for each individual ESPC project, along with FEMP-approved Project Facilitator (PF), to oversee the project schedule and timeline, and coordinate with CO/ESCO/COTRs.
- l. Develops ESPC procedures and guidance. Provides training on using and implementing the ESPC to the CO, BEM, Base financial manager, and other Base representatives as necessary.
- m. Assists installations with developing the ESPC project through award and completion of TO terms; evaluates proposals, provides vetting review, and approves each stage of project development. Reviews and provides comments and guidance on submissions from the ESCOs, including PAs, IGAs, Request for information (RFIs), and other documents. Provides access to AFCEC/CO engineering subject matter experts (SMEs).
- n. Provides M&V expertise and support during development, commissioning, and annual M&V reports.
- o. Determines if support services are needed after a proposal is complete. Refer to the [FEMP Support Services](#) job aid for more information about available services.

3.2 PF Roles and Responsibilities (AFCEC/CND provides PF)



- a. Utilizes the [FEMP ESPC Project Development Resource Guide](#), which charts the ESPC process, providing project development support to agencies developing ESPC projects using the [DoE Indefinite Delivery/Indefinite Quantity \(IDIQ\) ESPC](#).
- b. The guide outlines resources that PFs are required to use in the delivery of project development services and provides project documentation templates.

Note: ESPC projects are required to work with a FEMP-approved federal PF. PFs are experienced, unbiased advisors who guide the agency acquisition team through the ESPC process. AFCEC/CND will provide their own DoE-approved PFs at no cost to the project.

3.3 CO Roles and Responsibilities

As part of the execution of an ESPC, the Contracting Officer has the following roles and responsibilities:

- a. Overall responsibility to ensure that ESPC projects serve the best interests of the AF and are consistent with the terms and conditions of the ESPC contracts, legislation, and regulations, along with OSD and AF leadership guidance and intent.
- b. Awards and administers all issued ESPC TOs following AFCEC/CND technical review and approval and authorization.
- c. Along with AFCEC/CND, the Contracting Agent assembles the ESPC team and serves as co-chairperson for all meetings with the ESCO.
- d. Performs analysis of all construction costs to determine that all costs are realistic, fair, and reasonable for the work to be conducted.
- e. Appoints a Base COR to act as a liaison between the ESCO and the CO.
- f. Provides the total contract cost for each phase of an ESPC and a final signed copy of the TO AFCEC/CND.

3.4 DLA Energy Roles and Responsibilities (If selected as the acquisition agent)

- a. Overall responsibility to ensure ESPC projects serve the best interests of the Federal Government and are consistent with the terms and conditions of the ESPC contracts, legislation, and regulations.
- b. Performs all pre-award acquisition functions.
- c. Conducts acquisition actions.
 - 1. Issues Notice of Opportunity (NoO) at the start of acquisition actions.
 - 2. Issue ESCO down select and initiation of Preliminary Assessment (PA).
 - 3. Executes Notice of Intent to Award (NOITA) directing ESCO to start IGA.
 - 4. Reviews IGA pricing and negotiates contract costs.
 - 5. Awards ESPC TOs.
 - 6. Conducts contracting actions during the acquisition, implementation, and performance period of the TO.



3.5 HNC, United States Army Corps of Engineers (USACE) Roles and Responsibilities (If selected as the acquisition agent)

- a. Overall responsibility to ensure ESPC projects serve the best interests of the Federal Government and are consistent with the terms and conditions of the ESPC contracts, legislation, and regulations.
- b. Performs all pre-award acquisition functions.
- c. Conducts acquisition actions.
 1. Issues RFP at start of acquisition actions.
 2. Participates/guides ESCO site walk associated with RFP.
 3. Issue ESCO down select and initiation of Preliminary Assessment (PA).
 4. Executes Notice of Intent to Award (NOITA) directing ESCO to start IGA.
 5. Reviews IGA pricing and negotiates contract costs.
 6. Awards ESPC TOs.
 7. Conducts contracting actions during the acquisition and implementation period.

Note: Can provide contracting actions during the performance period if funded by the Base. AFCEC/CND will fund USACE during the acquisition and implementation period.

3.6 ESCO Roles and Responsibilities

As part of the execution of an ESPC, the ESCO has the following roles and responsibilities:

- a. Responds to Request for Preliminary Assessment (RFPA) or NoO for a down select in execution of ESPC.
- b. Develops and submits a PA.
- c. Conducts an IGA, including the necessary due diligence to provide a comprehensive executable project.
- d. Collects and documents the meter data and ensures the data adequately defines the baseline per AF guidance requirements. Simulation models (e.g., eQuest, Trane Trace, etc.) are not acceptable baselining tools. The baseline must be based on metered data, and AF must be able to validate (e.g., spreadsheets).
- e. Develops and provides savings calculations for ECMs, with documentation of the calculations for validation by AF (e.g., Option A facilities).
- f. Obtains competitive pricing for implementation for submission of firm fixed price proposal.
- g. Obtains/provides funding for energy reduction project(s).
- h. Provides savings guarantee that the ECM systems installed will provide tangible savings.
- i. Implements the ESPC project, including purchasing equipment, installing equipment, and overseeing and completing construction during projects.
- j. As part of IGA, develops a standalone M&V Plan in accordance with the ESPC Playbook.
- k. Annual inspection and development of the M&V report verifying meter and data collection per the awarded M&V plan to ensure guaranteed savings and performance of each installed ECM.
- l. Provides and follows the O&MRR based on the risk and responsibility matrix set forth in the IGA and codified in the awarded TO.
- m. Provides a project that complies with all AFCEC and AF requirements and guidance (e.g.,



UFCs, AFIs, Playbooks, etc.).

- n. Ensures all project actions are coordinated in conjunction with AFCEC and the Contracting Officer.
- o. Utilizing existing data sources (e.g., EMCS front end) to obtain current failure points and system status in relation for usage in the development of deficiency lists, operational effect on savings, and applicability of proposed ECMs (e.g., will it work with existing system conditions).

3.7 Base Champion (BC) Roles and Responsibilities

- a. The Base Champion (BC) will work with AFCEC/CND to determine the contracting office for execution of the ESPC. The Defense Logistics Agency-Energy (DLA-Energy) and U.S. Army Corp of Engineers Huntsville (CEHNC) are the execution contracting offices utilized for all AF ESPCs, due to having resources specialized in third-party execution.
- b. Works with AFCEC/CND and Contracting office to implement the ESPC program. Compiles and provides required project documentation, including site data packages and evaluation criteria to the AFCEC/CND and CO. Refer to ESPC Considerations for the BC ([Appendix F](#)) for more information.
- c. Completes the ESPC training available on the FEMP web page or in person before embarking on the implementation of an ESPC. Additionally, the BC shall engage with Base personnel (e.g., BEM, Base financial managers, etc.) associated with the ESPC project to receive training for the understanding of the AF and Installation's responsibilities with regards to an ESPC project.
- d. Provides onsite project management, support, and coordination during the ESCO's development of the PA/IGA (FS).
- e. Ensures that AFCEC is coordinated with on project scoping, savings, M&V, and other pertinent actions.
- f. Reviews and provides recommendations on RFIs and submittals to the CO during the PA/IGA development.
- g. Coordinates with the Base ISSO/ISSM to provide requirements to the ESCO to ensure compliance with the AF cybersecurity protocols.
- h. Reviews and address the O&MRR risk and responsibility matrix ([Appendix C](#) & [Appendix D](#)) set forth in the IGA by coordinating with local Base entities (e.g., Base CE Shops) to ensure alignment with Base resources and capabilities.
- i. Engagement with Base leadership (e.g., MSG Commander) for agreement/signature if choosing to adopt OMR&R of select ECMs being installed as part of the project. AFCEC/CND and AFCEC/CC must also concur with the responsibilities that the Base is undertaking in the contract. The Base's responsibilities will be codified in the awarded TO.
- j. Fulfills the GOV role for witnessing of energy measurements during the IGA for development of baseline and during performance period M&V.
- k. Determines if other funding sources such as FSRM are available and offer more cost-effective execution through the ESPC.
- l. Ensures the CO is notified of mission changes, facility modifications, or demolition.
- m. Acts as a point of contact to allow the ESCO to engage with facility managers, Base CE shops, tenants, and other Base agencies/individuals that would provide pertinent data, such as



- facility problems, HVAC conditions, future facility plans, etc.
- n. Recommends COR to CO for implementation portion of ESPC project.
- o. Engagement with Base leadership (e.g., Mission Support Group (MSG) Commander) for agreement/signature if choosing to proceed with IGA and for final award of the TO.
- p. Engagement with Base leadership (e.g., MSG Commander) for agreement/signature for cancellation of the project after start of the IGA per [DAFI 90-1701](#).
- q. Engagement with Base FM and Contracting on the MIPR process to ensure requirements can be met to provide funding as required to DLA or USACE.

3.8 Base COR Roles and Responsibilities

- a. Designated by Base and appointed by the CO prior to award of the TO and is the onsite technical representative for CO during design/construction.
- b. Acts as the COR during the design and construction action. Assists the CO in ensuring the ESCO company complies with all requirements for the term of the TO. Conducts onsite project management, oversight, inspection during construction and installation. Reviews and coordinates all deliverables and provides recommendations on submittals to the CO.
- c. Coordinates with Base entities (e.g., Base Civil Engineers, Base CE Shops) for comment and review of designs, submittals, etc.
- d. Provides onsite support and coordination during the ESCO's construction. Coordinates with the Base ISSO/ISSM to ensure actions taken by the ESCO are in compliance with the AF cybersecurity protocols.
- e. Coordinates Base provided power, water, sewer, etc., during ESPC construction.
- f. Coordinates laydown yard for ESCO during construction and required space during performance period.
- g. Fulfills the role of the government witnessing during ESCO commissioning of ECMs.
- h. Identifies and supports project goals and development efforts.
- i. Evaluates and documents mission changes, facility modifications, and demolition and provide information to AFCEC/CND and the Contracting Agent to ensure appropriate contract action is taken.
- j. Conducts witnessing of measurements during annual M&V actions by the ESCO during the performance period. Reviews the annual M&V report, in conjunction with AFCEC/CND. In coordination with AFCEC/CND provides recommendation on ESCO invoice payments.
- k. Conducts oversight/inspection during construction and installation.
- l. Reviews and approves technical aspects of the annual M&V reports, when applicable.
- m. Engagement with Base FM and Contracting on the MIPR process to ensure requirements can be met to provide funding as required to DLA or USACE.
- n. Fulfills the GOV role for witnessing energy measurements during performance period M&V.
- o. Assists AFCEC in the annual review of M&V Report from ESCO.



Chapter 4 ESPC Process

This chapter explains the ESPC process, broken down into clear and simple steps to follow. There is a process map for each step to assist in understanding the overall ESPC process. Refer to the AFCEC ESPC Development Checklist ([Appendix E](#)) document for generalized approach on the ESPC process.

Note: Per [DoE IDIQ Section H.6.2](#), proposals are reviewed in accordance with the instructions set forth in the NoO. The agency is not responsible for any costs incurred, such as proposal preparation costs or the costs incurred in conducting the IGA, unless a TO is awarded.

Prior to the issuance of NoO, ESCOs are allowed to visit installations to market their capabilities and past performance. During pre-NoO visits, ESCOs are not allowed to:

- Inspect buildings at installations.
- Discuss existing conditions at installations.
- Discuss the scope of potential future ESPC projects.

Refer to ESCO Engagement Guidance ([Appendix G](#)) for more information. Undo engagement on the ESCO's behalf puts the ESCO at risk of being eliminated from the competitive selection process. There must be no real or implied government commitments to a specific ESCO. Interaction at this point that constitutes actual or perceived government obligation must be avoided.

4.1 ESPC Initiation

The ESPC process begins by the Installation contacting the Office of Energy Assurance (OEA) via the storefront or based on the findings of an Installation Energy Plan (IEP).



Figure 1: Initiation Process Map

Step 1: The installation's leadership decides they want to conduct an ESPC project

Prior to engaging with an ESCO, the Base Champion (BC)/BCE can prepare a summary of the type of resilience ECMs being considered and submit requirements to the Office of Energy Assurance (OEA) storefront platform for assessment and validation. Most often, the pursuit of an ESPC results from the development of the Installation Energy Plan (IEP) in partnership with OEA. The IEP assesses the Base mission and identifies resiliency gaps, and an ESPC can be identified as a mechanism to eliminate the resiliency gaps to support the mission. OEA serves as the single point of entry for all installation resilience and energy requirements and opportunities.

**Step 2&3: Opportunity Vetted Through Clearance Process & ESPC Selected**

OEA acts as the facilitator and integrator to maximize energy assurance/resiliency and coordinates through the approval process. The approval process involves the generation of a Resilience Solution Report (RSR) which is developed between the Base and OEA and signed off by the Base MSG leadership. Once the RSR is complete, OEA works through the Facility Energy Board (FEB) to receive approval to move forward or re-evaluate. The FEB consists of AFCEC (various offices), AFIMSC, SAF/IEE, SAF/GNC, and MAJCOM. Upon clearance of the FEB and if ESPC was selected as the execution method, then OEA vectors the project to AFCEC/CND for execution. AFCEC/CND then engages with the BC/BCE to start the development of the project. As part of the development, AFCEC/CND reviews in greater detail the project goals and current Base conditions (e.g., utility rates/costs, utility types, existing contracts, etc.) to determine any concerns to be addressed externally or internally prior to moving forward.

Step 4: Installation leadership provides concurrence to AFCEC/CND

Upon AFCEC/CND engagement, one of the initial actions is to obtain Base MSG Leadership's signed concurrence back to AFCEC for initiation of the ESPC. AFCEC/CND engages with the BC to assist in staffing a package up for signature by Base MSG leadership. The letter ensures that Base leadership is aware and that the project receives proper support and engagement, even during leadership changes.

Step 5: Development of Scope and Requirements

The BC/BCE prepares a summary of the type of ECMs being considered, facilities to be considered, relevant utility information, and submits them to AFCEC/CND for review. AFCEC/CND and BC work together to develop the package for submission to the contracting agent for start of the acquisition process. The development package contains a minimum of one ECM addressing resiliency at the installation fulfilling the requirements approved in the RSR. SAF/IEE has defined the acceptable level of resiliency for an ESPC to generally be one or more elements of generation, storage, or micro-grid, but there are exceptions based on the findings of the IEP.

Note: AFCEC serves as advisor and approval point throughout the project life. Refer to the AFCEC ESPC Development Checklist ([Appendix E](#)) job aid for guidance.

The BC is the primary driver behind ESPC and engagement of appropriate Base personnel. Facility managers, process owners, and operations staff are useful sources for ideas on improving their respective building's operational characteristics. The local staff often has the best understanding of what equipment is failing or not operating in a proper manner due to design defects, age, or other reasons. Refer to ESPC Considerations for BC ([Appendix F](#)) for information on the BC's roles and responsibilities in the ESPC process.

When developing the ECM and facility list, the installation is mindful that an ESCO's costs and overhead are greater for widely scattered buildings than it is for buildings clustered together. Ensure the building packages are structured to take maximum advantage of project economics. Include the less desirable projects with the more attractive projects and ensure the ESCO takes them as a package. The best economical ECMs subsidize the less economical work such as chiller and cooling tower replacement. In addition, the best economical ECMs can subsidize energy assurance or resilience ECMs. Generally, the best option is to maximize the number of facilities included in the requirement, as it is harder to add facilities post NoO.



The ESPC can include a variety of technologies and ECMs with technical categories defined in Appendix H.

Note: Not all of an installation's opportunities/projects lend themselves to ESPC project execution.

Step 6: AFCEC/CND determines the appropriate contracting office: USACE or DLA Energy

AFCEC/CND and the BC form the initial Energy Team, which consists of various AFCEC/CND members, Base CE, customers, and the PF (assigned by AFCEC/CND). The Energy Team works together to determine a preferred acquisition agent for the project, with the AFCEC PMO providing final agreement for selection.

Step 7: AFCEC/CND Engages with selected contracting office

AFCEC/CND engages with the acquisition agent to determine if current capacity exists for them to execute the project. Based on workload, the acquisition agent may differ, and thus AFCEC/CND engages with the second acquisition agent.

The Energy Team develops a site data package and provides it to the acquisition agent. The site data package includes general site data such as building list (building type), square footage, building schedule, utility rates, and specific requirements (e.g., temperature, lighting level, humidity controls). The package also includes primary ECMs and resiliency opportunities to be pursued as part of the ESPC.

The Acquisition Agent coordinates the date and time for initial meeting or teleconference with the installation, AFCEC/CND, and the PF to explore opportunities, develop ESCO selection criteria, and acquisition strategies.

Note: USACE requires funding to execute ESPCs, which are paid by AFCEC through acquisition and construction. Post construction (performance period), USACE continues to support but requires annual payments. The performance period payments to USACE can be discussed between AFCEC/CND and the Installation. DLA Energy does not charge a fee to the AF at this time.

4.2 Contracting Process

AFCEC/CND utilizes DLA Energy or USACE contracting offices to complete the ESCO selection and the TO award process. The following sub-sections walk through the steps each contracting office completes in order to award the TO for the ESPC project.



4.2.1 DLA Energy Contracting Process

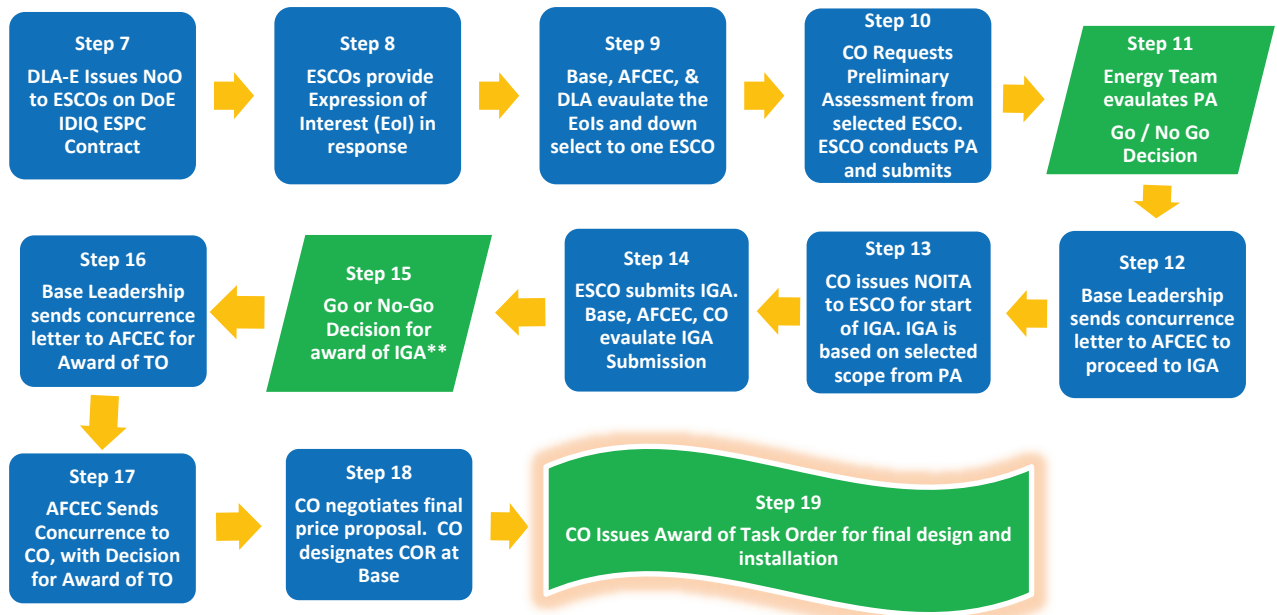


Figure 2: DLA Energy Process Map

Step 7: DLA Energy Issues Notice of Opportunity (NoO)

Based on information obtained during meetings with the AFCEC, installation, and stakeholders, DLA Energy builds the requirements and preferences for development of the NoO including the evaluation criteria. After developing the NoO and Acquisition Plan documents, the CO submits them to their policy and legal departments for approval. DLA Energy CO issues the approved NoO for ESCO review and response. Only ESCOs on the [Department of Energy IDIQ contract](#) receive the NoO.

The ESCOs generally have 30 days to respond to the NoO with the documents defined as the Expression of Interest (Eol). The installation and AFCEC remain engaged during the NoO period. The ESCOs commonly submit Requests for Information (RFI) during the NoO. These RFIs need to be responded to by the government prior to the ESCO's NoO response submission. Delays in responses to RFIs delay the ESCO response and extend the period of the NoO.

Step 8: ESCO provide Eol in response to NoO

The CO reviews each Eol for responsiveness to NoO and convenes the evaluation team for their evaluation, which includes independent write-ups by a team member. DLA Energy reviews the pricing and past performance portions of the Eols, with the technical portion reviewed by AFCEC and the installation.

Step 9: Energy Team evaluates Eols with down select to an ESCO

The Energy Team reviews the technical portion of Eols with the installation providing their review comments to AFCEC. Energy Team evaluates the Eol only in comparison to the criteria set forth in the NoO, reviews cannot compare Eols to each other or factors not included in the NoO. Based on



the comments from the installation and AFCEC/CND's own review AFCEC/CND prepares a technical evaluation for submission to the CO. DLA Energy CO reviews the technical evaluation for compliance with the NoO and legal sufficiency, if there are deficiencies identified, the technical evaluation is returned to AFCEC/CND for edits. Once the final technical evaluation is signed by the AFCEC/CND PMO and accepted by the CO, then the CO prepares the decision document. The CO completes the selection process, which includes a review period prior to completion, and issues unsuccessful letters to ESCOs not selected.

Step 10: DLA Energy issues the request for the PA and ESCO completes the PA

DLA Energy issues a letter to the selected ESCO to begin the Preliminary Assessment (PA). After receipt of the PA request, a kickoff meeting is held to establish the ground rules and objectives between the ESCO and the installation. On average, the ESCO has 60 calendar days to complete the PA, which is often dependent upon receipt of requested data from the installation. Once the PA report is received, the CO convenes the review team.

Step 11: AFCEC, Base, and DLA Evaluate PA

Upon receipt of the PA, the review team conducts the PA review and provides comments. AFCEC consolidates the AF comments and submits to the CO. Once all comments are submitted, the CO hosts a meeting with the Energy Team to discuss comments and ensure there is common vision between the Energy Team for the project. The CO then issues the comments to the ESCO, with a date to have comments addressed. Once comments are resolved, which may take several rounds, then the Energy Team determines whether to proceed with the project and with what specific ECMs. At this time the PA can be rejected with a request to conduct a new PA or end project actions.

Note: The agency is not liable for any costs associated with PA audits or preparation of the PA unless the project addressed by the PA later becomes a TO award.

Step 12: Base leadership provides concurrence to proceed to IGA with selected PA scope

If the Energy Team determines a path forward to proceed with the project. Then per [DAFI 90-1701](#), the Base MSG leadership provides a signed memorandum to proceed to the IGA with the selected scope. The concurrence to proceed letter/memo is sent to AFCEC/CND. If AFCEC/CND concurs with the installation, then AFCEC/CND issues the AF desire to proceed with DLA CO.

Step 13: DLA Issued Notice of Intent to Award (NOITA) to ESCO to begin IGA

Upon agreement of the installation and AFCEC/CND DLA Energy issues a Notice of Intent to Award (NOITA) to the ESCO to begin developing the IGA and establishes a date for submission of the IGA report. On average, ESPC IGAs take ten months to complete. After issuance of the NOITA, DLA Energy hosts the IGA kickoff meeting, with all concerned parties attending. IGA Kick-off meeting generally requires two steps with a government only meeting, followed the same day or next with the official kick-off meeting with the ESCO.

At the time of the NOITA, the DLA Energy starts the development of the TO-RFP and requests information from the installation and AFCEC. The required information is not part of the standard IDIQ but contains AF and installation specific requirements and restrictions. The installation provides documentation and information that is normally included in any local construction contract including requirements for architectural compatibility, hazardous waste handling/disposal, security Base access, safety, flight line operations, etc.



The development of the IGA is relevant to the ASHRAE Level III audit and encompasses assessment of the facilities and infrastructure included in the project. The IGA requires engagement from Base CE, Base CE Shops, facility managers, along with possible engagement with Base Environmental, Airfield Management, Base Communications, etc. The engagement of utilizing various Base entities is necessary for proper due diligence and confirm the execution and application of the proposed ECMs. At a minimum the IGA process involves and/or determines:

- Current status of facilities and infrastructure.
- Current facility operation parameters.
- Meter installation and collection of meter data.
- What upgrades and modifications are possible?
- What upgrades and modifications are financially viable within the project?
- Which proposed upgrades/modification are acceptable to the Base/AFCEC?
- What resiliency opportunities are financially viable within the project?
- The roles and responsibilities of the project for O&M, R&R, along with other actions
- Competitive subcontractor pricing to execute selected scope.

The IGA also includes ESCO actions to conduct due diligence in the generation of a comprehensive firm fixed price proposal with guaranteed savings. The ESCO's due diligence efforts can present a notable workload on the BC, and Base support of the BC needs to be taken into account at the start of the IGA.

Step 14: DLA Energy receives, and Energy Team evaluates the IGA

Once DLA Energy receives the IGA, a technical and pricing review is initiated. The entire Energy Team reviews the IGA for technical merit, while the DLA pricing team begins their analysis. The entire IGA review team has all comments returned to the CO within 20 business days. The BC is responsible for the widest dissemination of the IGA to obtain related reviews from Base operations engineers, Base CE Shops, facility managers, Base mechanical engineers, along with other affected parties. The installation submits their comments to AFCEC for consolidated submission to the CO. Once all comments are provided to the CO, then a meeting is held to discuss comments and ensure a common vision for the project is related in the comments (i.e., eliminate conflicts). Once the CO consolidates the final comments, they are forwarded to the ESCO for response. The ESCO provides responses to the comments, which the Energy Team reviews/accepts/rejects. Once all comments are closed or deferred (to be validate in revised IGA), which generally takes several rounds, the CO directs the ESCO to submit a revised IGA or re-accomplish the IGA to address concerns and for another round of reviews and comments. The revised IGA shall address all comments/concerns addressed in the review process, often failure to do so results in follow-on corrections and re-submissions by the ESCO.

If after review of the IGA and the comment resolution process, comments are unable to be resolved and/or the project is deemed unfavorable to the AF, then an option to cancel the effort or redo the IGA and be undertaken. If the option is to cancel the IGA, then procedures outlined in the [DAFI 90-1701](#) shall be followed. In brief, the cancellation actions require engagement with the Base MSG leadership for signed concurrence for cancellation with submission through the chain of command to SAF/IE for concurrence.

**Step 15: Installation and AFCEC decision to proceed**

If the final IGA addresses all concerns and provides a project that is acceptable to the installation and AFCEC, the efforts are initiated to move towards award.

Step 16: Base leadership provides concurrence to proceed to award

Once the Energy Team has determined to move to award, then per SAF guidance, the Base MSG leadership provides a signed memorandum to proceed to award with the selected scope, and roles and responsibilities as set forth within the final IGA. The concurrence to proceed letter/memo is sent to AFCEC/CND.

Step 17: AFCEC sends concurrence to CO to proceed to award

If AFCEC/CND concurs with the installation, then AFCEC/CND issues the AF desire to proceed to award with DLA CO. AFCEC/CND also notifies the appropriate AF offices of the award. AFCEC/CND concurrence concludes the technical portion of the IGA.

Step 18: DLA Negotiates final pricing and obtains clearance to award

The DLA Energy pricing review is a combination of pre-negotiations and the contract award review. The DLA Energy pricing review is often done simultaneously with the AF review and approval process to limit market impacts to pricing. DLA Energy prepares the Price Negotiation Memorandum (PNM) and negotiations are held with the ESCO. No award is made until all approvals are rendered to the CO. The CO finalizes the final PNM.

Step 19: DLA Energy awards the TO to the ESCO

DLA Energy submits the request for final pricing revisions and schedules based on a negotiated settlement. The ESCO needs to revise the price proposal to match the negotiated amount and update the schedules. These are delivered along with the final IGA for a comprehensive submission and inclusion in the awarded contract. The CO updates the award document, TO-RFP with negotiation revisions. Once this is complete, the ESCO is awarded the TO. Contract administration services are delegated to the DLA Energy Administrative Contracting Officer (ACO). Prior to award DLA Energy designates the Base COR for the implementation phase of the project. The award also includes a proposed date for the construction kick-off meeting. The construction kick-off meeting is held at the installation, to include all necessary Base personnel that would be present at any construction kick-off meeting.



4.2.2 USACE Contracting Process

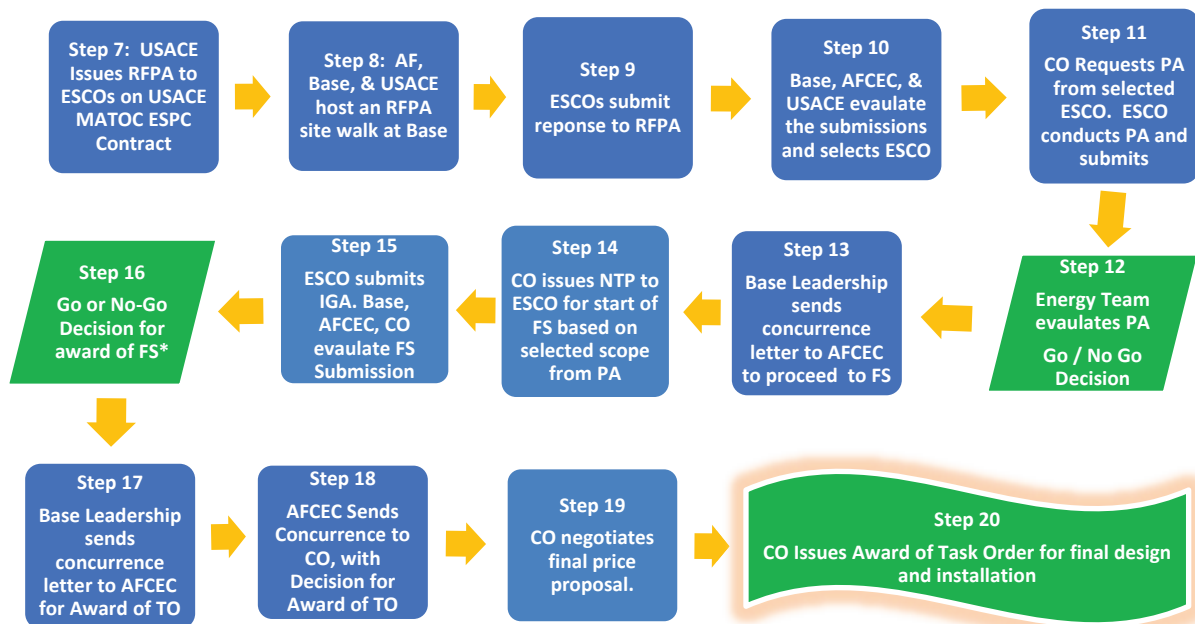


Figure 3: USACE Process Map

Step 7: USACE issues a Request for Preliminary Assessment (RFPA)

If AFCEC/CND identifies USACE as the contracting agency, AFCEC/CND identifies funding for the USACE fee, and issues a “Go to Work” letter, the USACE develops the Acquisition Plan and the Request for Preliminary Assessment (RFPA). The USACE conducts a team kickoff meeting and training with the installation, AFCEC, and other necessary stakeholders. As part of discussions, a date is determined for the ESCO site walk as part of the RFPA process. The RFPA consists of a limited number of facilities that the ESCO addresses as part of the RFPA. The facilities to be used as part of the RFPA are selected in partnership with the installation and AFCEC to allow the ESCO to present a representative scope. Primary ECMs and resiliency measures are identified in the RFPA. Once the RFPA has cleared legal and contractual hurdles, the RFPA is issued to ESCOs on the USACE Multiple-Award Task Order Contract (MATOC) IDIQ.

Step 8: USACE, the installation, and AFCEC conduct site visit in support of RFPA

USACE utilizes the RFPA date to coordinate an onsite meeting with all Government parties and ESCOs. The AF personnel are made aware that these site walks are well attended by the ESCOs, and that all information flows through the CO, and no direct conversations with ESCOs are to be conducted. The BC needs to ensure the necessary coordination for ESCO access to the installation along with specific access for all parties to the facilities selected as part of the RFPA.

Step 9 & 10: ESCOs submit responses to the RFPA

ESCOs are competed through the evaluation of the best technical approach and experience using a broad scope of work as defined in the RFPA. The ESCO responses to the RFPA with PA submissions are evaluated by the Energy Team, including USACE, the Installation, and AFCEC. The Energy Team has 20 working days to review the PA responses. After the Energy Team has completed their reviews, a consensus meeting is held with the installation, AFCEC, and USACE (government



personnel only) to select the ESCO. Once a consensus is reached on the ESCO for the project, then USACE develops the technical evaluation for submission to the CO.

Step 11: USACE Issues NTP and ESCO completes the PA

The USACE issues the Notice to Proceed (NTP) to the selected ESCO, and a kick-off meeting is scheduled to start the PA actions. The kick-off meeting consists of two meetings, one attended by government only, and the second as the official kick-off with the ESCO. After the kick-off meeting, ESCO conducts a site survey as part of the PA to address facilities within the scope of the project. The ESCO provides RFIs for collection of additional information, which needs to be responded to by the Energy Team prior to submission of the PA. Once the site survey is complete and RFIs are addressed, the ESCO submits the PA.

Step 12: Energy Team evaluates the PA

The PA is reviewed by the Energy Team, and comments generated are submitted to the CO. After consolidation of comments, an Energy Team meeting is held to go over the comments to address concerns and ensure that a united vision for the project is presented (i.e., conflicting and/or duplicate comments are removed). The comments are then sent to the ESCO to be address, with responses provided to the Energy Team for review and resolution. Once all comments are closed out, an Energy Team meeting is held to discuss whether to proceed with the ESPC, re-accomplish the PA, or cancel the effort. If the decision is to proceed with the project, then the ECMs to be considered are also selected. The ECMs to be considered form the basis of the Feasibility Study (FS) (i.e., FS is the term used in the USACE MATOC but fulfills the same intent as an IGA).

Note: The agency is not liable for any costs associated with PA audits or preparation of the PA unless the project addressed by the PA later becomes a TO award.

Step 13: Base leadership provides concurrence to proceed to IGA with selected PA scope

Once the Energy Team has determined a path forward on proceeding with the project, then per SAF guidance, Base MSG leadership provides a signed memorandum to proceed to the FS with the selected scope. The concurrence to proceed letter/memo is sent to AFCEC/CND. If AFCEC/CND concurs with the installation, then AFCEC/CND issues the AF desire to proceed with USACE.

Step 14: USACE Issues Notice to Proceed (NTP) to ESCO to begin Feasibility Study

USACE issues an NTP to the ESCO to begin developing the FS. On average, AF ESPCs take an average of 10 months to complete an FS. After issuance of the NTP, USACE hosts the FS kickoff meeting at the installation, with all concerned parties attending. At the time of the NTP, USACE starts the development of the Statement of Work (SOW) and requests information from the installation and AFCEC. The required information is not part of the standard IDIQ but contains AF and installation specific requirements and restrictions. The installation provides documentation and information that is normally included in any local construction contract including requirements for architectural compatibility, hazardous waste handling/disposal, security Base access, safety, flight line operations, etc.

The development of the FS is comparable to an ASHRAE Level III audit and encompasses assessment of the facilities and infrastructure included in the project. The FS requires engagement from Base CE, Base CE Shops, and facility managers, along with possible engagement with Base environmental, Airfield Management, Base Comm, etc. The engagement of various Base entities is necessary for proper due diligence, and it confirms the execution and application of the proposed ECMs. At a



minimum, the FS process involves and/or determines:

- Status of facilities and infrastructure.
- Current facility operation parameters.
- Meter installation and collection of meter data.
- What upgrades and modifications are possible?
- What upgrades and modifications are financially viable within the project?
- What resiliency opportunities are financially viable within the project?
- The roles and responsibilities of the project for O&M, R&R, along with other actions
- Which of proposed upgrades/modifications are acceptable to the installation/AFCEC?
- Competitive vendor/subcontractor pricing to execute selected scope.

Along with other actions necessary to conduct proper due diligence in the generation of a comprehensive firm fixed price proposal with guaranteed savings. As such, the FS can present a notable workload on the BC, and necessary support of the BC needs to be taken into account at the start of the IGA.

Step 15: ESCO submits FS to USACE, and Energy Team evaluates

Once USACE receives the FS, a technical and pricing review is initiated. The entire Energy Team reviews the FS for technical merit, while the USACE pricing team begins their analysis. The entire FS review team has all comments returned to the CO within 20 business days. The BC is responsible for the widest dissemination of the FS to obtain related reviews from Base operations engineers, Base CE Shops, facility managers, Base mechanical engineers, along with other affected parties. The installation submits their comments to AFCEC for a consolidated AF submission to the CO. Once all comments are provided to the CO, then a meeting is held to discuss comments and ensure a common vision for the project is related in the comments (i.e., eliminate conflicts and duplicate comments). Once the CO consolidates the final comments, they are forwarded to the ESCO for response. The ESCO provides responses to the comments, which the Energy Team reviews/accepts/rejects. Once all comments are closed or deferred, which generally takes several rounds, the CO directs the ESCO to submit a revised FS, re-accomplish the FS altogether, or move to cancel the project. The revised FS shall address all comments/concerns addressed in the review process, often fail to do so results in follow-on corrections and re-submissions by the ESCO.

If after review of the FS and the comment review process, if comments are unable to be resolved, and/or the project is deemed unfavorable to the AF, then an option to cancel the effort or redo the IGA and be undertaken. If the option is to cancel the FS, then procedures outlined in the [DAFI 90-1701](#) shall be followed. In brief, the cancellation actions require engagement with the Base MSG for signed concurrence for cancellation with submission through the chain of command to SAF/IE.

Step 16: Base Installation and AFCEC decision to proceed

If the final FS addresses all concerns and provides a project that is acceptable to the installation and AFCEC, the efforts are initiated to move towards award.

Step 17: Base leadership provides concurrence to proceed to award

Once the Energy Team has determined a path forward on proceeding with the project, then per SAF guidance, Base MSG leadership provides a signed memorandum to proceed to award with the selected scope, and roles and responsibilities set forth within the final FS. The concurrence to



proceed letter/memo is sent to AFCEC/CND.

Step 18: AFCEC sends concurrence to CO to proceed to award

If AFCEC/CND concurs with the installation, then AFCEC/CND issues the AF's desire to proceed to award with USACE CO. AFCEC/CND also notifies the appropriate AF offices of the award. AFCEC/CND concurrence concludes the technical portion of the FS.

Step 19: USACE Negotiates final pricing and obtains clearance to award

USACE review is a combination of pre-negotiations and the contract award review. Often the pre-negotiation actions are completed simultaneously with the AF approval process. The PNM is accomplished prior to AF approval, and negotiations are held with the ESCO to close the cost, pending the receipt of AF project approval. No award is made until all approvals are rendered to the CO.

Step 20: USACE awards the TO to the ESCO

USACE submits the request for final pricing revisions and schedules based on a negotiated settlement. The ESCO needs to revise the price proposal to match the negotiated amount and update the schedules. The CO updates the award document, SOW with negotiation revisions, and the ESCO is awarded the TO. USACE conducts the COR actions during the implementation period but is dependent on the BC for engagement on reviews of submittals. Post award, the construction kick-off meeting is held at the Base, to include all necessary Base personnel that would be present at any construction kick-off meeting.



Chapter 5 ESPC Post Award

This chapter explains the post award process, broken down into steps that are clear and easy to follow. At this point, the implementation portion of the project approximately mirrors any other construction/repair project executed at an installation. It is recommended that the project be managed at the installation via the same processes and methodologies already established for construction management. If the best practice for the installation involves designating a COR outside of the Energy Team, that is acceptable and often preferred. Utilizing installation personnel already familiar with installation construction policies, guidance, and procedures along with noted construction inspection experience mitigates a learning curve that might be required with the Energy Team. Often usage of existing construction management resources is the most efficient method to ensure proper GOV oversight and engagement. The process map below assists in understanding the post award process.

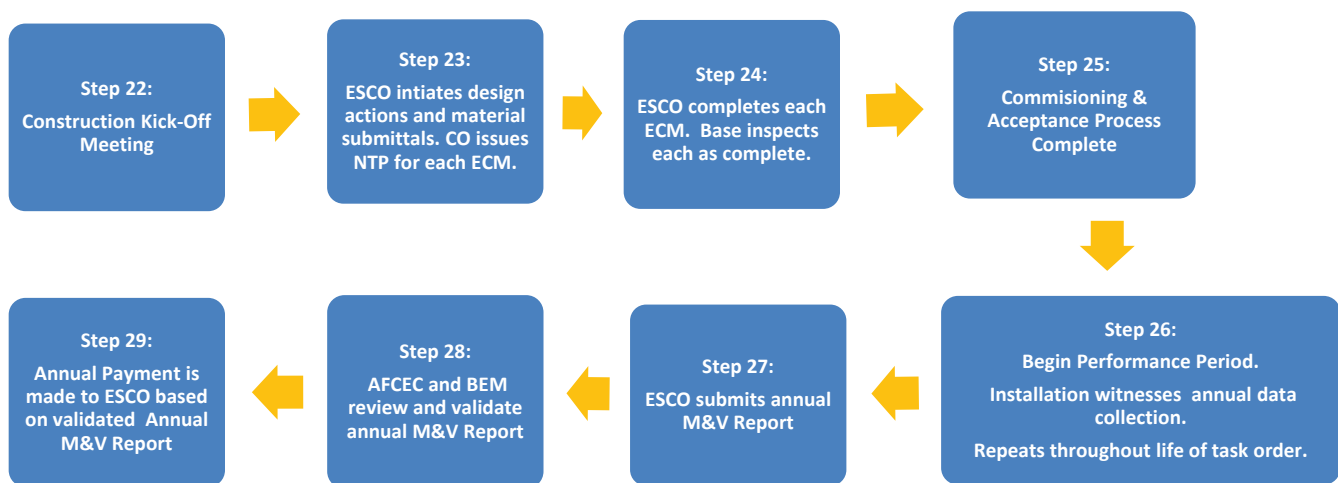


Figure 4: Post Award Process Map

5.1 Construction

Step 22: The ACO holds the construction kickoff meeting at the installation.

The kick-off meeting involves the ACO, CORs, installation inspectors, ESCO project manager, and ESCO managers for design, construction, commissioning, M&V, and performance-period services. The BC needs to ensure engagement of Base offices and personnel that will affect or be part of the project including, but not limited to, Base Environmental, Base CE, Base Safety, Security Forces, etc. The kick-off meeting presents, discusses, and reviews the following for the construction phase:

- Roles and responsibilities.
- Expectations.
- Construction timelines.
- Communication protocols.
- Schedules for design.
- Schedules for construction.
- Protocols for site access.
- Protocols for submittal review.
- Protocols related to safety, environmental, security, etc.



Step 23: ESCO initiates design actions and material submittals.

Post kick-off meeting, the ESCO starts submitting design and/or material submittals for Base review. The Base COR ensures that the Base CE design engineers (e.g., mechanical, electrical, etc.) are engaged and aware of the design submittals and required review times. Once the designs have been reviewed and comments resolved, the Base COR provides a recommendation to approve to the CO. Once the designs are approved along with material submittals, the CO issues NTPs for each ECM. The ESCO and Base coordinates submission schedule for designs as not to overburden Base CE resources.

Note: On TOs awarded by USACE, the COR is provided by USACE but still relies on the Base for reviews and inputs on designs and submittals.

Step 24: The ESCO completes the construction.

During the construction phase, the ACO, COR(s) and inspectors are responsible for ensuring the ESCO is adhering to the agreed schedule, requirements, and plans by:

- a. Monitoring the construction.
- b. Reviewing the ESCOs plans and field logs.
- c. Ensuring space access.
- d. Reviewing punch lists.
- e. Verifying proper ECM installation per TO requirements, design/installation plans, and approved submittals.

Project actions should follow the Contract Management Plan, which establishes continuity of contract administration as individuals come and go. If there are variances between design and as-built installation, the ESCO and agency identify and document the changes in the post-installation report.

During the implementation phase of the project, it is common for individual facilities to be inspected and signed off by the Base COR to meet TO/design requirements. Once a facility is inspected and signed off by the Base, and concurred by the CO, the ESCO can start claiming construction period savings. The sign off by the Base on a facility is not final acceptance, as that occurs at the end of the implementation period when the entire TO is accepted, and ownership is transferred to the AF. The ESCO submits a monthly spreadsheet to track the construction period savings. The interest costs can be reduced by savings from provisionally accepted ECMs before project acceptance. These construction period savings must be specified in Schedule TO 1 of the awarded TO.

As part of the Base's effort during this period would be witnessing energy measurements of existing equipment/facilities and of post installation confirmation measurements. The number of measurement samples are based on a statistical evaluation and are stated in the ESCO's M&V plan.

Step 25: Commissioning and acceptance process completed.

Once construction is complete, the ACO commissions the project as long as the project meets design intent, per the directives of the TO. While construction is usually completed before acceptance, some checks after acceptance are required, such as summer performance of chillers installed in winter, and steam trap performance in winter.

Before providing acceptance of the project, ensure the following:



- a. ECMs are performing as specified.
- b. Required submittals are received.
- c. Acceptance checklist is noted with dates for each item, signed off by the COR, and forwarded to the ACO.

As part of the commissioning and acceptance process, the ESCO provides the following:

- a. As-built drawings.
- b. Spare parts lists.
- c. Manufacturer warranties.
- d. ECM training materials.
- e. [DD Form 1354](#) for installed ECMs (COR to consult with Base Real Property on procedures).
- f. O&M training.
- g. O&M materials, manuals, and procedures.
- h. Commissioning report.
- i. Post-installation report.

5.2 Performance Period Management

The ACO, BC, and AFCEC are responsible for the ESCOs complying with its contractual responsibilities and ensuring guaranteed savings are achieved.

Step 26: Transition to Performance Management: The Installation witnesses data collection (repeated through life of the project).

The Base COR provides support to the ESCO for the data collection process, which can be monthly, quarterly, or annually as prescribed in the awarded TO. The actions necessary to support the ESCO can include:

- a. Access to the buildings/locations.
- b. Installation data per ESCO request.
- c. Records (such as utility bills, maintenance data, and occupancy).

The ACO and COR coordinate the ESCO site visits and schedules for M&V inspections/data collection, considering actual operating conditions and the availability of key personnel. The Base COR performs, or designates a knowledgeable witness, to accompany the ESCO during M&V activities, and conduct witnessing actions. M&V activities generally focus on high value ECMs, with statistical sampling of lower risk ECMs, such as:

- a. Critical systems, such as Energy Monitoring and Control System (EMCS) setpoints, chiller/boiler performance tests, solar PV generation, etc.
- b. ECMs generating the most energy/cost savings.
- c. Sampling of ECMs such as lighting, motors, and variable frequency drives (VFDs).

Note: Refer to the FEMP Guide to Government Witnessing and Review of Post-Installation and annual M&V Activities for M&V witnessing guidance, available on the [FEMP website](#).

Step 27: The ESCO provides annual M&V reports (repeated through the lifetime of the project).

The annual M&V report must be in accordance with the M&V plan in the awarded TO. The ESCO:

- a. Performs M&V activities per the M&V plan.
- b. Produces the M&V report annually to the ACO.



- c. Revises the M&V report, as requested by ACO.

Step 28: M&V Report validated by BEM & AFCEC/CND (repeated through the lifetime of the project).

The ACO ensures prompt review of the ESCO's annual M&V report. These reports document whether all parties and the delivered energy and cost savings meet the TO requirements. Review of M&V report verifies that:

- a. The M&V plan was followed.
- b. The field-measured values were carried over to report.
- c. Calculations are correct and follow the M&V plan.
- d. Utility and escalation rates used to calculate cost savings are correct.
- e. The report provides all required information.
- f. Savings guaranteed were met.

As being the central authority for ESPCs, all M&V reports need to be submitted to AFCEC/CND for review and validation. AFCEC/CND submits a final report to the CO once comments and concerns have been addressed by the ESCO. This often results in a revised submission of the M&V Report.

If the M&V report shows a savings shortfall, the ESCO is responsible for resolving ECM performance issues and proposing remediation options. Shortfall determinations are deducted from the next year's annual payment.

Step 29: Payment is made to ESCO (repeated through the lifetime of the project).

Invoices begin after the ACO has formally accepted the project after the PIR. Invoices are submitted annually and provided at the beginning of the performance year to reduce the financing fees paid by the AF. The ACO is responsible for verifying that invoices contain any required documentation of services provided before paying the ESCO.



Chapter 6 ESPC Business Practices

The following business practices help the installation and ESCO implement an ESPC, translate the legislative requirements, and apply the lessons learned to achieve a successful ECM. Each awarded TO must include mutually agreed upon procedures defining how to verify ECM performance, responsibilities, and energy savings post-installation.

6.1 M&V Plan

The M&V plan is measurement-based, ensuring the AF's ability to confirm that actual energy savings are occurring and are verified in a reasonable, cost-effective manner. Implementing the M&V plan annually guarantees the installed equipment is performing as predicted and generating savings per the TO. A well-written M&V plan:

- a. Mitigates risk to the installation.
- b. Eliminates conflict when systems fail to meet their expected savings.
- c. Ensures the ESCO remains engaged with the installation over the full term of the contract.
- d. Presents test procedures that present viable pass/fail criteria.
- e. Easy to understand and organized for clarity.

The M&V plan combines facilities and ECMs when possible, saving M&V costs on the project and simplifying the overall process. All M&V plans, **at a minimum**, must comply with both the latest version of [IPMVP](#) and the [DoE M&V Options](#): Measurement and Verification for Performance-Based Contracts Version 4.0 and the guidance set forth in this playbook, when there is conflict the AF ESPC Playbook takes precedent. The guidelines have the following M&V options:

- a. Option A: Retrofit Isolation uses key parameter measurements in conjunction with statistical sampling. This option can only be used with AF approval and submission of appropriate documentation for validation of savings.
- b. Option B: Retrofit Isolation with Continuous Metering is used when synergistic energy impacts are fully mitigated.
- c. Option C: Whole Facility uses meters connected to the building to establish an accurate baseline and accurate post-implementation utility consumption profiles. This is the preferred option for most M&V efforts on AF projects.
- d. Option D: Calibrated simulations are **prohibited** on any AF ESPC contracts.

Refer to the [Overview of M&V Options](#) to view examples for each of the options listed above. An ESCO M&V plan for ESPC projects, follow the guidance below:

- a. Metered consumption data is required for the M&V baseline. Estimating or simulation modeling (e.g., eQuest, Trane Trace, etc.) for development of baseline is **prohibited** on AF ESPCs. The ESCO must conduct a regression analysis of the metered data and present this analysis in MS Excel spreadsheet format to allow for the AF to validate the calculations.
- b. If the installation cannot provide measured consumption data from existing meters, the ESCO installs meters or pulls data from existing meters to capture the data to build the baseline. It is the ESCO's responsibility to take whatever action necessary (e.g., install meters/loggers) to establish the baseline data for the facilities and ECMs proposed.
- c. The AF has a goal to maximize the energy savings validated with metered data using Option B (sub-meters) or Option C (whole-building meters), with the preference being Option C. The ESCO shall maximize the number of metered facilities/ECMs as part of the project.



- d. A minimum of 12 months of metered data is generally required to establish the baseline per AF and FEMP guidelines for M&V. AFCEC/CND may accept less than 12 months (for example, nine months) of metered data if the appropriate season(s) for heating and/or cooling (depending on type of ECM) is included in metered data, and if data sufficiently correlates (e.g., $R^2 > 0.8$) with weather or other factors. AFCEC/CND approval for less than 12 months is based on a case-by-case analysis, per ECM/facility. The ESCO retains performance risk for any regression equation presented in the IGA. ESCO establishes regular M&V meetings early in the IGA, which can be in conjunction with regular project meetings.
- e. The installation nor AFCEC provides funds to support metering requirements in an ESPC. Metering costs are to be included in the ESPC financials.
- f. Usage of transitions from Option C to Option A or B during an ESPC performance period is **prohibited** by the AF.
- g. Option B measures commodity consumption of the selected ECM using direct meters, such as electrical or natural gas, not trend data from an EMCS or similar. An exception to this rule is identified in the flow chart Figure 5 but requires the ESCO to submit as part of the M&V plan a scope that defines the parameters to be monitored/metered.
- h. Buildings that are identified as candidates for Option C must have all ECMs implemented within that facility measured by Option C (e.g., cannot split out lighting as Option A).
- i. When there are multiple ECMs in a building, AFCEC/CND prefers that the ESCO use M&V Option C and aggregate all savings from ECMs.
- j. Baseline adjustments due to building usage changes (e.g., schedules, setpoints, maintenance impacts, capital improvements, etc.) are tracked by ESCO in coordination with the Base COR/BEM.
- k. The M&V Plan must be a holistic document that can stand on its own as a severable document from the IGA.
- l. Option B for solar photovoltaic arrays must be based on the commodity meter data with no adjustment, beyond failures per the Risk & Responsibility matrix (e.g., Base failure to conduct O&M per the TO).
- m. The IGA/FS shall provide, in MS Excel format, an M&V matrix that provides for each facility; baseline (dollars & MBTU), ECMs, ECM savings estimate (dollars & MBTU), and proposed M&V Option. The matrix shall allow for quick reference by the ESCO and AF of the M&V option and the data that led to the selection.

In summary, for M&V requirements, the ESCO strives to maximize the guaranteed savings validated with meter readings (Option B/C) confirming the actual savings. In a single facility, the criteria to determine M&V Option usage follows the basic criteria provided in Figure 5.

As part of the project development, the ESCO shall start at a higher goal such as metering 90%+. The higher the percentage, the better, and Option C is considerably less expensive than multiple Option A/B solutions for each individual ECM or facility. Option C provides a reliable measurement of overall savings and verification that the savings have been achieved. Option B deployment will be determined on a project-by-project basis and will consider ECMs, facilities, and savings being achieved but follow the general guidance provided in Figure 5.

The installation is required to witness the baseline, post installation, and annual M&V actions conducted by the ESCO. Option C is the most efficient method to verify savings because Option C is the easiest and quickest method to witness. Option B metering of an isolated ECM, most often solar



PV, which provides easy and accurate witnessing. Option A generally consists of witness of the measurements for existing conditions, post installation conditions, and then annual testing/verification depending on the ECM.

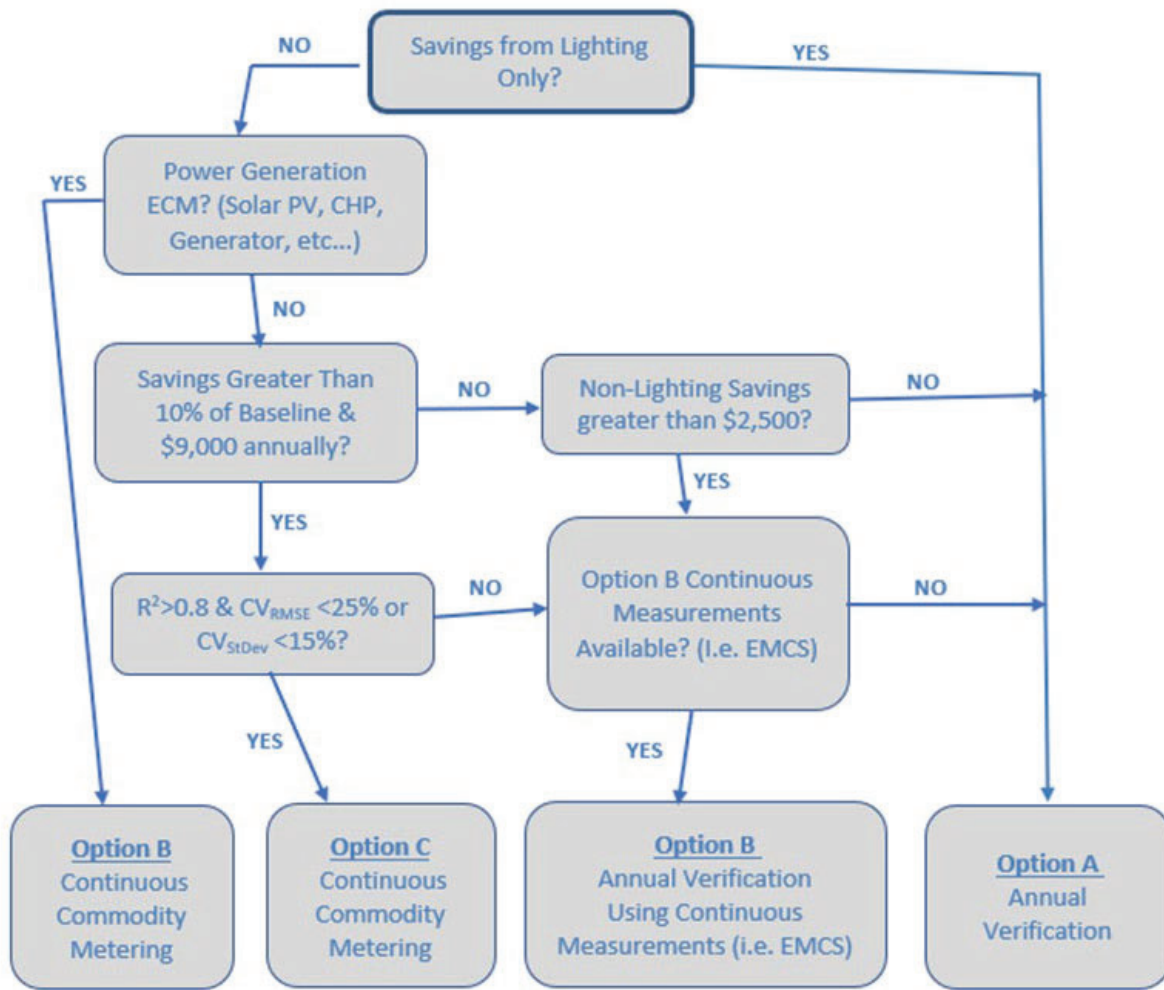


Figure 5: Facility M&V Determination Chart

6.2 Baseline Development

6.2.1 Metering Plan

A meter survey is conducted by the ESCO for all buildings and included in the NoO/PA. The meter survey results in a meter plan that identifies existing meters and addresses gaps/deficiencies and submitted as part of the PA. The metering plan must identify existing meters, operational characteristics of the meters, known suspected data errors, and meter data. The metering plan allows baseline development and data collection beginning immediately after the ESCO is selected to perform the IGA. The longer the data collection period, the lower the risk to the AF and the ESCO, which minimizes cost. AFCEC/CND review and approval of the baseline is required. Existing meters are used as much as possible to collect this data, as the M&V plan must be measurement-based. Failure or errors in the AF installed meters do not absolve the ESCO of collecting the necessary meter data for Baseline or annual M&V.



Meter and data assumptions made in the PA report are validated in the IGA by the ESCO. Validation includes documenting all pertinent data and formulas used to compute the energy savings so the AF can easily understand/explain these savings now or in the future.

Note: It is extremely important that equipment controlled by ambient temperature devices has valid measurements. Savings validation, as well as future baseline adjustments, require this accurate data before adjustments can be applied to the existing baseline.

6.3 Commissioning Plan

A Commissioning Plan is developed as part of the construction actions and has protocols prepared for each ECM in a single document/submission that details the performance tests and expected results for each ECM. A performance test is a process for achieving, verifying, and documenting the performance of equipment installed or modified as part of an ECM and, in comparison to what was proposed in the award TO. The Commissioning Plan is often developed and implemented by a third party hired by the ESCO. Performance tests are completed during the construction phase to certify that all equipment is operating properly, and the results are approved before conducting the energy savings verification tests. The Commissioning Plan describes all aspects of the test process, including:

- a. Schedules.
- b. Responsibilities.
- c. Documentation requirements.
- d. Document specific manufacture requirements.
- e. Functional performance test requirements.
- f. Functional performance tests describe the following, at a minimum:
 1. What conditions or loads the tests are to be performed.
 2. Location of test sensors.
 3. Type of test equipment.
 4. Number of random samples.
 5. Test methods.
 6. Acceptable range of results.
 7. Functional test scripts must be submitted for approval.

Note: Functional test scripts addressing EMCS setpoint/schedule ECMs address the requirement that a space's occupied Standard of Comfort must be maintained. Please reference [Appendix K](#) regarding specific requirements and protocols related to EMCS.

The level of detail depends on the complexity of the ECM. The Commissioning Plan is detailed so the installation knows exactly which tests are conducted and results expected. The ESCO must ensure proper coordination with the Base COR to maximize government participation and witnessing of commissioning activities. After completing the performance tests, the ESCO submits a commissioning for review and approval by CO, AFCEC, and COR. The commissioning report is submitted after all functional performance tests are completed and include the following:

- a. Executive summary.
- b. ECM description.
- c. Commissioning Plan parameters.
- d. Test results.



e. Deficiencies and Corrective Actions.

The CO approves the commissioning report results after coordination and verification of results by the COR and AFCEC/CND.

6.4 Post Installation Savings Validation

The performance testing provides that the ESCO installed systems are performing as designed, though performance does not equal energy savings. Once the commission of the systems is complete, testing is conducted to document the energy consumption of the installed ECMs. A formal set of test procedures with the acceptable range of results are developed to validate energy savings, often by a third party hired by the ESCO. These test procedures are submitted by the ESCO during the IGA and are part of the Commissioning Plan submitted and approved prior to start of construction. The test procedures describe:

- a. The conditions or loads for the tests being performed.
- b. The location of test sensors.
- c. The frequency of measurements.
- d. The type of test equipment used.
- e. Test methods.
- f. The acceptable range of test results.
- g. Quantity of samples per ECM.

Test procedures verify all assumptions made in the IGA by the ESCO. Validation includes documenting all pertinent data and formulas used to compute the energy savings so the new personnel can easily understand how the savings were derived in the future. The test procedures verify all energy savings intended under the ECM per the IGA. The ESCO must make all efforts to maximize GOV witnessing of the verification tests, with appropriate scheduling, meetings, timing, etc.

The ESCO submits the results of the testing in the Post Installation Report (PIR), which is reviewed and validated by the COR and AFCEC/CND. Once validated/approved by the installation and AFCEC/CND, the project can be fully accepted by the Contracting Officer and the ESCO can start submitting invoices for payment per the awarded TO schedules.

6.5 Annual Reconciliation Plan (Audit of Savings)

Each ECM listed in the TO has a detailed annual reconciliation plan approved prior to the award of the TO. The plan includes:

- a. A formal set of test procedures.
- b. The acceptable range of results.
- c. The schedule of how reconciliation payments are assessed if savings fall below the guarantee.
- d. A certification by the ESCO that all O&M requirements and conditions have been met for each ECM in the TO.
- e. Frequency of meter data collected (Often based on risk to the AF).

The test procedures are similar to those developed to validate energy savings. The purpose is to test, validate, and document the energy savings. The ACO must approve the annual reconciliation of savings after coordination and verification of savings by the BEM and AFCEC/CND.



Appendix A - Acronyms

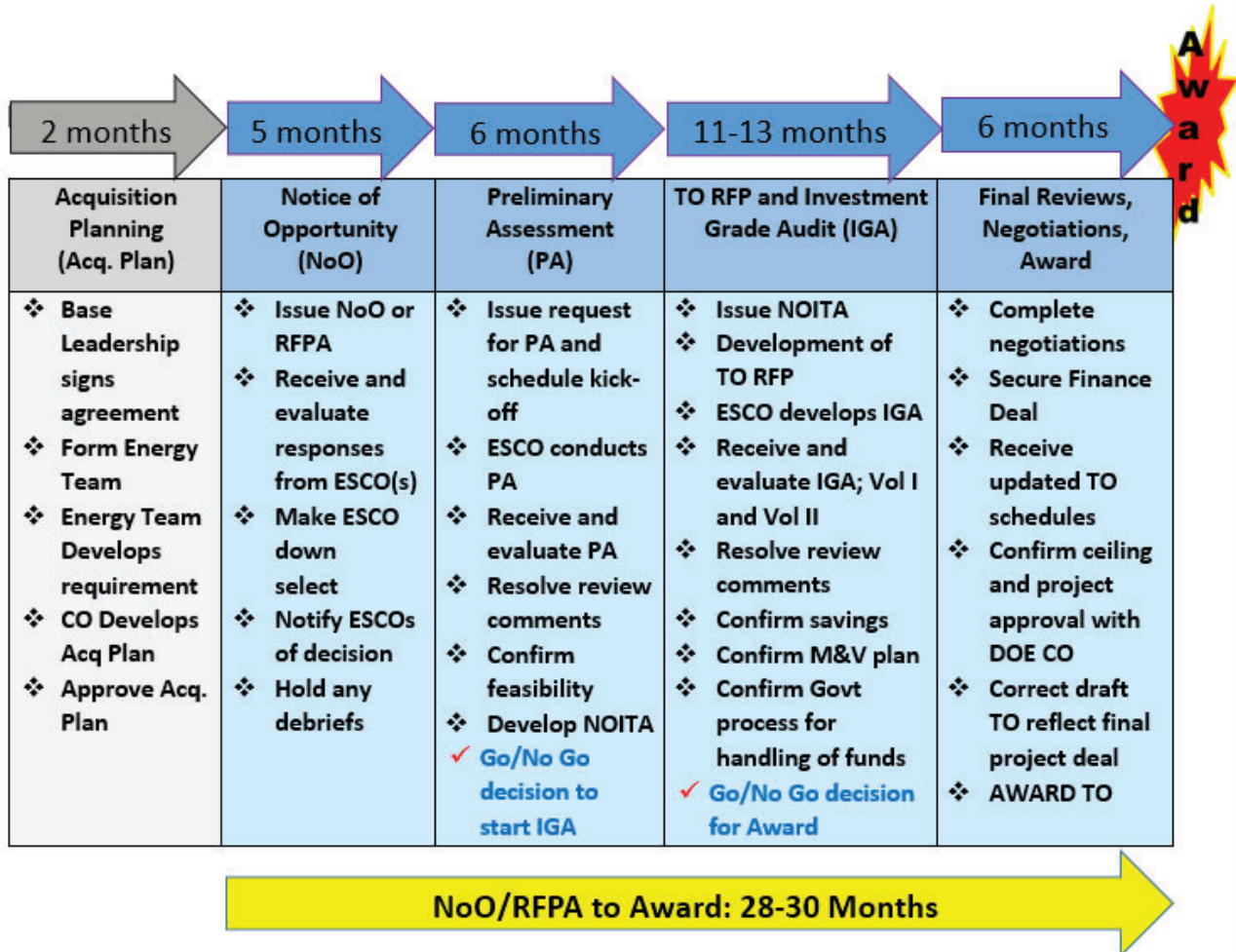
Acronym	Definition
ACO	Administrative Contracting Officer
A-E	Architect-Engineering
AF	Air Force
AFCEC	Air Force Civil Engineer Center
AFCAMP	Air Force Comprehensive Asset Management Plan
AFCEC/CND	Air Force Civil Engineer Center Program Development
AFI's	Air Force Instructions
AFIMSC	Air Force Installation and Mission Support Center
AFPD	Air Force Policy Directive
ALC	Air Logistics Center
AMRS	Advanced Meter Reading System
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
BC	Base Champion
BCE	Base Civil Engineer
BEM	Base Energy Manager
BFM	Base Financial Manager
CE	Civil Engineer
CFR	Code of Federal Regulations
CO	Contracting Officer
COR	Contracting Officer Representative
CTO	Construction Task Order
DLA Energy	Defense Logistics Agency- Energy
DoD	Department of Defense
DoE	Department of Energy
EO	Executive Order
EoI	Expression of Interest
ERCIP	Energy Resilience & Conservation Investment Program
ECM	Energy Conservation Measure
EERC	Energy Escalation Rate Calculator
EISA	Energy Independence and Security Act
EMCS	Energy Monitoring and Control System
E.O.	Executive Orders
ESCO	Energy Services Company
ESPC	Energy Savings Performance Contract
FAR	Federal Acquisition Regulation
FEMP	Federal Energy Management Program
FS	Feasibility Study
FSRM	Facility Sustainment, Restoration and Modernization
GOV	Government Owned Vehicle
HVAC	Heating, Ventilation, and Air-Conditioning
IDIQ	Indefinite Delivery/Indefinite Quantity
IGA	Investment Grade Audit for DOE contracts
IEP	Installation Energy Plan
IPL	Integrated Process List
IPMVP	International Performance Measurement and Verification Protocol
JA	Judge Advocate
MATOC	Multiple-Award Task Order Contract
M&V	Measurement and Verification
MFH	Military Family Housing
MILCON	Military Construction
MIPR	Military Interdepartmental Purchase Request (MIPR)



Acronym	Definition
MOA	Memorandum of Agreement
MSG	Mission Support Group
NAF	Non-Appropriated Funds
NIST	National Institute of Standards and Technology
NOITA	Notice of Intent to Award
NoO	Notice of Opportunity
NTP	Notice to Proceed
O&M	Operations and Maintenance
OMR & R	Operation and Maintenance Repair and Replacement
PA	Preliminary Assessment
PF	Project Facilitator
PMO	Project Management Office
PIR	Post Installation Report
PNM	Pre-negotiation Milestone
POC	Point of Contact
RDT&E	Research, Development, Test and Evaluation
REM	Resource Efficiency Manager
RFI	Request for Information
RFPA	Request for Preliminary Assessment
RFP	Request for Proposal
RIPE	Real Property Installed Equipment
RSR	Resilience Solution Report
R&R	Repair and Replacement
SME	Subject Matter Expert
SOW	Statement of Work
TC	Technology Categories
TO	Task Order
TO-RFP	Task Order- Request for Proposal
UFC	United Facilities Code
UP	Utility Privatization
U.S.C.	United States Code
USACE	United States Army Corps of Engineers
VFD	Variable Frequency Drive



Appendix B - ESPC Acquisition Timeline





Appendix C - Risk & Responsibility Checklist

		Risk/Responsibility Description	Does ESCO have an acceptable approach to deal with the risk/responsibility?	Has AFCEC/CND assessed the ESCO's approach?
Financial	Interest Rates	Neither the ESCO nor the AF has significant control over prevailing interest rates. Interest rates will change with market conditions during all phases of the project. Higher interest rates will increase project cost, financing/project term, or both. The timing of the delivery order signing may impact the available interest rate and project cost. Clarify when the interest rate is locked in and if it is a fixed or variable rate.		
	Energy Prices	Neither the ESCO nor the AF has significant control over actual energy prices. For calculating savings, the value of the saved energy may either be constant, change at a fixed inflation rate, or float with market conditions. If the value changes with the market, falling energy prices place the ESCO at risk of failing to meet cost savings guarantees. If energy prices rise, there is a small risk to the AF that energy-saving goals might not be met while the financial goals are. If the value of saved energy is fixed (either constant or escalated), the AF risks making payments in excess of actual energy cost savings.		
	Construction Costs	The ESCO is responsible for determining construction costs and defining a budget. In a fixed-price design/build contract, the AF assumes little responsibility for cost overruns. If construction estimates are significantly greater than originally assumed, however, the ESCO may find that the project or measure is no longer viable and drop it. In any design/build contract, the AF loses some design control. Clarify design standards and the design approval process (including changes) and how costs will be reviewed.		
	M&V Costs	The AF assumes the financial responsibility for M&V costs directly or through the ESCO. If the AF wishes to reduce M&V costs, it may do so by accepting less-rigorous M&V activities with more uncertainty in the savings estimates. Clarify what performance is being guaranteed (equipment performance, operational factors, energy cost savings) and that the M&V plan is detailed enough to satisfactorily verify it. Note: This only applies if M&V is required.		
	Delays	Both the ESCO and the AF can cause delays. Failure to implement a viable project in a timely manner costs the agency in the form of lost savings and can add costs to the project. Clarify the schedule and how delays will be handled.		
	Major Facility Change	The AF (or Congress) controls major changes in facility use, including closure. Clarify responsibilities in the event of a premature facility closure, loss of funding, or other major change.		



		Responsibility Description	Does ESCO have an acceptable approach to deal with the risk/responsibility?	Has AFCEC/CND assessed the ESCO's approach?
Operational	Operating Hours	The AF generally has control over the operating hours. Increases and decreases in operating hours can show up as increases or decreases in "savings," depending on the M&V method (e.g., operating hours, improved efficiency of equipment vs. whole building, utility analysis). Clarify if operating hours are to be measured or stipulated and what the impact will be if they change. If the equipment loads are stipulated, the baseline shall be carefully documented and agreed to by both parties.		
	Load	Equipment loads can change over time. The AF generally has control over hours of operation, conditioned floor area, and intensity of use (e.g., changes in occupancy or level of automation). Changes in load can show up as increases or decreases in "savings," depending on the M&V method. Clarify if equipment loads are to be measured or name plate values and the impact if they change. If the equipment loads are based on name plate, the baseline shall be carefully documented and agreed to by both parties.		
	Weather	Energy efficiency measures are affected by weather. Changes in weather can increase or decrease "savings" depending on the M&V method (e.g., equipment run hours x efficiency improvement vs. whole building utility analysis). If weather is "normalized," actual savings could be less than payments for a given year but will "average out" over the long run. Weather corrections to the baseline or ongoing performance shall be clearly specified and understood.		
	User Participation	Many energy conservation measures require user participation to generate savings (e.g., control settings). The savings can be variable and the ESCO may be unwilling to invest in these measures. Clarify what degree of user participation is needed and utilize monitoring and training to mitigate risk. If performance is stipulated, document and review assumptions carefully and consider M&V to confirm the capacity to save.		
Performance	Equipment Performance	Generally, the ESCO has control over the selection of equipment and is responsible for its proper installation and performance. The ESCO also has overall responsibility to demonstrate that the new improvements meet expected performance levels, including standards of service and efficiency. Clarify who is responsible for initial and long-term performance, how performance will be verified, and what will be done if performance does not meet expectations.		
	Operation	Responsibility for operations is negotiable, and it can impact performance. Clarify how proper operation will be assured. Clarify responsibility for operations and the implications of taking on the operation of the equipment.		



	Maintenance and Repair	Responsibility for maintenance & repair is negotiable; however, it is often tied to performance. Clarify how long-term maintenance and repair will be assured, especially if the party responsible for long-term performance is not responsible for maintenance. Clarify who is responsible for ECM overhaul and component or equipment repair required to maintain operational performance throughout the contract term.		
	Equipment Replacement	Responsibility for replacement of ESCO-installed equipment is negotiable; however, it is often tied to ECM performance. Clarify who is responsible for replacing failed components or equipment throughout the term of the contract. Specifically address potential impacts on performance due to equipment failure. Life of equipment is critical to ECM performance during the contract term. Specify equipment life expected for all installed equipment and specify warranties proposed for the installed ECMs.		



Appendix D - Risk & Responsibility Matrix (EXAMPLE)

Risk and Responsibility Matrix (EXAMPLE)

ECM	ECM Name / Equipment	Qty	Operations Responsibility	Operations Tasks	Maintenance Responsibility	Maintenance Tasks	Repair Responsibility	Year(s) for Repair	Replacement Responsibility	Year(s) of Replacement
5.01	LED Interior Lighting	Refer to Line-by-lines in Appendix C	Government	Visual Inspections	Government	Semi-annual: Inspect and clean lenses if necessary, verify operations, and check for damage / failures. Quarterly: Verify operations	Government - Labor ESCO-R-US Team to provide repair/replacement parts only during the manufacturer warranty period	Government ESCO-R-US Team to provide repair/replacement parts only during the manufacturer warranty period	Government	Government ESCO-R-US Team will provide a one-time 2% replacement stock of all new equipment installed
5.02	LED Building Exterior Mounted Lighting	Refer to Line-by-lines in Appendix C	Government	Visual Inspections	Government	Semi-annual: Inspect and clean lenses if necessary, verify operations, and check for damage / failures. Quarterly: Verify operations	Government - Labor ESCO-R-US Team to provide repair/replacement parts only during the manufacturer warranty period	Government - Install/remove/replace ESCO-R-US Team to provide repair/replacement parts only during the manufacturer warranty period	Government	Government - Install/remove/replace ESCO-R-US Team will provide one-time 2% replacement stock of all new equipment
10.02	Solar PV / BESS		Government No anticipation of additional labor needs	Quarterly Visual inspections of structures, inverters, and monitoring system. Maintain the system is operational and all inverters are On-Line. Any concerns or disruptions are to be documented and ESCO-R-US is to be made aware according to TO timelines. Inspections are required after a high wind event as well.	ESCO-R-US Team	Quarterly Inspection of structure, panels, sensors, and control systems. Cleaning of all panels as necessary to ensure performance. Annual Inspection and recording of voltage and amperage of system. Inspection of all enclosures inspection of all wiring connections and terminations inspection and calibration (if needed) of metering system PV System Testing.	ESCO-R-US Team Government	ESCO-R-US Team: Repair when failures occur within the Performance Period Repairs to PV modules, inverters, sensors, controllers, etc.). Repairs of existing infrastructure is Government's responsibility (e.g. existing transformers, etc.)	ESCO-R-US Team	Inverters will be replaced 1x by ESCO-R-US Team within the Performance Period. Failures that occur after that 1x replacement will be the Government's responsibility. All other equipment and components installed as part of the Solar PV BESS Microgrid system will be the ESCO-R-US responsibility
3.01	Legacy Network 8000 Replacements (Ver3.5 Controllers)	42 Bldgs	Government (per designed KOSS (Key Operating Savings Strategy)) Any deviations, changes or concerns, document & report issue to ESCO-R-US ESCO-R-US Team: Monthly and/or Quarterly site visits	Government Daily: Log alarms and any overrides on KOSS. Verify operations, document all activities. ESCO-R-US Team: Will verify operations, set points and schedules per KOSS (monthly and/or quarterly) via onsite technical representative. Address disruptions in comfort or services or KOSS and work with all parties involved to determine the root cause of any disruption. ESCO-R-US will manage trend and metered data for both visibility of efficiency and reliability as well as M&V (measurement and verification).	Government	Quarterly Review / Implementation of regular scheduled Preventative Maintenance Plan as part of Base regular services. ESCO-R-US will inspect and document the EMCS status on each site visit.	Government (to troubleshoot and accelerate repairs or replacement to failed field devices)	Government will provide repairs to the EMCS installed associated with this ESPC and will provide detailed documentation on Repair & Replacement work to support the Operating Savings Strategy on field devices. It is the government's responsibility to accelerate the repair / replacement to return the system or equipment to its original design.	ESCO-R-US Team (to provide a limited working inventory field devices) & Government (to accelerate repairs or replacement to failed field devices)	ESCO-R-US Team will provide a one-time 2% replacement stock of EMCS sensors installed (i.e. duct sensors, humidity & temperature sensors, etc.) and 2 main controllers, which will allow for the GOV to have a working inventory. Government will provide repairs to the EMCS installed associated with this ESPC and will provide detailed documentation on Repair / Replacement work to support the systems and equipment key Operating Savings Strategy on field devices. It is the Government's responsibility to conduct the repair / replacement in appropriate timeframes to maintain system operations and allow the system or equipment to its maintain design standards..



Appendix E - AFCEC ESPC Development Checklist

Process Step / Resource Name			Objective	Timeline
STEP 1 -Approval/Clearance for ESPC Acquisition				
	Base Submits Opportunity to OEA Storefront or Identified in IEP		Notifies OEA of opportunity and desire to execute a project	4-6 Months
	Base works with OEA to Develop Fidelity for Opportunity		Provides information to develop package for review/approval	
	OEA staff the Opportunity for Adjudication		Information with recommended acquisition method submitted for review	
	Opportunity is Adjudicated through FEP Approval Process			
	FEP Provides Recommendation To Proceed with ESPC		Provides for AFCEC/CND to Start Acquisition Actions	
	AFCEC/CND Notified of Approval to Proceed to Acquisition			
	AFCEC/CND Requests Concurrence from Base Leadership	X	Base Leadership Concurrence to Proceed with Acquisition	
STEP 2 - Acquisition Package & Requirement Development				
	AFCEC/CND and Base Develop Data Package		Establishes scope and desired ECMs and AFCEC PF Selected	2-7 Months
	AFCEC/CND Submits Data Package to Acquisition Agency	X	Start of Actions for Acquisition Agency	
	Acquisition Strategy / Planning		Establishes scope and desired outcome of project	
	Limited Acquisition Plan			
	ESCO Selection Evaluation Factors Developed		Energy Team Develop Factors To Select ESCO for ESPC	
	Issue NoO or RFPA to Eligible ESCOs**		Notifies ESCOs on DoE IDIQ or USACE MATOC (Starts 30 mth goal)	
	ESCO Submit Proposals		ESCO proposed plan to address NoO / RFPA Scope	
	Energy Team Evaluates Proposals	F	Allows for selection of ESCO based on NoO / RFPA Selection Factors	
	AFCEC/CND Submits Technical Evaluation to CO	X	Provides technical narrative for selection of ESCO	
	CO Develops J&A		Justification to use a limited source contract	
	CO Selects ESCO and Notifies all ESCOs of Selection		Notifies ESCOs of Selection and debriefs non-selected ESCOs	
	ESCO Selection Letter Is Issued		Notifies ESCO of Their Selection and start of Preliminary Assessment	
STEP 3 - PROJECT DEVELOPMENT				
Preliminary Assessment				
	CO Issues NTP to Initiate Preliminary Assessment		Establishes bilateral agreement for PA, at no Cost to GOV	3-5 Months
	PA Kick-Off Meeting		PA Kick-Off Meeting Hosted at Base	
	ESCO Conducts Preliminary Assessment		PA Includes Meter Survey and ECMs identified in NoO	
	ESCO Submits Preliminary Assessment Report		Provides for ESCO Proposed ECMs for further investigation	
	Energy Team Reviews/Evaluates PA Report		Determines if PA Report meets the requirements of the NoO	
	Energy Team Provides Comment/Resolution Matrix to ESCO	F		
	ESCO Responds to Comment/Resolution Matrix			
	Govt Team Determines Go or No-Go	F	Energy Team determines scope, if any, to proceed with in IGA	
	Base staffs Package to Base Leadership for Approval		Base leadership approves moving to IGA, issues letter/email to AFCEC	
	AFCEC/Base Agree to Move to IGA	X	Notifies CO of scope to proceed with in IGA	
	CO issues NOITA to ESCO for Scope Be Addressed in IGA		Initiates actions to start IGA	
Investment Grade Audit (IGA)				
	Kick-Off Meeting for IGA		IGA Kick-Off Meeting Is Hosted at Base.	11-13 Months
	Energy Team Develops TORFP for IGA	F	Defines AF/Base Requirements (i.e. Base Standards, UFC, etc..)	
	ESCO Conducts Investment Grade Audit		Base conducts Witnessing of Baseline Measurements	
	Energy Team Continues Development of Requirements for Final TO	F	Ensure Base/AF requirements are in TORFP and ESCO is aware.	
	ESCO Submits IGA with FFP		Defines M&V, O&M, Baseline, Savings, Risk & Responsibility, etc...	
	Govt Team Reviews/Evaluates IGA		Govt Validates Baseline, Savings, Assumptions, etc.	



	Energy Team Provides Comment/Resolution Matrix to ESCO	F		
	ESCO Responds to Comment/Resolution Matrix		ESCO to resolve Energy Team comments	
	Energy Team Determines Go or No-Go for TO Award	F		
	Base staffs up package to Base Leadership for Approval or Cancellation		Base leadership approves moving to Award or Cancellation of project	
	AFCEC/Base Agree to Move to TO Award	X		
	CO Requests Final Proposal FFP for TO Award		CO Starts Negotiations and Pricing Evaluation for Award of TO	
	Finalize J&A			
	Business Clearance Memorandum			
Award for Design and Implementation				
	Notify Congress 72 hrs. before awarding TOs >\$4M Award D&I TO		TO Establishes bilateral agreement for D&I	3-6Months
	Award TO			
	Finalize TO for Award			
	Base Initiates Budget to Fund Project		Base RM is engaged and with copy of annual payments for budgeting	
STEP 4 - PROJECT IMPLEMENTATION				
Design				
	ESCO submits designs / Agency reviews and approves		ESCO submits designs packages for each ECM	1-4 Months
	Upon Base COR design approval, CO issues NTP for each ECM		NTP allows for the start of field construction actions	
Installation/Construction				
	Construction Kick-Off Meeting		Construction Kick-Off Hosted at Base.	12-36 Months
	ESCO installs ECMS / CO Monitors / Base COR Oversights		Agency is CO and Base COR oversight during construction	
	ESCO conducts / Base receives O&M training, commissioning, etc.		Base COR witness during commissioning	
	ECM Performance Verification Checklist		Ensure installation / performance meets TO, GOV Witnessing.	
	ESCO Provides Post Installation Commissioning Report			
	AFCEC/Base Review Post Installation Commissioning Report	F		
	Base/Agency Accept Project	X	Agency approves work performed by ESCO under contract	
	Agency Reports Project Details to FEMP			
	ESPC Project Reporting			
STEP 5 - POST-ACCEPTANCE				
	Invoices and Payments		Invoice Approval / Payment Process ESPC Invoice Implement M&V plan and report annual ECM savings Close out contract at end of term	Term of Contract (up to 24 Years)
	ESCO Submits Annual Performance Report and Payment Request	F	Annual Performance Report and Payment Process	
	AFCEC/Base Review Annual Performance Report		Govt Ensure Performance Metric are met and is CA necessary	
	AFCEC/Base provide Review Responses (if any)			
	AFCEC/Base Provide Approval to Agency for Payment of Invoice	X		
	Close out Of Contract Term			

** = NoO or RFPA starts acquisition timeline with 30-month goal

Energy Team = AFCEC/Base/Acquisition Agency

X = AFCEC/PMO Approval Point

F = Coordination Point with AFCEC PF



Appendix F - ESPC Considerations for Base Champion

Although an ESCO brings technical energy expertise to the installation's energy program, the BC and/or BEM is the champion for achieving the installation's energy goals and reporting requirements. The BC has many resources available to assist in completing tasks, including:

1. Energy audits.
2. AFCEC/CN.
3. OEA.
4. REMs.
5. Facility managers.
6. Process owners.
7. Operations staffs.

One of the primary components of an ESPC Energy Team is local staff and building managers. Installation personnel have the best understanding of what equipment is non-operational due to design defects, age, or other reasons. As part of the development of an ESPC, the AF develops a consensus with all stakeholders in an attempt to address the installation's needs and wishes, while considering the AF's risk level to various actions.

Many factors impact the requirements of an ESPC. Overhead and interest charges can make some ECMs not economically viable. In this case, direct funding an ECM may be a better solution than an ESPC. To ensure energy projects are executed in the most efficient manner, AFCEC/CND practices a vetting process to review potential ECMs and analyze them with the Energy Team to determine the best execution method within the AF energy program. During the development period (PA, IGA) the BC/BEM should not accept submissions from the ESCO that fail to address the concerns and goals of the AF.

Note: ESCOs tend to consider the ECMs that fit their risk case scenario over AF goals. If the ESCO is not meeting the installation's goals, the ESCO should address the reasons in writing, and if found unacceptable there is always the AF option to cancel the ESPC for ESCO's being non-responsive.

Consider the following for successful ESPC projects, many of which the ESCO will assist with during the development of the project:

- a. Use a multidisciplinary team to evaluate proposals and consider the cost of maintenance after the equipment is installed. Each ECM should be evaluated on a life-cycle cost basis. Energy-efficient or ENERGY STAR equipment should be used in the project when possible.
- b. Assist ESCO in establishing the energy use baseline early in the process. Actions may require installing meters or data logging equipment as part of the contract, when practicable.
- c. Communicate with the ESCO often. The installation should provide their expectations and goals early in the process and provide what actions and efforts they are not interested in pursuing. This will allow the ESCO to focus their resources to maximize the costs incurred.
- d. Keep the terms and provisions of the ESPC as clear as possible. Examine each ECM to determine how it contributes to the overall project and whether it is "worth it" for inclusion in the long term. Review its length of payoff and the impact of its removal or inclusion on the overall project economics. Make appropriate business trade-offs and establish an optimal scope of work for the



project. Package less economical work such as chillers and cooling towers replacements with the most economical ECMs.

- e. Identify and define variables that impact energy consumption during the development of the project. The ESCO and AF should identify variables that create risk and define or eliminate them as part of the TO. Include as many of these variables as possible in the “normalized” baseline so that the energy savings can be corrected to changing conditions (e.g., weather variations, variable operating schedules). Document the remaining variables or variables that are not expected to change (e.g., non-routine variables such as building square footage, occupancy, size and type of equipment) as “static” variables that affect facility energy consumption. If these static variables change during the ESPC project term, an engineering analysis may be necessary to estimate the energy impact, and if actions should be taken.
- f. During the IGA, assist the ESCO in obtaining load profiles and tour the building during the peak energy-use period. Make observations about the operation of energy-using equipment. Assist the ESCO to determine if any equipment use or power loads could be shifted to a non-peak period of energy use. If not, explore peak shaving, thermal load shifting, and other means of saving energy and costs that could be used to cut expenses. Consider the use of automated building management systems and timed-out electronic locks on non-essential equipment so it cannot be operated during periods of peak demand.
- g. Make sure there is a clear understanding and clear contract language addressing how the M&V is to be conducted. As part of the development of an ESPC, the AF does not allow for rate adjustments to account for savings within an ESPC. Additionally, as part of any power generation ECMs, (e.g., CHP, solar photovoltaic), the consideration and discussion of an interconnect agreement with the local utility and/or UP contractor is paramount, and if not addressed early can result in a signification delay and costs. Become familiar with the latest version of the IPMVP and make use of the M&V protocols in your contract. M&V must comply with the requirements of the [Energy Policy Act of 2005](#).



Appendix G - ESCO Engagement Guidance

This guidance applies to all ESPC acquisition activities prior to the release of the ESPC NoO/RFPA. The guidance is not intended to limit ESCO opportunities to introduce and market their capabilities to AF installations and AFCEC or to limit the sharing of energy conservation ideas among AF installations. The guidance does caution ESCOs from engaging in any pre-NoO activities that could affect fair and open competition between ESCOs. AFCEC provides overall project management and contracting support for all AF ESPC projects.

Installation/AFCEC Guidance:

1. AF installations and AFCEC are encouraged to entertain marketing visits requested by ESCOs. Scheduling and timing of any such visit will be at the discretion of the Base.
2. While ESCOs are encouraged to market their firm's ESPC capabilities to government designated energy program personnel and introduce and/or share conceptual energy conservation ideas, government personnel are reminded to not begin any real or perceived acquisition activities prior to release of an NoO/RFPA.
3. ESCOs remain free to propose energy conservation ideas in the form of a non-proprietary document prior to the release of an ESPC NoO/RFPA.
4. AFCEC may post on an AF-internal website all non-proprietary ESCO provided conservation measures to facilitate the exchange of ideas among AF personnel.
5. When the government decides to the potential acquisition of an ESPC, all ESCO engagement shall be at the direction of the designated government CO.
6. Installations must keep AFCEC informed as ESPC projects develop actions.

ESCO Guidance:

1. ESCOs are encouraged to market their firm's ESPC capabilities to government designated energy program personnel and share conceptual energy conservation ideas. Before an ESPC is underway via contracting, ESCOs are allowed to visit installations to market their capabilities and past performance. During pre-ESPC visits, ESCOs are not allowed to visit buildings at installations, not allowed to discuss existing conditions at installations, and not allowed to discuss scope of potential future ESPC projects. There must be no real or implied government commitments to a specific ESCO. Interaction at this point that constitutes actual or perceived government obligation must be avoided.
2. Any marketing literature or conceptual ideas proposed in presentations or papers freely provided by the ESCO to government personnel is handled by the government as non-proprietary and may be shared with other AF installations and AFCEC personnel. Proprietary info, if provided by an ESCO and annotated as "proprietary" is protected by the AF Energy Team.
3. The scheduling and timing of any marketing visit is at the discretion of the designated energy program personnel at that location.
4. Once the government has decided to pursue potential acquisition (NoO/RFPA) of an ESPC, the ESCO may not request information regarding the scope, cost, or timing of that particular initiative from any government personnel except through the government's designated CO.



Appendix H - ESPC Technology Categories and Associated ECMs

This attachment lists the technology categories (TCs) authorized under this master indefinite IDIQ contract and provides ECM examples for each TC. This list is not intended to be inclusive of all potential ECMs authorized under each TC.

TC.1 Boiler Plant Improvements - ECMs such as, but not limited to:

1. Boiler control, including new controls and retrofits to existing controls.
2. Replacement of existing boilers with high efficiency boilers.
3. Boiler decentralization.

TC.2 Chiller Plant Improvements - ECMs such as, but not limited to:

1. Chiller retrofits or replacements.
2. Chiller plant pumping, piping, and controls retrofits and replacements.

TC.3 Building Automation Systems (BAS)/Energy Management Control Systems (EMCS) - ECMs such as, but not limited to:

1. Heating, Ventilating, and Air Conditioning (HVAC) upgrade from pneumatics to Direct Digital Control.
2. Upgrade or replacement of existing EMCS systems.

Note: Must comply with the most recent version of the AF Guidance requirements for cybersecurity and network protocols.

TC.4 Heating, Ventilating, and Air Conditioning (HVAC, not including boilers, chillers, and Building Automation System/Energy Monitoring/Management Control System (EMCS)) - ECMs such as, but not limited to:

1. Packaged air conditioning unit replacements.
2. HVAC damper and controller repair or replacement.
3. Window air conditioning replacement with high-efficiency units.
4. Cooling tower retrofits or replacements.
5. Economizer installation.
6. Fans and pump replacement or impeller trimming.
7. Thermal energy storage.
8. Variable air volume retrofit.

TC.5 Lighting Improvements - ECMs such as, but not limited to:

1. Interior and exterior lighting retrofits and replacements.
2. Intelligent lighting controls.
3. Occupancy sensors.
4. Light Emitting Diode technologies.
5. Daylighting.
6. Spectrally enhanced lighting.
7. Fiber optic lighting technologies.

TC.6 Building Envelope Modifications - ECMs such as, but not limited to:

1. Insulation installation.



2. Weatherization.
3. Window replacement.
4. Reflective solar window tinting.

TC.7 Chilled Water, Hot Water, and Steam Distribution Systems - ECMs such as, but not limited to:

1. Piping insulation installation.
2. Hot water heater repair and replacement.
3. Steam trap repair and replacement.
4. Repair or replacement of existing condensate return systems and installation of new condensate return systems.

TC.8 Electric Motors and Drives - ECMs such as, but not limited to:

1. Motor replacement with high-efficiency motors.
2. Variable speed motors or drives.

TC.9 Refrigeration - ECMs such as, but not limited to:

1. Replacement of ice/refrigeration equipment with high-efficiency units.

TC.10 Distributed Generation - ECMs such as, but not limited to:

1. Cogeneration systems installation.
2. Microturbines installation.
3. Fuel cells installation.

TC.11 Renewable Energy Systems - ECMs such as, but not limited to:

1. Photovoltaic system installation.
2. Solar hot water system installation.
3. Solar ventilation preheating system installation.
4. Wind energy system installation.
5. Passive solar heating installation.
6. Landfill gas, wastewater treatment plant digester gas, and coalbed methane power plant installation.
7. Wood waste and other organic waste stream heating or power plant installation.
8. Replacement of air conditioning and heating units with ground-coupled heat pump systems.

TC.12 Energy/ESCO Distribution Systems - ECMs such as, but not limited to:

1. Transformer installation.
2. Power quality upgrades.
3. Power factor correction.
4. Gas distribution systems installation.

TC.13 Water and Sewer Conservation Systems - ECMs such as, but not limited to:

1. Low-flow faucets and showerheads.
2. Low-flow plumbing equipment.
3. Water-efficient irrigation.
4. On-site sewer treatment systems.



TC.14 Electrical Peak Shaving/Load Shifting - ECMs such as, but not limited to:

1. Thermal energy storage.
2. Gas cooling.

TC.15 Energy Cost Reduction Through Rate Adjustments - (Not Applicable/Prohibited on AF Projects):

1. Change to a more favorable rate schedule.
2. Lower energy cost supplier(s) (where applicable).
3. Energy service billing and meter auditing recommendations.

Note: Not used on AF projects.

TC.16 Energy-Related Process Improvements - ECMs such as, but not limited to:

1. Production and/or manufacturing improvements.
2. Recycling and other waste stream reductions.
3. Industrial process improvement.

TC.17 Commissioning - ECMs such as but not limited to:

1. Retro-commissioning services.
2. Continuous commissioning services.

TC.18 Advanced Metering Systems

Note: Meters do not generate energy savings, and meters should only be part of the parcel of M&V for ESPC ECMs and are not for the fulfillment of AF metering goals.

TC.19 Appliance/Plug-load reductions - ECMs such as but not limited to:

1. Replace air-cooled ice/refrigeration equipment.
2. Replace refrigerators.
3. De-lamp vending machines.
4. Plug timers.
5. Energy Star® products.

TC.20 Future ECMs - (not currently authorized):

1. Non-Building Applications.



Appendix I - AFCEC Escalation Rate Guidance

Escalation Rates - Supplement to the ESPC Playbook

As a supplement to the AF ESPC Playbook, the following is the guidance for ESCOs calculating escalation rates in ESPC projects.

Escalation Rates:

Based on guidance from FEMP, the escalation rates for the ESPC going forward will be the Nominal Escalation Rate for each utility as calculated by National Institute for Standards and Technology (NIST) software program, Energy Escalation Rate Calculator, or EERC. EERC 2.0-XX (use the most current version) is available on the [FEMP website](#).

The inflation rate used for calculating escalation rates in ESPCs will be in IAW the directives of [10 CFR 436](#), Subpart A "Federal Energy Management and Planning Programs, Methodology and Procedures for Life Cycle Cost Analyses." The inflation figure shall represent "estimated increases in the general level of prices consistent with projections of inflation in the most recent Economic Report of the President's Council of Economic Advisors." The inflation rate used for calculating the ESPC escalation rates will be the projected rates of general inflation published in the most recent Report of the President's Council of Economic Advisors, **which is default** in the current EERC 2.0-XX.

Individual escalation rates must be used for each commodity, and specify 100% for a single fuel type:

- a. Identify the state in which their prospective project will take place.
- b. Select the "industrial" sector for AF installations.
- c. Select "No carbon pricing".
- d. The expected start date (award year).
- e. Duration of the project (contract term).

With that, the tool will determine an escalation rate for each fuel type, which shall be used for the financials in the ESPC. A new EERC is published every June, the ESCO shall use the most current version of the EERC in the IGA submission. If the version of the EERC changes prior to start of price negotiations for award, then the ESCO shall update the escalation rates using the new version. The re-accomplishing of the escalation rate calculator may be warranted based on the long development timeline of ESPCs.

If the escalation for sewer/water is needed for the project, then the ESCO shall utilize the most current guidance from FEMP. Also, for commodities not listed in the EERC calculator (e.g., fuel oil, water, sewer, etc.), the ESCOC shall consult with AFCEC/CND regarding escalation guidance. The current FEMP guidance for the determination of water and sewer provides a maximum allowable, which shall not be exceeded. Escalation of the Utility rates shall not initiate until after award of the TO.



Appendix J - ASD Policy Letter for Performance Contracts



SUSTAINMENT

ASSISTANT SECRETARY OF DEFENSE3500 DEFENSE PENTAGON
WASHINGTON, DC 20301-3500

NOV 20 2018

MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY (INSTALLATIONS,
ENERGY, AND ENVIRONMENT)
ASSISTANT SECRETARY OF THE NAVY (ENERGY,
INSTALLATIONS, AND ENVIRONMENT)
ASSISTANT SECRETARY OF THE AIR FORCE
(INSTALLATIONS, ENVIRONMENT, AND ENERGY)
DIRECTORS OF THE DEFENSE AGENCIES

SUBJECT: Policy on Energy Savings Performance Contracts and Utility Energy
Service Contracts

As described in the *National Defense Strategy*, the variety and velocity of global threats continues to rapidly evolve. The homeland is no longer a sanctuary, and we must anticipate and mitigate potential attacks against our critical defense, government, and economic infrastructure. In this environment, maintaining secure access to energy resources is critical to the Department of Defense (DoD) mission execution, and ensuring energy resilience at DoD installations is a top priority.

This policy provides guidance on the use of Energy Saving Performance Contracts (ESPCs) and Utility Energy Service Contracts (UESCs), as respectively authorized under 42 U.S.C. 8287 and 10 U.S.C. 2913(d), to enhance energy resilience at DoD installations. ESPCs and UESCs enable the DoD to leverage private sector funding and expertise to execute certain types of energy projects on DoD installations. By law, Congress directed the Secretary of Defense to ensure the readiness of the armed forces for their military missions by pursuing energy security and energy resilience. With this in mind, ESPCs and UESCs shall be designed to achieve objectives aligned with installation energy security priorities, and be documented in Installation Energy Plans (IEPs). The requirement for IEPs is outlined in the Assistant Secretary of Defense for Energy, Installations, and Environment (ASD(EI&E)) Memorandum, "Installation Energy Plans – Energy Resilience and Cybersecurity Update and Expansion of the Requirement to All DoD Installations" of May 30, 2018.

Pursuant to statutory directive, DoD Components shall execute ESPCs and UESCs in a manner consistent with the energy resilience guidance contained in DoD Instruction 4170.11, "Installation Energy Management," December 11, 2009 (Change 1, Effective March 16, 2016) and the guidance provided in the ASD(EI&E) Memorandum, "Energy Resilience: Operations, Maintenance, and Testing (OM&T) Strategy and Implementation Guidance," effective March 2017.

DoD Components shall take a holistic view of the energy project opportunities on their installations, and aggregate energy conservation measures (ECMs) – including ECMs with quick payback – with energy resilience enhancement projects that may have a longer payback period. Aggregating such initiatives is particularly important when a utility infrastructure project facilitates energy savings or is required to affect energy savings as part of an ESPC or UESC. DoD Components should ensure that ESPCs or UESCs continue to support mission assurance



goals and requisite managerial and contractual controls are in place to ensure a ready force. DoD Components shall review the potential for modifying existing ESPCs and UESCs to add energy resilience features to these contracts. Such a review may occur during a Component's master planning process, when developing an IEP, or as the mission requires. Prior to execution of an ESPC or UESC, DoD Components shall ensure required resources are in place to enable proper post award oversight to make certain these contracts are meeting expected performance requirements.

In addition, ESPCs and UESCs must include a cybersecurity plan for ECMs and energy resilience projects that include the installation or modification of Operational Technology (OT). OT encompasses Platform Information Technology (PIT), Control Systems (CS), or Facility-Related Control Systems (FRCS). Cybersecurity for OT shall be incorporated in accordance with Unified Facilities Criteria (UFC 4-010-06), "Cybersecurity of Facility-Related Control Systems," September 2016, "Supply Chain Materiel Management Regulation" (DoDI 4140.01), DoD Federal Acquisition Regulation Supplement (DFARS) Clause 252.204-7012, "Safeguarding Covered Defense Information and Cyber Incident Reporting," and the DoD Cybersecurity 8500 series of directives and instructions. In addition, all ECMs and energy resilience projects must adhere to the applicable Component's existing cybersecurity policy and guidance. DoD Components shall assess OT installed and operating under ESPCs and UESCs, throughout the life of the contract in accordance with DoD and their Component's cybersecurity policies and methodologies, and, where necessary, execute appropriate action in adherence with the Federal Acquisition Regulation (FAR), the DFARS, and above references to ensure the cybersecurity of these systems.

For ESPCs and UESCs, DoD assumption of maintenance, repair, and replacement (MR&R) for ECMs places the long-term performance of the ECMs, and thereby the ESPC or UESC, at risk; such an assumption by DoD should be avoided. Thus, DoD Components shall require that all MR&R for an ESPC or a UESC be carried out by the contractor. Exceptions to this policy should only be permitted on a case-by-case basis, and the DoD Component must document the rationale for assuming responsibility for the MR&R of an ECM in a memorandum signed by the installation commander or commanding officer. The memorandum must be submitted in the Component's next quarterly report to the Office of the Deputy Assistant Secretary of Defense for Energy (ODASD(E)), following contract award.

DoD Components shall report on executed ESPCs and UESCs on a quarterly basis, and shall provide Measurement and Verification reports annually, as required by the ODASD (Installation Energy) Memorandum, "Reporting Requirements for the Oversight of ESPCs and UESCs" of July 13, 2018.

My subject matter expert for this policy is CDR Walter Ludwig at 571-372-6859 or walter.s.ludwig.mil@mail.mil.

Robert H. McMahon



Appendix K - Energy Management Systems Recommendations & Requirements

1. Early in the PA development, it is recommended ESCO consider meeting with HVAC and EMCS shops to understand the conditions of the existing EMCS systems. In addition, to review existing HVAC and EMCS deficiencies along with Base desires/priorities regarding control systems.
2. Beginning with the IGA Kick-Off Meeting, the ESCO project manager, and Base COR shall establish a communication protocol for addressing EMCS and cybersecurity actions. The attendance of the Base CE ISSO/ISSM at this meeting is highly encouraged in order to participate in the establishment of the communication protocol.
3. During the development of the IGA, a regularly scheduled meeting shall be established between the Base COR, Base ISSO/ISSM, and ESCO to discuss the EMCS and cybersecurity requirements. The engagement of the Base ISSO/ISSM is to provide the ESCO an understanding of requirements for elements such as network connectivity engineering, network switch assignments, port assignments, IP address assignment, etc. ESCO will proactively communicate with Base COR and Base CE ISSO/ISSM a listing of information/actions the ESCO will be including in the IGA regarding project controls/EMCS. Recommended that these actions are validated by the ESCO and Base via the Request for Information (RFI) process, to ensure that it is officially documented.
4. Additionally, during the IGA, the ESCO shall work with the Base COR and Base ISSO/ISSM to determine the requirements and submissions to be conducted and provided by the ESCO in obtaining the Authority to Operate (ATO). The ATO will be required for systems being installed by the ESCO, though the ESCO cannot obtain the ATO, they are responsible for providing a compliant system and the necessary documentation for the Base ISSO/ISSM to obtain the ATO.
5. In IGA development, the ESCO and Base CE should identify deficiencies (repair/replace elements) that will prevent and/or inhibit the proposed EMCS/Controls project scope from achieving savings and M&V requirements. If notable repair/replacement scope is identified as part of the IGA that will impact the energy savings, then costs/efforts to address these conditions shall be included in the IGA. Inclusion in the implementation price would entail a possible break-fix escrow budget in the ESPC as part of the IGA and be utilized on an as needed basis to provide cost effective repairs. Any unused funds within the break-fix budget at the end of construction would be vectored into the buyout of the project. The usage of the break-fix budget has a direct negative impact on available savings with the project and should be used sparingly. The ESCO is required to conduct the necessary due diligence during the IGA to provide the AF fully functional systems to provide energy savings. Due diligence is defined as uncovering legacy mechanical and/or legacy energy management control system deficiencies, NOT just taking trend data from a valid sample of building and waiting until implementation to report deficiencies to the government.
6. The ESCO shall not assume that deficiencies identified during the IGA will be budgeted and corrected by the Base CE. An IGA that assumes repair of critical systems by the Base to obtain the estimated savings would be considered non-responsive by the AF and rejected.
7. As part of the IGA, ESCO will describe in detail the methodology to prevent potential surprise EMCS savings shortfalls due to government deficiencies. The IGA shall detail a proactive methodology for timely resolution of any such deficiencies possibly affecting guaranteed savings.
8. The ESCO shall develop and submit EMCS graphs for each control strategy in each building as part of Commissioning (Cx), within Post Installation Report (PIR), and as part of the annual M&V reports. The graphs shall provide necessary information to document EMCS guaranteed savings are actually taking place (equipment operation does not equal savings) within each facility. If there are



conditions affecting the status or outcome depicted in any EMCS graph for a given control strategy, the ESCO shall provide notation on the graph for ease of government understanding.

Note: For the Cx Plan, pre-functional checklists and trend data alone are not sufficient; graphs documenting energy-saving control strategy effectiveness are required.

9. As part of the due diligence during the IGA, the ESCO will ensure necessary sensors existing or needed are identified for the collection of data required to produce graphs documenting energy savings. The costs of the sensors and connections shall be included in the implementation price (e.g., AHU does not currently have a sensor on the fan motor showing status, or VFD on the fan motor lacks a sensor for Hertz frequency/speed, or VSD on the chilled water pump, etc.).
10. ESCO will make sure the EMCS front-end has a pop-up screen upon login revealing alarm points, failed points, and operator mode points (aka devices in “hand”). The EMCS operator shall be readily notified of system failures, and be provided a tracking log for easy, quick reference.
11. The IGA shall contain a plan regarding correction of EMCS deficiencies during the implementation period with a methodology to resolve which ones the Base CE shops will address and which ones the ESCO will correct. To track deficient points, the ESCO shall obtain and review quarterly deficiency reports, confirm which deficient points of control are included in the ESPC control strategies, and provide correct measures or notification to the Base for requested action, if warranted. The ESCO will also receive, track, and report on the resolution of deficient points on a quarterly basis to the Base COR to avoid any potential surprises resulting in a savings shortfall at the Annual M&V Report site inspection.
12. The ESCO will work with Base COR on a plan to provide EMCS and HVAC Shops a list of any/all buildings in the ESPC, generating guaranteed savings via the EMCS. The plan shall include actions to include signage at the mechanical systems (e.g., AHUs, chillers, thermostats, EMCS control panels, etc.), that direct personnel to report any changes to device setpoints, status, or other operational parameters to the Base COR and/or BEM in a timely manner. The Base COR and/or BEM will communicate changes to the ESCO on a quarterly basis. The reporting requirements will function as a Quality Control Loop in the Stakeholder Communication Plan. Reporting and quarterly reviews are necessary to ensure guaranteed savings that might otherwise be lost due to field actions or systems failures.
13. Beginning with the Construction Kick-Off Meeting, the ESCO construction project manager, controls sub-contractor, and Base COR shall establish a communication protocol for addressing EMCS and cybersecurity actions. ESCO will ensure the construction project manager is aware of ESCO's responsibility to coordinate with Base COR and the Base CE ISSO / ISSM on all network and cybersecurity actions. Engagement with the Base CE ISSO/ISSM is critical in the development and construction of any EMCS or other control systems operating over the AF Network. During the implementation/construction period, the following shall be adhered to:
 - a. Prior to Controls Submittal, ESCO will engage the Base COR and Base ISSO/ISSM to understand requirements for elements such as network connectivity engineering, network switch assignments, port assignments, IP address assignment, etc. ESCO will proactively communicate with Base COR and Base CE ISSO/ISSM a listing of information and actions the ESCO will be including as part of project controls/EMCS submittals prior to submission. The Base COR will provide a response after coordination with the Base CE ISSO/ISSM that the ESCO provided listing is sufficient.



- b. ESCO will provide supporting documentation for the process to obtain an Interim Authority to Test (IATT) and subsequent Authority to Operate (ATO). The ESCO shall work with the Base ISSO/ISSM prior to submittal to confirm clear understanding of requirements regarding necessary EMCS architecture description, typical artifacts required, etc.
- c. Construction progress meeting shall include a three week 'Look Ahead' schedule for awareness and understanding of actions regarding EMCS, network, or cybersecurity actions. The Base ISSO/ISSM shall be copied on the meeting invite and the three week "Look Ahead" schedule. Dissemination of information and communication is critical to ensure plans are coordinated to avoid any unnecessary delays or interruptions to the ESPC project or Base level projects.
- d. ESCO will ensure that the Base CE ISSO/ISSM is copied on invites to the Implementation Period Construction Status meetings. ESCO will work with Base COR/BEM and Base CE ISSO/ISSM to ensure coordination on any Base funded projects that could potentially interfere with or impact EMCS network connectivity requirements and schedules with the ESPC.



Appendix L - Master List of Links

Content	Location	Web Address
AFPD 32-10, Installations and Facilities	Chapter 2, Sec. 2.2	https://static.e-publishing.af.mil/production/1/saf_ie/publication/afpd32-10/afpd32-10.pdf
DAFI 90-1701, Installation Energy and Water Management	Chapter 1, Sec. 1.1 Chapter 3, Sec 3.7 Chapter 4, Sec. 4.2.1	https://static.e-publishing.af.mil/production/1/saf_ie/publication/dafi90-1701/dafi90-1701.pdf
DD Form 1354, Material Inspection and Receiving Report	Chapter 2, Sec. 2.8 Chapter 5, Sec. 5.1	https://www.esd.whs.mil/Portals/54/Documents/DD/forms/d/dd1354.pdf
DD Form 1391, Military Construction Project Data	Chapter 2, Sec. 2.4.4	https://www.esd.whs.mil/Portals/54/Documents/DD/forms/d/dd1391.pdf
DoE Federal Energy Management Program	Chapter 2, Sec. 2.3.1 Chapter 3, Sec. 3.1 Chapter 5, Sec. 5.2 Appendix I	https://www.energy.gov/eere/femp/federal-energy-management-program
DoE Indefinite Delivery / Indefinite Quantity Energy Savings Performance Contract Awarded Projects	Chapter 3, Sec. 3.2 Chapter 4 Chapter 4, Sec. 4.2.1	https://www.energy.gov/eere/femp/articles/doe-idhq-energy-savings-performance-contract-awarded-projects
DoE Measurement and Verification Options for Federal Energy- and Water-Saving Projects	Chapter 6, Sec. 6.1	https://www.energy.gov/eere/femp/measurement-and-verification-options-federal-energy-and-water-saving-projects
Energy Independence and Security Act of 2007	Chapter 2, Sec. 2.2	https://www.energystar.gov/ia/products/lighting/cfls/downloads/EISA_Backgrounder_FINAL_4-11_EPA.pdf#:~:text=The%20Energy%20Independence%20and%20Security%20Act%20of%202007,to%20consumers%2C%20industry%2C%20our%20country%20and%20our%20environment.
Energy Policy Act of 2005	Chapter 2, Sec. 2.2 Appendix F, Sec. G	https://www.congress.gov/109/plaws/publ58/PLAW-109publ58.pdf
E.O. 14057, Catalyzing Clean Energy Industries and Jobs Through Federal	Chapter 2, Sec. 2.2	https://www.federalregister.gov/documents/2021/12/13/2021-27114/catalyzing-clean-energy-industries-and-jobs-through-federal-sustainability
FAR 31.205-7, Contingencies for Additional Information	Chapter 2, Sec. 2.7	https://www.acquisition.gov/far/31.205-7
FEMP ESPC Project Development Resource Guide	Chapter 3, Sec. 3.2 Chapter 5, Sec 5.2	https://www.energy.gov/eere/femp/downloads/femp-espc-project-development-resource-guide
FEMP Support Services	Chapter 3, Sec.3 1	https://www.energy.gov/eere/technical-assistance



Content	Location	Web Address
International Performance Measurement and Verification Protocol (IPMVP)	Chapter 2, Sec. 2.3.2 Chapter 6, Sec. 6.1	https://evo-world.org/en/products-services-mainmenu-en/protocols/ipmvp
Title 10 CFR 436, Federal Energy Management and Planning Programs	Chapter 2, Sec. 2.2 Chapter 2, Sec. 2.3.1 Appendix I	https://www.law.cornell.edu/cfr/text/10/part-436#:~:text=10%20CFR%20Part%20436%20-%20FEDERAL%20ENERGY%20MANAGEMENT,Life%20Cycle%20Cost%20Analyses%20%28%C2%A7%C2%A7%20436.10%20-%20436.24%29
Title 10 U.S.C. 2911-13, Energy Performance Goals and Plans for DoD	Chapter 2, Sec. 2.2	https://www.law.cornell.edu/uscode/text/10/2911
Title 31 U.S.C. Section 1301, Application	Chapter 2, Sec. 2.4.6	https://www.law.cornell.edu/uscode/text/31/1301
Title 42 U.S.C. Section 8253, Energy Policy Act of 1992	Chapter 2, Sec. 2.2	https://uscode.house.gov/view.xhtml?req=(title:42%20section:8253%20edition:prelim)
Title 42 U.S.C., Section 8287, National Energy Conservation Policy Act	Chapter 2, Sec. 2.2 Chapter 2, Sec. 2.3 Chapter 2, Sec. 2.3.3 Chapter 2, Sec. 2.4.2	https://www.law.cornell.edu/uscode/text/42/8287