United States Air Force

Capital Investment Plan

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Version 3.8

1 July 2013

Revisions

	Date	Author	Description
1.0	March 2009	Rick Stacey	Initial Draft
2.0	1 August 2009	Ken Gray	General Revisions
3.0	23 November 2009	Rick Stokes	General Revisions
3.1	13 July 2010	Rick Stokes	CI Panel review
3.2	13 October 2010	Rick Stokes	Revisions from Panel sent to A7Os
3.3	18 January 2011	Rick Stokes	Revisions incorporate A7O comments
3.4	11 July 2011	Rick Stokes	CIP Panel Review
3.5	29 Dec 2011	Rick Stokes	General Revisions for MAJCOM Review
3.6	29 Feb 2012	Rick Stokes	Incorporated MAJCOM EM Review
3.7	31 Jan 2013	Rick Stokes	General Revisions
3.8	1 July 2013	Mike Kilgore	General Revisions

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Executive Summary

The Air Force has a multi-tiered plan to steer our energy program. The plan outline is as follows:

Tier 1: In 2010, the Air Force Infrastructure Energy Plan (AF IEP) describes the progress toward legislative and corporate energy goals. The AF IEP broadly outlines the Air Force's comprehensive energy strategy. The strategy for facility energy management rests on four conceptual pillars: (1) improve current infrastructure, (2) improve future infrastructure, (3) expand use of Renewable Energy (RE), and (4) manage costs.

Tier 2: Also in 2010, AFCEC produced the Air Force Infrastructure Energy Program Implementation Plan that guides development of installation-level energy programs and integrates the four AF IEP pillars through nine capabilities through enhanced information and decision management processes, effective leadership and enterprise energy portfolio management.

Tier 3: This document—the Capital Investment Plan (CIP) (previously known as the Capital Investment Strategy)—outlines targeted capital investments that will help the Air Force (AF) attain required performance improvements in the energy and water conservation programs. Target funding allocations for each of several areas are contained herein, and are in consonance with current statutory and corporate energy goals outlined in the AF IEP. The primary focus areas are sustainable infrastructure assessments, water conservation, renewable energy, and energy conservation, as well as appropriate levels of design funding and "third-party" energy saving contract buyouts. Helping the MAJCOMs and bases to program and manage implementation of the investments (enablers) is also a key component of the Air Force investment strategy.

The CIP covers the planned investment amounts in detail in Section 4. The AF plans a total investment of approximately $1.3B during the period FY12 to FY16 using centrally managed energy focus funds. The ongoing MILCON construction program also represents an opportunity to incorporate elements in our new and existing facilities that will result in reduced energy and water consumption. At least annually, AFCEC will review and revise the plan as necessary due to any changes to the mandated targets, and/or to improve the investment efficacy in bringing about the various energy and water conservation goals, and will adjust funding allocations as actual progress warrants.

Attachement 2 contains the Energy Program Execution Manual which discusses program rules and milestones including ACES PM programming guidance for implementing this plan.. Current ESPC/UESC policy is in Attachment 3. Attachment 4 covers the Economic Life for Various Systems. Attachment 5 is the Energy Program Measurement and Verification Execution Manual.

1.0. Introduction

From September 2001 to September 2006, the Air Force reduced overall energy consumption by 8%; however, energy costs grew by 42% in that same period. As a result, the Air Force developed a comprehensive energy strategy that includes the Air Force Infrastructure Energy Plan (AF IEP) as a central component. The AF IEP broadly defines the way ahead for energy issues associated with facilities, infrastructure, ground fuels, and ground vehicles. Interested readers may find the full AF IEP document on the Energy Community of Practice web page. See the web-link in Attachment 1.

At the core of the AF IEP are four "Pillars" that support Air Force efforts to reach our energy goals (Figure 1). These pillars are:

- Pillar 1 - Improve Current Infrastructure
- Pillar 2 - Improve Future Infrastructure
- Pillar 3 - Expand Renewables
- Pillar 4 - Manage Costs

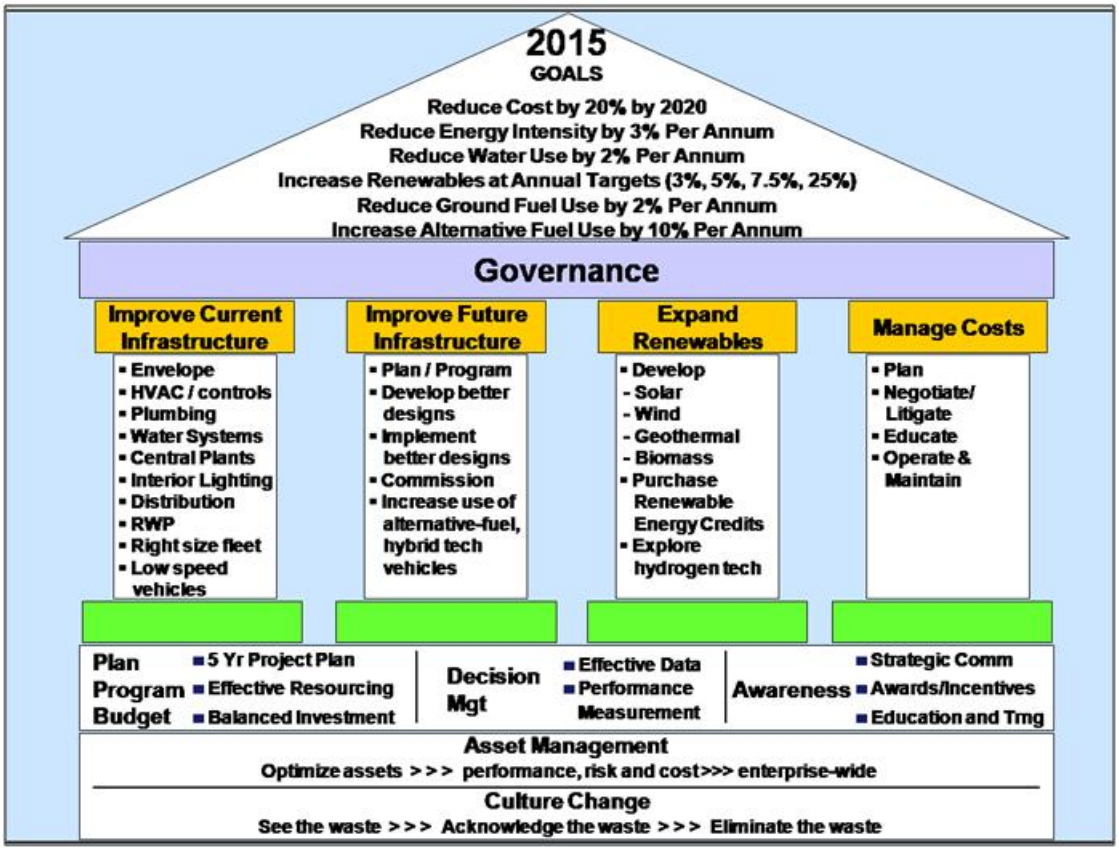


Figure 1. The Air Force Infrastructure Energy Plan

Each pillar focuses on specific objectives. Creating the foundation for the AF IEP action pillars are the following enablers: (a) planning, programming, budgeting, and execution; (b) decision management; and (c) energy awareness. These enablers are vital keys to the organizational and process transformation that will equip us to reach or exceed our energy goals.

In the next level of planning, AFCEC developed the Air Force Infrastructure Energy Program Implementation Plan that provides Air Force leaders with a framework to define installation-level energy programs. Solid installation level programs will improve the likelihood of success in attaining the overarching Air Force and DoD goals described in the AF IEP. The Implementation Plan may be found on the Energy Community of Practice web page (see the web-link in Attachment 1).

This document, the CIP, reflects the third tier in Air Force energy program planning, and supports both the AF IEP and the Implementation Plan in attaining many of the Pillar 1 through Pillar 3 goals. In short, the CIP establishes a specific investment plan that will help the Air Force accomplish legislative and corporate goals for facilities energy and water use. The CIP does not address fuels or vehicles.

AFCEC aligned the CIP investment allocations with the goals enumerated at the top of the diagram in Figure 1. Table 1 below lists specific goals and mandates.

Goal Title	Driver	Baseline (FY)	Annual Target	Final Goal	Goal (FY)	Future Target	Final Goal (FY)
Reduce Facility Energy	EISA 07	2003	3%	30%	2015		
Reduce Facility Energy	EO 13514	2015	1.5%	37.5%	2020		
Reduce Greenhouse Gases	EO 13514	2008	3%	35.1%	2015	1.5%	2020
Renewable Energy Use	EPAct 05	2005	5%	7.5%	2013	7.5%	2025
Renewable Energy Use	USC 2911	2013	1.5%	25%	2025		2025
On-Base Renewable Energy	AF	2008	--	1%	2012	3%	2015
Reduce Water Use	EO 13514	2007	2%	26%	2020		2020
Reduce Industrial Water Use	EO 13514	2010	2%	20%	2020		2020
Audit Covered Facilities	EISA 07	2009	25%	100%	2012		Indef
Meter Facilities (elec)	EPAct 05	2008	--	100%	2012		2012
Meter Facilities (gas/steam)	EISA 07	2008	--	100%	2016		2016

Table 1. Strategic Air Force Energy Goals and Mandates

Subsequent sections of this document describe the funding amounts targeted to help attain the goals depicted above.

2.0. Centralized Program Management

Centralized technical expertise resides with the Air Force Civil Engineer Center (AFCEC). AFCEC serves as the Air Force Center of Expertise for facility energy for the Air Force. The AFCEC facilitates facility energy programs, develops guidance to implement energy programs and projects, and provides technical, contractual, and legal review and analysis for energy and utility initiatives. The AFCEC team also consolidates program data and status for upward reporting to A7C, DoD and Congress.

One component of AFCEC, the CND Program Development Division (CND) centrally manages Air Force capital investments for the facilities energy program. CND oversees the Energy Conservation Investment Program (ECIP) and the Sustainment, Restoration & Modernization (SRM) /energy ("NRG") program identification, development, prioritization, and execution. In addition, CND monitors and reports on project progress and performance Air Force-wide.

AFCEE centrally manages the Military Construction (MILCON) and Sustainable Design and Development Program. The joining of these two programs allows incorporation of the High Performance Sustainable Buildings (HPSB) Guiding Principles into new construction and major renovations projects that support both current and new mission requirements. Two tenets of the HPSB Guiding Principles are energy efficiency and water conservation with contributions significantly meeting the AF program goals and mandates.

3.0. Capital Investment Funding Sources

Several different funding sources for capital investments are potentially available for renewable energy, energy conservation and water conservation. These sources include regular MILCON funds, regular SRM funds, Energy Conservation and Initiative (NRG) funds, and Energy Conservation Investment Program (ECIP) funds, Non-appropriated funds (NAF) may be used to fund energy and water conservation projects for facilities and activities within the NAF arena.

Other funding sources include third party-financed projects, such as Energy Savings Performance Contracts (ESPCs) and Utility Energy Service Contracts (UESCs). However, before considering these particular funding sources, installation or MAJCOM engineers must contact AFCEC for process, approval, and implementation details. Third party financing of projects is normally considered when there are not sufficient funds available for a direct AF capital investment.

The clearinghouse for determining the best method of executing centrally funded energy projects and contracts is AFCEC. The various branches of AFCEC will collaborate to review projects that are complete, in planning, design, or under construction. AFCEC will use all information available, including but not limited to, sources from Automated Civil Engineer System (ACES) (or TRIRIGA when available), installation audits, projects and studies to validate requirements

and put forth the best-engineered solution to accomplish energy and cost savings goals. AFCEC energy collaboration groups will review Air Force bases and Air Force led Joint Bases as an entire entity as needed to review requirements and proposals.

This Capital Investment Plan focuses on centrally managed ECIP and NRG funding as the primary resources allocated according to this plan. ECIP and centrally allocated NRG funds span multiple years with central management at AFCEC. Other funding sources described above may be relevant, and may (or may not) be managed centrally.

Table 2 shows the funding sources and amounts for each of several sources, including ECIP and Energy Conservation. Note the previously identified FY10-15 POM is now referred to as Energy Conservation funding.. The FY10-FY15 columns reflect the total available funding without taxes, for the various programs.

TOTAL AVAILABLE FUNDING ($M) w/o taxes						
PROGRAM	**FY10**	**FY11**	**FY12**	**FY13**	**FY14**	**FY15**
ECIP Projects (FC84)	30.68	33.85	40.04	29.70	34.80	37.00
ECIP Design (FC84)	2.95	3.96	0.00	2.50	3.50	3.50
AF Energy Program (8Y)	43.10	32.20	30.10	22.00	18.80	18.00
Energy Cons (2C/NRG)	215.64	200.34	170.79	189.68	191.09	188.93
ANG (2C)	24.00	24.00	24.00	24.00	24.22	24.03
AFRC (2C)	2.00	2.00	2.00	2.00	2.15	2.14
2C SUBTOTAL	241.64	226.34	196.79	215.68	217.46	215.10
TOTALS	**318.36**	**296.34**	**266.93**	**269.88**	**274.56**	**273.60**

Table 2. Facilities Energy Capital Investment Funding Profile

4.0. Capital Investment Allocation

This section describes the allocation of centrally managed energy funding. The most significant areas include: (a) third-party contracts (ESPC, UESC), (b) Audits, (c) Water Conservation, (d) Renewable Energy (e) Design, (f) Renewable Energy Feasibility Studies and (f) Energy Conservation and (g) MILCON.

Table 3 in Section 4.8 specifies "target" funding amounts based on program goals for each of the primary areas. Subsequent sections of this CIP explain the basis for the allocation amounts. The Energy Initiative funding is not included in the funding for projects for FY12-16, as it funds enablers (see Table 4, Section 4.9). Enabler funds are for such things as training, software, studies and re-commissioning.

4.1. Third-Party Contracts

The Air Force uses third party contracts such as ESPC and UESC to finance energy conservation projects with no up-front costs to the taxpayers.

Many ESPCs and UESCs awarded during the past decade, with some of the earlier ones lacking detailed Measurement and Verification (M&V), had high interest rates that provided a low value to the government. Consequently, the Air Force is now interested in reducing financed costs on those contracts in order for the Air Force to reap more economic benefits.

This funding strategy is in consonance with AF IEP, Pillar 4 (Figure 1) and Goal 1, Section 1 of this CIP: "Reduce Cost by 20% by 2020." AFCEC will identify and prioritize contracts with the goal of paying down or paying off the contracts having the highest Return on Investment (ROI). As the ESPC/UESC portfolio manager, AFCEC will evaluate which buyout alternatives offer the best ROI, and will prioritize buyouts accordingly.

As the Air Force evaluates and buys out the ESPC/UESC contracts, AFCEC will re-assess residual requirements and adjust funding allocations. In FY09, the Air Force bought out over $200M in third party financed projects using AFSO21 funding and over $20M in FY10.

No future buyouts are planned at this time; however, as part of the ESPC/UESC portfolio management, contracts will be reassessed annually.

4.2. Sustainable Infrastructure Assessments (SIAs)

The first year (FY10), the Air Force audited approximately half the "covered" facilities at about half the installations in the Air Force. Energy and water audits form the foundation of a vital energy and water conservation program. Audits are required by legislation or E.O. since EPAct 1992. The Energy Independence and Security Act of 2007 (EISA) requires that energy and water audits be accomplished annually for at least 25 percent of facilities consuming 75percent of the installation energy per year.

In February 2011, Air Force Civil Engineering Transformation sought to gain efficiencies in data collection for Asset Management Optimization by combining facility assessments with the audits, calling them Sustainable Infrastructure Assessments (SIAs). These assessments include energy audits, facility condition assessments, space utilization and a High Performance Sustainability Building questionnaire.

The four main components are:

1. Energy Audit Report
    - DD1391s with BLCCs
    - Re/Retro Commissioning and Process Energy recommendations
2. Facility Condition Assessment
    - Upload data to Sustainable Management System (SMS)
    - FYDP+2-year long-range maintenance plan
    - Real Property Install Equipment (RPIE) data and Direct Scheduled Work-Order (DSW) trends, costs/square foot, & Maintenance Action Sheet (MAS) review

- Detailed inventories on all facility, energy and water components, efficiencies and sizes of those components
- List of ACES-RP (Real Property) data change recommendations

3. Space: CADD floor plans (single-line) & updated/new S-file data set
4. High Performance Sustainable Building (HPSB): Project list for all water and energy requirements

The most economically feasible Energy Conservation Opportunities (ECOs) identified during these SIAs will include implementation cost estimates, Building Life Cycle Cost (BLCC) analyses, and completed DD Forms 1391. Base programmers/energy managers should enter the ECOs as projects into ACES PM as quickly as possible to ensure project availability for validation and prioritization.

4.3. Design

A substantial investment may be required for designing projects before construction and before arriving at an accurate Program Amount (PA). Some projects will require full (100%) designs. Other projects may be executed where 'design-build' contracts and up-front design cost will be reduced. As a starting point, AFCEC set the design allocation at eight percent (8%) of available funding per project. Design allocation is slightly higher than otherwise might be expected due to the relatively high cost for designing small projects (i.e., program amounts under $1M).

Since good design is essential to effective energy, water, and renewable projects, the initial design allocation are linked to Pillars 1and 3 as well as the goals listed in Section 1. The design allocation may change as the program advances and requirements are better defined.

CND is targeting several high-interest areas for design funding early in the program. The target areas include Paint Hangar HVAC Recirculation, Decentralizing Heat Plants, Precision Measurement Equipment Laboratory HVAC, and Data Centers. CND will address other special interest areas as they surface.

4.4. Renewable Energy (RE)

As discussed in the AF IEP, the Air Force is currently the second largest federal purchaser of RE in the United States, acquiring 6 to 11% of its total electrical power from renewable sources. In the coming years, the Air Force will focus more attention on construction of renewable generation capacity, largely through third party capital investment. Some direct investment to develop additional RE resources on Air Force installations may be used to help satisfy on-base generation requirements, if economically viable. The goal as stated in Section 1 of the CIP is to acquire up to 10.5% of the total electric energy consumed as renewable energy by 2015, while constructing on-base renewable energy assets capable of producing up to 3% of the total Air Force energy requirements by 2015.

The Renewable Energy Project Development team prioritizes projects based on an economic analysis, local (site) conditions, and mission compatibility. Other factors include the cost of technology deployment and available incentives such as new rebates or increasing REC prices. Processes used to outline the development and approvals for a renewable project are shown in the Renewable Energy Playbook on the A7C Portal. The Renewable Energy Project Development subpanel also determines the best execution method and coordinates with the RE plan with HAF and the Basing Review Panel under AFI 10-503.

The current AFCEC estimate for the required AF capital investment to contribute to Pillar 3 and Goal 4 is shown in Table 2. Small scale RE construction projects are now competing for funding in the Energy Conservation Funding stream. Other funding (e.g., for Power Purchase Agreements or other third party investments) to complete the RE portfolio will be obtained from other sources. The AFCEC centrally funds and manages REC purchases to obtain the most economical pricing, currently using DLA as the purchasing agent. Purchases are limited to the minimum amount to meet goals and maintain all PPA power as renewable. RE projects are prioritized based on the generation capacity and the potential effects of cost savings, mission assurance, green house gas savings and other criteria as approved by Air Force leadership.

4.5. Water Conservation

The AF IEP describes corporate Air Force goals for water conservation. Executive Order 13514 (signed 5 Oct 09) established that Federal Agencies must reduce water consumption by 26% versus the 2007 baseline by 2020. On whole, the data through FY12 indicates the AF has been very successful in water conservation and as such, there is less need for water conservation projects strictly from the standpoint of meeting goals. However, a number of individual bases, especially those located in arid climates or water-starved areas, will need to continue to pursue cost-effective water conservation projects to help insure base sustainability in their particular locations. Since there is no longer a set-aside of NRG funding to support water conservation projects (these projects typically don't compete well with conventional energy conservation projects from a cost-effectiveness standpoint), MAJCOMs are encouraged to directly contact their AFCEC/CND program manager to advocate for water projects viewed as especially important for bases that have critical water issues.

. Other criteria may also be applied as approved by Air Force leadership.

4.6. Energy Conservation

Cost-effective reduction of energy intensity is the bedrock of the Air Force Energy program. The primary goal is to reduce facilities energy intensity by 30% (measured in MBTUs/SF), compared to the 2003 energy baseline. The 30% reduction must occur by the year 2015.

As stated in Section 4.7 below, a secondary goal supporting the HPSB requirement and the AFCEE goals is that 15% of the existing buildings (greater than 5,000 sf) reduce a) energy consumption by 20%, b) indoor water consumption by 20% and c) outdoor water consumption by 50% - by 2015.

The Air Force has already made significant progress, having reduced energy consumption roughly 16% by the end of FY08. Therefore, the Air Force can reach its goal with only a 14% further reduction.

The AFCEC projects energy intensity reductions as a result of investments using an algorithm comprised of the projects' purported energy savings, system degradation over time, a slight impact due to demolition reduction of SF and a two year time delay due to construction and time to measure.

AFCEC prioritizes the Air Force-wide installations' energy conservation requirements, usingSIR times MBTUs per investment ration (BIR) to prioritize energy conservation projects. Other criteria may also be applied as approved by Air Force leadership.

4.7. MILCON

Choosing building elements during design and construction that result in the highest life cycle cost savings provides an opportunity for the Air Force to fully realize the greatest energy and water conservation over the life of the facility and reduce the total ownership cost of the building.

Through the MILCON process, AFCEE and the project delivery team will evaluate options to achieve the Federal HPSB Guiding Principle requirements, which include a 30% reduction in energy intensity relative to ASHRAE 90.1; a) a 20% reduction in indoor potable water consumption, b) a 50% reduction in outdoor potable water consumption, and c) renewable energy goals.

As the MILCON program supports both existing and new building requirements, the effectiveness of the program in achieving the HPSB requirements directly supports the conservation goals of Pillars 1 and 2, as well as the renewable energy goals of Pillar 3.

The current Air Force Sustainable Design and Development (SDD) Policy requires documentation of the cost to:

1) Meet the Federal HPSB requirements.
2) Be able to achieve US Green Building Council (USGBC), Leadership in Energy and Environmental Design (LEED), Silver certification level.

In the absence of detailed cost data, the SDD memorandum allows two (2) percent of the primary facility cost to be added to the DD Form 1391.

AFCEE and AFCEC will continue to explore avenues to accomplish the parallel energy, water and sustainability goals (such as companion ECIP and MILCON projects) in a manner that leverages the resources of both programs to the greatest benefit of the Air Force.

4.8. Funds Allocation

The Air Force plans to invest over $150M per year in NRG funds FY12 through FY15. Of the annual investment, Table 3 is allocated to the active duty facilities, and the balance is allocated to AFRC and ANG with the overall totals shown in Table 1. In addition, ECIP funds averaging about $35M per year are assumed available. The total centrally managed energy funding projected for projects in the period of FY12-17 is roughly $760M.

Total Force Funding Allocations (Combined ECIP and Energy Conservation $M)							
PROGRAM	FY12	FY13	FY14	FY15	FY16	FY17	TOTALS
AUDITS	18.00	20.00	5.00	5.00	0.00	0.00	48.00
WATER CONS	11.80	13.20	5.40	6.90	6.90	6.90	51.10
RENEWABLES	11.50	0.00	6.10	5.00	5.00	5.00	32.60
DESIGN plus surveys	11.50	12.50	12.50	13.50	3.50	3.50	57.00
RE PROJ DEV	0.00	1.20	0.00	0.00	0.00	0.00	1.20
RECOMMISSIONING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ENERGY CONS	133.49	113.34	134.71	138.57	28.60	28.60	577.31
TOTALS	**186.29**	**160.24**	**163.71**	**168.97**	**44.00**	**44.00**	**767.21**

Table 3. Mapping Capital Investments to Strategic Goals

Based on the objectives outlined in the AF IEP and in the preceding paragraphs, Table 3 reflects the desired apportionment of funds in the indicated investment areas. The upper portion of the table indicates planned dollar amounts allocated to the individual target areas.

AFCEC will review these funding allocations annually to assess efficacy in attaining the various energy and water goals. AFCEC recommends adjustmentsto the Energy Program Group as performance data warrants.

SIA/Audits: The funding amounts for audits and SIAs in Table 3 are an estimated cost per square foot times the number of square feet to be audited each year. AFCEC will spend approximately $18M (portion of SIAs) in FY12/13 and a decreasing amount in the out years.

Design: Funding for design is generally 8% of the total programmed amount for each project. Funding of water and gas leak surveys without construction are evaluated for funding depending on its scope

Renewable Energy: The renewable energy capital investment amount was calculated by the RE team, and reflects the anticipated construction funds needed to reach RE production goals rather than through purchasing RECs or through Power Purchase Agreements.

Energy Conservation: The energy conservation funding shown in the table is the balance of available funds after deducting all other line items from the original total funding.

Annually, AFCEC will review energy performance metrics versus investment allocations to assess how effectively the investment strategy is working. AFCEC will revise CIP allocations as needed based on performance data, relevant technology advancements, or changes in legislation, policies, and directives. The overarching theme in the CIP is to maintain investment allocations that are fully aligned with legislative and corporate energy goals as outlined in the AF IEP.

4.9. Enablers

Significant staffing is required to ensure the identification, programming and execution of energy projects at all levels, including AFCEC, the Air Staff, SAF/IEN, the MAJCOMs and the installations. AFCEC uses the Energy Initiative funding line to enable the energy offices to meet the staffing requirements and to continue funding "other enablers". The "other enablers" include many of the original energy initiative funding requirements such as energy awareness programs, CEMIRT HVAC Recommissioning, and training.

	ENABLER (INITIATIVE) FUNDING ($M)							
	FY1	FY12	FY13	FY14	FY15	FY16	FY17	TOTALS
PROGRAM	1							
REMs / Spt Ktrs	17.10	15.70	17.30	18.65	19.55	20.50	21.50	130.30
AFCEC Labor Spt	3.84	2.50	5.01	5.57	5.80	6.10	6.40	35.22
RECs	0.03	0.08	0.11	0.06	0.06	0.07	0.08	0.49
A7CAE CTRs	0.95	0.68						1.63
SAF/IEN CTRs	2.44	1.75	3.70					7.89
OTH ENABLERS	3.20	8.94	5.68	4.29	3.93	2.08	2.07	30.19
TOTALS	**27.56**	**29.65**	**31.80**	**28.57**	**29.34**	**28.75**	**30.05**	205.72

Table 4. Enabler Allocations Using Energy Initiative Funds

Specific allocations of the FY12 enabler funding is show in Table 4. Renewable Energy Credits, previously purchased by the MAJCOMs are centrally purchased by AFCEC to ensure only enough are purchased to meet the RE targets, as well as getting the best bulk prices.

The Resource Efficiency Managers (REMs) are energy support contractors allotted to bases and MAJCOMs to identify and implement projects incorporating energy conservation measures resulting in cost savings. AFCEC labor support personnel are supporting operations of the AFCEC. Duties include positions to perform ESPC/UESC, Annual Reporting, Utility rates, RE and capital investment support. Also included in Table 4 are RECs as well as contractor support to both AF/A7CA and SAF/IEN.

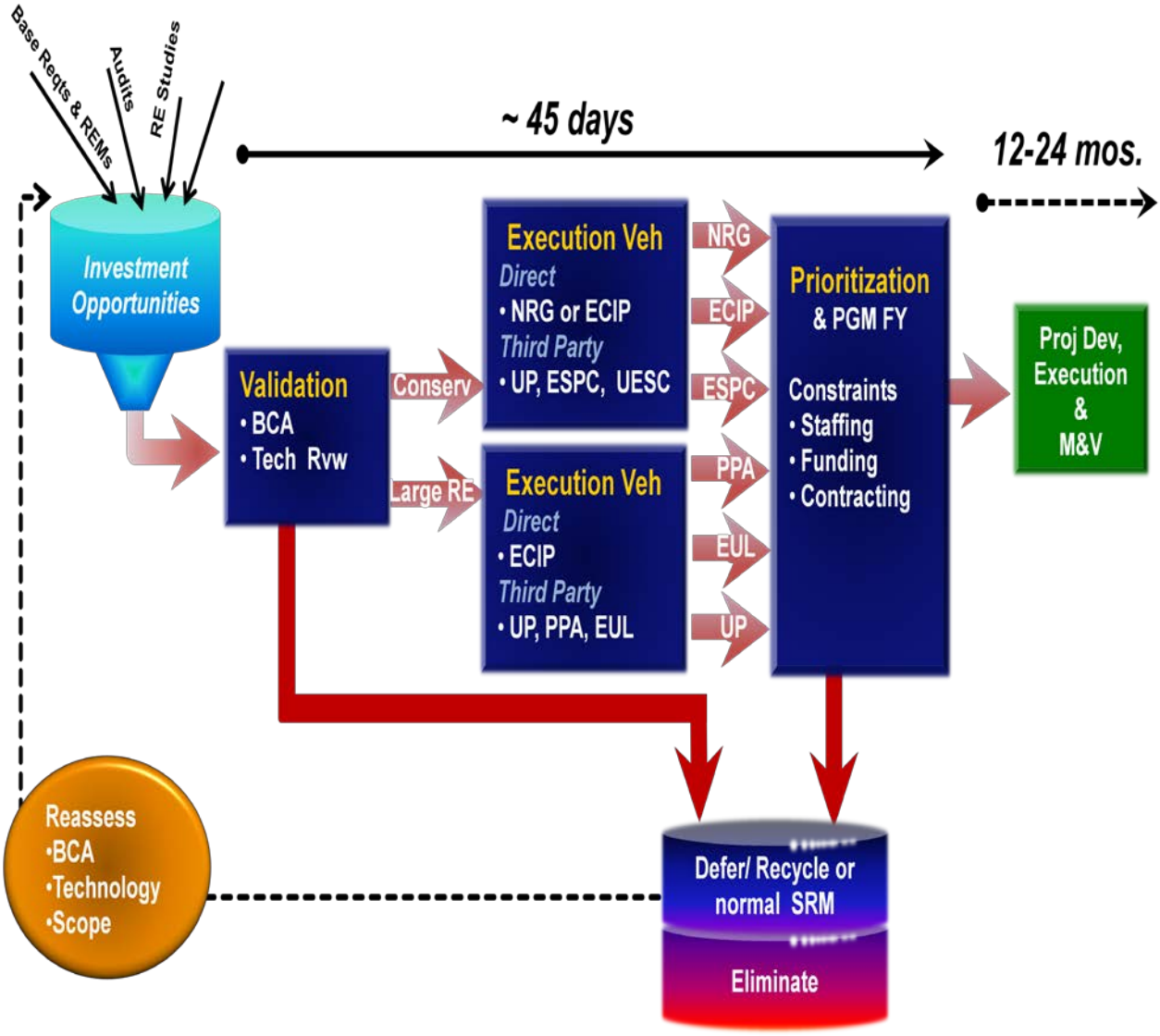
Table 4 also indicates Other Enablers (OTH ENABLERS) which is an assortment of money planned for project development, training, feasibility studies, travel support for AFCEC staff and AMR software development.

5.0. Updates to the CIP

Periodically, this plan may require updating based upon metrics analyses, changes in policy or legislation, new technologies, funding, mission, etc. The Program Management Review (PMR) will assess the allocations and any impacting issues. AFCEC will address any recommendations to the Energy Program Group as needed. Once advanced meters are in place and the data can be collected, analyzed and reported near-real time, adjustments may be made more frequently with up-to-date data.

5.1. Energy Project Execution Options

Ideas for energy projects come from a variety of sources including programmed installation Energy Audits, Resource Efficiency Managers (REMs), Energy Managers or shop personnel, mission requirements, leadership, best practices from other bases, etc. Candidate pilot projects (RE, energy conservation, etc) are filtered by AFCEC and the SMEs before funding.



AFCEC will defer some candidate projects before validation while others are eliminated due to other constraints. Some candidates will require additional study, design or analysis or may be ready to directly advance to prioritization for either direct capital investment or third party execution.

Methods → Criteria	SRM/NRG	ECIP	ESPC	PPA	EUL
Type of Work	Small Nrg/Wtr Consrv	Large NRG/WTR Consrv, Small RE, En Security	Large focused ECO, Process NRG	Med Utility Scale RE for AF use only	Large Utility Scale RE for Grid
Ownership	AF	AF	Ktr→AF	Developer	Developer
Maintenance	AF	AF	Ktr→AF	Developer	Developer
Land Availability Factor	No	Small	No	Med	Large
Complexity (tech/pgm)	Low-Med	Med-High	Med-High	High	High
Approval Levels	Min Const < $750K	MILCON > $750K	Major Repairs	TBD?	SAF/IEI

Still others may be good projects but should be executed by others. At any time in the process or even later down the road, there may be factors that change the viability of a candidate project and whether it should be re-analyzed. Specific execution processes for viable project candidates are detailed in the Energy Program Execution Manual in Attachment 2.

5.2. Energy Conservation Investment Program (ECIP)

Traditional design-bid-build is the preferred method of execution; however, some ECOs (like lighting) may lend themselves to the design-build acquisition. AFCEC/CND will work with the respective installations and MAJCOMs to determine the desired approach. AFCEC will centrally manage all ECIP projects. AFCEC will also centrally award most ECIP design and construction contracts. Exceptions will only be granted under extreme circumstances, upon request by the MAJCOM.

5.3. Energy SRM (NRG) Projects

MAJCOMs and installations will determine the execution approach for NRG projects and designs. As always, traditional design-bid-build or non-traditional design-build acquisition approaches may be used, depending on the nature and complexity of a given project.

Other options include IDIQ contracts, SABER contracts, and Corps of Engineers MATOC or similar contracts. AFCEC and AFCEE have contract execution tools available as well, and may be able to assist the installations upon request. AFCEC will centrally fund and execute Audits to meet the AF targets; exceptions will be considered on a case-by-case upon request by the AFCECted MAJCOM.

5.4. Third Party Execution

When Energy Service Companies (ESCOs) or Utility Service Providers present potential ECMs to the AF for consideration, the ECMs must be analyzed the same as for any direct investment; however, the execution method of the ECMs must also be analyzed. Several options exist for executing ECMs presented by ESCOs or Utility Service Providers. The first is fully funded, direct AF investment with the third party as the execution agent (ID-design-build-maintain-M&V). Another is a direct AF investment with full and open competition (exclude third party). If there is not sufficient AF funding, third party financing through the ESCO or Utility Service Provider. ESPCs/UESCs processes must follow the policy and guidance provided (see Attachment 3).

A Renewable Energy Power Purchase Agreement (REPPA) is another type of third party investment where the Utility Service Provider produces renewable energy and the AF contracts to purchase the renewable energy to meet the targets. Currently, there is almost $200M in ESPC/UESC and REPPAs projected in the CIP to help achieve the mandates (see Table 5).

THIRD-PARTY PROJECT FUNDING ($M)						
PROGRAM	**FY12**	**FY13**	**FY14**	**FY15**	**FY16**	**TOTALS**
ESPC/UESC	223.00	98.00	80.00	100.00	80.00	581.00
REPPA	117.90	447.60	220.00	92.00	90.00	1379.50
TOTAL	**340.90**	**545.60**	**300.00**	**192.00**	**170.00**	**1960.50**

Table 5. Third Party Funding ($M)

Air Force Real Property Agency executes Energy Conservation or Renewable Energy Enhanced Use Leases with “in kind” consideration being upgrades to energy conservation real property or investments in renewable energy for the installation that help the Air Force meet its mandated targets.

6.0. Attachments

Attachment 1: Glossary of References and Acronyms
Attachment 2: Air Force Energy Program Execution Manual
Attachment 3: Updated ESPC and UESC Policy
Attachment 4: Economic Life for Various Systems
Attachment 5: Energy Program Measurement and Verification Execution Manual

U.S. AIR FORCE

Attachment 1

Glossary of References and Acronyms

Version 3.8
1 July 2013

AFCEC-E/CND
139 Barnes Ave
Tyndall AFB, FL

Glossary of References and Acronyms

References

Air Force Infrastructure Energy Strategic Plan

Air Force Infrastructure Energy Implementation Plan

Note: The documents listed above may be found/viewed on the AF Energy Communities of Practice (CoP) via the following link

FEMP Energy Independence and Security Act of 2007 (EISA) Audit Guidelines

:

https://afkm.wpafb.af.mil/ASPs/DocMan/DocMain.asp?FolderID=OO-EN-CE-A4-53-6-4&Tab=0&Filter=OO-EN-CE-A4

Acronyms

A7C	**The Civil Engineer of the Air Force**
ACES	**Automated Civil Engineer System**
ACES PM	**Automated Civil Engineer System Project Management**
AF	**Air Force**
AFCAMP	**Air Force Comprehensive Asset Management Plan**
AFCEC	**Air Force Civil Engineer Center**
AFI	**Air Force Instruction**
AF IEP	**Air Force Infrastructure Energy Plan**
AFRPA	**Air Force Real Property Agency**
AFSO21	**Air Force Smart Operations for the 21st Century**
ARRA	**American Recovery and Reinvestment Act**
ATA	**Authority To Advertise**
AATA	**Advance Authority to Advertise**
BIR	**MBTU to Investment Ratio**
BLCC	**Building Life Cycle Cost**
BSE	**Base**
BTU	**British Thermal Unit**
CEK	**AFCESA Contract Support**
CENI	**AFCESA Energy Capital Investment Branch**
CENR	**AFCESA Renewable and Rates Branch**
CEMIRT	**Civil Engineering Maintenance, Inspection and Repair Team**
CIP	**Capital Investment Plan**
CIS	**Capital Investment Strategy**
CoP	**Community of Practice**
COR	**Contracting Officer Representative**
CRIS	**Commander's Resource Integration System**
DoD	**Department of Defense**
ECIP	**Energy Conservation Investment Program**

ECM	**Energy Conservation Measure**
ECO	**Energy Conservation Opportunity**
EEIC	**Expense Element Investment Code**
EISA	**Energy Independence and Security Act of 2007**
E.O.	**Executive Order**
EoY	**End of Year**
EPG	**Energy Program Group**
ESCO	**Energy Service Company**
ESPC	**Energy Savings Performance Contract**
ETL	**Engineering Technical Letters**
EUL	**Enhanced Use Lease**
FAR	**Federal Acquisition Regulation**
FEMP	**Federal Energy Management Program**
FY	**Fiscal Year**
GSA	**General Services Administration**
HAF	**Headquarters Air Force**
HVAC	**Heating, Ventilation and Air Conditioning**
IDIQ	**Indefinite Delivery Indefinite Quantity**
IGP	**Investment Grade Project**
IEESG	**Infrastructure and Expeditionary Energy Steering Group**
IPL	**Integrated Project List**
IT	**Information Technology**
JUON	**Joint Urgent Operational Need**
KPI	**Key Performance Indicator**
kWH	**Kilowatt Hours**
LED	**Light Emitting Diodes**
MAJCOM	**Air Force Major Commands**
MATOC	**Multiple Award Task Order Contract**
M&V	**Measurement and Verification**
MC	**Minor Construction**
MCP	**Military Construction Program**
MBTU	**Millions of BTUs**
MGals	**Millions of Gallons**
MILCON	**Military Construction**
NAF	**Non-appropriated funds**
NAVFAC	**Naval Facilities Engineering Command**
NECPA	**National Energy Conservation Policy ACT**
NRG	**Energy, Sustainment, Restoration and Modernization**
O&M	**Operations and Maintenance**
OAC	**Operating Agency Code**
OPR	**Office of Primary Responibility**
OSD	**Office of Secretary of Defense**
PA	**Program Amount**
PMO	**Program Management Office**
PMR	**Program Management Review**
POM	**Program Objective Memorandum**
PPA	**Power Purchase Agreement**
PRG	**Programming**
PPA	**Power Purchase Agreement**
RDT&E	**Research, Development, Test and Evaluation**
RE	**Renewable Energy**

REPPA	**Renewable Energy Power Purchase Agreement**
REC	**Renewable Energy Credit**
ROE	**Rules of Engagement**
REM	**Resource Efficiency Manager**
REPPA	**Renewable Energy Power Purchase Agreement**
ROI	**Return on Investment**
RPIE	**Real Property Installed Equipment**
RxC	**Re- or Retro-Commissioning**
SABER	**Simplified Acquisition of Base Engineering Requirements**
SAF	**Secretary of the Air Force**
SIR	**Savings to Investment Ratio**
SPB	**Simple Pay Back**
SRM	**Sustainment, Restoration & Modernization**
UESC	**Utility Energy Service Contracts**
UFC	**Unified Facility Criteria**
UP	**Utility Privatization**
USACE	**United States Corp of Engineers**
WCO	**Water Conservation Opportunity**
WIR	**MGals to Investment Ratio**

Definitions

Automated Civil Engineer System (ACES PM) Programmed "NRG" Projects	Projects entitled "NRG" meeting any of the following definitions below should have a fund source code "NRG" in Automated Civil Engineering System (ACES) along with the applicable sub-source code. All NRG projects must document in the ACES, as a minimum, the million BTU's (MBTUs) saved or millions of gallons (MGals) saved for water conservation projects, or MBTUs produced for renewable electrical projects, the economic life, annual energy-related dollars saved, the Savings Investment Ratio (SIR) and Simple Pay Back (SPB). While an NRG project normally needs to have economic payback to receive central funding, it could still be programmed as NRG with an SIR less than one (1) if there is the potential for the SIR to increase in a future year and it is the intention of the base to reanalyze the project for changes in the economics. Additionally, meter installations, designs, feasibility studies and energy audits which contribute to any NRG project should use fund source code "NRG." Note that meter installations are funded by the MAJCOMs. NRG projects that do not satisfy the preceding definitions, while they may affect energy or water consumption, should not have fund source code NRG and should be prioritized as NRG projects based upon impact to mission, not their economic return on investment.
Building Life Cycle Costs (BLCC)	A life cycle analysis program, latest Air Force approved version, developed by the Office of Applied Economics, Building and Fire Research Laboratory, National Institute of Standards and Technology
Commissioning	The systematic process of ensuring that all newly constructed facility systems perform interactively in accordance with the design documentation, the intent of

the facility and operational needs of the owner. This process occurs not earlier than 1 year after completion of facility construction. The goal is to ensure fully functional systems that can be properly operated and maintained during the useful life of the facility. Commissioning is not included in the NRG program centrally funded by AFCESA and is currently under the auspices of AFCEE.

Covered Facilities

In accordance with 42 USC 8253 (f), Use of Energy and Water Efficiency Measures in Federal Buildings, "Covered Facilities" are facilities measured by square footage that consume the highest 75 percent of the agency's energy. These "Covered Facilities" must be evaluated and audited 100 percent within a 4-year cycle. Covered Facilities include, but are not limited to, high energy users such as industrial, maintenance, data processing, recreational, dormitories, and office-type facilities

Energy Audits

An audit conducted by a certified energy professional individual or team that focuses on potential capital-intensive energy usage improvements and involves gathering field data and engineering analysis. At a minimum, the audit will provide proper programming documents; e.g., a DD Form 1391/c with detailed project costs, BLCC life cycle cost, Savings Investment Ratio (SIR) and Simple Pay Back (SPB), with a level of confidence sufficient for major capital investment decisions. Energy audits may be funded locally or centrally funded by AFCESA.

All energy audit projects shall be programmed and tracked through ACES. The complexity and level of these audits shall be considered "Level 3 Investment Grade."

Level 1 Audits

A walk-through assessment of the existing facility, which involves a preliminary energy use evaluation followed by a brief survey of the building. In a Level 1 analysis, low-cost/no-cost measures are indentified, and cost and savings estimates are provided for those improvements that merit further analysis and provide initial judgments about potential costs and savings.

Level 2 Audits

An energy survey and analysis. A Level 2 audit should include a more detailed facility survey and energy analysis. Energy use should be broken down by end-use category. The analysis, cost and savings estimates are identified and provided for all practical measures that meet the government's constraints and economic criteria. Any potential measures that require more thorough data collection or analysis should be identified with initial judgments about cost and savings.

Level 3 Audits

A detailed analysis of capital-intensive modifications. This level focuses on potential capital-intensive projects identified during Level 2 and requires more field data and engineering analysis. Detailed project cost and savings information suitable for making capital investment decisions shall be provided.

Energy Conservation Investment Program (ECIP)

ECIP is a subset of the Defense-Wide Military Construction Program (MilCon), specifically designed to fund projects that save energy or reduce DoD's energy costs. The Program supports construction of new, high-efficiency energy systems and improvement and modernization of existing systems.

The basic objectives of ECIP are energy conservation and energy cost savings. For a project to be eligible for the program, at least 20 percent of its annual dollar savings must be attributed to energy (BTU) savings. Water projects are exempt from the 20 percent savings requirement.

Projects are selected by OSD using the metrics and criteria in this table:

	Metric	Energy Efficiency - 55%		Renewable Energy -35%		Water Conservation -5%		Energy Security -5%	
		Weight	Units	Weight	Units	Weight	Units	Weight	Units
Financial	SIR	10%	$/$	10%	$/$	10%	$/$		
	Payback	10%	Years	10%	Years	10%	Years		
	Benefit-to-Investment	15%	MMBTU/5	15%	MMBTU/5	15%	MMBTU/5		
Goals	How do the Energy/Water Savings or Renewable Energy Production compare to the installation's annual goal?	10%	MMBTU (Project) / MMBTU (Target)	10%	MMBTU (Project) / MMBTU (Target)	10%	MGAL (Project) / MGAL (Target)		
Energy Security	How does the project support critical load security or reliability?							25%	Narrative
Synergistic Effect	Does the project integrate multiple technologies to realize synergistic benefits, and how? Is the project part of a multi-year/multi-phaseproject consistent with the installation's plan?	5%	Narrative	5%	Narrative	5%	Narrative	15%	Narrative
Partnership	Does the project provide partnership opportunities with DoE or other Federal agencies?	10%	Narrative	10%	Narrative	10%	Narrative	15%	Narrative
Test Bed Application	Does the project implement a demonstrated testbed technology?	20%	Narrative	20%	Narrative	20%	Narrative	20%	Narrative
Service Priority	Where does this project fall on the Component's prioritized list of projects?	20%	Priority	20%	Priority	20%	Priority	25%	Priority
		100%		100%		100%		100%	

Energy Conservation Projects

Also known as "Energy Projects", these projects include the construction or implementation of energy conservation measures in Federal facilities.

Energy Conservation Measures

"means measures that are applied to an existing Federal building that improve energy efficiency, are life cycle cost effective and that involve energy conservation, cogeneration facilities, renewable energy sources, improvements in operation and maintenance efficiencies, or retrofit activities." (10 CFR § 436.11) (US Code (fully amended), Title 42, Ch 91, Subchapter III, part B, Section 8259

Energy Savings Performance Contract (ESPC)

A partnership between the government and an Energy Service Company (ESCO) to conduct a comprehensive energy audit that will save energy and reduce utility bills at the facility.The ESCO identifies, designs, and installs Energy Conservation Measures (ECMs) that result in a specified level of cost savings (guaranteed savings) that are sufficient to pay the ESCO for the project. Legislation authorizing ESPCs was enacted in 1992 (National Energy Conservation Policy ACT (NECPA)) and first gave federal agencies the authority to enter into shared-energy contracts with private-sector energy service companies (ESCOs).

	It was later superseded by the Energy Policy Act of 1992 which authorized federal agencies to execute guaranteed-savings ESPCs, required ESCOs to guarantee savings, required Measurement and Verification (M&V) of savings and set the maximum contract term at 25-years. The DoD specific authority is 10 CFR 436 Subpart B, which implements ESPC authority, establishes list of qualified ESCO's, specifies the procurement procedures and criteria for selecting ESCO's, identifies recommended standard terms and conditions; defines conditions of payment; addresses measurement and verification (M&V) requirements and prioritizes 10 CFR 436 over Federal Acquisition Regulation (FAR) requirements if the two conflict. ESPCs at Air Force installations must comply with AF/A7C policy memorandum dated 30 October 2007.
Enhanced Use Lease (EUL)	A ground lease authorized by 10 USC 2667 that allows underdeveloped and/or underutilized military facilities/real property to be used by non-federal entities. 10 USC 2667 allows for the receipt of "in-kind" consideration as an additional form of rent payment under the lease. "In-kind consideration" may take many forms and give the development team flexibility to return various types of value to the Air Force for the use of Air Force property.
Real Property Installed Equipment (RPIE)	NRG Projects involving RPIE, such as air compressors, air compressor supply lines or other type specialty systems that are integral to the facility can be considered for NRG project funding if that equipment was originally installed with MILCON or civil engineering O&M funds.
Re-commissioning	The application of the commissioning process to a facility that has been commissioned previously as new construction or as an existing facility. Re-commissioning normally occurs every three to five years to maintain top levels of performance and/or after major upgrade process. Commissioning projects that meet NRG criteria are acceptable as candidates for central funding by AFCESA/CENI.Studies for re-commissioning shall be a part of the repair/upgrade projects.
Renewable Energy Projects	Projects that result in government-owned facilities that produce renewable energy with a positive return on investment (ROI). The legislation defines "renewable energy" as energy generated from solar, wind, biomass, landfill gas, ocean (including tidal, wave, current, and thermal), geothermal, solar walls, ground source heat pumps, municipal solid waste, or new hydroelectric generation capacity achieved from increased efficiency or additions of new capacity at an existing hydroelectric project. (Section 203 of EPAct 2005)
Renewable Energy Purchase Agreement	A utility purchase agreement with a contractor to provide renewable power to an installation generated by equipment or systems provided either by the contractor on base property or from contractor owned generation located off-base. The utility purchase agreement is awarded using FAR Part 41 provisions. When the

(REPPA)	Contractor owned equipment is located on the installation, some form of land use agreement is necessary. Under this arrangement the contractor retains ownership of the generation equipment.
Retro-commissioning	The application of the same systematic commissioning process to an existing facility that has never been commissioned to ensure that the systems designed, installed, functionally tested, and capable of being operated and maintained according to owner's operational needs. Retro-commissioning projects that meet NRG criteria are acceptable as candidates for central funding by AFCESA/CENI. Studies for retro-commissioning shall be a part of the repair/upgrade projects.
Savings to Investment Ratio (SIR)	An indicator of the amount of savings over the investment cost. The SIR must be greater than one to indicate that there will be more savings than cost. The SIR is calculated by dividing the net savings by the initial capital investment.
Simple Payback (SPB)	This ratio indicates in rough terms the number of years needed to save enough to pay for the initial cost of the improvement. It is not exact as the ratio is calculated with only the estimated first year investment and projected savings. There is no adjustment for the changes over time in the savings. The SPB is calculated by dividing the Initial Capital Cost by the first year estimated savings.
Utility Energy Service Contracts (UESC)	Allows federal agencies to implement comprehensive energy and water efficiency and improvement projects at their facilities through partnerships with their franchised or serving utilities. The utility arranges financing to cover the capital costs of the project, and then is repaid over the contract term from the cost savings-generated by the energy efficiency measures. The Federal agency may also pay for the project with appropriated funds. Though UESCs estimate savings possible through the ECMs, they are not required to do so. The Energy Policy Act of 1992 and Federal Legislation 10 USC 2911, 2913 and 2866 authorize Federal agencies to participate in utility energy efficiency programs offered by electric and gas utilities and by other program administrators (e.g., state agencies). These programs range from equipment rebates through utility incentive programs, to delivery of a complete turnkey utility energy service contract project. UESCs at Air Force installations must comply with AF/A7C policy memorandum dated 30 October 2007.
Water Conservation Projects	"…measures applied to a Federal building that improve the efficiency of water use, reduce the amount of water for sewage disposal and are life cycle cost effective and that involve water conservation, improvements in operation and maintenance efficiencies, or retrofit activities." (10 CFR § 436.11) (US Code (fully amended), Title 42, Ch 91, Subchapter III, part B, Section 8259)

U.S. AIR FORCE

Attachment 2

ENERGY PROGRAM EXECUTION MANUAL

Version 3.8
1 July2013

AFCEC-E/CND
139 Barnes Ave
Tyndall AFB, FL

REVISIONS

Version	Date	Author	Description
1.0	1 Aug 2009	Rick Stacey	Initial Draft
2.1	25 Aug 2009	Ken Gray	Revision with A7CAE comments, Program guide inserted and update for ACES Changes, AFCEC comment
3.0	23 Nov 2009	Rick Stokes	Updated with MAJCOM comments and general revisions
3.1	13 July 2010	Rick Stokes	Workshop real time revisions
3.2	30 Sept 2010	Rick Stokes	General revisions
3.3	18 Jan 2011	Rick Stokes	A7O comments included
3.4	10 July 2011	Rick Stokes	Workshop real time revisions
3.5	29 Dec 2011	Rick Stokes	General Revisions
3.6	29 Feb 2012	Rick Stokes	Incorporated MAJCOM EM review comments for A7O review
3.7	31 Jan 2013	Rick Stokes	AFCAMP addition-General Rev
3.8	1 July 2013	Mike Kilgore	Incorporateed MAJCOM EM review comments for A70 review

FOREWORD

The Air Force AFCEC/CN Energy Directorate located at the Headquarters Air Force Civil Engineer Center (HQ AFCEC/CND) developed this manual, with inputs from Headquarters Air Force (HAF) and the Major Commands (MAJCOMs). It will be reviewed and updated each year as required to direct execution of the next fiscal year's efforts. Solicitation for comments and suggestions for improvements shall be directed to Energy Program Development, 139 Barnes Drive, Suite 1, Tyndall AFB FL, 32403-5319.

Contents

1.0 ROLES AND RESPONSIBILITIES

1.1 SAF/IE (IEN/IEI) Roles and Responsibilities:

1.1.1. SAF/IE (IEN/IEI): Staff and operate the AF Energy Program Management Office (PMO). Perform Congressional Liaison activities related to energy. Develop and promulgate policy, and oversee results of the programs/capabilities listed in subparagraphs below.

1.1.1.1. Performance Measurement and Analysis: The PMO will integrate facility energy and non-facility energy data into annual reports and submit to OSD. The PMO will also maintain the AF Senior Leader Energy Dashboard that leverages data/information provided by the AFCEC.

1.1.1.2. Direct Capital Investment Program Management: Review/endorse energy initiatives and advocate for resources within the AF Corporate process.

1.1.1.3. Direct Capital Investment Execution.

1.1.1.4. Third-Party Investments.

1.1.1.5. Subject Matter Expertise, Staffing Support.

1.1.1.6. Renewable Energy Program Management.

1.1.1.7. Utility Contract Review/Assessments.

1.1.1.8. Utilities Privatization (UP): Provide UP program oversight through Privatization ESG. Approve all utility system awards in conjunction with A7C-2, conveyances or exemptions

1.1.1.9. Awareness and Culture Change: Develop policy relative to federal, DOD and AF initiatives, campaigns and energy award programs. Provide Strategic Communications leadership.

1.1.1.10. Research, Development, Test, and Evaluation (RDT&E): Establish strategy and goals. Serve as focal point for AF Energy RDT&E Program. Approve Joint Urgent Operational Need (JUON) documents. Serve as Acquisition Decision Authority on selected matters. Approve locations and begin acquisition process.

1.1.2. AIR STAFF: Advocate for programs; develop and defend budgets. Develop and promulgate execution guidance, and review/approve execution plans as required for the capabilities listed in subparagraphs below. Oversee/guide execution as applicable.

1.1.2.1. Performance Measurement and Analysis: Assure adequate information is available to enable decision-makers. Incorporate CE-related non-facility energy into annual reports and submit to SAF level. Review/approve proposed KPIs and metrics.

1.1.2.2. Provide policy and oversight of results of Capital Investment Program Management:: Advocate for resources to carry out AFCEC execution plan. When AFCEC requests funds transfers, effect the transfer of funding (bridging until OAC established) to the AFCEC, MAJCOMs/Bases, or to Agents (USACE/NAVFAC), as applicable.

1.1.2.3. Provide policy and oversight of results of Direct Capital Investment Execution.

1.1.2.4. Provide policy and oversight of results of Third Party Investments.

1.1.2.5. Ensure adequate Subject Matter Expertise, Staffing Support provided to AFCEC.

1.1.2.6. Provide policy and oversight of results of Renewable Energy Program Management.

1.1.2.7. Utility Contract Review/Assessments: Review/approve revisions of applicable Air Force Instructions (e.g., AFI 32-1061, Providing Utilities to AF Installations).

1.1.2.8. Utilities Privatization: Serves as Source Selection Authority for UP (A7C-2) and provides recommenations to SAF/IEI. Advocates for funding resources to support existing contracts and future UP execution requirements.

1.1.2.9. Awareness and Culture Change: Manages Strategic Communications: Support strategic sourcing as applicable.

1.1.2.10. Research, Development, Test, and Evaluation (RDTE) related to facilities energy: Oversee, develop guidance for, and advocate for CE related RDT&E. Develop Joint Urgent Operational Need (JUON) document.

1.1.3. AFCEC: Implement higher-level policy and guidance. Develop appropriate execution plans, and advise AFCEC, Air Staff, and SAF Senior Leaders on all energy matters that fall under AFCEC purview. Guide/manage overall execution of centralized energy program.

1.1.3.1. Performance Measurement and Analysis: Gather/compile, analyze and report on AF facility energy/water data and manage the implementation of IT systems that support energy data. Develop ETLs, playbooks, guidance to comply with federal, DOD, and AF policy. Lead the development and implementation of programs towards compliance with EISA07, Section 432; including evaluation (auditing), benchmarking and recommissioning of covered facilities. Develop and disseminate meter and meter data guidance. Develop KPIs and metrics then promulgate when approved. Compile AF energy/water consumption/production data and report to higher echelons. Issue data calls. Implement data reporting policy.

1.1.3.2. Capital Investment Program Management: Develop Investment Plan. Assist with building/defending energy elements of Program Objective Memorandum (POM). Validate/Prioritize Requirements for AFCAMP IPL. Program Projects in IPL (Final DD1391s). Develop Program Management Plan for all AFCEC-executed energy-related projects. Provide execution support AF-wide; all levels/echelons. Validate program performance. Evaluate/vet proposed projects to determine how they may be best executed in overall AF energy program. Review/approve business case and contract scope.

1.1.3.3. Capital Investment Execution. Develop execution plan. Award large Design and Construction Projects for applicable energy projects to appropriate sources. Request/direct transfer of funds to carry out execution plans. Assure project execution status is current in program management tools (ACES, NexGen). Ensure appropriate level of construction oversight/management.

1.1.3.4. Third Party Investments: Develop/execute programs to meet mandates. Evaluate/vet proposals to determine how to best execute in overall AF energy program context. Review/approve business case and contract scope. Review/approve contractor proposals to include, energy conservation measures, M&V plan, and maintenance requirements. Execute contract and validate results for payment. Ensure appropriate level of construction oversight/management.

1.1.3.5. Subject Matter Expertise, Staffing Support: Provide technical staff support and 'reach-back' subject matter expertise. Manage central REM funding. Centrally contract for REM support to installations and MAJCOMs. Develop and promulgate REM execution guidance to MAJCOMs/installations.

1.1.3.6. Renewable Energy (RE) Program Management: Provide RE Program Development (REPD) oversight to all AF RE initiatives. Conduct regular REPD meetings, and provide regularly scheduled updates to AF Senior Leaders who are stakeholders in the RE program. Provide technical, legal, real estate, and contracting support and training to project teams seeking to develop RE projects. Determine highest & best use of AF property. Evaluate lease proposals and conduct negotiations. Maintain RE information in program management database (e.g., NexGen). Continue monitoring and reporting AF wide RE use and performance against mandates/goals.

1.1.3.7. Utility Contract Review/Assessments: Provide technical and legal support to assist installations with utility contract issues. Monitor for new rate increase cases, perform preliminary analysis of impact due to rate increases, and intervene where/when appropriate. Review all base utility contracts and billings on a 4-year recurring cycle.

1.1.3.8. Utilities Privatization: Develop specifications, system inventories and Government cost estimates. Provide technical support for cost estimating, technical, and contract solutions. Validate base/MAJCOM requirements. Assist MAJCOMs/installations in working through the UP process. Keep the Utilities Privatization Playbook current.

1.1.3.9. Awareness and Culture Change: Promulgate facility energy-related awareness & culture change materials and information from higher echelons. Develop and promulgate AF facility energy awareness and culture change messages. Manage the facility energy awards programs.

1.1.3.10. Research, Development, Test, and Evaluation (RDTE) [facilities energy]: Solicit Installations and Expeditionary base's needs. Consolidate and maintain a Qualified Product List (QPL) of available and certified technology. Determine if existing technology that meets installation/Expeditionary base needs exist. Identify appropriate test bed site to SAF.

1.1.4. MAJCOM: Provide liaison function between installations HAF and AFCEC. Promulgate and support AFCEC execution plans. Advocate for funding to support capabilities listed in subparagraphs. Keep MAJCOM stakeholders informed of relevant energy issues.

1.1.4.1. Performance Measurement and Analysis: Review/validate base M&V data. Validate requirements for AFCEC. Benchmark 'like-buildings' across MAJCOM. QC and certify base data. Prepare/upload CTS data. Validate base utility requirements. Project future year FO requirements. Forward higher-level data calls to installations and tailor as needed. QC and certify base data. Develop/transmit policy and guidance to the bases. Review/validate/submit AFERS data.

1.1.4.2. Direct Capital Investment Program Management: MCAMP IPL (bridging until focus funds exhausted). Manage the MAJCOM-funded energy initiatives (RCx, design, construction, studies, awareness, etc.). Review/validate ACES-PM NRG data. Validate base requirements. Approve DD1391s. Advocate for funding. Assist bases in meeting AFCEC capital investement plans. Support HAF/AFCEC on NexGen implementation.

1.1.4.3. Direct Capital Investment Execution: Support command-wide projects (like SIAs) to ensure command priorities achieved. Follow up with installations to assure program execution.

1.1.4.4. Third-Party Investments: Assure installations provide adequate support to programs. Review/validate contractor proposals. Support command-wide projects to assure MAJCOM priorities are achieved. Ensure funding is available to pay contract cost for third-party awards.

1.1.4.5. Subject Matter Expertise, Staffing Support: Provide support to installations and AFCEC. Execute higher level policy/guidance. Leverage REMs across the MAJCOM to assure most effective employment of resources.

1.1.4.6. Renewable Energy Program Management: Review/endorse base level activities with respect to project identification, selection, and development. Support acquisition team as required. Advocate for viable projects, and facilitate timely decisions at MAJCOM or installation level. Assist with Strategic Basing review and oversee/assure quality on RE reporting.

1.1.4.7. Utility Contract Review/Assessments: Contract and JA support as needed based on contract award/mod authorities. Oversight of FO Account for budgeting and execution. Review and

awareness for impacts to the FO Account. Comply and support. Support reviews and follow up on recommendations/actions

1.1.4.8. Utilities Privatization: Oversee, coordinate with, and support installation thoughout the Pre-Award process and Post Award contract period.

1.1.4.9. Awareness and Culture Change: Promulgate AF-level awareness and culture change materials and information. Generate MAJCOM specific awareness and culture change messages. Compile and nominate candidates for AF and Federal energy awards. Lead MAJCOM-level Energy Management Steering Groups (EMSGs). Prepare and disseminate an Energy Awareness Month, After Action Report, and an Energy Campaign Plan annually.

1.1.4.10. Research, Development, Test, and Evaluation (RDTE) related to facilities energy: Implements policy, identifies new material/technology needs across installations and Expeditionary bases. Provides recommendations on test bed locations.

1.1.5. INSTALLATION: Primary roles & responsibilities

1.1.5.1. Performance Measurement and Analysis: Implement meter and meter data policy, install & maintain meters (per Base/AFCEC SRM/MILCON project execution procedures). Utilize data for energy/water optimization. Provide roll-up data for higher level systems; NexGen, CTS, ESPM. Validate and input utility bills and other consumption/source data. Provide accurate program information in response to higher-level data calls. Maintain accurate project information within ACES/NexGen. Implement data reporting policy.

1.1.5.2. Direct Capital Investment Program Management: Develop requirements and installation energy investment planning strategy synchronized with the AF energy investment planning strategy. Develop plan and scope new requirements. Produce Building Life Cycle Cost (BLCC) for candidate projects. Produce DD1391s, generated from ACES PM and supporting documents for AFCEC-executed projects. Update project design/development database (NexGen). Community planning & siting for all projects. Carry out measurement and verification (M&V) of executed projects at each installation.

1.1.5.3. Direct Capital Investment Execution: Award small-scale SRMC, SABER, IDIQ, GSA support AFCEC-executed projects by providing local coordination with end user, Comm, etc. Serve as focal point for utility outages, digging permits, etc. Perform design reviews, construction updates, and keep project execution status current (ACES, NexGen).

1.1.5.4. Third-Party Investments: Identify opportunities. Develop scope, site data packages and evaluation criteria. Address community planning and siting issues for all candidate projects. Review all ESCO/Utility Company submittals in a timely manner. Perform as on-site Contracting Officer's Representative (COR).

1.1.5.5. Subject Matter Expertise, Staffing Support: Provide day-to-day guidance to assigned REMs with objective of complying with higher level guidance/policy.

1.1.5.6. Renewable Energy (RE) Program Management (including Power Purchase Agreements, PPAs, and Enhanced Use Leases, EULs): Contact MAJCOM and AFCEC OPR for RE immediately for assistance. Identify potential projects. Obtain all local coordination and facility board approval for project. Provide local support for project acquisition. Assist with AF internal review/approval process. Develop supporting documents. Assist with AF evaluation of mission compatibility and non-excess determination. Maintain database (NexGen) of project status and planned projects. Monitor and report RE outputs/use.

1.1.5.7. Utility Contract Review/Assessments: Coordinate and award local utility contract and execute modifications. Certify Utility Bill Payments; verification of bill amount to meter usage. Contact URMT if a provider proposed rate increases. Monitor and advise AFCEC of issues. Comply with current AFI 32-1061. Support Utility Acquisition Assessments on a recurring 4 year cycle.

1.1.5.8. Utilities Privatization: Develop technical library, validate utility system inventories, provide source selection evaluation team members, serve as Contracting Officer's Representative (COR), and assist the System Owner in developing a five-year plan with validated funding requirements

1.1.5.9. Awareness and Culture Change: Promulgate awareness & culture change materials and information with validated funding requirements.. Generate base specific awareness & Culture change messages. Submit for AF and Federal energy awards. Lead installation-level Energy Management Steering Groups (EMSGs). Make energy consumption information and energy awareness training available to all Airmen.

1.1.5.10. Research, Development, Test, and Evaluation (RDT&E) related to facilities energy: Identify requirements and if a technology solution exists to support their needs. If selected, serve as test bed location for applicable tests.

1.1.6. OTHER:

1.1.6.1. Legal Support: The Energy program has a growing need for legal support. In particular, it is essential to have attorneys who are well versed with the laws that govern programs for which the AFCEC oversees execution. These programs include utilities rate case evaluation and litigation, Renewable Energy program development, ESPC/UESC program/project development, as well as more common energy projects the AFCEC develops and implements.

1.1.6.2. Contracting Support: The AFCEC has a continuing need for contracting support for the many energy programs the AFCEC oversees/executes. The Energy program routinely contracts for staff/labor support, design contracts, construction contracts, and audits.

1.2. LINES OF AUTHORITY: Lines of authority are not affected by the Energy capabilities concept of operations.

2.0 ENERGY PROGRAMMING RULES OF ENGAGEMENT (ROE)

AFCEC/CND vets capital investment opportunities for reducing energy consumption by validating the opportunity and determining the best execution vehicle for the most effective results, (see Capital Investment Plan). Figure 1 depicts the general process leading to the successful funding and execution of energy projects.

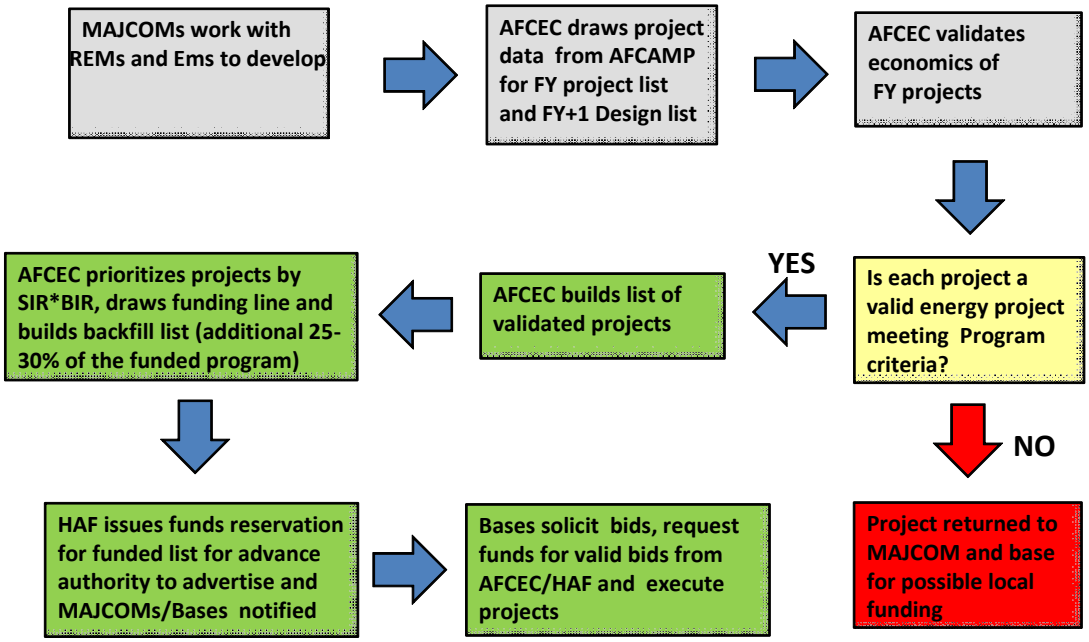


Figure 1

Figure 1: General Centrally Funded Energy Program Process

Section 2 of this manual addresses the general rules, funds authorization process and execution of energy capital investments, design projects and studies. For direct investment opportunities using centrally managed funds, projects must be properly programmed. Specific programming instructions are addressed in **Appendix A-Guide to Programming Energy Projects in ACES PM**.

> *[**EDITOR'S NOTE:** References to Automated Civil Engineer System Project Management (ACES PM) fields are presented in **bold italics** to facilitate references to Appendix A.]*

2.1 General Rules of the Centrally Funded Energy Program

Projects must be programmed, approved and executed in accordance with AFI 32-1032, *Planning and Programming Appropriated Funded Maintenance, Repair, and Construction Projects*, 15 Oct 2003 (or latest version), applicable Unified Facility Criteria (UFC) and the latest Air Force Engineering Technical Letters (ETLs).

Energy conservation projects (NRG) competing for central funding must have an estimated construction cost of at least $100K, have a Savings to Investment Ratio (SIR) of at least 1.0 (higher SIR will compete better), and have significant energy savings (shown as million BTU saved per year). The higher the

anticipated annual MBTU saved, the better the project will compete for funding. Also, the dollar value associated with the energy savings must account for at least 70% of the cost savings that contribute to the SIR (O&M and other non-energy savings can account for no more than 30% of the savings). Simple Payback (SPB) must be less than the economic life of the proposed system.

Key selection criteria: Proper work classification is important to obtaining funding. Projects that are Minor Construction (EEIC 529EC) with a Programmed Amount (PA) over $750K (per building) shall be programmed as Energy Conservation Investment Program (ECIP) to comply with Military Construction (MILCON) authorization laws. Energy projects programmed as sustainment shall be either EEIC 521EC or 524EC. Projects programmed as restoration and modernization shall be EEIC 522EC. Retro-commissioning or Re-commissioning is sustainment. Figure 2 shows how projects are typically classified for various funding methods.

Methods → Criteria	SRM/NRG	ECIP	ESPC UESC	PPA	EUL
Type of Work	Small NRG/Wtr Consrv	Large NRG/WTR Consrv, Small RE, NRG Sec	Large focused ECO, Process NRG	Med Utility Scale RE for AF use only	Large Utility Scale RE for Grid
Ownership	AF Desired	AF Desired		Ktr Desired	Ktr Desired
Maintenance	AF Desired	AF Desired	Ktr Desired	Ktr Desired	Ktr Desired
Land Availability Factor	No	Small	No	Med	Large
Complexity (tech/pgm)	Low-Med	Med-High	Med-High	High	High
Approval Levels	MC < $750K	MC > $750K	Major Repairs	No MC limit	No MC Limit

Figure 2: Program Selection Criteria

MAJCOM and base energy managers are urged to work closely with project programmers to make sure ACES PM (or NexGen, when available) data fields are current and accurate.

Third party contracts such as Utility Energy Service Contracts (UESC) or Energy Savings Performance Contracts (ESPCs) are not entered in ACES PM unless it is a companion project or a directly funded project using the utility provider as the contracting agent. ESPCs are contracts which provide energy-efficient improvements financed with third party funds, operation and maintenance of the systems and infrastructure they install, have typical performance periods of 10 to 20 years (maximum of 25 years) and come with complex financial terms. The Air Force uses ESPC's to fund energy conservation projects with no up-front investment cost to the taxpayers. They are executed through an Energy Service Company (ESCO) that provides financing for and installs the infrastructure or equipment system modifications to reduce Air Force energy costs and consumption. The ESCO also typically provides

O&M services for the equipment and systems they install over the life of the contract. The Air Force repays the ESCOs, (including overhead, profit and interest) over the term of the contract from funds made available via lower utility, operation and maintenance costs.

Renewable Energy (RE) project development can be programmed and compete for funding using NRG funds, but the preferred method to implement large scale RE projects is through third party contracts (typically Power Purchase Agreements). NRG project development funds can be used for potential real property improvements that will lead to energy or water savings.

Purchase and installation of meters should be programmed and tracked in ACES PM in the **Uniques**, (meters) field, but meter projects are locally or MAJCOM funded and will not be validated or considered for central NRG funding. However, meters can be included for a building as part of an overall NRG-funded building energy efficiency improvement project, where the meter itself is only a small part of the overall project.

2.2 AFCAMP Process and ACES PM Entry

Bases will continue to identify and program projects for energy and water conservation throughout the year. Important ACES PM fields to complete for NRG projects prior to an AFCAMP data build are listed and described in Appendix A.

With the installation commander's support,the Installation Facilities Board shall approve and prioritize projects entered into ACES PM.

The AFCEC/CND validation process dovetails with the Air Force Comprehensive Asset Management Plan (AFCAMP) process for base and MAJCOM prioritization of requirements. The associated NRG validation documents, (1391, BLCC, cost and energy savings data support spreadsheets), must be uploaded to the AFCEC/CND energy document repository when requested. See Section 4.0 for milestones.

Candidate projects for NRG funding will be pulled from the AFCAMP build. If an NRG project is not programmed and prioritized in the CAMP process, it will not be considered for NRG central funding.

The Energy Focus Funds will remain available through FY15 but are scheduled to roll back into the R&M program in FY16. This means NRG projects will compete directly with R&M projects for funding, and the scoring provided by the bases and MAJCOMs will be extremely important for the NRG projects to earn sufficient points to compete for funding. Note that the NRG focus funds are not being eliminated, but are being rolled back into the overall R&M program with the goal of continuing to fund NRG projects as part of the R&M program.

The scoring matrix for this "combined" program is being developed to best support a reasonable ranking of both conventional R&M as well as NRG projects.

The National Environmental Policy Act (NEPA) review requirements or Categorical Exclusion (CATEX, EA, etc.) must be documented in ACES PM and be provided if requested during the validation process. Failure to complete NEPA requirements prior to project execution can create large project delays.

Project titles shall be briefly descriptive of the work to be done with a verb and noun construction (e.g. "Replace HVAC with GSHP, 4 Bldgs", "Install PV on Rooftop", or "Recommission HVAC, 3 Bldgs", "DESIGN B1234 HVAC). Do not use terms such as NRG, Energy Cons, ECIP, ECP, Renewable, or similar terms as part of the project title as these categories are indicated in other ACES PM data fields. Files uploaded onto the AFCEC/CND file share site shall be in Adobe Acrobat format (.pdf extension).

File naming convention for uploading NRG candidate projects is:

- BASE_PROJECT NUMBER_PROJECT TITLE_. The title may be abbreviated (RPR = repair, MOD = modernize, RPL = replace, DSG = Design and CNS = construct) as appropriate.
- An example is: Randolph_TYMX999999_RPR Chiller Bldg 45911

The ***Programmed Amount (PA):***

The ***PA*** for "Design-Bid-Build" construction projects will include only construction costs without design. In order to accurately determine the project economics, the costs in the BLCC must reflect the total construction costs including the design costs funded either centrally or separately. Design-Build projects include the construction costs and design costs in both the PA and BLCC.

OCONUS bases that have in-country fees associated with design or construction should identify those charges and include them in the PA.

The PA on the DD 1391 should reflect the amount of NRG funds being requested in the FY that the funds are needed.

Design-bid-build projects can compete for FY design funding separately before the year of planned project execution (e.g. FY design for FY+1 or FY+2 construction).

AFCEC/CND will perform preliminary validation of the request for design funding to determine the suitability of awarding design funds. See Section 2.7.5 for further discussion of design project validation and funding.

2.2.1 Programming Projects for Centrally Managed Energy Program Development

Leading up to the scheduled project data pulls from the AFCAMP, each base shall program their energy projects and submit them to the MAJCOMs for review and concurrence.

The types of projects can vary greatly between bases. These can include mechanical, electrical, lighting, commissioning, water conservation projects, etc. Figure 3 depicts the general percent mixture of energy conservation project types for FY10 through FY12.

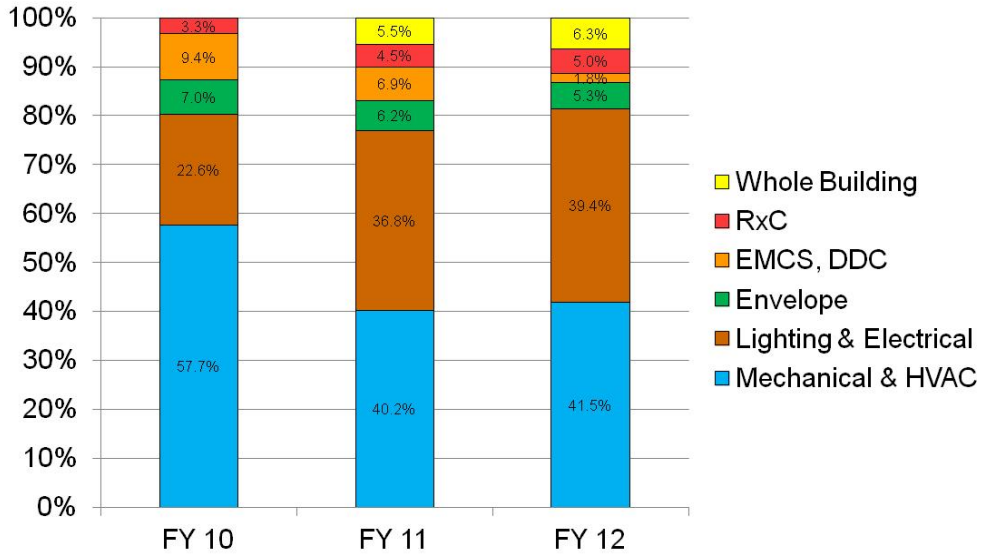


Figure 3: Centrally Funded Energy Construction Projects (By percent annual dollar savings)

Five critical fields to include in the ACES project data and DD1391 are the ***SIR***, ***SPB***, ***Annual Dollars Saved Amount***, ***Annual Energy Saved Amount and Economic Life*** fields**.** These five fields are used in the economic review of the project during validation and in prioritization of project lists after validation. Other standard fields normally filled out by the bases are also required and are discussed further in Appendix A.

Appendix A has step by step specific instructions on the programming of Design-bid-build projects requesting design funds and design funds for FY and FY+1 Design-bid-build projects.

2.2.2 Rules for Bundling Energy Conservation Opportunities (ECO)

Capital investment ECOs with ***SIR*** > 1 can be combined with other economically viable ECOs in order to meet or exceed the $100K project threshold for central funding, using the following rules:

- Multiple buildings with like ECOs (e.g. lighting) may be combined together into one project. Each individual building ECO shall have an ***SIR*** >= 1.0.
- "Whole building" energy retrofit for a single building with multiple ECOs: Each ECO shall have an ***SIR*** >= 1.0. If an ECO has an ***SIR*** < 1, the base must submit the justification through the MAJCOM to AFCEC/CND, to determine if there is sufficient benefit of including that ECO. The economic life used in the BLCC shall be the predominant technology by energy savings or the Facility Energy Improvement category shown in Attachment 4. Each ECO must have a BLCC demonstrating its SIR is >=1.0.
- Multiple, dissimilar ECOs across multiple buildings will generally NOT be considered due to the complexity of analysis for validation (e.g. one project that has 10 buildings: 3 buildings with lighting and window retrofits, 5 buildings with HVAC and irrigation, and 2 buildings with roof repairs and solar hot water).

Using the BLCC tool, the procedure to develop a single BLCC that combines multiple ECOs is as follows:

1. Enter basic project data, with the length of study (Under the Key Dates tab) tied to the ECO with longest life.
2. Click on the "Energy Saving/Costs Folder" on the menu to the far left of the program.
    2.1.1. Use the drop down menu to select the Savings/Cost Name associated with type of energy saved.
    2.1.2. Under the Energy Usage Tab, Enter an appropriately descriptive name (Electricity Saved from Lighting ECO, etc...) and annual savings and cost information for the ECO.
    2.1.3. In the same tab, under the "Energy Usage Indices" section; enter the life span of the ECO in the duration column and 100% in the "Usage Index" column.
        2.1.3.1. In the second row of the "Energy Usage Indices" section, leave the duration as the default "Remaining" and enter 0% into the Usage Index.
3. If an ECO has savings from multiple energy types, repeat in the step 2 for each usage type within the ECO.
4. Repeat the process in step 2 and 3 for each of the other ECO's in the project.
5. Complete the "Additional Investment Cost" section of the far left of the program as normal for the compiled project.
6. Apply the same approach to any non-energy "Annually Recurring" or "Non-Annually Recurring Savings" associated with each ECO (Be sure to name appropriately to track to each ECO).

7. Run report as normal; its output will be an appropriately weighted, and combined analysis of all of the ECO's in the project. Note: This does not alleviate the need to verify individual ECO's SIR is 1.0 or greater.

Note: The use and accuracy of a combined BLCC from any procedure is the responsibility of the MACJOMs and bases. AFCEC will work with the MAJCOMs to verify or reject the results.

2.3 MAJCOM Validation and Endorsement

MAJCOMs will work with their bases to develop energy projects for funding consideration. Candidate projects entered in ACES PM shall be reviewed and endorsed by the MAJCOM for validity and economics, and to de-conflict with demolition and consolidation plans. AFCEC will generate a list of projects from ACES PM that meets the criteria for NRG funding consideration and provide this list to the MAJCOMs. AFCEC/CND will request MAJCOMs to upload documents supporting each candidate project from the list provided.

The MAJCOM will review and endorse the supporting validation documentation before uploading. MAJCOMs are encouraged to provide extra scrutiny for projects with low SIRs (e.g. 1.0 to 1.3). These projects are at risk of failing to meet minimum program criteria if the bid costs are higher or energy savings are lower than originally anticipated.

MAJCOMS shall upload the candidate project documents including DD FORM 1391/c, Building Life Cycle Costs (BLCC) (latest approved version), cost estimates, and other supporting documentation to the AFCEC/CND designated file share site. Calculations supporting annual estimates of energy (million British Thermal Units (MBtu)) and water savings (million gallons (MGal)) used in the BLCC analysis shall be included.

The MAJCOMs can submit energy construction and projects for AFCEC pre-validation up to two weeks prior to a scheduled data pull. Validation rules will follow the normal rules for the program.

2.4 AFCEC Validation and Authorization

Beginning 1 March 2013, AFCEC/CND will select the candidate construction projects for the ***FY NRG*** program from the AFCAMP IPL. AFCEC/CND will develop a list and request the uploading of support documentation by the MAJCOMs onto the designated file share site. AFCEC/CND will validate project economic viability and may request additional information necessary for approval. See Section 4.0 for timeline details.

The project list will be prioritized after validation based on SIR multiplied by BIR (MBTU per investment ratio) It is the responsibility of the MAJCOM to convey to AFCEC/CND the priority of recommended water projects for NRG consideration. The validated and prioritized project list is for funding consideration and will be compared to the AFCAMP IPL list as it develops.

AFCEC/CND will validate projects to approximately 125 percent (based on dollar amount) of projected FY funding, thereby allowing for project breakage as the program advances. AFCEC/CND will continue to validate projects as time permits; however, validated projects not selected for funding are eligible for prioritization/funding from other sources, such as local funding or the centrally managed R&M or Sustainment programs. If not, they can be considered for the following FY+1 construction program.

AFCEC/CND will forward the list of recommended energy projects to AF/A7CAE and AF/A7CRO for establishing the Budget Account breakouts (BA01 – BA04), if needed, and issuance of a funds reservation letter (Authority to Advertise, (ATA)) to the MAJCOMs.

MAJCOMs may submit projects for pre-validation in advance of a data pull. Pre-validation is accomplished by the same validation rules normally used. Pre-validation ceases to be available two weeks before a data pull. MAJCOMs must ensure that pre-validated projects are programmed correctly in ACES PM so they draw into the data report.

After validation, AFCEC/CND will request the MAJCOMs/bases to change the value in the drop down menu for ***PM*** in the Supplemental tab to "***AFCESA".*** See Appendix A. This allows AFCEC/CND to enter the validated ***PA*** into the ***Authorized Amount*** field. Bases shall continue to update and refine the project in ACES PM as normal except those six fields managed by AFCEC/CND (***FY***, ***Fund Status***, ***Fund Indicator, Auth Amt, Issued Amt,*** and ***PM***)

AFCEC/CND shall then remain the ***PM*** for the life of the project unless it is removed from central funding. However, the bases and MAJCOMs will still be able to update all ACES PM fields except the six fields reserved for AFCEC/CND use.

AFCEC/CND will change the ***Fund Indicator Code*** on the ***Funding Tab*** from "***U***" to "***N***" indicating the project has been validated and will enter the Authorized Amount (***Auth Amt***) as the validated PA, and date authorized. Refer to Appendix A for additional information.

For projects above the funding line, the AFCEC/CND will change the Fund Status from Unfunded ***(Fund Status=U)*** to Authorized (***Fund Status=A***). In the year of appropriations, once bids have been validated and funds requested by AFCEC/CND. AFCEC/CND will change the Fund Status to Funded (***Fund Status=F).***

Additional documents or information may be required for validation:

- Dates of past commissioning/re-commissioning (if applicable).
- Age of system, component or facility being modified.
- Documentation of Savings from energy: In general, for energy and water projects, the preponderance of savings must come from either energy or water, not O&M savings. AFCEC/CND requires at least 70 percent of estimated savings (Total from line 2 divided byline 6 on a BLCC) from energy or water savings to qualify for central funding. AFCEC/CND will consider projects having different energy percentages for projects having different system types or technological solutions. Operations and Maintenance (O&M) and other costs savings shall be calculated and be provided along with the project validation submittal documents. O&M savings must be "hard" savings (e.g., actual manpower reductions, not just diverted manpower). Avoided costs are generally not allowed and will have justification appropriately reviewed case by case.
- For Renewable Energy (RE) projects (e.g. ground source heat pumps (GSHP) or solar PV): AFCEC/CND requires a minimum of 20 percent of total savings (Total from line 2 divided by line 6 on a BLCC) from energy to qualify for central funding.

Once a project is validated for centralized funding by AFCEC/CND, the validation will remain in effect for 18 months from the date the project was pulled from ACES PM. If the project is not funded for any reason during that 18 month period, the base and MAJCOM will need to update ACES PM and the new 1391, BLCC and supporting documentation for submittal to AFCEC/CND should be generated for re-validation. Appropriate changes will also need to be made in ACES PM. Assuming the revised project still meets NRG funding criteria, the project will be re-ranked with other projects awaiting NRG funds and addressed accordingly.

2.5 Tips for Successful Project Validations

Section 4.0 contains the timelines for data preparation, validation, and funding by organization. Bases and MAJCOMs are encouraged to program energy projects year around in advance of data pull deadlines.

1. Total Project Cost shall be consistent throughout all project documentation including the Cost Estimate and BLCC. BLCC input shall use MILCON Analysis, ECIP Project module, and industrial use. BLCCs run for overseas bases shall use "US Average". Bases shall use actual energy costs for the base's particular location (if available) and be able to provide documentation for actual utility rates.
2. Project must be for energy savings improvements. O&M savings may be realized, but projects seeking central energy funding shall be energy dominant.
3. A well written work description in the DD 1391or as an attachment is useful to the review of the project. The description may discuss the work involved, the O&M savings and other special circumstances the base wants the reviewer to consider in the review.
4. Include documentation to substantiate estimated energy and water use savings for each project**.** Documentation can be in the form of a spreadsheet calculation or other documentation that arrives at the energy savings used in the BLCC. This is particularly necessary in the validation of projects with multiple facilities with similar ECOs.
5. Ensure Economic Life of systems is correct. Refer to Attachment 4: Economic Life for Various Systems.
6. Any historic (previous year) energy consumption or actual energy rates and cost information may be included in developing your case.
7. Include graphics (sketches, drawings, diagrams, cut sheets, photos) if they will create a better understanding of the project.
8. Ensure Project Name in ACES PM is descriptive of the project and matches support documentation uploaded to the designated file share site.
9. Double check math calculations to ensure dollar and energy savings are correct and in the correct units.
10. Combine all documentation generated from ACES PM, (DD Form 1391/c, BLCC and Energy saved computations) without M&V excel spreadsheet into one (1) single PDF file per project for uploading to the AFCEC/CND designated file share site using the file naming convention. This ensures the correct files are together to review the project.
11. Electronic files shall include installation name and project number in the name of the file. See Appendix A for details.
12. Keep the AFCEC/CND designated file share site clean. Remove older documentation as updated information is loaded. Remove documentation that is no longer valid.
13. Be aware that while 'replacement in kind' type projects may save energy through the use of newer and more efficient equipment models, this technique may not always be the best engineering solution. This is particularly true regarding unit sizing since it is common for both chiller and heat units to be oversized, which can result in significant energy inefficiency. The true needs and load of the building(s) should be considered before replacing building systems.

Also, replacing an old oil-fired burner with the latest model will save energy, but completely changing out the system to a natural gas-fired boiler will save energy and limit greenhouse gas emissions. Adding in solar pre-heat to the system could save even more resources. Alternatives must be examined to see which solution provides the best engineering and economical solution.

14. MAJCOMs shall double check descriptions, data, calculations, energy savings, and project economics prepared by the base to determine whether it meets capital investment criteria before final submission to AFCEC/CND.

2.6 Project Execution

After the funds reservation letters (Authority to Advertise or ATA) are issued, MAJCOMs shall notify the bases they have ATA for the approved projects. Bases shall solicit the projects and submit the lowest approved bid to the MAJCOMs for concurrence.

After concurrence, MAJCOMs shall send the lowest approved bid to AFCEC/CND with a request for funding approval (and re-validation if necessary). AFCEC/CND will prepare a funds request and the released funds are sent to the MAJCOMs which in turn send the funds to the base to execute awards.

If the bid amount is greater than 10 percent of the approved ***PA*** or if the project has been re-scoped, the base shall advise the MAJCOM. A revised BLCC must be completed by the base and submitted through the MAJCOM to AFCEC/CND. AFCEC shall re-affirm the project economics still remains valid before recommending it for funding by HAF.

Depending on the bid savings of the entire energy program and the amount of the bid overrun, AFCEC/CND may choose to delay the funds request. AFCEC/CND will notify the MAJCOM of any decisions to delay a funds request and work with the MAJCOM to determine the best path forward.

2.7 Specific Project Types

2.7.1 Energy Conservation Investment Program (ECIP)

ECIP is a Military Construction (MILCON) Appropriations funded program originally begun to improve the energy efficiency of existing Department of Defense facilities. Its role has expanded to include water conservation, energy security and renewable energy for our facilities. Funding is appropriated for the program by Congress and provided in a lump sum to the Office of the Secretary of Defense (OSD).

In FY13, OSD will allocate half of the funding to the various Services on a “fair share” basis. The remaining funding will be allocated through project competition among the Services within the categories of energy conservation (60 %), renewable energy (25%), water conservation (5%), and energy security (10%). In FY14 and beyond, all projects will be selected by OSD through competition.

Following OSD selection of FY+1 ECIP projects, funds to bring those projects to 100% design are released. The FY+2-5 projects are submitted to OSD (these can include the FY+1 projects not selected by OSD) a few months later. These projects are ranked by SIR*BIR and there are no limits on cost or number of projects that can be submitted. For those projects that can compete well for FY+2, funds to bring the project to 35% design are requested from OSD.

ECIP funding is good for five years and is line item funded for projects approved in the FY. The balance of funds accrued through bid savings or cancellations may be used within a Service on other projects for cost growth or for additional projects approved by Congress. If sufficient funds are available, a project can be selected by AFCEC and inserted into the current year.

Refer to the timelines in Section 4.0 for important milestone dates. See Section A-7 in Appendix A for instructions on programming ECIP projects.

	Metric	Energy Efficiency - 60%		Renewable Energy -25%		Water Conservation -		Energy Security - 10%	
		Wgt	Units	Wgt	Units	Wgt	Units	Wgt	Units
Financial	SIR	10%	$/$	10%	$/$	10%	$/$		
	Payback	10%	Years	10%	Years	10%	Years		
	Benefit-to-Investment	20%	MMBTU/$	20%	MMBTU/$	20%	MMBTU/$		
Goals	How do the Energy/Water Savings or Renewable Energy Production compare to the installation's annual goal?	10%	MMBTU (Project) / MMBTU (Target)	10%	MMBTU (Project) / MMBTU (Target)	10%	MGAL (Project) / MGAL (Target)		
Energy Security	How does the project support critical load security or reliability?							25%	Narrative
Synergistic Effect	Does the project integrate multiple technologies to realize synergistic benefits, and how? Is the project part of a multi-year/multi-phaseproject consistent with the installation's plan?	10%	Narrative	10%	Narrative	10%	Narrative	15%	Narrative
Partnership	Does the project provide partnership opportunities with DoE or other Federal agencies?	10%	Narrative	10%	Narrative	10%	Narrative	15%	Narrative
Test Bed Application	Does the project implement a demonstrated testbed technology?	10%	Narrative	10%	Narrative	10%	Narrative	20%	Narrative
Service Priority	Where does this project fall on the Component's prioritized list of projects?	20%	Priority	20%	Priority	20%	Priority	25%	Priority

Figure 4: OSD Funding Allocation (%) and Project Scoring Criteria

Energy or water projects that exceed the Minor Construction (MC) authority for the Air Force shall be programmed as an ECIP Project. Program ECIP projects in ACES PM with ***Program Type=MCP***, ***Fund Source=ECP***, and show ***Fund Status=U***. The FY will be inserted as a best estimate, but is not definite. These projects should be new construction over $750,000, as outlined in AFI 32-1032, *Planning and Programming Appropriated Funded Maintenance, Repair, and Construction Projects.* Figure 4 is the OSD ECIP project scoring criteria.

Areas of concern to consider when developing or managing an ECIP project are:

1. OSD requires the Services to consider factors beyond financial return on investment, such as meeting the legislated energy mandates and energy security.
2. Do not pursue ECIP funding for projects that would be good candidates for third-party financing arrangements or for facility operations or contracted maintenance.
3. OSD monitors the programmed amount and scope so the AF will not change these factors after submission to OSD, unless changes are coordinated with and approved by OSD.
4. Well written project descriptions are essential to securing funding.

Projects submitted for ECIP are reviewed and validated by AFCEC/CND. Once validated and included in the appropriate FY, the project is returned to the MAJCOM/base for additional information required by OSD. AFCEC/CND then submits the projects to OSD for competition and selection in FY+1.

If a project is selected, change ACES PM to reflect programming in the correct fiscal year, and change to ***Program Type=MCP*** and ***Funding Source=ECP***. Following selection the MAJCOM/base submit the project to HAF in ACES PM. Once Congressional notification has passed, providing funding for the current FY ECIP projects, a design instruction is issued moving ACES PM responsibility to AFCEC.

OSD requires quarterly performance reports of ECIP projects. These must include actual energy or water savings or energy produced. Submit the reports to AFCEC/CND at the end of each quarter. A sample report is provided in Figure 5.

Majcom	BaseProject No.	Base	State	FY	Project Description	Estimated Energy Savings MMBtu	Actual Energy Savings MMBtu	Estimated Renewable Energy Production in MMBtu / MWh	Actual Renewable Energy Production in MMBtu/MWh	Annual Energy Target
AFSPC	ACJP073046	LA AFB	CA	2009	ECIP Energy Reductions	409	350			1,638
AFSPC	ACJP063057	LA AFB	CA	2009	ECIP Solar Roof Parking			441/129.2	493/144.47	1,139
AFSPC	CRWU093007	Buckley	CO	2009	ECIP Install 1MW Solar PV Panels			1911/560	1935/560	4,968
AFSPC	DBEH081562	Cape Canaveral	FL	2009	Replace Chiller, Fac 1646	3010	3004			3,009

Figure 5: Sample of Quarterly Performance Report of ECIP Savings

2.7.2 Centrally Funded Audits/ Sustainable Infrastructure Assessments (SIAs)

[Editor's Note: Energy audits conducted as part of the SIAs are now managed by AFCEC/CEO. AFCEC/CND no longer manages or executes the SIA program. NRG funds have been used to help fund the SIA effort, which involves energy audits for covered facilities (i.e. Facilities that consume 75 percent of the base energy; until such time as buildings were metered, the AF used 75% of the total building area or approximately 400M square feet) to meet Energy Independence and Security Act of 2007 (EISA07) goals. Energy audits for approximately 75% of the facilities are complete with the remaining 25% under contract. A contract is in place for the final 25 percent of the area in FY12 under SIA II and is scheduled for completion Dec 2014.As bases receive the audit reports, they shall program in ACES PM all economically viable Investment Grade Energy and Water Conservation Opportunities (ECOs or WCOs) that resulted from an audit or SIA. The number of Investment Grade ECOs resulting from an energy audit or SIA meeting NRG program requirements shall be entered in the ***AUDITS*** field in the ***Uniques*** tab on the main page of each project. See Appendix A for complete instructions. The SIA audits are only level II, so the base may need to perform additional scoping and lifecycle analysis before programming a project. For large or complex projects cases, it is recommended NRG design dollars be requested and the project designed before programming for construction.

2.7.3 Energy (NRG) Projects

Energy conservation projects will include all categories of work to make existing facility systems more efficient. Projects requesting NRG funding shall use less water, electricity, natural gas, fuels and other utility commodities. These NRG funds are R&M dollars and expire at the end of the fiscal year appropriated if not obligated within that FY.

The Air Force goal for obligation of NRG project funding is by the end of the second quarter of the fiscal year, depending on funding availability. The NRG project threshold is a ***PA*** equal to or greater

than $100,000. If new construction for a candidate NRG project approaches or exceeds $750,000 per project, the project shall be programmed as a candidate ECIP project.

An "out-of-sequence" project data pull from the AFCAMP IPL may be accomplished periodically to provide design projects and potential backfill for the FY NRG program. This will be based on any anticipated End of Year (EOY) funding or any emerging requirements based on audits or to provide HAF with an energy project backlog. Any new backfill projects will undergo validation before being added to the program. This may require a supplemental Funds Reservation Letter for any additional funds or a "straddle" program as each becomes available.

Refer to the timelines in Section 4.0 for important Centrally Funded NRG milestone dates by Organization.

2.7.4 MAJCOM Oversight

In preparation for AFCEC/CND validation of projects, the MAJCOMs shall review and concur with the proposed project documentation to ensure each project qualifies for central funding before the scheduled data pull. After the energy conservation candidate project list is developed, AFCEC/CND shall request the project documentation be uploaded by the MAJCOMs onto the AFCEC/CND designated file share site for review and validation. Project validation packages (1391, BLCC, supporting cost and savings information), which are generated from the ACES PM, may be uploaded prior to development of the candidate project list for those projects the MAJCOM believes are especially good and clearly meet NRG program criteria.

2.7.5 Energy Conservation Project Design

The AF Energy Program Group (EPG) decided in 2011 that energy projects receiving design funds are assured construction funding. This assumes project economics and energy savings continue to meet all NRG program criteria once project specifics are better defined by the design. Projects whose project economic factors drop significantly below what was anticipated before the design started may be held for use as backfill projects. Provided that funds are made available by Congress, design projects will be reviewed in stages during the design process in order to ensure that the final design is still a good energy construction project. Note that the greatest emphasis is on the conceptual (~35%) design level, as this is typically the point that reasonable estimates of project cost and energy savings can be made. See Figure 5: Staged Design Project Document Submittals below.

Staged Design Submittals to AFCEC-E/CND				
Documents	35% Design Submittal	65% Design Submittal	95% Design Submittal	100% Design Submittal
Executive Summary or Description or Narrative	Note 1	Note 2	Note 2	Note 2
DD1391	Note 8	Note 2	Note 2	Note 2
BLCC	Note 3	Note 11	Note 11	Note 11
Cost Estimate Summary	Note 4	Note 2	Note 2	Note 2
Energy Savings Calculations	Note 5	Note 2	Note 2	Note 2
M&V Plan	na	na	Note 6	na
Construction Dwgs	na	Note 7	Note 2	Note 2
Water and leak surveys	na	na	Note 10	Note 2

Notes

1. Executive Summary, description or narrative provided from design documents
2. Provide updates at latter design stages only if there has been substantial design changes
3. Provide new BLCC at 35% design
4. Provide updated roll up of cost estimates as project is developed
5. Provide updated energy savings calculations as project is developed
6. Provide finalized M&V plan at the 95% submittal
7. AFCEC-E may request drawings only on complex designs or when design widely varies from validated project
8. Update the DD1391 to actual costs and energy savings for funding
9. Upload design documents onto the CoP at the following link:

https://afkm.wpafb.af.mil/ASPs/DocMan/DOCMain.asp?Tab=0&FolderID=OO-EN-CE-A4-51-3-9&Filter=OO-EN-CE-A4

10. Water and Gas leak surveys are to provide a minimum of the 95% report
11. Provide new BLCC if 10% >PA or 10%<Energy Savings

Figure 6: Staged Design Project Document Submittals

To better utilize the limited design funds available, projects showing the best potential energy savings and SIR shall receive priority in design funds requests. Candidate energy design projects shall undergo the same basic review and validation process as construction projects. See Figure 5 for staged design submittals.

Central funding for design-only work can be provided with expectations that the ultimate construction of the designed project will meet all of the program criteria. The calculation of SIR and SPB must include design and construction cost. PA changes are allowable during the design and the final design shall be used to update the 1391 and BLCC for submission to AFCEC/CND to insure project economic factors and energy savings remain in line with the factors reviewed at the 35% design level.

AFCEC/CND shall assign a budgeted amount of the overall NRG funds to be used for project designs, and if necessary these design funds will be allotted in Budget Activity (BA) accounts. Funds for project design will be used in two areas: (1) gas leak and water leak surveys without concurrent repairs and (2) the design of FY projects to allow earlier advertising and award in FY+1 (or some in FY+2) using the design-bid-build method. Construction projects that will use a design-build approach will not be eligible for separate award of design funds prior to construction.

Once the candidate design projects have been identified by AFCEC/CND, they shall be reviewed and validated for high payback potential, SIR, estimated energy savings, and design requirements. AFCEC/CND may request additional information regarding the design work needed. If the number of candidate design projects exceeds funds availability, a pre-design prioritization may be used to rank candidate design projects. If approved, the design projects shall be funded with FY dollars once funds become available.

Leak detection survey projects of natural gas or potable water systems can be funded with design funds as long as repairs are not included in the project. These leak detection surveys shall be programmed as

design with a separate sub-source (***Funding Sub-source=DESIGN***) and designated as design (***Status=DSG)***. A subsequent project needs to be programmed to make the needed repairs for leaks identified. For these leak detection projects only, set the ***PA*** equal to the design funds requested and set 1.0 in each field for ***SIR, SPB***, ***Annual Dollar Saved Am*** and ***Annual Energy Saved Am***. Leak detection projects that include repairs shall compete for central funding as a normal NRG construction project. See Appendix A for details.

Refer to the timelines in Section 4.0 for important milestone dates by Organization (Notional).

Design funds tied to individual projects will be the maximum of eight percent (8%) of the ***PA*** unless circumstances warrant an increase (isolated locations or execution agent's requirement, etc.). MAJCOMs can request a design fund increase on a case by case basis.

Exception: Design funds may also fund additional specific "host-country" costs for overseas construction projects. The amount necessary shall be documented and concurred with by the MAJCOM.

Candidate design projects funds may be identified in two increments.

- First Design Fund Increment: A 1 Nov data pull will produce a list of potential design-bid-build projects requiring ***FY*** design funds for the ***FY+1*** construction program. All necessary ACES fields must be properly populated. After initial distribution AFCEC/CND will forward funds directly to the MAJCOMs based on the estimated design amounts of the validated design project list. MAJCOMs must report to AFCEC/CND the amounts awarded for each design project at the time awards are made. Updates thereafter will be tracked through ACES reports and Commander's Resource Information System (CRIS) reports. The use of any unused NRG design funds not awarded to NRG design projects must be coordinated with AFCEC/CND and may need to be returned to AFCEC/CND.
- Second Design Fund Increment: A 1 March data pull will produce a list of potential ***FY***, ***FY+1*** and some ***FY+2*** design-bid-build projects requiring ***FY*** design funds. A Funds Reservation Letter for the listed, validated design projects shall be issued by AFCEC and AFCEC will issue the funds (when available). directly to the MAJCOMs based on the estimated design amounts on the validated project list. MAJCOMs must report to AFCEC/CND the amounts awarded for each design project at the time awards are made. Updates thereafter will be tracked through ACES reports and Commander's Resource Information System (CRIS) reports. The use of any unused NRG design funds not awarded to NRG design projects must be coordinated with AFCEC/CND and may need to be returned to AFCEC/CND.

2.7.6 Renewables

Renewable projects will utilize a natural source of energy which can be harnessed or converted to provide usable, transferable power for Air Force use. These include wind power, solar, tidal, biomass and other projects which use a natural and renewing source of raw energy. Ground Source Heat Pumps are currently considered renewable. Small scale renewable projects provide resources to a limited number of buildings in a project scope. These projects can compete for central energy funds. Large scale utility RE projects must be coordinated with AFCEC/CNR and are not suitable for NRG focus funds.

Each base will program renewable projects into ACES PM for consideration and concurrence by the MAJCOM as discussed above. Renewable projects must be coordinated with AFCEC's Utility and Renewable Branch for record keeping and to ensure that projects are aligned with Air Force RE program. Currently, renewable energy projects compete with energy construction projects for funding.

RE studies will use sub-source (***Sub-source=RE Study***) and designated as design (***Status=DSG, Fund Indicator=D)*** in ACES PM

2.7.7 NRG End of Year Straddle Programs

If HAF and AFCEC/CND determine that an End of Year (EoY) Straddle Program is possible, and there is an insufficient backlog of executable validated projects, a date for an ACES project data call will be advertised to the MAJCOMs. The ACES Discoverer Plus Report will be shared ahead of time for the MAJCOMs to use in monitoring base input and refining their energy programs.

The project data call will provide a potential candidate project list for an EoY Straddle and/or provide additional projects for backfill for the ***FY*** program.

Candidate projects resulting from the data call shall have their information updated in ACES PM to generate the DD 1391/c, BLCCs and additional documentation uploaded by the MAJCOMs for validation.

Validation of candidate straddle projects shall operate under the same rules as those governing the NRG Program.

Validated projects shall be prioritized according to SIR*BIR, high to low. Straddle projects will be designated as all validated projects to the funding limit, including an additional 25 percent (based on dollar amount) for project breakage as the program advances.

Unfunded projects with SIR>1.0 and below the additional 25 percent selected, will be moved to the ***FY+1*** energy conservation program to compete in that funding stream.

After validation and the development of straddle projects, AFCEC will issue a funds reservation letter to the MAJCOMs. Bases shall advertise 100 percent of the straddle projects.

Milestones will be set and advertised to the MAJCOMs after the initial straddle project list is set.

2.7.8 Reporting in ACES PM after the Data Calls

MAJCOMs and bases shall continue to keep ACES PM updated during the bid process, the contractual process, and the construction process of every on-going funded project and MAJCOMs shall verify updates. These updates are critical to enable timely and accurate reporting of the Energy Program status throughout the year and especially in the project advertisement, bidding and award period when updates are often requested weekly. Construction status updates in ACES are also important and must be updated at least quarterly. See Appendix A for a discussion of ACES fields to keep current.

Once the candidate NRG construction project list is drawn from ACES PM, the ***PA*** is considered locked during the validation process by AFCEC/CND. Bases will use ***Current Working Estimate*** (***CWE***) to update and refine the project in ACES PM. If project scope, cost or estimated energy saving attributes change during the validation process, refinement of individual project details must be communicated with the AFCEC/CND POC.

2.8 AFCEC/HAF Funds Distribution Process

AFCEC/CND identifies validated projects to Air Staff for visibility of total program funding. Approximately 25 percent more projects are validated than available funding to develop a backfill list for project “breakage”.

Funds Reservation letters are issued to MAJCOM based on the ***Programmed Amounts*** (***PA***) of the validated project list and grants Authority to Advertise (ATA) for bases to begin process of advertising through their contracting agent.

AFCEC/CND will coordinate with MAJCOMs to make adjustments to project list based on breakage or executable projects. Depending on the current funding situation, adjustments may or may not be possible.

AFCEC/CND will evaluate whether to fund a bid that exceeds the PA by more than 10% based upon individual project merits and overall program realized bid savings. Projects in this category may be re-prioritized and funded based upon remaining program funds availability and Budget Activity restraints.

2.9 MAJCOM Funds Execution Process

MAJCOMs/bases will advertise 100 percent of projects on their approved program as indicated on the Funds Reservation Letter. Once project bids are received and submitted to the MAJCOM for concurrence, the MAJCOM submits the recommended bid funding request to AFCEC/CND.

When the requested award amount is more than 10 percent change over approved ***Authorized Amount,*** or the scope has changed, the MAJCOM will submit a request for funding to AFCEC/CND with a request for revalidation. This will include a revised DD 1391/c, generated from ACES PM, a description of the changed scope and a revised BLCC report.If AFCEC/CND concurs with a recommended bid that is more than 10 percent over ***PA***, the MAJCOM will be notified and the funds request will proceed. Alternatively, AFCEC/CND may delay funding the bid award until they have sufficient bid savings from other projects.

Funding requests for bids more than 10 percent lower than the PA will be accompanied by a statement confirming the scope of the project was not changed from what was validated by AFCEC/CND and the bid addresses all areas in the advertised scope of work.

The ideal goal will be for 100 percent of all funds available be awarded by the end of 2Q FY or within 120 days of availability of funds. See Section 4.0 for milestone details.

3.0 Execution Roles and Responsibilities

The MAJCOMs are responsible for working directly with their bases to insure execution of energy funds for all validated projects given ATA.

AFCEC/CND is responsible for:

1. Energy Focus Fund project validation and selection, and recommendation of projects for NRGand ECIP funding.
2. The management of centrally funded Renewable Studies and ECIP projects.
3. The oversight and reporting of execution rates and funding obligations by the MAJCOMs and AFCEC/CND.

Installation's ACES PM information will be the sole mechanism for recording and reporting energy program execution. Installations must keep ACES PM information current including accurate **Milestones (Bid Advertised and Bid Award**) status and ***Local Status*** data field information. Contract information and **Bid Award** amounts are also critical for tracking and reporting.

A secondary tracking system (CRIS) will be used through the Financial Management systems to monitor total ***Auto Mat*** obligation and expenditure using fund Emergency and Special Program (ESP) codes**.**

MAJCOM reporting will be facilitated with the quarterly Energy Program Management Review with attendance by Energy Managers and programmers.

3.1 Execution of Funds

The goal for 100 percent obligation of distributed Energy funds is the end of 2Q FY or initial distribution of funds plus 120 days. Projects that do not execute by the goal are subject to recall of funding.

AFCECAFCEC/CND may recommend recalling funds from MAJCOMs with low execution rates and no indications of progress toward obligation. This recommendation will be coordinated by AF/A7CA and AF/A7CR to AF/A7C for approval.

Recalled funds will be redistributed for validated NRG projects with the best SIR*BIR rating that is executable in the FY program, using the same coordination and approval process as for initial distribution of funds. The projects funded using the recalled funds, will not necessarily be at the base or within the MAJCOM unable to execute their projects.

3.2 Cost Differences

Each MAJCOM is responsible for cost overruns (amounts above funding based on the AFCEC/CND approved ***Auth Amt)*** within their command. With AFCEC/CND concurrence, MAJCOMs may use additional funds remaining and unobligated from centrally funded energy dollars, or supplement with other MAJCOM or base NRG funds.

AFCEC/CND shall use and manage any bid savings to continue to execute other validated energy projects approved in the overall FY program. If all MAJCOM projects in the approved FY program are executed and dollars remain available, these funds may be requested by AFCEC/CND for use on other validated NRG projects .

MAJCOMs will notify AFCEC/CND concerning cancelled projects with an explanation of the reason to cancel the project. After a project is cancelled, it may be eliminated, or revised and reconsidered under a future energy project review. AFCEC/CND will select replacement projects within the constraints of each Budget Activity, if needed and in conjunction with MAJCOM energy managers

MAJCOMs must submit requests for change orders to AFCEC/CND for review of the change, project scope and revalidation of the project economics. Changes and cost growth may eliminate the economic basis of execution and must be monitored closely.

3.3 Measurement and Verification

The AFCEC/CND Capital Investment Project Measurement and Verification (M&V) program is designed to provide feedback and validity regarding the direct investment projects. The data collected will be used to document energy and financial savings, support future funding of energy programs, improve engineering efforts (design, operations, maintenance), and aid in future financial budgeting and energy forecasting.

Once NRG project construction is completed, AFCEC/CNA will choose from among the projects having metered buildings in varying technologies and climatic zones for continued M&V.

The AFCEC Project Interim Measurement and Verification Plan Work sheet template is provided as a starting place for the overall capital investment program. As the M&V component matures, this workbook shall be updated (1) to include lessons learned and (2) based on feedback from the installations, MAJCOMs and AFCEC/CND.

Bases/MAJCOMs shall submit M&V plans with validation document packages for construction projects. All MAJCOMs shall begin meter reading now so that individual facility baselines can be developed. See Attachment 5-Measurement and Verification Instructions and Template for details.

4.0 MILESTONES

The following key applies to milestones that follow:

Text Notation	Type of Milestone
ECIP	Energy Conservation Investment Program (ECIP) Key Milestones
NRG	NRG Key Milestones
DSG	NRG Project Design Key Milestones

Note: **The notional timeline below with the exception of milestones in bold text is based on the availability of funds on 1 October. The timeline dates following key milestones are approximate and are subject to adjustments relative to the funding date.**

4.1 1Q FY Milestones

Date	Program	Organization	Activity/Milestones
1 Oct:	NRG	HAF/A7CAE HAF/A7CRO EPG	With oversight from the Energy Program Group (EPG) Chair, HAF/A7CAE will coordinate with HAF/A7CRO the planned release of the Energy Conservation (NRG) funds to MAJCOMs for execution of validated and approved FY projects. The MAJCOMs will execute the approved projects at the stated *PA*.
15 Oct	NRG	MAJCOM	MAJCOMs issue an Authority to Advertise (ATA) letter to bases
15 Oct	NRG	Bases	Bases advertise authorized/funded NRG projects.
15 Oct	ECIP	Base/AFCEC	Current FY ECIP designs are complete. FY+1 ECIP designs are 35% complete.
1 Nov	**NRG, DSG**	**AFCEC**	**AFCEC/CND identifies FY- FY+1 design funding and additional FY projects to be used for FY backfill if required. AFCEC/CND begins validation and prioritization of candidates**
25 Nov	ECIP	Base/ MAJCOM/AFCEC	Base & MAJCOM & AFCEC/CND complete OSD selection criteria for FY+1 ECIP projects; submit to OSD
1 Dec	NRG,	AFCEC	AFCEC/CND completes validation of candidate

	DSG		projects and issues design funding ATA.
15 Dec	DSG	AFCEC	AFCEC/CND use FY dollars to fund FY+1 project designs from 1 Nov pull.

4.2 2Q FY Milestones

Date	Program	Organization	Activity/Milestones
15 Jan	ECIP	OSD	OSD selects the FY+1 ECIP projects
15 Jan	ECIP	OSD	OSD forwards to Congress the planned ECIP projects for current FY. The list is accepted if no comments are received from Congress with 21 days.
28 Feb	NRG	AFCEC	AFCEC/CND reviews funding allocations and overall capital investment plan to make recommendations to EPG for prioritization method for FY+1 NRG programs.
28 Feb	**NRG**	**Bases**	**Base's goal to have actual bid openings.**
1 Mar	**NRG**	**AFCEC**	**AFCEC/CND identifies candidate FY+1 NRG construction projects and identifies FY+1, FY+2 Design program.**
15 Mar	NRG	AFCEC	AFCEC/CND receives second quarter EPG approval and direction on prioritization of the FY+1 NRG projects, and confirmation of budget amounts for planning
15 Mar	ECIP	AFCEC	AFCEC/CND funds FY+1 ECIP projects to 100% design
15 Mar	ECIP	AFCEC	AFCEC/CND sends FY+2 ECIP projects to OSD.
15 Mar	**NRG**	**MAJCOM**	**MAJCOMs validate and confirm NRG projects to be considered for FY+1 central funding in ACES PM. These proposed NRG projects must updated in ACES PM and ready for the ACES report.**
30 Mar	ECIP	AFCEC	Receive ATA/Current FY ECIP projects are in solicitation.
31 Mar	**NRG**	**MAJCOM**	**MAJCOM goal for 100 percent obligation of entire budgeted Energy program is by the end of FY 2Q (or distribution of funds plus 120 days or whichever is later).**

4.3 3Q FY Milestones

Date	Program	Organization	Activity/Milestones
1 Mar to 15 Apr	NRG	AFCEC	AFCEC/CND completes a validation and prioritization of authorized FY Design program, FY+1 program and any adjustments.
1 May	ECIP	AFCEC	AFCEC/CND will issue a request to the MAJCOMs for additional out-year ECIP projects. These proposed ECIP projects must updated in ACES PM and ready for an ACES Discoverer Plus report by AFCEC. The projects will be validated by AFCEC/CND and used to identify and plan ECIP projects in the out years (FY+1-5).
1 Jun	DSG	AFCEC	AFCEC/CND reviews the FY+1 NRG program for projects

			that will require design funds to be executed. Identify FY dollars available for FY+1 design.
1 Jun	DSG	AFCEC	AFCEC/CND fund FY+1 and some FY13 NRG project designs with FY dollars
15 Jun	NRG	AFCEC/A7CAE	AFCEC/CND forwards proposed FY+1 NRG program project list to HAF/A7CAE for issuance of a Funds Reservation letter.
30 Jun	NRG	AFCEC	AFCEC/CND distributes the approved FY+1 program to MAJCOMs.
30 Jun	ECIP	Bases	All current FY ECIP construction awards complete.
30 Jun	**NRG**	**Bases**	**FY NRG projects are to be advertised and awarded as soon as funds become available.**

4.4 4Q FY Milestones

Date	Program	Organization	Activity/Milestones
1 Jul	NRG	AFCEC	AFCEC/CND shall determine the availability of FY End of Year (EoY) funding of a possible Straddle program.
1 Jul	DSG	AFCEC	AFCEC/CND funds FY+1 projects for design with remaining FY dollars.
28 Jul	NRG	MAJCOM	MAJCOMs provide bases the FY+1 NRG program with advanced authority to advertise
30 Jul	ECIP	AFCEC	AFCEC/CND run an ACES Discoverer Plus report to identify the candidate FY+2-5 ECIP projects. Project revisions, DD Form 1391/c and supporting documentation generated from ACES PM, shall be uploaded onto the AFCEC designated file share site. Out-year projects will be planned and developed to support long-term ECIP goals.
30 Aug	**NRG**	**HAF/A7CAE**	**HAF/A7CAE coordinates FY+1 funding distribution requirements with the EPG Chair to HAF/A7CR.**
1 Sep	ECIP	Base/AFCEC	FY+2 ECIP projects are revalidated at 35% design
15 Sep	DSG	AFCEC	AFCEC/CND to select FY+1 NRG program projects to be designed with FY design dollars.
15 Sep	ECIP	AFCEC	Confirm FY+1 projects to OSD
30 Sep	NRG	Bases	The last day for bases to award EoY Straddle projects, if a Straddle program is enacted.
30 Sep	NRG	Bases	Last day to issue FY construction funds
30 Sep	DSG	Bases	Last day for bases to use FY dollars to award designs.

Appendix A - Guide to Programming Energy Projects in ACES PM

Introduction to the Energy Project Programming Guide

The following guidance provides assistance for programming energy projects in the Air Force Automated Civil Engineer System – Project Management (ACES PM). Projects can be funded in a variety of ways such as using Base/MAJCOM Sustainment Restoration & Modernization SRM, traditional MILCON, special funding, centrally-managed energy funding ("NRG" funding source code) or Energy Conservation Investment Program (ECIP) funds.

All potential energy conservation, water conservation, or renewable energy projects, excluding the ECIP projects that are minor construction greater than $750K, shall initially be programmed as Operations & Maintenance (O&M) with an "***NRG***" fund source code to compete for centralized funding. Feasibility studies and meter work will be locally funded and will not compete for central funding.

After prioritizing the projects, AFCEC/CND will make funding source decisions (e.g., O&M "NRG" vs. MILCON "ECP") and then notify the MAJCOMs which projects have been approved. If a project does not meet the criteria for either ECIP or NRG funding, or it is not a high enough priority to be funded in that particular fiscal year, it may be funded by the MAJCOM or base, or could be considered for third party financing if the business case is strong enough.

This guide addresses only NRG programming, as it will apply to both ECIP and NRG prioritization.

A-1: Programming for Energy Conservation Design Funds

Design fund requested for design-bid-build projects in ACES PM will have the ***DSN FY*** field completed. Projects developed from those designs will be programmed as follow up ***FY+1*** (or in some complicated designs, ***FY+2***) construction projects using the same project numbers to facilitate tracking and management.

Steps to program design funding for design-bid-build projects are indicated in Figures 1 through 3. All screen shots are to identify field locations only, not content. Please note that some fields pre-populate between tabs, so checking those fields is good practice. An example of correctly filled ACES report fields is in Figure 4.

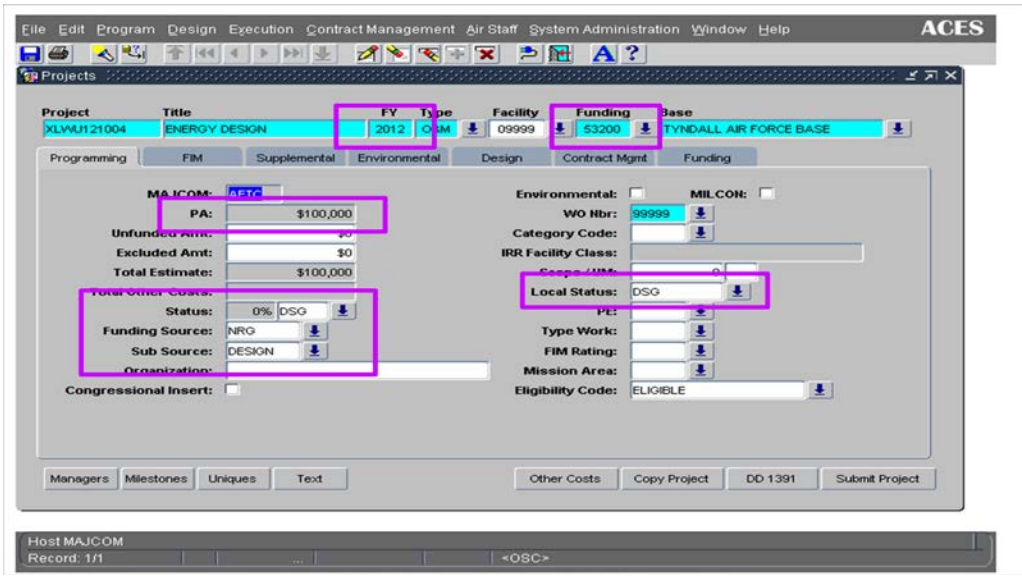


Figure 1: Programming Tab, Design-Bid-Build Project Design Funds

1.0 Design Tab: ***DSN FY*** is the year the design funds for design-bid-build projects are desired to perform the design work. See Figure2.

2.0 Programming Tab: Enter ***53200*** to indicate design into ***Fund Type*** field for pure design projects without follow up construction in this FY. Otherwise enter correct fund type such as 522EC, 524EC, or 529EC. (Note that energy conservation codes end in EC, not 00)

3.0 Programming Tab: Select ***NRG*** from drop down menu in ***Funding Source*** field. Enter the construction ***FY.***

4.0 Programming Tab: Enter the ***PA*** desired. This can be the estimated construction or match ***DF*** requested.

5.0 Programming Tab: Select ***DSG*** from drop down menu in ***Local Status*** field.

6.0 Programming Tab: Select the designation from the drop down menus that best fits the project (***NRG CNS, WTR CNS, DESIGN, RENEW, RE STUDY***) in the ***Funding Subsource*** field.

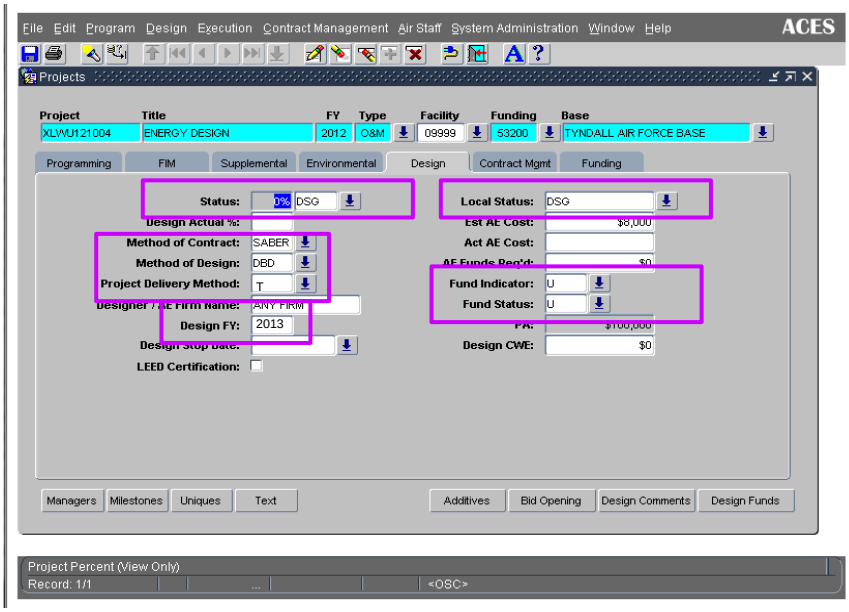


Figure 2: Design Tab, Design-Bid-Build Project Design Funds

7.0 Design Tab: Select ***DSG*** from drop down menu in ***Project Status*** field as shown in Figure 2.

8.0 Design Tab: Select best option from drop down menu in the ***Method of Contract*** field, Method of Design, and Project Delivery Method .(Note: ***D/B***, design-build, doesn't qualify to receive separate design or study funds. The ***PA*** for design-build projects shall include design funds.)

9.0 Design Tab: Select the Method of Design from drop down menu.

10.0 Design Tab: Enter up to 8% of the estimated construction ***PA*** into the ***Est AE Cost*** field. The same amount for design cost is entered int the AE Funds Req'd field.

11.0 Design Tab: Select ***D*** in ***Fund Indicator Cd*** field.

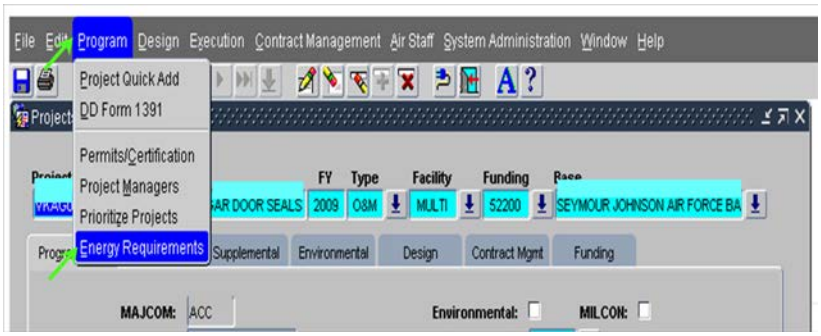


Figure 3: Energy Input-Design-Bid-Build Projects Requesting Design Funds

12.0 Program Header: Chose Energy Requirements from the drop down. See Figure 3 above.

13.0 Enter the Annual Energy Saved Amount, the SIR, the SPB and Annual Dollars Saved Amount. If the project is a water system or gas distribution leak survey without repairs then the values of the four fields are "1.0" and the PA=Design Funds Requested to help identify each as a survey.

[PROGRAMMER'S HINT: Typical errors seen by AFCEC include not entering energy savings as MBtu or MGals. Note that blank fields are nulls when the ACES report is run.]

14.0 Figure 4 indicates all the ACES report fields necessary to indicate a design-bid-build project requesting design funds.

FY	Dsg Fy	MAJCOM	Installation	Project Nbr	Project Title	Pa	SIR	SPB	Annual Dollar Save Am	Annual Energy Save Am	Design Funds Required	Project Status Cd	Local Status	Project Dsg Method Cd	Method Of Contracting Cd	Dsg Std Method Cd	Fund Status Cd	Funding Source Cd	Funding Subsource Cd	Fund Type	Fund Indicator Cd
2014	2013	ACC	DAVIS-MONT	FBNV130017	Design/Rpr HVAC Multi Facs	$175,579	5.7	3	$74,737	2547	$12,459	DSG	DSG	T	MACC	C	U	NRG	NRG CNS	522EC	D

Figure 4: ACES Fields-Design-Bid-Build Projects Requesting Design Funds

A-2: Programming for Water Distribution and Gas Distribution Surveys without Repairs

Water and gas leak surveys or studies that do not include repairs are funded using ***FY*** Design Funds. Repeating, all screen shots are showing field locations only, not content. Some fields pre-populate between tabs, so check those fields. An example of correctly filled ACES report fields is in Figure 7. To program a water leak or gas leak survey for design funding, the following fields in ACES PM must be programmed as indicated below:

1.0 Programming Tab: The Project Title must clearly indicate this is a water leak or gas leak survey. Please include the word "Survey" in the title. Refer to Figure 5 for the data field location.

2.0 Programming Tab***: DSN FY*** is the year the design funds are desired to perform the design work effort.

3.0 Programming Tab: Enter 53200 for the EEIC representing Design into the ***Fund Type*** field.

4.0 Programming Tab: Select ***NRG*** from drop down menu in ***Funding Source*** field.

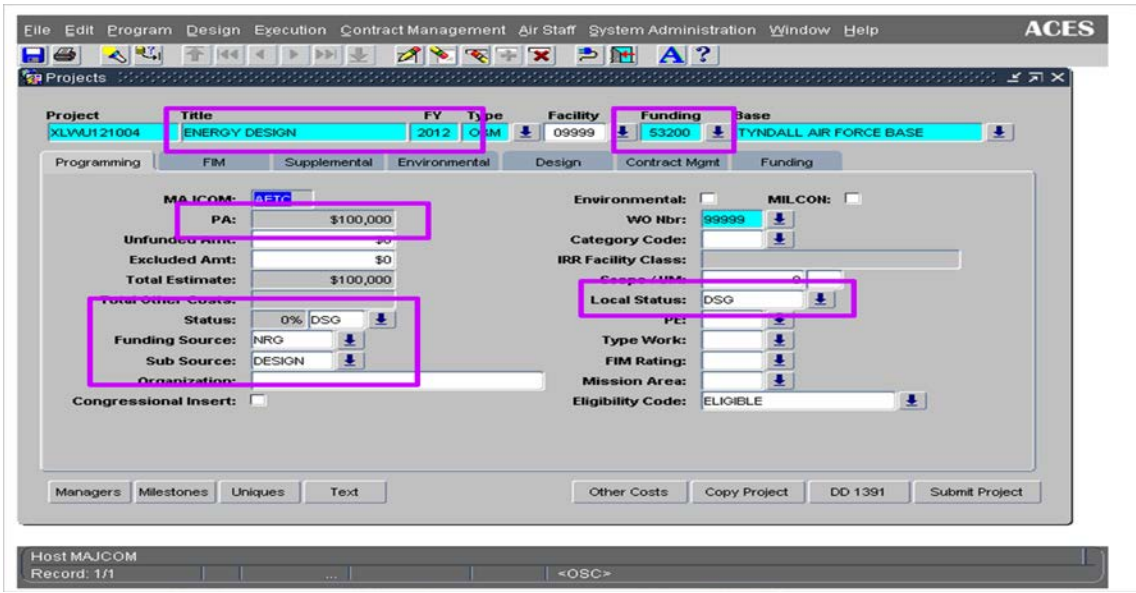


Figure 5: Programming Tab, Water-Gas Survey Design Funds

5.0 Programming Tab: Select ***NRG CNS*** for gas leak survey or ***WTR CNS*** for water leak survey, as appropriate, from drop down menu in the ***Funding Sub source*** field.

> *[PROGRAMMER'S HINT: A common error includes not selecting from a required field drop down menu. The ACES report considers that as a "NULL". Nulls in required fields will cause a project to drop out of the report.]*

6.0 Design Tab: Select ***DSG*** from drop down menu in the ***Project Status*** field and ***Local Status*** field.

7.0 Design Tab: The amount in the ***DF Funds Required*** field must equal the ***PA*** (i.e.: the ***PA=Design Funds Required***)

8.0 Design Tab: Select ***D*** in the ***Fund Indicator*** field.

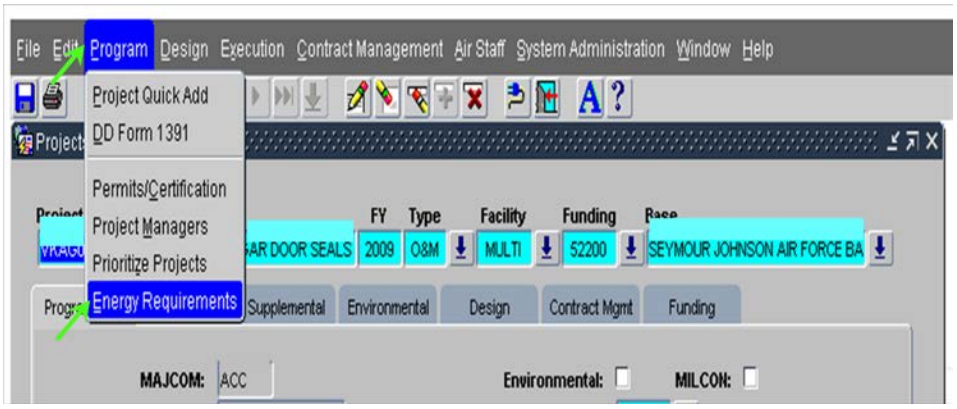


Figure 6: Program Header, Water-Gas Surveys without Repairs

9.0 From Program Drop Down (Figure 6), select ***Energy Requirements*** on the drop down menu.

10.0 Enter ***1.0*** in each of these four fields – ***Simple Payback, Savings to Investment Ratio, Annual Energy Savings, and Annual Dollars Saved.*** The addition of "1.0" in these four fields allows the survey to draw into the ACES data run. Without a number, there will be a "NULL" in these four fields.

11.0 Figure 7 indicates all the ACES report fields necessary to indicate a water or gas distribution survey without repairs.

Project Title	Pa	SIR	SPB	Annual Dollar Save Am	Annual Energy Save Am	Design Funds Required	Project Status	Fund Status Cd	Funding Source Cd	Funding Subsource Cd	Fund Type	Fund Indicator Cd
Water Main Leak Survey	$80,000	1.0	1	$1	1	$80,000	DSG	U	NRG	DESIGN	53200	D

Figure 7: ACES Report Results for Water-Gas Surveys without Repairs

A-3: Programming Energy Conservation (NRG) Construction Projects

Each year, AFCEC/CND will pull the candidate projects during the AFCAMP build process (currently beginning 1 March), using data from ACES PM. There may be a second project pull on 1 November (if warranted). Additional data calls may be required depending on changing financial opportunities to fund additional projects. Validation of projects are based on the energy and cost data entered into ACES. Prioritization of projects will be by SIR*BIR (or WIR) according to the rules set in the Execution section of this document and will be calculated on the spreadsheet after validation.

[PROGRAMMER'S HINT: This is a good time to remember to save your work often! Suggested file naming convention for NRG candidate projects is:

- *Base_Project Number_Title_). Abbreviate the title where practical*
- *An example is: Randolph_TYMX999999_RPR Chiller Bldg 459_]*

The steps to code "NRG" projects are described below. Note all screen shots are for data field locations only, not necessarily content.

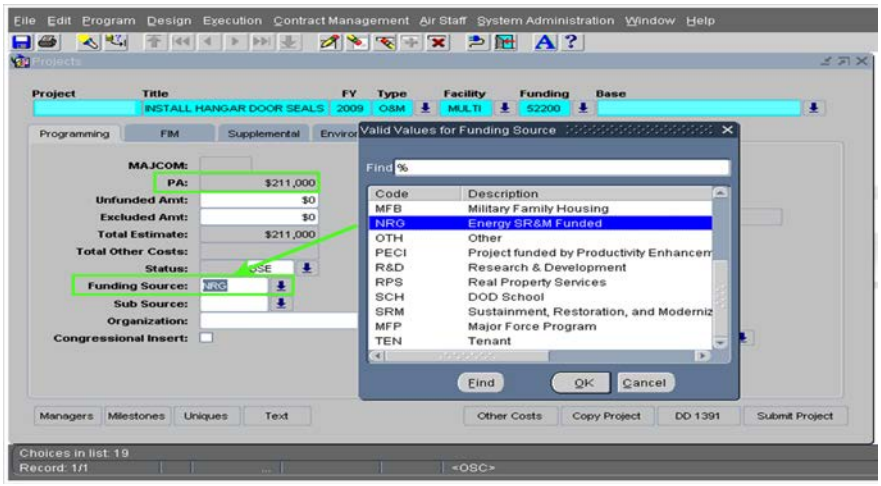


Figure 8: Programming Tab-Select NRG Program

1.0 Programming Tab: ***FY*** is the year the funds are desired to perform the construction work.

2.0 Programming Tab: Select ***NRG*** from drop down menu in ***Funding Source*** field. See Figure 8.

3.0 Programming Tab: Select the designation from the drop down menus that best fits the project (***NRG CNS, WTR CNS, RENEW, RE STUDY***) in the ***Funding Subsource*** field. Refer to Figure 9.

[PROGRAMMER'S HINT: There is no need to put project type in the title as it is described elsewhere. Exceptions: Put Survey, Design, Re-commissioning or Retro-commissioning projects into titles. Use abbreviations when practical.]

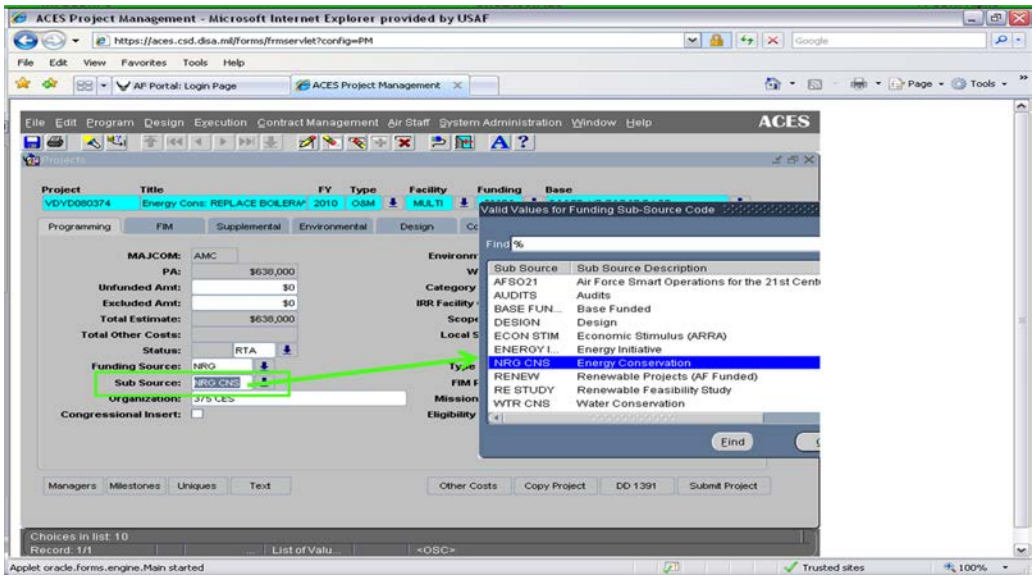


Figure 9: Programming Tab-Subsource Field

4.0 From ***Program*** header (Figure 10): select ***Energy Requirements*** on the drop down menu.

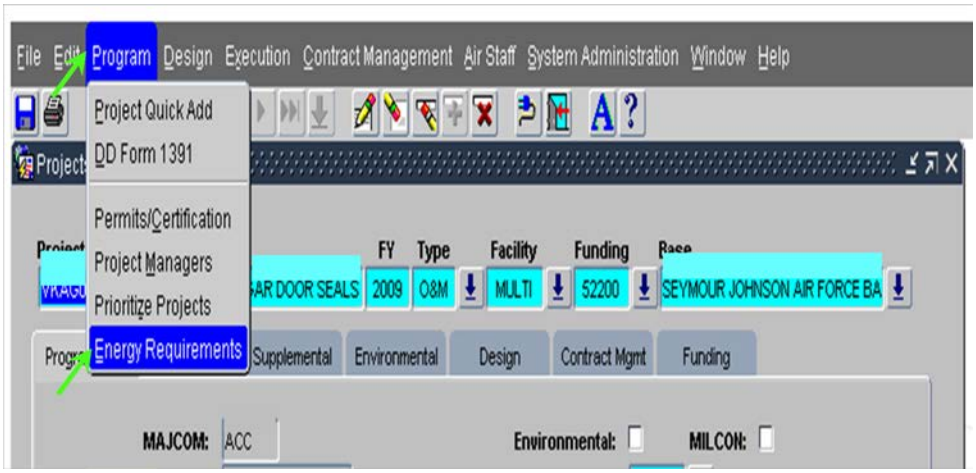


Figure 10: Program Header-Energy Requirements

5.0 Enter the ***Annual Energy Saved Amount***, the ***SIR***, the ***SPB*** and ***Annual Dollars Saved Amount***. See Figure 11 for specific fields of entry.

6.0 Enter the Economic Life of the proposed system. See Attachment 4: Economic Life for Various Systems to determine the number best representing your system.

[PROGRAMMER'S HINT: Another common error is the economic life does not match the BLCC.]

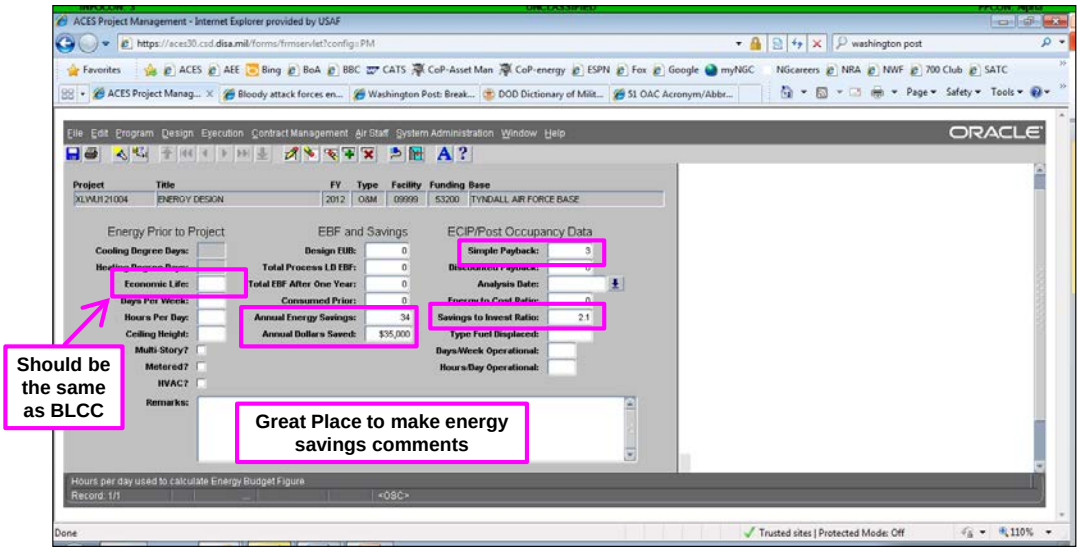


Figure 11: Program Header-Energy Requirements

7.0 Uniques Menu: If your project contains ECOs that originated from an energy audit recently performed at the base, select the ***Uniques*** button, lower left of screen as shown in Figure 12.

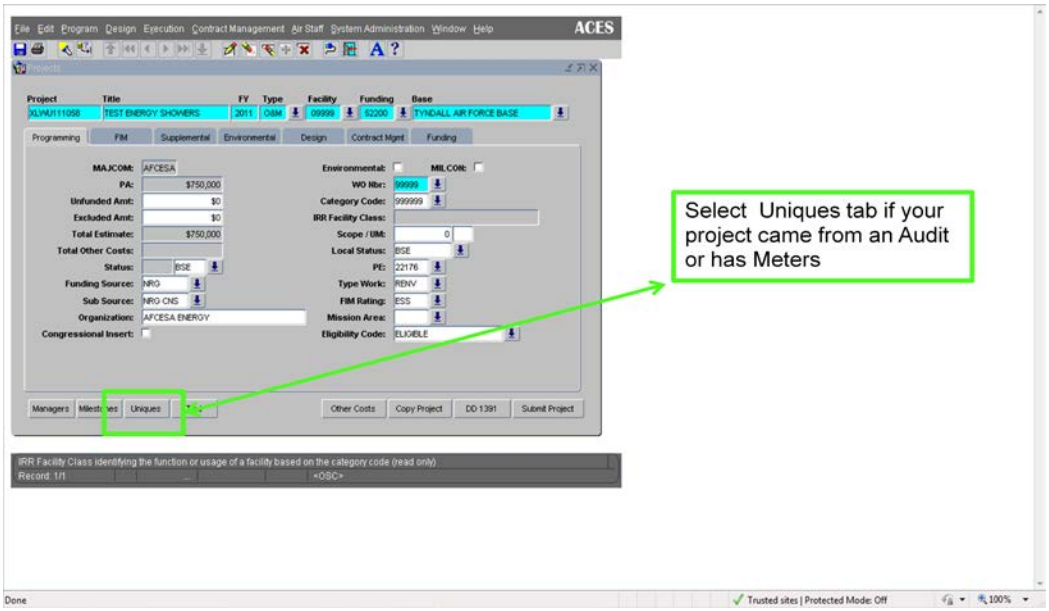


Figure 12: Uniques Menu-Entering Audits and Meters

8.0 Uniques Menu: Select either Audits and/or Meters from the drop down menu as shown in Figure 13. (Meter projects are not funded as a project, but a project containing a meter is allowable)

[PROGRAMMER'S HINT: Determine the quantity and the total cost amount of the Energy Conservation Opportunities (ECOs) that came directly from audits contained in the project before reaching this point.]

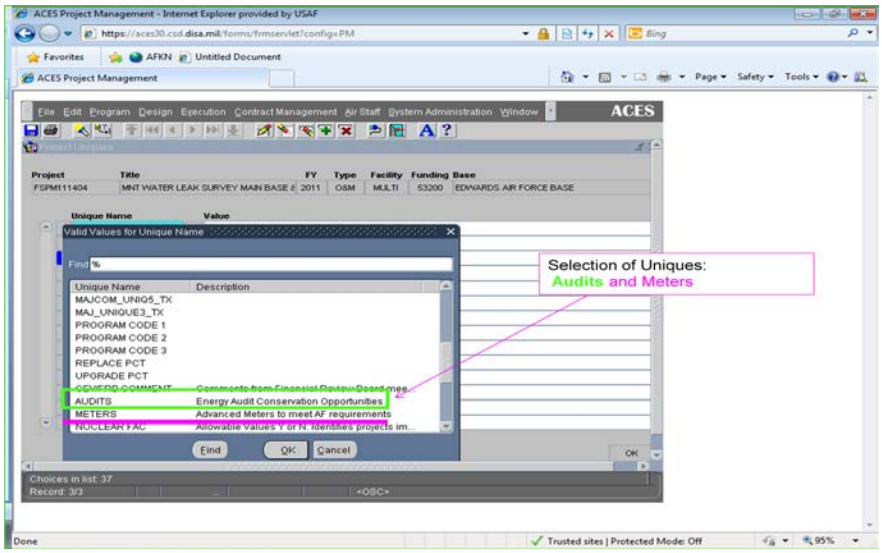


Figure 13: Uniques Menu-Entering Audits and Meters

9.0 Uniques Menu: Enter the whole number of Energy Conservation Opportunities (ECOs) that comprise the project and/or the total cost of those ECOs. AFCEC/CND is tracking the energy project impact from the audit program.

10.0 Uniques Menu: Enter the whole number of ECOs contained in the project.

11.0 Uniques Menu: If the project contains meters, select meters; enter the whole number of meters followed by the type of meters contained in the project. Refer to Figure 14 below.

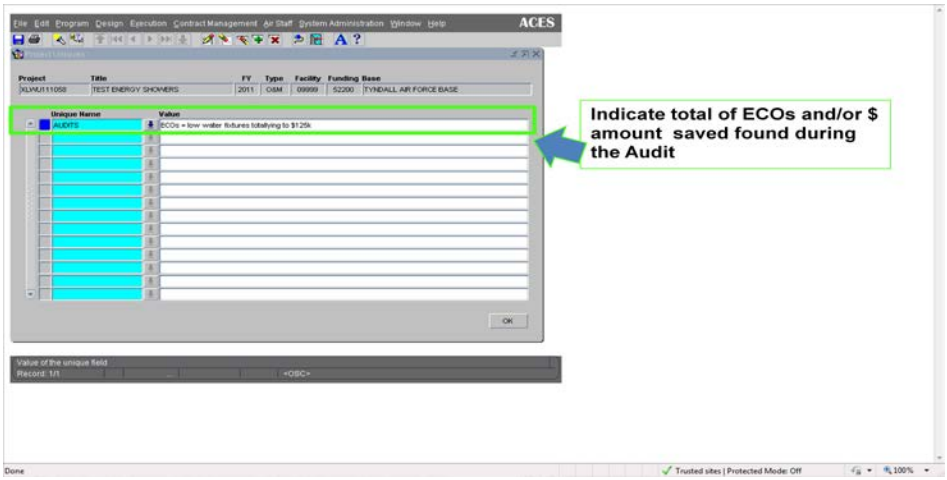


Figure 14: Uniques Menu- Entering Audits and Meters

12.0 Funding Tab: Figure 15 shows the locations of other important fields for a project to draw into an ACES report. Select the ***Status*** drop down and chose one of the possible conditions.

[PROGRAMMER'S HINT: Choose from the list on the drop down menus. Blank fields in specified programming steps are NULL and will drop out the report when conditions are on.]

13.0 Funding Tab: Select ***U*** from the drop down menu in the ***Fund Status*** field.

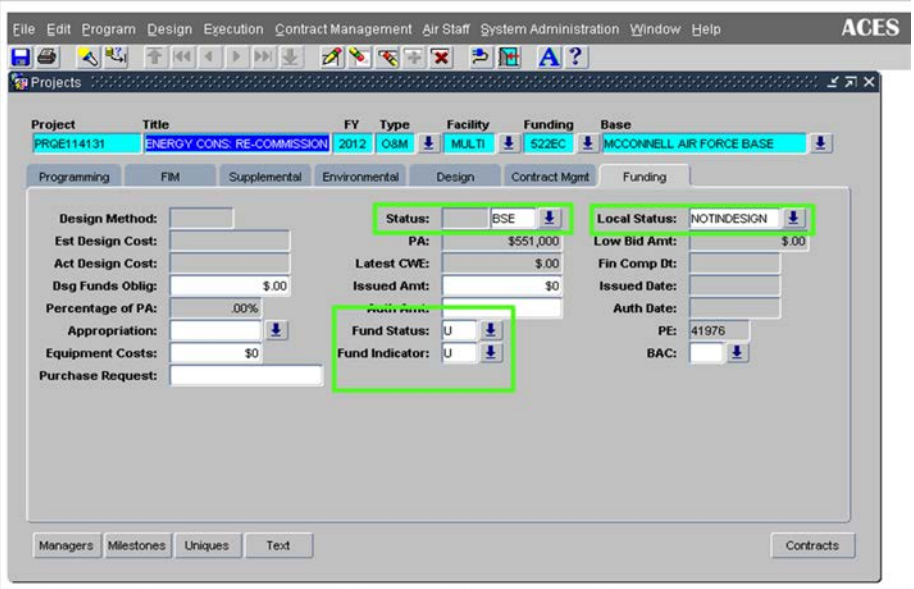


Figure 15: Funding Tab-Fund Indicator and Fund Status

14.0 Funding Tab: Select ***U*** from the drop down menu in the ***Fund Indicator*** field.

15.0 Funding Tab: Select from the choices in the drop down menu for ***Local Status***.

16.0 Funding Tab: Select from the 4 choices in the drop down menu in the ***BAC*** field. Note that generally one ***BA*** code matches to each MAJCOM with the exception of AETC.

17.0 Programming Tab: Select the correlating ***PE*** from the list that matches the ***Fund Type***. In Figure 16 below, the ***Fund Type*** of ***522EC*** corresponds to ***Program Element Cd*** of ***22176*** for ACC.

*[PROGRAMMER'S HINT: Since the project has not been validated yet, the **Fund Status** and **Fund Indicator** fields must be U.]*

FY	MAJCOM	Installation	Project Nbr	Project Title	Pa	Current Cwe	SIR	SPB	Annual Dollar Save Am	Annual Energy Save Am	Design Funds Required	Fund Status Cd	Funding Source Cd	Funding Subsource Cd	ECO Qty from Audit	Budget Activity Cd	Program Element Cd	Fund Type	Fund Indicator Cd
2012	ACC	BEALE AIR FC	BAEY120041	CONSTRUCT EVAPROCOC	$220,943	$0	2.1	7	$31,639	1469	$0	U	NRG	NRG CNS	NULL	01	22176	522EC	U

Figure 16: ACES Report Results for Energy Construction Projects

A-4: Programming Re-Commissioning and Retro-Commissioning NRG Projects

Re-commissioning and retro commissioning projects follow the same general rules as energy projects with some distinctions. The project title must clearly indicate to AFCEC/CND that it is a re or retro-commissioning project.

The economic life for a re- or retro-commissioning project is 4 years maximum. The SIR for these projects is 1 or better. The Simple Payback field is less than 4 years. Last, energy savings can only account for 15% of the current total energy consumption of the facility. Refer to Figure 17 for an example of field locations. The ODC maintenance costs of $2,500/facility slated for RCx be reduced from the overall costs in order to compute the SIR. The RCx PA will include the ODC costs with the costs of RCx for funding purposes.

Set the ***Fund Status*** and the ***Fund Indicator*** to ***U*** on the Funding Tab.

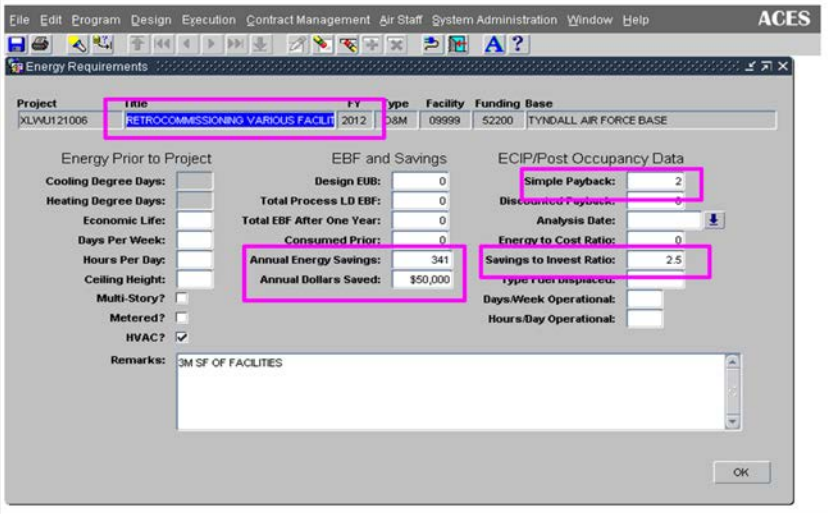


Figure 17: Programming Re and Retro-Commissioning Projects

A-5: AFCEC ACES Management of Energy Conservation Projects

After an ACES data run, AFCEC/CND will conduct a preliminary review and segregate energy conservation projects into various energy project types. AFCEC/CND will request the MAJCOMs to submit validation documents for the projects on the lists in order to begin the validation process. Once projects are validated and prioritized, AFCEC/CND shall request the MAJCOMs have bases make "AFCESA" the ***PM*** on the ***Supplemental Tab***.

The selection of ***AFCESA*** as ***PM*** grants AFCEC/CND control of six fields. Those fields are ***FY***, ***Fund Status***, ***Fund Indicator, Auth Amt, Issued Amt,*** and ***PM***. The bases will continue to program the projects as before as each develops. After a construction project has been selected for funding by AFCEC/CND, the AFCEC/CND program manager will change the ***Fund Indicator*** field to ***N*** or change it to ***A*** to identify the validated projects in that ***FY***. AFCEC/CND then has the ability to run reports pulling the approved funded projects and/or the validated projects with the associated authorized amounts. This enhances the identification of projects to HAF in the AFCAMP process and supports program management within ACES.

1.0 Supplemental Tab: As shown in Figure 18, select ***AFCESA*** from the drop down menu in the ***PM.***

2.0 Supplemental Tab: Figure 19 depicts the ***PM*** field populated by ***AFCESA***.

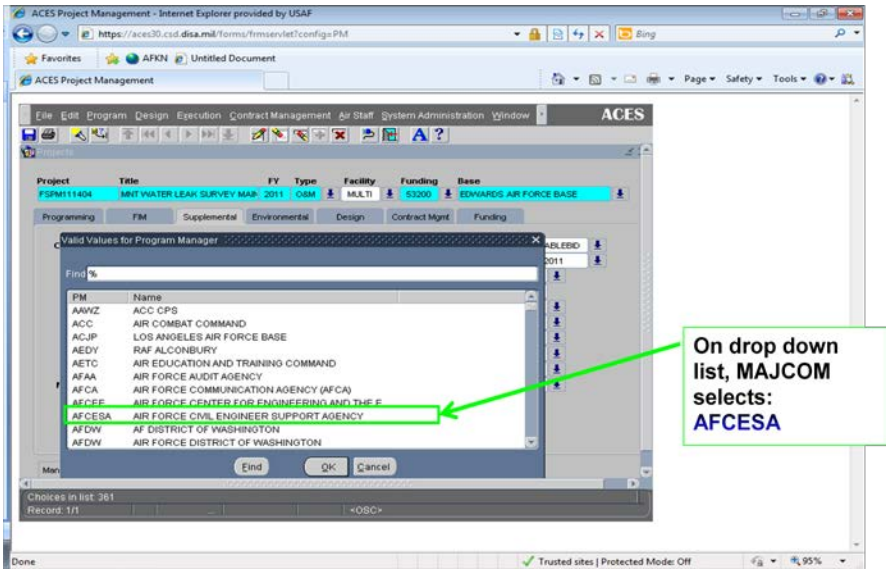


Figure 18: PM Drop Down Menu

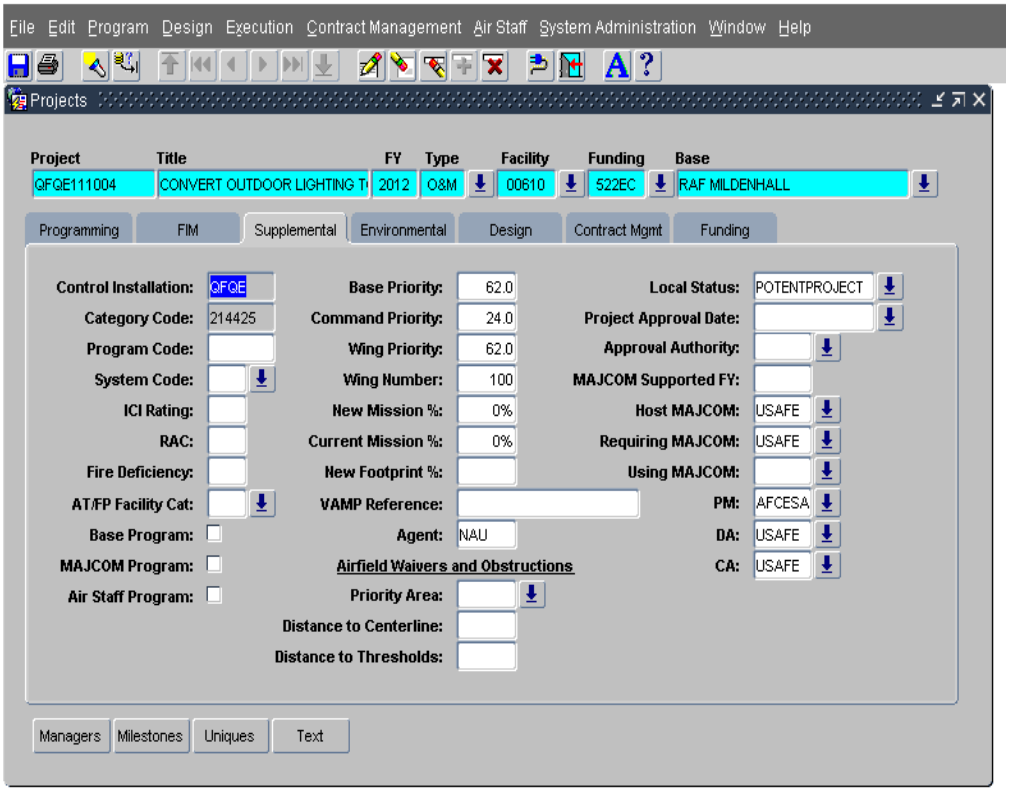


Figure 19: AFCECAFCEC as PM

3.0 Funding Tab: Figure 20 depicts four fields populated by AFCEC/CND as ***PM***.

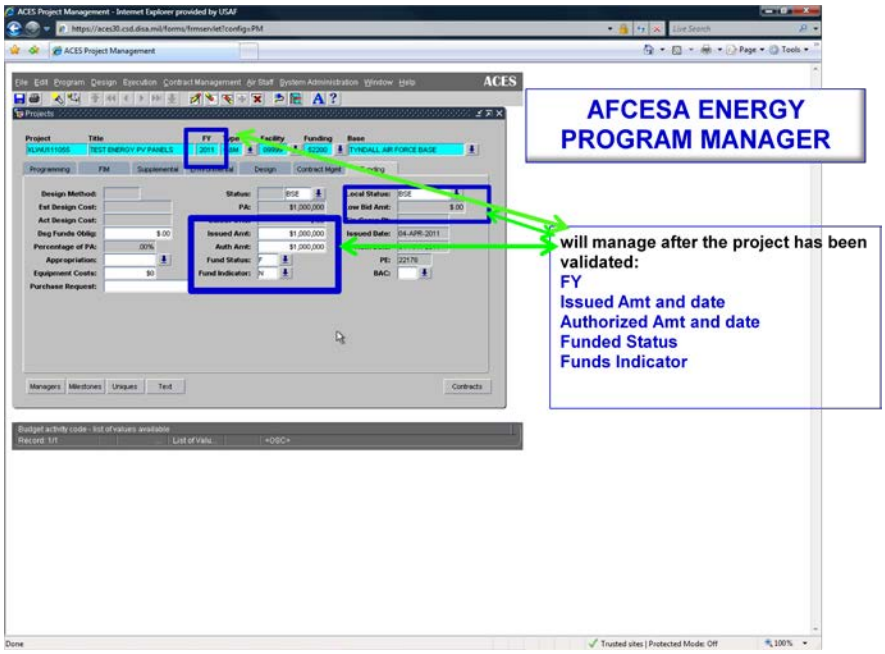


Figure 20: ACES Fields Managed by AFCEC

*[PROGRAMMER'S HINT: Do not change the Fund Indicator from **"N"**. If any changes need to be made to the 4 fields or project removal from the program, contact your AFCEC/CND energy manager.]*

A-6: ACES Reports for Program Management Review

The MAJCOMs and AFCEC/CND conducts quarterly Program Management Reviews (PMR) to discuss the status of the on-going energy projects. The meetings are alternatively held by DCO or at a selected meeting place. The current construction status of the ***FY-1*** projects, the bid status or construction status of ***FY*** projects (depending on timing) and the bid status of ***FY+1*** is reviewed. AFCEC/CND prepares an ACES report for each program which is shared with the MAJCOMs. These reports are a tool that will highlight fields not updated.

The following figures will display those fields of interest for each concurrent energy program. Figure 21 depicts the ACES fields of interest for the ***FY-1*** construction program. The projects in that program will have contracts awarded and are at some stage of completion. The bid status fields in a ***FY*** program are in Figure 22.

Host Majcom	Installation	Project Nbr	Project Title	Pa	Contract Awd Am	Act Cns Pct Comp Qy	Est,Cns Complete Dt	Revised Cns Complete Dt	Act,Cns Complete Dt
ACC	SHAW AIR FORCE BASE	ASPR100100	CONST TAXIWAY EDGE LIGHTS ALPHA & CHARLIE (RED HORSE TRAIN)	$334,000	$8,304	100	NULL	NULL	NULL
ACC	BEALE AIR FORCE BASE	BAEY110176	REPAIR/ADD TELECOMMMUNICATIONS FAC, B/2159	$3,985,000	$2,963,237	0	30-Sep-2013	30/09/2013	NULL

Figure 21: ACES Report for FY-1 NRG Construction Projects

[PROGRAMMER'S HINT: Discrepancies include a percentage complete but no contract number entered or updated completion date or percentages.]

MAJCOM	Installation	Project Nbr	Project Title	Pa	Project Status Cd	Act,Readyto Advertise Dt	Estimated Bid Opening Dt	Advertise (out,being solicitated)	Act,Bid Opening Dt
ACC	ARBUCKLE AIRFIELD	ASPR100107	RPR VAV HVAC UNITS AT HQTS, B29	$120,000	RTA	07-Feb-2013	30-July-2011	2-July-2011	NULL
ACC	BEALE AIR FORCE BASE	BAEY120023	REPAIR RETROCOMMISION HVAC SYSTEMS MULTIPLE FACILITIES	$282,880	DSG	NULL	5-Jan-2011	NULL	NULL

Figure 22: ACES Report for FY Bid Opening Status

[PROGRAMMER'S HINT: Discrepancies include greatly exceeding the estimated bid date or not entering the actual bid date. Remember AFCEC/CND will supply the reports in advance of a PMR]

A-7: Programming ECIP Projects in ACES PM

ECIP projects programmed shall be loaded in ACES PM with ***Program Type=MCP***, ***Funding Source=ECP***, and show ***Fund Status=U***. Make the ***FY*** as a best estimate, but be aware it can change. ECIP projects shall be new construction over $750,000, as outlined in AFI 32-1032, *Planning and Programming Appropriated Funded Maintenance, Repair, and Construction Projects.* Refer to Section 2.7.1 in the Execution Manual for an extensive discussion regarding ECIP projects.

1.0 Programming Tab: Enter ***321*** in the ***Funding*** field. Refer to Figure 23 for field locations.
2.0 Programming Tab: Place a checkmark into the field next to ***MILCON.***
3.0 Programming Tab: Select the drop down menu at the ***Funding Source*** field and select ***ECP***.
4.0 Programming Tab: Select ***MCP*** from the ***Type*** drop down menu.

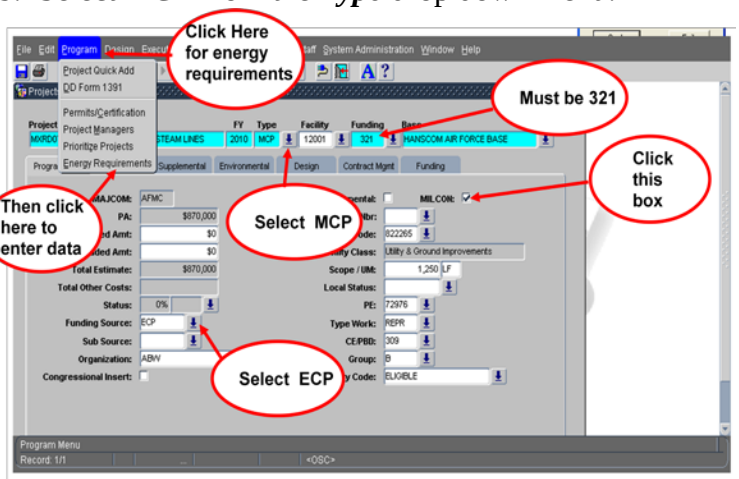


Figure 23: Programming ECIP Projects

5.0 Program Menu: Click ***Program*** for the drop down menu.
6.0 Programming Tab: Enter the ***PE*** and ***Type Work***
7.0 Program Menu: Click on the ***Energy Requirements*** choice.

8.0 Energy Screen: Enter data into the ***Annual Energy Savings***, ***Annual Dollars Saved***, ***Simple Payback*** and ***Savings to Invest Ratio***. Figure 24 indicates the locations of these fields.

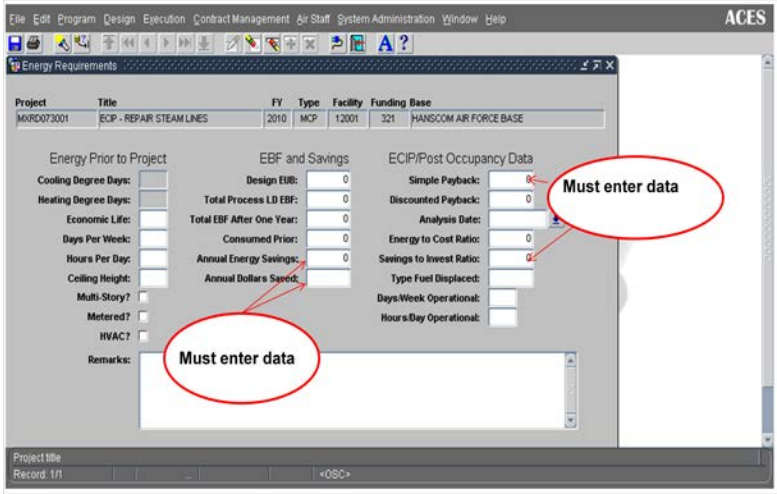


Figure 24: Enter Energy Data for ECIP Projects

9.0 Programming Tab: Figure 25 indicates the locations of the submittal buttons. NOTE: This will remove the project from local control, so only do this if the project is approved by the Office of the Secretary of Defense (OSD). After MAJCOM submits the project to Air Staff, AFCEC is named project manager. AFCEC will enter all data into ACES PM.

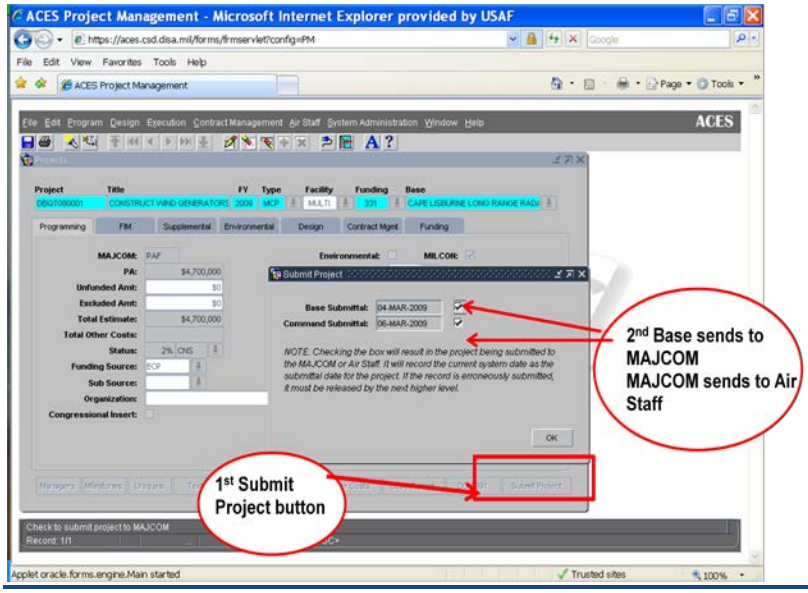


Figure 25: Submitting ECIP Projects

U.S. AIR FORCE

Attachment 3

Updated AF ESPC and UESC Policy Letter

AFCEC-E/CND
139 Barnes Ave
Tyndall AFB, FL

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON DC

MEMORANDUM FOR ALMAJCOM/A7

23 OCT 2012

FROM: HAF/A7C
1260 Air Force Pentagon
Washington, DC 20330-1260

SUBJECT: Policy on Energy Savings Performance and Utility Energy Service Contracts (ESPC/UESC) (A7C Memo, dated 4 Oct 10)

The AF continues to endorse the use of third-party financed efforts such as ESPCs and UESCs to help meet AF energy goals and comply with White House/DoD directives. Installations are beginning to identify more project opportunities and Energy Service Companies (ESCOs) and Utility Providers continue to show interest in partnering with the AF. Efforts by the Air Force Civil Engineer Center (AFCEC) to reinvigorate these programs, in partnership with several MAJCOMs, are showing success.

In Aug '12, Tinker AFB (the largest AF facility energy consumer) awarded the first ESPC since 2009. This $91M heat plant decentralization project will save 493,000 MBTUs a year, enough energy to power 12,424 homes, impacting 70 buildings and reducing Tinker's energy intensity by 30 percent. The AF will use the $6.4M in annual utility savings to pay for the financed infrastructure improvements and maintenance over the next 20 years.

I ask you to help your installations and the AFCEC continue to identify candidate projects. Your installations are encouraged to work with ESCOs and Utility Provider(s) to help identify and develop potential ESPC/UESC projects, as long as there are no real or implied government commitments to a specific contractor or utility, prior to AFCEC involvement/approval. You will soon see a revision to ETL 11-24, Energy Savings Performance Contracts, to clarify any confusion on ESCO engagements. We are hosting a RIE to improve our ESPC/USPC processes and will provide results in the near future.

ESPCs and UESCs are often the right tool to help achieve energy goals—particularly when a sound business case exists. We have shifted from a sharp focus on heat plants to a wider aperture which encompasses central plants, process energy and data centers, and we are also open to any viable ESPC/UESC that makes good business sense. Contact the AFCEC Energy Director, AFCEC/CN, Mr Rick Stacey at DSN 523-6341 for additional information.

TIMOTHY A. BYERS, Maj Gen, USAF
The Civil Engineer
DCS/Logistics, Installations & Mission Support

cc: SAF/IEN
HQ AFCEC/CL/DD
AF/A7CE

U.S. AIR FORCE

Attachment 4

Economic Life for Various Systems

Version 1.3
1 July 2013

AFCEC-E/CND
139 Barnes Ave
Tyndall AFB, FL

REVISIONS

Version	Date	Author	Description
1.0	18 Jan 2011	Rick Stokes	Initial Release
1.1	29 Feb 2012	Rick Stokes	Updated from EM Review
1.2	31 Jan 2013	Rick Stokes	Updated cover sheet
1.3	1 July 2013	Mike Kilgore	Updated cover sheet

Economic Life for Energy and Water Conservation Project Types

(Recommended Economic Analysis Life)

Cat.	Title	Description
1	EMCS or HVAC Controls (10 years)	Projects that centrally control energy systems with the ability to automatically adjust temperature, shed electrical loads, control motor speeds, or adjust lighting intensities.
2	Steam and Condensate Systems (15 years)	Projects to install condensate lines, cross connect lines, distribution system loops, repair or install insulation, and repair or install steam flow meters and controls.
3	Boiler Plant Modifications (20 years)	Projects to upgrade or replace central boilers or ancillary equipment to improve overall plant efficiency. This includes fuel switching or dual fuel conversions.
4	Heating, Ventilation, Air Conditioning (HVAC) (20 years)	Projects to install more energy efficient heating, cooling, ventilation, or hot water heating equipment. This includes the HVAC distribution system (ducts, pipes, etc.).
5	Weatherization (25 years)	Projects improving the thermal envelope of a building. This includes building insulation (wall, roof, foundation), insulated doors, windows, vestibules, earth berming, shading, etc.).
6	Lighting Systems (15 years)	Projects to install replacement lighting systems and controls. This would include daylighting, new fixtures, lamps, ballasts, photocells, motion sensors, IR sensors, light wells, highly reflective painting, etc.
7	Energy Recovery Systems (20 years)	Projects to install heat exchangers, regenerators, heat reclaim units or recapture energy lost to the environment.
8	Electrical Energy Systems (20 years)	Projects that will increase the energy efficiency of an electrical device or system, or reduce cost by reducing peak demand.
9	Solar Systems (10 years action) (20 years passive or PV)	Any project utilizing solar energy. This includes solar heating, cooling, hot water, industrial process heat, photovoltaics, wind energy, biomass energy, geothermal energy, and passive solar applications.
10	Facility Energy Improvements (20 years)	Multiple category project or those that do not fall into any other category.
11	Water Conservation Retrofit (5 years)	Projects to install low flow fixtures, control devices, or more water efficient equipment.
12	Leak Detection/Repair (25 years)	Projects to repair water leaks in water main and plumbing systems.
13	Water Efficient Landscape (15 years)	Projects to install xeriscape, subsurface/drip irrigation, irrigation management systems. etc.
14	Water Reuse (25 years)	Projects to modify wastewater treatment systems to allow water reuse and projects to reuse grey water.
15.	Retro & Re-commissioning (4 Years)	Systematic commissioning process to an existing facility that has never been commissioned or needs to be re-commissioned. See Execution Manual.

U.S. AIR FORCE

Attachment 5

Energy Program Measurement and Verification Execution Manual

Version 1.3
1 July 2013

AFCEC-E/CND
139 Barnes Ave
Tyndall AFB, FL

REVISIONS

Version	Date	Author	Description
1.0	29 Dec 2011	Rick Stokes	Initial Release
1.1	29 Feb 2012	Rick Stokes	Updated with EM review comments
1.2	31 Jan 2013	Rick Stokes	Updated M&V Req'ts
1.3	1 July 2013	Mike Kilgore	Updated M&V Req'ts

Energy Program Measurement and Verification Execution Manual

1.0 Overview

The AFCEC Capital Investment Project Measurement and Verification (M&V) program is designed to provide feedback and validity to the direct investment projects. The data collected will be used to document energy and financial savings, support future funding of energy programs, improve engineering efforts (design, operations, maintenance), and aid in future financial budgeting and energy forecasting. A completed M&V plan shall be submitted per installation with documentation for each covered facility contained in the candidate energy projects validated for funding. To clarify, one M&V plan will cover all buildings in all the combined construction projects.

The interim (M&V) template is provided as a starting place for the overall capital investment program. As the M&V component matures, this workbook will be updated (1) to include lessons learned and (2) feedback from the installations, MAJCOMs and AFCEC.

The instructions below will guide you through completing the M&V Plan Workbook. This program will use a modified Whole Facility approach (as defined by IPMVP and ASHRAE). The modifications implemented are to simplify the program for internal use.

2.0 Completing the M&V Plan Workbook

The following information provides details on completing the M&V Plan Workbook. Note that the entire workbook follows the end of the instructions.

1.0 Items highlighted in green will self-populate as workbook is completed.

2.0 Complete Items 1-5 on "Front" tab of M&V Plan workbook.

3.0 Go to "Back" tab and beginning with line 1, start to input facilities that are included in the project.

3.1 Enter facility number.

3.2 Enter facility category code according to real property records. If multiple category codes exist, use category code of the largest percentage by square footage.

3.3 Enter facility type in general terms (i.e. Administration, Warehouse, Lab, Dorm, Dining Hall, etc)

3.4 Enter facility description (i.e. Squadron Ops, 80-person dorm, Base Support Center, etc)

3.5 Enter facility square footage.

3.6 Enter facility energy consumption per year and indicate whether this information was obtained from metered data.

3.7 Enter facility water consumption per year and indicate whether this information was obtained from metered data.

3.8 Continue down the rows until all facilities are recorded.

3.9 % SF Project, % E Project, % W Project, Total Square Footage, Number of Facilities, Total Energy Consumption and Total Water Consumption will self-populate as information is completed.

4.0 Go to "Front" tab, Lines 6, 7, 8, and 9 will self-populate when "Back" is completed.

5.0 Using drop down menu, complete line 10. Select method used to establish baseline consumption.

6.0 Enter date baseline data collection started on line 11.

7.0 Using drop down menu, complete line 12. Be sure to review all options and select the most appropriate project type.

8.0 Enter project life cycle on line 13.

9.0 Using drop down menus, complete lines 14 and 15 in regards to installed meters.

10.0 On line 16, enter the total project energy consumption reduction that is estimated after project is complete. Lines 17 and 18 will automatically populate.

11.0 On line 19, enter the total project water consumption reduction that is estimated after project is complete. Lines 20 and 21 will automatically populate.

12.0 On line 22, list the energy and water sources that are affected with this project and their corresponding rates. (i.e. electricity @ $0.1026/kWh, natural gas @ $7.23/MMBTU, potable water @ $1,092.43/Mgal)

13.0 Use line 23 to describe the modeling method(s) used for any values not metered (e.g. Used E-quest to model facilities, used 8 months of metered data to extrapolate 12 months for baseline). If metered data was used for the entire baseline measurement, enter "NA" on line 23.

14.0 Use line 24 to provide any additional comments which are applicable to the measurement and verification plan for this project.

15.0 If project addresses energy conservation efforts only, all water fields may be left blank. Conversely, if project addresses water conservation efforts only, all energy fields may be left blank. Otherwise complete all fields.

16.0 If project addresses more than 100 facilities, contact HQ AFCEC/CND for directions on completing M&V Plan.

17.0 Address any questions, concerns, feedback and recommendations to HQ AFCEC/CND in regards to M&V Plan Workbook.

18.0 Separate water metering at each facility is not required. Base main water meter may be used to M&V water conservation projects depending on scope of project.

19.0 The final M&V Plan Workbook must be approved at Line item 25 at Flight Chief level or above.

AFCEC Capital Investment Project Interim Measurement and Verification Plan Worksheet (front)

1	Installation Code:	
2	Installation Name:	
3	MAJCOM:	
6	Submission Square Footage:	0
7	Number of Buildings included in Submision:	0
8	Annual Energy Consumption Baseline (btu/yr):	0
9	Annual Water Consumption Baseline (gal/yr):	0
10	Energy Consumption Baseline was established using…	
11	Submission Date:	Enter Date on Back Page
16	Estimated Energy Consumption Reduction (btu/yr):	
17	Estimated New Annual Energy Consumption (btu/yr):	0
18	Estimated Energy Consumption Reduction (%):	0.0%
19	Estimated Water Consumption Reduction (gal/yr):	
20	Estimated Water Consumption: Post-Project (gal/yr):	0
21	Estimated Water Consumption Reduction (%):	0.0%

Comments:
24 Insert Details Here:

25 Approved by:

Name	Title

NOTE: Refer to the Excel Spreadsheet for remaining spreadsheet tabs