



**USAF
COMMANDER'S
FACILITY ENERGY MANAGEMENT
GUIDE**

INTRODUCTION

In this time of reduced budgets it is increasingly difficult for you, the commander, to find the dollars to accomplish all your requirements and keep your personnel at acceptable levels of operational readiness. The Air Force’s Facility Energy Management Program can alleviate some of these problems while also improving the environment.

Read this guide to learn the methods that develop a good energy awareness program, identify funds for infrastructure improvements, and make the environment better.

The ability of a military installation to take advantage of the opportunities made available through energy management is one key to having a successful infrastructure improvement program.

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CHAPTER 1

THE ENERGY MANAGEMENT PROGRAM

The Air Force Energy Management Program is based on compliance with public law and federal policy. The program's goals and objectives form a synergy to improve operating efficiency, enhance mission capability, and improve personnel comfort and productivity. All DoD components must comply with the following executive directive which is the basis for all other federal energy management programs.

- *Executive Order 13123 of June 1999 -- By the President of the United States of America: Greening the Government Through Efficient Energy Management.*
- This comprehensive directive has the following goals and objectives:

Existing Facilities:

- Reduce facility energy consumption by 35% per square foot by FY2010 compared to FY1985.

Industrial Processes:

- Improve industrial energy efficiency by 25% by FY2010 as compared to FY1990 benchmark. AFMC bases only.

Technology:

- Implement all cost effective, energy efficient, water conservation, and renewable energy technologies.
- Increase use of solar and other renewable energy sources.
- Reduce use of petroleum-based fuels in facilities by switching to clean fuels or renewable energy.

New Construction:

- Meet or exceed the energy performance standards set forth in Federal Regulation 10 CFR 435.
- Minimize life-cycle cost of new facilities by using energy efficient, water conservation, or renewable energy technologies.

Show Case Facilities:

- Designate exemplary new and existing buildings as a showcase facility highlighting advanced energy efficiency, water conservation, and renewable energy technologies and practices.
- Energy Star Building Facility Criteria shall be used for energy performance and indoor environmental quality.

Innovative Financing and Contractual Mechanisms:

- Utility Energy Savings Contract (UESC) Programs
- Energy Savings Performance Contracts (ESPC)

Incentives and Awareness:

- Assign energy program duties & responsibilities to appropriate personnel.
- Reward employees for exceptional performance in implementing energy efficiency and water conservation projects.

Energy Efficient Products:

- Purchase products that are in the upper 25 % of energy efficiency of their product class or Energy Star labeled.

To accomplish this directive two things must happen. The base population must practice energy conservation and the base staff must use the energy budget effectively. Both efforts improve the environment because all energy reduction abates the pollutants created by energy production.

Energy conservation starts in every base office and home and must be practiced all the time. By routinely turning off unneeded lights and computers, keeping thermostat settings reasonable, maintaining heating and cooling equipment, and fixing leaky faucets you can reduce energy costs significantly. Other actions are just as simple and are available from the base facility Energy Manager in the Base Civil Engineer's (BCE) organization.

Effectively using the base's utility budget will bring about large scale energy efficiencies through the replacement of entire sections of the base infrastructure, i.e.; interior and exterior lighting, old cooling and heating systems, and ineffective building insulation. The remainder of this guide describes the potential in properly using the energy budget.



CHAPTER 2

ENERGY FUNDS & CREATIVE FINANCING

Capital Investment Programs:

Here is where the program has exceptional value for you!

There are three basic funding avenues.

Federal Capital Investment Programs:

Energy Conservation Investment Program (ECIP)

Other: (Military Construction Program (MCP),
Operations and Maintenance (O&M), etc.)

Utility Capital Investment Program:

Utility Energy Savings Contract (UESC)

Energy Services Company (ESCO)

Capital Investment Program:

Energy Savings Performance Contracts (ESPC)

Both UESC and ESPC Programs include:

Preliminary (no cost) Energy Audits

Rebates

Turnkey Energy Projects

Multidiscipline Expertise

Table 2.1

- Federal Capital Investment Programs:

ECIP has funds exclusively earmarked for energy and water conservation projects.

This is the preferred method of payment for energy conservation projects because the funds are appropriated by Congress and do not have to be paid back. Conversely, current funding levels are insufficient to cover the needs of the AF facility energy program. Other conventional means of project funding (MCP and O&M) are limited and reduce funds available for other direct mission support requirements.

- Utility Capital Investment Program: This program provides energy saving incentives, at relatively low interest rates, such as utility financed rebates and energy-saving projects. These types of energy-saving projects are based on conserving the energy source supplied by the participating utility company. **Not all utilities participate in UESC programs.** Recommend you coordinate with your MAJCOM and the Air Force Civil Engineer Support Agency. They can provide the experience to ensure maximum success of your UESC program.
- ESCO Capital Investment Program: Prequalified third party companies called ESCO's finance these ESPC projects. All cost-effective, energy-saving applications, regardless of fuel type, are investigated for savings potential. The ESCO makes its money by receiving a negotiated portion of the energy savings derived from the projects they accomplish. ESPCs can be acquired through local utility companies. **Unlike UESC, all Air Force bases, worldwide, can have ESPC projects.** Here too, you are urged to team-up with your MAJCOM and the Air Force Civil Engineer Support Agency for their assistance.

There must be a mechanism by which the loans and associated finance costs for UESC and ESPC projects are paid. Payments are executed as a utility budget line-item cost paid over a negotiated time period, not to exceed 10 years per project, at a negotiated interest rate. The monthly payment amount is based on a portion of the cost savings derived from the reduced energy consumption. There are two major differences between UESC and ESPC programs relative to the payment plan. First, UESCs do not guarantee estimated savings where ESPCs must. This means a utility company exercising a UESC project will receive their full-negotiated payment no matter how much energy is or is not saved. An ESPC project must save the amount of energy estimated or the ESCO does not receive full payment. Second, the cost of an ESPC program cannot cause the cost of utilities to go higher than if the Government had not awarded an ESPC. The opposite is true for a UESC program.

The main UESC and ESPC program qualifier is each project must conserve energy or water and the estimated cost savings must be sufficient to pay for the project within 10 years.

Millions of dollars in energy projects can be generated, depending on the size of your utility budget. For example, a \$3M annual utility budget may yield up to \$22.5M for energy and water conservation projects over 25 years (See Appendix A). These are energy-efficient projects for worn-out infrastructure systems and equipment and water conservation projects such as indigenous landscaping for base beautification.



CHAPTER 3

INSTALLATION ENERGY MANAGEMENT TEAM

Energy management is a *team* effort. The Energy Management Steering Group (EMSG) is composed of senior representatives from each base organization that serve in an advisory capacity to propose and discuss energy conservation ideas and policies prior to your final decision.

Because each EMSG member represents different mission requirements the ways they consume energy also vary. This diversity makes each member instrumental in implementing a program for his/her own organization. The following summarizes the EMSG membership.

- **Chairperson**: As the Installation Commander, **you** (or your designated representative) will chair the EMSG. **You** set the tone for the Facility Energy Management Program. **You** are the authority for implementing projects that will save energy and water.
- **Secretary**: This is reserved for the installation Energy Manager. Selection of the Energy Manager, normally from the BCE squadron, is the first and most important step in assembling an EMSG. The Energy Manager should be a dynamic individual who takes the initiative to develop a successful energy management program with a “can do” attitude and oversee day-to-day activities in the base energy program. S/he is your resident expert on all matters concerning facility energy and water conservation and awareness.
- **Core Members**: Base Civil Engineer, Comptroller, Contracting Officer, Legal Counsel, Supply Officer, Utilities Manager, Director of Operations, Public Affairs Officer, Fuels Management Officer, and Transportation Officer or their representatives.
- **Optional Members**: Representatives from the Security Police, Housing Office, large energy- and water-user organizations, and managers of the Base Exchange, Commissary, and Clubs.



APPENDIX A

EXAMPLE: POTENTIAL FUNDS AVAILABILITY

Chapter 2 mentions that \$22.5M in utility cost savings may be generated through UESC or ESPC programs by investing in energy and water conservation projects from a \$3M annual utility budget. This appendix explains that statement.

Assume you have an annual utility budget of \$3M for your installation and you can achieve a 30% reduction in annual energy consumption through conservation projects.

Also assume a one-to-one correlation between energy saved and energy dollars saved. (This is a conservative approach.) Thus, for every percentage point of energy saved, there is an equivalent percentage of cost savings attained. That is, for a 30% reduction in energy consumption, there is also a 30% reduction in energy cost. A 30% reduction in the annual utility budget of \$3M yields an annual savings of \$900,000. Money which can pay for energy conservation projects.

Further assume, the UESC or ESPC program generates individual projects each year, for a full 25 years, that save the \$900,000 in savings. For all ESPC and some UESC projects the installed equipment is also contractor repaired and maintained for this 25-year period. Thus,

$$25 \text{ yrs} * \$900,000/\text{yr} = \$22,500,000.$$

With this program not only has a 30% reduction in energy consumption been achieved, but also assurance that the systems are properly maintained and repaired for the next 25 years without using limited base O&M resources has likewise been obtained. The money to pay for the UESC or ESPC projects comes from the 25 years worth of utility budget savings.

This is a simple explanation with many assumptions but carries the point that a large potential exists for reducing energy consumption and improving the base's infrastructure by using funds in your current utility budget.

Do not allow energy cost savings to go uncommitted. Any unused (sic, uncommitted) utility funds resulting from measured energy savings will be usable for the fiscal year in which attained; however, subsequent utility budgets will reflect reductions based on the previous year's "excess" utility funds. It is in your interest to have these funds committed, in their attained fiscal year, as a long-term utility line item requirement for more energy projects. Do not waste the opportunity to reduce energy consumption, improve the base's infrastructure, and positively impact quality of life. Maximize the utility funds you have saved by awarding more UESC/ESPC projects.



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