U.S. DOE–FEMP Super ESPC Program

1 Background

The U.S. Department of Energy's Federal Energy Management Program (FEMP) created the Super ESPC program to reduce the time and effort required for Federal agencies to award ESPC contracts at Federal agency facilities. FEMP awarded indefinite-delivery, indefinite-quantity (IDIQ) contracts to selected ESCOs using a process that fulfilled the competition requirements of the Federal Acquisition Regulations (FAR). To set up ESPC projects for their facilities, agencies award delivery orders to the pre-selected Super ESPC ESCOs.

Super ESPC project development is carried out in four phases. In Phase 1, an ESCO and an agency explore opportunities for energy savings through informal communications, meetings, and exchange of information. If the potential for a project exists, the ESCO develops an initial proposal, which is the goal of Phase 2. The initial proposal is based on a preliminary survey of the site and includes a description of proposed energy conservation measures (ECMs) and estimates of energy and cost savings. The agency reviews the initial proposal and decides whether or not to proceed.

If the initial proposal is acceptable, development proceeds to Phase 3. The agency transmits a letter confirming its intention to award the delivery order to the ESCO and issues a delivery order request for proposal. In response, the contractor performs a detailed energy survey and submits a report that describes the basis for the project's contractually guaranteed savings. The detailed energy survey is the ESCO's comprehensive audit of facilities and energy systems at the project site. The detailed energy survey augments, refines, and updates the preliminary site survey data and provides the information needed to update the feasibility analyses of the ECMs under consideration for the project. The agency's project team reviews the proposal and submits its comments to the ESCO. Based on these comments and further negotiation, the ESCO develops a final proposal. This is a fixed-price proposal for installation of the ECMs, and usually includes performance of ongoing services such as M&V and operations and maintenance. Phase 4 of the development process entails construction, commissioning, and agency acceptance of the ECMs.

The performance period begins after the agency formally accepts the completed project. In the United States, most agencies of the Federal government are funded by the U.S. Congress through the budget process and are prohibited from issuing their own debt. For this reason, the ESCO obtains the financing required to fund project construction. During the performance period, the agency pays the ESCO from the savings that are generated by the ECMs. The ESCO uses this payment to repay the lender and to fund the performance-period services called for by the contract.

Federal regulations require that the savings from Super ESPCs exceed their costs in each year of the contract, and the ESCO must guarantee a level of annual cost savings that is sufficient to pay for the debt service and any performance-period services under the contract. M&V is also required, and at least once a year, the ESCO produces an M&V report detailing the results of a program of measurements, inspections, engineering calculations, and comparisons with energy baselines, carried out to estimate the level of savings being delivered by the installed equipment. If the savings do not meet the guarantees, the agency can withhold payments to the ESCO up to the level of the shortfall.

A key element of the Super ESPC program is the use of project facilitators, who assist the agency in the contract development process. FEMP project facilitators are objective, expert consultants for technical, financial, and contractual issues who help to optimize the financial value of ESPC projects. Use of a project facilitator is mandatory for those who use DOE's Super ESPCs. Up to the notice of intent to award (end of Phase 2) FEMP provides project facilitation free of charge; further services through the first year of the performance period are available on a reimbursable basis.

Since the program began in 1998, more than $700 million in conservation projects have been funded through the use of Super ESPCs, saving the Federal government an estimated $1.6 billion in energy and energy-related costs.

2 A Typical Project

An example of a recent Super ESPC project is the one being implemented by Johnson Controls, Inc. for the National Archives and Records Administration (NARA). The project involves the Lyndon B. Johnson Library in College Station, TX, and the Gerald R. Ford Library in Ann Arbor, MI. The ECMs in this project are:

- Gerald R. Ford Library
  - Boiler replacement
  - Energy management control system upgrade
  - Variable air volume conversion
  - Energy efficient lighting upgrade
  - Variable-frequency-drive electric motors
- Lyndon B. Johnson Library:
  - Chilled water and hot water systems improvements
  - Energy mangement control system upgrade
  - Airflow improvements
  - Heating, ventilation and air conditioning system upgrades
  - Energy efficient lighting upgrade.

The total implementation price of $4.3 million dollars (which is very nearly equal to the program average of $4.7 million) is financed for 20 years at 6.2% interest. The project is expected to save 1.4 million kWh of electricity, 3300 MBtu of natural gas and 23,000 MBtu of steam each year. The total estimated cost savings in the first year of the performance period is $498,000. Based on analysis of previous years' utility bills, it was agreed to escalate this amount by 2.9% per year. Of the estimated savings, the ESCO guarantees 75%, and each year NARA pays the ESCO one dollar less than the guaranteed savings.

In addition to debt service, payments to the ESCO fund performance-period services costing $65,000 per year (escalating at the same rate as the guaranteed savings) of which about 40% is for M&V, 43% is for operations and maintenance, and 17% is for management and administration.

3 Measurement & Verification

M&V for the project is mostly based on FEMP's Option D, which is calibrated simulation. During project development, Johnson Controls used building energy analysis software to develop pre-retrofit models of the libraries' energy use as a function of weather, occupancy, and other parameters. The models were calibrated using utility bills from the two sites. The retrofit technologies were then implemented in software and used to predict post-retrofit energy use and the energy savings. Each year, Johnson Controls performs a series of measurements on the installed equipment (for example, flue gas analyzers are used to measure boiler efficiency, and power meters are used to measure the draw of motors installed on fans and pumps). A report is prepared to show that the efficiency and power use of the installed equipment is the same (within measurement error) as the values used to estimate post-retrofit energy use.

NARA is just one of the 18 agencies of the U.S. Federal government that have used the Super ESPC contract to implement energy conservation projects at their facilities. Since 1998, more than 130 Super ESPC contracts have been awarded.

4 References

FEMP, 2003. *Practical Guide to Savings and Payments in Super ESPC Delivery Orders*. DOE Office of Energy Efficiency and Renewable Energy, Federal Energy Management Program, January 2003. (www.eren.doe.gov/femp/financing/espc/practical_guide.html).

FEMP. *Super Energy Savings Performance Contracts (Super ESPCs)* Web page, http://www.eere.energy.gov/femp/financing/superespcs.cfm.