

# **Energy Savings Performance Contracting — Experience of the U.S. Department of Energy Federal Energy Management Program**

*Patrick J. Hughes, Oak Ridge National Laboratory  
Tatiana Strajnic Muessel, DOE Federal Energy Management Program*

## **ABSTRACT**

Executive Order 13123 requires federal agencies to reduce the energy used per square foot in their buildings by 35% by 2010 compared to 1985 consumption. The U.S. Department of Energy's (DOE's) Federal Energy Management Program (FEMP) estimates that a total of \$6 to 7 billion must be invested in energy efficiency to meet the goals set by the order. DOE FEMP's Super Energy Savings Performance Contracts (Super ESPCs) represent an alternative financing option available to federal agencies to help them implement energy-efficiency projects and meet energy savings goals. This paper describes FEMP's Super ESPC Program, the differences between regional and technology-specific contracts, and how agencies use the contracts. The program's accomplishments at this early stage of its development are summarized along with trends in federal investment in ESPCs. The paper discusses some of the challenges FEMP faces in pursuing its mission to increase energy efficiency in the federal sector through implementing a new way of doing business in the government. FEMP's strategies for improving the Super ESPC program are also described.

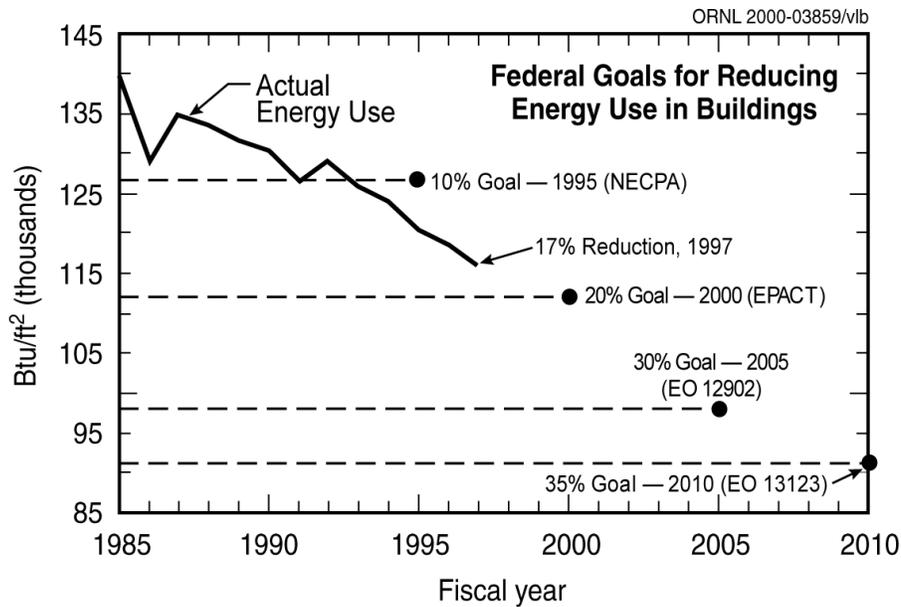
## **Introduction**

Federal agencies are required by statute and by a series executive orders<sup>1</sup> issued over the last 10 years to improve the energy efficiency in their buildings. The latest of these increasingly challenging mandates, Executive Order 13123, signed by President Clinton in June 1999, requires federal agencies to reduce their energy use per square foot by 35% by 2010 compared to 1985 consumption (see Fig. 1). Executive Order (E.O.) 13123 also sets federal goals for water conservation, carbon emission reduction, use of renewable power sources, and others. The mission of the U.S. Department of Energy's (DOE's) Federal Energy Management Program (FEMP) is to reduce the cost of government by advancing energy efficiency, water conservation, and the use of renewable energy sources, and by helping agencies manage their utility costs. In other words, FEMP is in the business of helping agencies meet their mandates.

Congress has been disinclined in recent years to appropriate capital funds for energy-efficiency projects in federal buildings. This is not expected to change, and very few agencies can find sufficient funds in their shrinking budgets for adequate maintenance and repair, let alone the improvements needed to achieve the mandated energy savings. FEMP estimates that investments totaling \$6 to 7 billion in energy efficiency are needed to meet the goals set by E.O. 13123.

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<sup>1</sup> Federal energy-efficiency mandates were set by the National Energy Conservation Policy Act (NECPA Pub. L. 95-619, as amended in 1988), as amended by the Energy Policy Act of 1992 (EPACT), and by Executive Orders 12902 and 13123.



**Fig. 1. Goals and Progress in Reducing Federal Energy Use**

One of FEMP's primary strategies to address this situation is to give agencies access to private-sector funding for projects to improve their resource efficiency and to reduce costs. In that effort, FEMP established DOE's Super Energy Savings Performance Contracts (Super ESPCs), a financing mechanism that joins private-sector energy service providers with federal agency customers under the umbrella of a standard contract with DOE. Under Super ESPCs, private energy service companies (ESCOs) provide financing for energy-efficiency projects at federal facilities. The ESCO provides for the design, purchase, and installation of building improvements at agency facilities, along with any maintenance services included in the contract, and in return receives fixed payments over the term of the contract from the cost savings generated by the project.<sup>2</sup>

To FEMP's early champions of Super ESPCs, the program's success was a foregone conclusion. Here was a way to fund energy-efficiency projects using private capital — an absolutely legal method, encouraged by the executive orders and blessed by Congress. At no up-front capital cost, and without depending on special Congressional appropriations, federal agency sites could accomplish significant facility improvements and solve high-priority problems, along with reducing expenses for energy and related operations and maintenance (O&M). Costs for these items would become largely predictable for the term of the contract, and after the contract term, the agency would accrue the full cost savings from increased energy efficiency (which are used during the contract term to pay the ESCO).

Some agencies have made this rosy picture a reality, and Super ESPCs are proving to be a valuable tool for achieving the goals set by E.O. 13123. In less than three years, 26 Super ESPC projects have been awarded for a total of \$65 million in investment, and 110

<sup>2</sup> The use of ESPCs by federal agencies was authorized by the National Energy Conservation Policy Act (NECPA Pub. L. 95-619 [42 USC 8287], as amended in 1988), as amended by the Energy Policy Act of 1992 (EPACT Section 155 of Pub. L. 102-486). These statutes, as amended, were codified at 42 U.S.C. 8287. EPACT also directed DOE to conduct a rulemaking, and the DOE Final Rule is codified into regulation at 10 CFR Part 436.]

projects worth \$275 million are “in the pipeline,” on their way to award. That \$65 million, however, represents only a small fraction of the needed investment, and the success stories are just one scene in a multi-hued panorama painted by FEMP’s experience in establishing and promoting Super ESPCs.

FEMP’s experience is casting the clear light of day on the potential for realizing energy savings in the federal sector and the challenges of implementing an innovative way of doing business in the government. FEMP is using this experience in crafting adjustments to its approach, aiming for a more flexible, practical, and customer-driven program focused on getting a good business deal for the government. This paper is an overview of the DOE FEMP Super ESPC Program, its accomplishments at this early stage of its development, and FEMP’s strategies for improving the program.

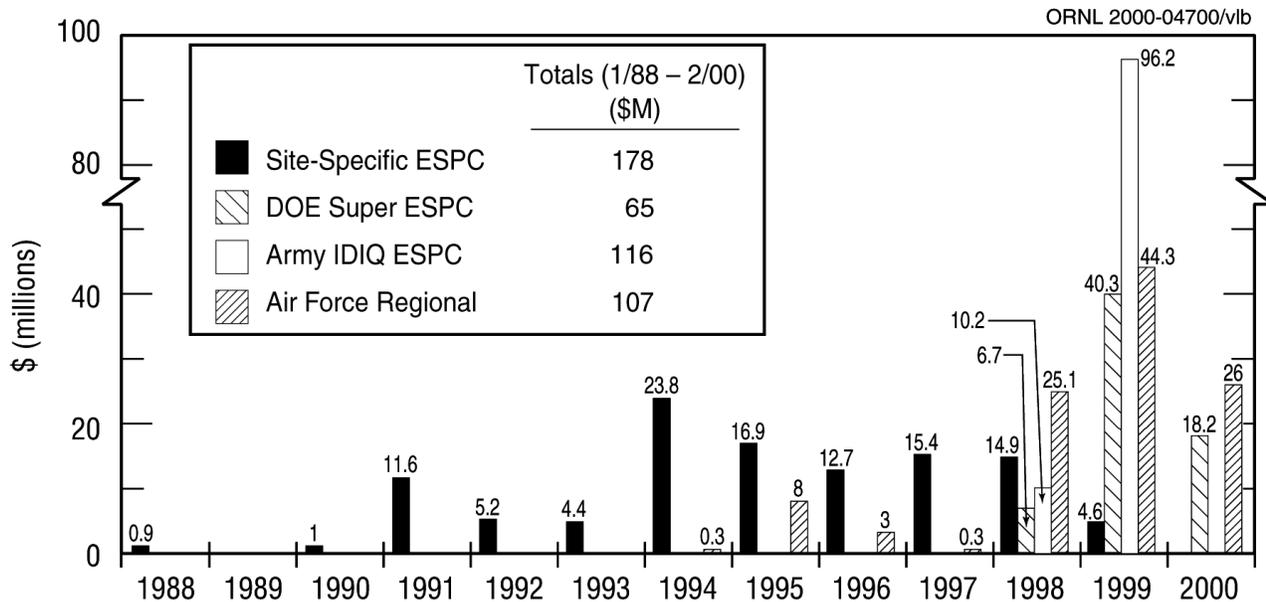
## **Trends and Accomplishments**

Since the prime contracts were awarded in 1997 – 1998, agencies have awarded Super ESPC delivery orders for 26 projects representing a total of \$65 million in project investment at federal facilities throughout the United States, with the number of awards tripling between 1998 and 1999. The average contractor investment in these projects is \$2.5 million, average bundled project simple payback is 6.9 years, and average term is 14.9 years (see Table 1). Many more Super ESPC projects that are “in the pipeline” are listed in Table 2 by agency. Assuming that investment per project will be close to the average for delivery orders to date, \$275 million will be invested in these new projects.

The DOE Super ESPCs are indefinite-delivery, indefinite-quantity (IDIQ) contracts. Federal Acquisition Regulations allow the government to award “umbrella” IDIQ contracts, which define general terms and conditions, but leave the exact definition of the goods and services to be delivered to be specified in “delivery orders” awarded under the IDIQ. The U.S. Air Force and the U.S. Army are using IDIQ contracts similar to DOE Super ESPCs, and this type of contract appears to be replacing site-specific ESPCs for stand-alone ESPC projects, according to data compiled by FEMP and graphed in Fig. 2. Between 1988 and 1998, stand-alone ESPCs accounted for investments totaling \$105.8 million, with annual investment averaging \$10.5 million and peaking at \$23.8 million in 1994. In 1999, when \$40.3 million worth of DOE Super ESPC projects were awarded, site-specific ESPCs accounted for only a \$4.6 million investment (not counting the unique \$67 million contract for the multi-site Military District of Washington, D.C.). Investment in U.S. Army IDIQ projects grew from \$10.2 million in 1998 to \$96.2 million in 1999.

## **DOE FEMP Super ESPCs**

DOE FEMP’s Super ESPCs were established to streamline the procurement process, and can substantially reduce the time and effort it takes agencies to implement energy projects (DOE FEMP 1999a). Time is literally money in this case, to both the agencies in the market for energy projects and to the ESCOs who develop the projects. The agency invests the time and resources of its procurement, contracting, and engineering professionals to secure ESPC financing for the actual building improvements, so making the process more efficient saves them money. Also, every day before the project is completed represents a day of lost cost and energy savings. The Super ESPC ESCOs are heavily invested in the Super ESPC



**Fig. 2. Investment In Federal Energy Savings Performance Contracts** (Note: Values for 2000 include data gathered through February. Data sources: Nealon 2000 and Beason 1999.)

program, and they represent a quality source of project development and implementation expertise for federal customers. The ESCOs invest significant resources in preliminary energy surveys and initial project proposals, and detailed energy surveys and revised project proposals, before they are assured of any award or any recovery of these costs. By partnering with ESCOs in good faith, agencies can help to expedite the process and keep the ESCOs' costs within reasonable bounds, thus minimizing unrecovered costs (if projects fail to proceed to award). To date, such unrecovered costs have been responsible for keeping markups on awarded projects high. As in any business, these companies' stockholders expect to profit from their investments in federal energy projects, and unprofitable ventures don't survive for long in the corporate portfolio.

The ESCOs that competed for the IDIQ Super ESPCs were evaluated based on demonstrated capabilities to manage the development and implementation of multiple ESPC projects over a large geographic area and on their technical approach and price for one or more site-specific projects defined in DOE's requests for proposals (RFPs). The prime IDIQ contracts establish the general scope of work, terms, and conditions for firm-fixed-price delivery orders for performance-based energy savings projects at federal agency sites. With these contracts in place, the lion's share of the procurement process is already done when agency customers come to the table. The agency can skip the competitive contract awarding process and go directly to placing a delivery order. Putting a typical stand-alone ESPC in place can take 2 to 3 years, whereas a Super ESPC delivery order can be awarded in 6 to 12 months.

### All-Purpose and Technology-Specific Super ESPCs

The entire United States, the District of Columbia, and all U.S. territories are covered by regional "all-purpose" Super ESPCs. In each of the six DOE regions, five-to-seven ESCOs

**Table 1. DOE Super ESPC Awarded Contracts**

Agency	Energy-Conservation Measures	Contractor investment	Avg. annual savings	Term (years)
<b>1998</b>				
Coast Guard	Lighting, HVAC, EMS, boiler upgrades	\$954,353	\$228,824	7
Transportation	Lighting, pumping modifications	\$348,682	\$50,271	14
General Services	EMCS, variable frequency drives, boiler pumps, air compressors, air dryer	\$493,541	\$113,183	12.92
Interior/Forest Service	Lighting, EMCS, steam system mod.'s, trap maintenance, return air ducting, premium efficiency motors, fume hood controls	\$426,600	\$76,900	10
Veterans	Boiler replacement w/ steam production system, EMCS, medical air compressor and cooling coil, motor efficiency upgrade, lighting	\$4,428,666	\$670,510	20.17
<b>1999</b>				
Veterans	BAS, HVAC, lighting	\$395,629	\$64,734	10
NASA	Lighting, efficient water, more to be announced over life of contract	\$17,696,374	\$1,941,318	23.25
Coast Guard	BAS, HVAC, lighting	\$1,149,112	\$157,028	10
Interior/Park	Boiler improvements, BAS, HVAC, lighting, electric motors and drives, electric distributions systems	\$584,535	\$81,539	14.67
Veterans	Lighting, steam traps, water, heat recovery	\$755,857	\$81,251	20.75
Defense	Boiler, EMCS, HVAC, lighting, hot water/steam, motors	\$1,891,128	\$354,738	9.83
Interior	Boiler improvements, BAS, HVAC, building envelope, electric motors and drives	\$1,546,684	\$159,361	22.42
Coast Guard	Lighting, building envelope, hot water/steam	\$3,166,628	\$647,815	10
Archives & Recs.	Lighting, steam trap replacements, EMCS	\$266,431	\$35,914	13.5
Energy	Lighting upgrades, water conservation	\$279,462	\$37,797	17.33
Defense/Navy	Upgrade boiler plants, upgrade chiller plants, EMCS, HVAC, lighting, insulate hot water pipes	\$1,699,458	\$267,938	13
NASA	Lighting upgrades and boiler improvements	\$1,158,744	\$247,615	8.67
Defense/Navy	Chiller, EMCS, lighting, hot water/steam	\$663,559	\$71,658	20
Coast Guard	BAS, lighting, electric motors & drives, water & sewer systems, rate reduction/audits	\$1,830,611	\$271,140	15.5
General Services	Chiller, HVAC, lighting, electric motors & drives	\$7,045,074	\$1,005,386	20.58
Labor	Lighting	\$169,170	\$29,267	11.25
<b>to 2/2000</b>				
Agriculture	Boilers, EMCS, HVAC, lighting, elect. motors, elect./cogen., elect. distribution, rate reduction/audit	\$6,363,685	\$723,458	18.17
Labor	EMCS, HVAC, lighting, renewables, water	\$1,483,360	\$208,697	15.58
Defense	Lighting	\$1,786,056	\$273,628	11.58
General Services	Chillers, EMCS, lighting, water	\$3,721,661	\$371,451	19
Veterans	Chiller, EMCS, HVAC, Lighting, RE systems, Electric distribution system, Rate reduction/audit	\$4,814,796	\$823,193	18.33
	Totals	\$65,119,856	\$8,994,614	14.9 <sup>a</sup>

<sup>a</sup> Average contract term

Note: BAS = building automation systems; EMCS = energy management control system.

Source: Nealon 2000

were awarded contracts for regional Super ESPCs, which are intended for implementing energy projects based on a wide variety of well-proven energy-conservation measures (ECMs).

Government facilities overall had reduced their energy consumption by 20% by 2000; but the going is expected to be more difficult and expensive from here on. FEMP believes that the standard, tried-and-true ECMs will not in all cases enable agencies to reduce the energy intensity of their facilities by another 15% by 2010, and more advanced ECMs will be required. FEMP's technology-specific programs were developed to address this need by fostering the use of promising new and emerging technologies in federal energy-efficiency projects. FEMP has established technology-specific Super ESPCs as components of three of these programs, which focus, respectively, on geothermal heat

pumps, solar thermal concentrating systems, and photovoltaics. FEMP's goal is to harness the purchasing power of the federal government to build markets for these technologies and shepherd their transition from the "proven but underutilized" category into the mainstream. Technology-specific Super ESPCs can be used anywhere in the United States or its territories, and will soon be available to federal agency facilities worldwide.

All delivery orders under technology-specific Super ESPCs focus on the designated technology, which motivates the ESCOs holding the contracts to find applications for these technologies that will generate sufficient savings to pay for themselves. FEMP uses their technology-specific project experience to develop the information, tools, and guides necessary to ensure that, after the technology-specific Super ESPCs have expired, the technology will continue to achieve its federal market potential by being integrated into projects financed with appropriations, regional Super ESPCs, or utility energy service contracts.

FEMP chooses the new/emerging ECMs that merit technology-specific programs based on market studies, assessments of the potential of the technologies to contribute to energy and cost savings, and the need for improvements in delivery infrastructure to ensure that their potential is realized in practice. Geothermal heat pumps (GHPs), for instance, can produce significant energy and cost savings and are in high demand at federal facilities, but the engineering and installation expertise required to deliver quality GHP systems has not been widely available. Now every federal site has at least five quality sources of expertise for the family of GHP systems. The FEMP GHP Core Team is working with data from federal and private-sector projects to address technical issues, prove techniques, and generalize results into GHP tools, guides, and training. Examples include GHP guide specifications in Construction Specification Institute format and a database of GHP construction and maintenance costs from actual projects.

**Table 2. DOE Super ESPCs in Pipeline**

<b>Agency Customer</b>	<b>Regional</b>	<b>Tech-Specific</b>	<b>Total</b>
Agriculture	2		2
BIA	1	1	2
CIA	1		1
Commerce	1		1
Defense	13	6	19
Energy	11		11
EPA	1	2	3
GSA	12	1	13
Health	5		5
Interior	3		3
Labor	4		4
National Guard	2		2
NARA	1		1
NASA	4		4
NRC	1		1
SSA	1		1
Transportation	9		9
VA	27	1	28
<b>Total</b>	<b>99</b>	<b>11</b>	<b>110</b>
Note: All technology-specifics are geothermal heat pump projects except one photovoltaics project. Source: Nealon 2000.			

FEMP is continuing to assess the need and opportunity for encouraging the advancement of other ECMs such as wind; thermal energy storage systems; combined cooling, heating, and power; fuel cells; and desiccant dehumidification technology.

## **Advantages of Super ESPCs**

The main attraction of Super ESPCs to federal agencies is the capability to finance energy-savings projects without new appropriations. The contracts require the ESCOs to finance and implement ECMs for their agency customers and guarantee that these improvements will result in sufficient cost savings to cover the agency's firm-fixed-price payments to the ESCO. The ESCO and the customer agree on a bundled project of ECMs that can pay for themselves within an acceptable term (up to 25 years) given the cost savings generated by the project and prevailing interest rates. The ESCO provides the up-front funds and services for surveys to identify projects, engineering design, acquisition of materials and equipment, and construction.

The ESCOs selected as Super ESPC prime contractors are highly qualified to deliver successful projects, are heavily invested in the Super ESPC program, and are driven by their motivation to earn repeat business to work hard to satisfy the customer. To provide positive reinforcement to this motivation, DOE tracks ESCO performance, making evaluations and performance data available to agencies considering their choices of ESCO partners.

Agencies can use Super ESPCs to gain improvements and cost savings while spending no more than they would have anyway, effectively harvesting dollars previously lost to wasted energy and O&M and repair and replacement of obsolete equipment. Using Super ESPCs, agencies are able to leverage the resources they have (i.e., in-house resources and budgets for energy and related O&M) with wrap-around private financing and expertise. During the contract term, the ESCO provides any operations and maintenance services included in the contract, which ideally are arranged to allow agencies to make the best use of their in-house forces.

Each agency site's objectives are unique, but most implement comprehensive projects that solve known problems in their buildings and renew and improve energy-related infrastructure. In addition to helping agencies meet federal energy-efficiency goals, Super ESPC projects have been used to address longstanding maintenance problems, to replace chillers that use chlorofluorocarbons or otherwise comply with environmental regulations, and to improve the work environment through better lighting levels, ventilation, and humidity control, to positively affect productivity and the missions performed in the buildings.

FEMP's experience over the last few years has yielded some valuable lessons about using the process and structuring projects to maximize their value to the government. The first lesson is that in terms of effort, resources, and result, it is critical to gain the support of top-level management and a commitment at the agency to use the authority effectively. The goal should be to have improvements operating in the facility in one year—not two or three. Where decision makers fail to commit the necessary resources or to make the project a priority for key acquisition team members, projects can only limp along, neutralizing the time advantage Super ESPCs were designed to give. Without a dedicated acquisition team that sees the project as an opportunity to accomplish improvements, such projects can take years to reach award. The bottom line is that agencies should recognize that time is literally money and pursue the project with a commitment to gaining the best obtainable value for their

organization. To maximize cost savings and long-term value, it is extremely important to leverage available resources to accomplish the largest, most comprehensive pay-from-savings project possible within the constraints of the cost savings stream, interest rates, and acceptable term.

FEMP supports agencies pursuing Super ESPC projects by providing technical expertise, contracting assistance, information, and tools. Agencies beginning projects now are reaping the benefits of several years' experience and knowledge gained from previous projects, which are distilled in workshops, in clear and concise written guidelines on using Super ESPCs, and in electronic tools for developing delivery order RFPs and analyzing the pricing and financing of projects, such as templates, spreadsheets, and databases. An experienced FEMP Project Facilitator assigned to each project provides or coordinates delivery of FEMP services and acts as the agency's "owner representative," balancing the partnership between the highly expert ESCO and the (possibly) inexperienced agency acquisition team. The Project Facilitator guides the agency through the entire delivery order process.

## **Impediments to Progress and FEMP's Pursuit of Remedies**

Super ESPCs have enabled facilities to accomplish successful energy-efficiency projects that otherwise would not have been financially feasible, thus proving the concept. However, FEMP has also seen the Super ESPC Program — first assumed to be a "no-brainer" winning proposition — run into impediments of various descriptions. With the Super ESPC Program (and by other means), FEMP addresses its mandate to reduce the cost of government by helping agencies improve the energy efficiency of their facilities. Super ESPCs offer a vehicle for financing energy projects, but this offer accomplishes nothing if agency decision makers lack any motivation to improve their facilities in this way. For every argument in favor of doing an energy project, there are many arguments against, including resource limitations, the prospect of increasing workloads, reluctance to pioneer a new way of doing government business, and the force of organizational inertia. Complying with unfunded executive orders is hardly uppermost in the minds of federal facility managers, many of whom struggle with barely adequate funds just to patch together solutions to their day-to-day problems. The private sector has moved many years beyond the point where saving energy meant "freezing in the dark," and energy efficiency is now a well-established asset to the bottom line. Risks and rewards are defined differently in the government, where there is no analogous bottom line, and proposing new initiatives not directly related to agency missions is as likely to draw disapproval as reward.

The divergence of the ESPC concept from the status quo in government procurement practice is an impediment that might have been predicted solely on the basis of the long-term commitment involved in a Super ESPC project. Throughout the government ranks, from facility managers, to agency contracting officers, to headquarters finance/budget and legal staff, many federal employees feel distinctly uneasy at the thought of making long-term financial commitments on behalf of their organizations, which is in sharp contrast to the traditional practice of requesting and receiving appropriations from Congress for up-front payment for all goods, services, and capital improvements. This reluctance is largely natural and understandable. The Congressional approval implicit in appropriations is unquestioned and virtually sacrosanct. The window of opportunity for second-guessing a Super ESPC delivery order, on the other hand, could theoretically last up to 25 years, and some individuals

still fear that such a long-term commitment is inherently risky, and that any future questions will come to roost with them.

The natural tendency to risk aversion—as well as good-faith efforts toward due diligence—may also explain another phenomenon that has limited the practical usefulness and flexibility of Super ESPCs in some agencies. Overly conservative interpretations of the enabling legislation and overly conservative policies have restricted the ways in which the Super ESPC vehicle can be used and have made it a less attractive option than it could be. These interpretations and policies are critical to whether projects will be feasible under Super ESPCs, especially when they affect how an agency is allowed to determine cost savings attributable to the project. Super ESPC projects must be paid for entirely from the savings stream generated by the project, so restrictive interpretations can turn a potentially comprehensive, high-value project into one that yields limited benefits, making it more trouble than it's worth, or killing the project's feasibility altogether.

FEMP has scant power to motivate agencies to improve the energy efficiency of their facilities, but its staff is working diligently to remove the obstacles. The goal is to make continuous progress in building a flexible, practical, and customer-driven program. FEMP's intent is to better enable agencies to use Super ESPCs to develop comprehensive, best-value projects that can address the agency's needs, goals, and priorities. FEMP is aggressively pursuing strategies on several fronts to (1) educate agency decision makers at all levels about the opportunities afforded by Super ESPCs, (2) establish and solidify DOE-sanctioned interpretations of the enabling legislation that will make best-value projects possible, (3) gain legislative remedies to remove restrictions where necessary, and (4) *get out of the way* — continue to improve the program and the process of developing Super ESPCs.

### **Interpretation of the ESPC Authority**

**Water-conservation projects under ESPCs.** Water conservation is an integral component of many energy-conservation measures and fits seamlessly into comprehensive energy-efficiency projects. However, the ESPC authority is silent on whether the cost savings from reduced water/sewer usage can be counted and used to support ESCO payments under ESPCs. A legal opinion sought by FEMP and issued recently by DOE's Assistant General Counsel for Procurement and Financial Assistance (Masterson 2000) states that the cost of, and the cost savings from, water conservation measures may be included, as long as energy conservation or energy savings is the principle purpose of the contract and the water-conservation savings are integral parts of the energy project. FEMP is also pursuing an amendment to the law to explicitly allow civilian agencies to include water projects in ESPCs (Department of Defense organizations already have this authority).

**Use of ESPCs to finance incremental costs of improvements in new construction.** In new building construction, energy-efficient equipment that represents higher-than-average first costs is too often jettisoned as designers finalize plans and owners struggle to stay within budget. A recent DOE legal opinion (Masterson 2000) sought by FEMP states that ESPCs may be used to finance the incremental costs of energy-efficiency improvements in new buildings where the improvements further the statutory purpose of the enabling legislation (saving energy). Before issuing a final opinion, DOE legal counsel will review proposed

projects on a case-by-case basis. FEMP is also pursuing adding “new construction” to the law by amendment, which would make case-by-case legal reviews unnecessary.

**No limits on percentage of energy cost savings vs. energy-related O&M savings.** Although energy cost savings are defined by the statute and regulations as a “reduction in the cost of energy and related operation and maintenance expenses” (10 C.F.R. §436.31), some agency staff have thought it prudent to limit the percentage of project cost savings that can be energy-related O&M savings (as opposed to energy cost savings). FEMP is endeavoring to communicate to agencies that there is no such statutory limitation and that adopting such a limitation reduces the amount of project investment available through these pay-from-savings contracts (DOE FEMP 1999b).

**Financial analysis to verify a good business deal for the government.** FEMP has observed several schools of thought in the agencies as to what sort of financial analysis is appropriate to verify that an ESPC project is a good financial deal for the government. Among some, ESPCs are expected to be used only for meeting the energy savings mandate, and financial analysis and selection of ECMs is based primarily on the calculated life cycle cost effectiveness and savings-to-investment ratios of individual ECMs. This approach in theory improves program performance metrics such as BTU energy savings per dollar of project investment, but in reality it allows less BTU savings to be realized, because facility managers lose interest when restricted to a version of ESPC that is not flexible or practical enough to help them solve their other problems as well as respond to energy-savings mandates.

FEMP encourages agencies to focus on holistic solutions and to develop comprehensive, best-value projects, with “value” being defined by the agency site. The agency customer commonly expects the ESPC project to include solutions to facility problems if at all possible. In common practice, potential ECMs are identified, ECM savings and costs are estimated, ECMs are ranked by simple payback, and the site designates “must-have” ECMs. Then the ESCO and site cull out the lower-priority, longest-payback ECMs until a pay-from-savings ECM scope with an acceptable term is identified.

**Bundling ECMs under an ESPC.** Some management staff responsible for approving ESPC projects have been led to require that each individual ECM be shown to be life cycle cost effective. It has been FEMP’s challenge to educate agency staff that the ESPC statute requires only that the project as a whole be life cycle cost effective, and to encourage agencies to buy holistic solutions for the buildings they improve with ESPCs, thereby avoiding the extra cost and disruption of multiple construction projects in the same buildings and taking advantage of synergies between technologies (such as envelope improvements that permit downsizing of heating and ventilating systems).

**Longevity of site and contract term.** Ironically, many agency sites are reluctant to agree to an ESPC contract term beyond 10 years at the same time that they are constructing new buildings funded by appropriations. The thinking seems to be that an appropriation from Congress for new construction is a gift with no strings attached, but ESPC financing is not — and if the site’s mission ends in 8 years, the appropriation would already be off the books, whereas there would still be a termination liability to pay on the ESPC. Although the 8-year-old structures would represent a far larger loss to the taxpayer than the remaining termination

liability in year 8 on a 10-, 15-, or even 20-year ESPC, the potential ESPC termination liability seems to loom large. This viewpoint persists even at sites experiencing major growth as a result of mission consolidation.

Before entering into an ESPC, the acquisition team should of course ascertain that the site or buildings are not slated for closure within the anticipated term of the contract. This point taken, FEMP is educating sites regarding the nature of the ESPC authority as a Congressional “gift” carrying the same privileges and obligations as appropriations and allowing project terms up to 25 years. The amount of project investment that can be raised in a pay-from-savings ESPC is directly related to the cost savings stream of the ECMs, prevailing interest rates, and term. Arbitrarily deciding to limit the ESPC contract term to, say, ten years may seriously limit the value of the project to the site.

**Pre-negotiation of the financing termination liability component of the cancellation ceiling.** Lower interest rates would be possible if Super ESPC financing termination (i.e., prepayment) were handled according to standard finance industry practice. If the government, like every other borrower, agreed at the time of the delivery order award to the exact payment they would make in any month for the privilege of terminating the financing (i.e., paying off some or all in advance) in that month, financiers could offer lower interest rates. FEMP has suggested allowing pre-negotiation of the financing termination liability component of the cancellation ceiling in Super ESPC delivery orders.

**Early payment options.** Since the ESPC authority was enacted, agencies have been asking whether they could make extra payments on a delivery order when, for example, end-of-fiscal-year funds are available. Agencies believe, and FEMP agrees, that it makes good business sense for the government to be able to apply these funds as payments on delivery orders to reduce interest costs. Some agencies are already doing this, and FEMP is working to make it easier for all agencies to take advantage of this cost-saving opportunity.

**Allow ESPC projects in facilities leased by federal agencies.** The annual energy bill for federal buildings—both federally owned and leased—is about \$3.6 billion. Only federally owned space can be addressed under the current authority. FEMP is pursuing an amendment to the enabling legislation to allow ESPCs to finance energy projects in buildings leased by federal agencies, provided that the lease enables the government to capture the cost savings to be used to support contractor payments.

**Raise the threshold for Congressional notification.** The ESPC statute requires Congress to be notified 30 days prior to award of ESPCs having cancellation ceilings exceeding \$750,000, which includes almost every ESPC project. This requirement has delayed project awards for months to years, because agency processes to issue notifications involve high-level staff unaccustomed to spending their time on such small financial obligations. Delays have resulted in loss or restructuring of some projects, because of rising interest rates, for example. FEMP is proposing an amendment to raise the threshold for Congressional notification from \$750,000 to \$10,000,000.

## Program and Process Improvement

FEMP's efforts to improve the Super ESPC Program and make the process work better for agency customers are producing tangible results. FEMP's strategies for improving the program grow from ongoing communication among staff, which leads to diagnosis of problems and identification of bottlenecks, and proactive support and leadership of the program from FEMP management. FEMP has focused on process innovations and adjustments to ease agencies through routines that have been obstacles in the past, continuous improvement of FEMP's services to customers, and collaboration and communication with the Super ESPC ESCOs. FEMP task forces comprising DOE and national laboratory staff have produced excellent results in terms of program improvements, including study and proposal of some of the remedies discussed previously. Continuous improvement efforts are proceeding apace among virtually all program staff.

Two agreements required in the Super ESPC process, the memorandum of understanding (MOU) and the interagency agreement (IAG), are examples of procedural quagmires that FEMP has bridged for agency customers. Some agencies have had difficulty executing MOUs, which simply establish the agency's and DOE's roles and responsibilities in the Super ESPC process. Most sites are now covered by agency-level or agency-region-level MOUs with DOE, which eliminates the requirement for site-specific MOUs.

In most cases reimbursement to DOE is required for technical assistance that FEMP provides to the ordering agency, with an IAG committing payment for specified services.<sup>3</sup> Executing IAGs is becoming easier as more agencies become familiar with the concept and the process becomes routine. FEMP is also accommodating the needs of its customers by establishing standard IAGs, which cover a general scope of services for a specified dollar amount. The IAG obligates the money without having to specify when or exactly on what it will be spent, and the funds are committed to work orders later when the agency more specifically defines its needs for assistance with ESPCs or other services.

There are slight differences between the six regional and three technology-specific IDIQ contracts. These differences stem from their issuance over several years and incorporation of lessons learned along the way. A FEMP task force spearheaded efforts to establish consistency across all of the contracts, which is now an important goal for the program. Experience with awarded projects has continued to be instructive, and every new interpretation, policy, or legislative amendment could affect the contracts. FEMP defines consistent contracts as those having the same definitions and financial schedules and implementing the same interpretations, policies, and legislation. Consistent contracts will be less costly to maintain over time.

Contract consistency will also contribute to the program's ability to leverage Super ESPC experience into universally useful productivity tools, such as delivery order RFP development tools, financial analysis tools, training workshops, and delivery order guidelines. These productivity tools are important resources to agencies and are key to reducing delivery order cycle time and making the Super ESPC program a better business deal for the government.

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<sup>3</sup> FEMP is authorized by the Skaggs Amendment to the Interior Appropriations Bill to accept reimbursement from other agencies outside of the Economy Act, enabling a more flexible and less cumbersome exchange than the traditional work-for-others arrangements.

A FEMP task force recently evaluated and upgraded the Super ESPC Delivery Order Workshop, which is held twice annually in each of the six DOE Regions to provide training to agency acquisition teams pursuing Super ESPC projects. Each year FEMP also broadcasts the Energy Manager's Workshop, which includes a module on ESPC that is available on video cassette throughout the year.

Feedback from agency customers indicates that the experienced and technically qualified Project Facilitators assigned to each project are a highly valued service of the Super ESPC program. FEMP works to enhance this benefit through Project Facilitator Workshops, which provide the opportunity for Project Facilitators to improve their skills, share their experiences, learn from each other, and help set the program's priorities for continual improvement.

FEMP organized the ESCO Steering Committee as an informal working group to jointly address issues of concern to the ESCO partners. The ESCO Steering Committee meetings provide a forum for FEMP and the ESCO partners to speak frankly to each other about performance, progress or lack thereof, and priorities. One result of a recommendation from this group was the issue of a primer for agency finance/budget staff to on how to implement DOE's guidance (Archibald 1999) on allowable savings and payments under ESPCs. The "Practical Guide to Savings and Payments in Super ESPC Delivery Orders" is available on the FEMP web site (DOE FEMP 1999b). More recently, FEMP and the ESCOs agreed that shortening the delivery order cycle time from kickoff meeting to award should be a top priority. A joint FEMP and ESCO task force has been formed to review the lessons learned and document proven methods for minimizing cycle time.

## **Evaluation of the DOE Super ESPC Program**

Evaluation efforts for the Super ESPC Program to date, though premature, have begun to define an approach for judging the program's success that can be used in the future, when the program is running smoothly and DOE's Super ESPCs are allowed to work as intended. This approach is focused on estimating the proportion of the federal market for energy-efficiency improvements (market share) that DOE Super ESPCs will have to capture, all things considered, if all available financing vehicles do indeed bring forth the investment necessary to achieve the E.O. 13123 savings mandate. Then FEMP's goal and the basis for evaluating the program's performance will be to meet annual targets for metrics such as number of delivery order awards, project investment level, and energy savings necessary to capture Super ESPCs' estimated market share by 2010.

## **Conclusions**

Super ESPCs have enabled many facilities to accomplish energy-efficiency projects that otherwise would not have been possible. The Super ESPC program has awarded 26 projects worth \$65 million in investment and has another 110 projects representing about \$275 million in investment in the pipeline. Still, this mechanism is not yet working like a well-oiled, smooth-running machine. In many cases, overly restrictive interpretations of the enabling legislation or overly restrictive agency policies have limited the full use of ESPC authority. FEMP's goal is to make the Super ESPC Program a flexible, practical, and customer-driven program that provides a good business deal for the government. FEMP

recognizes the challenges currently facing the program and is aggressively working to overcome them. Super ESPCs can be a practical and flexible vehicle for implementing energy-efficiency projects that may directly enhance mission support and make significant contributions to meeting the mandates of E.O. 13123.

## References

- Archibald, John. 1999. "Programmatic Guidance on Energy and Energy-Related Cost Savings and Contractor Payments Under Super ESPC" (April 29, 1999).
- Beason, Freddie L., PE, CEM. 1999. "Air Force Energy Savings Performance Contracts—A New Way of Doing Business," presented at Energy 99, Aug. 18-21, 1999, Orlando, Fla.
- DOE FEMP (U.S. Department of Energy Federal Energy Management Program). 2000. "DOE FEMP FY 2001 Congressional Budget Request."
- DOE FEMP. 1999a. "Delivery Order Guidelines for Southeast Region All-Purpose Super ESPCs and Technology-Specific GHP Super ESPCs," posted at <http://www.eren.doe.gov/femp/financing/guidelines.html>.
- DOE FEMP. 1999b. "Practical Guide to Savings and Payments in Super ESPC Delivery Orders," posted at <http://www.eren.doe.gov/femp/financing/cost-savings.html>.
- Masterson, Mary Ann (Assistant General Counsel for Procurement and Financial Assistance, DOE). 2000. "Legal Opinion Regarding Allowability of Water Savings and New Construction Under Energy Savings Performance Contracts" (Feb. 11, 2000).
- Nealon, Teresa. 2000. Data on DOE FEMP Super ESPC Program and the Army ESPC Area-Wide Program maintained for FEMP by the National Renewable Energy Laboratory (Feb. 4, 2000).

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