

An hourglass-shaped graphic with a globe in the top bulb and another globe in the bottom bulb. The hourglass is light blue and has a dark blue cap at the top. The globe in the top bulb is dark blue, and the globe in the bottom bulb is light blue. The text is centered within the hourglass.

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February 2, 2009

Congressional Research Service

Report RL32543

*Energy Savings Performance Contracts: Reauthorization
Issues*

Anthony Andrews, Resources, Science, and Industry Division

September 1, 2004

Abstract. Congress is currently considering ESPC reauthorization. Even though authorizing legislation has expired, ESPCs awarded prior to the expiration date of October 1, 2003, continue in effect until their completion dates. This report reviews the legislative history of ESPCs, the federal program to promote them, the Congressional Budget Offices (CBOs) scoring rationale, and ESPCs cost and benefits. The report also discusses the debate as to whether ESPCs offer the best contract means for installing ECMs, and policy considerations for Congress.

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CRS Report for Congress

Received through the CRS Web

Energy Savings Performance Contracts: Reauthorization Issues

Updated September 1, 2004

Anthony Andrews
Specialist in Industrial Engineering and Infrastructure Policy
Resources, Science, and Industry Division

<http://wikileaks.org/wiki/CRS-RL32543>

Energy Savings Performance Contracts: Reauthorization Issues

Summary

Since the 1970s, both the executive branch and Congress have promoted energy efficiency within federal agencies. When the federal government's energy-efficiency and conservation programs received severe budget cuts in the 1980's, Shared Energy Savings and later Energy Savings Performance Contracts were devised as part of the strategy to meet federal energy reduction goals.

Energy Savings Performance Contracts (ESPCs) offered federal agencies a novel means of making energy-efficiency improvements to aging buildings and facilities. In return for privately financing and installing energy conservation measures, a contractor received a specified share of any resulting energy cost savings. The contractor, referred to as an Energy Service Company (ESCO), guaranteed a fixed amount of energy and cost savings throughout the term of the contract, and bore the risk of the improvement's failure to produce a projected energy savings. The sum of the improvement's cost and its reduced level of energy cost could not exceed the pre-ESPC energy cost. The term "energy conservation measure" (ECM) was applied to energy-efficiency improvements such as energy- and water-saving equipment, and renewable energy systems such as solar energy panels.

ESPCs were authorized in 1992 by amendments to the National Energy Conservation Policy Act. Federal agencies' authorization to enter into ESPCs expired October 1, 2003. Legislative attempts to reauthorize ESPCs in the 108th Congress stalled when the Congressional Budget Office (CBO) scored ESPCs as mandatory spending that imposed a future financial obligation on the federal government.

To date more than 340 ESPCs have been awarded with a total value of approximately \$1.6 billion in private sector investments. None have failed to produce energy and cost savings. In comparison to ESPCs, \$3.17 billion in appropriated funds was invested in energy-reducing capital improvements between FY1985 and FY2001, peaking at \$288 million in FY1995 and declining to \$131 million by FY2001. As appropriations-funded energy conservation projects have been declining since FY1995, federal managers have increasingly turned to ESPCs to fund energy conservation measures.

Options for Congress include taking no further action on the sunset provision that ended agencies' authorization to enter into ESPCs, extending the sunset provision, or extending the ESPC authorization with amendments. Such amendments could include reducing the maximum contract length and expanding the contract scope to non-building applications. This report will be updated as the situation warrants.

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Energy Savings Performance Contracts: Reauthorization Issues

Introduction

From the mid-1980s to the end of FY2003, federal agencies had been authorized to enter into Energy Savings Performance Contracts (ESPCs) with contractors that privately financed and installed energy conservation measures in federal buildings and facilities. In return, the contractors received specified shares of any resulting energy cost savings. The term “energy conservation measure” (ECM) applies to energy-efficiency improvements such as energy- and water-saving equipment, and renewable energy systems such as solar energy panels.¹

The contractor, referred to as an Energy Service Company (ESCO), provided the design, acquisition, installation, testing, operation, maintenance, and repair services for the ECM. The ESCO also had to guarantee a fixed amount of energy and cost savings throughout the term of the contract, and bore the risk of the ECM’s failure to produce a projected energy savings. The sum of the ECM cost and its reduced level of energy cost could not exceed the pre-ESPC energy cost. The term “energy savings” was applied to the measured reduction in the base cost of energy used by an existing federally owned building or facility, as established through methods specified in the contract.

To date more than 340 ESPCs have been awarded, according to the Department of Energy (DOE), and no ESCO has failed to produce an energy and cost savings.² A recent Department of Defense (DOD) proposal would have expanded ESPCs’ application beyond fixed facilities into mobile systems. ESPCs were suggested as means of replacing the engines of the Air Force’s aging B-52 bomber fleet with more efficient jet engines that would burn less fuel, thus qualifying as energy conservation measures.³

Congress is currently considering ESPC reauthorization. Even though authorizing legislation has expired, ESPCs awarded prior to the expiration date of October 1, 2003, continue in effect until their completion dates. This report reviews

¹ 42 U.S.C. 8259 (4). “The term ‘energy conservation measures’ means measures that are applied to a Federal building that improve energy efficiency and are life cycle cost effective and that involve energy conservation, cogeneration facilities, renewable energy sources, improvements in operations and maintenance efficiencies, or retrofit activities.”

² Tatiana Strajnic, U.S. DOE, Federal Energy Management Program, personal email (March 17, 2004).

³ Office of the Secretary of Defense, *Defense Science Board Task Force on B-52 H Re-Engining* (December 2002).

the legislative history of ESPCs, the federal program to promote them, the Congressional Budget Office's (CBO's) scoring rationale, and ESPCs' cost and benefits. The report also discuss the debate as to whether ESPCs offer the best contract means for installing ECMs, and policy considerations for Congress.

Enabling Legislation

Though Energy Savings Performance Contracts were authorized in 1992, they built on earlier Congressional mandates to improve the energy efficiency of federal buildings. Subsequent legislation required federal agencies to audit their effectiveness, authorized federal agencies to retain 50% of the resulting savings, raised the dollar threshold for notifying Congress, and temporarily extended their authorization. The enabling legislation is summarized below.

1978 <i>National Energy Conservation Policy Act (P.L. 95-619)</i> ⁴	“NECPA” — Required federal buildings to be retrofitted to improve energy efficiency to assure their minimum life cycle costs.
1985 <i>Deficit Reduction Amendments (P.L. 99-272)</i>	Amended NECPA with Federal Energy Conservation Shared Savings authorizing federal agencies to contract for energy savings for maximum periods of 25 years, and required annual progress reports regarding energy savings.
1992 <i>Energy Policy Act (P.L. 102-486)</i>	“EPAct” — Amended NECPA by adopting the term “Energy Savings Performance Contract”; provided that the contract guarantee savings to the agency; authorized federal agencies to incur obligations through ESPCs to finance energy conservation measures, provided that guaranteed savings exceeded the debt service requirements; authorized a federal agency to enter into multiyear contracts for a period not to exceed 25 years.
1995 <i>Energy Policy Act Amendment (P.L. 104-52)</i>	Amended EPAct to permit federal agencies (except DOD) to retain 50% of ESPC savings for additional ECM projects, while returning the remaining 50% to the general fund of the Treasury.
1998 <i>Energy Conservation Reauthorization Act (P.L. 105-388)</i>	Amended NECPA to extend the authority of federal agencies to enter into ESPCs to September 30, 2003. The sunset provisions of EPAct originally authorized entry into new contracts for five years after the date that procedures and methods were established by the DOE.

⁴ 42 U.S.C. 8287 et seq.

- 2001 *Department of the Interior and Related Agencies Appropriations Act (P.L. 106-291)* Amended NECPA to raise the congressional notification threshold from \$750,000 to \$10 million.
- 2004 *H.R. 6, S. 2095* Section 105 of the conference version of omnibus energy legislation, H.R. 6, would extend ESPC authority. The bill passed in the House in November 2003, but has stalled in the Senate. A modified version of H.R. 6 (S. 2095) dropped the ESPC provision as part of an effort to reduce the bill's cost, but has received no further action.

Department of Energy Rules

EPA directed DOE to develop rules for federal use of ESPCs consistent with Federal Acquisition Regulations (FAR). DOE published the final energy savings performance contracting regulations (10 C.F.R. 436) in April 1995.⁵ These provisions superseded those in the FAR. Federal agencies were encouraged to make use of ESPCs' innovative contracting mechanisms, namely, the use of private sector financing that did not require prior appropriations.⁶ The financing supported energy-efficiency improvements to help reduce energy costs and meet federal energy reduction goals.

DOE's rules also required that federal agencies document progress toward energy saving goals by submitting an annual report, implementation plan, energy scorecard, and energy management data report to the President and Congress.⁷ The annual report describes energy management activities in federal facilities program operations, and progress in implementing NECPA requirements and in attaining the energy-efficiency improvement goals of Executive Order 13123, *Greening the Government Through Efficient Energy Management*.⁸ The order directs federal agencies to maximize their use of available alternative financing contracting mechanisms, such as ESPCs.

⁵ "Federal Energy Management and Planning," *Federal Register* (April 10, 1995). On April 18, 1995, DOE published a correction that changed the effective date of the final rule from May 10 to April 10, 1995.

⁶ EPA (42 U.S.C. 8287a) specifically authorized payment on an ESPC "only from funds appropriated or otherwise made available to the agency ... for the payment of energy expenses (and related operation and maintenance expenses)."

⁷ 10 CFR 436, Federal Energy Management and Planning Programs.

⁸ The current goals are 30% improvement by 2005 and 35% improvement by 2010 relative to a 1985 baseline.

DOE's Federal Energy Management Program (FEMP) established a "Qualified List of Energy Service Companies."⁹ The list includes all private industry firms that submitted an application and were qualified by a Review Board, consisting of Federal Interagency Energy Management Task Force representatives and DOE staff. Recognizing that awarding a stand-alone ESPC could be very complex and time-consuming, FEMP also created streamlined "Super ESPCs" as umbrella contracts that allowed agencies to undertake multiple ESPCs under one contract.

ESPCs' Cost and Benefits

Federal agencies reported new EPSC commitments through an annual Energy Scorecard that listed the number of contracts, projected annual savings in millions of British thermal units (Btu), total investment value, cumulative guaranteed cost savings, and contract award value.

For FY1998, FEMP reported that federal agencies awarded \$79 million in conventional ESPCs and another \$6.6 million as Super ESPCs, excluding the Department of Defense.¹⁰ By FY2000, conventional awards rose to \$225 million as Super ESPC awards rose to \$62 million (for a total of \$287 million), including Defense.¹¹ For FY2003, FEMP estimates that the private sector committed \$252 million to finance ESPCs. **Figure 1** shows the value of Super ESPCs versus conventional ESPCs awarded between FY1998 and FY2003 in nominal dollars. Few if any conventional ESPCs are reported as being awarded after 2001, as indicated by the abrupt drop-off of the graph curve.

How effective are ESPCs' contribution to meeting federal energy reduction goals? Federal ESPC projects have achieved about a 30% higher energy savings (per-square-foot basis) than municipal/state governments, universities, schools, and hospitals (MUSH).¹² The median for federal energy savings is about 18,000 Btu per square foot (Btu/ft²) compared to 14,000 Btu/ft² for MUSH. Annual federal government electricity consumption also declined from 1992 to 2002 by 1.14 billion kilowatt-hours.¹³

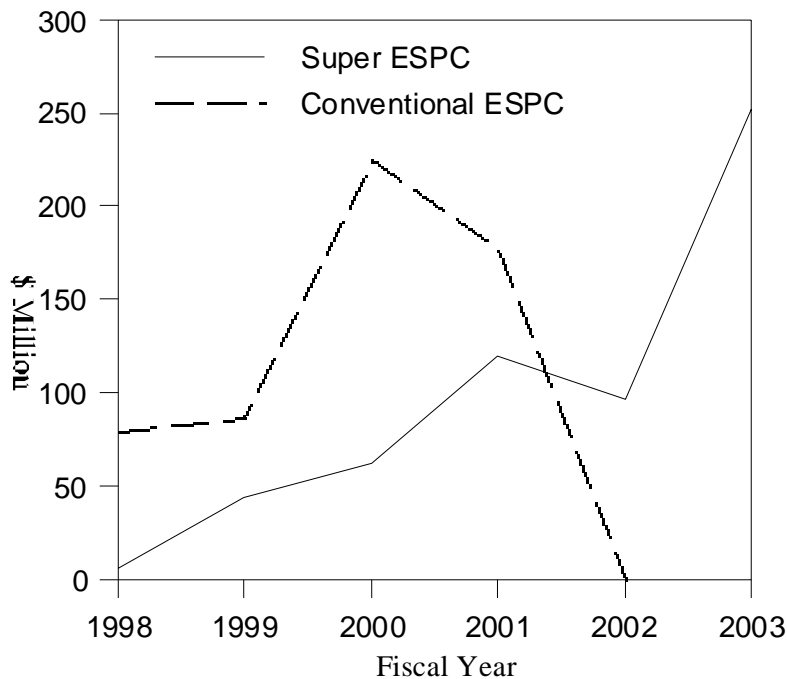
⁹ In accordance with the Energy Policy Act of 1992 and 10 CFR § 436. Qualified List available at [http://www.eere.energy.gov/femp/financing/superespcs_qualifiedescos.cfm] (viewed March 22, 2004).

¹⁰ U.S. DOE Federal Energy Management Program, *Annual Report to Congress on Federal Government Energy Management and Conservation Programs, Fiscal Year 1998* (March 20, 2000). The actual amount may be larger, as DOD data was not reported.

¹¹ U.S. DOE Federal Energy Management Program, *Annual Report to Congress on Federal Government Energy Management and Conservation Programs, Fiscal Year 2000* (December 13, 2002).

¹² Lawrence Berkeley National Laboratory, *The Federal Market for ESCO Services: How Does it Measure Up?* LBNL-5492 (August 2004)

¹³ U.S. DOE Energy Information Administration, *Annual Energy Review for 2002, Table 1.13*; see [<http://www.eia.doe.gov/emeu/aer/overview.html>].

Figure 1. Super ESPC vs. Conventional ESPC

Source: U.S. DOE FEMP, *Annual Report to Congress on Federal Energy Management and Conservation Programs, Fiscal Years FY1998 to FY2000*.

How do the savings translate in terms of net economic benefit? In an analysis of 214 federal projects, using a 7% discount (interest) rate, Lawrence Berkeley National Laboratory (LBNL) projected \$550 million in benefits that would go to the taxpayer.¹⁴

ESPC savings projections may or may not be achieved depending upon whether the building or facility is fully used after the energy improvement.¹⁵ If savings were smaller than projected, future operation and maintenance (O&M) spending would need to be larger than projected. The ESPCs' savings freed up funds that otherwise would have been appropriated for O&M.¹⁶

Though authorized for up to 25 years, ESPC contract terms have been averaging 14 years in length.¹⁷ Normally, ESPC cost savings are used to pay the contractor first

¹⁴ LBNL, *The Federal Market for ESCO Services*.

¹⁵ Discussion with CBO (March 19, 2004).

¹⁶ Thomas Armstrong, GAO, personal phone conversation (March 18, 2004) regarding *GAO B-287488—Issues Related to Share-in-Savings Contract Authorities of the National Energy Conservation Policy Act and the Clinger-Cohen Act* (June 19, 2001).

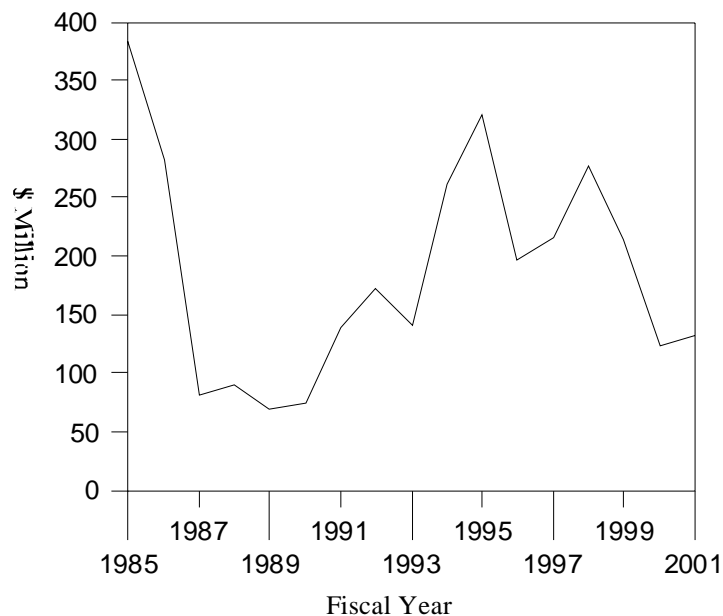
¹⁷ LBNL, *The Federal Market for ESCO Services*.

and then offset other base operating expenses after the contract completion.¹⁸ In an unconventional approach, DOD deferred some ESPCs' cost savings until contract completion to shorten the contract term and accelerate payoff of the energy conservation improvement. These contracts reduced energy consumption but did not reduce the total cost of operation until contract expiration. Although CBO would score such ESPCs as future financial obligations, the length of the obligation would be reduced, as would the interest charges that the ESCO would pass on to the government (discussed below).

ESPC vs. Appropriations- Funded Energy Conservation Measures

The federal market for ESPCs has produced at least 340 projects valued at approximately \$1.6 billion in private sector investments.¹⁹ In comparison to ESPCs, \$3.17 billion in appropriated funds was invested in energy-reducing capital improvements between FY1985 and FY2001. Appropriations-funded projects peaked at \$288 million in FY1995 and declined to \$131 million by FY2001. **Figure 2** shows the rate of spending between 1985 and 2001.

Figure 2. Appropriations-Funded Energy Conservation Measures



Source: U.S. DOE FEMP, *Annual Report to Congress on Federal Government Energy Management and Conservation Programs, Fiscal Year 2001* (February 4, 2004), Table 4-B.

¹⁸ U.S. DOE FEMP, *Annual Report* (December 13, 2002), p. 41.

¹⁹ LBNL, *The Federal Market for ESCO Services*.

Are the costs of energy conservation measures installed under ESPCs as favorable as the costs obtained through competitive sourcing with appropriated funds? To answer the question, Oak Ridge National Laboratory (ORNL) conducted a cost evaluation comparing energy projects completed under ESPCs with those completed under appropriated funds.²⁰ ORNL's evaluation concluded that the "pricing under Super-ESPCs, using a design-build approach negotiated for best value, was as good as the pricing obtained for the appropriations-funded projects in the traditional 'bid-to-specification' competitive program." In sum, ORNL found that energy conservation measures completed under an ESPC were no more costly than those completed under direct appropriations.

Are energy conservation measures under appropriated funds more time-consuming than under ESPCs? Based on data for 71 awarded projects, ORNL found that Super ESPCs averaged 15 months to award the contract and 12 months for design and construction — 27 months in duration from start to finish for an average implementation price of \$3.26 million.²¹ Based on data for 23 energy projects, appropriations-funded projects averaged 63 months in duration. Only 12 of the 39 ECMs studied were ultimately funded (some projects having more than one ECM).

How does project financing compare between ESPCs and appropriations-funded contracts? Since ESCOs pay interest charges on money borrowed to finance the energy conservation measures, they recover the cost over the life cycle of the ESPC. Under an appropriations-funded project, a contractor's commercial finance charges would also be passed through as part the project's cost, but the length of financing and therefore cost of financing would be considerably less than with ESPCs.

A key measure for comparing the ESPC funding alternative to appropriations-funded projects lies in the life-cycle cost. This accounts for the costs of the initial survey and feasibility study, installation, and owning and operating the ECM over its useful life. ORNL devised parametric tables²² to assist federal managers in deciding whether to fund ECMs through ESPCs or wait for appropriated funding. For project duration times between 28 and 68 months, ORNL found that appropriations-funded projects had lower life-cycle costs as long as the up-front survey/study costs stayed below 18% of the design/completion costs.²³ However, when the annual energy savings from appropriations-funded projects decreased by as little as 2% from the projected savings, the projects begin to lose their competitiveness with ESPCs.

²⁰ Oak Ridge National Laboratory, *Evaluation of Federal Energy Savings Performance Contracting — Methodology for Comparing Processes and Costs of ESPC and Appropriations-Funded Energy Projects*, ORNL/TM-2002/150 (March 2003).

²¹ ORNL, *Evaluation of Energy Savings Performance Contracts*, Figure 3.3. Timeline of the average Super ESPC process and one agency site's appropriations process for implementing energy-efficiency projects.

²² ORNL, *Evaluation of Energy Savings Performance Contracts*, Table 4.3. Ratio of present value of life-cycle cost (thousands, 2001 dollars) of typical energy conservation project funded with appropriations to present value life-cycle cost of same project carried out using ESPC, as a function of total survey and study cost and total process time.

²³ ORNL, *Evaluation of Energy Savings Performance Contracts*, Table 4.1.

Congressional Budget Office Scoring

Under the 1990 Budget Enforcement Act (BEA, P.L. 101-508) pay-as-you-go (PAYGO) rules, increases in mandatory spending scored by CBO had to be offset by mandatory spending cuts or increased revenues. These enforcement mechanisms were extended through FY2002 in the Budget Enforcement Act of 1997 (P.L. 105-33). In addition, the BEA imposed limits on discretionary spending, that is, on funds provided through the annual appropriations process.

Under the BEA budget constraints from FY1991 through FY2002, CBO remained silent on scoring the budgetary cost of ESPCs. After an extensive review of whether ESPCs imposed a future financial obligation on the federal government, CBO began scoring ESPCs as mandatory spending, coinciding with the expiration of the BEA.²⁴ The CBO scoring reflects how ESPCs create future commitments to appropriations. It is consistent with how appropriations-funded energy conservation projects would be scored throughout the budget. CBO assumed in scoring H.R. 6 that because the federal building inventory is aging, ESPCs would continue to be awarded at least at the same rate as in FY2003.²⁵ Thus, authorizing an extension of ESPCs as included in the H.R. 6 conference report could commit upwards of \$2.5 billion over the next 10 years, based on an estimated \$252 million commitment in FY2003.

Policy Considerations

Since the 1970s, both the executive branch and Congress have promoted energy efficiency within federal agencies. When the federal government's energy-efficiency and conservation programs received severe budget cuts in the 1980s, Shared Energy Savings and later Energy Savings Performance Contracts were devised as part of the strategy to meet federal energy reduction goals. Appropriations-funded energy conservation projects have been declining since FY1995, and federal managers have increasingly turned to ESPCs as a remedy to fund energy conservation measures.

EPAct had authorized federal agencies to incur obligations through ESPCs to finance energy conservation measures provided that guaranteed savings exceeded the debt service requirements. Nevertheless, CBO scores ESPCs as future commitments to appropriations, consistent with the scoring of commitments for appropriations-funded energy conservation projects throughout the budget. O&M funds that would pay for ESPCs must be appropriated. Upwards of \$2.5 billion over the next 10 years would be scored as a future commitment if ESPCs were reauthorized.

In effect, the federal government borrows money when it authorizes energy-efficiency improvements through ESPCs. When there is a deficit, the Treasury must also borrow money needed by government to pay its bills, which government borrows by selling Treasury securities such as T-bills, notes, Treasury Inflation-Protected securities, and savings bonds to the public.

²⁴ Discussion with CBO (March 16, 2004).

²⁵ CBO.

Proponents of ESPCs may argue that ESPCs represent a financially smart choice because of the guarantee that all costs, including debt repayment, will be covered by the cost savings produced by new ECMs. Further, the real cost of energy conservation measures under ESPCs is zero given that the capital improvement costs and reduced energy costs are less than what the government would continue to pay without the improvements. Further arguments may be made that ESPCs require shorter lead times than improvements made with appropriated funds. Hence, energy reductions can be achieved sooner with ESPCs, as supported by the ORNL study. However, the life-cycle cost of the ECM favors appropriations-funded projects within certain parameters, and ESPC funding under other parameters.

ESPCs were devised by Congress as a means of decreasing future obligations by reducing operation and maintenance spending on energy. In recognizing that ESPCs do impose future financial obligations, as scored by CBO, Congress may consider retaining the sunset provision.

Despite declining appropriations for energy-efficiency improvements and the necessity to limit future financial obligations, Congress may still choose to encourage energy-efficiency improvements in federal facilities. Congress may decide once again to extend the sunset provision, as had been authorized in the 1998 legislation. Further, Congress may consider amending the provisions of ESPCs to promote early payback strategies to reduce long-term obligations, or expanding their application to mobile systems for additional energy-savings potential.