



Improving Federal Energy Savings Through Performance Contracting



Report on the Progress of the Obama Administration's Two-Year Energy Savings and Performance-Based Contracting Investment Initiative

- 1 The Importance of Energy-Efficient Buildings
 - 2 Background on Performance Contracting
 - 3 The President's \$2 Billion Performance Contracting Goal
 - 4 The Program Has Helped Spur Valuable New Contracting Tools
 - 4 The Impact of ESPCs and UESCs on Manufacturing
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Executive Summary

On December 2, 2011, President Obama challenged federal agencies with a two-year, \$2 billion Energy Savings and Performance-Based Contracting Investment Initiative. The President directed the heads of all executive departments and agencies to enter into a combined \$2 billion in energy-saving performance contracts (ESPCs) and utility energy service contracts (UESCs) by the end of 2013. Performance contracts are a proven tool to save energy, improve infrastructure, reduce operating expenses and decrease emissions with no upfront costs to the government or taxpayers. They leverage the power of the private sector, saving energy while creating jobs across the manufacturing supply chain.

Almost two years later, the program is an unqualified success. Twenty-three different agencies helped identify 305 projects with an estimated \$2.4 billion investment value, with potential net savings to the federal government of more than \$2 billion.ⁱ By the close of 2013, more than \$1.3 billion worth of these projects will have been awarded. Another \$1 billion worth of projects will be in various stages of the development “pipeline,” with expectations of an additional \$200 million being awarded early in 2014.ⁱⁱ The program has created jobs across the manufacturing supply chain and around the country. Almost every state in the United States has used at least one ESPC or UESC in recent years.

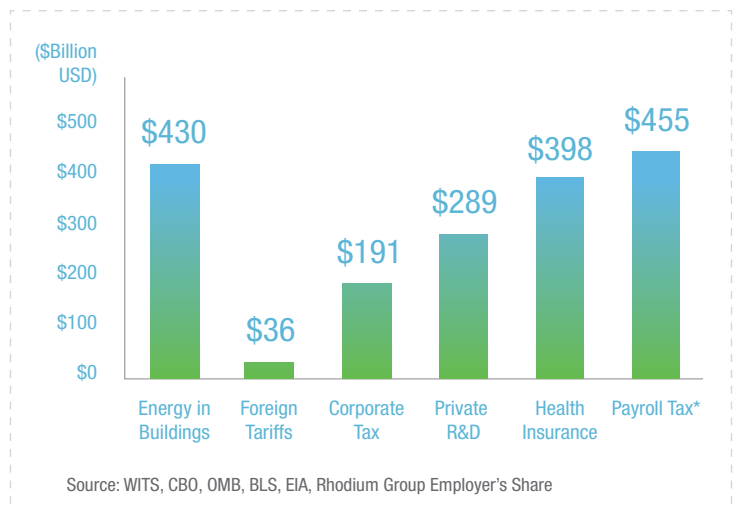
By setting a firm goal, the Energy Savings and Performance-Based Contracting Investment Initiative broke down many barriers that have kept agencies from taking on ESPCs and UESCs in the past. Now that these barriers have been removed, it is imperative that the program be extended (and another goal be set) to keep agencies and their staffs committed to the process. Manufacturers believe the President should extend his directive and challenge all federal agencies to meet a five-year, \$5 billion goal.

- 5 ESPC and UESC Success Stories
- 9 Congressional Support for ESPCs and UESCs
- 9 DOE Study Shows ESPCs Save Much More Than They Guarantee
- 10 Conclusion and Recommendations

The Importance of Energy-Efficient Buildings

Manufacturers play a significant role in improving the efficiency of commercial and residential buildings. Residential and commercial buildings account for 40 percent of all energy consumed in the United States, with Americans spending \$430 billion to power their homes, stores and offices in 2010. That is more than U.S. businesses spent on employee health insurance in that same time frame and nearly as much as they paid in payroll taxes.

Manufacturers support market, regulatory and institutional reforms that increase opportunities to better use energy efficiency in buildings. The National Association of Manufacturers (NAM) believes improving building efficiency should start in the federal government, the nation's single largest owner of building inventory. The NAM supports policies to enhance private-sector investment in public building efficiency improvement projects as well as policies that strengthen standards for existing commercial, industrial and residential buildings.



“ Residential and commercial buildings account for 40% of all energy consumed in the United States ”

Background on Performance Contracting

An ESPC is a contract for a defined time period, usually between 10 and 25 years, under which an energy services company (ESCO) designs, acquires, installs and finances energy and/or water conservation measures for an existing federally owned building and is repaid by the agency from the resulting energy and water cost savings. Similarly, under a UESC, a utility company arranges for the design, installation and financing of an energy- or water- efficiency project, and the costs are repaid over the contract term from cost savings generated by those measures. The programs differ in two key ways: (1) the utility company usually has an existing relationship with an installation or facility (it supplies it with distribution services and often electricity); and (2) federal agencies are split on whether the UESC contract term is limited to 10 years or can be longer, whereas an ESPC can have up to a 25-year contract term and requires measurement and verifications, in addition to a guarantee of energy savings.

The Energy Policy Act of 1992 (Pub. L. 102-486) created ESPCs and UESCs. That law directed federal agencies to decrease energy consumption in federal buildings and authorized and encouraged them to take advantage of rebates, incentives and other services offered by serving utilities to implement energy-efficiency and water conservation projects—namely, ESPCs and UESCs. Energy savings can be realized through improvements in building components such as energy-efficient lighting, windows and insulations as well as ventilating, heating, air-conditioning and building management control systems. By law, the government never pays more than it would have paid for utilities if it had not entered into the ESPC or UESC. Under an ESPC, the

contractor guarantees energy cost savings that exceed the debt incurred.

ESPCs and UESCs have historically been underused. Between fiscal year (FY) 2003 and FY 2008, the federal government invested about \$622 million annually in energy efficiency, but of this amount, only 38 percent of this investment was through ESPCs/UESCs. In 2008, the Department of Energy (DOE) issued \$80 billion in contract authority for use toward the implementation of energy-efficiency, renewable energy and water conservation projects at federally owned buildings and facilities using ESPCs. However, despite such a high ceiling, agencies have used only a small fraction of the \$80 billion in contract authority available since 2008.

Both the U.S. Army Corps of Engineers and the DOE have Indefinite Delivery/Indefinite Quantity (IDIQ) contracts available for use by federal agencies to award ESPC projects. Government agencies can also contract with utility companies through UESCs, which follow a similar process, and typically involve an ESCO or other contractors providing project fulfillment.

An ESPC is generally implemented through the following process:

- 1** An agency establishes a project and issues a “request for proposal,” and ESCOs then submit bids and compete for the project.
- 2** Once selected and the contract is signed, the ESCO works with the federal agency to further develop the project and plan to implement energy-efficient systems and equipment.





The President's \$2 Billion Performance Contracting Goal

On December 2, 2011, President Obama unveiled the Energy Savings and Performance-Based Contracting Investment Initiative, directing the heads of all executive departments and agencies to enter into a combined \$2 billion in ESPCs and UESCs by the end of 2013. This directive signaled the Administration's strong commitment to improving energy efficiency, reducing energy consumption and cost within the federal government and doing so without using congressionally appropriated funds. Performance contracts are a proven tool to save energy, improve infrastructure, reduce operating expenses and decrease emissions with no upfront costs to the government or taxpayers.

In his June 2013 Climate Action Plan, President Obama extolled the benefits of ESPCs and UESCs, which “drive economic development, utilize private-sector innovation and increase efficiency at minimum costs to the taxpayer, while also providing long-term savings in energy costs.”ⁱⁱⁱ The plan committed to “a number of actions to strengthen efforts to promote energy efficiency, including through performance contracting.”^{iv}

As of October 2013, federal agencies have identified 305 projects with an estimated \$2.4 billion investment value and a potential net savings to the federal government of more than \$2 billion. The federal government has selected ESCOs for 166 projects with an estimated investment value of \$1.7 billion. They have also issued a Notice of Intent to Award for 142 projects with an estimated investment value of more than \$1.5 billion. To date, the federal government has approved 100 projects with an investment value of \$1.03 billion. By the end of

3 Various energy conservation measures—and if applicable, renewable energy measures—are combined in a project that is uniquely designed for the particular federal facility. Typical measures can include new efficient lighting, windows, insulation, building controls, HVAC equipment, boilers and chillers, cogeneration systems and renewable energy technologies.

4 The ESCO provides or facilitates upfront financing for the project and completes the project using local subcontractors and creating positive local economic activity.

5 Upon project completion, the energy savings are measured, verified and guaranteed throughout the term of the contract. The ESCO can also provide operations and maintenance of the systems.

6 Savings on a facility's utility costs are guaranteed, and the agency does not share any of the financial risk. The agency then uses the energy/water savings to pay the ESCO for materials and services rendered.

2013, the investment value is expected to reach more than \$1.3 billion.^v

Twenty-three different agencies and departments set specific goals to execute projects, including the DOE, Environmental Protection Agency, U.S. Coast Guard, Federal Bureau of Prisons, Department of Defense, General Services Administration (GSA), Architect of the Capitol, Department of Agriculture and the National Park Service. Seven of these agencies have met or surpassed their goals, and the remaining 16 agencies continue to make substantial progress and look to meet their goals in 2014.^{vi}

Although these results do not yet meet the \$2 billion overall goal, significant progress has been made—more activity than several prior years combined—and the foundation for a robust program has been established. According to the DOE’s Federal Energy Management Program (FEMP), there are a large number of ESPCs and UESCs scheduled to be completed during the first quarter of 2014.^{vii} Currently, 115 projects reside in the “pipeline,” and many of those will commence at some point in 2014. In fact, we fully expect an additional \$200 million to be under contract in early 2014.

The Program Has Helped Spur Valuable New Contracting Tools

Thanks to renewed interest and investment in ESPCs and UESCs, FEMP and its partners have developed a suite of software and analytical tools to help federal managers and agencies implement energy- and water-efficiency projects. These tools range from evaluating energy efficiency in facilities, to estimating lifecycle costs, to estimating energy

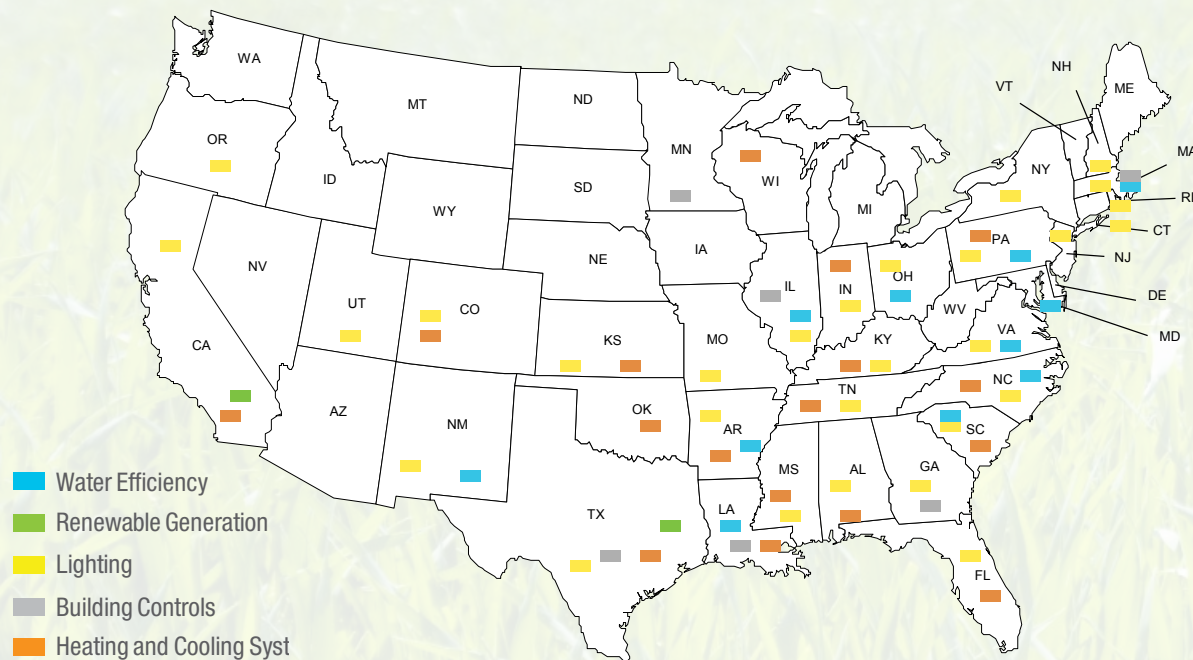
and cost savings, to selecting technologies to meet the needs of the agencies. FEMP also provides technical and project assistance to help agencies through the process and offers live webinars and on-demand courses and workshops for agency energy managers that provide the latest information on best practices, energy requirements and technologies available.

The Impact of ESPCs and UESCs on Manufacturing

ESPCs and UESCs present tremendous opportunities for manufacturers. The types of products and services that typically fall within the scope of an ESPC or UESC—boilers and chillers, energy management control systems, lighting, windows, doors, insulation, HVAC, energy delivery—create much-needed jobs across the manufacturing supply chain and around the country. In addition, small and medium-sized manufacturers handle the majority of the components of a performance contract. For instance, one of the main ESPC IDIQ contractors sources its chillers from small and medium-sized manufacturers in Philadelphia, Pa.; Richmond, Va.; Metairie, La.; San Francisco, Calif.; and Atlanta, Ga. Small and medium-sized manufacturers in Mobile, Ala., and Houston, Texas, build the electric motors this ESCO installs. Its boilers come from small and medium-sized manufacturers in Albuquerque, N.M., and Dallas, Texas. In addition, the engineering services that make the whole ESPC work are performed in North Carolina, Illinois and Maine.



Manufacturing Facilities Supporting the ESPC Industry



Manufacturing in the United States produces more than \$1.87 trillion of value each year, or 11.9 percent of U.S. GDP. For every \$1.00 spent in manufacturing, another \$1.48 is added to the economy—the highest multiplier effect of any economic sector. A long-term commitment to performance contracting will continue to unlock these benefits throughout the manufacturing supply chain.

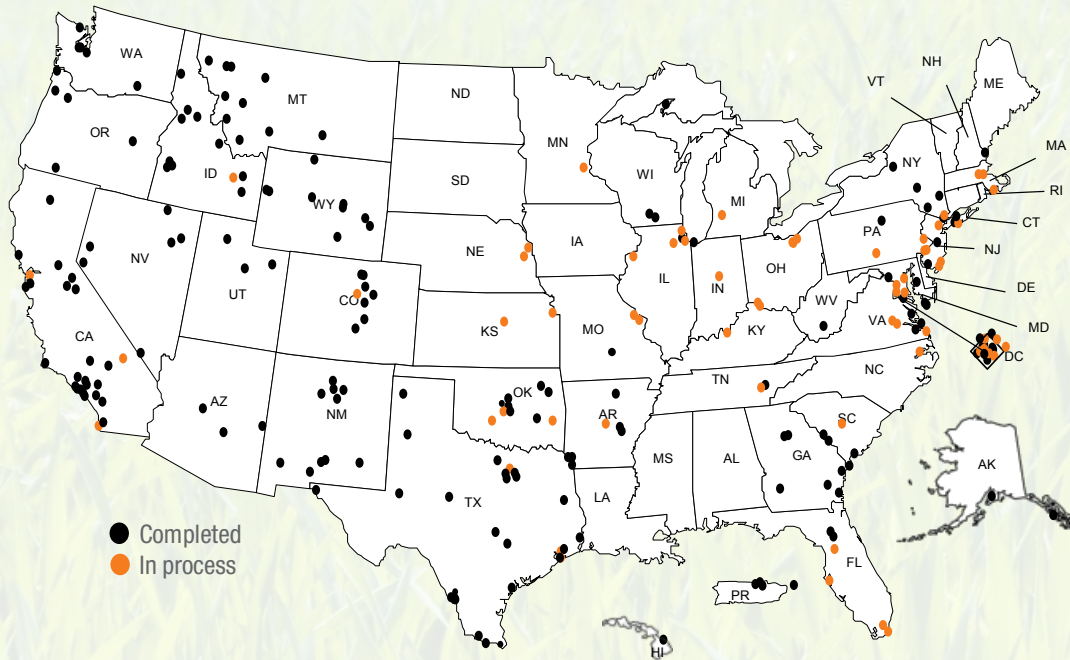
ESPC and UESC Success Stories

ESPC and UESC projects have allowed the federal government to make much-needed infrastructure improvements across a wide range of facilities. The flexibility of the contracting vehicle allows for comprehensive projects that address many energy- and water-related needs. Almost every state in the United States has used at least one ESPC or UESC since 2009.

Some examples of recent projects include the following:

- + U.S. Military Academy, West Point, N.Y.**
\$35.8 million private-sector ESPC investment; the project provides substantial upgrades to lighting and HVAC systems, complete modernization of the facility control system, water conservation and solar photovoltaic power generation. Long-term operations and maintenance will augment West Point's existing staff. This project helped West Point meet its energy-reduction goals two years earlier than required.
- + U.S. Army, Fort Buchanan, P.R.**
\$34.5 million private-sector ESPC investment; the project includes solar photovoltaic power generation, solar thermal applications, wind power generation, new indoor and exterior LED lighting, a post-wide building automation and control systems to manage energy at 73 buildings as well as other energy-efficiency improvements. The project is

Federal ESPC Projects in the United States (2009-Present)



expected to save more than \$61 million in energy and operation costs over the next 16 years.

+ U.S. Air Force, Tinker Air Force Base, Midwest City, Okla.

\$80 million private-sector ESPC investment; the project includes boiler plant improvements, chiller plant improvements, building automation systems and energy management control systems. According to Air Force officials, the project will remove 56 buildings from the base's steam grid, reducing water consumption by almost 20 million gallons annually, trimming natural gas usage by about 30 percent and reducing annual carbon dioxide emissions by 60 million pounds. The ESPC will save the Air Force \$6.4 million in the first year alone and will conserve enough energy to power 12,424 homes each year.

+ DOE, Savannah River Site, S.C.

\$150 million private-sector ESPC investment; the DOE's single largest ESPC was used to finance and construct the Savannah River Site (SRS) Biomass Cogeneration Facility, a 34-acre renewable energy facility in Aiken, S.C., that opened in early 2012. In the first year, the facility operated without interruption and generated 97,000 megawatt hours of electricity. The project created an estimated 800 construction, mechanical, engineering and supplier jobs over its 30-month construction period and sustains approximately 200 permanent jobs related to its operation and supply chain. Benefits include decreasing water intake by 1.4 billion gallons annually and yearly reductions of 100,000 tons of carbon dioxide emissions equal to



the planting of 11,000 acres of trees per year. Over a 19-year period, the ESPC will generate \$944 million in guaranteed energy cost savings.

+ NASA, Wallops Island, Va.

\$28 million private-sector ESPC investment; the NASA Goddard Space Flight Center's Wallops Island facility, located on Virginia's Eastern Shore, benefits from a two-phase ESPC that is expected to reduce energy intensity by 35 percent and improve aging infrastructure. Its first phase involved \$15 million worth of high-efficiency lighting, decentralization of an antiquated steam plant and improvements to energy management systems. More than 9,950 interior and exterior lighting fixtures were replaced with higher efficiency units and technologies. Phase two involves the installation of 500 geothermal heat pumps. The project is expected to save 77,000 British thermal units (BTUs) per year and reduce greenhouse gas emissions by 8,600 metric tons.

+ HUD Headquarters, Washington, D.C.

\$37 million private-sector ESPC investment; the Department of Housing and Urban Development (HUD) is using an ESPC on its Robert C. Weaver headquarters building in Washington, D.C., as its signature initiative in reducing greenhouse gas emissions to meet federal targets. The project includes boiler and chiller, lighting and HVAC improvements, building automation systems, building envelope modifications, renewable energy systems and water and sewer system improvements.

+ Atlanta Federal Prison, Atlanta, Ga.

\$50 million private-sector ESPC investment; the Bureau of Prisons entered into a two-phase ESPC that

will improve infrastructure at the U.S. penitentiary in Atlanta, Ga., generate \$3.2 million in energy and water savings and reduce energy consumption by 43 percent upon completion. A new hybrid geothermal chiller will be installed as well as a new high-efficiency boiler for heating and site-wide energy management control systems. The ESPC will help make the facility less costly to operate by reducing its energy and water expenses.

+ GSA Greater Southwest Region-Wide Upgrades

\$68 million private-sector ESPC investment; the GSA is using an ESPC to upgrade 75 buildings in the Southwest region. The work includes advanced irrigation control systems, thermal energy storage, building envelope improvements, photovoltaic panels, system upgrades and even a wind turbine along the border. The upgrades are expected to save \$4.8 million in just the first five years of operation.

+ U.S. Army, Fort Detrick, Frederick, Md.

\$10 million UESC investment; the investment will enable the shutdown of an old and inefficient central heating plant and provide localized energy-efficient heating systems, including a new distribution system, to service 39 buildings for energy savings and operating and maintenance expense reductions. The project is expected to save approximately \$18 million in energy and energy-related cost savings over the useful life of the equipment.

+ U.S. Air Force, Eglin Air Force Base, Valparaiso, Fla.

More than \$24 million UESC investment in multiple task orders, saving more than 225,517 million BTUs, or \$2.63 million, annually; conservation measures include

lighting, HVAC modifications, chillers, heat pumps, water conservation, solar thermal, direct digital control backbone infrastructure and metering. Partial funding was used when available to leverage energy savings to maximize the ability to make capital improvements where needed.

+ U.S. Navy, Navy Yard, Washington, D.C.

A more than \$6.3 million UESC private-sector investment for 13 facilities; the project includes lighting upgrades, including new LED lighting, HVAC modifications, energy-efficient chillers, water conservation, retro-commissioning of HVAC systems, building controls upgrades, variable speed drives and steam system improvements throughout the base. The UESC project is expected to save more than \$10 million in energy and energy-related costs over the useful life of the equipment.

+ Department of Veterans Affairs, Calif.

\$9.9 million UESC private-sector investment for three medical centers and two clinics (more than 2 million sq. ft.). The project included multiple energy conversion measures as well as commissioning to ensure performance of the measures. The annual costs savings will be \$1.6 million.

+ Naval Station Mayport, Jacksonville, Fla.

\$3.2 million UESC investment expected to provide a total annual savings of \$564,394, with a payback period of less than six years; the project included the installation and upgrade of equipment in 56 buildings aboard Naval Station Mayport, including a Niagara “front-end” energy management control system, installed to provide a central means to monitor and control systems within those buildings.

+ Naval Submarine Base Kings Bay, Kings Bay, Ga.

\$4.5 million UESC investment expected to provide a total annual savings of \$446,112, a 10-year payback; this UESC project included the installation of various energy conservation measures in seven buildings within the Strategic Weapons Facility Atlantic area aboard the Naval Submarine Base Kings Bay. These measures included high-efficiency lighting and water fixture retrofits, ultraviolet lighting installations in air handler units, motor and pump replacements, variable frequency drive installations and control upgrades.



Congressional Support for ESPCs and UESCs

A bipartisan Energy Savings Performance Caucus was formed in early 2013. Led by Reps. Cory Gardner (R-CO) and Peter Welch (D-VT), the purpose of the caucus is to promote performance contracting projects at the federal, state and local level. The caucus has 34 House members (17 Democrats and 17 Republicans). In addition, Senate Energy and Natural Resources Committee Chairman Ron Wyden (D-OR) wrote to the President on May 2, 2013, expressing his support for ESPCs. “ESPCs are a good deal for the government,” Chairman Wyden wrote. “These projects save money by reducing the cost of energy and operations in federal buildings, and they do not require any outlay of funds. For these reasons, I urge you to support a robust ESPC program and reduce administrative barriers to the use of these contracts.”



DOE Study Shows ESPCs Save Much More Than They Guarantee

An Oak Ridge National Laboratory (ORNL) study released in March 2013 shows that the “federal government receives nearly twice the level of cost savings guaranteed by the ESCO” under a typical ESPC project. This builds upon a 2006 ORNL study that concluded that ESPCs have a lower lifecycle cost compared to directly funded projects that take more than two years to budget and develop.

According to the 2013 ORNL report, assessments on the longevity of performance contract savings indicated that the federal government receives nearly twice the cost savings on a typical project. The report indicated that there are four principal sources of cost savings to the government that are not captured in the calculation of the guaranteed savings: ESCOs routinely guarantee on average about 96 percent of the estimated cost savings from a project. This means that the site receives about 104 percent of the guaranteed savings during the project’s performance period. The study goes on to make the following points:

- 1 The useful life of the installed equipment generally extends beyond the performance period of ESPCs. For example, the average ESPC performance period is 17 years, but a centrifugal chiller can have a useful service of greater than 25 years.
- 2 ESPCs use National Institute of Standards and Technology escalation rates to calculate future utility prices and the dollars to be saved. However, since 1998, these projections have been very conservative. Therefore, the actual



avoided cost of energy (savings for the government) has been higher than the guaranteed cost savings.

- 3 The baseline case that forms the basis of the guaranteed savings calculation assumes that the baseline equipment would maintain the same efficiency and require the same maintenance level for a period of time equal to the performance period of the ESPC. Historically, existing equipment did not always receive the maintenance that it should. This lack of maintenance contributed to the decline in equipment performance over time. An ESPC typically includes maintenance, and thus, the life of the equipment is extended significantly.

Conclusion and Recommendations

The President's 2011 directive has demonstrated that it is possible to act in an expeditious manner to initiate and develop cost-effective energy-saving projects using ESPCs and UESCs. The program quickly spurred a number of agencies to develop a robust pipeline of projects, yielding \$1.3 billion in completed contracts, plus another \$1 billion in various stages of process.

According to the FEMP office, energy audits performed for 50 percent of the agencies within the executive branch have already identified more than \$9 billion^{viii} in addressable energy conservation measures with a 10-year payback or less. If institutionalized, the success of the President's two-year performance contracting directive could lead to a sustained reduction in federal energy costs, plus significant modernization of federal infrastructure with minimal use of direct taxpayer dollars. It would also help the Administration make significant progress toward this aggressive new goal the President set in his June 2013 Climate Action Plan: that efficiency standards for appliances and federal buildings set during the Obama Administration will reduce greenhouse gas emissions by at least 3 billion metric tons cumulatively by 2030.

The efforts associated with bringing this initiative up to speed and running efficiently should not be wasted. Many agencies have developed new systems and processes for initiating proposals, tracking progress and awarding contracts as a result of this directive. Now that this has been accomplished, turnaround times for future ESPCs and UESCs will be shorter. There exists well in excess of \$9 billion in opportunity, but there is little visibility to any commitment beyond the expiring \$2 billion directive.

Manufacturers are concerned that at the end of 2013, the incentive to develop new projects and

complete existing contracts in the pipeline will dissipate, and ESPCs and UESCs will taper to previous levels, a fraction of the \$1 billion per year goal. To avoid this problem, manufacturers recommend that the President makes a long-term commitment to using performance contracting to retrofit federal buildings. ESPCs and UESCs put the best that the private sector has to offer to work in improving federal energy performance; in doing so, the programs create much-needed jobs at ESCOs, utilities and their local suppliers of equipment and trade labor, all while saving the federal government energy and money and improving and modernizing facility infrastructure. To further reduce government expenses, the robust use of ESPCs and UESCs should continue into 2014 and beyond. The NAM believes a substantial volume of additional savings can be captured with ESPCs and UESCs through a new presidential directive and with minor process- and program-related modifications.

For 2014 and beyond, the NAM recommends the following:

- 1** Continue to direct the use of ESPCs and UESCs over the next five years at a steady rate of \$1 billion per year. The federal government will undoubtedly be subject to fiscally constrained budgets, and these programs accomplish much-needed infrastructure improvements and modernization, reduce energy consumption and create jobs at no upfront costs to taxpayers by leveraging the power of the private sector.
- 2** Streamline the ESPC/UESC process, including the issuance of bids, selection of contractors and approval of projects. The more quickly projects are awarded, the sooner departments and agencies will reach their goals. Despite the priority the President has given these contracts, some agencies needed almost 12 months just to select a contractor to work with. The

agencies that have demonstrated the most success have followed FEMP guidance and have used a one-step selection process; all agencies should follow this method. FEMP should continue its contract oversight practices to ensure contracting does not drag on unnecessarily. In addition, the Administration should put in place a process by which legal and contracting personnel at all federal agencies can vet their various interpretations of what is allowable under an ESPC/UESC.

- 3** Expand the scope of projects beyond traditional measures (efficient lighting, building controls and HVAC equipment and the associated operations and maintenance) to include proven measures to enhance energy security at all federal facilities. This could include measures such as combined heat and power, microgrids and demand response and waste to energy plants and data centers.

Manufacturers strongly believe that President Obama should extend his directive and challenge all federal agencies with an additional five-year, \$5 billion Energy Savings and Performance-Based Contracting Investment Initiative. This significant and meaningful commitment will do much to improve and increase energy and water efficiency within the federal government, while creating private-sector jobs across the country.

[Endnotes]

- i. Department of Energy, Federal Energy Management Program, October 2013.
- ii. Id.
- iii. The President's Climate Action Plan, Executive Office of the President, p. 11.
- iv. Id.
- v. Department of Energy, Federal Energy Management Program, October 2013.
- vi. Id.
- vii. Id.
- viii. Department of Energy, Federal Energy Management Program, November 2013, available at http://www1.eere.energy.gov/femp/pdfs/ctsreport_cfeval.pdf.



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