

**Business Council for Sustainable Energy's  
Federal Performance Contracting Coalition  
Written Testimony  
House Committee on Armed Services  
Hearing on Energy and Energy Efficiency Programs of the Department of Defense  
September 26, 2006**

My name is Mark Wagner, Vice President of Government Relations for Johnson Controls, Inc. My testimony is on behalf of the Federal Performance Contracting Coalition (FPCC) and the Business Council for Sustainable Energy. The Business Council was founded in 1992 to support energy efficiency, renewable energy and natural gas in both a domestic and international context. The FPCC is a group of energy service companies working together on common objectives and consisting of Ameresco, Chevron Energy Solutions, Honeywell, Johnson Controls and Noresco.

We are particularly vested in working to help U.S. military installations become more energy efficient and energy secure. To that end, I will address two things today:

1. A path to bringing energy efficiency, renewable energy and energy security to military installations; and
2. Building sustainable facilities that will save money and energy into the future

Both of these items address goals and requirements of the Department of Defense (DOD), and although can be expensive, we have some suggestions on how to accomplish these goals with minimal government investment.

**Background: Recent Army Corps of Engineers Report**

In a September 2005 report entitled *Trends and Implications for U.S. Army Installations*, the Army Corp of Engineers Research Laboratory (CERL) called the national and international energy situation “highly uncertain” and said that it provides challenges on both the “supply-side and demand side”. Further, the report posited that the primary energy issues for the DOD are energy availability, affordability, sustainability and security.

The results of the report were summed up as follows: “Our best options for meeting future energy requirements are energy efficiency and renewable sources.” The Report concluded the following about energy opportunities for the U.S. military:

- “Energy efficiency is the least expensive, most readily available.”
- “Energy efficiency measures usually pay for themselves”
- Renewable options also make use of the large stretches of land in the United States, much of which is owned by the Federal government
- Renewable options are “available, sustainable and secure”

- “For efficiency and renewables, the intangible and hard-to-quantify benefits (e.g. reduced pollution and increase security) yield indisputable economic value”

The Army Corps Report recommended that DOD address energy issues by using their large markets to pull technology. The report noted that DOD should also leverage alternative financing options and diversify the sources of energy used, which include massive expansion in renewable distributed generation (including photovoltaic, solar thermal, wind, microturbines and biomass), and the large scale networking of on-site generation.

### **Deployment of Technology as DOD Role**

The FPCC and our members are supporters of Research and Development (R&D) and we feel it should continue as energy technologies and costs are constantly being improved and breakthrough technologies are still being developed. The Department of Energy (DOE) has a relatively robust R&D activity for energy efficiency technologies and renewable energy generation. It is appropriate to leave general energy R&D to that Federal agency and concentrate DOD attention on *applied* research activities that have particular applicability to DOD. These might include adapting technologies so they are compatible with military fuels (JP8), integrating commercial technologies for specific defense deployment (such as distributed generation for force forward applications and secure operations, back up power for installation security and communications), and so forth.

However, what is critical for the Department of Defense is to *deploy* technology. In large part, technology exists today to cost effectively do most of what the Army Corp Report has recommended and what is necessary to meet the energy reduction goals set by Congress in the Energy Policy Act of 2005.

Various DOD facilities have completed innovative energy upgrades in recent years. For example:

- Elmendorf AFB, a 50-year old heating and power plant was replaced with a new energy efficient distributed generation system.
- Picatinny Arsenal, again, distributed generation and back up generation was installed to address energy and mission needs.
- Twentynine Palms Marine Corps base, a dual-fueled cogeneration and photovoltaic plant was installed.
- Fort Bragg also now has new combined heat and power for efficiency and security.
- Naval Station Guantanamo Bay, high tech windmills are now providing power more cost effectively than the expensive grid power that was heretofore available.

(Attached are additional details on these projects.)

Unfortunately, these successful projects are more the exception than the rule. We need the will and the way to deploy efficiency and alternative energy technologies and develop

these types of projects at more military installations throughout the country and the world. Only then will we significantly address our critical energy needs and reduce our energy expenditures on military infrastructure.

### **Funding Needs**

How do we replicate this? How do we accomplish our goals of achieving energy efficiency, gaining on-site renewable energy sources and maintaining energy security for military installations? How do we do this while upgrading our basic infrastructure? Clearly investments must be made. But direct appropriations are, unfortunately, lacking.

The main energy efficiency program of the DOD, designed and created by the House Armed Services Committee nearly 15 years ago is the Energy Conservation and Improvement Program (ECIP). This program is designed exclusively to provide direct funding at Defense facilities to improve their energy efficiency. It is the only real program of its kind left at DOD after the demise of the Federal Energy Management Program in the mid-nineties (this program had been funded at approximately \$200 million per year and no longer exists).

As for ECIP, the Office of Management and Budget recently gave the program its highest Program Assessment Rating saying it has a 3:1 savings to investment ratio. This is one of the best ratios in the Federal government; however, funding for ECIP is basically at the same level it started at nearly 15 years ago -- \$50 million/yr. The Department has asked for a \$10 million increase in ECIP for FY07 but to be honest, with a three to one return on investment, it should get a \$100 million increase. Even at this level, however, the ECIP program would barely scratch the surface of what is needed at the Department of Defense in energy-related upgrades. By way of example, the Navy is planning to execute \$150-\$200 million in energy projects next year but is receiving only about \$13 million in ECIP funds.

The question is the same one we, in Washington, are always asking: Where do we get the money?

Chairman Hefley held a hearing last March on maintaining historic structures on military installations. In his opening statement, Mr. Hefley highlighted the difficulty of fully funding and executing sustainment and base operations budgets. He said that DOD and Congress were urged to think "outside the box" to find ways to reduce operations and maintenance costs.

Sufficient direct appropriations are clearly not available for energy efficiency upgrades. **The alternative to direct appropriations is financing projects through the energy savings.** Programs such as Utility Energy Savings Contracts (UESC) and Energy Savings Performance Contracting (ESPC) allow for energy efficiency projects to be financed with private sector capital. These are true Public-Private Partnerships.

## Energy Savings Performance Contracting

The ESPC program was specifically created by Congress to address the lack of appropriations for energy efficiency upgrades. Under the program, private sector energy service companies finance, install, and maintain new energy efficient equipment in federal facilities at no up-front cost to the government. The energy service company is paid back over time from the dollars saved by the agency on its energy and maintenance bills. The energy savings are contractually *guaranteed* to exceed cost of the contract and, by law, the project costs are required to be fully off-set by the utility bill savings. *If the energy savings do not occur, the contractor does not get paid.* In addition, the energy savings for each project are measured and verified on a regular basis. The bottom-line is that energy use is guaranteed to be reduced, the military base has new energy-efficient equipment, and it does not pay any more than it was paying for utilities before the start of the project.

The Department of Defense has been successfully using these alternative financing mechanisms as their primary means to improve their energy infrastructure, reduce their energy use per Presidential Directive, and reduce their energy costs. In fact, 70% of all Federal ESPCs are within DOD facilities. The five successful energy programs mentioned earlier in this testimony were all done with ESPC – that is, with no upfront funding from the government. These infrastructure investments of these five projects alone are worth over \$200 million. They were financed by private sector capital and are being paid back with energy cost savings.

The ESPC program has good support within the Government as evidenced below:

“These contracts provide agencies with important opportunities to improve energy efficiency at thousands of Federal Buildings across our country. I encourage government officials to utilize ESPCs to meet their energy reduction goals.” *President Bush, 8/3/06*

“The Committee urges the Department of Defense to utilize Energy Savings Performance Contracting whenever possible to upgrade facilities and retain base operating funding.” *Senate Report on Defense Appropriations 7/25/06 (SR 109-292)*

In summary ESPC pays for itself, provides energy efficiency and can offer renewable energy and energy security. Unfortunately, like other energy efficiency programs, Federal agencies are not taking full advantage of this program.

The FPCC recommends that the Committee take steps to ensure more widespread use of the ESPC option. Very few of these recommendations even require legislative language – in fact, many of them can be implemented directly by the agencies with cover provided from the Committee.

- **Require agency energy reductions per the EPACT 2005 goals on every military base and measure them.** Currently, the DOD overall has a reduction goal; however, there is little ownership at the individual facility level and there

are no tangible compliance ramifications. Were energy reduction part of facility personnel's evaluation criteria, a much larger effort to save the military energy and O&M dollars would be evident.

- **Make the fear of inaction greater than the fear of action by requiring military installations to implement energy efficiency measures on a large scale.** ESPC is a voluntary program and to date, most installations have proceeded cautiously, and on a relatively small scale. Installation leadership must be empowered to take bolder steps in order to have a substantial impact on energy efficiency, security and renewable capabilities. Again, this might grow from the above recommendation and/or providing incentives for energy projects.
- **Work to make renewable energy conservation measures affordable.** The Energy Policy Act of 2005 gives double credit toward meeting goals for implementing renewable projects. We should consider how to emphasize renewable projects through the ESPC program, if achieving more on-site renewable energy is indeed a desirable outcome.
- **Take advantage of all the energy-related savings, including operations and maintenance (O&M) costs.** Although allowable by statute and regulation, many ESPC projects take longer to pay for themselves because often the ESCOs are not allowed to use the full savings stream from reducing on site operations and maintenance personnel and activities.
- **Allow appropriated dollars to be used to leverage ESPC projects.** This would mean allowing Military Construction and ECIP funds to “buy down” certain portions of an ESPC project in order to achieve maximum efficiency. This would substantially increase the number of renewable projects under the program.
- **Remove obstacles to the ESPC program.** Although it seems minor, micromanagement from Washington, DC, be it Congress or the Administration, has a very obvious dampening effect on projects.
  - For example, it has been proposed to lower Congressional Notification for ESPC projects from the current \$10 million down to \$7 million. This change will add to the lengthy time (18-24 months) it already takes to develop and approve smaller ESPC projects.
  - A new emerging obstacle is developing as the result of the plan to move Sustainment, Restoration and Modernization (S/R&M) and Demolition funding, from the Defense Appropriation Act to the Military Quality of Life and Veterans Affairs Appropriation Act. As a result of the Congressional realignment, it appears intermingling S/R&M and Demolition funds with other O&M accounts will no longer be possible. Agencies will no longer be able to use S/R&M and Demolition funds to make payments attributable to other O&M accounts and vice versa. As a result, the Air Force has already written policy that would prohibit the use of O&M savings on ESPC projects in anticipation of this change, which would severely impact this needed energy efficiency program.

Some recommendations for the ESPC program may require legislative language but such changes will expand the program to allow it to be more effective and do more to address the needs of military installations.

- Include energy generation, not just energy savings in ESPCs. This would allow bases to address security issues surrounding dependence on outside the fence generation and transmissions for energy.
- Allow for new construction ESPC which would provide the opportunity for ESPCs to pay some of the cost of building better, more efficient, and sustainable buildings so the Department can meet its sustainability requirement without reducing the size of facilities.

## **Sustainable Buildings**

The FPCC wants to further address sustainability in our testimony. In January, the DOD signed a Federal Memorandum of Understanding for sustainable buildings and this has real implications for the Department's energy efficiency and alternative energy integration. The MOU commits the Department to employ integrated design principles, optimize energy efficiency and performance, protect and conserve water, enhance the indoor environment, and reduce the environmental impact of materials used in construction.

So what does it mean to erect sustainable buildings? First, it means designing, locating, constructing and operating facilities in an energy efficient and environmentally sustainable (low impact) manner. Sustainability uses life cycle approaches, consensus-based standards, and performance measurement and verification methods that utilize good science and lead to sustainable buildings. The private sector has embraced sustainability because green buildings save money.

- Energy-efficiency experts say that better construction techniques, new energy-saving devices and smarter management can reduce electricity consumption by 20 percent in older buildings and up to 50 percent in new ones, vastly reducing utility bills. *Washington Post 8/5/06*
- "The corporate world is catching on real fast. They understand the financial benefit, but they also see this as the right corporate model." *Architect Robert Fox, Washington Post 8/5/06*
- "Green is green." *Jeff Immelt, GE Chief Executive*

Sustainable Buildings are critical for military construction because these facilities will be around for a minimum of 50 years and the Department will be responsible for soaring O&M costs long into the future if the buildings are not built in a sustainable manner right from the start. Unfortunately, MilCon and O&M funds suffer from the "color of money issue". That is, they are never considered together. As a result, in military construction we are often forced to focus on first costs, which then result in higher O&M costs.

The FPCC recommends that the DOD take a corporate approach and find ways to *combine existing MilCon and O&M resources* in order to build sustainable buildings that will cost less to operate in the long term. This is critical right now. The Department, after

going through Base Realignment and Closure (BRAC) is now constructing new buildings on some facilities, and these are planned as sustainable buildings. But with tight funding, these buildings are likely to be insufficient in size, or not sustainable and therefore costly in the long run. Combining O&M with initial MilCon will allow leveraging of ESPC and other such programs.

In conclusion, we want to emphasize that the DOD should concentrate on becoming more energy efficient via deployment of, not necessarily basic research on, energy technologies. When money is short and is appropriately focused on agency mission, means do exist to reduce energy use and costs. This will leave even more money in later years for these mission specific activities.

We appreciate the opportunity to testify and would be happy to answer any questions.

## **DOD ESPC Projects**

### **Elmendorf Air Force Base**

Elmendorf AFB partnered with Ameresco, PACAF and AFCESA to implement a \$71M project that eliminated a 50 year old Central Heat and Power Plant and replaced it with 300 boilers located in 120 facilities throughout the base. The project also included the installation of 8 miles of natural gas distribution lines and the modification of the electrical substations. The project, which is reducing Elmendorf's energy consumption by over 1 million btus per year, is generating average annual cost savings of \$5.6M or \$123,000,000 over the course of the 22 year performance period. Ameresco managed and coordinated with multiple subcontracting firms, the local utilities and worked simultaneously in 30 facilities at a time in order to complete the project on time with a brief 5 month outdoor construction period per year. In addition to the direct and energy related savings associated with this project, EAFB avoided over \$50M in repair costs and numerous safety concerns generated by the deteriorated steam distribution system.

### **Picatinny Arsenal, New Jersey - Arsenal-Wide Heating Decentralization Project**

Through its energy analysis, design, and construction management services, Chevron Energy Solutions (ES) reconfigured Picatinny Arsenal's aging central heating system by installing 120 new steam boilers, hot water boilers, furnaces, or unit heaters to service over 250 buildings. The solution also involved renovation of over 6,000 feet of steam distribution lines; an Arsenal-wide energy management and control system serving 121 buildings; redesign and replacement of building interior heat distribution systems; coordination of all air emissions permitting; electric back-up generation to the boiler plants to ensure that steam is available for heating during electrical outages; and an 18-year ongoing operations, maintenance, and repair/replacement of all installed units and equipment. The long-term, maintenance and operations portion of the contract, which enables Picatinny to realign its work force and focus on core mission activities, consists of development and execution of preventive maintenance programs and activities, service desk response to all trouble calls for over 300 facilities, database tracking and reporting of all service and preventive maintenance activities via a web-based CMMS program, and monitoring of building automation systems for building comfort and indoor air quality.

This award-winning ESPC project, reduces harmful carbon, sulfur, and nitrogen dioxide emissions by an estimated 1 million tons; produces more than \$107,748,821 of energy and operational savings, and reduces risks associated with catastrophic plant or steam distribution system failure and lack of redundancy.

### **Twentynine Palms Marine Corp ESPCS**

At the Twentynine Palms Marine Corps Ground Combat Center in Southern California, the three ESPC projects developed by Johnson Controls are saving energy, as well as supporting the mission of this important military base.

- New chilled water plants and an air conditioning system upgrade are saving energy and have improved the quality of life for the Marines in the barracks, which are located in the southern Mojave Desert.
- A "Dual-Fueled" 7.5 megawatt cogeneration plant has improved the energy security on base because it can produce electricity by burning either natural gas from a pipeline or

diesel fuel which is stored on base. If there is a break in the gas line due to an earthquake or other disruption, the new system will enable the base to operate for up to six days without electricity or natural gas from the outside.

- The renewable energy project is a 1.1 megawatt photovoltaic plant. This is one of the highest capacity, non-utility, solar power plants in the world covering eight acres and providing one fifteenth of the base's annual electric load.

All totaled the improvements will produce energy savings of about \$6.9 million per year for a total savings of \$138 million over 20 years.

### **Fort Bragg Combined Heat and Power ESPC**

Known as the home of the Airborne and Special Operations Forces, Fort Bragg is the 84-year-old U.S. Army post in Fayetteville, N.C. One of the largest Army installations in the world, Fort Bragg houses the 82nd Airborne Division and the XVIII Airborne Corps, along with the Army Special Operations Command and other rapid deployment units. Honeywell recently led the installation of a large combined heat and power (CHP) system at the post's 82nd Central Heating Plant. The CHP system, which is managed by the Fort Bragg Directorate of Public Works (DPW), went online in June 2004.

The primary goal of the DPW – responsible for almost 30 million sq ft of facilities at the post – is to provide a secure setting in which the Army can train, mobilize and deploy its forces, and continuously improve the environment and quality of life for the troops and civilians stationed at Fort Bragg. The CHP system, with its energy-efficiency and security benefits, and related infrastructure improvements, certainly supports this mission.

This \$11 million CHP project is the latest phase in a wide-ranging public-private partnership between Honeywell and the DPW. Formed under an Energy Savings Performance Contract (ESPC), the partnership has allowed Fort Bragg to make \$66 million in capital investments at no additional operating cost to the government or taxpayers. Through 2004, it has saved more than \$57 million at the post.

### **US Naval Station Guantanamo Bay, Cuba**

The Department of the Navy partnered with Noresco to construct a \$12 million wind turbine project at US Naval Station Guantanamo, Cuba using an ESPC. Four wind turbines generate 3,800 kilowatts of electricity – enough to supply about a quarter of the peak power needed for base operations.

The project will not only save taxpayers \$1.2 million in annual energy costs, but will also save 650,000 gallons of diesel fuel. In addition, it will reduce air pollution by 26 tons of SO<sub>2</sub> and 15 tons of NO<sub>x</sub>, demonstrating the Navy's commitment to energy conservation and environmental stewardship.

The four turbines are rated to withstand winds up to 140 mph – equivalent to a Category 4 hurricane. Each turbine is completely automated. They independently sense the wind direction, turn into the wind and control the pitch of the blades for optimum efficiency.

This project is an excellent example in which the Navy successfully utilized the ESPC program to implement state of the art renewable technologies at this facility to provide secure, reliable and cost effective power to the Base.



THE WHITE HOUSE

WASHINGTON

August 3, 2006

I send greetings to those gathered for the Energy 2006 conference.

Keeping America competitive requires renewable and affordable energy. As a forum for the exchange of ideas and discussion about energy and conservation issues, this event is important to a secure energy future for our children and grandchildren. Your participation in the 2006 Energy conference and your hard work to conserve energy in the workplace will help create a better America.

Since 2001, my Administration has invested nearly \$10 billion in the development of cleaner, cheaper, and more reliable alternative energy sources, and our Federal agencies must continue to lead the way in conservation and research. Last August, I was pleased to sign the Energy Policy Act of 2005, the first national energy plan in more than a decade. This law encourages conservation and efficiency, helps increase our domestic energy production, promotes alternative and renewable resources, and enables the modernization of our electricity grid. To ensure that the Federal Government sets a positive example, the Energy Policy Act established aggressive Federal energy savings goals and reauthorized the Energy Savings Performance Contract program. These contracts provide agencies with opportunities to improve energy efficiency at the thousands of Federal buildings across our country. I encourage government officials to utilize ESPCs and Super ESPCs to meet their energy use reduction goals and advance the growth and prosperity of our great country while being good stewards of taxpayer dollars and our environment.

I appreciate the sponsors and participants of this conference, and I commend all those who are committed to energy conservation and efficiency in government and across the country. Your efforts help improve our national and economic security and strengthen America for future generations.

Laura and I send our best wishes for a successful event.

A large, stylized handwritten signature in black ink, which appears to be "George W. Bush".