

**RECORD VERSION**

**STATEMENT BY**

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DEPUTY ASSISTANT SECRETARY OF THE ARMY (STRATEGIC  
INFRASTRUCTURE) AND SENIOR OFFICIAL PERFORMING DUTIES AS  
ASSISTANT SECRETARY OF THE ARMY  
(INSTALLATIONS & ENVIRONMENT)**

**BEFORE THE**

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**ENERGY SECURITY / INSTALLATION ENERGY MANAGEMENT**

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**INTRODUCTION**

Mr. Chairman and members of the Subcommittee, it is a pleasure to appear before you to discuss the Army's Energy Security program, specifically our installation energy initiatives. We are especially grateful for this Subcommittee's continued support for the Army's Energy Security program. The Subcommittee's ongoing efforts, coupled with the President's vision for Energy Security and Sustainability, marked by increased energy efficiencies, investments in renewable energy, and leveraged Federal purchasing power to promote environmentally-responsible products and technologies, will result in assured access to reliable supplies of energy and the ability to protect and deliver sufficient energy to meet operational needs.

The recently published Quadrennial Defense Review (QDR) Report presents energy security in a manner consistent with current and planned Army energy initiatives. The Army program supports the QDR determinations that energy efficiency can be a force multiplier and that the expanded use of renewable energy and the reduction in energy demand, if properly implemented, will improve operational effectiveness. We are committed to enhancing energy security and mission assurance without degrading our test, training, and operating areas essential for mission readiness.

Among the most immediate, significant, and systemic risks to Army installations are those which house our Task Critical Assets, Defense Critical Assets, critical infrastructures and key Continuity of Operations and Continuity of Government capabilities. These risks are linked to our

dependence on the commercial power grid. Senior homeland security and defense leaders have acknowledged that sophisticated state-sponsored actors have demonstrated both capability and intent to disrupt Department of Defense (DoD) missions, logistics, and communications by exploiting this strategic vulnerability. Beyond those threats to the grid, we are also susceptible to non-state actors, accidents, and natural disasters.

The Army is answering the call for the nation to face many of the inextricably linked challenges of our time: confronting our dependence on foreign oil, addressing the moral, economic, security, and environmental challenge of global climate change, and providing clean energy that benefits all Americans in the near term and in the future. Increased Energy Efficiency is a DoD High Priority Performance Goal and as such the Army's Energy Security program goals support the DoD two-part investment strategy for installations to (1) reduce the demand for traditional energy (18% by 2011) and (2) increase the supply of renewable energy sources (14.3% of annual electric usage in 2011). The Army is consistent with DOE, GAO and DOD General Counsel regarding counting renewable contributions and is committed to meeting federal energy management requirements. The Army will continue to lead by example and partner with public and private organizations to meet our nation's energy security needs. Energy is a key consideration in all Army activities, with emphasis upon reducing demand, increasing efficiency, seeking alternative sources, and creating a culture of energy accountability, while sustaining or enhancing operational capabilities.

Sustaining the Army's mission capabilities and its global operations requires a tremendous amount of energy. In fiscal year 2009, the Army spent approximately \$1.2 billion for more than 80 trillion British thermal units of energy to operate installations and facilities worldwide and invested more than \$600 million for installation energy efficiency projects.

The Army is engaging in studies and developing plans to maximize renewable energy opportunities across Army installations in an effort to meet established goals. In fiscal year 2010, the Army expects to invest over \$45 million for 19 Energy Conservation Investment Program projects, including renewable projects such as solar walls, solar day lighting, and solar photovoltaic power generation. The Army is also utilizing Sustainment, Restoration and Modernization and military construction funds to implement energy efficient projects.

We now view Energy Security as an Operational Imperative which will provide the Army with a significant tactical advantage. Army installations, tactical operations, and Soldier training require secure and uninterrupted access to energy. Dependence on fossil fuels and a vulnerable electric power grid jeopardizes the security of Army installations and mission capabilities. The long liquid fuel logistical tail poses risks to contingency operations and is a vulnerability for deployed Army forces. Today's Army is transitioning into an elite 21<sup>st</sup> Century expeditionary force designed to confront elusive enemies that threaten our interests both around the globe and on our home soil; therefore, Energy Security will support Army goals to transform into an agile and technologically superior fighting force capable of successfully accomplishing any and all mission requirements.

## **BACKGROUND**

The Army recognizes that continued reliable access to affordable, secure energy supplies is a significant concern for the Army and the nation. Given our reliance on energy, disruption of critical power and fuel supplies will harm our ability to accomplish critical missions. Such a risk exposes a vulnerability that must be addressed by a more secure energy position and outlook. In addition, increasing efficiencies and lowering demand for energy will save money and free up both fiscal and personnel resources. Industry partnerships that supply power

to the commercial grid from Army installations provide residual benefits to the region while meeting Army requirements.

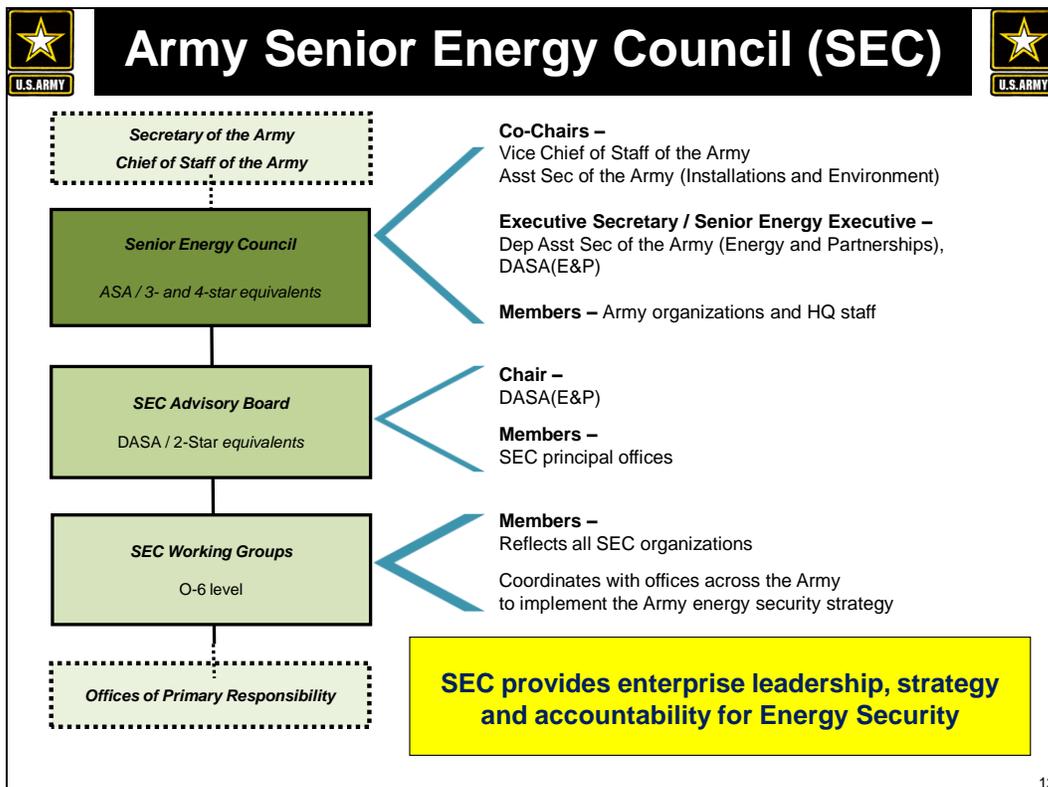
To facilitate development of a cohesive Army-wide approach to energy security, the Secretary of the Army commissioned an Army Energy Security Task Force (AESTF) in April 2008 to assess our energy security posture. The AESTF developed recommendations for reducing Army energy consumption, increasing energy efficiency across platforms and facilities, promoting the use of new sources of alternative energy, establishing benchmarks for reducing the Army's energy footprint, and creating a culture of energy awareness across the Army based on the principles of Leadership, Partnership, and Ownership.

Based on initial recommendations from the task force, the Army created the Senior Energy Council (SEC), comprised of the senior leadership of the Army's key energy stakeholder organizations, to oversee the Army's Energy Enterprise. An enterprise perspective is essential since energy investments and activities in one organization have potential impacts on the ability of other organizations to perform their respective missions. The enterprise represents vertical and horizontal alignment of people, processes and technologies across organizational and functional boundaries. The Deputy Assistant Secretary of the Army for Energy and Partnerships, serving as the Army's Senior Energy Executive (SEE), integrates energy activities across the Army, monitors objectives and metrics, and tracks progress for meeting established energy goals. The Assistant Secretary of the Army (Installations and Environment) Co-Chairs the SEC because installations make up a very large proportion of the Army's energy consumption.

The Army Energy Security Implementation Strategy (AESIS) was approved in January 2009. This strategy addresses the Army's energy security challenges and establishes initiatives to help achieve the energy security necessary for the full range of Army missions. Energy security to the Army

means the following: preventing loss of access to power and fuel sources (surety); ensuring resilience in energy systems (survivability); accessing alternative and renewable energy sources available on installations (supply); providing adequate power for critical missions (sufficiency); and promoting support for the Army’s mission, its community, and the environment (sustainability).

The AESIS, which encompasses new and existing plans under an enterprise framework, is an evolutionary document addressing future Army energy security requirements and initiatives, and will link all energy plans to the Army enterprise level energy security goals. For the first time, the development of the Army budget will be influenced by an enterprise energy security strategy. The Program Objective Memorandum (POM) 12-17 submission will reflect the priorities developed to support the goals and objectives of the AESIS.



## ENERGY SECURITY PROGRAM OBJECTIVES AND METRICS

Through the Army's Senior Energy Council (SEC) governance structure, specific goals, objectives, and metrics have been developed in the past year to support the AESIS, providing integrated, goal-driven energy security activities for the Army while drastically reducing vulnerabilities and risks. The Army's strategic Energy Security Goals (ESGs) are designed to be achieved over the long term through steady annual progress that will be monitored with review of established metrics. Success will represent a significant improvement of the Army's energy security enterprise and will place Army assets in a strong position for future energy-effective operations. The ESGs incorporate the fundamental principle that the improvements achieved shall not lead to reductions in either operational capability or in the ability of the Army to carry out its primary missions. The Army's solutions to achieving its energy goals will effectively maintain and enhance operational capabilities, achieve long-term cost savings, and strengthen the ability of the Army to fulfill its missions.

The Army's five overarching **Energy Security Goals** are:

**ESG 1. Reduced Energy Consumption.** Reducing the amounts of power and fuel consumed by the Army at home and in theatre. This goal will assist in minimizing the logistical fuel tail in tactical situations by improving fuel inventory management and focusing installation consumption on critical functions.

**ESG 2. Increased Energy Efficiency Across Platforms and Facilities.** Raising the energy efficiency for generation, distribution, storage and end-use of electricity and fuel for system platforms, facilities, units and individual Soldiers and Civilians. This goal also relates to the productivity of a system based on energy requirements and supports the ability to

make informed trade-offs in development, engineering and deployment of weapon systems.

**ESG 3. Increased Use of Renewable / Alternative Energy.** Raising the share of renewable / alternative resources for power and fuel use, which can provide a decreased dependence upon conventional fuel sources. This goal also supports national, regional and local goals related to renewable / alternative energy.

**ESG 4. Assured Access to Sufficient Energy Supply.** Improving and maintaining the Army's access to sufficient power and fuel supplies when and where needed, including incorporation of smart secure grid capabilities. Energy is a critical resource in conducting Army missions. Vulnerabilities to external disruption of power and fuel sources should be minimized and the potential for industry partnerships to enhance energy security and generate net revenues for the Army should be considered.

**ESG 5. Reduced Adverse Impacts on the Environment.** Reducing harmful emissions and discharges from energy and fuel use. Conducting energy security activities in a manner consistent with Army environmental and sustainability policies.

The Army will measure progress toward its ESGs through engaging in specific implementation activities that support more than 20 energy security objectives and over 50 supporting metrics. Metrics are based on both quantitative and qualitative requirements for energy performance that have been established by legislation, Presidential Executive Orders (EO), Office of the Secretary of Defense (OSD) mandates, and Army policies.

The Army is committed to measuring the impact of energy security implementation activities undertaken to meet its ESGs. Measuring and tracking progress will occur systematically across all major energy activities to ensure that the ESGs are being addressed and that

compliance with energy directives is occurring. Progress toward directive targets and ESGs will be gauged using quantitative and qualitative metrics to permit periodic data collection, analysis and reporting and to build a historical record of performance. Progress from across the Army will be measured using the Army Strategy Management System (SMS) and reported to the SEC. SMS serves as the foundation for ensuring Army-wide strategy execution, strategy management, organizational alignment (vertical and horizontal), and data synchronization. It consolidates input from various Army information technology systems or Standard Army Management Information Systems (STAMISs) into a single dashboard to compare actual performance to stated targets or standards.

### **ENERGY SECURITY INITIATIVES**

The Army is actively supporting advanced technologies and is taking immediate action to implement innovative energy initiatives to include large-scale solar, wind and geothermal power sources, electric and hybrid vehicles, and improved insulation of facilities, to name but a few. In fiscal year 2009 the Army had 67 active renewable energy projects operating, 42 of which generated electricity that qualifies for credit toward the Energy Policy Act of 2005 renewable energy goal. In addition, per the Fiscal Year 2010 National Defense Authorization Act (NDAA), the Army is coordinating with OSD to consider nuclear power options to help achieve our energy security goals. The Army is making significant investments in implementing energy projects in Army installation facilities, including more than \$600 million for energy-related projects identified in the 2009 American Recovery and Reinvestment Act. Examples of ongoing initiatives are listed below.

Army Construction Standards. The Army, in coordination with the US Army Corps of Engineers, is implementing energy efficiencies in facility construction and renovation projects. The Army requires military

construction projects to reflect Leadership in Energy and Environmental Design (LEED) Silver level standards and compliance with energy efficient designs. In addition, water conservation is being pursued through a comprehensive program which includes water management plans, adoption of best management practices, establishment of a waterless urinals as standard in new Army construction, increased metering, and improved asset management of water distribution systems.

Sustainment, Restoration and Modernization (SRM). SRM funding through the American Recovery and Reinvestment Act and Military Construction funds for the Energy Conservation Investment Program (ECIP) produced over 300 energy efficiency facility improvement projects. The majority of funds received for ECIP are dedicated toward renewable energy technology projects.

Energy and Utilities Services Contracting Authority. Alternative financing from private industry and utility companies is being used through the energy savings performance contracting and utility energy services contracting authorities. Energy services companies and utilities have invested over \$1 billion in energy efficiency improvements to Army facilities over the last 20 years since Congress provided this authority. Expanding the current contracting authority would allow more opportunities for energy security initiatives.

Acquisition Policy. In January 2009, the Army published policy requiring energy productivity (the level of output we can achieve from the energy we consume) to be a consideration in all Army Acquisition Programs. Therefore, all new Army acquisition programs, including information systems, with energy-consuming end items, must include the fully burdened cost of energy needed for system operation in their total ownership cost analysis. The acquisition policy will have a second-order and positive impact at our

installations, as new vehicles and equipment consume less energy (both electrical and fuel) from our fixed installations and forward operating bases.

Fort Irwin, CA. In July 2009 the Army selected a developer to design a plan for phased construction of a 500 megawatt solar energy plant at Fort Irwin. This will be the DoD's largest solar project and will include a partnership with Clark / Acciona utilizing an Enhanced Use Lease (EUL) and Power Purchase Agreement. The plant is intended to provide secure electricity to Fort Irwin even if the commercial grid goes down. The plant will be constructed with approximately \$2 billion of private capital and will reduce the Army's utility cost by an estimated \$20.8 million over 25 years. Most importantly, the project will provide energy security to a one-of-a kind Army training installation, and 'island' the National Training Center from outside the gate grid-failure.

Hawthorne Army Depot, NV. The Army is planning to partner with industry to build a 30 megawatt geothermal power plant at Hawthorne Army Depot. To utilize their experience and expertise, the Army has established a partnership with the Navy to assist us with the procurement process. The 30 megawatt geothermal power plant will meet all of Hawthorne's electrical power requirements on a 24/7 basis, independent of the commercial power grid, with essentially no greenhouse gas emissions.

Fort Bliss, TX. With the largest DoD facility growth underway, Fort Bliss is positioned to become an Army Center for Renewable Energy. Fort Bliss has begun to implement unique renewable energy opportunities from wind, solar, geothermal and biomass resources to provide secure electric power for the installation. A unique inland desalination plant has been developed in partnership with the local community.

Fort Knox, KY. Since 1996, Fort Knox has implemented innovative energy saving projects through a utility partnership and signed a 10-year contract to develop low-grade natural gas reserves contained in the Devonian Shale geologic formations beneath the installation, with first option to purchase gas at reduced cost. The Army negotiated a monthly natural gas price at 86 percent of market price. Fort Knox has also leveraged its utility partnership and awarded six Utility Energy Support Contract task orders for almost \$50 million for energy projects in fiscal year 2008. Fort Knox used Energy Conservation and Investment Program (ECIP) funding to install ground source heat pumps to reduce heating and cooling costs. Building meter systems have been installed and integrated into the Army's largest wireless utility management system. Two fiscal year 2007 ECIP projects were awarded for \$5.5 million to convert seven barracks to geothermal heating and cooling, and four barracks were converted in fiscal year 2009 using \$3.35 million ECIP funding. The projects have estimated savings to investment ratios of 1.5 and payback of 10 years. Another fiscal year 2009 ECIP project for \$1.15 million converted domestic water heating from natural gas to geothermal with a three year payback.

Fort Detrick, MD. To support the National Interagency Bio-defense Campus (NIBC) an EUL project for a Central Utilities Plant (CUP) has been initiated. The CUP provides an efficient, cost-effective, reliable, and secure utility asset and is an excellent example of a public / private partnership. The new, energy-efficient plant, which is fueled by natural gas or fuel oil, delivers highly secure and reliable steam, chilled water, and high-quality / conditioned stand-by emergency power to the 24/7/365 operations of the NIBC. The CUP was designed to enable expansion of service and capacity as additional needs arise on the installation. The CUP provides a highly energy-efficient and environmentally-friendly solution to utility needs in a secure campus setting providing both

conditioned power and backup emergency power. The electrical system can be isolated from the commercial utility system in time of national emergency, weather emergency, or power shortages. The chiller plant is designed to exceed LEED efficiency standards by up to 30 percent. The highly efficient chilled water plant delivery system reduces electrical usage through a 27,000-ton-hour thermal energy storage tank. Peak loads occur at different times in different buildings; therefore, less installed capacity is required to meet the diversity of the steam loads. Bulk purchasing of fuel for the boilers reduces overall cost.

Sea Girt, NJ (NJ Army National Guard). The Sea Girt Photovoltaic Electric Power System represents the New Jersey Department of Military and Veterans Affairs' ongoing efforts to optimize efficiency, conserve natural resources and lessen our dependence on foreign energy sources. With 230 kilowatts of power generating capacity, this system will produce about 250,000 kilowatt hours per year and reduce carbon dioxide by seven million pounds over the next 30 years. The New Jersey Department of Military and Veterans Affairs is also conducting wind analysis through Rowan University for the construction of a 1.5 megawatt wind turbine. Data from this test has determined Sea Girt to be an excellent facility for a turbine. This turbine has the potential to produce 4 million kilowatt hours per year, which is enough energy to allow Sea Girt to operate independent of the power grid. In the event of a crisis, Sea Girt will be able to function providing necessary services, energy security, and National Security.

Alternative and Hybrid Vehicle Fleet. The Army is building one of the largest federal fleets in the country of Low Speed Electric Vehicles (LSEVs) and hybrid vehicles. We are replacing 4,000 petroleum-fueled vehicles with LSEVs at installations nationwide. The LSEVs operate up to 40 miles between charges and can travel at about 35 miles per hour. This

initiative will result in over 100,000 fewer metric tons of carbon dioxide emissions and an estimated savings of more than 7.5 million gallons of fossil fuel over six years. In addition to the LSEVs, the Army is replacing traditional gas / diesel fuel vehicles with the latest hybrid technology vehicles. In 2009, the Army acquired more than 700 hybrid vehicles and now has the second largest hybrid fleet in the federal government. These two initiatives significantly reduce dependence on and consumption of fossil fuels, while lowering greenhouse gas emissions.

Utility Metering Program. The Army is installing advanced utility meters for electricity, natural gas, steam and water on individual buildings where cost-effective and on all new military construction projects to enhance energy management efforts per federal metering mandates. Through fiscal year 2009, the Army has completed installation of 40 percent of needed advanced electric meters and 20 percent of needed advanced natural gas meters. These meters will be networked to a central meter data management system to assist energy management review and analysis throughout the Army.

Spray Foam Insulation. The Army has pioneered use of spray foam insulation for temporary structures in forward operating bases to cut the amount of power needed from liquid-fueled generators, and potentially cutting the number of fuel convoys required for fuel supplies. Insulation provides energy savings of more than 50 percent in many of the newly foamed structures. This is just one point solution with specific application parameters and other technological solutions will be investigated to support the basic requirement for enhanced insulation of temporary structures Army wide.

Utilities Privatization (UP). The Utilities Privatization Program focuses on privatizing electrical, natural gas, water, and waste water

systems. Systems are exempt if privatization is uneconomical or if privatization raises security concerns. The privatization of utilities utilizes private sector financing and expertise to modernize and sustain utility systems to industry standards. The Army is evaluating 355 utility systems in the United States. Currently, 304 systems have been evaluated, 146 systems privatized.

### **ADDRESSING THE CHALLENGES**

The fragility and vulnerability, from both a physical and cyber perspective, of the national electric grid has been well documented by numerous credible institutions including the intelligence community, the Defense Science Board and Congressional study groups. Not only are we susceptible to prolonged, widespread outages due to natural hazards and aging infrastructure (e.g., Northeast Blackout of 2003), but there is strong evidence that the U.S. grid is a prime target for cyber exploitation by our enemies during periods of crisis.

To date, efforts to provide assured power to Army owned critical infrastructure has been assessed primarily from the perspective of traditional back-up diesel power generators. Given the physical and cyber vulnerability of the commercial grid, this will not be adequate for a number of key facilities in the future. The concept of applying alternative energy sources, including solar, geothermal, wind and small scale nuclear generation, is being examined for all Army installations.

In light of the strategic threats to the commercial energy infrastructure, energy security is a key consideration when developing comprehensive Army energy policy. Future energy cost benefit analysis must go beyond purely economic considerations and include a determination of how much risk national leadership is willing to accept to ensure continued operation of critical military missions and functions. The

Army acknowledges and accepts that in some cases there will be a cost premium associated with achieving energy security.

The Army's installations and associated lands are valuable and critical assets and as training or operational demand requirements increase, the Army will continue to address critical energy security requirements in addition to our traditional focus on energy conservation.

## **CONCLUSION**

Without power and energy the Army lies silent. Energy security provides our Soldiers with superior capabilities, weapons, and facilities to live, work, and train. The energy required to power these assets is integral to the success of the mission and the quality of life for our personnel and their Families.

Based on 2010 QDR, the Army is working with DoD to develop a strategic approach to Climate and Energy. We have made impressive progress and plan to continue with our aggressive, synchronized, and methodical approach to obtain energy security. If funded and implemented, our strategy and initiatives will move us from where we are now – vulnerable at our installations and at our overseas forward operating bases – to where we want to go: 'islanding' key assets and installations, producing a much smaller energy and carbon boot print, and supporting a smaller fuel logistical tail in theater that will reduce the risk to our Soldiers.

Mr. Chairman, this concludes my statement. Thank you again for the opportunity to appear before you today. I look forward to your questions.