

ARMY INFORMATION PAPER

SAIE-EP
May 2010

SUBJECT: Army Energy Enterprise

1. Purpose: To provide information on the Army Energy Enterprise
2. Discussion:
 - a. The Army Energy Security Mission is to ensure energy is a key consideration for all Army activities to reduce demand, increase efficiency, seek alternative sources, and create a culture of energy accountability while sustaining or enhancing operational capabilities.
 - b. The following five strategic Energy Security Goals (ESGs) incorporate the fundamental principle that the improvements achieved shall not lead to reductions in operational capability or the ability of the Army to carry out its primary missions.
 - ESG 1. Reduce energy consumption
 - ESG 2. Increase energy efficiency across platforms and facilities
 - ESG 3. Increase use of renewable / alternative energy
 - ESG 4. Assure access to sufficient energy supplies
 - ESG 5. Reduce adverse impacts on the environment
 - c. Surety, Survivability, Supply, Sufficiency, Sustainability are the core characteristics defining the energy security necessary for the full range of Army missions. Energy security for the Army means 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).
 - d. Energy Security is an Operational Imperative and can provide the Army with a tactical advantage. Army bases, 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 makes deployed Army forces vulnerable. The SEC and the AESIS provide the essential senior leadership and direction to focus attention on foster development of energy awareness and an energy security culture within the ranks.

SAIE-EP

SUBJECT: Army Energy Enterprise

3. Background:

a. Army Energy Enterprise.

- Army Directive 2008-04, Army Energy Enterprise established the Senior Energy Council (SEC) with membership comprised of Army senior leadership. The SEC is an intra-Army departmental committee responsible for the enterprise level energy security goals, objectives, performance metrics, and priorities for energy security initiatives and programs throughout Army. The SEC reports to the Secretary of the Army and is co-chaired by the Assistant Secretary of the Army for Installations and Environment and the Vice Chief of Staff of the Army.
- The SEC charter required collaborative development of an Army Enterprise Energy Plan for approval by the Secretary of the Army. This plan, the Army Energy Security Implementation Strategy (AESIS), articulates the Army's vision, mission, and goals for achieving greater energy security and ensuring energy is a key consideration in all Army activities. The AESIS encompasses all aspects of the Army's energy consumption and utilization, including installations, weapon systems, and operations.
- The Deputy Assistant Secretary of the Army for Energy and Partnerships serves as the SEC's Executive Secretary and is designated as the Army's Senior Energy Executive (SEE). The SEC convenes, at a minimum, two times per year to review Army energy programs, progress towards meeting Army energy security goals at an enterprise level, investment strategies, and other energy security issues.
- The Army's SEC approved the AESIS and the Army Energy Security Implementation Plans (IPs) to execute the AESIS. The IPs define activities for installations, commands, tactical operations, training, and acquisition personnel to address strategic energy objectives and related metrics for regular monitoring and progress reporting toward achieving the AESIS goals.
- The Army's SEC will evaluate progress toward achieving the energy security goals, establish energy security priorities, policies and metrics, and provide guidance on future energy investments. In addition, the Army will address legislative requirements, executive orders, policy mandates, and conduct outreach campaigns to promote energy security programs, operations, and initiatives at Army installations worldwide, at forward operating bases, in acquisition programs, and throughout our operational forces. The Army will continue to support research, development and acquisition of advanced energy

SAIE-EP

SUBJECT: Army Energy Enterprise

- technologies to increase energy security and improve cost management for weapon systems and sustainable contingency base camps. Army senior leaders will continue to increase visibility of the Army's energy security needs and will
- b. Energy Security is an Operational Imperative and can provide the Army with a tactical advantage. Army bases, 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 makes deployed Army forces vulnerable. The SEC and the AESIS provide the essential senior leadership and direction to focus attention on energy security and help ensure that the Army will always have the power and energy to meet our mission when, where and in the quantities required.
- c. The Army is actively supporting advanced technologies at installations, in weapon systems, and in contingency operations. Current Army energy projects include large scale solar, wind and geothermal power sources, electric and hybrid vehicles, and improved insulation of facilities. The Army has an established and successful energy management program that has improved Army facilities and produced a utility cost avoidance of over \$3 billion since 1985. The Army Energy Security Implementation Strategy and a robust energy management program better posture the Army against impact from domestic and global energy supply and cost uncertainties.

4. Initiatives.

- Policy. Effective in January 2009, all new Army acquisition programs, including information systems, with energy-consuming end items will include the fully burdened cost of energy (FBCE) needed for system operation in their total ownership cost analysis.
- Fort Irwin, CA 500 MW Solar Thermal Energy Project. 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.

SAIE-EP

SUBJECT: Army Energy Enterprise

- 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.
 - Low Speed Electric Vehicles / Hybrid Vehicles. 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 alternative / 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.
 - Foam Insulation for Temporary Structures In-theater. The Army has pioneered use of spray foam insulation for temporary tent structures in forward operating bases to cut the amount of power needed from liquid-fueled generators, potentially cutting the number of fuel convoys required for fuel supplies. Analysis reveals Energy savings of more than 75% in many of the new foamed structures.
 - Tactical Biorefineries Successfully Tested in Iraq. Supplementing conventional power in the battle space through innovative energy technology development today gives the Army more tactical flexibility and a greater tactical advantage in the future. The Army's Rapid Equipping Force has completed 90-day tests of a new waste-to-energy technology, the Tactical Garbage to Energy Refinery (TGER). Various wastes, including food waste, plastic, paper, and styrofoam, are converted into either synthetic gas (similar to low-grade propane) or hydrous ethanol using thermo chemical and biocatalytic technologies. However, final approval for fielding this system has not yet been obtained due to cost concerns.
5. Measuring Progress. The Army will measure progress toward achieving ESGs through specific implementation activities that support energy security objectives and associated metrics. Progress from across the Army will be reported to the SEC. Principle metrics will be 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.

SAIE-EP

SUBJECT: Army Energy Enterprise

6. The Way Ahead. Enhancing energy security is a basic responsibility of every Army Soldier and Civilian. Success lies in individual accountability for improved energy security through development and implementation of solutions to each organization's energy security challenges. The AESIS communicates the Army-wide energy security vision, mission, and goals to facilitate the integration of all Army organization's energy activities to an enterprise level with a focus on Leadership, Partnership, and Ownership.