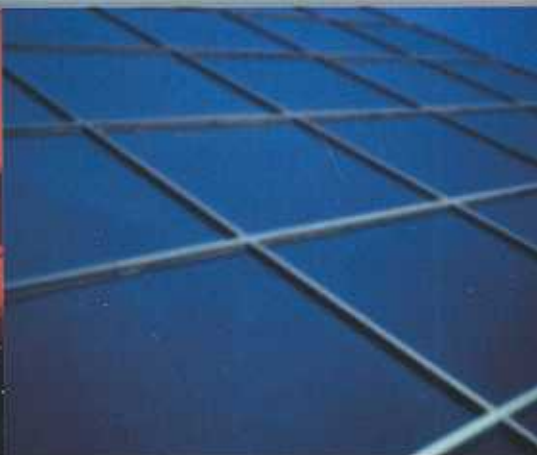
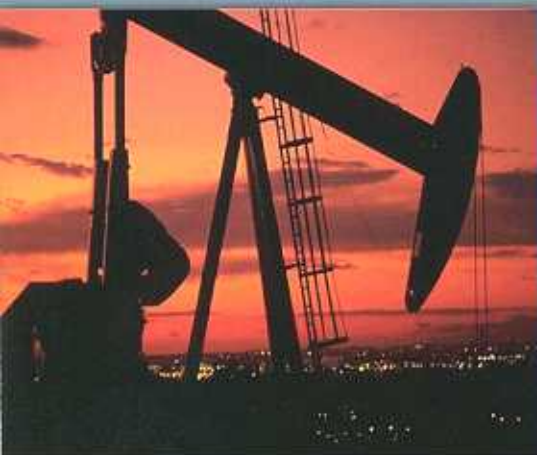




The US Army Energy Strategy for Installations



Report Documentation Page

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We must "... take appropriate actions to conserve natural gas, electricity, gasoline, and diesel fuel to the maximum extent consistent with the effective discharge of public responsibilities..."

President George W. Bush



Army Energy Strategy for Installations

Our Army is the most capable, mobile and dynamic force the world has ever seen. We continue to meet all challenges to our national security with motivated, professional Soldiers who live, work and train on our installation flagships of readiness – the most extensive military complexes enjoyed by any Army.

Our excellence in defending America and her values has underlying costs for energy and water needed to operate our installations. Our military capability and combat effectiveness depend on these resources. Inefficiency and waste deplete funds that could be applied to multiplying our combat power and caring for families. Our over-reliance on fossil fuels and offshore energy sources jeopardizes our security and limits our freedom to act in the global environment.

Unfortunately, our energy program is burdened by our past funding priorities and the demands of our current OPTEMPO and dynamic force structure transformation. Our energy use, heretofore on a generally decreasing trend, has begun to rise. Compounding our growing energy demands are spiraling costs for all forms of energy as sources become constrained and delivery means become more expensive. We compete for energy in an expanding world population with growing industrial markets in developing nations. Now, more than ever, we must manage these energy growth trends in the Army and limit our rising energy expenses.

Implementation of this new Army Energy Strategy for Installations will counter our growing demand for energy and water; reduce our expenses in purchasing energy and operating our utility systems; and enhance the use of new technologies and renewable energy to reduce our reliance on fossil fuels. Unless we take positive and sustained action to achieve the goals outlined in this strategy, we will continue on an irrevocable path of ever increasing demands on limited energy resources and diversion of precious Army funds into inefficient utility systems. We all must adopt the goals of our Energy Strategy to make our installations more effective bases for enhancing combat power and caring for the great Army families who sustain our fighting men and women.

Handwritten signature of Peter J. Schoomaker in black ink.

Peter J. Schoomaker
General, United States Army
Chief of Staff

Handwritten signature of Francis J. Harvey in black ink.

Francis J. Harvey
Secretary of the Army

Signed on July 8, 2005



The United States is becoming increasingly dependent on imported fossil fuels, and the costs of these energy sources are rapidly increasing. The Army Energy Strategy for Installations looks out to the year 2030 to envision conditions of domestic and imported energy resources and the evolution of the energy marketplace. Development of new technologies and increased efficiencies will reduce the impact of global industrialization and competition for energy resources; however energy prices are expected to increase. Environmental considerations are expected to play a larger role in the utility industry's ability to produce energy. The challenge of transmitting power from where it is produced to where it is needed may result in supply problems at some locations. Continuing pressure to reduce operating costs and space constraints from increasing population may result in more compact installations and higher energy densities but with less expensive energy distribution between facilities. These considerations point to the need for increased energy efficiency.

Currently, to accomplish our mission the Army spends over eight hundred million dollars each year for energy in our facilities. Total use is more than eighty trillion British thermal units, or roughly twenty-two percent of the facility energy used in the entire U.S. Federal government. If we can improve our energy efficiency, even by just a small amount, we can have a big impact on costs – a one percent improvement in our average energy efficiency can translate into a savings of nearly ten million dollars. Well-operated and efficient facilities improve the working, training, and living environment at Army installations. These efficiencies save critical resources that can be used to support other Army missions such as training and force deployment.

The Army must provide safe, secure, reliable environmentally compliant, and cost-effective energy and water services to Soldiers, families, civilians and contractors on our installations. Integration of energy and environmental sustainability is critical to the success of this Strategy. Sustainability connects our activities today to those of tomorrow with sound business, energy, and environmental practices. The Army Energy Strategy for Installations emphasizes energy awareness; working with industry, community and other stakeholders; investing in innovative technologies; and maximizing the use of renewable energy to replace fossil generated power. We will invest in sustainable and energy efficient facilities.

The Army Energy Strategy for Installations is based on five major initiatives supported by specific actions:

- Eliminate energy waste in existing facilities
- Increase energy efficiency in renovation and new construction
- Reduce dependence on fossil fuels
- Conserve water resources
- Improve energy security



Eliminate energy inefficiencies that waste natural and financial resources, and do so in a manner that does not adversely impact comfort and quality of the facilities in which Soldiers, families, civilians and contractors work and live.

The first step to accomplish this is to increase energy awareness by ensuring at least all major installations (installations with annual utility bills exceeding \$10 million) have an energy manager certified to Army standards in energy management principles. The energy manager serves the Garrison Commander as the installation's energy champion in all phases of planning and executing viable energy programs. The Army will foster a sustainability approach through its energy training program to address current and future needs, to include other Federal requirements. All installations will participate in energy training. To promote the Army's energy and water management program accomplishments, we will revamp our energy awards and recognition programs to facilitate procedures to reward excellence in meeting our goals.

The Army will provide sufficient energy to meet facility requirements while eliminating excessive energy use due to inefficient controls or operation. Installations will conduct analyses to determine energy consumption based on building type, area and weather factors. Energy managers will be responsible for this effort.

Installations will also make extensive use of electronic energy monitoring and control equipment to validate performance of energy systems and focus corrective action accordingly. All installations will develop energy management systems and procedures to monitor their energy load.

Complementing the use of improved monitoring, we will eliminate wasteful practices through awareness and focused efficiency improvements in high-energy use facilities. Progress toward improving energy efficiency will help the Army achieve Federal energy efficiency goals. To augment the Federal energy program, the Army will establish annual efficiency goals to focus Army resources. These goals create the structure to provide a clear linkage between the Army's strategic objectives and the actions needed to achieve those objectives as envisioned and directed under the Government Performance and Results Act and the Chief Financial Officers Act.





Increase the use of energy technologies in construction and major renovation projects that provide the greatest cost-effectiveness, energy efficiency and support the Army's environmental objectives.

The Department of Defense (DoD) uses 62% of the facility energy consumed by the Federal government. Within DoD, the Army consumes 36% of the facility energy. The largest component of the Army's energy cost is electricity. As we expand our use of digital technologies to increase operational efficiency, extensive computer systems will increase demands for electricity. To offset electricity increases due to expanded use of mission related electronic systems, the Army will leverage emerging technologies and make use of available capabilities from the private sector and Army Laboratories. We must demand the most efficient electrical equipment in building energy systems in new construction and repair projects and continue to reduce the use of electricity from nonrenewable fuels.

Our business processes must ensure installations receive the most favorable rates from utility suppliers. The Army will institute processes to aggressively challenge inappropriate rate structures and will review these regularly at all installations. Rates will be renegotiated when determined necessary. We will pursue bundling of utility contracts, peak load shaving and other management practices to reduce utility costs.

The Army must minimize the impact of price volatility. To reduce potential for price fluctuations, the Army will aggressively pursue consolidated utility procurement to include consolidated purchases with other Defense Services and Federal Agencies. Regionalized purchasing will leverage buying power and improve price stability. Where economical, we will enter into long-term agreements that provide increased price stability.

The Army will review all components of installations' utility bills that impact costs. A major component of an electrical bill is based on power consumption, known as peak demand. This is similar to a time-of-use rate in the sense that we pay a premium cost for electricity used during peak hours, typically late morning or late afternoon on an Army installation. At locations where the electric rates include a cost component for power, installations will shift and reduce electrical loads during peak hours to reduce these costs. Over the last few years, we have achieved substantial energy savings through the various performance-contracting programs. To continue our progress, installations will work with authorized Army and/or Federal performance contracting-service providers. Installations will enter into agreements that provide tangible benefits to the installation in addition to saving energy.



The Army will incorporate Sustainable Design and Development (SDD) standards into all installation planning and construction/renovation projects. The Army's goal is to include SDD provisions in all MCA, OMA and RCI investments to achieve a platinum rating in all projects. To measure success, the Army will annually validate incorporation of SDD provisions and verify its performance.

To accomplish the SDD objective, the Army will change the way cost factors are considered in construction projects. We must move from basing facility investment decisions solely on first costs to one of basing decisions on full life-cycle costs and benefits. Since the current "first-cost" method is the Department of Defense (DoD) standard, the Army must pursue changing the metric throughout DoD.

Appropriated funds are only part of the resources available to improve Army facilities for better energy efficiency and operation. Installations must maximize use of alternative financing to achieve energy reductions. One method is to establish partnerships with utility providers offering programs to implement energy saving projects under utility energy service contract agreements. Installations will determine availability of utility sponsored programs and solicit proposals from utility suppliers. Where available and beneficial to the installation, they will establish partnerships to participate in these programs. As the market changes and utility providers modify their programs, installations must regularly pursue newly offered investment programs.

Over the last few years, we have achieved substantial energy savings through the various performance-contracting programs. To continue our progress, installations will work with authorized Army and/or Federal performance contracting-service providers. Installations will enter into agreements that provide tangible benefits to the installation in addition to saving energy.

Reduce the dependency on fossil fuels by increasing the use of clean, renewable energy, reducing waste, increasing efficiencies and optimizing environmental benefits.

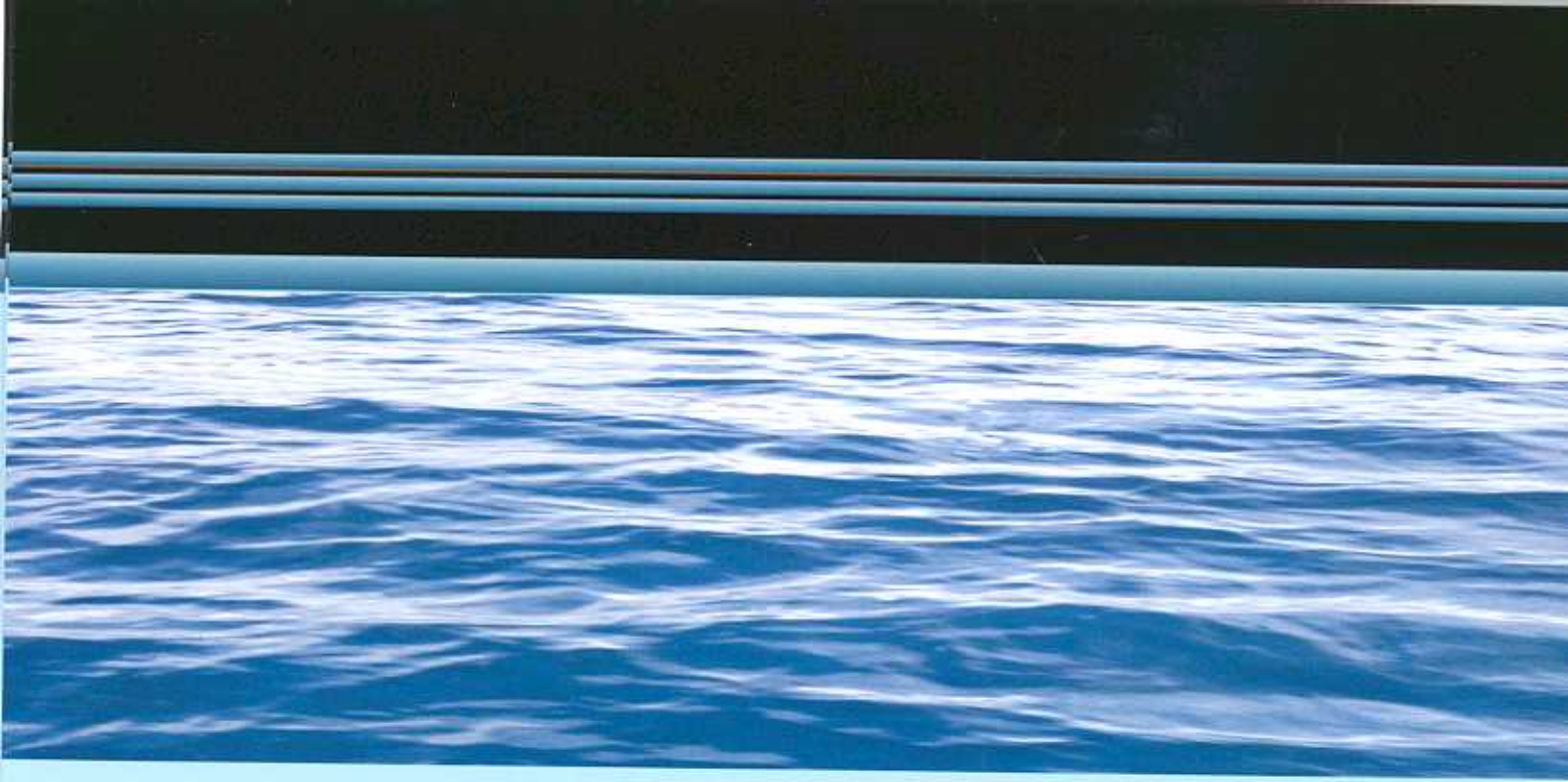
Heightened interest in global climate change, acid rain, respiratory ailments, and smog has raised concerns about emissions from the burning of fossil fuels. Concerns also exist about the other environmental impacts associated with traditional electricity generation fuel sources, such as the impacts related to mining, drilling, transporting, and disposing of fuels. As a sustainable Army we must address the lifecycle impacts of our energy use.

As fossil fuels become scarcer and more expensive, and as technologies develop to provide improved markets for alternative energy sources, the Army must pursue increased use of renewable energy and expand its use of alternative fuels. The Army must become a leader in acquiring innovative, cost effective technologies such as geothermal, solar, biomass, and wind energy, in concert with our mission. The Army will work to reduce the effects of greenhouse gases on the environment and expand its use of alternative fueled vehicles and other technologies reducing fossil fuel emissions produced on its installations. We will further reduce emissions using efficient and effective renovation and improved maintenance practices for heating systems that traditionally consume an abundance of fossil fuels.

Increased use of renewable energy and reduced consumption of fossil fuels will help to reduce our dependence on imported oil. Current consumption levels will put us in a vulnerable position. Sudden impacts to the global market can adversely affect our ability to meet mission requirements and sustain our quality of life. Fostering renewable energy use and developing better renewable technologies, along with improving the environmental performance of traditional sources of electricity generation, expands the diversity and availability of our energy supply, improves the reliability and security of our power systems and benefits the environment.

The reduction of unnecessary consumption and the increase in efficiencies in building facilities will have significant impact on the use of fossil fuels.






Conserve water use to conserve water resources for drinking and domestic purposes.

In order to meet current and future water needs, our installation water supplies must be sustainable. Efficient water use can have major environmental, public health, and economic benefits by helping to improve water quality, maintain aquatic ecosystems, and protect drinking water resources. As we face increasing risks to water supplies, the inextricable link between water quality and water quantity becomes more important. Water efficiency is one way of addressing water quality and quantity goals.

Clean water will become increasingly scarce and water treatment costs will become more expensive. As our installations and communities are interwoven, we will address local and regional water issues by working with communities to better manage our water resources.

The Army will reduce demand for domestic water consumption by employing innovative methodologies and technologies. Our water management plans must include leak detection surveys, repair requirements, alternative irrigation techniques, and other approaches to water use such as harvesting rainwater, use of reclaimed or recycled water, and the use of indigenous plants to reduce water demand.



Improve security and reliability of our energy and water systems in order to provide dependable utility service.

Safe and reliable energy and water is critical to most activities and operations on Army installations. Our utility systems are subject to disruption in service from commercial power grid failures, intentional or accidental contamination or destruction of utility systems, or failure of deteriorated and overburdened infrastructure. These disruptions can have severe, if not catastrophic, effects on military performance. Programs to reduce energy consumption reduce utility supply and distribution requirements, yet most of our energy and water demands will continue to be met through extensive and vulnerable utility distribution systems. These systems must be made safe, secure and reliable.

Installations must have the capability to counter potential disruption threats. We must develop viable energy security plans and water system vulnerability assessment and response plans. These plans will tie force protection conditions, system vulnerability, and Homeland Security threat conditions to local considerations for utility and water security. Installations must incorporate their plans for energy and water security into their installation security plans. Where vulnerabilities exist, the Army will program for critical remedial actions.

Privatized utility systems must conform to energy and water security and operational requirements. The Army will establish reliability and security criteria. Installations successful in privatizing their utility systems will ensure they maintain oversight of critical private industry operations. These criteria will be consistent with energy security plans and support mission requirements. When utility systems are privatized, installations will pursue support from utility suppliers for possible stand-by and uninterrupted power sources for mission critical facilities.

As installations increase energy and water security and minimize potential impact of disruptions, the Army will continue to diversify our energy portfolio, to include distributed generation, particularly at critical mission facilities. Through economies of scale and leveraging private industry expertise and local emergency response, installations will explore partnering with local communities and utility suppliers for additional capabilities they may provide.



The US Army Energy Strategy for Installations integrates improvements to the way the Army obtains and uses energy and water with an overarching focus on sustainable operational efficiency. The Army must provide safe, secure, reliable and environmentally sound energy and water to installations. To implement this Strategy, the Army will initiate an integrated energy and water campaign plan that identifies objectives, initiatives and assessment tools to achieve these goals. Implementation of this strategy is vital to Army installation management in support of our Army mission.

For more information visit : <http://army-energy.hqda.pentagon.mil>