

AMERICA'S ARMY:  
THE STRENGTH OF THE NATION

# US Army

## “Leading By Example”

Honorable Katherine Hammack  
 Assistant Secretary of the Army  
 for Installations, Energy and Environment

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### Leadership Supports Energy and Sustainability Initiatives

“Now, **there are costs associated with this transition.** And there are some who believe that we can't afford to pay those costs right now. I say we can't afford not to change how we produce and use energy – **because in the long-term costs to our economy, our national security and our environment are far greater.**” - President Obama, Jun 2010



“We're telling America's scientists and engineers that if they assemble teams of the best minds in their fields, and focus on the hardest problems in clean energy, we'll fund the Apollo projects of our time.” - President Obama, State of the Union Address, Jan 2011



“The Army has developed a comprehensive energy security strategy, and is acting now to implement initiatives to make us less dependent on foreign sources of fuel and better stewards of our nation's energy resources. “  
 - CSA, SA Testimony to the Senate Appropriations Defense Subcommittee, March 2010

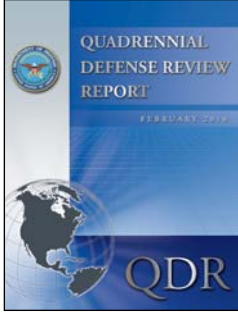


“...[T]he Army is actively supporting partnerships and private industry investments in clean energy technologies such as large-scale solar, wind and geothermal power sources to reduce our dependence on a single source of power.”  
 - SMA, CSA, SA, Army Energy Awareness Month Letter, Oct 2010

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**Quadrennial Defense Review**  
February 2010



**Climate Change** – “While climate change alone does not cause conflict, it may act as an accelerant of instability or conflict, placing a burden to respond on civilian institutions and militaries around the world.” – pg 85

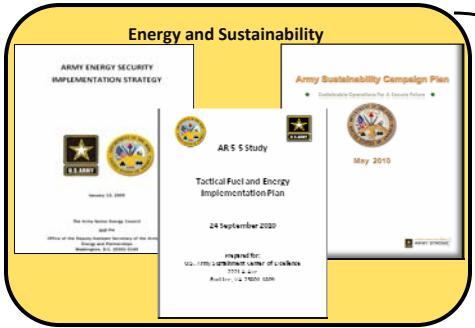
**Energy Security** – “assured access to reliable supplies of energy and the ability to protect and deliver sufficient energy to meet operational needs” – pg 87

**QDR climate change and energy security discussion is consistent with Army approach and priorities**

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**Integrated Energy Security & Sustainability**



**Energy and Sustainability Mission:**  
Provide Strategic Leadership, Policy Guidance, Program Oversight and Outreach for Energy and Sustainability throughout the Army Enterprise to Enhance Current Installation and Operational Capabilities, Safeguard Resources and Preserve Future Options

**Ensure the Army of the future has the same access to resources as the Army of the today**

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Creating Change

- **Change the Culture: Every Soldier is a Power Manager**
  - Give soldiers and leaders capability to manage energy status, resources, performance.
  - Building awareness and training
  - Integrate into operational planning and execution
- **Drive Efficiency Across the Enterprise**
  - Reducing demand is the cheapest and fastest way to save energy
  - New buildings built to meet ASHRAE 189.1 standards for energy efficiency
- **Build Resilience through Renewable/Alternative Energy**
  - Forces must prevail even in the face of disruptions due to enemy, weather, an energy availability.

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Net Zero Hierarchy



- **A Net Zero ENERGY Installation** produces as much energy on site as it uses, over the course of a year.
- **A Net Zero WATER Installation** limits the consumption of freshwater resources and returns water back to the same watershed so not to deplete the groundwater and surface water resources of that region in quantity or quality.
- **A Net Zero WASTE Installation** reduces, reuses, and recovers waste streams, converting them to resource values with zero landfill.
- **A Net ZERO INSTALLATION** applies an integrated approach to management of energy, water, and waste to capture and commercialize the resource value and/or enhance the ecological productivity of land, water, and air.


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## Net Zero Energy

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**A Net Zero ENERGY Installation** produces as much energy on site as it uses, over the course of a year.

Steps to achieve Net Zero Energy

1. Implement aggressive conservation and efficiency
2. Utilize waste energy or “re-purpose” energy.
3. Meet balance with renewable/alternative energy


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## Net Zero Water

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**A Net Zero WATER Installation** limits the consumption of freshwater resources and returns water back to the same watershed so not to deplete the groundwater and surface water resources of that region in quantity or quality.

Steps to achieve Net Zero Water

1. Implement aggressive conservation and efficiency
2. “Re-purpose” water – ie Grey water.
3. Treat, reclaim, or recharge wastewater

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Net Zero Waste




**A Net Zero WASTE Installation** reduces, reuses, and recovers waste streams, converting them to resource values with zero landfill.

Steps to achieve Net Zero Waste


1. Reduce amount of waste generated
2. Repurpose Waste
3. Maximize recycling
4. Reclaim Recyclable and compostable materials
5. Recovery of waste products for energy
6. Minimize Disposal

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Net Zero Installation



**A Net ZERO INSTALLATION** applies an integrated approach to management of energy, water, and waste to capture and commercialize the resource value and/or enhance the ecological productivity of land, water, and air.

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Energy & Sustainability – Recent  
Policies

- Utilization of Efficient Lighting Policy (Oct 2010)**

  - The Army will phase out purchases of incandescent light bulbs
  - Implements Energy Independence and Security Act (EISA) of 2007 efficiency standards for manufacturers to improve the performance of lamps intended for general service applications
- Sustainable Design & Development Policy (updated Oct 2010)**

  - Policy update addresses the Army approach to the design and development of efficient military construction projects and major renovations by incorporating guidance in ASHRAE 189.1 as the baseline standard.
- Building Efficiency Tax Deduction Policy (Dec 2010)**

  - Policy will assist Army contractors to validate and obtain tax incentives and deduction for costs of installing certain energy efficient systems in government buildings
    - Contractors can qualify for tax deductions of up to \$1.80 per square foot.
    - Building envelope, HVAC and Hot Water Systems, and lighting can each qualify for 1/3 of the deduction
  - The tax incentives were authorized in the 2005 Energy Policy Act and enacted by the IRS as Section 179D

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Leveraging Private Investments

Leveraging private sector investments is a strategy to advance efficiencies in an era of constrained resources.

**Authorities from Congress (underutilized):**

- **Energy Savings Performance Contracts (ESPC)** – Implementation and financing of energy efficiency projects out of energy cost savings
- **Utility Energy Service Contracts (UESC)** – Service contract with utility provider
- **Enhanced Use Lease (EUL)** – Use of non-excess Army land exchanged for In-kind SRM projects
- **Power Purchase Agreement (PPA)** – Energy projects installed on installations at no-cost in exchange for long term agreements to purchase renewable energy

**Other Authorities (well utilized):**

- Residential Community Initiative (RCI) – privatized housing
- Privatized Army Lodging (PAL)
- Utility Privatization (UP)

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Operational Energy

**FY09 NDAA Definition:**  
 “[T]he energy required for training, moving, and sustaining military forces and weapons platforms for military operations. The term includes energy used by tactical power systems and generators and weapons platforms.”



**CHALLENGE: Liquid Fuels + Generators = Energy on today's battlefield**

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Army Operational Energy

**Challenges**

Fuel & water comprise 70-80% of ground resupply by weight...



...and 1 casualty occurs for 24 ground resupply convoys in OEF



**Piloting Solutions in Permanent Installations**

Increase Efficiency  
Demand Management  
Diversifying Supply

Potential Solutions

Smart and Green Energy (SAGE) for Base Camps



- Smart Micro-grids
- Renewable Energy
- Purpose-built Shelters
- Efficient Generators
- Onsite Water



**Portable Solar Power**



**Portable Power Capabilities**



**Tactical Fuels Manger Defense**



**Portable Power Capabilities**



**Tactical Fuels Manger Defense**

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**Innovative Solutions**



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