



# Initiative Next Steps

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# Our Net Zero Web Site



<https://eko.usace.army.mil/public/fa/netzero/>

**EKO ENGINEERING KNOWLEDGE ONLINE™**

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Net Zero Installations  
 Army Net Zero Installations functional area page. This page is sponsored by the Office of the Assistant Secretary of the Army (Installations, Energy & Environment).

2012 Army Net Zero Installation Conference

- Conference Agenda (1)
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**ENERGY**  
 Reduction  
 Re-Purpose  
**WASTE** Recycling & Composting  
 Energy Recovery  
**WATER**

The Army's vision is to appropriately manage our natural resources with a goal of net zero installations. Today the Army faces significant threats to our energy and water supply requirements both home and abroad. Addressing energy security and sustainability is operationally necessary, financially prudent, and essential to mission accomplishment. The goal is to manage our installations not only on a net zero energy basis, but net zero water and waste as well. We are creating a culture that recognizes the value of sustainability measured not just in terms of financial benefits, but benefits to maintaining mission capability, quality of life, relationships with local communities, and the preservation of options for the Army's future. The Army is leveraging available authorities for private sector investment, including using power purchase agreements (PPA), enhanced-use leases (EUL), energy savings performance contracts (ESPC), and utilities energy service contracts (UESCs) as tools to achieve these objectives. The Army must invest in its installations and improve efficiencies in energy, water and waste for the benefit of our current and future missions.

The Army is piloting six installations to be Net Zero Energy, six installations to be Net Zero Waste, six installations to be Net Zero Water, and two installations to be all three by 2020. The Army goal is to have 25 Net Zero Installations by 2030.

The installations are as follows:

**NET ZERO ENERGY PILOT SITES**

- Fort Detrick, MD
- Fort Hunter Liggett, CA
- Kwajalein Atoll, Republic of the Marshall Islands
- Paras Reserve Forces Training Area, CA
- Sierra Army Depot, CA
- West Point, NY

**NET ZERO WASTE PILOT SITES**

- Fort Detrick, MD
- Fort Hood, TX
- Fort Hunter Liggett, CA
- Fort Polk, LA
- Joint Base Lewis-McChord, WA
- U.S. Army Garrison, Grafenwoehr, Germany

**NET ZERO WATER PILOT SITES**

- Aberdeen Proving Ground, MD
- Camp Rilea, OR
- Fort Buchanan, PR
- Fort Riley, KS
- Joint Base Lewis-McChord, WA
- Tobyhanna Army Depot, PA

**NET ZERO OVER-ALL PILOT SITES**

- Fort Bliss, TX
- Fort Carson, CO

**STATE-WIDE ENERGY INITIATIVE**

- Oregon Army National Guard

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# Track Success Stories



## We want to capture your success!

### Fort Hunter Liggett Phase I – 1MW Solar Power System

Fort Hunter Liggett (FHL) has made significant progress in reducing energy use intensity (BTU's per square foot) by over 40 percent from 2003 to 2010 through behavioral changes, implementation of low demand technologies and low energy new construction. The base is currently constructing an Army-funded 1 megawatt (MW) solar power system.

This Energy Conservation Investment Program (ECIP) project is part of the first phase of the Net Zero Energy Strategy and is scheduled for completion by the end of March 2012. FHL has a second ECIP project of the same capacity that the U.S. Army Corps of Engineers (USACE) awarded in September 2011. A third project is in the works and may be funded by ECIP, Energy Savings Performance Contracts (ESPC), or utility rebates.



Carport Style PV System similar to what will be constructed at FHL

FHL is able to capitalize on solar as an energy source because of very favorable weather with 295 sunny days/year and high electricity rates (\$0.13/KWh during peak summer hours). It is anticipated that rates will continue to increase, making utilization of readily available renewable energy sources all the more important.

The current average annual load at FHL is about 12,000 MWh and the peak load is 2.8 MW. Two future ECIP solar projects are being programmed, and the installation is beginning exploration of geothermal power and ground source heating/cooling. These, along with substantial energy conservation measures, will help FHL towards achieving the goal of Net Zero energy consumption.

**Contribution to Net Zero**

The 1 MW PV system will produce about 1,500 MWh annually. This will support Fort Hunter Liggett's plan to acquire on site generation to achieve Net Zero Energy. This project will provide about 12% of the installations annual energy consumption.

### Toboyhanna Army Depot Wastewater Reuse and Water Chiller

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 and quality over the course of a year.

In support of its Net Zero Water installation goals, Toboyhanna Army Depot (TYAD) used Army Working Capital Fund (AWCF) resources for an in-house project that replaced potable water with process wastewater for foam reduction in two locations at its wastewater treatment plant. The project cost of \$1,200 will result in savings of 300,000 gallons of potable water per month. The project paid for itself in just over one month.

Also using AWCF, TYAD installed a water chiller to replace a single-pass cooling system in an Industrial Operations Facility. This project saves over two million gallons of potable water per month. A payback period of 8 months is expected to cover project costs of \$125,000.



Toboyhanna Army Depot Wastewater Treatment Plant

Wastewater Reuse at Sewage Treatment Plant

Water Chiller Water Savings

**Contribution to Net Zero**

TYAD reduced its potable water use by 2,300,000 gallons per month.

### Joint Base Lewis-McChord (JBLM) Concrete and Asphalt Recycling

A Net Zero Waste installation reduces, reuses, and recovers waste streams, converting them to resource values with zero solid waste disposal to landfill over the course of a year.

In support of its Net Zero Waste installation goals, JBLM collects and stockpiles waste concrete and asphalt generated from in-house projects, then reclaims the material to provide high-quality DOT-specification aggregate for other on-Post projects. This practice eliminates the cost of off-site transportation and disposal, and reduces the need for new crushed rock/aggregate. The cost of using reclaimed material is dependent on the volume of material processed, but generally is 50% less than the cost of virgin material.

The use of reclaimed aggregate qualifies for LEED credits, enabling JBLM to also meet the Army's sustainable design and development policy for new construction and major renovations.



Earthworks Asphalt Recycling

A third order benefit of this best management practice is a reduced carbon footprint. This on-Post reclamation effort eliminates the inbound and outbound trips to off-site disposal and virgin product quarries, significantly reducing greenhouse gases associated with aggregate transportation, as well as the volume of traffic through JBLM's access gates.

**Contribution to Net Zero**

- Eliminates disposal of waste concrete and asphalt
- Reduces the need for new aggregate
- Reduces fuel use for transportation of new aggregate or disposal of waste aggregate



# Report on Progress



Net Zero Scorecard:           [installation name]          

DoD Goal	Net Zero		FY2010 Status	FY2011 Status
	Area	Goal		
<b>Energy Intensity Reduction:</b> Target: 37.5% by FY2020 Baseline: FY2003	Energy	<b>Energy Intensity Reduction:</b> Target: 65% by FY2020 Baseline: FY2003	___%	___%
<b>Renewable Energy Use:</b> Target: 20% by FY2020 Baseline: NA	Energy	<b>Renewable Energy Use:</b> Target: 100% by FY2020 Baseline: NA	___%	___%
<b>Green Buildings:</b> Target: 100% of new bldgs meet LEED-Silver / equivalent [OSD policy: 25 Oct 2010]	Energy & Water	<b>Green Buildings:</b> Target: 100% of new bldgs meet LEED-Silver / ASHRAE 189.1	___%	___%
<b>Potable Water Use:</b> Target: 26% by FY2020 Baseline: FY2007	Water	<b>Potable water use:</b> Target: 26% by FY2015 50% by FY2020 Baseline: NA	___%	___%
<b>Industrial &amp; Irrigation Water Use:</b> Target: 20% by FY2020 Baseline: FY2010	Water	<b>Industrial, Landscaping &amp; Irrigation Water Use:</b> Target: 20% by FY2015 40% by FY2020 Baseline: NA	[not tracked or reported separately in FY2010?]	___%
<b>Pre-Development Hydrology:</b> Target: 100% of buildings >5,000 SF retain pre-development hydrology starting in FY2011 Baseline: NA	Water	<b>Pre-development hydrology:</b> Target: 100% by FY2012 Baseline: NA [EISA 2007 requirement]	___%	___%
<b>MSW Diversion:</b> Target: 50% by FY2015 Baseline: NA	Waste	<b>MSW Diversion:</b> Target: 50% by FY2015 100% by FY2020 Baseline: NA	___%	___%
<b>C&amp;D Debris</b> <b>C&amp;D Diversion:</b> Target: 60% by FY2015 Baseline: NA	Waste	<b>C&amp;D Diversion:</b> Target: 60% by FY2015 100% by FY2020 Baseline: NA	___%	___%
<b>Electronics</b> <b>Electronics Diversion:</b> Target: 100% disposed of sustainably Baseline: NA	Waste	<b>Electronics Diversion:</b> Target: 100% diverted from MSW disposal Baseline: NA	___%	___%
<b>Waste Management Plan:</b> Target: 100% updated on a 5-yr cycle Baseline: NA	Waste	<b>Waste Management Plan:</b> Target: 100% updated on a 5-yr cycle Baseline: NA	Current Integrated Solid Waste Management Plan (ISWMP) is dated FY20XX	___%

### Strategic Sustainability Performance Plan Goals & FY 2010 – FY 2020 Targets

Plan sub-goals and targets for FY2010-2020 served as the starting point for the Net Zero Scorecard.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
10	15%	18%	21%	24%	27%	30%	31.5%	33%	34.5%	36%	37.5%
nts	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
ities	6%	8%	10%	12%	14%	16%	18%	20%	22%	24%	26%
s by	n/a	2%	4%	6%	8%	10%	12%	14%	16%	18%	20%
,000 the	n/a	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
om ugh	42%	42%	44%	46%	48%	50%	50%	50%	50%	50%	50%
5.3	60% of Construction & Demolition Debris Diverted from the waste stream by FY2015, and thereafter through FY2020	73%	52%	54%	56%	58%	60%	60%	60%	60%	60%
6.2	100% of excess or surplus Electronic Products Disposed of in environmentally sound manner.	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

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# Develop an Implementation Plan



## The Army Net Zero Installation Implementation Plan

- General approach to Net Zero energy, water and waste for all Army installations.
- Based on the lessons learned and best practices identified in working with the selected pilot installations
- Build on the pilot installation Road Maps
- The plan will include:
  - Roles and Responsibilities
  - Timelines
  - Data Types and Sources
  - Data consolidation methods



# Next Time We Meet



## GovEnergy 2012: The Gateway to Smart Energy Solutions



**America's Center Convention Complex • St. Louis, MO • August 19-22, 2012**

**Trade Show: August 19-21**

**Training Workshop: August 20-22**

## 2012 Trade Show Opportunities

*Celebrating 15 years of helping federal employees work smarter to meet their sustainability, energy security, and energy assurance goals.*

- Expand networks; meet face-to-face with current and prospective customers, key decision makers, and industry experts.
- Build brand awareness, gather information, and present products and/or services.
- Reach a federal audience and boost ROI.

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