



Army Net Zero





Net Zero Hierarchy

ENERGY

Reduction

Re-Purpose

Recycling & Composting

Energy Recovery

WASTE

WATER


NET ZERO IS A FORCE MULTIPLIER

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2014 Army Universe



Land Acreage (Summary Data) *

- United States 13,482,669
- Europe 133,906
- Asia 27,491
- Other Overseas 1,361

Roads (paved and unpaved) *

- 55,308 Lane Miles

Paved Area (excludes roads) *

- 267,033,417 Sq. Yards

Railroads *

- 2,252 (Miles)
- 57,742 (LF (Bridges))

Buildings (Square feet) *

- United States 680,159,316
- Europe 105,867,428
- Asia 2,549,120
- Other 3,204,439
- Leases 37,746,343
- Privatized 120,567,597
- WWII Wood 16,524,530

Utilities (Systems)*
(Electric, Gas, Water, Wastewater)

- Army-Owned 210
- Privatized 144

Army Installations *

- IMCOM 67
- Army Reserve 3
- AMC 27
- DIA 5
- National Guard 48
- ARNG 3
- TOTAL 153

153 small cities

Army End-Strength

- Active 850,000
- USAR 201,166
- ARNG 358,078
- Reservists 271,794
- Civilians 865,277

2.2 million people

Aviation

- Multi-use 60
- Heliport 28

Family Housing Units*

- Owned 46,009
- Leases 6,432
- Total 52,441

106,000 homes

Barracks Adequate Spaces

- Permanent Party 148.4K
- Training 71.8K
- ORTC 106.3K

Plant Replacement Value*

- \$304.4B

FY13 Army Demographics

59.8% total married

(8.7% dual military married)

6.6% single parents


880,743 family members

Environmental Clean-up Remaining
(Installation Restoration Program & Military Munitions Response Program)


- Active Sites 1,515
- BRAC Sites 310
- Formerly Used Defense Sites 1,738


FY13 Installation Management Resources = \$20.8B

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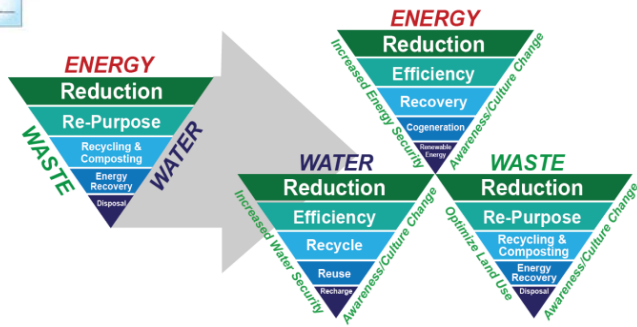
Evolution of Net Zero





17 pilot installations are serving as test beds to identify lessons learned and best practices to be institutionalized across the Army enterprise.

Recognizing the need to capture the different strategies applicable to each area of NZ, the hierarchy was refined into subordinate hierarchies for each area of net zero.



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Inter-Agency Collaboration



The Army is collaborating with the Environmental Protection Agency (EPA) and Department of Energy (DOE) on our net zero initiative.


- Based on a 2011 Memorandum of Understanding, the Army and EPA are performing projects at Fort Riley, Kansas
- Based on a 2010 Memorandum of Understanding, DOE labs are providing direct support to NZ pilot installations






Dr. Paul Anastas of EPA and HON Katherine Hammack, ASA(IE&E)

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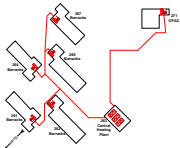


Best Practices




Net Zero ENERGY

- Conduct thermal building envelope analysis
- Reduce energy use through energy management control systems
- Hire resource efficiency managers
- Pursue alternative financing mechanisms
- Conduct energy master planning



Net Zero WATER


- Maximize the use of xeriscaping
- Implement leak detection on the potable water distribution system
- Maximize water recycling
- Install purple pipe
- Maximize use of alternative water sources



Xeriscaping conversion

Net Zero WASTE


- Establish a Qualified Recycling Program (QRP)
- Characterize & quantify waste flows
- Improve purchasing practices to reduce waste at the source
- Repurpose & reuse waste/material through free & low-cost opportunities
- Recycle & compost waste through free & low-cost opportunities




Electronics recycling via UNICOR

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Net Zero Definitions




ENERGY



WATER



WASTE



- **Net Zero ENERGY:** Reduce overall energy use, maximize efficiency, implement energy recovery and cogeneration opportunities, and then offset the remaining demand with the production of renewable energy from on-site sources, such that the Net Zero energy installation produces as much renewable energy as it uses over the course of a year.
- **Net Zero WATER:** Reduce overall water use, regardless of the source; increase efficiency of water equipment; recycle and reuse water, shifting from potable water use to non-potable sources as much as possible; and minimize inter-basin transfers of any type of water, potable or non-potable, such that a Net Zero water installation recharges as much water back into the aquifer as it withdraws.
- **Net Zero WASTE:** Reduce, reuse, recycle/compost, and recover solid waste streams, converting them to resource values, resulting in zero landfill disposal

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