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# ***Sustainable Fort Carson & Net Zero Installation (NZI)***

***Dec 2011***

**Sustainable Fort Carson: Mary J. Barber**

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## ***MISSION***

***The Mountain Post Garrison Team provides units mission support and services including quality of life programs for the Fort Carson Soldiers, Families and community to enable forces to execute expeditionary operations and to minimize stress on Soldiers and Families in a time of persistent conflict.***

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***“Best Hometown in the Army – Home of America’s Best”***



# Fort Carson 2027 Goals (as of May 2010)

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## ENERGY & WATER RESOURCES

**Goal: Sustain all facility and mobility systems from renewable sources and reduce total water purchased from outside sources by 75% by 2027.**



## SUSTAINABLE TRANSPORTATION

**Goal: Reduce automobile dependency and provide balanced land use and transportation systems.**



# Fort Carson 2027 Goals (as of May 2010)

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## AIR QUALITY

**Goal: Reduce Installation greenhouse gases (scope 1, 2 and 3) and other air pollutants to the lowest achievable emission rates.**



## SUSTAINABLE DEVELOPMENT

**Goal: Create a community that encourages social, civic and physical activity while protecting the environment.**



# Fort Carson 2027 Goals (as of May 2010)

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## SUSTAINABLE PROCUREMENT

**Goal: All DoD and Fort Carson procurement actions support sustainability.**



## ZERO WASTE

**Goal: Total weight of solid and hazardous waste disposed of is reduced to zero by 2027, and every year thereafter.**



# *Fort Carson 2027 Goals (as of May 2010)*

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## SUSTAINABLE TRAINING LANDS

**Goal: Training ranges; maneuver lands; and associated air space capable of supporting current and future military training to standard while maintaining and sustaining training resources.**



# Net Zero Installation



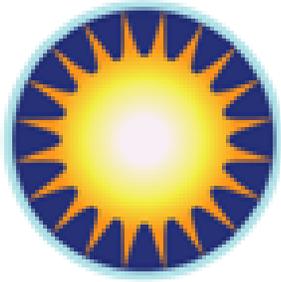
Fort Carson has been identified by the Office of the Assistant Secretary of the Army (Installations, Energy & Environment) as a Net Zero Pilot Installation.



**"Striving for Net Zero is operationally necessary, financially prudent, and critical to our mission."**

Katherine Hammack

*The Assistant Secretary of the Army (Installations, Energy & Environment)*



## Net Zero Energy by 2020

A net zero energy military installation produces as much energy on-site from renewable energy generation or through the on-site use of renewable fuels, as it consumes in its buildings, facilities, and fleet vehicles.

Net zero energy is a concept of energy self-sufficiency based on minimized demand and use of local renewable energy resources.

From: Net Zero Energy Military Installations: A Guide to Assessment and Planning, Technical Report NREL/TP-7A2-48876, August 2010



# Net Zero Energy: Renewable Energy



## On-going or Future Initiatives (FY10/FY11):

- Wind power purchase
- 100kw woody biomass energy system (Raiders DFAC)
- Microgrid initiative
- Net zero CAB
- Minimum LEED Silver in MCA (*Sustainable Development*)
- Greenhouse Gas Metrics & Analysis (*Air Quality*)



## Renewable Energy Efforts Since FY10:

- Net Zero Study
- Biomass Feasibility Study
- Policy - conservation



From: Installation Sustainability Plan, May 2010



# Net Zero Energy: Energy Efficiency



## On-going or Future Initiatives (FY10/FY11):

- High bay lighting retrofits
- Boiler replacements
- Meter Data Management System (MDMS) pilot site
- Energy audits
- Energy Conservation Improvement Program (ECIP) participation
  - Energy Management Control System (EMCS) expansion
  - Re-commissioning
  - Other opportunities identified in Energy Engineering Analysis Program (EEAP)
- Minimum LEED Silver in MCA (*Sustainable Development*)



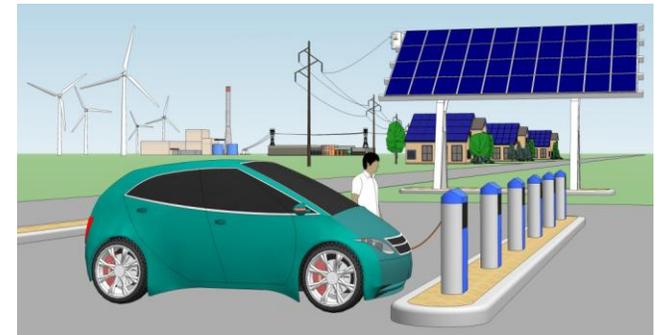
From: Installation Sustainability Plan, May 2010

# Net Zero Energy: Transportation Fuel



## On-going or Future Initiatives (FY10/FY11):

- GSA alternative-fueled vehicle replacements
- GSA approval for use of biodiesel
- GSA actual fuel reports
- Electric vehicle charging infrastructure
- Improve access to sustainable fuel
- Conduct pilot projects, e.g. Smith Electric Trucks
- Facilitate & market bicycling, walking & low impact vehicles
- Commuter transit + on demand post transit supported by car & bicycle sharing
- Pedestrian campus (*Sustainable Development*)
- Minimum LEED Silver in MCA (*Sustainable Development*)



From: Installation Sustainability Plan, May 2010  
(Transportation & Sustainable Development Goals)

# Net Zero Energy: Transportation Fuel



## Transportation Fuel Initiatives Since FY10:

- Ride sharing promotion
- Give a buddy a ride
- Smart Cars (*Sustainable Procurement*)
- Life-cycle sustainability performance analysis of vehicle fuels (*Sustainable Procurement*)
- Implement pedestrian & bike plan (*Sustainable Development*)
- Minimum LEED Silver in MCA
  - Bicycle racks
  - Preferential parking
  - Connectivity
  - Bus pull-outs
- Policy – vehicle idling





# Net Zero Water

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## Net Zero Water by 2020

A net zero water installation limits the consumption of freshwater resources and returns water back to the same watershed so as not to deplete the groundwater and surface water resources of that region in quantity and quality over the course of a year.

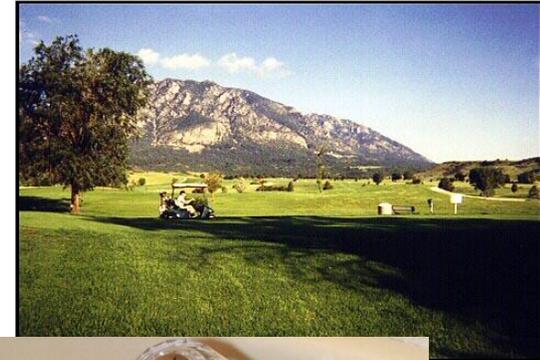


# Net Zero Water



## On-going or Future Initiatives (FY10/FY11):

- Net Zero Water planning and training
- Expand non-potable system
- No wash racks in new motorpools
- Water fixture retrofits where cost effective
- Influence purchase of equipment
- Water Returns Program
- Water audits
- Xeriscaping
- Low impact development (*Sustainable Development*)
- Minimum LEED Silver in MCA (*Sustainable Development*)





# Net Zero Water



## Water Conservation Efforts Since FY10:

- New construction (waterless urinals, low flow fixtures, xeriscaping and TEMF indoor maintenance wash)
  - Revised waterless urinal Army policy
- Landscape practices: winter irrigation, deep aeration, weather smart controllers
  - Significant turf removal
- Completed Comprehensive Energy and Water Master Plan (CEWMP)
- Coolerado demonstration and study – electric cooling vs. water cooling
- Pre-rinse nozzles at DFAC and Elkhorn
- Policy - conservation





# Net Zero Waste

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## Net Zero Waste Resources by 2020

A net zero waste installation is an installation that reduces, reuses, and recovers waste streams, converting them to resource values with zero landfill over the course of a year.

# Net Zero Waste: Solid Waste



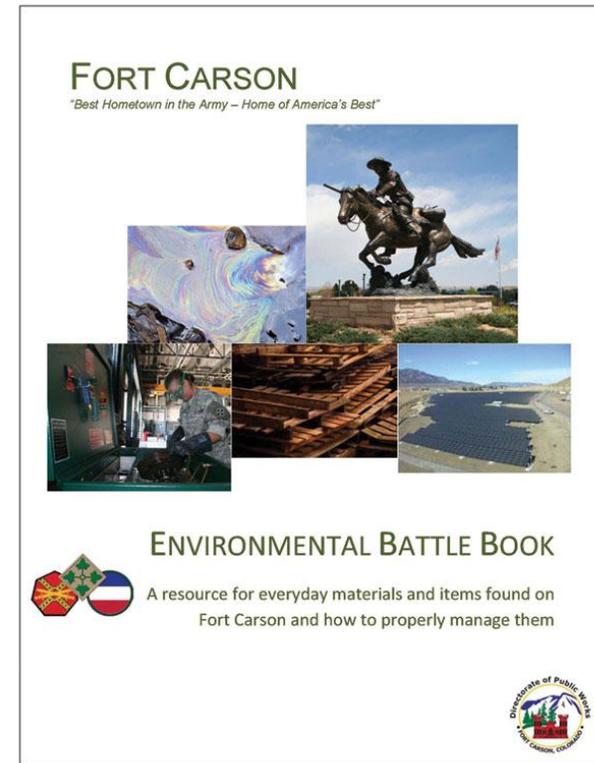
## On-going or Future Initiatives (FY10/FY11):

- Biogas feasibility
- Compost investigation
- Regional recycling consortium
- EPP Plan (*Sustainable Procurement*)
- DFAC study (*Sustainable Procurement*)
- Contract review (*Sustainable Procurement*)
- Minimum LEED Silver in MCA (*Sustainable Development*)

## Zero Waste Efforts Since FY10:

- Environmental Battle Book (periodic review/update required)
- Waste to energy assessment
- Policy – recycling & incentives

From: Installation Sustainability Plan, May 2010



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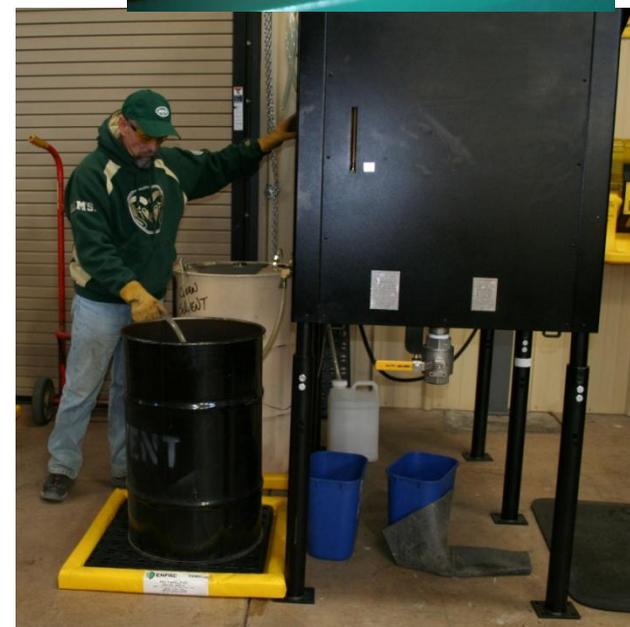


# Net Zero Waste: Hazardous Waste



## On-going or Future Initiatives (FY10/FY11):

- Solvent distillers
- Motorpool recycling
- Hazardous Material Control Committee (HMCC)
- Heptane recycling
- Digital mammography equipment
- Research additional opportunities
- Minimum LEED Silver in MCA (*Sustainable Development*)



From: Installation Sustainability Plan, May 2010

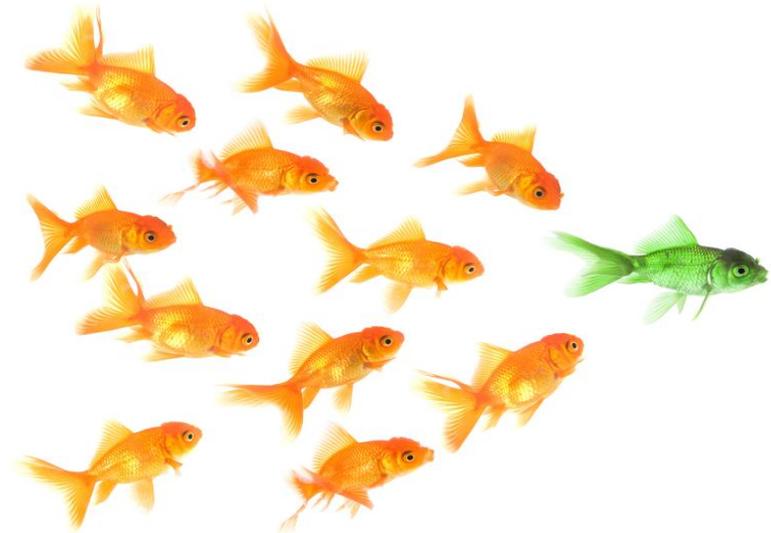


# Net Zero Installation Way Ahead



## Other Key Strategies:

- Awareness, Education and Training
- Strategic Communication
- Partnership
- Management/Accountability



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# Net Zero Installation Way Ahead



Heaven help us!!!  
Bob really did drink the Kool-Aide!

Mission



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Environment

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**What are the next  
steps towards NZI?**



# Energy Forum



## END OF BRIEF

# United States Army Garrison Fort Carson



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