



NET ZERO WASTE STRATEGIES AT FORT HOOD, TX

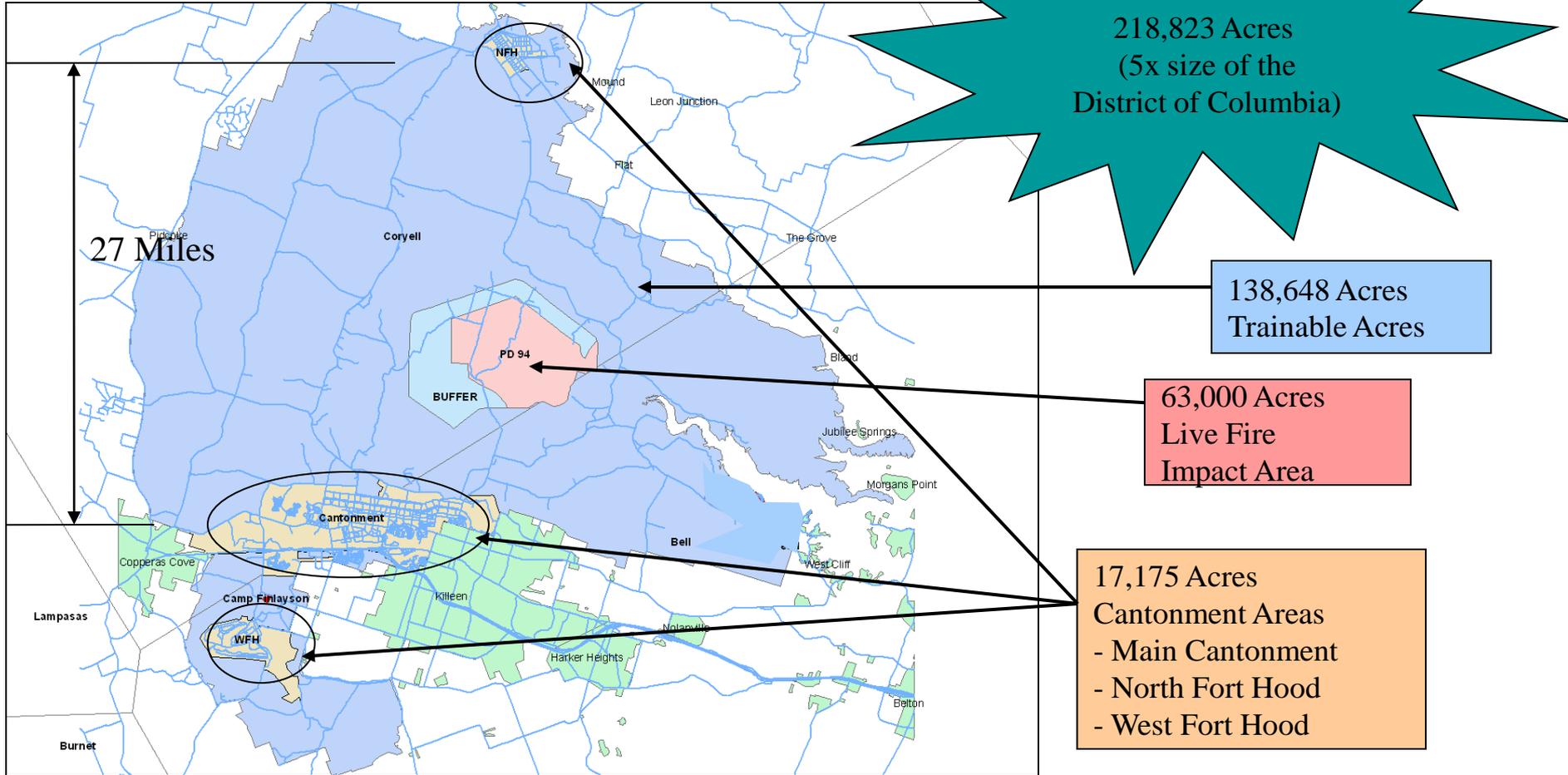


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FORT HOOD, TX



FORT HOOD, TX



THE WORLD'S PREMIER INSTALLATION



9 on post schools
819 teachers (+ staff)
40,000 students
on/off post



60 motor pools -
7.2 miles of combat
power



9 Gyms

**LARGEST
IN THE ARMY**



12 chapels



99 barracks
(11,432 rooms)



6,730 Family quarters
(13 separate housing areas)



2 huge "department stores,"
2 huge "grocery stores," and
110 Exchange Facilities

- ☑ 48,376 Soldiers
- ☑ 18,788 On-post family members
- ☑ 73,439 Off-post family members
- ☑ 6,754 Civilian employees (includes NAF)
- ☑ 15,856 Service & contractor employees
- ☑ 241,675 Retirees/Family Members/Survivors
- ☑ ≈ 400K Total population served

ECONOMIC IMPACT
~\$12B



U.S. ARMY

THE ARMY'S NET ZERO PROGRAM



NET ZERO HIERARCHY

The Army Net Zero approach addresses energy, water and waste at Army installations and is comprised of five interrelated steps:

- Reduction includes maximizing energy efficiency in existing facilities, implementing water conservation practices, and eliminating generation of unnecessary waste.
- Re-purpose involves diverting energy, water or waste to a secondary purpose with limited processes.
- Recycling or composting involves management of the solid waste stream, development of closed loop systems to reclaim water, or cogeneration where two forms of energy (heat and electricity) are created from one source.
- Energy recovery can occur from converting unusable waste to energy, renewable energy or geothermal water sources.
- Disposal is the final step and last resort after the last drop of water, the last bit of thermal energy and all other waste mitigation strategies have been fully exercised.

-  The Net Zero Energy goal is to produce as much energy on the installation as it uses, over the course of a year.
-  The Net Zero Water goal is to limit use of potable fresh water and capture, repurpose or recharge an amount of water equal to or greater than the amount of water the installation consumes.
-  The Net Zero Waste goal requires considering the waste stream when purchasing items, reducing the volume of packaging, reusing as much as possible, and recycling the rest.



PILOT INSTALLATIONS

These are the Net Zero pilot installations. All Army installations are encouraged to continue working toward achieving Net Zero. The Army goal is to have 25 Net Zero Installations by 2030.

The Oregon Army National Guard has volunteered to pilot a unique and challenging Net Zero Energy initiative, which includes all of their installations spread across the entire state.

NET ZERO ENERGY

- Fort Bliss, TX*
- Fort Carson, CO*
- Fort Detrick, MD
- Fort Hunter Liggett, CA
- Kwajalein Atol, RMI
- Parks Reserve Forces TA, CA
- Sierra Army Depot, CA
- West Point, NY

NET ZERO WATER

- Aberdeen Proving Ground, MD
- Camp Rilea, OR
- Fort Bliss, TX*
- Fort Buchanan, PR
- Fort Carson, CO*
- Fort Riley, KS
- JB Lewis-McChord, WA
- Tobyhanna Army Depot, PA

NET ZERO WASTE

- Fort Bliss, TX*
- Fort Carson, CO*
- Fort Detrick, MD
- Fort Hood, TX
- Fort Hunter Liggett, CA
- Fort Polk, LA
- JB Lewis-McChord, WA
- USAG Grafenwoehr, Germany

* Identified as Net Zero Pilot Installations (Energy, Water and Waste)

NET ZERO WASTE

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Net Zero is a Force Multiplier



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Net Zero Installation Initiative





Definition



- 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 Initiative



2020 "Perfect Vision, Perfect Mission"



Net Zero Waste Strategy



Goal: Change culture at Fort Hood to achieve NZW

Key Tasks:

- Reduce amount of solid waste generated
- Re-purpose whenever possible
- Expand Recycle; increase diversion rate
- Use Waste to Energy to eliminate remaining waste
- Identify alternative disposal methods
- Employ aggressive strategic communications campaign



End State: Ft Hood Community has embraced NZW and is actively supporting the effort



Net Zero Waste Workgroups



Goal 1: REDUCTION: Reduce the amount of solid waste generated on Fort Hood	Goal 2: REPURPOSE: Repurpose whenever possible	Goal 3: RECYCLE & COMPOST: Expand recycling and increase diversion rate	Goal 4: MARKETING & OUTREACH: Employ aggressive strategic communications campaign
Goal Leader: DHR	Goal Leader: PAIO	Goal Leader: DPTMS	Goal Leader: DFMWR
Mike Engen, DHR (Goal Leader)	Jim Bondi, PAIO (Goal Leader)	Lee Stockland, DPTMS (Goal Leader)	Nick Johnsen, DFMWR (Goal Leader)
Wade Utley (Team Leader)	Pat Neky, PAIO (Team Leader)	Mark Peterson (Team Leader)	Tracy Thomas, DFMWR (Team Leader)



NZW Brainstorming Session



Reduce

- Change Contract Language
- Reduce packaging materials
- Improve ordering processes
- Reduce Mass ordering
- Educate Supply Chains on green alternatives
- Purchase recyclable furniture
- Reduce food waste generated

Recycle/Compost

- Expand Recycling Materials and Go Single Stream.
- Food Waste Composting
- Sell Furniture through QRP
- Improve IMMU C&D
- Pay as you throw in Housing
- Create consolidated recycling centers
- Placement of recycle bins next to trash bins

Repurpose

- Renovate buildings
- Develop Restore program
- Improve DLADS
- Coordinate with Habitat for Humanity
- Create Repair Shop
- Develop return policies with manufacturers
- Create a Trash to Treasure Program

Marketing/Outreach

- Logo and slogan **completed**
- Develop NZW Brochures and videos
- Create Educational Flyers and banners
- Teach the teacher Program
- Conduct Road Shows
- Booths at events
- Include NZW in training events



Goal #1: Reduce



Reduce the amount of solid waste generated on Fort Hood.

- Conducting a material flow analysis
- Updating contract language
- Food Waste reduction study
- OPORD procedures to reduce printed documents and use electronic signatures
- Performance Objectives





Goal #2: Repurpose



Repurpose whenever possible.

- Partnering with local Habitat for Humanity for deconstruction
- Renovating existing buildings
- Developing a furniture re-use program
- Conducting installation-wide “yard sales” and donating items to local charities





Goal #3: Recycle & Compost



Expand recycling and increase diversion rate.

- Enhancing recycle at FHFH and Barracks
- Regional Recycling - Pay-as-you-Throw and Single Stream encourages more recycling
- Developing Recycle Coordinators and Recycle Counsels at the Company/Branch level
- Researching food composting options
- Hood Hero Recycle Award Program
- Conducting Site Assistance Visits



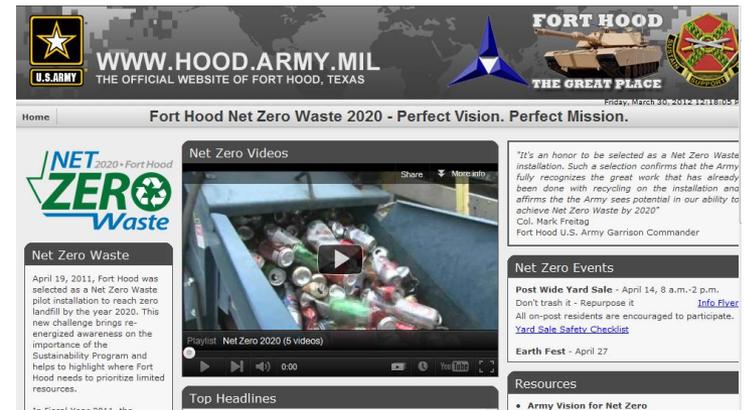


Goal # 4: Marketing & Outreach



Employ aggressive strategic communications campaign.

- Developed a logo, slogan, video clips, brochures, website and news articles.
- Presenting NZW slides and videos at town hall meetings, rotary club, newcomers briefing, commander staff meetings and environmental training events.





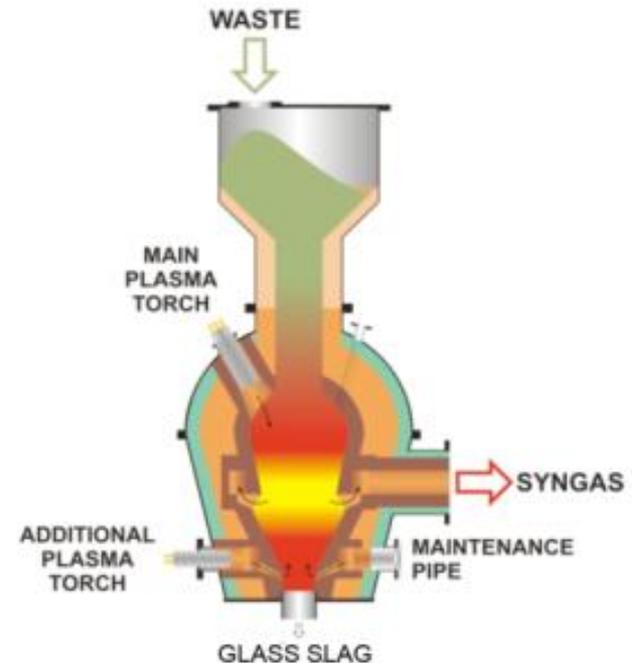
The Remaining 10-20% Solution



Waste to Energy

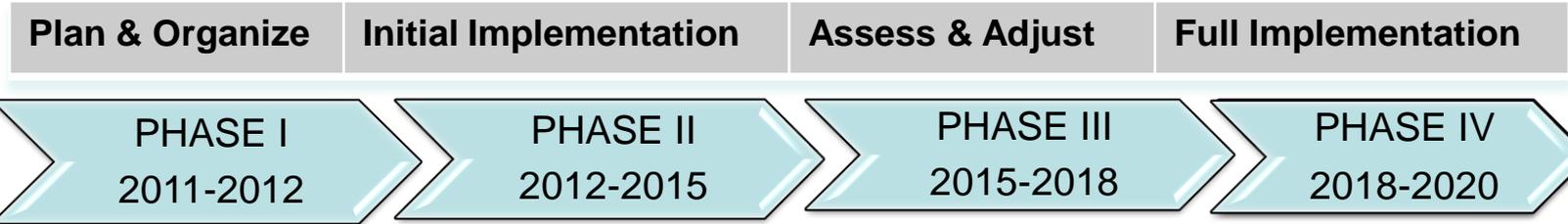
Use waste to energy to eliminate remaining waste.

- Investigating and researching best WTE technology fit for Fort Hood feed stock
- Develop scope of project for 20% of MSW < 20 tons per day
- Investigate Regional Approach
- Secure funding (EUL, PPA, ESPC)





NZW Execution Timeline



Diversion Goal: **44%** **60%** **75%** **90-100%**

Reduce

- | | | | |
|--|---|--|--|
| <ul style="list-style-type: none"> • Mass balance survey • Contract language • Stakeholder meetings | <ul style="list-style-type: none"> • Performance objectives • Supply discipline • Reusable Tote Bags | <ul style="list-style-type: none"> • Reduce unit purchases • Life-Cycle standard • Vendor support | <ul style="list-style-type: none"> • 100% C&D Diversion |
|--|---|--|--|

Re-Purpose

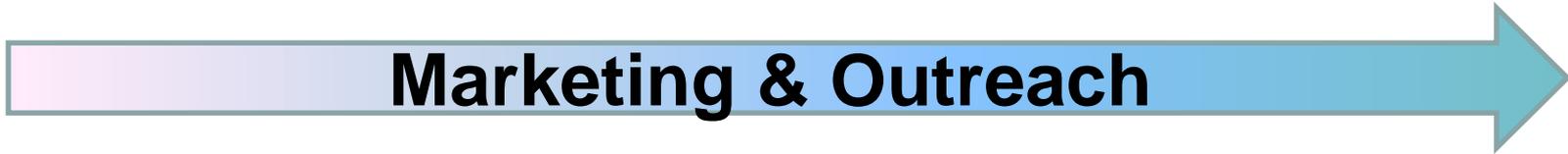
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|--|---|---|--|
| <ul style="list-style-type: none"> • Partner with charities • Renovate buildings • Compostable products | <ul style="list-style-type: none"> • ReStore Program • Improve DLADS • Installation garage sales | <ul style="list-style-type: none"> • Re-use online program • Deconstruction Design • Buy back programs | <ul style="list-style-type: none"> • 100% Electronics Diversion |
|--|---|---|--|

**Recycle/
Compost**

- | | | | |
|---|--|---|--|
| <ul style="list-style-type: none"> • ORCA machines • Expand recycle • Regional recycling • Recycle Councils | <ul style="list-style-type: none"> • Expand recycle center • Food waste compost • Metrics to measure • Award Program | <ul style="list-style-type: none"> • Recycle Automation • Pay as you Throw • Single stream recycle • IMPACT credit card | <ul style="list-style-type: none"> • ~80% Recycle MSW |
|---|--|---|--|

**Waste to
Energy**

- | | | | |
|--|---|--|--|
| <ul style="list-style-type: none"> • Conduct WTE study • Compare research findings with Austin | <ul style="list-style-type: none"> • Select WTE Technology • Secure WTE Funding | <ul style="list-style-type: none"> • WTE construction & execution | <ul style="list-style-type: none"> • ~20% WTE MSW |
|--|---|--|--|





Questions/Discussion



**NET
ZERO** 
WASTE 2020
Fort Hood

2020 "Perfect Vision, Perfect Mission"

