Army Sustainability – Past, Present & Future

Dr. Craig College
Deputy Assistant Chief of Staff for Installation Management

2011 Association of Defense Communities
Panel Members

Dr. Craig College  Deputy Assistant Chief of Staff for Installation Management

Mike Lynch  Fort Bragg Director of Plans, Training & Mobilization

Donald Belk  Regional Planner, Fort Bragg Regional Alliance

Wanda Johnsen  Office of Dep. Ass’t Secretary of the Army (Energy & Sustainability)
Army Expenditures 2001-2011

<table>
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<th>FY</th>
<th>Actual Base Budget/Projected</th>
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Total Actual Base Budget/Projected: $242
Total Actual OCO/Projected: $231

Office of the Assistant Chief of Staff for Installation Management

Army Sustainability: Sustain the Mission, Secure the Future
Fort Bragg – Where It All Began
Fort Bragg - Sustainability in the Sandhills of North Carolina

Preserving Our Resources Today to Secure Our Legacy Tomorrow
AN AVERAGE DAY AT FORT BRAGG
5TH LARGEST CITY IN NORTH CAROLINA

✓ A supported population of 261,000 personnel
✓ 22,700 housing units are managed and serviced
✓ 1,500 miles of paved road traveled (same distance as Boston, MA to Miami FL)
✓ 342 police, fire, and medical emergency responses are performed
✓ 200 patients are treated in the medical center emergency room
✓ 1,670 children at 11 facilities are provided child and youth services
✓ 5,070 students at 10 on-post schools are provided elementary and secondary education
✓ 10,000 Soldiers are trained using, ranges, drop zones, and training areas
✓ 142,000 vehicles enter the Installation
✓ 12,176 meals are served at 20 dining establishments
✓ $1.5 Million in retail sales are generated
✓ $26.3 Million in economic impact generated in local economy
BEGINNINGS OF SUSTAINABILITY

In 2001, Fort Bragg faced many challenges that threatened to compromise its military mission. Some of these included:

- Incompatible growth which constrained training exercises
- Urban development in close proximity to the Fort Bragg boundary
- Federal mandates to protect endangered species
- Aging infrastructure
- Increasingly stringent environmental policies

SOLUTION: Incorporate sustainable concepts into comprehensive strategic planning.

- Fort Bragg is considered the first Army installation to publicly set goals toward sustainability

The endangered red cockaded woodpecker has threatened training exercises on Fort Bragg
ORIGINAl SUSTAINABILITY GOALS

Reduce the amount of water drawn from Little River by 70 percent by 2025.

Meet or exceed the NC state high quality water standards for discharge by 2025.

Reduce Landfill waste to zero by 2025.

Meet minimum platinum standards for all construction by 2020 and renovate 25 percent of all existing structures to at least a bronze standard by 2020 using LEED.

Adopt compatible land use laws/regulations with local communities by 2005.

Reduce energy use in accordance with Executive Order 13123.

Develop and implement an effective regional community program by 2015.

Reduce the use of both gasoline and diesel in the non-tactical fleet by 70 percent by 2015 and 99 percent by 2025.

Implement 100 percent environmentally preferred purchasing by 2025 for all purchases, including government purchase card, contract, and military requisition.
HOW WE REACH THESE GOALS …

… THROUGH PARTNERSHIPS

• In order for Fort Bragg to maintain its mission, protect resources, and become a sustainable community, we must work in collaboration with the region surrounding the post

• Sustainability challenges are global challenges - we cannot address alone

• Partnerships and collaborations are critical to the success of sustainability

A focus on sustainability will address present and future needs while strengthening community partnerships that improve our ability to organize, equip, train and deploy our soldiers as a part of the joint force, making us better neighbors at home and abroad.

- IMCOM Campaign Plan
LOOKING THROUGH THE LENS OF THE TRIPLE BOTTOM LINE ...
SUCCESS IN LAND USE

COMPATIBLE LAND USE AND LAND RECLAMATION

Partnerships include:
• Sustainable Sandhills
• The Nature Conservancy
• Sandhills Area Land Trust
• Fort Bragg Regional Alliance
• US Fish and Wildlife Service
• North Carolina State Park System
• NC Department of Environment and Natural Resources
• NC Department of Agriculture
• Audubon International
  • Through partnerships, Fort Bragg has developed or facilitated policies and guidance that benefit both the installation and the region

• Examples of Successes:
  • Regional Land Use Planning Tool
  • Naturalization of trails and firebreaks
  • Audubon Certified Golf Courses
LAND USE – THE WAY AHEAD

ENERGY CROP FEASIBILITY STUDY
- Partnership with the Corps of Engineers and Utah State University to examine use of oilseed plants on military lands as a source of alternative fuels
- Identifies land sources to meet executive orders and regulations requiring increased use of renewable and alternative fuels

AG LEASES ON DROP ZONES
- Partnership with Moore County Agriculture Extension Office
- Growing Coastal Bermuda on flat areas and native warm grasses on terraces
- > 9000 acres of drop zones require rotation of annual mowing and burning to restrain hardwood growth
SUCCESS IN FACILITIES

INTEGRATION OF LEED STANDARDS INTO NEW AND EXISTING STRUCTURE

Partnerships include:
- US Green Building Council (USGBC),
- US Army Corps of Engineers (USACOE),
- NC State Historic Preservation Office (NCSHPO)
- Cultural Resources
- Facility occupants

LEED-EB integration through Operations & Maintenance
- Renovation of maintenance garages in Old Post Historic District
- Required collaboration with NCSHPO and Fort Bragg CRMP

LEED Professional Development
- Training programs for project managers, designers, USACOE engineers and sustainability planners
- Training programs with Sustainable Sandhills
- Highest concentration of LEED professionals at a military installation
CONTINUE TO INTEGRATE LEED STANDARDS

- Construction
- Operations & Maintenance
- Small Building Template

CERTIFIED AND CERTIFIABLE FACILITIES

- Fort Bragg constructs all new MILCON construction to meet LEED Silver standards to accordance with 2008 Army mandate
- Achieved first LEED Silver certified facility – 4th BCT TEMF (top photo)
- New Community Emergency Services Station was the first facility constructed to meet LEED Platinum standards on Fort Bragg (bottom photo)
SUCCESS IN MATERIALS

WASTE REDUCTION

QUALIFIED RECYCLING PROGRAM (QRP):

• Federally recognized program which recclaims materials from waste stream and retains revenues for reinvestment in diversion technologies and improvement initiatives such as urban reforestation and energy efficiency

• The QRP Incentives Program provides participants incentives for recycling; through the program, units and organizations deliver their recyclables to the Recycling Center in exchange for vouchers that may be used at on post recreational and dining establishments

• A total of 208 units and agencies participate in the recycling program to date

• $66,500 in vouchers have been issued since program inception
MATERIALS – THE WAY AHEAD

GREEN BOOT PROGRAM

- Expand partnership with Installation units and directorates
- Connect building occupants to the costs associated with operating an installation
- Encourage integration of sustainable activities into daily operations in support of Garrison Goal One

GREEN PROCUREMENT

- Active partnerships with Self Service Supply Center, Defense Logistics Agency, and General Services Administration
- Identify potential waste reduction opportunities
- Eliminate items that are considered disposal issues or replace those items with less environmentally invasive materials

DRAGON PULSE

What do you do to conserve on high energy cost?

“I don’t do anything to cut down on energy costs. I don’t really think about it because I live in the barracks.”

— Pvt. Kevin O’Call
Company A,
37th Engineer Battalion
THERMAL ENERGY STORAGE

- Awarded as a DoD Energy Conservation Investment Program (ECIP) Project
- Goal is to shift electrical load from peak time to off-peak time
- Viable solution is thermal energy storage (TES)
- Fort Bragg TES utilizes a simple chilled water system
  - Produces a surplus of cold water during the night for storage
  - Meets normal energy demand or augments production by circulating cold water through the tank to extract additional cooling capacity to the area central energy plant during the day
SUCCESS IN ENERGY

UTILITY MONITORING AND CONTROL SYSTEM (UMCS)

• Selected facilities are connected to a central server at the Building Operations Command center (BOCC)
  • Currently 278 buildings/22 percent of the Fort Bragg building inventory
• Energy use information is gathered through the UMCS, then data is analyzed and distributed to facility occupants
  • Raises awareness about power consumption
  • Encourages energy efficient practices
• Projected to yield up to a 20 percent savings in energy costs annually
ENERGY – THE WAY AHEAD

RETRO-COMMISSIONING

• Designed to upgrade and outfit older facilities in need of maintenance
• Provide efficient energy systems to increase occupant comfort and decrease energy costs
• Building tune-up
• Projected 20 percent annual savings

PHOTOVOLTAICS AT WARRIORS IN TRANSITION

• Solar array designed to reduce electrical consumption at Warriors in Transition campus project by over 200,000 kWh per year
• Savings of almost $20,000 annually
• Accrue over 200 Renewable Energy Credits (RECS) per year valued at $39,500
SUCCESS IN WATER

LOW IMPACT DEVELOPMENT (LID)

• Maintain and treat storm water on site
• Recharge aquifers through infiltration
• Encourage AE/contractors to utilize LID conveyances through training
• Conserve natural site features, reducing impact of development
  • Rain barrels
  • Permeable pavement
  • Infiltration channels
  • Cisterns
• Partnership with Sustainable Sandhills to host a series of lunch-and-learns as well as the LID workshop to discuss best management practices, policy review and an interactive project to bring awareness to Fort Bragg LID projects
SUSTAINABLE SHUTTLE

• A partnership with regional mass transit services including our local communities to provide access to destinations outside of the installation

• Critical component in the resolution of Fort Bragg traffic issues

• Fleet of B20 powered hybrid electric vehicles serve seven routes that connect primary points on the installation including barracks, post exchanges, Medical Center, Support Centers, dining facilities, and recreation facilities
SUCCESS IN TRANSPORTATION

ALTERNATIVE FUEL STATION

- Partnership Army Petroleum Center (APC) and Defense Energy Supply Command (DESC) to establish alternative fueling station
- Station dispenses E85 ethanol, B20 biodiesel, and ultra low sulfur diesel for flexible fuel
- Reduction of petroleum consumption is projected at 405,000 gallons annually
- Carbon dioxide emissions savings is projected at 8 million pounds annually
TRANSPORTATION – THE WAY AHEAD

FUEL THE FORCES

• A bio-fuel project designed to link the installation with other NC military posts with the ultimate goal of producing all liquid fuels locally

• Partners include NC Bio-Fuel Center, NC Energy Office, Military Growth Task Force, NC Department of Agriculture, NC Department of Commerce, and Camp LeJeune

PROJECT GET READY

• Preparing Fort Bragg for electrification of transportation – hybrid and electric plug-in vehicles

• Partners include Sustainable Fort Bragg, Sustainable Sandhills, Advanced Energy, Progress Energy
FORT BRAGG ENVIRONMENTAL POLICY

THE RIGHT WAY …
Obey environmental laws and federal, state and installation regulations.

THE GREEN WAY …
Practice pollution prevention by acting to protect the environment, health, natural resources and financial resources.

ALL THE WAY …
Keep improving! Be aware of the long term impacts of your actions and choose to minimize them.
Fort Bragg Regional Alliance – Partnering for Solutions
Opportunities for Collaboration

Donald R. Belk, AICP
Regional Planner
Fort Bragg Regional Alliance

Jon Parsons
Executive Director
Sustainable Sandhills
Mission

To provide inspiration and resources that spark and support the transformation into sustainable enterprise.
Army Sustainability – Past, Present, and Future

Values

Education

Collaboration

Consensus

Demonstration

Grassroots Engagement

Service
Army Sustainability – Past, Present, and Future

Education

2006  High Performance Schools Symposium
2008  Sandhills Water Resources Conference
2010  NC Green Business Conference
2010  Regional Sustainability Symposium
2011  National Green Business Conference
Collaboration

2006-present  Fort Bragg Regional Alliance
2008  Fayetteville Recycling Task Force
2009  Harnett County Recycling Task Force
2009-present  Cumberland Schools Go Green Initiative
2010-11  Student Energy Internship Program
Demonstration

2007-10  Green Living & Design Tour
2009-present  SS Urban Farm Tour
2009-present  Sandhills Farm To Table Cooperative
2011  Plug-In Electric Vehicle Infrastructure Workshop
Army Sustainability – Past, Present, and Future

Grassroots Engagement & Service

2005-present  Special Event Recycling
2008-present  SS Green Business Program
2008-present  Conservation Assistance Project
2009-present  Sustainable Film screenings
Consensus

2005-09  Early Action Compact (ground level ozone)
2005-09  SS Suitability Map Project (11 county)
2008-11  Foundation of Regional Land Use Planning
2009 - 2011  Green Growth Toolbox
NC’s Military Region:

- Feed & Fuel the Forces
- Land Resource Base for Sustainable Economic Development
- Key to Achieving Compatible Use Goals
- Sustainable Agriculture will create entrepreneurial energy and foster Rural Economic Development
Opportunities for Collaboration

- Feed & Fuel the Forces: Renewable Energy, “Local” procurement of NC’s agricultural resources (biofuel feedstocks, fiber, foods)

- Transportation Planning: Reducing VMT is the ‘holy grail’: less fuel consumed, higher quality development, quality-of-life benefits

- Collaborative Corridor Planning/TOD Projects with City of Fayetteville, Town of Spring Lake, and Counties
opportunities for collaboration

- Economic Development Partnerships: more DoD procurement of local products means more money stays in the regional economy.
- Sustainable Agriculture will create entrepreneurial energy and foster Rural Economic Development.
Looking Forward – Direction of Army Sustainability
DoD & Army Sustainability Drivers

- Presidential / Executive Orders:
  - EO 13148, 13149, & 13150 (Apr 2000)
  - EO 13423 – Strengthening Federal Environmental, Energy, & Transportation Management (Jan 2007)
  - Presidential Memorandum – Federal Fleet Performance (May 2011)

- Energy legislation

- DoD Strategic Sustainability Performance Plan

- Army Sustainability Campaign Plan
“Energy security and sustainability are operationally necessary, fiscally prudent, and are key considerations for Army installations, weapons systems, and contingency operations. On Army installations, we are developing a holistic approach, called Net Zero, to address energy, water, and waste. Net Zero is a force multiplier enabling the Army to appropriately steward available resources, manage costs, and provide our Soldiers, Families, and Civilians with a sustainable future.”

http://www.army.mil/info/institution/posturestatement/
Net Zero Installations

- **A Net Zero ENERGY Installation** is an installation that 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** is an installation that reduces, reuses, and recovers waste streams, converting them to resource values with zero solid waste to 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.
Energy

- **Change the culture**
  - Energy & sustainability must be a consideration in all Army activities

- **Drive efficiency across the Enterprise**
  - Implement energy-efficient technologies to reduce energy demand
  - Leverage public-private partnerships

- **Build resilience through renewable / alternative energy**
  - Diversify energy sources to reduce risk of disruption
  - Attract private investments for large-scale renewable energy projects

- **Science & technology**
Facilities

Army sustainable design policy for new construction & major renovations (updated Oct 2010)

- ASHRAE 189.1 is baseline standard
- Greater energy efficiency (e.g., more efficient equipment, smart sensors, day-lighting)
- Renewable energy sources (e.g., solar panels, heat pumps)
- Improved water conservation (e.g., low-flow plumbing, zero-scaping)
- Reduced runoff (e.g., porous paving, cisterns)
- Green building materials (e.g., low VOC paints & carpets, recycled content materials)

Army efficient lighting policy (Oct 2010)
Planning, Transportation & Partnerships

Army Sustainability: Sustain the Mission, Secure the Future

- **Sustainability planning**
  - Installation Strategic Plans that incorporate sustainability principles
  - Installation Master Plans with sustainable design & development:
    - Town Center style developments
    - Co-located unit HQ & support facilities

- **Improved transportation options**
  - Improved on-Post systems (shuttle bus networks, neighborhood electric vehicles)
  - Connections to public transportation

- **Expanded partnerships**
  - Education & employment
  - Army Community Covenant
  - Waste management
  - Renewable energy
On-going Collaboration

- **Fort Detrick (MD):**
  - Frederick Community College – sustainability courses
  - Frederick County – sustainability planning

- **Fort Carson (CO):**
  - Catamount Institute’s Pikes Peak Sustainable Business Network
  & Southern Colorado Sustainability Conference

- **Fort Hood (TX):**
  - Central Texas Sustainable Communities Partnership – recycling

- **Fort Polk (LA):**
  - In discussion with Louisiana Economic Development authority & private partner for regional recycling

- **Fort Bliss (TX):**
  - In discussion with City of El Paso on regional Waste-to-Energy
Opportunities

- Local & Regional planning & solutions
  - Transportation planning, biofuels, alternative fueling stations

- Natural resources conservation
  - Army Compatible Use Buffers

- Energy
  - On-Post energy efficiency projects
  - On-or Off-Post Renewable energy

- Education
  - Technical school courses
  - Business management
  - Science & sustainability courses

- Army Community Covenant
Contact Info

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