# Public Works DIGEST

Volume XXIII, No. 5
September/October 2011

The solar panels at Sandhills Utility Services, one of several renewable energy initiatives at Fort Bragg, N.C., provide 6,500 kilowatt hours to the installation per year. Photo by Paul Hora. Page 23.

This Issue:
**Energy and Water**



IMCOM
SOLDIERS • FAMILIES • CIVILIANS

# Public Works DIGEST

Volume XXIII, No.5
September/October 2011



U.S. Army Installation
Management Command
2405 Gun Shed Road
Fort Sam Houston, TX 78234-1223



*Public Works Digest* is an unofficial publication of the U.S. Army Installation Management Command, under AR 360-1, The Army Public Affairs Program. Method of reproduction: photo-offset; press run: 1,600; estimated readership: 40,000. Editorial views and opinions expressed are not necessarily those of the Department of the Army. Mention of specific vendors does not constitute endorsement by the Department of the Army or any element thereof.



**Address mail to:**
U.S. Army Installation Management Command
2405 Gun Shed Road
Fort Sam Houston, TX 78234-1223
Attn: Editor, *Public Works Digest*

Telephone: 202-761-0022 DSN 763
FAX: 202-761-4169
e-mail:
mary.b.thompson@usace.army.mil

**Gregg Chislett**
*Chief, Public Works Division*
*Installation Management Command*

**Mary Beth Thompson**
*Managing Editor*
*U.S. Army Corps of Engineers*



*Printed on recycled paper.*


## Energy and Water Management



## Successes



## Technical Support



## Afghanistan Insights



## Professional Development



## Who's Who

# Moving toward net zero: Role of master planning

*by Mark L. Gillem*

At the August GovEnergy conference in Cincinnati, exhibitors and presenters focused on building energy reduction to achieve energy mandates. Innovative mechanical systems, building energy recover techniques and facility-based energy production tools were featured strategies. While these and many other solutions are essential in the drive to reduce Department of Defense energy use, another strategy that must be included in the conversation is the way we plan our installations.

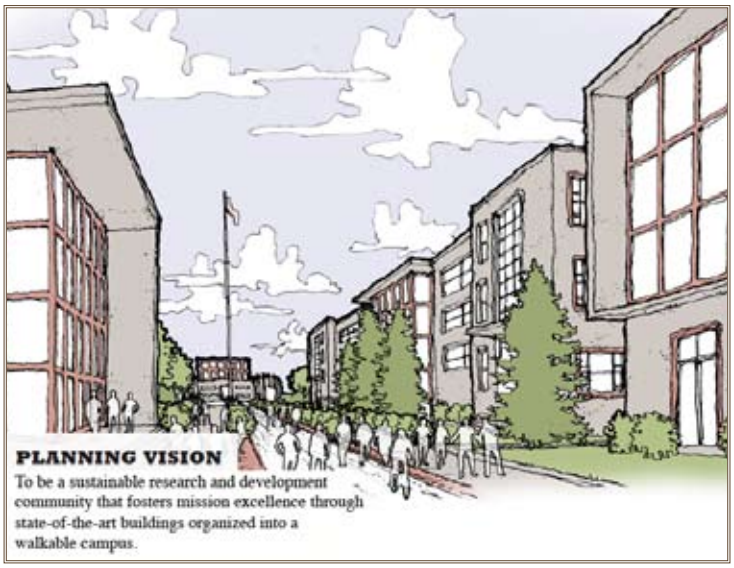
When we place a few energy-efficient buildings within a landscape of sprawl that requires automobile trips and adds pavement, the benefits at the building level are undone by the energy used in transportation to get to and from those buildings.

To address the role of planning, U.S. Army Corps of Engineers planners are working to integrate energy, water and waste reduction at the installation scale within the context of the Army's Net-Zero Initiative. While the Army has selected several installations to be prototypes for achieving net-zero use in water, waste and energy, all installations should be working toward that goal.

The Natick Soldier Systems Center near Boston is one location where planners are addressing the issue at the installation and building scales. Achieving net zero requires a holistic approach to addressing Natick's energy, water and waste.

Planning can play a significant role in achieving these goals, but for the installation to attain a net-zero status, sustainable strategies must be incorporated into existing and new buildings, and reduction and conservation must be implemented at the individual user level as well. This holistic approach allows the Army to be stewards of the environment, reduce resource use and provide a sustainable future for Soldiers, Civilians and Families.

Natick's master plan emerged out of a collaborative process that engaged hundreds of stakeholders on and off the installation to create a plan that could accommodate short- and long-term growth. Natick's planning vision is, "To be a sustainable research and development community that fosters mission excellence through state-of-the-art buildings organized into a walkable campus."




*A rendering demonstrates the Natick Soldier System Center's vision of becoming a walkable campus that integrates strategies for water, energy and waste reduction. Graphic by The Urban Collaborative LLC*

As part of the process, the team incorporated many strategies at the planning scale to move toward net zero. The team developed metrics to track compliance and focus efforts on the most beneficial strategies.

**Water** – Natick's projected water requirement is 26 million gallons annually. Using rainwater catchment and storage systems, the installation can capture up to 14 million gallons, or roughly 53 percent of its requirement. Net-zero water use can be achieved in part by adding aquifer recharge through on-site stormwater mitigation. By reducing impervious surfaces through a variety of master planning strategies, the installation would be able to mitigate the remaining 12 million gallons.

**Energy** – The projected annual energy requirement using standard planning methods is 22 million kilowatt hours. With appropriate master planning, up to a 40 percent reduction can be achieved using narrow wings, cool roofs and other strategies. Another 36 percent can be supplied by photovoltaic panels if used. These changes could result in a net energy reduction of 76 percent or almost 17 million kWh per year. In addition, a trigeneration district energy solution is planned. When coupled with user reduction, which is not factored in at the planning level, Natick could get to net-zero energy use.

**Waste** – When current recycling programs are applied to the master plan build-out, the waste stream can be reduced by 60 percent. Another 12 percent can be achieved by using compost and diversion techniques resulting in a total reduction of 72 percent. When coupled with user reduction, which is also not factored in at the planning level, Natick may be able to get to net-zero waste, too.

Master planning plays a key role in the Army's movement toward achieving net-zero energy, waste and water. Master planning strategies should be incorporated at the earliest stages and used to guide future development.

*POC is Mark L. Gillem, 510-551-8065, mark@urbancollaborative.com.*

*Mark L. Gillem, Ph.D., AIA, AICP, a principal with The Urban Collaborative, is a consultant, Master Planning Team, U.S. Army Corps of Engineers.*