

White Paper Explores Challenges in Achieving Net-Zero Water

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The Center for Advancement of Sustainability Innovations recently published a technical note that examines issues related to ensuring long-term availability of water resources for military installations. Part of the CASI “White Paper” series, the document is available at <https://casi.erd.c.usace.army.mil/>

The U.S. Army is vulnerable to the same issues of water supply and demand that jeopardize global water security. Providing the required amount of clean fresh water where it is needed is increasingly difficult. The conditions that threaten water availability are the aging state of water infrastructure, generalized population growth (especially in regions containing key Army installations), increased water demands for energy, and uncertain, but generally agreed upon regional effects of global climate change. The complexity of water compacts, treaties, and agreements is another challenge for installations. In the coming years, the effects of water scarcity will be more severe in certain locations and this will be reflected in increasing costs.

To help ensure sustainable water supplies for installations, the Army launched the Net Zero Water initiative. Installations are in the unique position of maintaining a high degree of control over city-like campuses. This positions them to be involved in acquisition, treatment, distribution and use—and potentially reuse—in a holistic fashion, an opportunity that few other organizations are afforded.

Given this significant opportunity, partnering will be the key. Some water management functions are already privatized, every activity that uses water affects others in the watershed and regulators, and the Army needs to have “end users” fully engaged in whatever solutions it selects and implements. Included are state and regional players, code groups, national industry associations, and other federal entities.

Few truly new technologies are available for water efficiency and conservation programs. However, there is a lack of information for many technologies on effectiveness, return on investment, maintenance, and other life-cycle implications. It is imperative that the Army document not only its own technology demonstrations, but also collect the “lessons learned” from others to assist installations in planning and investment toward attainment of NZW.

Large reductions in water use will require taking a holistic approach that includes policy, technology, education, partnering with others, and strong command emphasis. Some initiatives will apply Army-wide while others will be site-specific. Consideration should be given for the varying circumstances that may affect water supply and demand. Installations are located in regions that encompass a broad spectrum of conditions affecting water security, cost, and applicability of water efficient technologies.

Hydrologic conditions vary across the United States and include differences in surface and groundwater availability and vulnerability to drought and other climate extremes. Climate conditions will affect the potential applicability of some NZW technologies, e.g., collection of rainwater and condensate. Local laws and codes will also affect technology infusion e.g., the legality of collecting rainwater and the codes regulating graywater reuse. Finally, installations themselves vary in the maturity of water conservation programs, some having already achieved substantial savings and perhaps not easily able to further reduce consumption. The NZW program on an installation should be unique and tailored to these characteristics.

Web tool supports Net Zero Water efforts

A web portal launched earlier this year, the Water Management Toolbox, has been enhanced to specifically address issues related to achieving Net Zero Water. (Please see related article in PWD Jul/Aug 2011, page 36.)

Topics include:

- Water Demand Projection Tool
- Laws, Regulations and Policies
- Best Management Practices and Guidance
- Tools
- Data
- Focus Areas
- Regional and State Resources
- International Resources
- Other Resources and Links
- News

The toolbox is publicly accessible at <http://water-management-toolbox.com/>

