

# Balancing Act



Lynn Broaddus

## Finding opportunities in the water-energy nexus

Water utilities in the U.S. are bearing the brunt of climate change as resources become scarcer. SWS Associate Editor Williette Nyanue spoke with Lynn Broaddus, Ph.D., director of the Environment Program at the Johnson Foundation at Wingspread, to find out how the water-energy nexus can provide utilities with new opportunities.

**Williette Nyanue:** What is the water-energy nexus?

**Lynn Broaddus:** Using water takes a lot of energy. You have to pump it and treat it on intake and outflow. The chemicals used in treatment also require a lot of energy, as does heating water inside buildings and for industrial uses. On the flip side, a lot of water goes into creating and making energy available, whether it is for thermoelectric power generation, cooling, extracting the fuels, cleaning coal or growing the sources for ethanol and biofuels. The places where water and energy connect are what we call the water energy-nexus.

**Nyanue:** What opportunities can the water-energy nexus provide?

**Broaddus:** Because peak energy tends to cost more than the base load of energy, water utilities can work collaboratively with electric power utilities to try and shift their energy demands to off-peak times. There also is an opportunity in the wastewater world to generate energy through the waste stream, reducing or eliminating the need for external sources of energy. Collocating water plants and power plants also could allow water plants to use the waste heat from power plants for heating and thermal needs.

**Nyanue:** What does the water utility of the future look like?

**Broaddus:** Water utilities will need to use their purchasing power in a way that does not exacerbate the climate problems that they are experiencing. In the future, the most successful utilities will be those that close the loop between water, waste

and energy, and try to plan for and site them together. One excellent example on a very large scale is what's going on in Washington, D.C. The city is working with its electric utility to create a wastewater utility that will generate enough energy to power some of its own electrical needs. I think that's the kind of thing we'll start to see more of.

**Nyanue:** How will this change affect customers?

**Broaddus:** Their expectations need to change so that they become more conscious of the way they use water and energy and the kinds of wastes they generate. They will need to be smarter and more demanding of their utilities as well. Maybe they'll install appliances that use water more efficiently. Maybe they'll take that next step and capture their own water to use on site, or avoid polluting water unnecessarily by watching what they flush down the toilet or throw on the ground. They also will need to recognize that purchasing clean energy is better overall, and be willing to support that at the ballot or in paying their bills.

**Nyanue:** Why is this concept important for utilities and consumers?

**Broaddus:** If we start to conserve and plan properly, as we bring down energy use, we will bring down water use. This is important, not only because the impacts of climate change are something that we are currently dealing with, but also because all utilities and customers want to be able to get a handle on costs. The best way to do this is by reducing energy costs or generating energy on site so you are not beholden to outside fluctuations and trends. **SWS**

**Lynn Broaddus, Ph.D., is director of the Environment Program at the Johnson Foundation at Wingspread. Broaddus can be reached at [lbroaddus@johnsonfdn.org](mailto:lbroaddus@johnsonfdn.org).**

**Williette Nyanue is associate editor for SWS. Nyanue can be reached at [wnyanue@sgcmail.com](mailto:wnyanue@sgcmail.com).**

**For more information, write in 810 on this issue's reader service form on page 46.**