

# water sockets



By Benjamin H. Grumbles

Next-generation  
planning for the  
energy-water nexus

It is no shock to anyone that energy and water are connected. We all know linkages and tradeoffs exist throughout stages of exploration, production, distribution, restoration and reinvention. What is surprising and encouraging though, is the increasing level of scientific and policy focus on the subject. Just over the past decade, the term “energy-water nexus” has come out of the blue, reached buzzword status, and now is the worthy subject of intense focus, analysis and practice.

According to Dr. Michael Hightower, Water for Energy project lead, Sandia National Laboratories, the catch phrase may have gotten its launch into stardom in 2005, when Department of Energy experts used the shorthand phrase in briefings about a report to Congress on the interrelationships of energy and water. The concept also has surfaced under different names in various contexts, some well before 2005. For example, the Energy Policy Act of 1992 ushered in important new national requirements on energy-efficient light bulbs and other fixtures such as low-flow toilets.

To offer another example, the Alliance to Save Energy coined the term “Watergy” and applied it to international needs, stating, “It takes a lot of energy to pump and treat water for urban residents and industry—between 2% and 3% of the world’s energy consumption, to be exact. As a result, clean water is often inaccessible in energy-poor countries.” Its Watergy program has helped improve water sanitation and delivery services in more than 100 cities worldwide and also has borne energy and water fruit at a Bucks County Water & Sewer Authority pilot project in Pennsylvania.

Another early example of the nexus, reflecting tradeoffs between energy production and water quality and ecosystem protection, was the Clean Water Act’s section 316(b) regulations for cooling water intake structures. The U.S. Environmental Protection Agency’s (EPA) efforts to interpret and implement the provisions spawned decades of litigation. Environmental advocacy groups such as Hudson Riverkeeper and energy interests such as the Edison Electric Institute have mud-wrestled over the costs, benefits and risks of the law, resulting in court decisions and consent decree schedules. EPA currently is engaged in its latest attempt to finalize a portion of tiered, phased-in regulations. It also is working on Clean Water act section 304 effluent limitation guidelines for the steam electric power sector, involving metals and other pollutants in coal ash and power plant storm water discharges, as well as the legal and policy question of whether water quality trading should be used to meet technology-based controls under the act. (Visit <http://water.epa.gov/scitech/wastetech/guide/steam-electric/proposed.cfm> for more details.)

## Crash Course

Two other high-profile collisions between water and energy are worth noting; in fact, they often dominate the debate over the energy-water nexus: 1) mountaintop mining of coal, with its regulatory protections and gaps under the Surface Mining Control and Reclamation Act and the Clean Water Act; and 2) shale gas drilling and hydraulic fracturing, the current center-stage debate playing out in theaters across the country.

Energy efficiency and water efficiency go hand in hand, as do their economic and environmental benefits. Climate change skeptics—who can pose good questions to shape better policies—should not have a problem with utilities, corporations and cities saving money and deferring, or even avoiding, more expensive infrastructure investments through water and energy conservation and efficiency. EPA’s Energy-Water Nexus Principles underscore the value of integrating drops and watts work.

The Alliance for Water Efficiency is doing great work to understand the nexus and enlighten policies and practices for both water and energy. It also has coordinated with the American Council for an Energy Efficient Economy ([www.aeee.org](http://www.aeee.org)) to provide a roadmap for research and action.

In July 2013, I participated in bipartisan discussions within the Senate Energy and Natural Resources Committee on potential ways Congress and the federal government might promote more education and efficiency. Federal agencies and non-governmental, nonprofit organizations and associations brainstormed and reacted to various proposals. One area of interest was to establish a national clearinghouse. I am not averse to the idea, but realize the potential for multiple clearinghouses becoming “clutterhouses” that do not add value. Overall, the conversation was constructive and shed light on various technical, legal and institutional barriers.

Here are some of my top recommendations:

1. Congress should fund and support EPA’s WaterSense program and the Department of Energy’s and EPA’s Energy Star program. (Admittedly, I am biased on both because I helped launch WaterSense and supported Energy Star while an EPA official.) Since my time at EPA, though, I have seen firsthand how these nonregulatory certification and labeling initiatives significantly boost efficiency and sustainability and save citizens money by using market-based strategies and consumer awareness campaigns.
2. Support continued research and pilot projects. Organizations inside and outside the government—from the National Academy of Sciences to the Electric Power Research Institute, World Resources Institute, and Resources for the Future—are tackling some of the most relevant questions. The more America pursues biofuels and other alternatives to fossil energy, the more it needs to know about the water footprint and the unintended costs “downstream.” To advance efficiency and intergovernmental coordination, Sen. Tom Udall of New Mexico has developed legislation to authorize a \$15-million pilot program within EPA and the U.S. Department of Energy (DOE) for communities. It initially was proposed as an amendment to the larger energy legislation sponsored by Sens. Jeanne Shaheen and Rob Portman.
3. Consider internal reorganizations in federal agencies and committees. It is no small feat for the DOE to centralize its efforts on energy-water. The good news, though, is that a more consolidated approach seems to be in the works. Congressional efforts to caucus and coordinate more strategically among committees on energy-water priorities are needed now more than ever.

Probing energy-water nexus issues does not mean sticking a wet finger in an electrical socket, but it does entail integrating the two worlds of energy and water in bold and creative ways. Pilot projects and breakthrough technologies, coupled with legal and financial risk management strategies, will light the way to a brighter and more sustainable future. All it takes is national vision, governmental coordination, and local and private sector leadership. Piece of cake. **www**

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