



American Water Works
Association



Water Sector Meeting with the Honorable Ernest Moniz, Secretary of Energy

September 7, 2016

Energy and Water Sector Collaboration

Purpose: Discuss challenges and opportunities in the energy-water-food nexus and explore opportunities for collaboration with the Department of Energy (DOE). Research and collaboration between energy and water sectors can result in reliable, resilient, and sustainable systems that will stimulate energy efficiency and water conservation to benefit public health and the environment.

Who We Represent: We represent utilities that provide service to 90 percent of the population in the United States through drinking water, wastewater, resource recovery, reuse and stormwater systems. We are the leading national water sector research, educational, and advocacy organizations with membership consisting of most of the large and medium water utilities in the United States, plus consulting, manufacturing, academia, government, and others. We have been engaged in addressing energy-water nexus issues through research, practice, and collaboration for decades and are positioned to make significant advancements through increased collaboration with DOE and other stakeholders.

The Energy-Water Nexus: Water and energy are critical and mutually dependent resources. There are about 52,000 drinking water utilities and about 15,000 wastewater utilities in the United States, making us a large and diverse sector. Around 2–4% of the nation's electricity is used by these utilities. Likewise, approximately 27% of U.S. nonagricultural water is consumed by the energy sector.

Challenges and Opportunities: There are numerous energy and water management challenges and opportunities in water supply, treatment, and resource recovery. See the accompanying document: [Energy and Water Sector — Challenges and Opportunities](#)

Suggested Actions for the Secretary's Office in the Next Quarter:

- ✓ DOE should convene leaders from major energy companies and water utilities to discuss critical areas where strategic planning and cooperation is needed to support climate resilience for the nexus of the water and energy sector nationwide.
- ✓ Recognize sector leaders and develop robust sector energy data through supporting the Better Plants and Superior Energy Performance in the Advanced Manufacturing Office.
 - Catalog and widely advertise practices implemented by leaders to foster adoption of this program and practices identified within the sector.
 - Open these programs to more of the water sector: all utility types, ownerships, and sizes.

Suggested Actions for the Secretary's Office in the Next Quarter (continued):

- ✓ Develop efficiency savings protocols for the sector to facilitate performance and coordination through the Uniform Methods Project in the Energy Efficiency and Renewable Energy Office.
 - Recognize the need for water sector-specific measures due to the unique nature of distribution and collection systems and utility operations.
 - Launch a pilot to develop measures for at least two sector-specific activities and a plan to develop more. Consider water loss control (drinking water and water reuse) and protection from infiltration and inflow (wastewater) as possible pilots.
- ✓ Arrange for the Energy Information Agency to track data on biogas generation at wastewater plants in the same manner as other renewables (i.e., landfill gas).
- ✓ Grow water sector outreach from DOE's Industrial Assessment Centers (IACs).
 - Direct the IACs to conduct outreach through the local affiliates available through several national water associations to encourage participation and share results.
 - Aggregate both common and novel practices and data collected to enhance into the Better Plants and the Uniform Methods Project.
- ✓ Develop collaborative research opportunities with DOE and the water sector, such as:
 - Estimate energy efficiency and demand response potential in the United States in water supply and drinking water systems and resource recovery facilities.
 - Develop vehicle fuel (including liquid fuels) and other beneficial products from wastewater sludge
 - Enable the co-digestion of food wastes and other organic waste streams with wastewater solids.
 - Develop and demonstrate new membranes for water and wastewater treatment made of new materials that improve energy efficiency of processes.
 - Develop energy from wastewater technologies including hydrothermal liquid processing, microbial fuel cells, and anaerobic membrane bioreactors.
 - Identify the costs and benefits of automated data collection systems for energy management; develop standards for data collection.
 - Develop new technologies and practices that can reduce the energy demand of desalination and reuse and lower its environmental and economic costs.
 - Continue investigations into the water/energy tradeoffs of differing resource development and management choices that can better inform multi-sector integrated resource planning.
 - Develop energy efficiency and reduction technologies like short-cut nitrogen removal (deammonification), sensors, and real-time control technologies.
 - Develop comprehensive studies and guidelines for conducting a detailed audit of embedded energy demands for local, regional, or national water and wastewater systems to help in system optimization.