ENERGY AND WATER RESEARCH INTEGRATION (H.R. 34)

Leadership of the U.S. House of Representatives Committee on Science, Space, and Technology (SS&T) opened the 116th Congress by reaching across the aisle to reintroduce bipartisan legislation aimed at integrating research into the critical "energy-water nexus." Chairwoman Eddie Bernice Johnson (D-Texas) and Ranking Member Frank Lucas (R-Okla.) offered the **Energy and Water Research Integration Act** (**H.R.34**) January 3, 2019. The bill was referred to the SS&T Subcommittee on Energy February 12. It received a **legislative hearing** by the Subcommittee on Energy March 7 and went through a **subcommittee markup** March 27. The bill explicitly draws the connection between energy consumed by the water sector, and water used and consumed by the energy sector. Similar legislation was most recently introduced into the 114th Congress as **H.R. 5979** by Rep. Johnson, then Ranking Member of the SS&T committee with cosponsor Rep. Matt Cartwright (D-Pa.). A similar bill, introduced as **H.R. 3598** (Rep. Bart Gordon, D-Tenn./Rep. Ralph Hall, R-Texas) nearly a decade ago passed the House via voice vote on December 1, 2009 (111th Congress) with committee report **H. Rept. 111-344**. Alliance Honorary Advisor ***Rep. Paul Tonko (D-N.Y.)*** was one of 16 cosponsors of that legislation.

OPPORTUNITY

The vital relationship between energy and water is often referred to as the "energy-water nexus." Water is a key component in energy generation, as it is used for power, cooling, and processing. The treatment and delivery of safe, clean water relies on energy for pumping, transport, heating and cooling. These two networks are heavily interconnected and face similar threats to security and reliability at the hands of natural disasters, increasing resource scarcity, and a changing climate. There is an opportunity to increase the energy efficiency of both networks through thoughtful integration of information and controls, and incorporation into DOE's RD&D projects. The bill considers findings of recent studies by DOE and the Electric Power Research Institute which highlight these connections and it encourages research of technologies to increase efficiencies and reduce water usage in energy production.

KEY PROVISIONS

The Energy and Water Research Integration Act directs the Secretary of Energy to incorporate water considerations into energy RD&D programs by: advancing energy efficiency technologies and practices that minimize freshwater withdrawal and consumption, increase water efficiency, and utilize nontraditional water sources to improve the quality of the water from those sources; considering the effects of climate variability on the quality of water supplies for energy generation and fuel production; and improving understanding of the energy-water nexus.

The bill requires DOE to develop a Strategic Plan within 12 months that would identify RD&D needs, to specifically include:

- New advanced cooling technologies for energy generation and fuel production technologies;
- Performance improvement of existing cooling technologies and cost reductions associated with using those technologies;
- Innovative water reuse, recovery, and treatment technologies in energy generation and fuel production;
- Technology development for carbon capture and storage systems that utilize efficient water use design strategies;
- Technologies that are life-cycle cost-effective;

- Systems analysis and modeling of issues related to the energy-water nexus;
- Technologies to treat and utilize waste-water and produced waters discharged from oil, natural gas, coal-bed methane, and any other substance to be used as an energy source;
- Advanced materials for the use for non-traditional water sources for energy generation and fuel production;
- Biomass production and utilization and the impact on hydrologic systems;
- Technologies that reduce impacts on water from energy resource development;
- Energy efficient technologies for water distribution, treatment, and collection systems;
- Technologies for energy generation from water distribution, treatment, and collection systems; and
- Any other area of the energy-water nexus the Secretary of Energy deems appropriate.

In developing the strategic plan, DOE is advised to consider relevant information from the National Water Availability and Use Assessment Program and consult with a diverse group of representatives from research and academic institutions, industry, and State and local governments. The strategic plan should be updated three years after the passage of this Act and every five years thereafter.

The bill recommends DOE establish an interagency Energy-Water Subcommittee of the Energy Advisory Board to promote improved energy and water resource data collection, reporting, and technological innovation. The Subcommittee should have representation from each program within the Department and each Federal agency that conducts energy-water nexus related research, as well as non-Federal members from academic, State, and industry communities. The Subcommittee would make recommendations on the development and integration of data collection and communication standards to agencies that currently collect data for the energy-water nexus; recommend ways to improve Federal water use data to better understand trends in energy generation and fuel production; and recommend best practices for using existing data collection programs to provide uniform water and energy use and infrastructure data across the country.