Complete Statement of Nicole T. Carter, Ph.D.
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Before the Committee on Energy and Natural Resources
Subcommittee on Water and Power
United States Senate
Hearing to Consider S. 1971, Nexus of Energy and Water for Sustainability Act of 2014
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Chairman Schatz, Ranking Member Lee, Members of the subcommittee, my name is Nicole Carter. I am a Specialist in Natural Resources Policy at the Congressional Research Service (CRS). Thank you for inviting CRS to testify on S. 1971, The Nexus of Energy and Water for Sustainability Act (the NEWS Act). In serving the U.S. Congress on a non-partisan and objective basis, CRS takes no position on this legislation, but has been asked by the Subcommittee to provide background and analysis of the legislation and its context. CRS remains available to assist the Subcommittee in its consideration of this legislation, related issues, and potential concerns among affected stakeholders.

Description of Legislation

S. 1971 would require the Director of the Office of Science and Technology Policy to establish a Committee or Subcommittee on Energy-Water Nexus for Sustainability (hereinafter referred to as the NEWS Committee). The NEWS Committee would be within the National Science and Technology Council (NSTC). The NSTC was established by Executive Order 12882 on November 23, 1993. This Cabinet-level council is the principal means within the executive branch to coordinate science and technology policy across the federal research and development enterprise. A primary objective of the NSTC is the establishment of clear national goals for federal science and technology investments; the NSTC also prepares research and development strategies coordinated across federal agencies to form investment packages aimed at accomplishing these goals.

The NEWS Committee would coordinate federal energy-water nexus efforts, which the bill defines as the link between (1) energy efficiency and the water quantity needed to produce fuels and energy and (2) the energy needed for transporting and treating water. It would be co-chaired by the Secretary of Energy and the Secretary of the Interior and include at minimum 11 other identified federal departments, agencies, or offices. The duties of the NEWS Committee would include the following:

- providing a forum for development of federal energy-water nexus goals and plans,
- promoting coordination of energy-water nexus activities across federal agencies,

- supporting federal energy-water nexus data capabilities and dissemination, and
- identifying opportunities to advance energy-water nexus science and technologies, including through public-private partnerships and innovative financing.

S. 1971 also would require an annual energy-water crosscut budget of federal and state funding of energy and water nexus projects to be transmitted within 30 days of the President's budget submission to this Committee and two House Committees. Currently, few activities are identified as energy-water nexus related in federal budget and appropriations documents, although we know that numerous federal programs, activities, and grants support energy-water nexus research and data, often as part of their broader missions.

Federal Energy-Water Nexus Efforts

A 2012 Government Accountability Office (GAO) report provides some context for this legislation. It described how the lack of comprehensive energy-water data and research hampers effective policy choices; the report stated: "Congress and federal agencies may be making decisions that affect energy and water supplies without fully understanding the impact of these decisions."[1] In a 2013 review of global corporations' disclosures, 45% of energy companies indicated that water stress or scarcity represented a direct risk to their business operations.[2]

Domestic energy development, electricity demand, and population distribution affect how much and where the energy sector relies on water to cool power plants, to produce conventional and unconventional fuels, and generate hydropower. Similarly, delivering water to communities, industries, and agriculture and treating municipal and industrial wastewaters consumes energy. While many federal entities collect energy-water nexus relevant data, support related research, and in the case of the Department of Energy have a departmental strategy, the coordination and strategic planning of federal energy-water nexus efforts have been limited and of limited impact in guiding research and improving investments and policy choices. Some agencies have taken steps to improve energy-water nexus data collection and dissemination of research results and attempted some targeted collaboration. However, the results and impact of these efforts to date remain to be seen. For example, the Multi-Agency Collaboration on Unconventional Oil and Gas Resources consisting of U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency (EPA), and the U.S. Geological Survey (USGS),

[1]U.S. Government Accountability Office (GAO), *Energy-Water Nexus: Coordinated Federal Approach Needed to Better Manage Energy and Water Tradeoffs*, GAO-12-880, September 2012, http://www.gao.gov/assets/650/648306.pdf.

[2] Carbon Disclosure Project, *Moving beyond business as usual: A need for a step change in water risk management*, CDP Global Water Report 2013, 2013.

targeted release of a multi-year research plan by January 2013; the plan has yet to be made public. Another example of mixed results is the availability of reliable data for informing policies and public debates. Significantly more data and analysis are available today than five years ago on the water use associated with different thermoelectric power generation technologies and fuels; however, significant data gaps remain regarding water use associated with fuels, especially on a water use per unit of energy produced basis. For example, the water use data for oil extraction and refining that are often cited are decades old, poorly documented, lack verification, or represent limited samples. Energy-water data gaps persist in part because improving available data is challenging: much of the energy sector is private, dispersed, and quickly evolving; and ensuring data consistency, accuracy, and currency is challenging and can require an investment of resources and effort.

S. 1971 would assign the NEWS Committee to engage in information exchange, collaboration, and promote data collection and dissemination. The legislation also calls for the NEWS Committee to identify opportunities for public-private partnerships and collaborations. Together these efforts may stimulate innovation in related science and technologies and assist in addressing in the long-run some of these persistent data and knowledge gaps that remain for the United States and internationally.

As previously noted, S.1971 would require an annual crosscut budget of nexus activities. The U.S. Department of Energy's activities can illustrate how crosscuts may provide federal funding information that otherwise would not be available. The Energy Policy Act of 2005 directs the Secretary of Energy to carry out a program to address the energy-water nexus and assess the effectiveness of existing programs at DOE and other federal agencies. To date, DOE has neither received nor requested any funding specifically designated to carry out this provision; however, the department has been active in various energy-water research efforts. A crosscut budget would presumably document any federal spending on energy-water related activities such as this, even if they do not appear as appropriations line-items. The energy-water crosscut budget could be of use to Congress, the executive branch including the NEWS Committee, and non-federal stakeholders.

Impact of Legislation

Regarding the impact of S. 1971, the bill would provide congressional direction to the Administration on how to accomplish federal energy-water nexus coordination, and provide the forum and budget information for development of integrated multi-agency research plans.

The crosscut budget requirement in S. 1971 may pose some implementation challenges. First, while S. 1971 defines "energy-water nexus," the term "energy-water nexus project" is not defined. In particular, the bill does not clarify whether this term is limited to research, development, and

demonstration or includes infrastructure and other larger-scale investments. Second, the requirement to include state government expenditures from all 50 states and expenditure data back to FY2011 may be difficult to accomplish. It is unclear if state governments would have incentives to cooperate, and if the aggregated data state data would be sufficiently consistent to be useful to the crosscut budget effort. In the face of challenges like these, other existing and proposed federal crosscut budget provisions have utilized joint federal-state institutions or narrowly limited the nature of state-level information to be compiled.[3] For crosscut budgets to be most useful they need to be accurate and targeted at the most pertinent information for decision-making in order to reduce unnecessary effort and cost associated with their compilation.

Except for the annual crosscut budget, S. 1971 requires no specific deliverable and provides little direction to the Administration on how the NEWS Committee should accomplish its duties or measure its success. S. 1971 does provide the OSTP Director discretion to terminate the NEWS Committee after 10 years based on a determination of its relevance and effectiveness. The flexibility S. 1971 provides to the NEWS Committee may allow it to anticipate and respond to developments affecting the energy-water nexus as they arise (which can be rapid, as illustrated by the quick rise of unconventional oil and gas development since the late 2000s), to be innovative in how it coordinates, and how participating federal agencies engage nonfederal and private entities.

While S. 1971's implementation would likely require an investment of resources and staff (e.g., to accomplish the coordination, prepare plans, and assemble data and crosscut budgets), it also has the potential to produce benefits. It may result in research plans that reduce duplicative research efforts, knowledge to help avoid unintended policy outcomes, and technologies to more reliably deliver affordable energy and water, efficiently use and conserve natural resources, and mitigate energy-water nexus related business risks.

This concludes my statement. Thank you. I am happy to answer any questions you may have at the appropriate time.

[3] See, for example, crosscut budget provisions for Great Lakes restoration (P.L. 113-76, Division E, Title VII, Section 738; 128 Stat. 238); and proposed crosscut budget provisions in H.R. 2773 (Great Lakes Ecological and Economic Protection Act of 2013, as introduced) and H.R. 2954 (Title X of the proposed Public Access and Lands Improvement Act, 113th Congress, Chesapeake Bay Accountability and Recovery Act, House-passed).