Statement of Tom Iseman
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before the
United States Senate
Committee on Energy and Natural Resources
Subcommittee on Water and Power
S. 1971, Nexus of Energy and Water for Sustainability Act of 2014
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Chairman Schatz, Ranking Member Lee and members of the Subcommittee, I am Tom Iseman, Deputy Assistant Secretary for Water and Science at the Department of the Interior (Department). Thank you for the opportunity to testify on S. 1971, Nexus of Energy and Water for Sustainability Act of 2014. The Administration has not completed its review of S. 1971 in conjunction with the report issued by the Department of Energy last week, entitled *The Energy-Water Nexus: Challenges and Opportunities* (U.S. Department of Energy 2014). The bill would create a Committee or Subcommittee on Energy-Water Nexus for Sustainability under the National Science and Technology Council (NSTC), co-chaired by the Secretary of Energy and Secretary of the Interior. The Department has a number of existing programs that address many of these energy-water nexus issues, some of which are summarized below.

Founded in 1879, the USGS is the Nation's largest water, earth, and biological science and civilian mapping agency. The USGS collects, monitors, analyzes, and provides scientific understanding about natural resource conditions, issues, and problems. The USGS provides impartial scientific information on the health of our ecosystems and environment, the water and energy resources we rely on, and the impacts of climate and land-use change. With a diversity of scientific expertise, the USGS carries out large-scale, multi-disciplinary investigations and provides scientific information to resource managers, planners, and other customers.

Reclamation owns and operates water projects that promote and sustain economic development within the 17 western States. The mission of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public. Since it was established in 1902, Reclamation has constructed more than 600 dams and reservoirs including Hoover Dam on the Colorado River and Grand Coulee on the Columbia River. Reclamation is the largest wholesaler of water in the country, delivering water to more than 31 million people, and providing one out of five western farmers with irrigation water for 10 million acres of farmland across the United States. Reclamation is also the second largest producer of hydroelectric power in the United States, and provides significant amounts of renewable energy to customers throughout the West.

<u>Existing Programs at the Department of the Interior</u>

The Department recognizes the importance of the energy-water nexus and supports a closer level of communication and coordination between the Department of the Interior, Department of Energy and the broader federal community. The Department of the Interior appreciates the

Committee's leadership on the energy-water nexus issue. Energy and water issues intersect across a range of Interior activities, including hydropower generation, energy development, electricity generation, and water treatment, distribution, and conservation. Interior has a variety of programs that address the energy-water nexus, including USGS monitoring systems and research programs (including the National Water Census), Reclamation Basin Studies, and WaterSMART Grants. Understanding the value of interagency coordination, Interior has partnered with the Department of Energy and the Department of the Army (working with the U.S. Army Corps of Engineers) through a 2010 Memorandum of Understanding (MOU) to collaboratively address a host of energy-water nexus issues related to hydropower. By coordinating efforts, the signatory agencies have completed a number of projects that promote sustainable hydropower development, including hydropower resource assessments, unit-dispatch optimization systems, climate change studies, integrated basin-scale opportunity assessments, and funding opportunities to demonstrate new small hydropower technologies.

The Department is committed to integrating energy and water policies to promote the sustainable use of all resources, including incorporating water conservation criteria and the water/energy nexus into the Department's planning efforts. On June 9, 2014, the Department announced that Reclamation will make $17.8 million in WaterSMART Water and Energy Efficiency Grants available to 36 new and ongoing projects in the Western United States for activities such as conserving and using water more efficiently, increasing the use of renewable energy, improving energy efficiency, encouraging water markets, and carrying out activities to address climate-related impacts on water. Reclamation also announced that it will make $1.8 million available for comprehensive water basin studies conducted jointly with state and local partners in the Upper Red River Basin in Oklahoma, Upper Deschutes River Basin in Oregon, and Missouri River Headwaters Basin in Montana. These announcements support the President's Climate Action Plan by providing tools for states and water users to create water supply resilience to meet future water and energy demands in the face of a changing climate.

Water and Energy Efficiency Grants and Basin Studies are part of the Department's WaterSMART Program. WaterSMART Grants provide cost-shared funding to States, tribes, and other entities with water or power delivery authority for water efficiency improvements, with additional consideration given to proposals that include energy savings as a part of planned water efficiency improvements. Water management improvements that incorporate renewable energy sources are also prioritized for WaterSMART Grant funding. These grants directly address the energy-water nexus and provide a concrete means of implementing on-the-ground solutions to energy-water issues. The FY 2014 Water and Energy Efficiency Grant projects are expected to conserve more than 67,000 acre-feet of water annually and 22.9 million kilowatt-hours of electricity — enough water for more than 250,000 people and enough electricity for more than 2,000 households. Basin Studies are collaborative studies, cost-shared with non-Federal partners, which analyze how climate change may affect water supply, demand and operations in the future and identify adaptation strategies to address imbalances in water supply and demand.

In addition to long-standing USGS efforts in water supply and availability and in energy resource assessments and research, which provide an essential foundation for understanding issues related to the energy-water nexus, the USGS participates in a number of interagency efforts. The USGS has been working with the Energy Information Administration (EIA) since 2010 to improve

estimates of water withdrawals[1] and consumptive use associated with cooling water at thermoelectric generating plants across the Nation. Cooling water for such plants is the largest sector of water withdrawals in the United States, at 49% of all water withdrawals nationwide, according to USGS Circular 1344, Estimated Use of Water in the United States in 2005. A recent USGS report, Methods for Estimating Water Consumption for Thermoelectric Power Plants in the United States (Scientific Investigations Report 2013-5188), documents the model that the USGS developed with the assistance of the EIA for estimating electric generating plant water withdrawals and consumptive use, which are currently not consistently reported. This ground-breaking model, which incorporates the heat budget of each of the approximately 1,300 thermoelectric generating plants that rely on water for cooling, can be used both to estimate current and historical water use and to forecast future water use with different plant configurations and cooling water technologies.

In addition to the efforts above, the FY 2015 President's Budget requests an additional $2 million for the USGS to provide water use grants to States that will increase availability and quality of water use data – including data related to water used for energy. These grants would provide financial resources, through State water resources agencies, to improve the availability and quality of water use data that they collect and would integrate those data with the USGS Water Census. Funding provided to States through these grants would be targeted at improvements to water use data collection and integration that will be of the greatest benefit to a national assessment of water availability and use. As the energy sector is a primary user of water, increased availability of water use information related to energy will be an important part of this effort.

In mid-April 2014, the USGS released an expanded and updated version of the USGS oil, gas, and geothermal Produced Waters Database and Map Viewer; the revised database contains nearly 100,000 new samples from conventional and unconventional well types, including geothermal. The availability of more samples and more types of analyses will help farmers determine the quality of local produced water available for possible remediation and reuse, will enable local and national resource managers to track the composition of trace elements, and will help industry plan for waste-water injection and recycling.

The Powder River Basin in northern Wyoming and southern Montana has experienced a rapid expansion in the development of coalbed natural gas. About 90 billion liters of water were produced annually in the Wyoming portion of the Basin between 2002 and 2011 as part of the extraction process. The produced waters are moderately saline and have high proportions of sodium relative to calcium and magnesium, thus rendering the waters unsuitable for irrigation without treatment. USGS studies have examined the environmental impacts of different disposal options. Results indicated that infiltration impoundments had the potential to contaminate underlying fresh groundwater supplies, but that with specific treatment the produced waters could be used in subsurface drip irrigation operations that minimized potential for groundwater contamination and provided beneficial use of the waters to enhance agricultural production in this semiarid region.

[1] Withdrawals are defined as water removed from the ground or diverted from a surface-water source for use.

Other Departmental programs and activities relate directly to the energy-water nexus, including hydropower development, water treatment and desalination, pumping and water delivery, BLM energy permitting, and USGS research on energy resources and induced seismicity. We are happy to provide the Committee with additional information on these programs as needed.

S. 1971, Nexus of Energy and Water for Sustainability Act of 2014

Section 3 of S. 1971 requires the Director of the Office of Science and Technology Policy to establish either a Committee or Subcommittee on Energy-Water Nexus for Sustainability under the NSTC, co-chaired by the Secretary of Energy and Secretary of the Interior. The Committee or Subcommittee is directed to: (1) serve as a forum for developing common federal goals and plans on energy-water nexus issues; (2) promote coordination of the related activities of several federal departments and agencies identified in the bill; (3) coordinate and develop capabilities for data collection, categorization, and dissemination of data from and to other federal departments and agencies; and (4) engage in information exchange between federal departments and agencies.

Section 4 of S. 1971 requires the Director of the Office of Management and Budget to submit to Congress a report that includes an interagency budget crosscut that: (1) displays the budget proposed for the upcoming fiscal year, including any interagency or intra-agency transfer, for each of the federal agencies that carry out energy-water nexus projects and (2) identifies all federal and state expenditures since 2011 on energy-water nexus projects. The report to Congress would also provide a detailed accounting of all funds received and obligated by all Federal and State agencies with energy-water implementation responsibilities during the previous fiscal year and list all energy-water nexus projects to be undertaken in the upcoming fiscal year, with the federal portion of funds for those projects.

The Department appreciates the Committee's leadership and the opportunity to strengthen capabilities to address the energy-water nexus. Given the breadth and many facets of this issue, we support close collaboration with the DOE and other Federal agencies. Moving forward, we would like to continue working with the Committee on preliminary concerns regarding the details of the collaborative structure and reporting provisions on issues related to the nexus of energy and water. The Department supports interagency collaboration and information sharing to support sound decision-making, leverage resources, and reduce duplication. But, the Administration believes this can be done through more effective and efficient collaboration and program management, rather than an unduly and potentially ineffective reporting requirement.

If enacted, it is the Department's view that the committee or subcommittee created under S. 1971 should focus its attention on key vulnerabilities where there is an appropriate federal role and capability to have a positive impact. It is the Department's view that that focus should be on data gaps associated with water use and availability.

Water availability, severe drought, and long-term climate trends have always posed a significant risk to energy development and electric generation. This is one of the broad, systemic risks at the core of the energy-water nexus. Decreased water availability, prolonged drought, and more

pronounced climate trends could increase that risk and require the use of accelerated adaptation strategies.

The Department supports the type of coordination and data exchange encouraged under S. 1971 and is already undertaking a number of steps to do so as discussed in the testimony above. Such efforts could help close existing gaps, increasing our understanding of water supply availability to benefit water and energy decision makers.

If enacted, S. 1971 may present challenges to the Department. The Department would need to evaluate whether the commitments and reporting requirements in the bill may require additional resources to carry them out. Additionally, while S. 1971 allows for the coordination of federal activities, the Department would like to stress the importance of providing the scientific community with autonomy to design and execute studies. Finally, States play the key role in allocating and administering water, and they must be a partner in energy-water efforts. S. 1971 does not address the important relationships with states and the private sector, where significant work on energy-water nexus projects is accomplished. Finally, as drafted, it is unclear to the Department what qualifies as an "energy-water nexus project" under S. 1971.

Conclusion

In conclusion, the Department shares the Committee's goals to promote coordination between Federal agencies as it relates to the energy-water nexus. We appreciate the leadership of this Committee in engaging Federal agencies. The Department has numerous programs in place that encourage coordination not only within the Federal Government, but as public-private partnerships. The Federal Government has a role in providing leadership and tools to address the challenges of imbalance between supply and demand. Sustainable water supplies and energy use are important parts of a stable economic base, employment continuity, and smart growth.

I would be pleased to answer any questions the Subcommittee may have.