

**Statement of Michael L. Connor, Commissioner
Bureau of Reclamation
U.S. Department of the Interior**

before the

**Committee on Energy and Natural Resources
Subcommittee on Water and Power
United States Senate**

Colorado River Basin Water Supply and Demand Study

July 16, 2013

Chairman Udall and members of the Subcommittee, I am Michael Connor, Commissioner of the Bureau of Reclamation (Reclamation) at the Department of the Interior (Department). Thank you for the opportunity to testify before the Subcommittee today regarding the Colorado River Basin Water Supply and Demand Study (Study). The Colorado River Basin (Basin) is one of the most critical sources of water in the West. The River and its tributaries provide water to nearly 40 million people for municipal use, for irrigation of nearly 5.5 million acres of land, and also it represents the lifeblood for at least 22 federally recognized Indian tribes (tribes), seven National Wildlife Refuges, four National Recreation Areas, and 11 National Parks. Hydropower facilities along the Colorado River provide more than 4,200 megawatts of generating capacity, helping to meet the power needs of the West and offsetting the use of fossil fuels. The Colorado River is also a vital component in fulfilling Mexico's agricultural and municipal water needs in Baja California and Sonora.

Today the Colorado River is facing a record drought. The period from 2000 to 2013 is shaping up to be the lowest 14-year period in the over 100-year historical record for the Colorado River. Tree-ring reconstructions of streamflow indicate that the current 14-year period, which began in 2000, is one of the lowest in the Basin in over 1,200 years. The challenges and complexities of ensuring a sustainable water supply and meeting future demand in the over-allocated and highly variable Colorado River has been recognized and documented by Reclamation and the Basin States of Arizona, California, Colorado, New Mexico, Nevada, Utah, and Wyoming for decades. Looking ahead, concerns regarding the reliability of the Colorado River system to meet water deliveries, power generation, environmental and recreational needs are even greater, given the likelihood of increasing demand for water and projections of reduced supply due to climate change.

It was against this backdrop that the Study was conducted by Reclamation's Upper Colorado and Lower Colorado Regions and the Basin States with participation and input from a broad range of stakeholders including tribes, agricultural users, purveyors of municipal and industrial water, power users, and conservation, environmental and recreation organizations. The purpose of the Study was to define current and future imbalances in water supply and demand in the Basin and the adjacent areas of the Basin States that receive Colorado River water over the next 50 years (through 2060). The Study also included a wide array of adaptation and mitigation strategies proposed by stakeholders and the public to resolve those imbalances. The Study did not result in

a decision as to how future imbalances should or will be addressed. Rather, it provides a common technical foundation that frames the range of potential imbalances that may be faced in the future and the range of solutions identified by stakeholders and the public that may be considered to resolve those imbalances. Reclamation has not taken a position on the merits of any of these actions or whether it may ultimately support pursuing any individual actions.

The Study is one of 22 Basin Studies being undertaken by Reclamation and non-federal cost share partners across the West as part of the WaterSMART (Sustain and Manage America's Resources for Tomorrow) initiative. Through WaterSMART, Interior agencies work with state and local water managers to plan for climate change, drought and other threats to water supplies and consider their potentially interrelated and combined effects, and take action to secure water resources for communities, economies, and the ecosystems they support.

The Study is an unprecedented joint effort by Reclamation and the Basin States and is the most comprehensive basin-wide analysis ever undertaken within the Department. It began in January 2010 and was completed in December 2012 at a cost of approximately \$7.0 million, which was roughly equally shared by Reclamation and agencies representing the seven Basin States. This figure does not include the “in-kind” services by all of the other collaborators. The Study is a model, not only for other Reclamation basin studies, but for watershed planning across the country.

The FY 2014 Energy and Water appropriations bill passed by the House of Representatives last week drastically underfunds critical investments that develop American energy sources to build a clean and secure energy future; develop and commercialize the emerging technologies that create high-quality jobs and enhance the Nation’s economic competitiveness; and improve resilience against current and ongoing climate impacts that threaten our economy, public health, and natural resources. The bill eliminates the vast majority of WaterSMART funding that supported the Colorado River Basin Study and would significantly hinder actions under the WaterSMART program that could help address water supply shortages in the Colorado River Basin and elsewhere. Overall, the House bill would cut WaterSMART by 53%, including the elimination of all funding for WaterSMART grants, despite already having helped facilitate the conservation of 616,000 acre feet of water from 2010 through 2012. This action undermines the Federal government’s ability to partner with local communities on improving resilience against climate-related impacts that threaten a range of economic and environmental interests. The Administration urges the Congress to increase funding for the Bureau of Reclamation to the requested level and to allocate funding to priority conservation, science, and technology programs.

The Study Builds on a History of Collaboration in the Basin

Water managers and water users in the Colorado River Basin have long recognized the need to adapt to and mitigate the impacts of shortfalls between water supply and demand. As early as the 1950s, the estimated annual water use in the Colorado River basin exceeded the annual yield in some years. Prior to that, early water planning efforts resulted in the construction of significant infrastructure such as Hoover and Glen Canyon Dams. This infrastructure -- about four years of average natural flow of the river -- has helped to avoid past water shortages and to provide substantial power generation benefits to the region. Recently, substantial progress has

been made on refining Colorado River water management, including the 2007 interim guidelines for shortage, surplus, and coordinated operations, and the 2012 agreement with Mexico known as Minute 319 to the 1944 Treaty with Mexico. These efforts have resolved potential conflicts in the short and mid-term, are providing operational certainty in that same time frame, and are facilitating conservation actions along with increased water storage that is already helping to alleviate the impacts of the ongoing drought. The benefits of these agreements will continue to accrue for the foreseeable future.

The key to these historic accomplishments was collaboration and partnerships. It is in that same spirit that the Study was conducted. Through monumental outreach efforts, interested parties were engaged and their participation and input was critical to the Study.

Study Approach and Projected Range of Water Supply and Demand Imbalance

The Study adopted state of the art techniques and approaches to incorporate science, address uncertainty, and assess risk. In particular, a scenario planning approach was used to identify a broad range of future conditions leading to the most robust data generation and analysis of any planning effort in the Basin. The Study considers four different water supply scenarios and is the first Basin-wide study that considers the potential influence of climate change on future water supply. A range of future water demands were quantified in six different demand scenarios that included varied assumptions about future economic conditions, population growth, and water needs for agricultural, municipal and industrial, energy, mineral, and fish, wildlife, and recreation purposes.

The Study confirms that the Basin faces a range of potential future imbalances between supply and demand. Each of those imbalances results in decline in the performance of water deliveries, hydropower, water quality, ecological, and recreational resources. When the median of water supply projections is compared against the median of the water demand projections, the basin-wide imbalance in future supply and demand is about 3.2 million acre-feet annually by 2060. The average reduction in hydropower output under this projection is approximately 12%. However, the imbalance can be much greater, or less, under any one of the multiple future supply and demand scenarios that could occur.

The Study relied upon participants, stakeholders, and the public to provide a broad range of potential options to help resolve the water supply and demand imbalance. The Study then organized over 150 ideas or “options” into four groups: 1) those that increase Basin water supply, 2) those that reduce Basin water demand, 3) those that focus on modifying operations, and 4) those that focus primarily on Basin governance and mechanisms to implement options. , The Study explored a wide range of options with the goal of incorporating all viable opportunities, even those that that may ultimately be uneconomic or technically infeasible. Reclamation has not taken a position on the merits of any of these actions or whether it may ultimately support pursuing any individual actions.

An effective adaptation strategy would likely include large agricultural, municipal, and industrial conservation and water transfers, and water reuse options. Longer-term solutions are still unclear, and may or may not involve the use of large-scale augmentation, such as ocean desalination.

The Study's portfolio exploration indicates that implementation of a broad range of options can reduce the Basin's vulnerability and improve the system's resiliency to dry hydrologic conditions while meeting increasing demands in the Basin and adjacent areas receiving Colorado River water.

Moving Forward after the Study

This Study is not a regional or river basin plan or proposal, or a plan for any Federal water resource project. Rather, Reclamation intends that the Study will promote and facilitate cooperation and communication throughout the Basin regarding the reliability of the system to continue to meet Basin needs. However, In recognition of the enormous challenge facing the Basin states, the Federal Government can provide a leadership role in appropriate processes to facilitate dialogue about addressing water supply and demand imbalances in the Colorado River Basin. As a part of this federal facilitation process, Department of the Interior Assistant Secretary for Water and Science Anne Castle and I participated with representatives from the Basin States, the Ten Tribes Partnership, and conservation organizations in a "Moving Forward" public event in late May. This continuing effort will require innovative thinking, integration of many viewpoints and a commitment to work in a positive and collaborative spirit.

Phase 1 of this process builds on the critical investigations identified in the Study and consists of the formation of three multi-stakeholder workgroups representing Federal, State, Tribal, agricultural, municipal, hydropower, environmental, and recreational interests. These workgroups will investigate: 1) Municipal and Industrial (M&I) Conservation and Water Reuse, 2) Agricultural Conservation and Water Transfers, and 3) Environmental and Recreational Flows. As projects, policies, and programs are developed, consideration will be given to those that provide a wide-range of benefits to water users and healthy rivers for all users. In addition, Reclamation and the Ten Tribes Partnership are jointly pursuing a study related to tribal water use and long-term needs.

It is anticipated that Phase 1 will be completed by 2014, after which Phase 1 efforts will be reviewed, additional phases will be identified, and the process will be reassessed and modified as needed to facilitate anticipated further phases of work. Of course, this new initiative is responsive to the findings of the Study and will be carried out in parallel with ongoing efforts such as continued operations under the 2007 guidelines; implementation of Minute 319; installation of more efficient turbines on existing hydropower units; and actions to further implement endangered species recovery programs in the upper and lower basins. Collectively, these initiatives are critical for short and mid-term operations, even as we seek to improve long-term preparedness in the Basin.

Conclusion

The Department of the Interior and Reclamation view the Colorado River Basin Study as a critical step to establish a common technical foundation from which important discussions can begin to help ensure the sustainability of the Colorado River system. As we enter our second decade of drought conditions, the communities that rely on the river to sustain them are being forced to make tough choices. Tree-ring reconstructions of streamflow indicate that the current 14-year period, which began in 2000, is one of the lowest in the Basin in over 1,200 years. It is

likely that climate change and its emerging challenges will have major consequences on the Colorado River. There is no silver bullet to solve these challenges. Fortunately, the level of cooperation among key stakeholders has never been higher and as a result, there is reason for optimism, even in the midst of the daunting challenges that exist in this Basin. The Department will continue to be a partner in assisting the Colorado River Basin prepare for, and successfully address, the significant issues identified in the Study.

This concludes my written statement. Thank you for the opportunity to discuss these important topics. I am prepared to answer questions at the appropriate time.