

# Case Study: Water and Wastewater Utilities Planning for Resilience



## SOUTHERN NEVADA WATER AUTHORITY

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### Background

The Southern Nevada Water Authority (SNWA) is a cooperative of seven member agencies founded in 1991 with the collective mission to manage the region's water resources and develop solutions that will ensure adequate future water supplies for the Las Vegas Valley. Roughly 90% of the drinking water for the SNWA region is currently sourced from the Colorado River via Lake Mead, the largest man-made reservoir in the United States. This water is processed through two water treatment plants to serve residential customers and businesses in Las Vegas Valley, which includes roughly 2 million people and more than 40 million annual visitors. Groundwater production provides additional water supply during summer months.

### Challenges

Historically, drought and population growth have complicated water management in the Southwest region of the country. Recent extended drought has increased the challenge of maintaining a reliable supply of water and infrastructure to access and treat supplies. In response, SNWA developed, and for the past two decades has successfully implemented, an effective water resource plan and capital improvement plan. Despite the success of these plans' strategies, SNWA faces significant challenges, including: the potential for continued decline in Lake Mead storage due to reduced Colorado River streamflow, the potential loss of the ability to withdraw water from intakes, reduced water quality at intake locations, and increased power requirements to pump water a greater vertical distance.

### Planning Process

Recently, due largely to concerns about the additional impact of climate change on current drought conditions, SNWA participated in an exercise with the U.S. Environmental Protection Agency (EPA) to demonstrate use of the Climate Resilience Evaluation and Awareness Tool (CREAT) by beginning a climate risk assessment of overall threats to its system and identifying opportunities for adaptation. Through a series of internal collaborations and webinars with EPA, SNWA participants discussed their approach to risk assessment and began collecting information related to available climate data, anticipated climate change impacts and potentially vulnerable assets.

### Resilience Strategies and Priorities

Based on impacts from prior drought events, SNWA has already taken action to protect its water resources and improve the overall resilience of these resources to drought and climate change. Examples of these measures include an extensive water conservation program and significant investment in enhancements to Lake Mead intake infrastructures. Demand management practices (i.e., education, incentives, regulation and rates) have reduced consumptive water use by 32% since 2000, even as the population has increased by nearly half a million over the same period.

Using CREAT results, SNWA was able to evaluate a number of physical adaptation measures to address the impacts related to declining reservoir levels. These options included infrastructure improvements to ensure operability at lower lake



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levels and confirmed the need of a new intake that was already under construction. See the table below for more potential adaptive measures that were considered, as well as those that have already been implemented by SNWA.

Type	Resilience Strategies
New construction adaptive measures and enhancements	Completion of a third intake in Lake Mead accessing cooler water with lower turbidity
	Planning and constructing a low-lake level pumping station which will enable water diversions across the full range of possible reservoir levels, including those well below the lowest reservoir levels ever recorded since the filling of Lake Mead in 1936
	Changes to operation of groundwater wells to address water quality issues associated with warm water in the distribution system stemming from low reservoir levels
Conservation adaptive measures	Monetary incentives for homeowners and commercial properties to convert turf to water efficient landscapes
	Partnerships with landscapers in the area to provide them with water-efficient irrigation technology
	Rebates on pool covers to prevent evaporation
	Time/day restrictions on landscape irrigation, including for commercial customers

## Contact Information

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