

EXECUTIVE SUMMARY

SINCE ITS INCEPTION IN 1991, THE SOUTHERN NEVADA WATER AUTHORITY HAS WORKED TO SECURE NEW WATER RESOURCES FOR SOUTHERN NEVADA, MANAGE EXISTING AND FUTURE WATER SUPPLIES, CONSTRUCT AND OPERATE REGIONAL WATER FACILITIES AND PROMOTE CONSERVATION.

The Southern Nevada Water Authority (SNWA) was formed in 1991 by a cooperative agreement among seven water and wastewater agencies. Collectively, the SNWA member agencies serve nearly 2.3 million residents in the cities of Boulder City, Henderson, Las Vegas, North Las Vegas and areas of unincorporated Clark County. As their wholesale water provider, the SNWA is responsible for water treatment and delivery, as well as acquiring and managing long-term water resources for Southern Nevada.

SNWA Member Agencies:

- Big Bend Water District
- City of Boulder City
- City of Henderson
- City of Las Vegas
- City of North Las Vegas
- Clark County Water Reclamation District
- Las Vegas Valley Water District

The SNWA Cooperative Agreement calls for the adoption of a water resource plan to be reviewed annually by the SNWA Board of Directors. The 2024 SNWA Water Resource Plan fulfills this requirement, providing a comprehensive overview of projected water demands in Southern Nevada, as well as the resources available to meet those demands over time.

THE CURRENT PLANNING ENVIRONMENT

The current planning environment includes uncertainty associated with the availability of future resources and long-term water demand forecasts. These considerations, as well as how they are addressed in the 2024 Plan, are detailed briefly in the following sections.


Beginning in 2000 and continuing today, several water supply and demand changes have occurred—both

locally and regionally—that create uncertainty for water planning agencies across much of the western United States. Today, the most significant factors affecting Southern Nevada are increased temperatures and decreased runoff in the Colorado River Basin.

Between 2000 and 2023, overall snowfall and runoff into the Basin were well below the historical average. Combined with warming temperatures, these factors resulted in the second lowest 24-year runoff period on record. The persistence of decades-long drought conditions has resulted in significant water-level declines in major system reservoirs. As of late 2023, the combined water storage in the Colorado River’s two primary reservoirs (Lake Mead and Lake Powell) was 36 percent of capacity.

The U.S. Bureau of Reclamation’s 2012 Colorado River Basin Water Supply and Demand Study projects the Colorado River will experience a median imbalance of 3.2 million acre-feet per year (MAFY) between supply and demand by 2060 due to climate change and increased demands within the Basin. This imbalance could be realized even sooner. Recent studies show that warming temperatures in the Colorado River Basin have significantly impacted hydrologic conditions, including the timing and magnitude of inflows to the reservoir system. These conditions are not only expected to continue but worsen. Multiple studies project a warmer and drier future, both locally and regionally. Projected climate change impacts range from decreased snowpack, precipitation and soil moisture to increased evaporation and an overall reduction in runoff.

Hydrologic modeling indicates a high probability that water levels at Lake Mead and Lake Powell will continue to decline, which has water resource implications for the entire Colorado River Basin.



Colorado River stakeholders have worked effectively since the onset of the drought to develop and implement shortage sharing, contingency and other plans to boost Lake Mead water levels. However, changing hydrology requires additional actions to protect Lake Mead water levels and system operations.

The Lower Basin States submitted a proposal to the U.S. Bureau of Reclamation in 2023 for additional water use reductions. The proposal is being evaluated as part of a Supplemental Environmental Impact Statement process that was initiated to evaluate alternatives for achieving necessary reductions. The U.S. Bureau of Reclamation is also investigating engineering options to allow for the release of water below dead pool in Lake Powell, but actions could take several years to implement if feasible. Meanwhile, negotiations for post-2026 actions are ongoing. At this time, it is unclear which specific actions the seven states and the federal government may take to further protect water levels at Lake Mead and Lake Powell. However, these actions could have a material effect on Lower Basin water supplies, including Nevada.

Nevada's maximum total reduction amount under existing agreements is 30,000 AFY through 2026. The maximum total obligation by all parties, including Mexico, is 1.375 million AFY through 2026. These totals will need to change if the states reach an agreement for achieving the required protection volume.

Colorado River conditions improved in 2023 with above-average snow pack and runoff into the basin that gave reservoir water levels a temporary boost. The U.S. Bureau of Reclamation's 2023 August 24-month study reflects this improvement, forecasting a Lake Mead elevation between 1,050 feet and 1,075 feet on January 1, 2024. This projection reflects a 20-foot increase from the actual January 1, 2023 Lake Mead elevation.

A Tier 1 shortage is currently in effect for 2024 Lower Basin operations, reducing Nevada's available Colorado River supply by 21,000 AFY for 2024. The respite in declining reservoir conditions does not resolve the supply and demand imbalance. Continued action is needed by all Colorado River water users to preserve system operations.

SUPPLY & DEMAND

Water resource planning is based on two key factors: supply and demand. Supply refers to the amount of water available or expected to be available for use. Water demand refers to the amount of water expected to be needed in a given year. Water demand projections are based on population forecasts and include assumptions about future water use, such as expected achievements toward water conservation goals.

Projecting future demands is uncertain, particularly during periods of significant social and economic change. Assumptions are a necessary part of the planning process and conditions are unlikely to occur exactly as assumed. Likewise, climate variations, policy changes, implementation of new regulations and other factors can influence water resource availability over time.

PLANNING FOR UNCERTAINTY

As in prior years, the SNWA used a scenario-based planning approach for its 2024 Plan. Key factors evaluated include reductions of Colorado River supplies, variation in future demands and the implications of conservation on water demand and water resource needs.

As part of its planning process, the SNWA considered the increasing likelihood of additional Colorado River supply reductions over the long-term planning horizon. Mandatory water use reductions and other contributions are based on the projected surface elevation of Lake Mead. Under federal shortage rules and the Drought Contingency Plan, Nevada's obligation starts at 8,000 AFY when Lake Mead's elevation is at or below 1,090 feet. Contributions increase up to 30,000 AFY as the lake level declines.

For planning purposes, the SNWA assumes a further shortage reduction of 10,000 AFY in the event Lake Mead's elevation declines below 1,020 feet. In 2022, Lake Mead reached an elevation of 1,041 feet, the lowest point since the lake began filling in the mid-1930s. Chapter 3 provides additional information about Colorado River water supply reductions.

The SNWA also considered economic growth in Southern Nevada, and long-term projections indicate that the region will continue to grow.

However, a high level of uncertainty remains regarding the magnitude and timing of population change and the impact that change will have on associated short- and long-term water demands.

As further described in Chapter 4, the SNWA's resource planning scenarios consider these factors and bracket the range of reasonable supply and demand conditions that may be experienced over the 50-year planning horizon. This conservative approach demonstrates how the SNWA plans to meet future needs, even if conditions change significantly over time.

ADAPTIVE MANAGEMENT

The SNWA has implemented several adaptation strategies to respond to the drought, climate change and other factors that affect the community's water supply. From developing new facilities and implementing progressive water conservation initiatives to water banking and securing future resources, these efforts have reduced the potential for customer impacts.

The SNWA is not currently using its full Colorado River allocation, and near-term shortage declarations will not likely impact current customer use. By the end of 2022, Southern Nevada's consumptive Colorado River water use was 224,000 acre-feet. For 2023, the SNWA anticipates the community's consumptive Colorado River water use to reach below 200,000 acre-feet. These amounts are well below any Colorado River water supply reduction under existing rules. However, Colorado River water use reductions associated with achieving the protection volume have yet to be defined and could result in significant additional limitations on local Colorado River water supplies.

A return to normal or near-normal hydrologic conditions is unlikely to occur during the long-term planning horizon, and the probability of shortage is forecast to remain high in future years. Meanwhile, local water demands are projected to increase. Meeting the community's long-term water resource needs will require the SNWA to make significant and sustained progress toward its conservation goal. As demonstrated in the planning scenarios, the level of conservation achieved is a critical factor that will impact the timing and need for temporary and future resources.

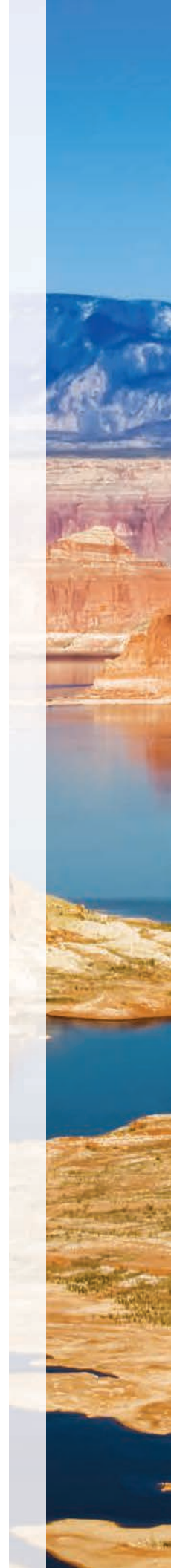
Ultimately, the community's conservation performance is critical in determining how much water is needed and when. The 2024 Plan reflects the SNWA's conservation goal of 86 gallons per capita per day and highlights strategies the SNWA has implemented or is pursuing to reduce demands and improve efficiency. Achieving the goal will require committed support from the SNWA member agencies, local jurisdictions and the public at large, particularly with upward pressures from climate change and system age.


Water conservation has far-reaching benefits for the community and the Colorado River system. Locally, water conservation increases water efficiency and reduces per capita demands. It also allows the SNWA to store or "bank" these conserved supplies. This, in turn, provides the SNWA with added flexibility in responding to drought conditions and meeting future demands. As of 2022, the SNWA has stored more than 2.3 million acre-feet of water, more than ten times Nevada's 2022 consumptive Colorado River water use.

On a larger scale, water conservation helped the SNWA meet its commitments with interstate and federal partners to store water in Lake Mead. Together, partners have bolstered Lake Mead storage through Intentionally Created Surplus, System Conservation and other initiatives that benefit the Colorado River system. Likewise, efforts by interstate and federal partners to develop and implement Drought Contingency Plans adopted in 2019 are helping to slow the decline of Lake Mead and Lake Powell water levels. To date, collaborations have bolstered Lake Mead's elevation by more than 91 feet.

These efforts have provided the SNWA with time to complete essential infrastructure, helped to forestall and reduce the impact of Colorado River shortage declarations, and provided water storage and recovery opportunities.

The SNWA completed construction of the Low Lake Level Pumping Station at Lake Mead in 2020. The pumping station works with SNWA's Lake Mead Intake No. 3 to preserve Southern Nevada's access to Colorado River water supplies to a Lake Mead elevation of 875 feet. These infrastructure additions have helped to ensure reliable water service, even during extremely low reservoir conditions, and provide new opportunities for the SNWA to explore water resource opportunities with Colorado River





partners. Other benefits to the community include reduced pumping costs and enhanced operational flexibility. Operation of the Low Lake Level Pumping Station ensured Southern Nevada's access to Colorado River water as Lake Mead reached historic lows.

CURRENT PRIORITIES

The 2024 Plan demonstrates the importance of conservation in extending the availability of Colorado River resources, minimizing the use of Temporary Resources, and delaying the timing and need for Future Resources. Continued progress towards the conservation goal will help ensure thoughtful and well-coordinated execution of operational and water-efficiency plans so that impacts to the community are reduced. With ongoing community support and through the adaptive use of its Water Resource Portfolio, the SNWA is prepared to meet the range of projected demands and water supply conditions presented in this plan.

Likewise, the SNWA and the community will continue to play a key role in helping to develop and implement Colorado River response efforts. While specific reduction amounts by state have yet to be determined, achieving the level of reduction needed will likely require participation from all Colorado River water users, including Nevada. To this end, Nevada may be required to take reductions beyond those already defined under existing agreements or take reductions sooner than currently required. The SNWA will update its Water Resource Plan to reflect the status of these discussions when the timing and magnitude of these changes are better understood.

While current Colorado River conditions are severe, Southern Nevada faces a much lower risk than the larger Colorado River community due to the planning, adaptation and extraordinary investments the community has made to secure Southern Nevada's water supplies. With community support, the SNWA has taken deliberate steps to bolster supplies, reduce demands and fortify facilities. Thoughtfully planned and executed over decades, these actions make Southern Nevada one of the most water-secure communities along the Colorado River.

Additional work remains. As one of the fastest warming and fastest-growing communities in the

United States, Southern Nevada must continue to anticipate, mitigate and adapt to changing conditions.

Meeting the challenges that lie ahead will require significant and ongoing adaptive management efforts, which include:

- Working with SNWA member agencies to develop policies and programs to ensure new development has the smallest possible consumptive water use footprint;
- Collaborating with Colorado River stakeholders for conservation and flexible use of Colorado River supplies (for example, water banking), as well as taking additional steps to protect Lake Mead's elevation against future water level declines;
- Continuing to secure temporary resources to offset long-term impacts associated with shortage while working to bring other future resources online when needed;
- Working with Colorado River partners to explore collaborative future water resource projects;
- Addressing uncertainty by planning to a range of future supply and demand possibilities; and
- Collaborating with climate scientists and other agencies to understand and evaluate climate change, and its potential impacts on water supplies and facilities.