2025-2045

Water Resource Plan

At a glance

DRAFT

Truckee Meadows Water Authority

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This “At-A-Glance” Report helps summarize the 2045 Water Resource Plan for our customers. The following material broadly addresses questions and concerns about water sustainability in the face of growth and climate conditions.

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Water Resource Planning: Comprehensive, Adaptive, and Strategic

As Reno, Sparks, and Washoe County continue to grow and change, Truckee Meadows Water Authority (TMWA) is consistently updating its water management planning to meet customer needs. Every five years, this effort is captured in a Water Resource Plan (WRP) with a 20-year planning horizon. With each plan, the WRP factors in population growth, economic cycles, climate conditions, regulatory changes, and available water supplies.

The 2025-2045 WRP (2045 WRP) is a detailed assessment of how TMWA will meet the drinking water supply needs of current and future customers in the Truckee Meadows through 2045. Climate modeling goes even further, looking out toward the end of the century. This includes projections of population growth, re-occurrences of extreme drought, and greenhouse emission scenarios.

Want more in-depth reading? Download and explore the complete Water Resource Plan → **DOWNLOAD**

Overview of service area

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Lake Tahoe Dam

Inception of TMWA: Local Government Collaboration Secured the Region's Water Future

TMWA was created in January of 2001 through a joint-powers agreement (JPA) among the City of Reno, City of Sparks, and Washoe County, with the intent to purchase the water rights and system assets of Sierra Pacific Power Company.

By initiating the JPA, the jurisdictions purchased a reliable, high-quality water system for the region. This action secured local control over the future of drinking water for the Truckee Meadows.

TMWA officially began operating in June 2001. The utility is overseen by a seven-member board of directors from each jurisdiction: three from City of Reno, two from City of Sparks, and two from Washoe County. One of the main purposes in creating TMWA, as described in the JPA, is to meet the "common interest in assuring that water resources be developed and managed to fulfill the present and future water needs of the greater Truckee Meadows community."

Twenty-five years later, TMWA now serves approximately 475,000 Truckee Meadows residents, representing over 90% of the population that lives in Washoe County.

A Big Year in Water Resource Management

Passed after decades of negotiation, the **Truckee River Operating Agreement (TROA)** fundamentally changed Truckee River operations. The modifications benefit water users, protect threatened and endangered fish, and allow TMWA to increase upstream reserves during drought years.

Additional milestones of 2015 include:

Water Utility Consolidation: TMWA merged with the Washoe County Department of Water Resources (WDWR) and South Truckee Meadows General Improvement District (STMGID). This regional water utility consolidations and associated water rights furthered the sustainable management of groundwater and surface water and increased water supply reliability in the Truckee Meadows.

Metered Rates: Transition from flat rates to metered water rates was completed. Billing that allowed customers to understand usage resulted in lower consumption and bolstered TMWA's conservation initiatives.

Drought Response: The lowest snowpack and runoff in recorded history occurred; TMWA asked customers to reduce their usage by 10% and customers responded by reducing water usage by 9-16%. The severity of this drought led to additional drought and climate modeling in subsequent planning efforts.

Truckee River Operating Agreement Signatories:	State of California	State of Nevada	Pyramid Lake Paiute Tribe	US Department of the Interior	Truckee Meadows Water Authority

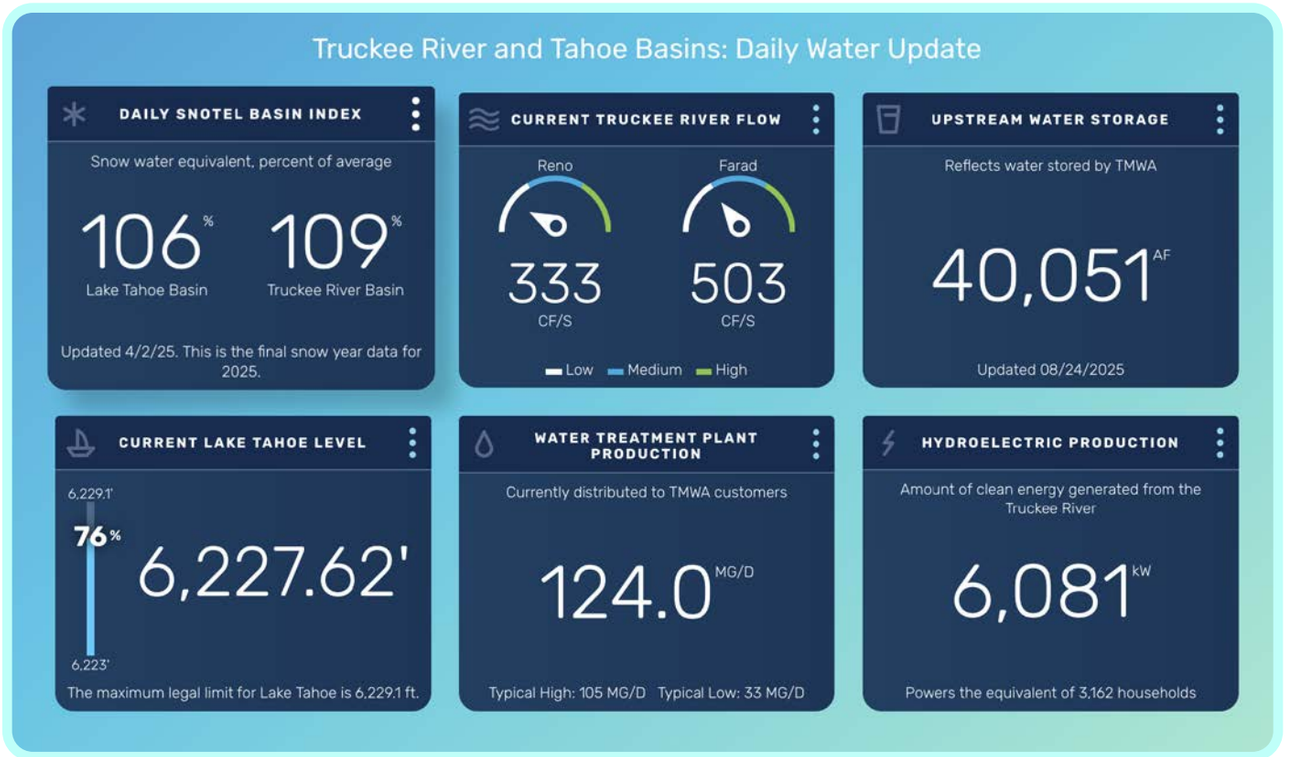
The Truckee River is a Managed Water System

The Truckee River Operating Agreement (TROA) governs all reservoirs on the Truckee River system. The Lake Tahoe Dam and the dams at Stampede, Boca, and Prosser Reservoirs are managed by the Federal Water Master who is appointed by the US District Court for Nevada. TMWA owns and operates the dams at both Independence and Donner Lakes.

The Truckee River is Lake Tahoe's only outlet and its flows are highly dependent on the lake's water levels. In fact, Tahoe's surface elevation is considered the best indicator regarding the region's water-supply health.

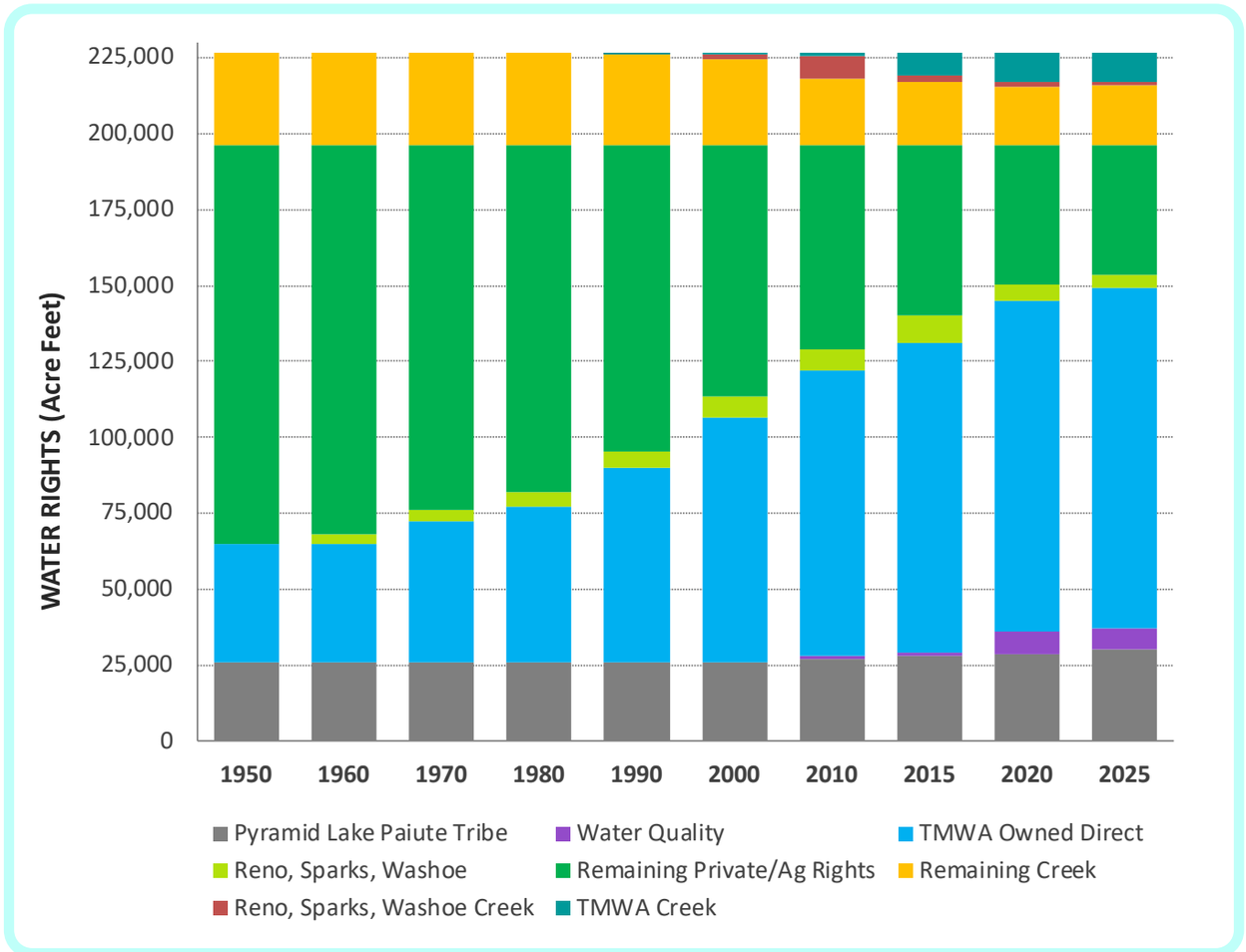
The amount of water released from Lake Tahoe and other upstream reservoirs by the Federal Water Master is regulated to maintain Truckee River flow rates at the California/Nevada state line. These are known as "Floriston Rates."

If Lake Tahoe falls beneath its natural rim, water no longer flows into the Truckee River through the Lake Tahoe Dam. When this happens, TMWA can choose to release water from upstream reservoirs to maintain drinking water supplies.



Updated information about Lake Tahoe elevation levels, Truckee River flows, and TMWA's water storage can be found at ***smartaboutwater.com***

More about the Truckee River System [WRP, page 22] → **EXPLORE**



Approximately 82,000 AF of Truckee River decreed water rights have been converted to TMWA for water service. Presently, TMWA estimates there are about 42,000 AF of mainstem Truckee River rights remaining. Most of these rights are currently allotted for agricultural use.

Truckee River Water Rights and TMWA

After a series of judicial challenges, in 1944 the Orr Ditch Decree established the total number of water rights on the Truckee River and its tributaries. With this decree, water rights were legally set at approximately 226,000 AF annually.

While the number of water rights cannot be changed, their designated use can. As an example, in the 1950s, agriculture accounted for most of the water used in the Truckee Meadows. Over time as the region became more urbanized, many agricultural water rights have been converted into municipal water rights to serve a growing community.

How much is an Acre Foot (AF) of Water?

An acre foot is approximately 326,000 gallons, which is enough water to cover an acre of land (about the size of a football field) to a depth of one foot. An average single-family home uses about ½ acre foot of water per year.

More about Water Rights [WRP, page 32] → EXPLORE

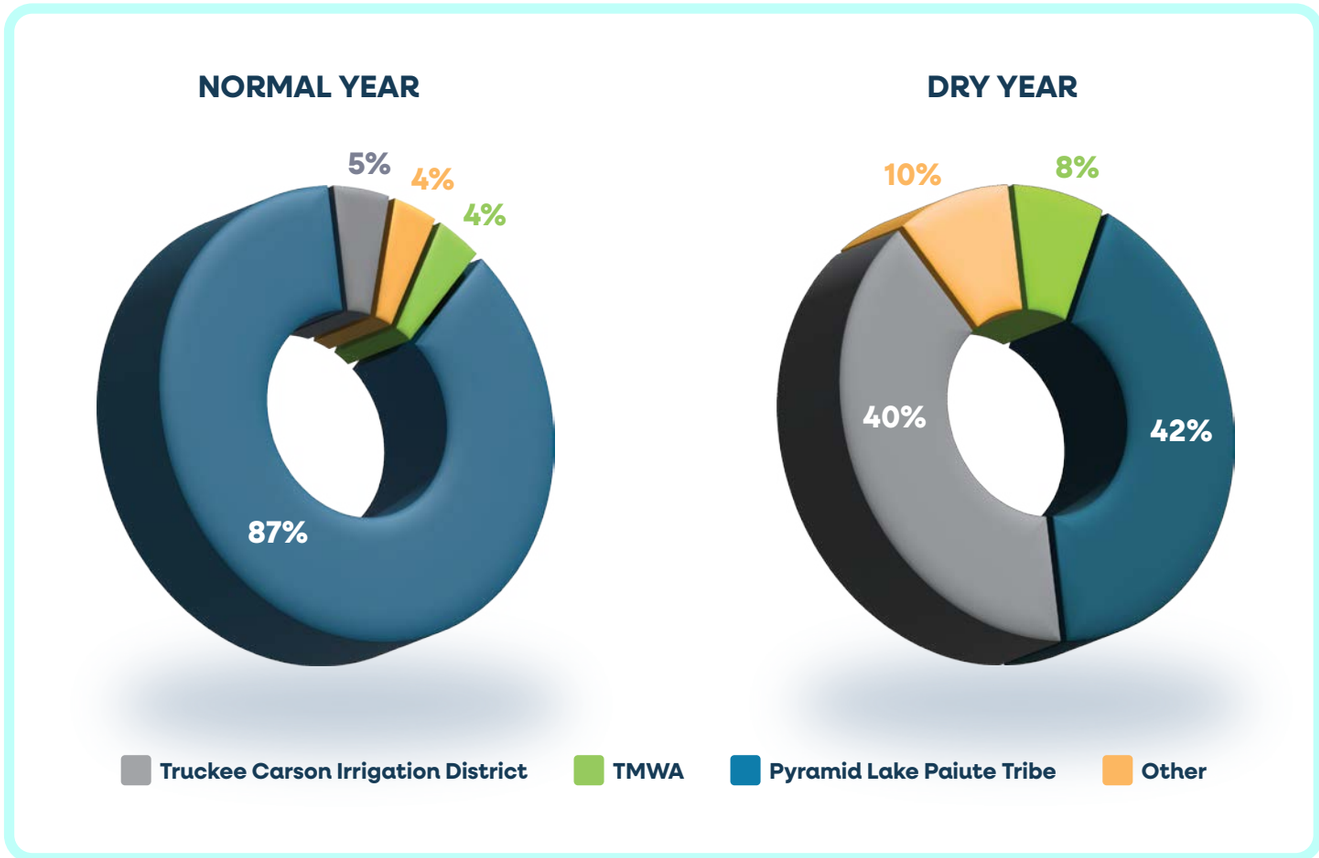
Understanding Drought and Water Supply Resiliency

TMWA's ability to manage through drought vastly improved with the implementation of TROA in 2015.

During prolonged drought periods TROA allows TMWA to accumulate significant reserves by storing water that was previously required to be released. If a drought persists over multiple years, TROA also allows TMWA to carry-over unused drought reserves from the prior year until the drought is over.

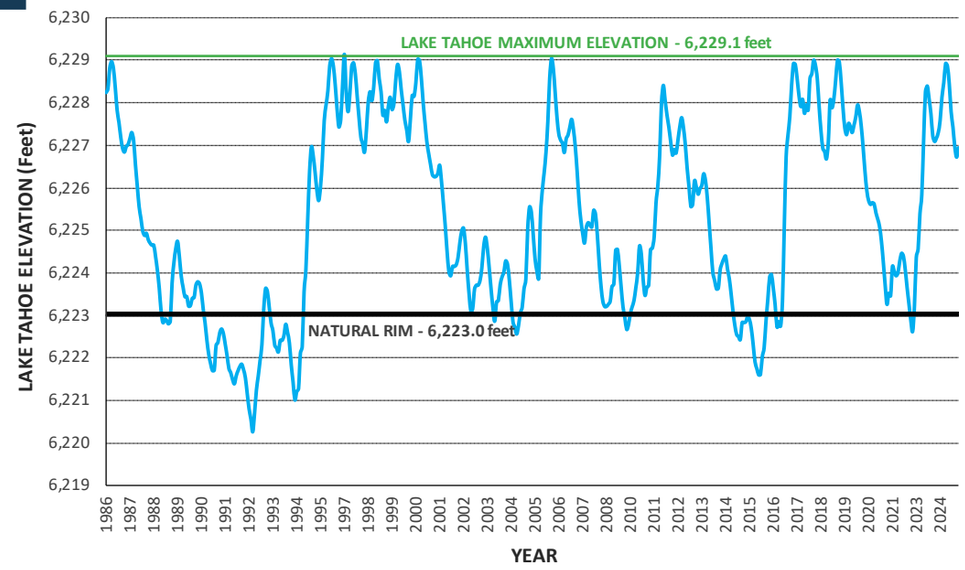
This increase in the ability to store water allows for more sustainable supply management during prolonged droughts, compared to what was allowed prior to 2015.

More about Surface Water Resources [WRP, page 23] → **EXPLORE**



During normal years, TMWA uses about 4% of the river.
During drought years this increases to about 8% because there is proportionally less water available in the river.

1



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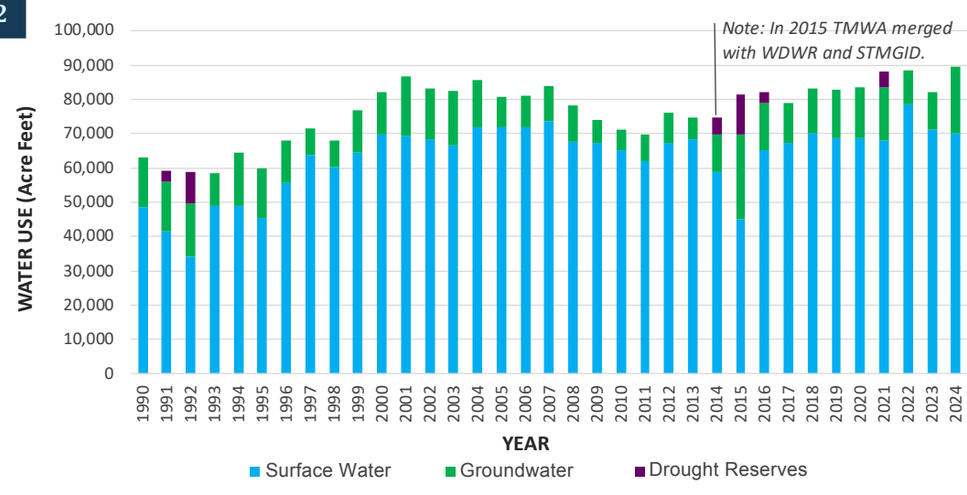


Surface Water is Supplemented by Groundwater

With 86 active production wells in nine distinct hydrographic basins, groundwater provides 15-20% of TMWA's water supply. By supplementing Truckee River water, groundwater helps TMWA meet increased demand during the warmer months when customers are watering lawns and irrigating gardens.

Sustainable groundwater management includes active and passive groundwater recharge. One form of active recharge is TMWA's Aquifer Storage and Recovery (ASR) program, which pumps treated surface water into aquifers through a network of injection wells. This improves groundwater levels, benefits water quality, and stores water for later use.

Managing groundwater and surface water together is called conjunctive use, which allows TMWA to meet customer demands during wet years and dry years.

1 ***Lake Tahoe Level Fluctuations:*** *The blue line shows Tahoe's surface elevation. When this elevation dipped beneath the natural rim, no water was flowing into the Truckee River from Tahoe.*

2 ***Resiliency Beyond River Flows:*** *This chart shows how much surface or groundwater was used each year. Note that groundwater and stored water use increase when surface water is less available—during droughts.*

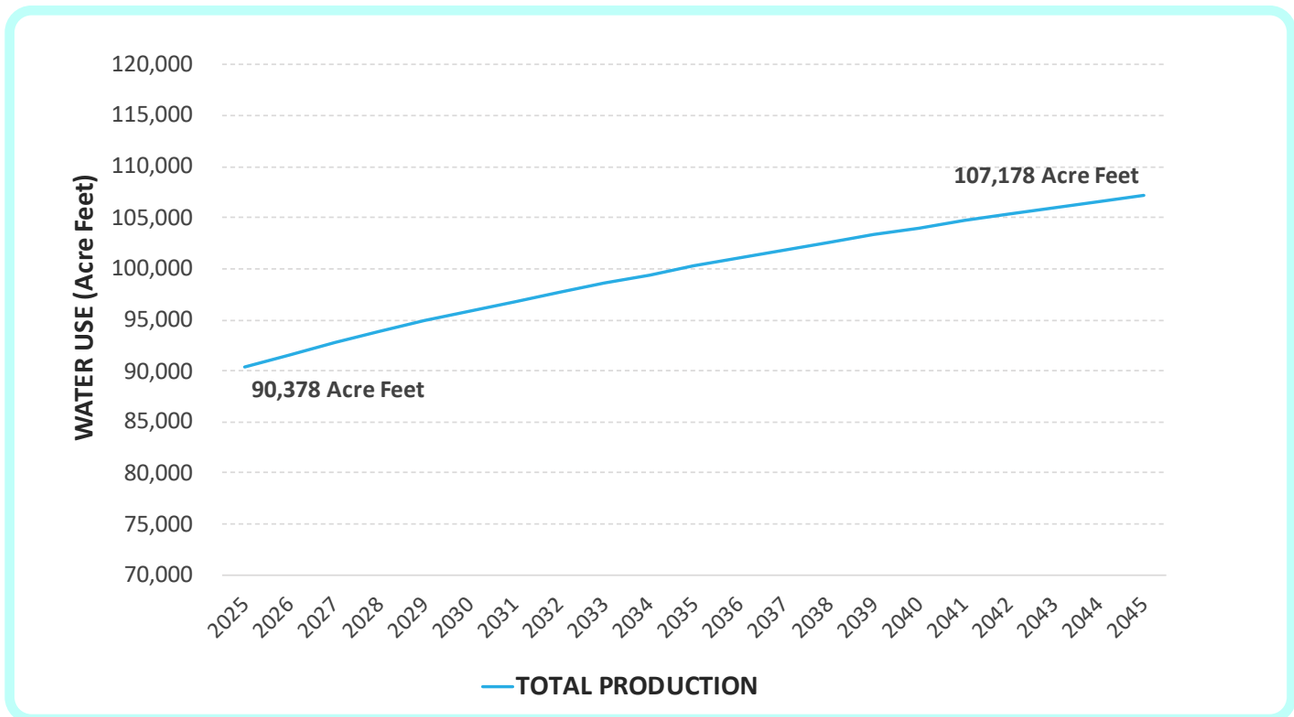
More about Groundwater Resources [WRP, page 30] → EXPLORE

Water Demand and Growth

Population growth projections inform TMWA's estimates for future annual water demand in the Truckee Meadows. The WRP is required to look at a 20-year demand projection to ensure sufficient water resources are available over that timeframe. The objective is to clearly understand who will be using the water, how they will use it, and how much they will need.

Water and Growth

Over the next two decades, TMWA's water demand is projected to rise by 1.8% annually. To meet the water needs for new growth, developers must dedicate necessary water rights to TMWA, plus an additional 11% to be used as drought reserves. Additionally, developers are responsible for funding any new water infrastructure, which is then deeded to TMWA upon completion.



Total water production projection for the next 20 years.

More about Future Water Demand Projections [WRP, page 40] → EXPLORE

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Assessing Future Water Supply Scenarios

While the Truckee Meadows has a history of extreme wet and dry years, changing climatic conditions may prove more challenging for water supply reliability in the future. Temperature trends are expected to continue warming, which could alter the timing of snowpack release and increase losses through evaporation.

TMWA's 2045 WRP incorporates the best available regional climate change information into the planning process. Using multiple global climate models downscaled to the northern Sierra Nevada, TMWA studied a range of future conditions. The modeling incorporates future water demands based on projected population and economic growth in the area through 2098.

The modeling shows the Truckee Meadows has a secure water supply future due to decades of comprehensive planning. Even with potentially warmer and drier conditions, TMWA has a diverse water resources portfolio that will help the region adjust to more variable climate patterns.

A key take-a-way from the modeling: TMWA needs to continue investing in off-river resources to bolster future resource sustainability, such as by expanding its Aquifer Storage and Recovery (ASR) program to increase groundwater resources.

Moderate Climate Change Scenario Through 2098

1. *Future Water Supply without Expanded Aquifer Storage and Recovery Program.*
2. *Future Water Supply with Expanded Aquifer Storage and Recovery Program.*

More about Future Water Demand Scenarios [WRP, page 47] → EXPLORE

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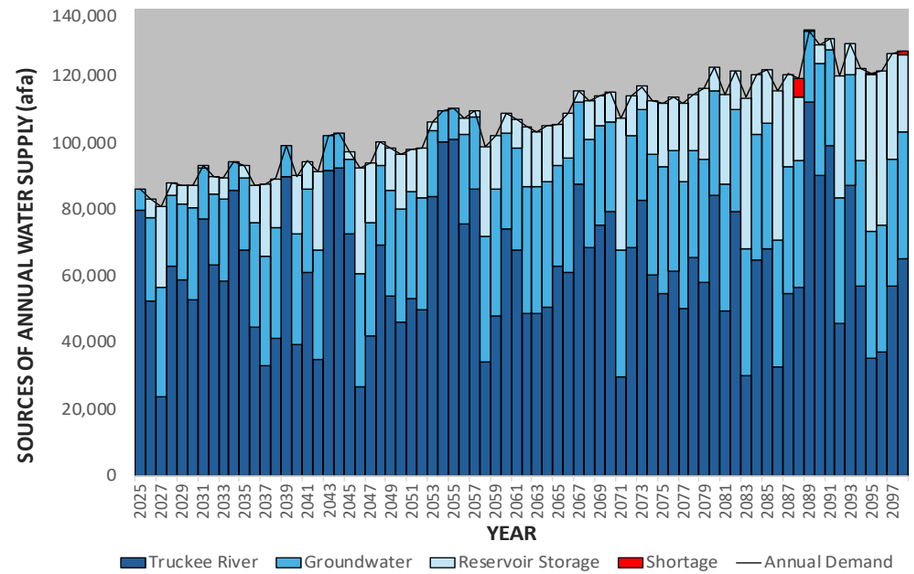

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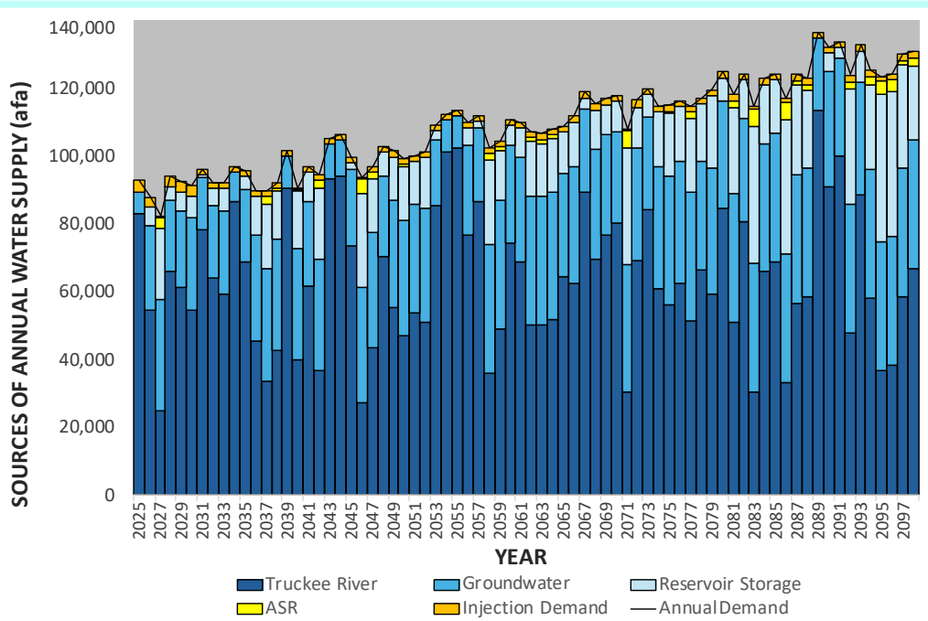
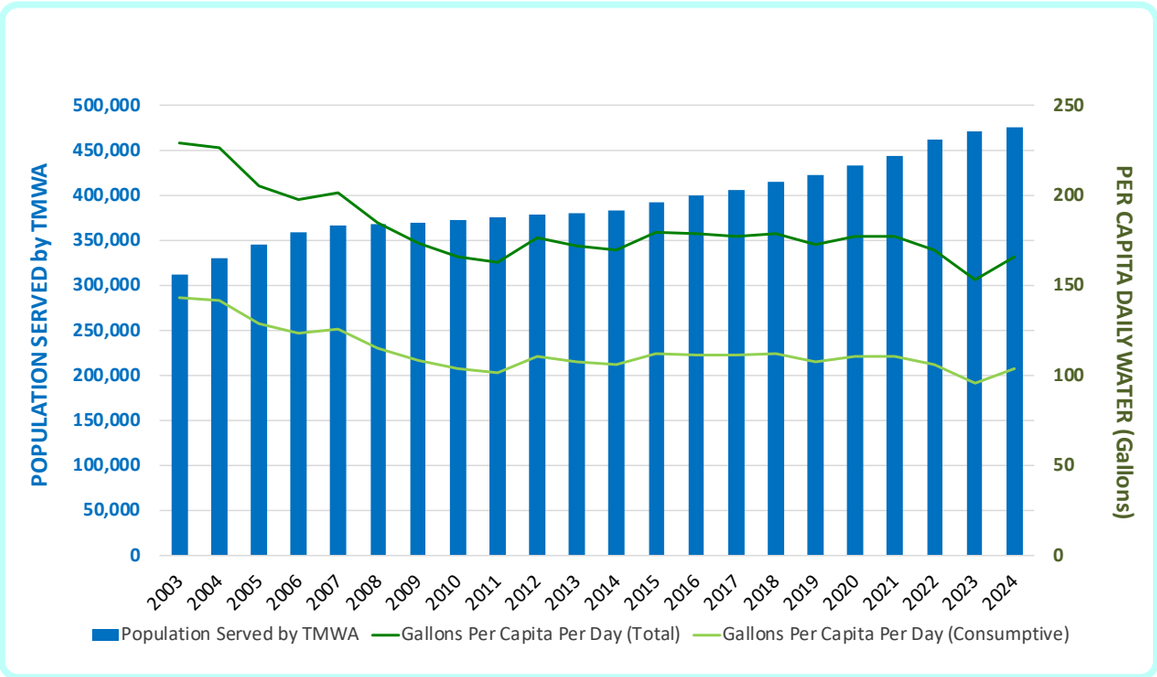




Population Served By TMWA Total And Consumptive Residential Per Capita Daily Water Use (Upper Green Line Is Total Water Use And Lower Line Is Consumptive Water Use)

Smart Meters

TMWA has also upgraded all customers to Advanced Metering Infrastructure (AMI), providing the ability to monitor water use by the hour and set up leak alerts to detect water waste. AMI meters will also give TMWA better insight to identify water loss throughout the distribution system.

Ongoing Conservation and Per Capita Water-Use Reductions

Conservation programs have been in place in the Truckee Meadows since the mid-1980s, when Assigned-Day Watering began. While many people know about this effective program, TMWA uses several other strategies to meet water-saving goals. These include:

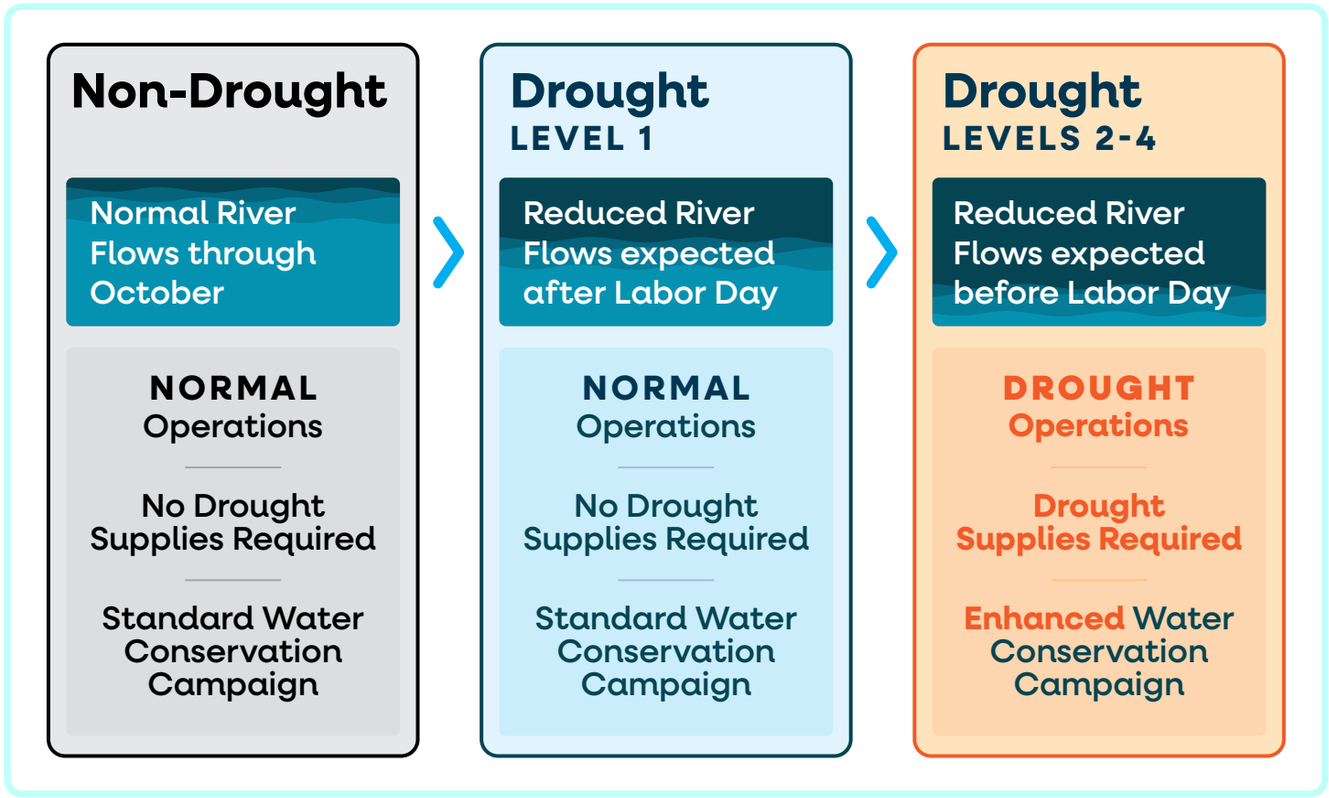
- **Tiered Rate Structure:** When customers use more water, they may pay more based on TMWA's pricing structure.
- **Water Efficiency Codes:** Customers who waste water or have unaddressed leaks are notified. Fee-based penalties are in place for rare instances of repeat violations.
- **Irrigation Workshops:** In-person and on-line sessions to help customers start up and shut down irrigation systems.

Developments with smaller lot sizes and water efficient landscaping have played a role in regional conservation outcomes as well, with per capita usage declines by almost 30% over the last 20 years. This represents a per-day usage reduction in consumptive use of 143 gallons per customer in 2003 to 104 gallons per customer in 2024.

More about TMWA's Conservation Programs [WRP, page 56] → EXPLORE

Water Conservation During Droughts

TMWA implements enhanced conservation measures during droughts based on available Truckee River flows.



TMWA Drought Severity Response Flowchart

Enhanced conservation includes:

- Expanded public education campaigns
- No lawn watering between 11 a.m. – 7 p.m.
- Increased Conservation Consultant staffing for the Water Watchers program
- Temporary cutbacks on usage may be requested
- Drought rates or increased fines may be implemented

More about TMWA's Drought Plan [WRP, page 64] → EXPLORE

Protecting Source Water and Water Quality through Community Partnerships

TMWA works with many organizations and agencies throughout the Truckee River watershed to protect and improve the community's drinking water sources. Since TMWA does not own most of the land around its groundwater and surface water supplies, multiple partnerships and collaborative projects are essential to help maintain the region's water supply sources.

1 *Truckee River Fund contributes to Keep Truckee Meadows Beautiful in support of Truckee River Cleanup Day.*

2 *Operational area for MTRWFP's 10-year Vegetation Management Plan*

More about the Truckee River Fund [WRP, page 88] → EXPLORE

Truckee River Fund

Established by TMWA in 2004, the Truckee River Fund (TRF) works to protect and enhance the water quality and resources of the Truckee River and its watershed. Since its inception the TRF has approved 220 projects, providing nearly $17 million to qualifying projects with over $26.5 million in matching funds. To date, over $43 million has been invested in projects to protect the Truckee River watershed. Example projects include riparian cleanups, river restoration, forest management, watershed-based youth education, and invasive species removal efforts.

1

Middle Truckee River Watershed Forest Partnership (MTRWFP)

Large wildfires could potentially have major impacts on TMWA's source water quality and infrastructure. To help prevent this, TMWA entered into a formal partnership in 2022 with the US Forest Service- Tahoe National Forest, Truckee River Watershed Council, National Forest Foundation, and The Nature Conservancy to form the MTRWFP. The goal is to restore forest health and resilience by completing forest thinning and fuels reduction on approximately 60,000 acres of US Forest Service land by 2033.

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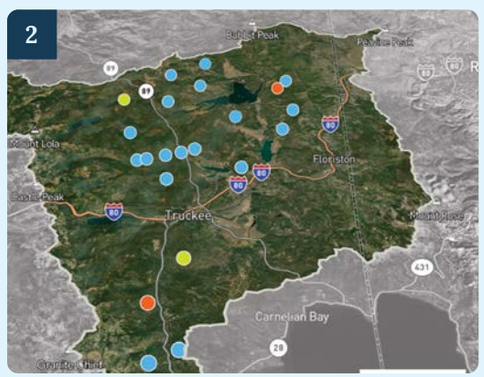

Advanced Purified Water: Creating a New Local Resource

After more than 15 years of research, pilot testing, and demonstration projects, TMWA and the City of Reno have developed a sophisticated process for producing A+ Advanced Purified Water.

In 2026 they will begin construction of the Advanced Purified Water Facility (APWF) at American Flat, with the goal of adding this new resource to the region's water portfolio.

The APWF will use recycled water from the Reno-Stead Water Reclamation Facility as its source—the same category of water currently used for irrigating local parks, schools, and golf courses. At the APWF, the recycled water will undergo additional purification through rigorous, multi-barrier technologies, including:

- **Ozonation** to break down contaminants,
- **Coagulation and Flocculation** to bind and remove tiny particles,
- **Biologically Activated Carbon Filtration (BACF)** for natural and engineered cleaning,
- **Granular Activated Carbon (GAC)** for removing trace compounds like PFAS, and
- **Ultraviolet (UV)** disinfection for a final layer of protection.

The result is Advanced Purified Water that either meets or surpasses state and federal drinking water standards.

Up to 2 million gallons per day of advanced purified water will be recharged into American Flat aquifer. Initially used to irrigate crops while monitoring and testing continues, this water will eventually become part of TMWA's everyday supply, increasing regional water resilience and sustainability.

An architectural rendering of the Advanced Purified Water Facility at American Flat

Advanced Purified Water is

- ✔ Proven to meet all EPA drinking water standards.
- ✔ An effective way to bolster groundwater levels.
- ✔ A new drought-proof water supply for the region.
- ✔ A locally controlled addition to the region's water supply portfolio.

More about the Advanced Purified Water facility at American Flat [WRP, page 31] → EXPLORE

Potential Future Water Supply Projects

While the region has adequate water resources to meet future demand, TMWA is constantly analyzing options to add more redundancy and resiliency to the region's drinking water system.

Identifying these projects now helps with efforts to secure funding and set other needed plans in motion.

This table identifies the possible resource development projects of interest to TMWA for continued research.

RESOURCE/PROJECT	RANGE OF YIELD OR CAPACITY	ESTIMATED TIMELINE
Treatment of Existing Groundwater Resources		
Spanish Springs Valley Nitrate Treatment Facility	3-4 MGD	2030-2035
Sparks Groundwater Treatment Facility	11.9 MGD	Beyond 2045 planning period
Longley Lane Groundwater Treatment Facility	4-6 MGD	Beyond 2045 planning period
South Truckee Meadows Groundwater Treatment Facility	4-6 MGD	Beyond 2045 planning period
Additional Groundwater Capacity		
New/Replacement Well Development	As needed	Ongoing
ASR Expansion	3,000-5,500 AFA	3-5 year planning period
Additional Fish Springs Ranch Water	Up to 5,000 AFA	Beyond 2045 planning period
Creek Water Resources	**Varies**	**Ongoing**
Marlette Lake Water System – Wholesale Service	**Varies**	**Feasibility being investigated**
Reclaimed Water		
Expanded Irrigation Use	Varies	Ongoing
Advanced Purified Water	Varies	Ongoing
Water Banking	**Varies**	**Feasibility being investigated**

The initiatives above will be implemented as needed. Until then, TMWA will continue relying on the conversion of Truckee River water rights from agricultural to municipal use to meet the region's water supply needs.

More about Potential Future Resources [WRP, page 72] → EXPLORE

Focusing on the Next Five Years

The 2045 WRP outlines recommended water resource management strategies into the next 20 years.

Based on information and findings presented throughout the plan, this table summarizes near-term actions to help guide utility staff over the next five years until the next WRP is developed.

More about Near-Term Actions [WRP, page 97] → EXPLORE

Near-Term Actions (2025-2030)

Water Supply Planning
Review current WRP and compile draft 2030-2050 WRP.
Monitor future legislative bills that could expand developable land in the region.
Work with TMRPA, EDAWN, and GOED on policies related to large water users.
When approached by small water systems, assess resource benefits, financial impacts, and technical challenges of each system prior to considering acquisition.
Participate in workshops in coordination with NNWPC/WRWC related to wastewater regionalization.
Management of Current Water Resources
Continue to collaborate with TROA stakeholders to develop opportunities to improve reservoir operations and efficient use of water resources.
Maximize upstream storage under TROA within hydrological and operational constraints.
Maintain and rehabilitate TMWA's wells to meet demand while maintaining the sustainability of aquifers.
Invest in groundwater infrastructure to maintain access to existing resources.
Continue to expand active groundwater recharge and use passive recharge when possible.
Continue an active role in maintaining sufficient water rights inventory and analyzing purchase opportunities.
Assess the most effective use of AMI data to promote water conservation.
Explore additional programs to further TMWA's conservation goals during drought and non-drought years.
Maintain and expand watershed-based partnerships to protect regional source water supplies.
Work with partners to continue implementation of Integrated Source Water Protection Plan for Washoe County.
Analyze the extent of TMWA's ability to maintain water demand during river outages.
Future Water Demand & Resources
Complete annual demand projections.
Work with DRI, UNR, and other research institutions to evaluate new climate modeling for the region.
Construct Advanced Purified Water Facility at American Flat in coordination with City of Reno.
Work with Nevada regulatory agencies on moving forward Direct Potable Reuse regulations.
Further investigate and evaluate the potential water supply projects described in the WRP.

Planning a Comprehensive Path Forward

The 2045 WRP is part of TMWA's integrated planning approach, which evaluates future scenarios with consistency to determine resource sustainability, infrastructure investments, and the funding approach to ensure reliable delivery of water for the long term.

Water Resource Plan: Estimates water supply and demand, giving insight into the facility capacity that will be needed for TMWA's future infrastructure.

Water Facility Plan: Identifies the condition of TMWA's existing capital assets and project expansions needed to meet future growth, as identified in the Water Resource Plan.

Funding Plan: Analyzes the Five-Year Capital Improvement Plan with a thorough analysis of all revenues and expenses, with an assessment of overall spending and identification of funding options.

TMWA's integrated planning approach ensures the delivery of high-quality drinking water while keeping customer rates as low as possible.

More about Integrated Planning [WRP, page 16] → EXPLORE