



CREATING AND MAINTAINING A SUSTAINABLE COMMUNITY

SOUTHERN NEVADA'S PERSPECTIVE



SOUTHERN NEVADA WATER AUTHORITY®

SNWA Responsibilities

The Southern Nevada Water Authority is the regional agency responsible for maintaining Southern Nevada's water resources.



CONSERVATION

Incentives, Programs,
Regulation and Pricing



WATER SUPPLY PLANNING

Developing and managing
regional water supplies



WATER QUALITY

Maintaining and
protecting water quality



INFRASTRUCTURE

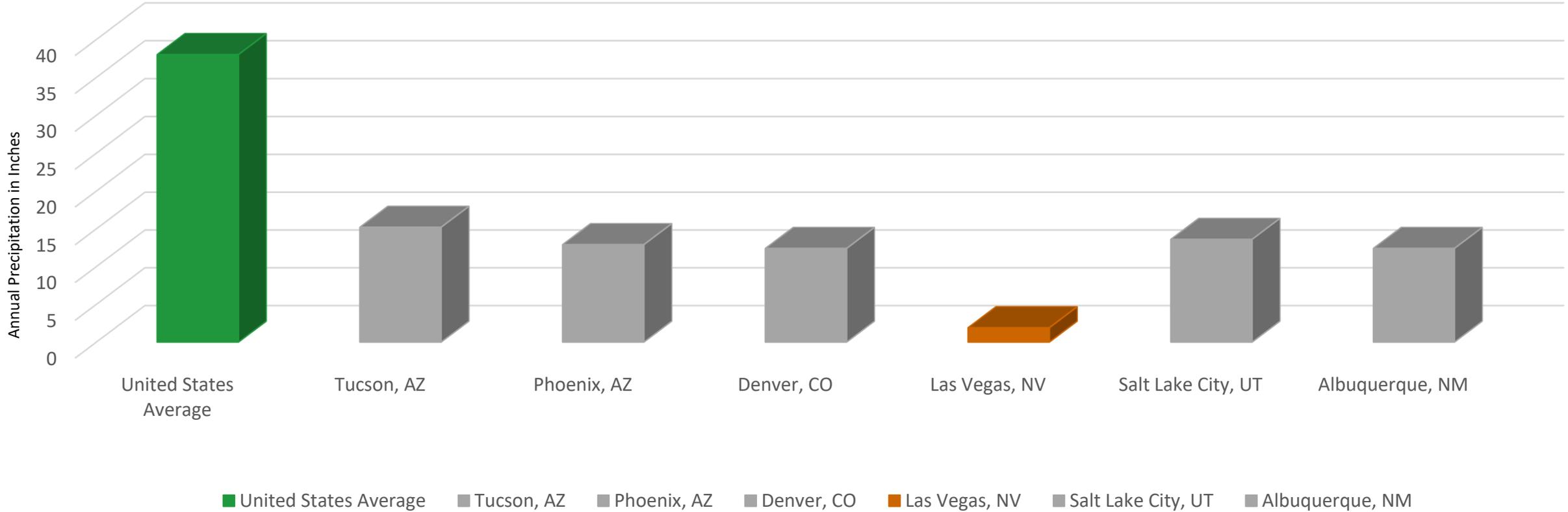
Building and operating
major facilities



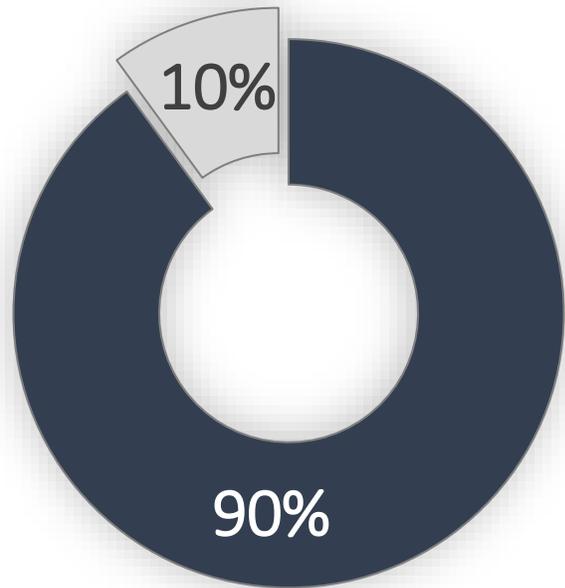
STEWARDSHIP

Protecting
environmental resources

Las Vegas is the driest metropolitan area in the United States.



Las Vegas is nearly fully dependent on Colorado River resources.



■ Colorado River ■ Groundwater



Minute 323 and Drought Contingency Plan

2007 Interim Guidelines, Minute 323, Lower Basin Drought Contingency Plan, and Binational Water Scarcity Contingency Plan

Total Volumes (kaf)

Lake Mead Elevation (feet msl)	2007 Interim Guidelines Shortages		Minute 323 Delivery Reductions	Total Combined Reductions	DCP Water Savings Contributions			Binational Water Scarcity Contingency Plan Savings	Combined Volumes by Country <i>US: (2007 Interim Guidelines Shortages + DCP Contributions)</i> <i>Mexico: (Minute 323 Delivery Reductions + Binational Water Scarcity Contingency Plan Savings)</i>					Total Combined Volumes
	AZ	NV	Mexico	Lower Basin States + Mexico	AZ	NV	CA	Mexico	AZ Total	NV Total	CA Total	Lower Basin States Total	Mexico Total	Lower Basin States + Mexico
1,090 - 1,075	0	0	0	0	192	8	0	41	192	8	0	200	41	241
1,075 - 1,050	320	13	50	383	192	8	0	30	512	21	0	533	80	613
1,050 - 1,045	400	17	70	487	192	8	0	34	592	25	0	617	104	721
1,045 - 1,040	400	17	70	487	240	10	200	76	640	27	200	867	146	1,013
1,040 - 1,035	400	17	70	487	240	10	250	84	640	27	250	917	154	1,071
1,035 - 1,030	400	17	70	487	240	10	300	92	640	27	300	967	162	1,129
1,030 - 1,025	400	17	70	487	240	10	350	101	640	27	350	1,017	171	1,188
<1,025	480	20	125	625	240	10	350	150	720	30	350	1,100	275	1,375

Tier 1 →

Tier 2a →

Tier 2b {

Tier 3 →

The Secretary of the Interior will take affirmative actions to implement programs designed to create or conserve 100,000 acre-ft per annum or more of Colorado River System water to contribute to conservation of water supplies in Lake Mead and other Colorado River reservoirs in the lower basin. All actions taken by the United States shall be subject to applicable law, including availability of appropriations.





Megadrought causes perilously low water levels at Lake Mead

Jun 2, 2022 6:20 PM EDT

CBS NEWS

NEWS ▾

SHOWS ▾

LIVE ▾

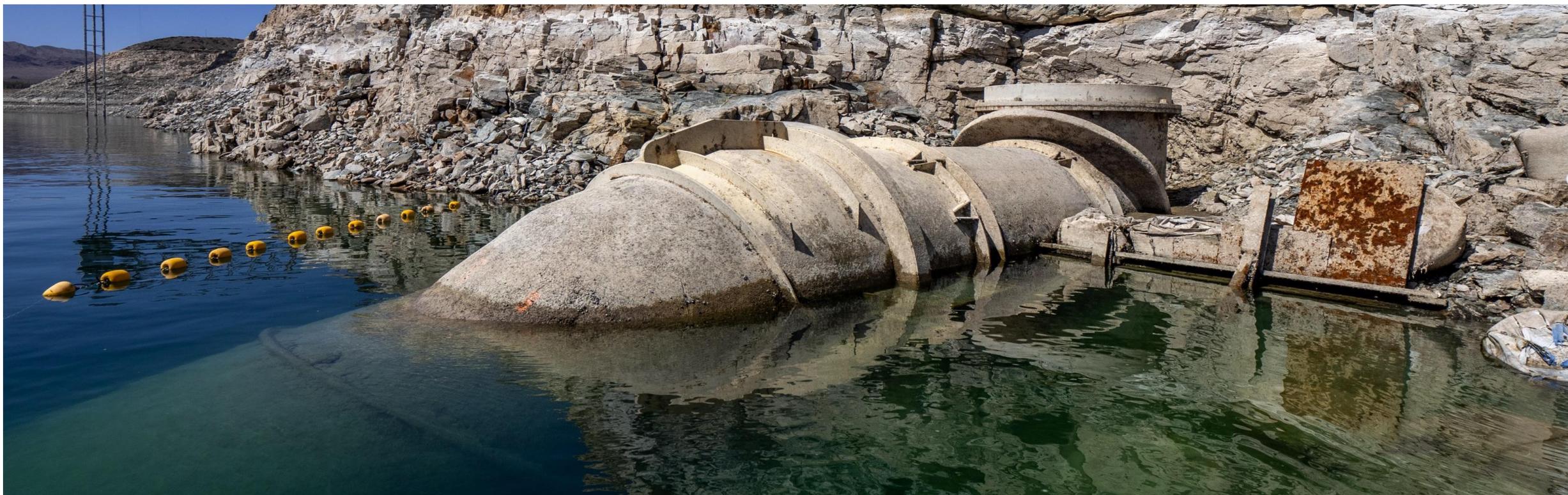
LOCAL ▾



U.S. >

Lake Mead shrinks to record low amid punishing drought and consumer demand

JULY 11, 2022 / 3:56 PM / AP



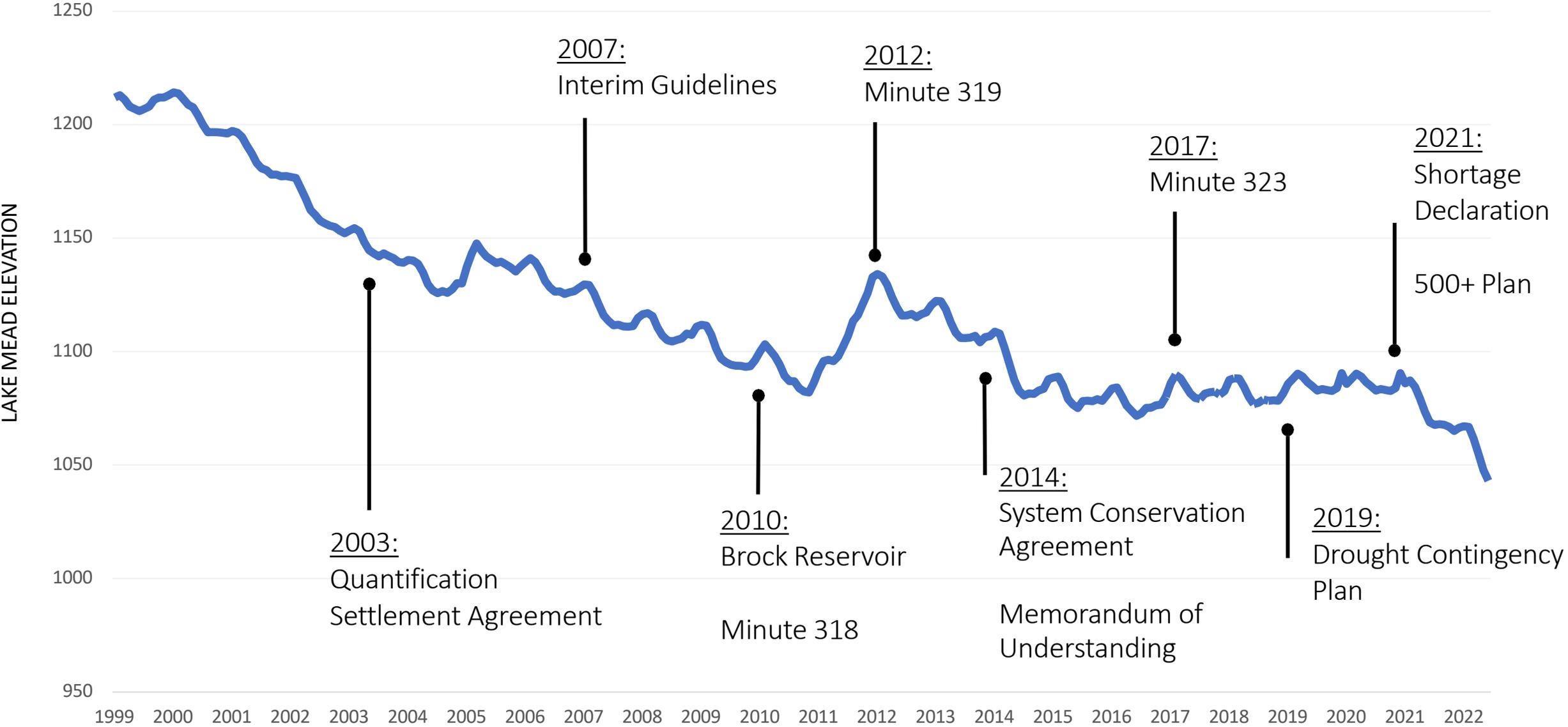


How Did We Get Here?

- 1. Our predecessors miscalculated
- 2. We ignored our predecessors' miscalculation for decades
- 3. Our climate has changed dramatically
- 4. We've largely exhausted our storage as a result of 1, 2, and 3



**We have built up a system of rules; however, the hydrology has been overwhelming.
Stronger actions are required.**

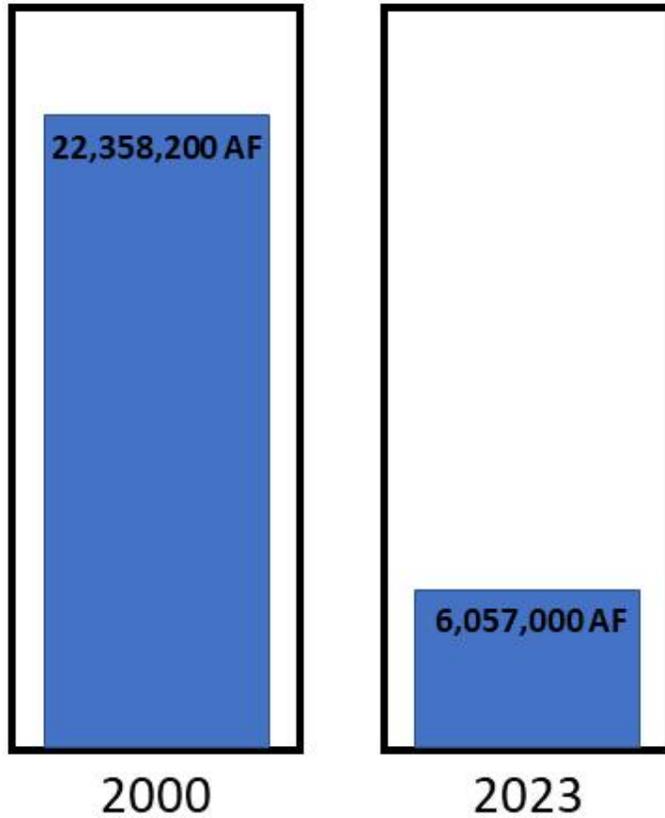


LIVE STORAGE

2000 vs. 2023

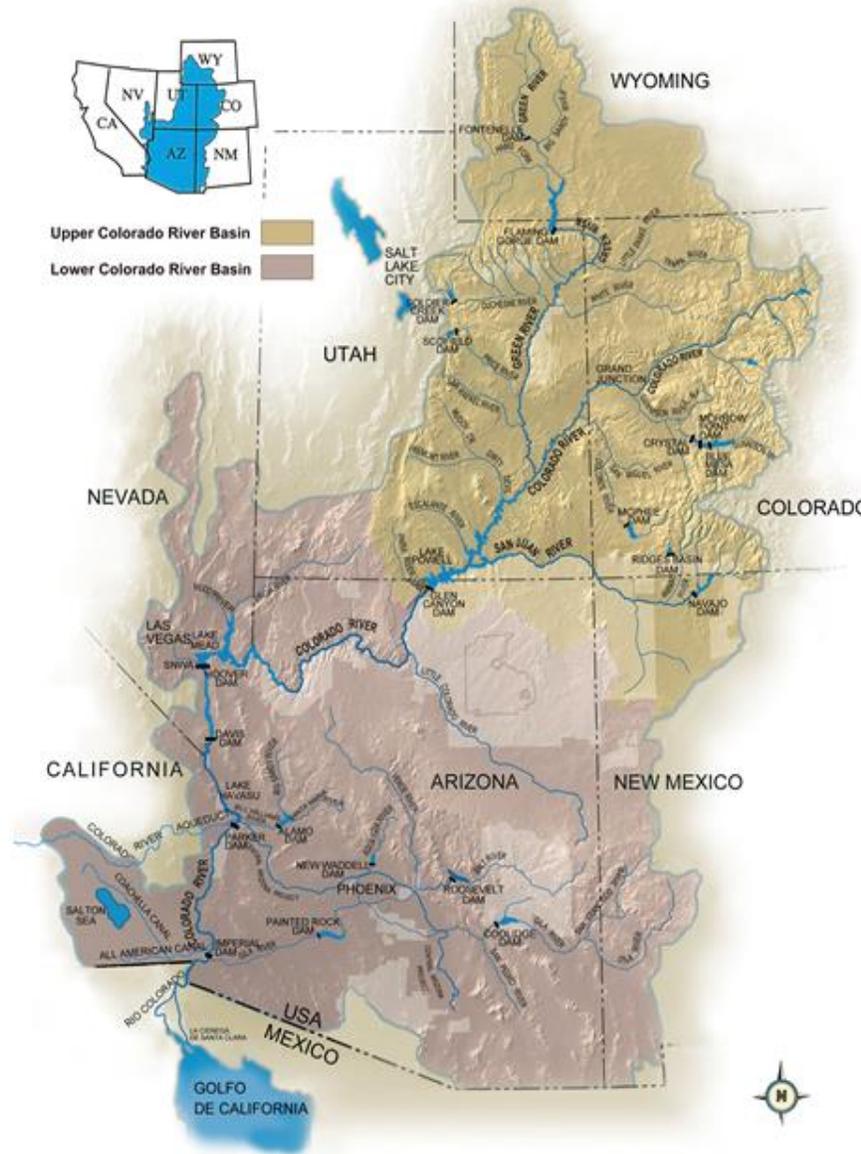
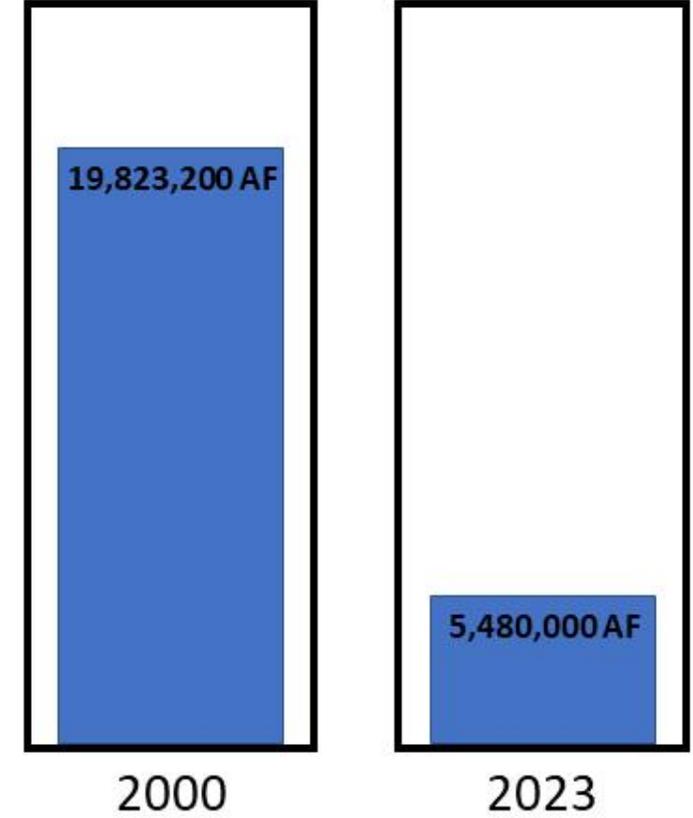
LAKE MEAD

LIVE STORAGE
26,120,000 AF



LAKE POWELL

LIVE STORAGE
24,322,000 AF



Basin map source: US Bureau of Reclamation

2000 data source: US Bureau of Reclamation - Reclamation Information Sharing Environment (RISE)
2023 data source: Projections from US Bureau of Reclamation - October 2022 24-Month Study

The May 22, 2023, LB Plan for 2023-2026

- 1. Application of '07 Guidelines, DCP, and Minute 323 as written;
- 2. AZ, CA, and NV leave 3.0 maf in Mead by the end of 2026 - and 1.5 maf by the end of 2024;
- 3. 2.3 maf of the 3.0 maf to be funded by IRA
- 4. Up to 0.2 maf in “non-bucket 1” IRA funded conservation by federal dollars;
- 5. None of the federally funded system conservation water shall be retrievable;
- 5. The remaining 0.5 maf can be ICS created in 2023-2026 or system water, but any ICS cannot be delivered before 12/31/26;
- 6. If Mead hits 1025 in the interim period, AZ, CA, and NV must propose additional actions to the UB States and Reclamation that will prevent Mead from reaching 1000;
- 7. Powell releases can be limited depending on Powell elevation to 6.0 maf if any 24-month study shows Powell could drop below 3500 in the succeeding 12 months.

The Toughest Nut to Crack





Shortage Under Arizona vs. California Decree (1964)

- II(B)(3): If insufficient water is available in the lower basin to satisfy 7.5 maf among the states, the secretary shall supply water to Present Perfected Rights first in the order of their priority (and without regard for state lines).
- I(H): “Present perfected rights” means perfected rights, as here defined, existing as of June 25, 1929, the effective date of the Boulder Canyon Project Act.
- PPRs:
 - AZ = 1,077,971 acre-feet
 - CA = 3,019,573 acre-feet
 - NV = 13,034 acre-feet

Colorado River Projects Act of 1968

Arizona wanted to use its full 2,800,000 acre-feet apportionment and required California support in Congress

Result was subordination of 100% of Central Arizona Project deliveries to all PPRs and other contract holders as of 1968 in California (and Nevada)

Colorado River Projects Act of 1968

- II(B)(3) of the Decree shall be interpreted such that . . .
- PPRs and Existing Contract volumes as of September 1968 will be supplied first:
 - Arizona = 1,138,370 acre-feet (approximate)
 - California = 5,362,000 acre-feet (but only up to 4,400,000)
 - Nevada = 20,410 acre-feet

Colorado River Projects Act of 1968

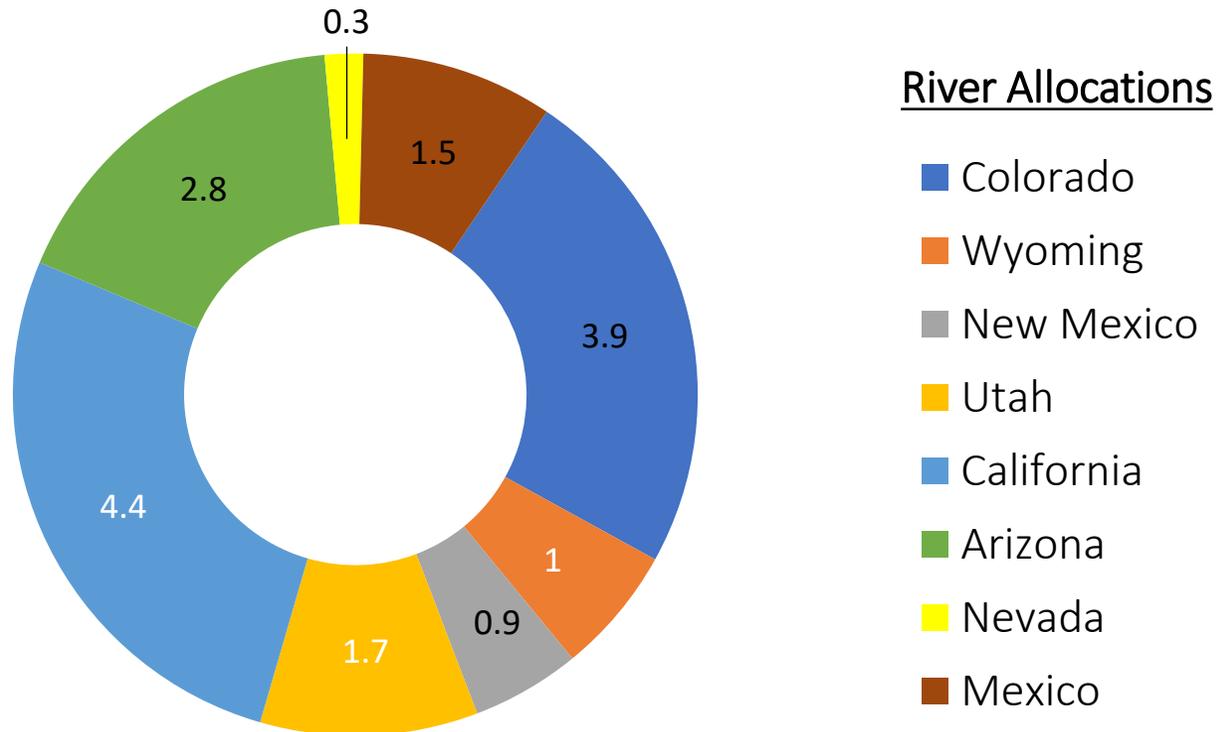
- Section 301(b): Article II (B) (3) of the decree of the Supreme Court of the United States in Arizona against California (376 U.S. 340) shall be so administered that in any year in which, as determined by the Secretary, there is insufficient main stream Colorado River water available for release to satisfy annual consumptive use of seven million five hundred thousand acre-feet in Arizona, California, and Nevada, diversions from the main stream for the Central Arizona Project shall be so limited as to assure the availability of water in quantities sufficient to provide for the aggregate annual consumptive use by holders of present perfected rights, by other users in the State of California served under existing contracts with the United States by diversion works heretofore constructed, and by other existing Federal reservations in that State, of four million four hundred thousand acre-feet of mainstream water, and by users of the same character in Arizona and Nevada.

Lower Basin states are subject to Tier 2 shortages in 2023.

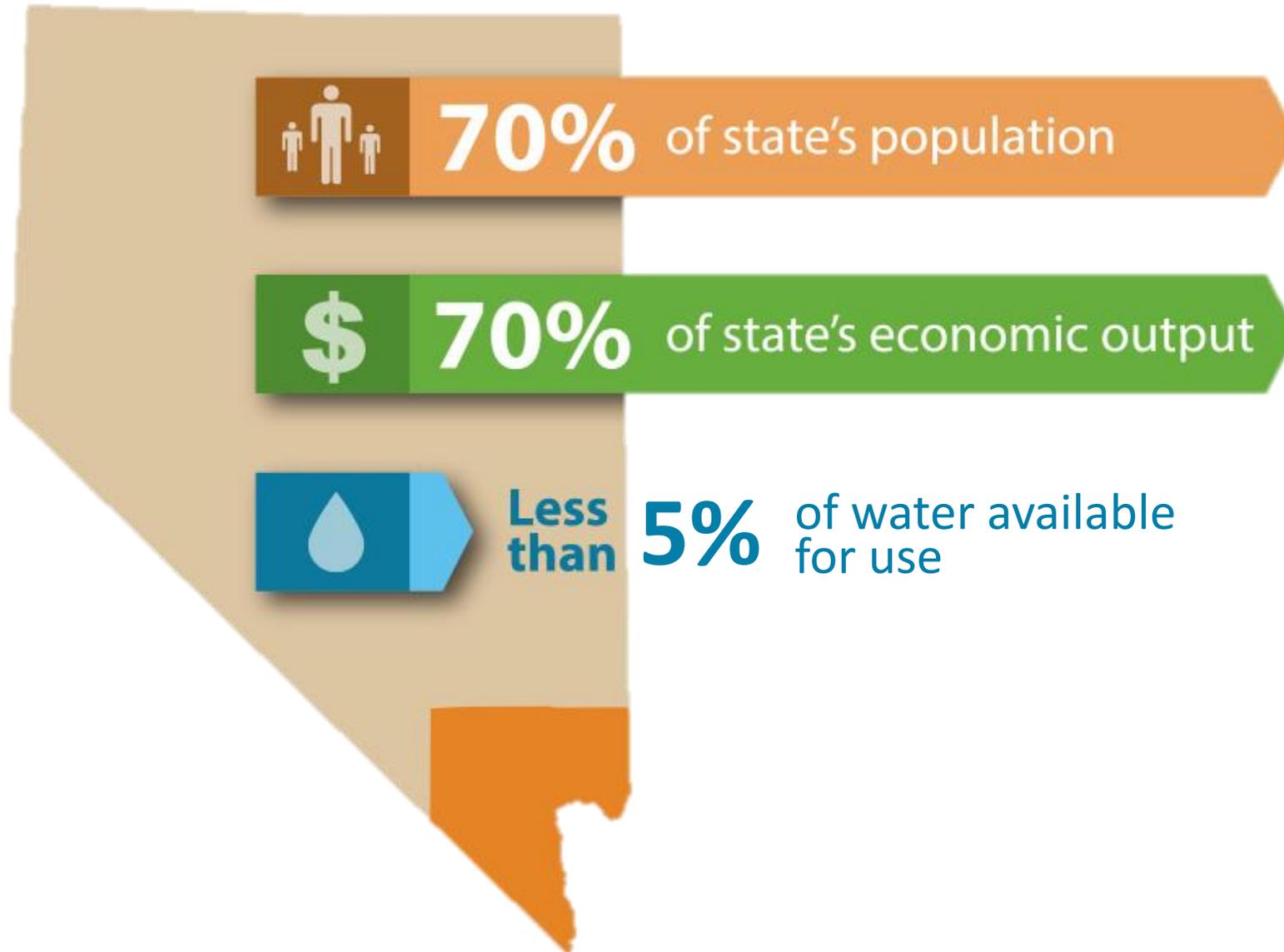
Lake Mead Elevation	Shortage Reduction	Available
1,090+ feet	0	300,000 AFY
1,075 – 1,090 feet	-8,000 AF	292,000 AFY
1,050 – 1,075 feet	-21,000 AF	279,000 AFY
1,045 – 1,050 feet	-25,000 AF	275,000 AFY
1,025 – 1,045 feet	-27,000 AF	273,000 AFY
< 1,025 feet	-30,000 AF	270,000 AFY

COLORADO RIVER ALLOCATIONS

Nevada receives 300,000 acre-feet of Colorado River water annually.

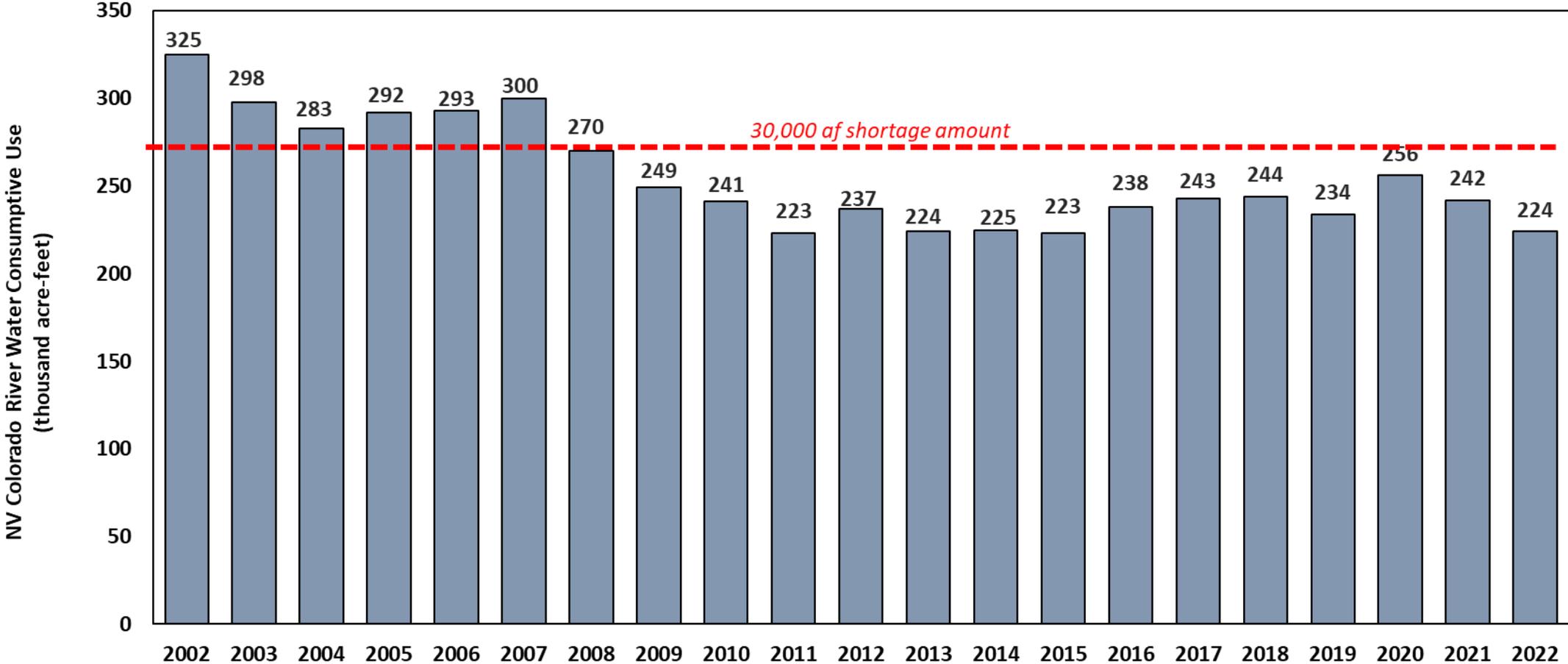


WATER USE



Thanks to conservation, shortages have been mitigated in the near term.

Nevada Colorado River Consumptive Use (Thousand Acre-Feet Per Year)



Since 2002, Southern Nevada has been able to reduce water use while its population grew.

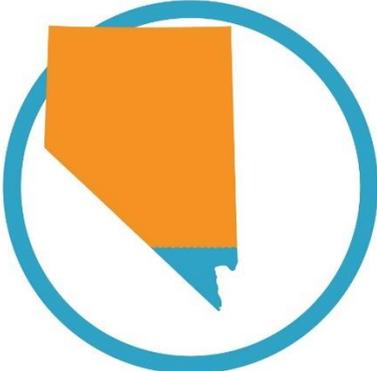
Southern Nevada
POPULATION



Per Capita
WATER USE

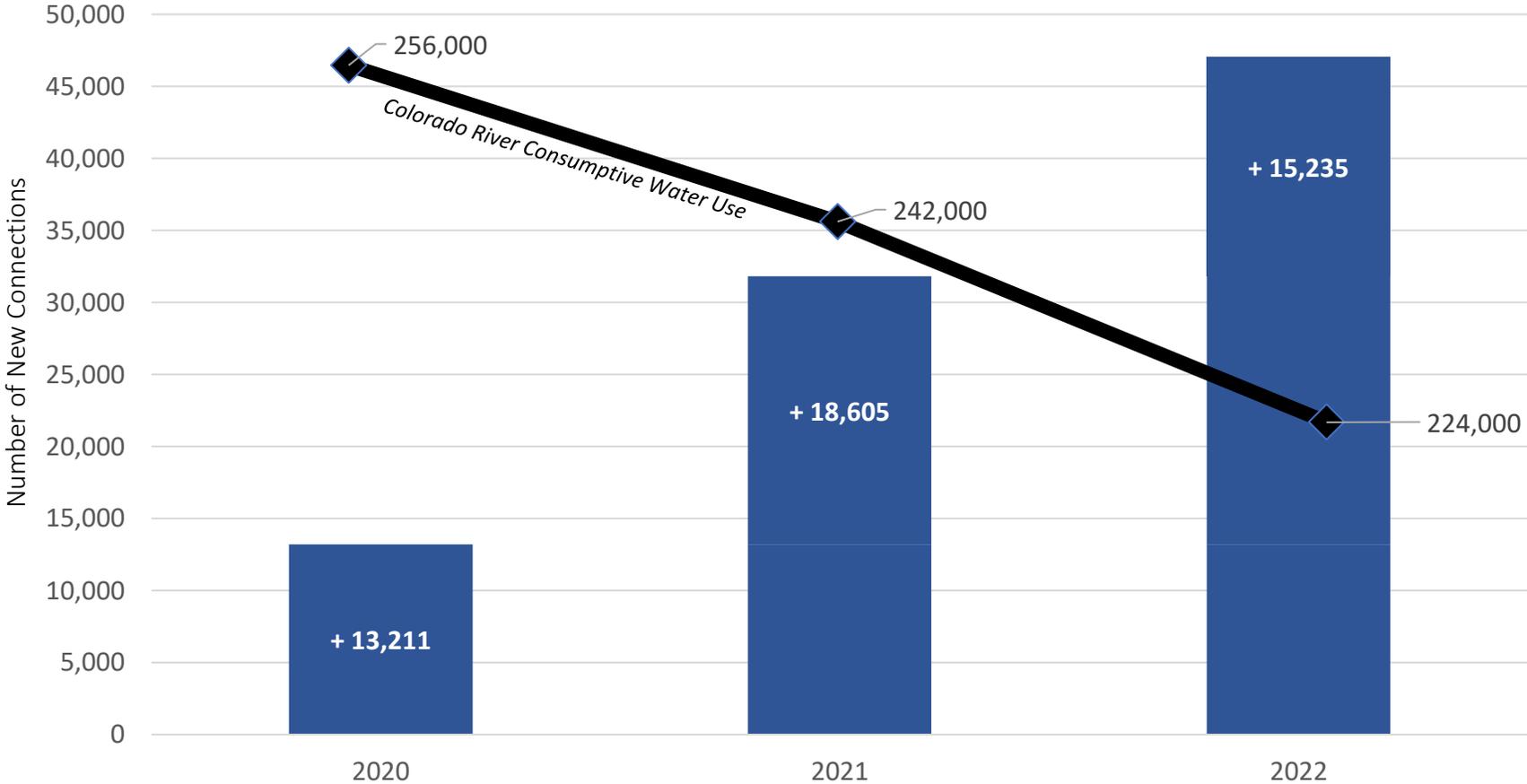


Colorado River Water
CONSUMPTION



Conservation matters.

Despite the addition of more than 47,000 new connections since 2020, water use has declined by 12% in the same time period.



SO HOW ARE WE DOING THAT?

No one would question developing to earthquake safety standards in San Francisco or hurricane standards in Florida.

In Southern Nevada, water scarcity is our natural disaster



Lake Mead - Calville Bay Marina, 2022

Local policy makers are willing and enabled to make tough decisions to make water uses more efficient.

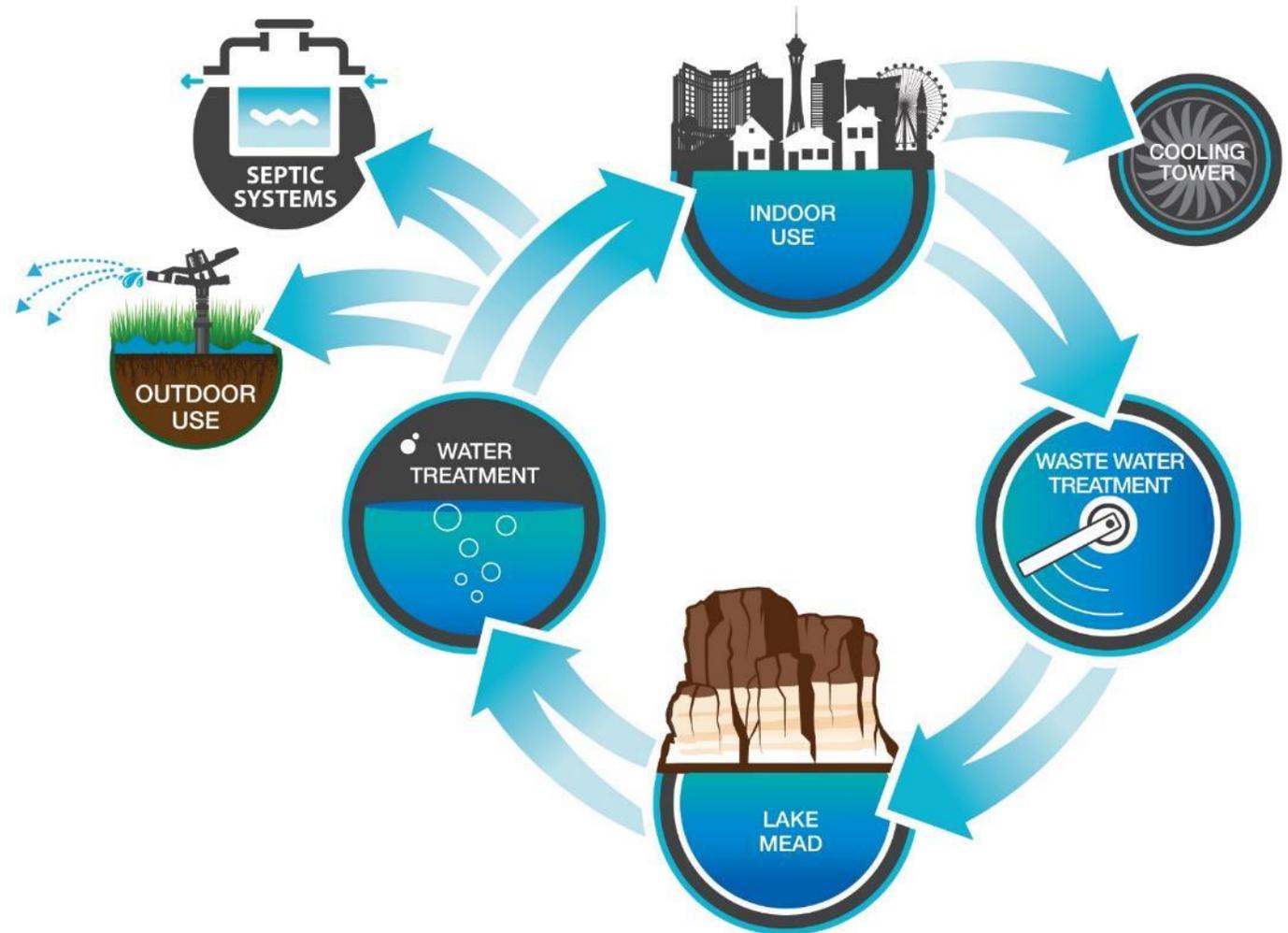


SNWA MEMBER AGENCIES

- **Big Bend Water District (Laughlin)**
- **Boulder City**
- **City of Henderson**
- **City of Las Vegas**
- **City of North Las Vegas**
- **Clark County**
- **Las Vegas Valley Water District**

Southern Nevada's conservation programs focus on areas where water is lost permanently.

Southern Nevada recycles 99% of water used indoors, thereby extending the availability of its resources.



Recent initiatives curb consumptive and inefficient water uses.



NONFUNCTIONAL GRASS: AB356 prohibits nonfunctional grass by 2027



NEW GRASS: New grass installations are limited to parks, schools and cemeteries



SEPTIC: Municipal water supplies cannot be discharged in septic tanks



GOLF COURSES: Golf course water budgets were reduced by one-third. No new golf courses.



EVAPORATIVE COOLING: New buildings are prohibited from using evaporative cooling



FOUNTAINS: New ornamental water features are prohibited, including resorts



SWIMMING POOLS: New pools are limited to 600 sq. ft. surface area



WATER PRICING: Punitive water rates for top 10% of single-family residential users

A new law enacted in 2021 prohibits the community's water supplies from water existing unused grass by 2027.

- **Neighborhood entries**
- **Streetscapes**
- **Medians**
- **Roundabouts**
- **Non-residential applications (commercial buildings, office parks, etc.)**



Functional Turf Types

Active / Programmed Recreation Turf:

- Turf in an active or programmed recreational area within an HOA-owned or managed property, public park or water park

Must be:

- 1,500 contiguous square feet or greater
- Co-located with facilities (trash bins, benches, tables, walking paths, etc.)
- Located >10 feet from street or interior parking lot



Non-Functional Turf - MultiFamily

Non-functional Turf

- Streetscape turf
- Frontage, courtyard, interior and building adjacent turf
- Turf managed by an HOA that does not provide a recreational benefit to the community

Functional Turf:

- Up to 150 square feet per dwelling, but cannot be located in parking lots, streetscapes or non-accessible areas



Functional Turf Types

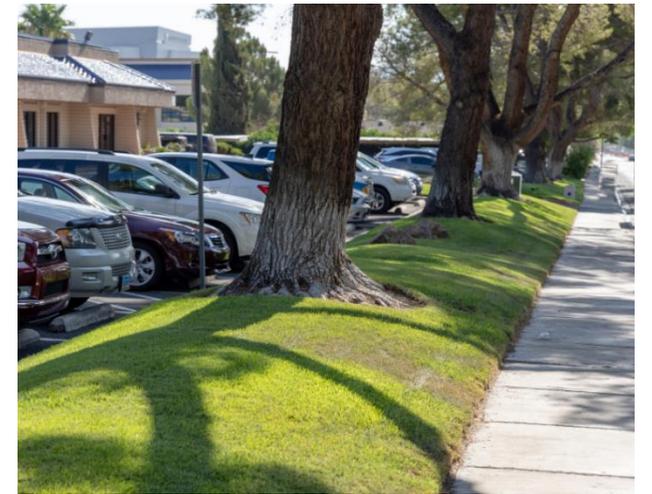
Playground Turf:

- Turf in designated play areas with playground amenities on HOA- managed or owned facilities. Amenities could include slides, swings, climbing structures, etc.
- Turf must be located more than 10 feet away from a street or fenced.



Non-Functional Turf - Commercial

All turf in commercial landscapes is considered non-functional



In 2023, new legislation was enacted to further protect Southern Nevada's limited water resources.

- **Septic Prohibition:** New septic systems prohibited in areas served by the Colorado River and creates a voluntary financial assistance program to pay 100 percent of the cost for a septic conversion.
- **Restricted Water Use under Shortage:** Provides authority to temporarily restrict water use if the federal government reduces Nevada's Colorado River allocation to 270,000 acre feet.
- **Anti-Speculation:** Requires the Colorado River Commission of Nevada to approve changes in entitlement holders to prevent speculation of Colorado River water.

Consumptive Use: New turf installations prohibited



In 2022, Southern Nevada's municipalities approved ordinances and rules that prohibit the installation of new grass except in parks, schools and cemeteries.

Consumptive Use: Golf Course Water Budgets

Local golf courses are subject to water budgets.

- **Existing water budget: 6.3 acre-feet per irrigated acre**
- **January 2024: 4.0 AFY per irrigated acre**



Consumptive Use: Evaporative cooling

Behind irrigation, evaporative cooling represents the largest consumptive water use.

In November, the LVVWD approved a new policy that prohibits the installation of evaporative cooling in all new development, effective September 2023.



Consumptive Use: Pool evaporation

Some area pools exceed 3,000 square feet and evaporate more than 145,000 gallons of water per year.

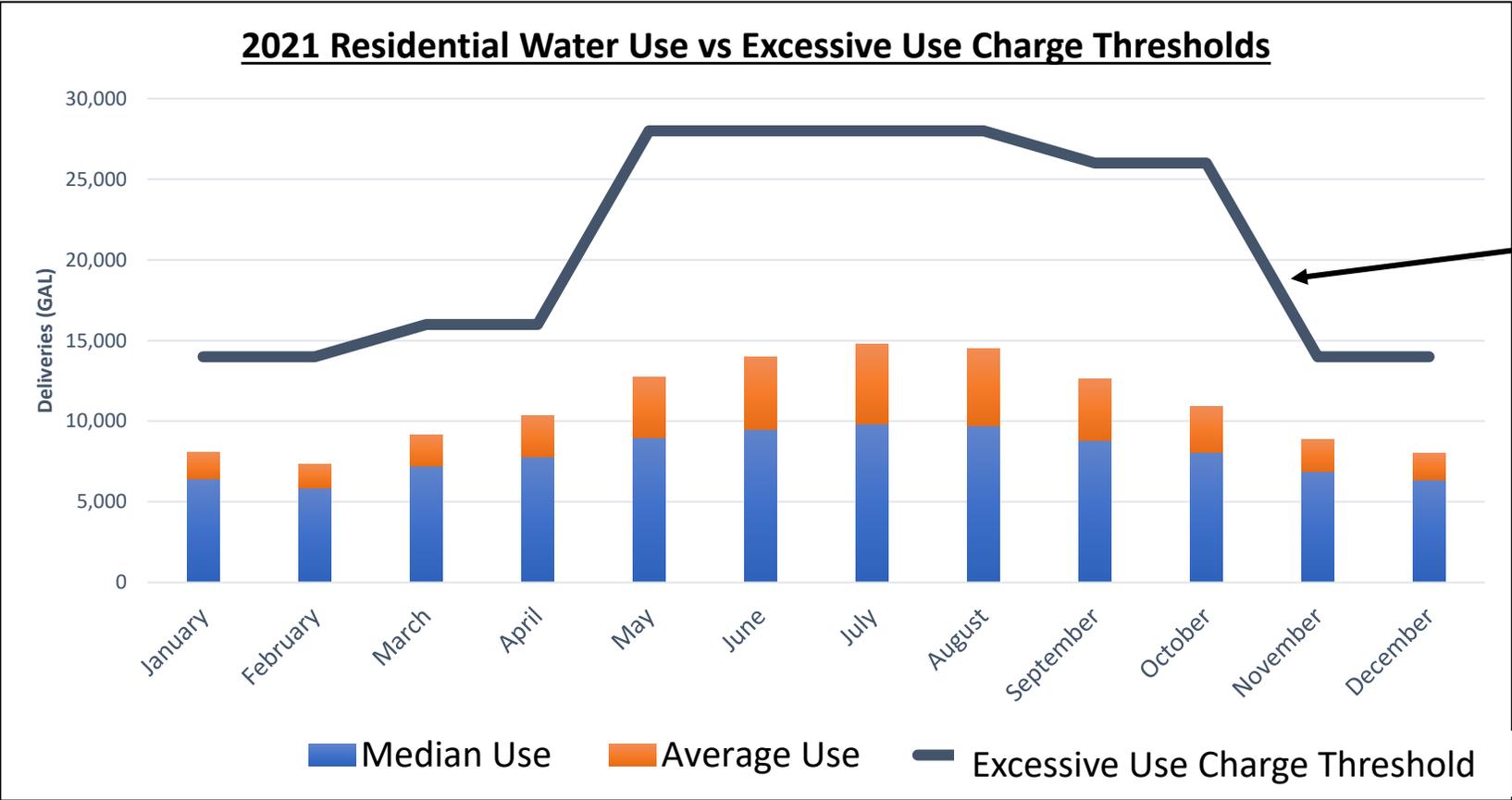
New pool construction is limited to 600 square feet of surface area (single-family residential).

470 sq. ft = average pool size in Southern Nevada



Last fall, water rates were adjusted for single family residential customers to further incentivize conservation.

Excessive Use Charge: A surcharge (\$9) added to every 1,000 gallons of water used beyond an established threshold that changes by watering season.



Thresholds are set at the minimum of the 10th decile (top 10%) of SFR water bills per season.

The largest water users use approximately **one-third of total residential water**.

These homes typically have:

- **Large amounts of grass**
- **Turf that is inefficiently watered**
- **Spray irrigation regardless of landscape**
- **Not following watering schedule**

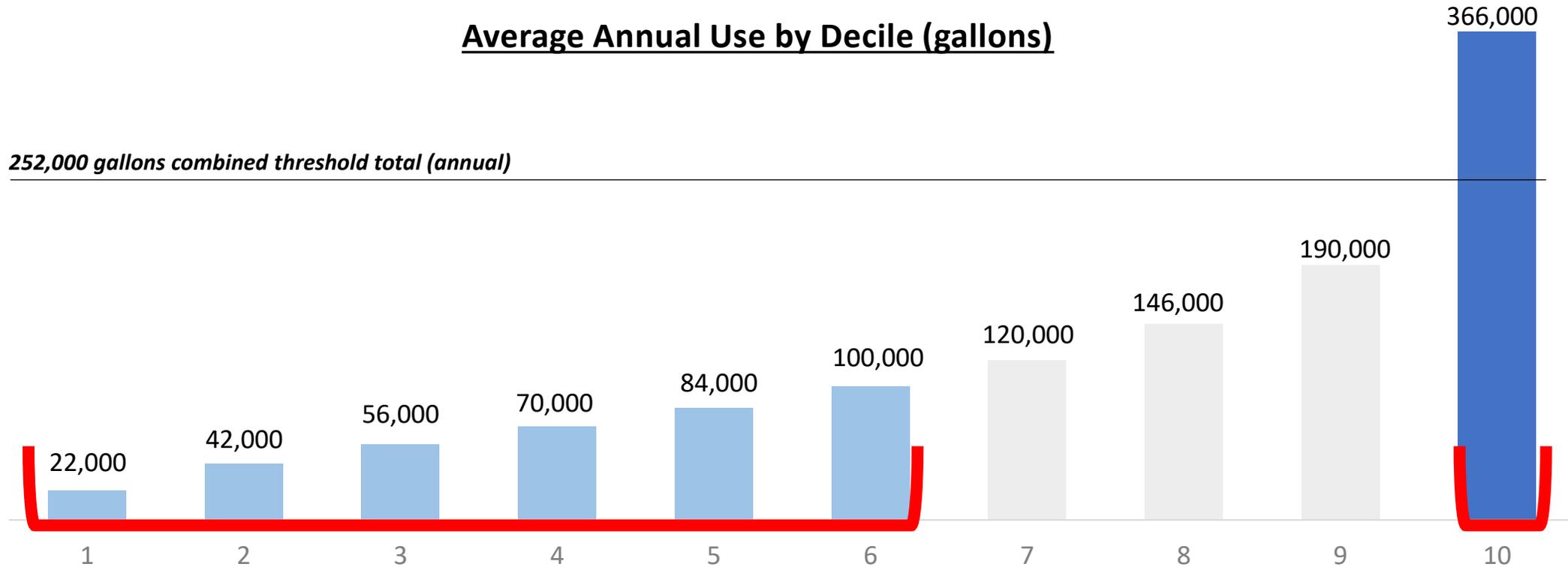
Many of the largest water users also have high-volume, unresolved leaks despite multiple notifications from LVVWD.



LARGEST WATER USERS

Among all single-family residential accounts, the top 10 percent of customers use approximately the same amount of water as the bottom 60 percent

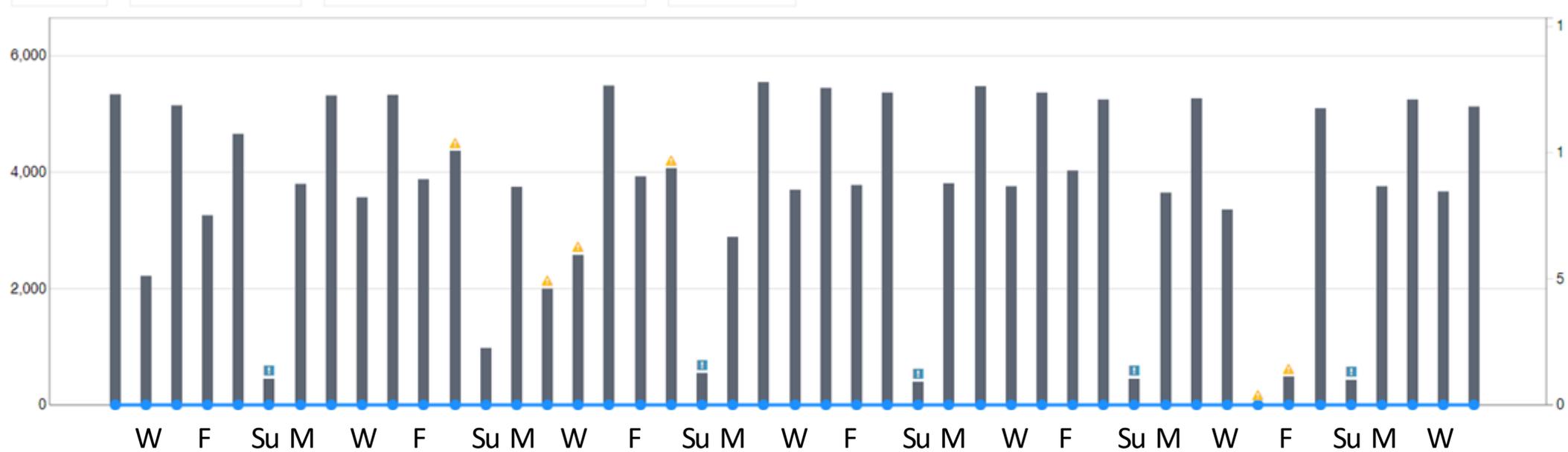
Average Annual Use by Decile (gallons)



Each decile = about 36,000 customers

METER DATA - Daily

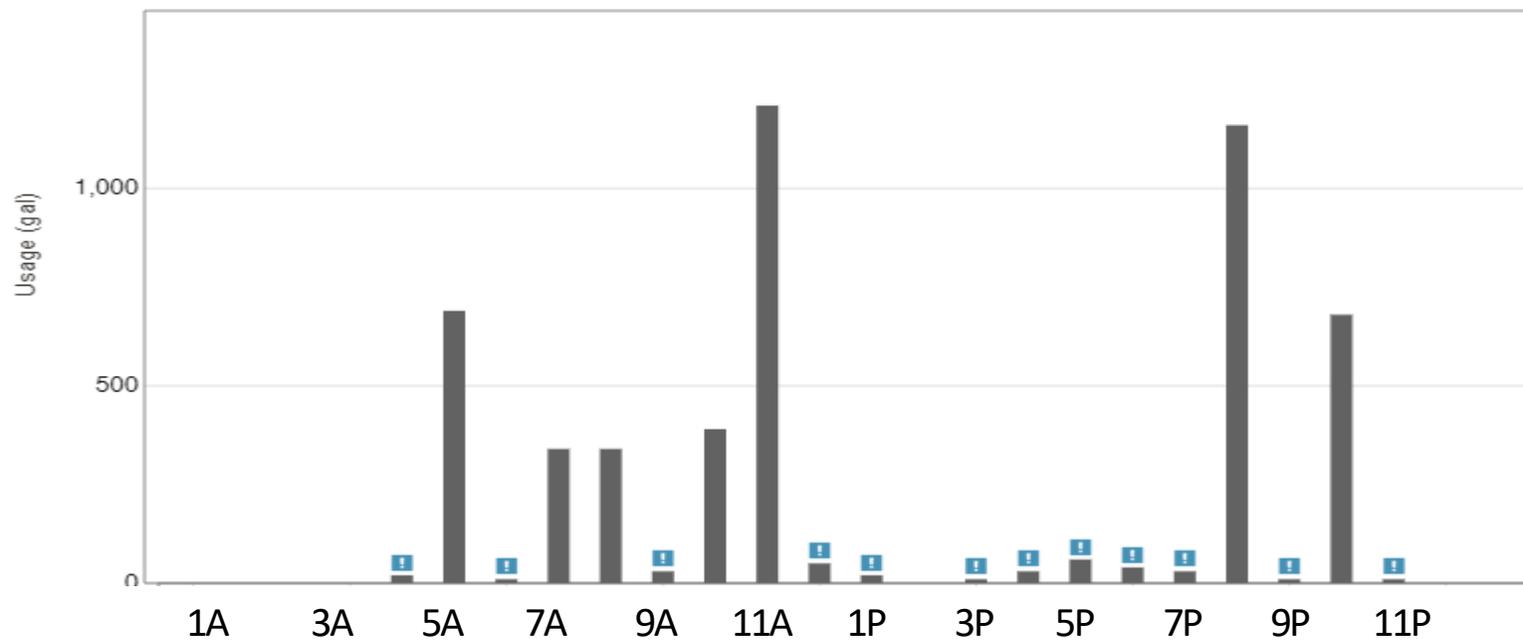
Meter data helps LVVWD identify if the usage is attributable to a leak or an irrigation event.



This customer is a large water user (between 4,000-6,000 gallons a day), but the water use pattern shows the customer is not watering on Sundays, indicating it's nearly all irrigation.

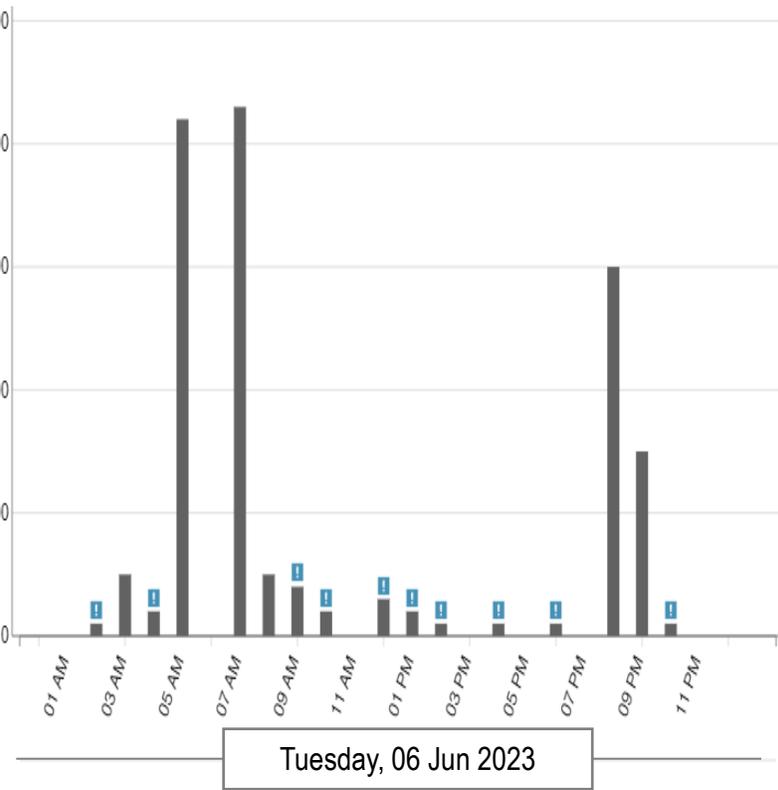
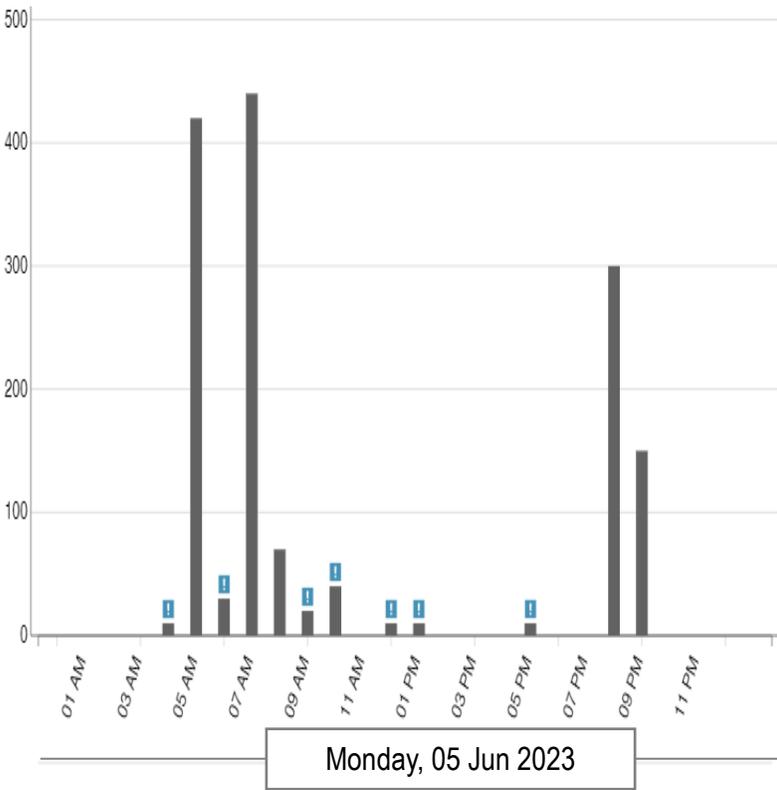
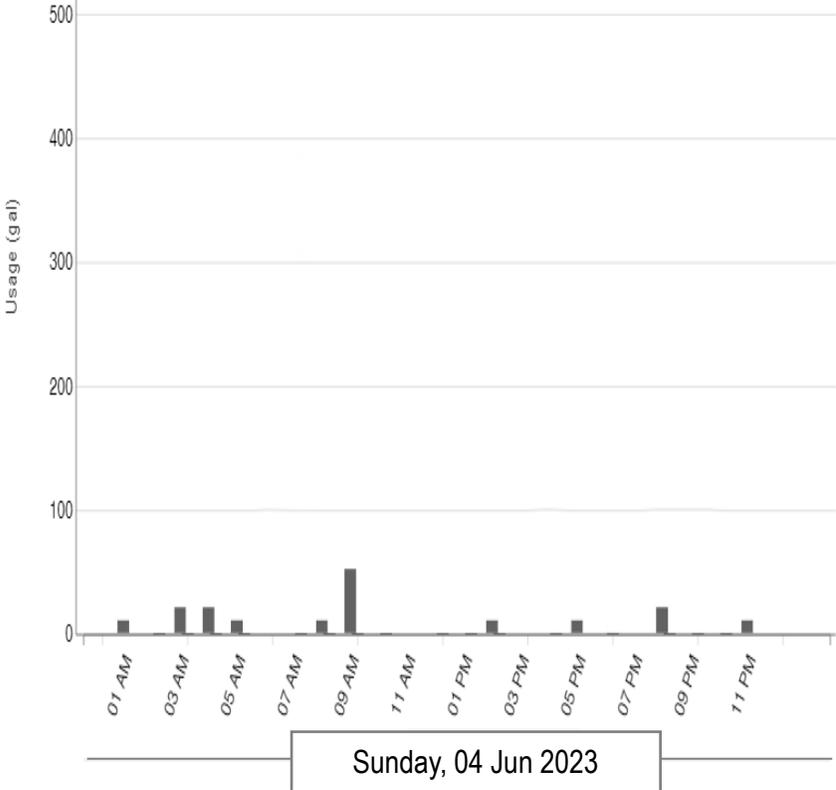
METER DATA - Hourly

The same customer is watering at 5a, 11a and again at 8p and 10p, and potentially some other irrigation activities throughout the morning.



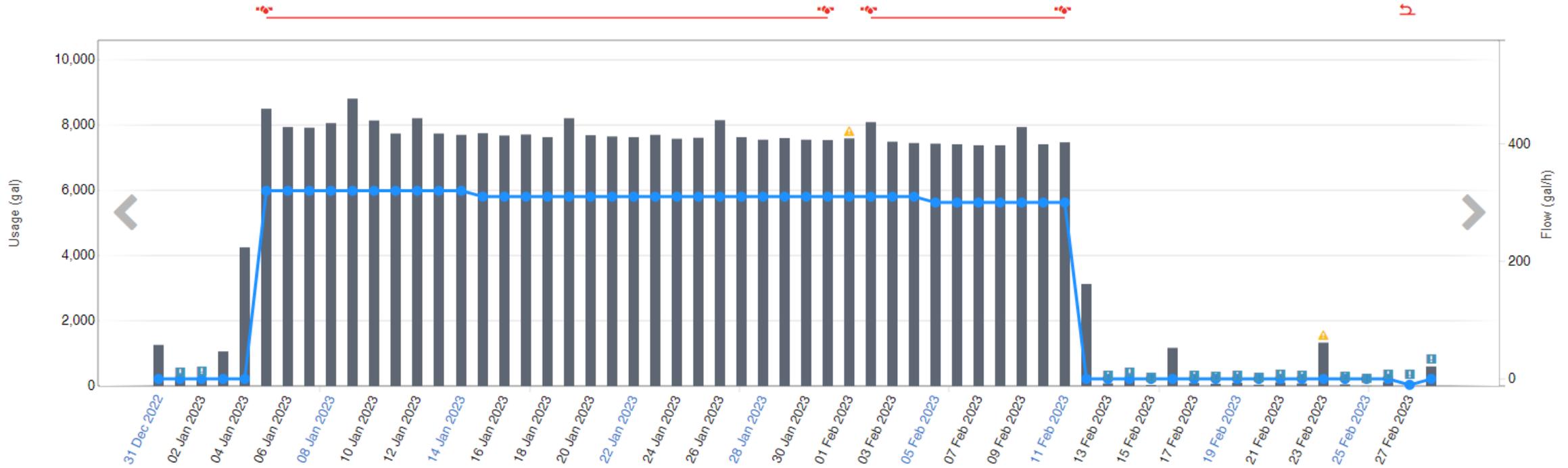
METER DATA - Hourly

Consecutive days of similar irrigation activities demonstrate it's a timed irrigation event.



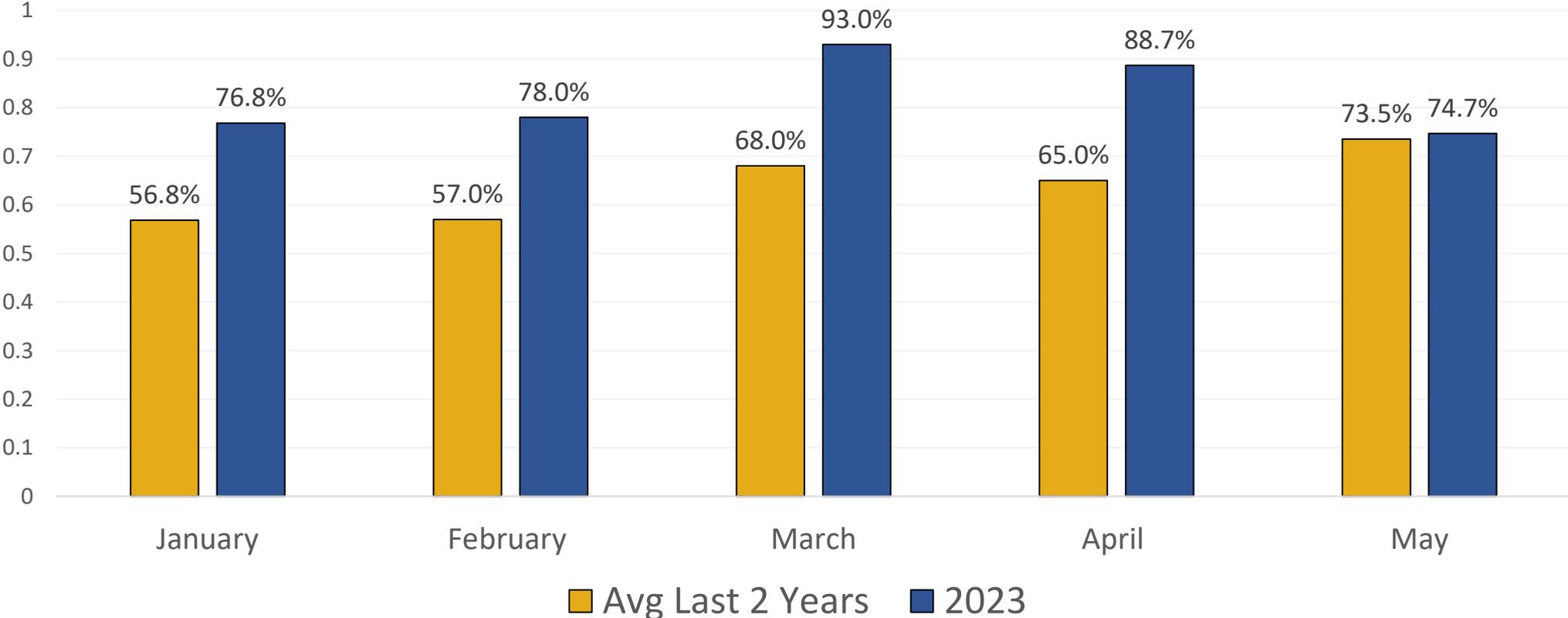
METER DATA - Leak

Leaks are typically very apparent on meter data.

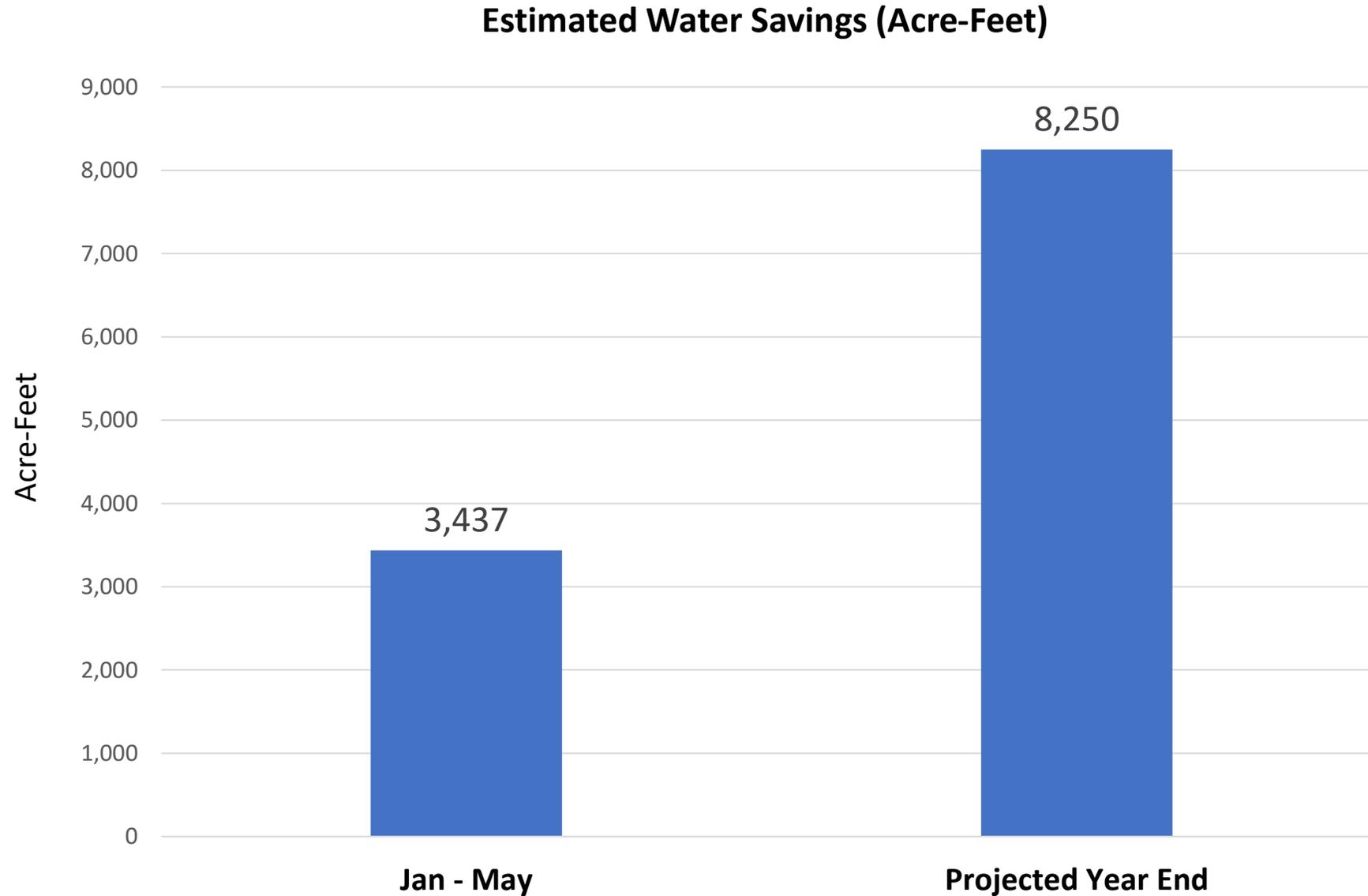


COMPLIANCE

Compliance Results: Single Family Residential Average Weekly Seasonal Compliance



ESTIMATED WATER SAVINGS



TREE HEALTH

Some popular tree species are at or near their maximum heat tolerance. Current and changing climate conditions play a key role in tree survival.

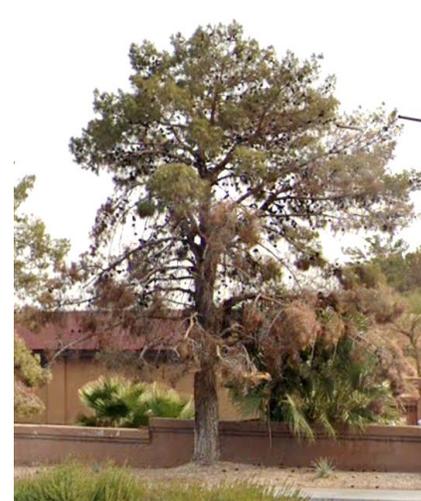
At a Glance:

- Several at-risk tree species are already showing signs of decline in our community.
- These trees are planted in significant numbers in all areas of the community.
- SNWA has communicated with nurseries and landscape companies; updated the Regional Plant list in 2021.

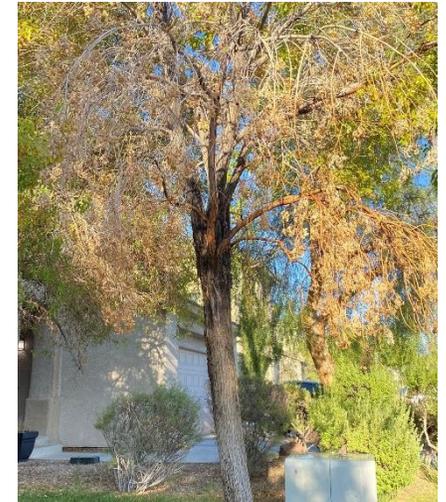
Purple Leaf Plum



Afghan Pine



Ash Tree



New trees are needed to mitigate unavoidable tree loss due to climate change and address urban heat island.

TREE RESOURCES

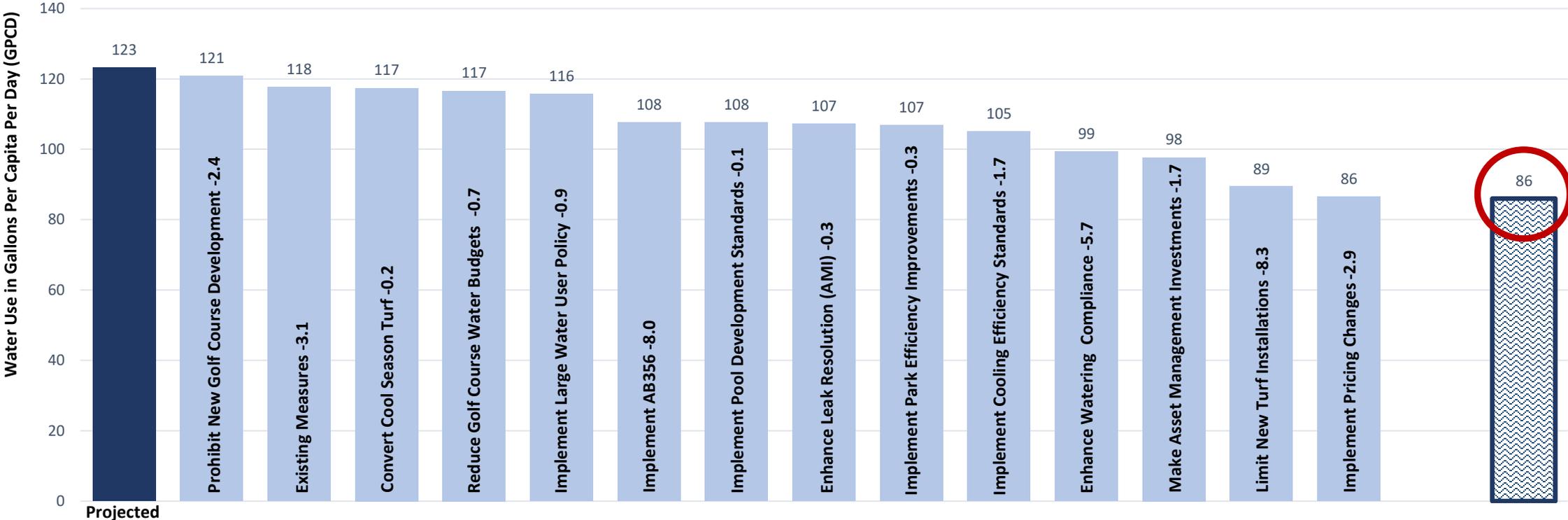
Local agencies, including the LVVWD and the Southern Nevada Water Authority, are committed to protecting our community's trees.

At the July SNWA Board meeting, the Board will consider new programs and partnerships to increase our community's tree canopy coverage and improve resilience to urban heat island impacts:

- New rebate enhancement program will increase the incentive for more canopy coverage from trees for SNWA Water Smart Landscapes program participants
- New partnership with ImpactNV will focus tree placement efforts in areas where populations are vulnerable to extreme heat, targeting high use areas



Meeting the Conservation Goal





SOUTHERN NEVADA WATER AUTHORITY™