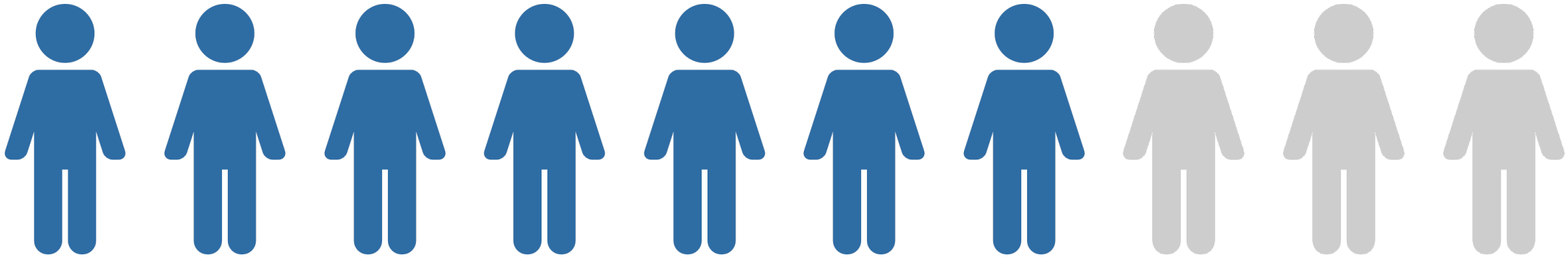
MANAGING DROUGHT IN SOUTHERN NEVADA

KATIE HORN
Manager – Public Services

SOUTHERN NEVADA WATER AUTHORITY®

Seven of every 10 Nevadans rely on the SNWA to supply water to homes and businesses.



SNWA Responsibilities

CONSERVATION

Incentives, Programs, Regulation and Pricing

WATER SUPPLY PLANNING

Developing and managing regional water supplies

WATER QUALITY

Maintaining and protecting water quality

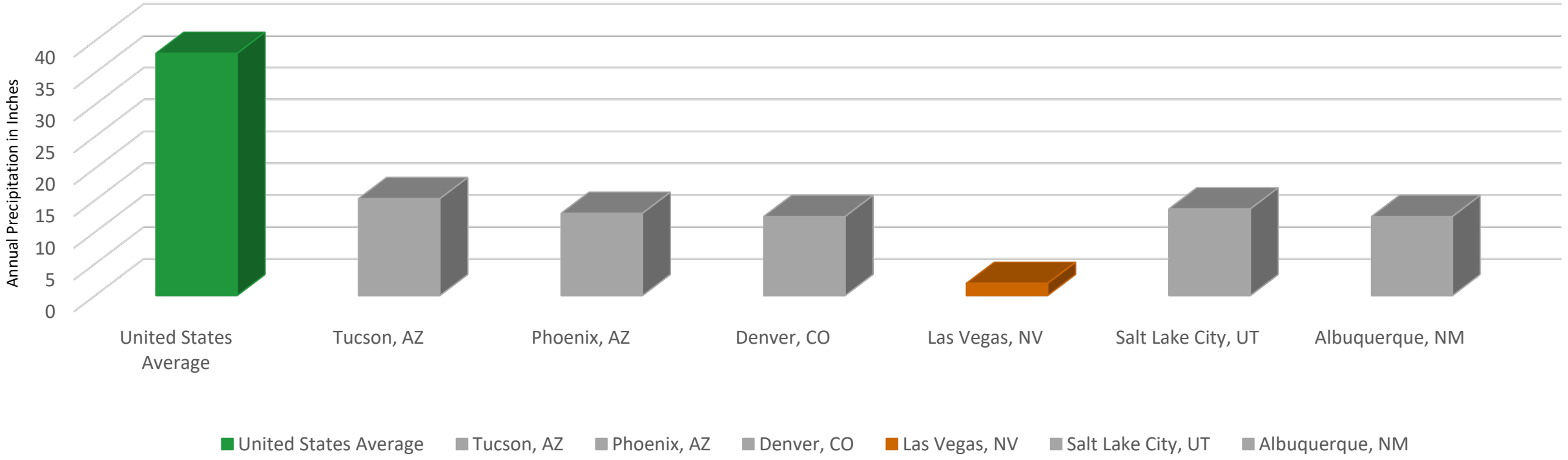
INFRASTRUCTURE

Building and operating major facilities

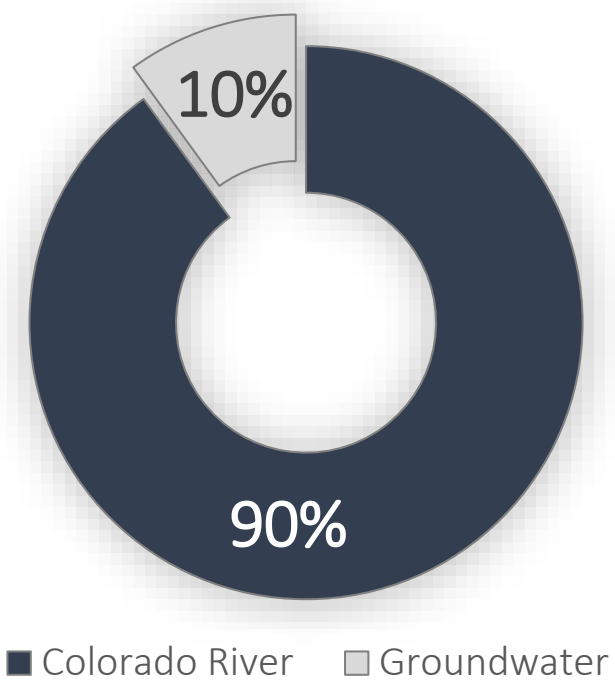
STEWARDSHIP

Protecting environmental resources

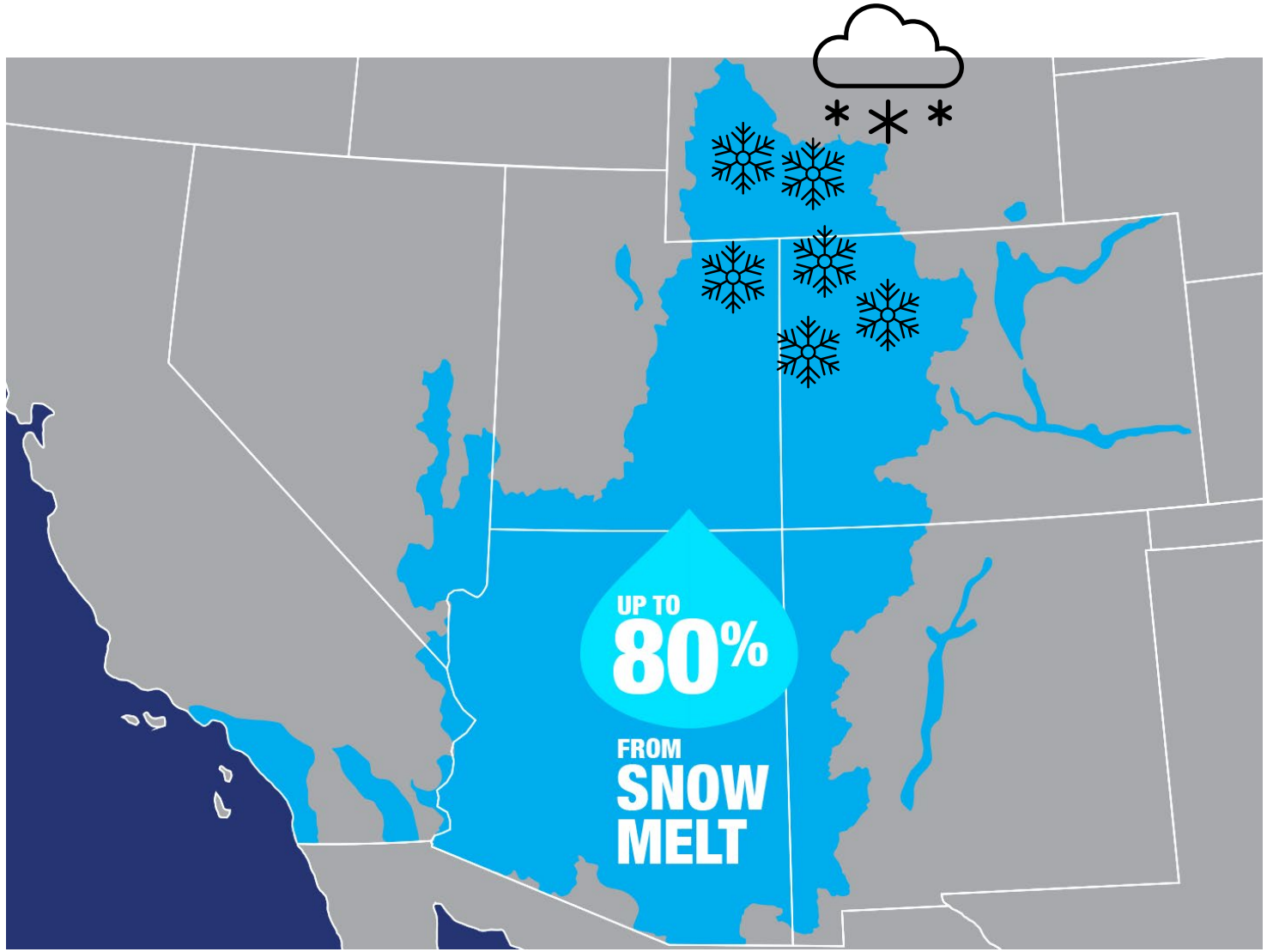
Las Vegas is the driest metropolitan area in the United States



Las Vegas is nearly fully dependent on Colorado River resources.



These resources begin as snowpack in the Colorado Rocky Mountains.



The Colorado River is shared among seven Basin States and the country of Mexico, whose boundaries fall within the hydrographic basin.

The Basin's two major reservoirs include Lake Powell and Lake Mead.

LAKE POWELL:

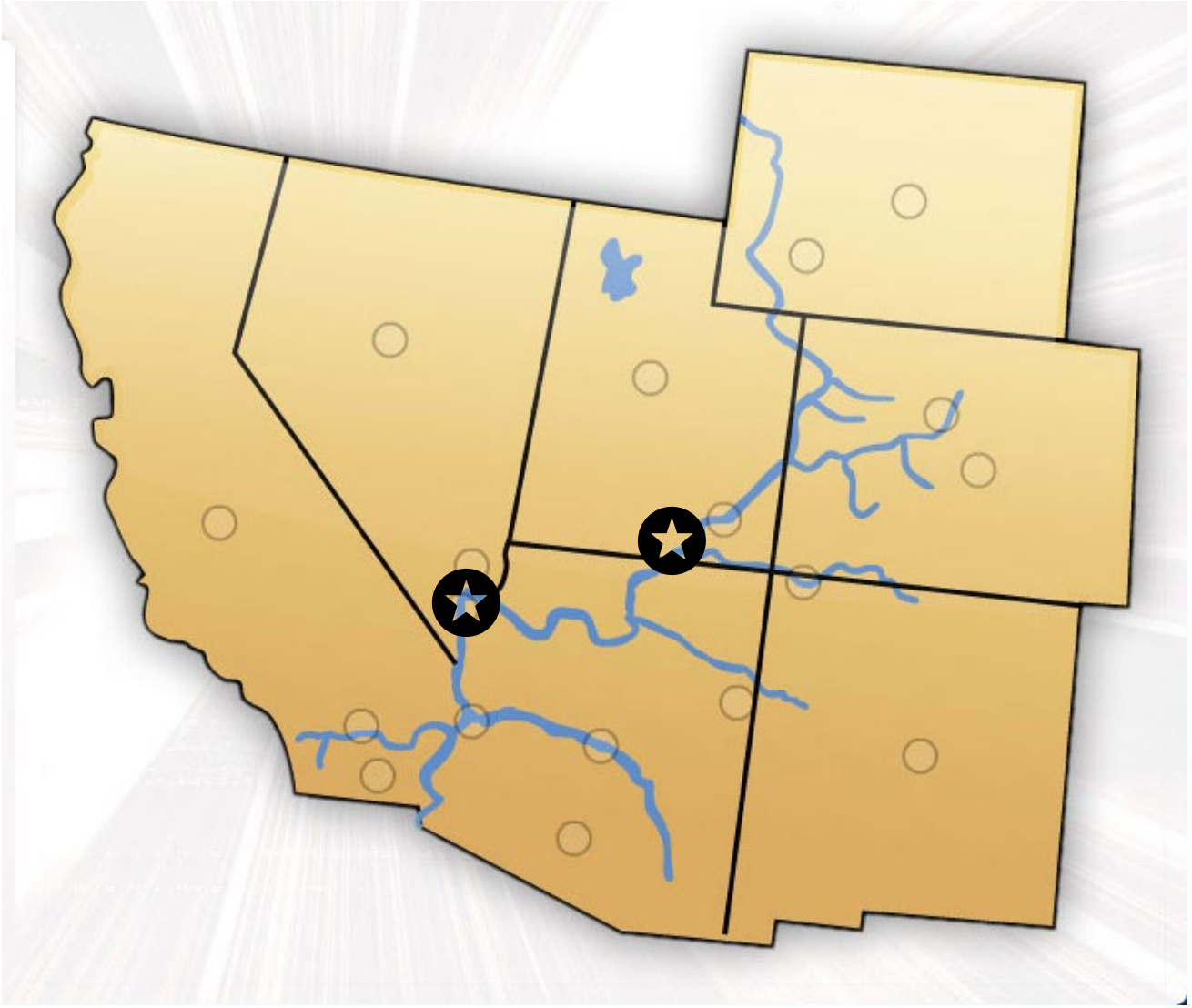
Storage: 25 million acre-feet

- Ensures Upper Basin can meet its water delivery requirements to the Lower Basin.
- Significant source of hydroelectric power

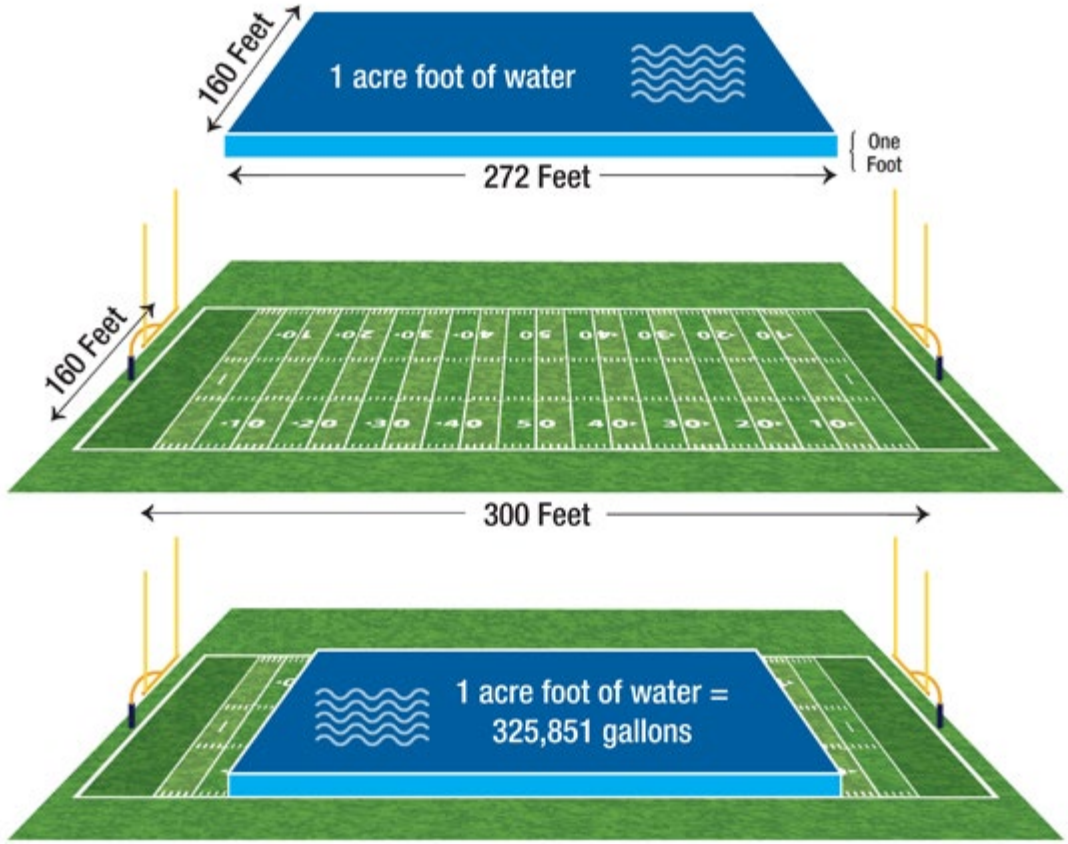
LAKE MEAD:

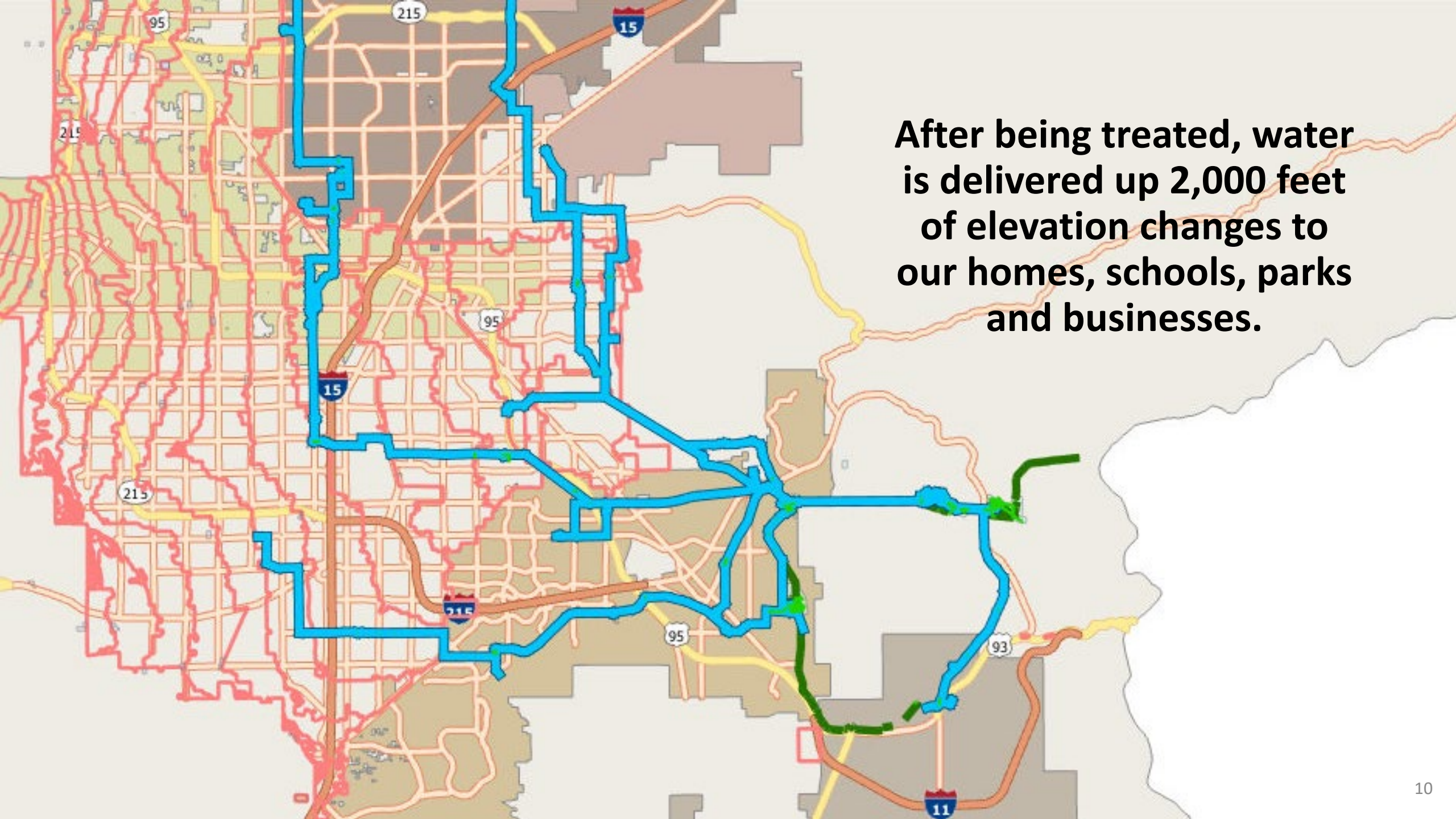
Storage: 26 million acre-feet

- "Faucet" that regulates deliveries to Arizona, California, Southwest Tribes and Mexico



Acre-foot
=
The amount of water it takes to fill an acre one foot high



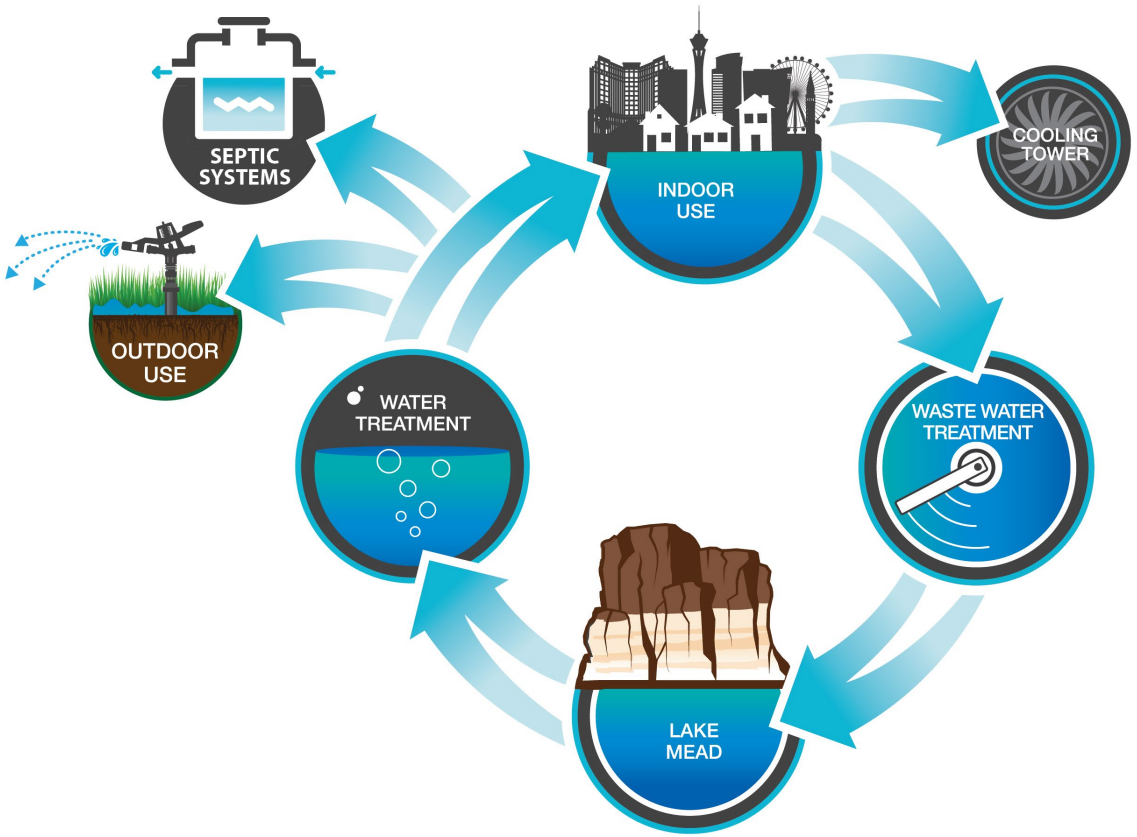


After being treated, water is delivered up 2,000 feet of elevation changes to our homes, schools, parks and businesses.

Water used indoors flows into the sewer system. This water travels to a wastewater facility, where it is treated.

40 percent of our water is used indoors, then captured, treated and returned to Lake Mead via the Las Vegas Wash.

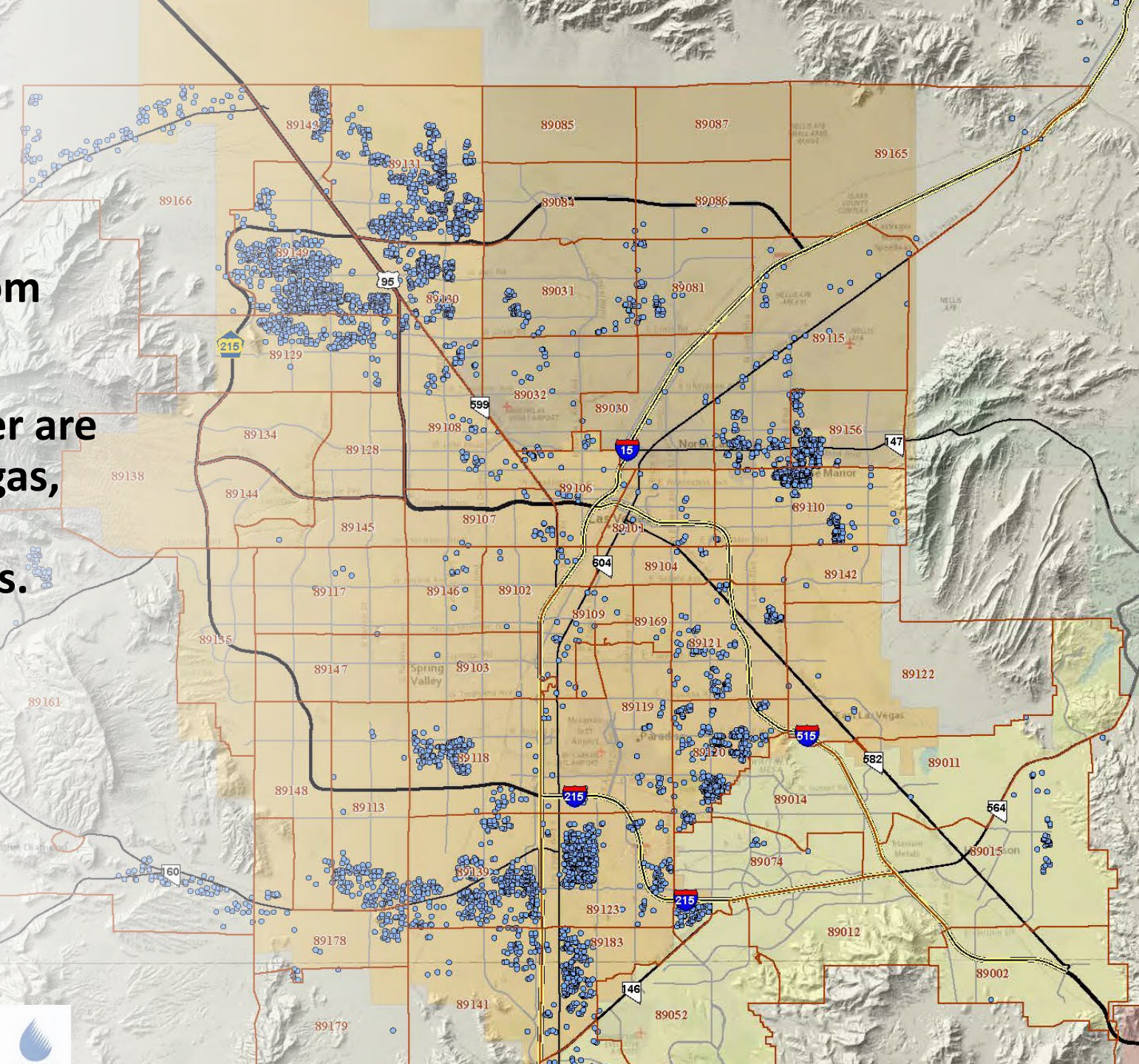
We recycle 99% of the water used indoors, thereby extending the availability of our resources.



GROUNDWATER

About 10 percent of Southern Nevada's water supply comes from groundwater.

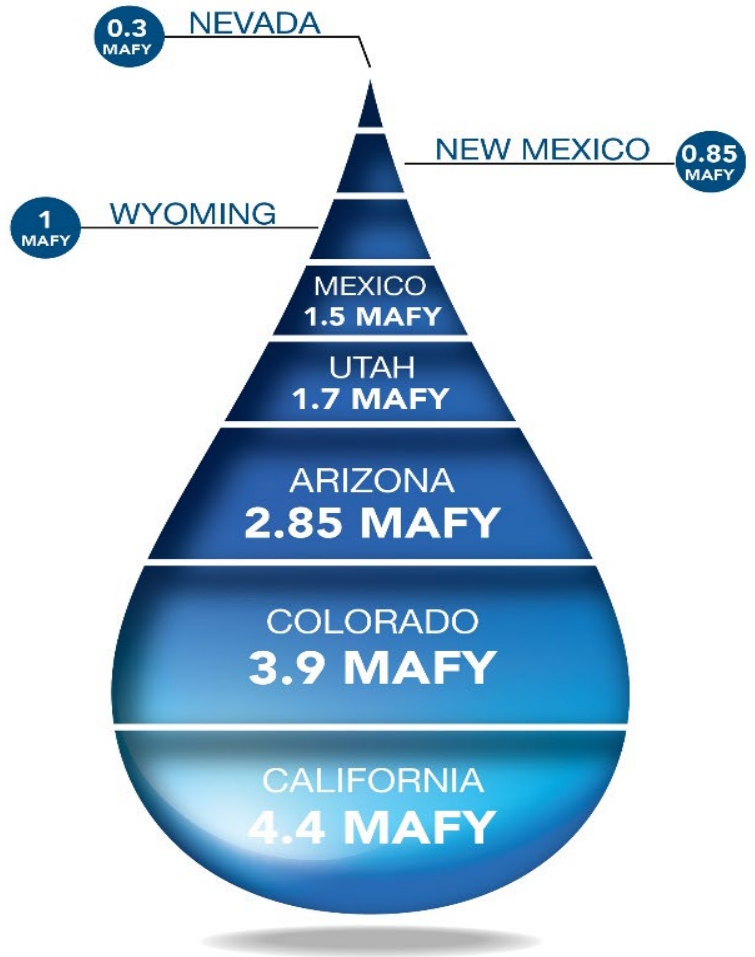
The primary users of groundwater are LVVWD, the City of North Las Vegas, and thousands of single-family domestic and private well owners.



The Colorado River was allocated in 1922 through a Compact.

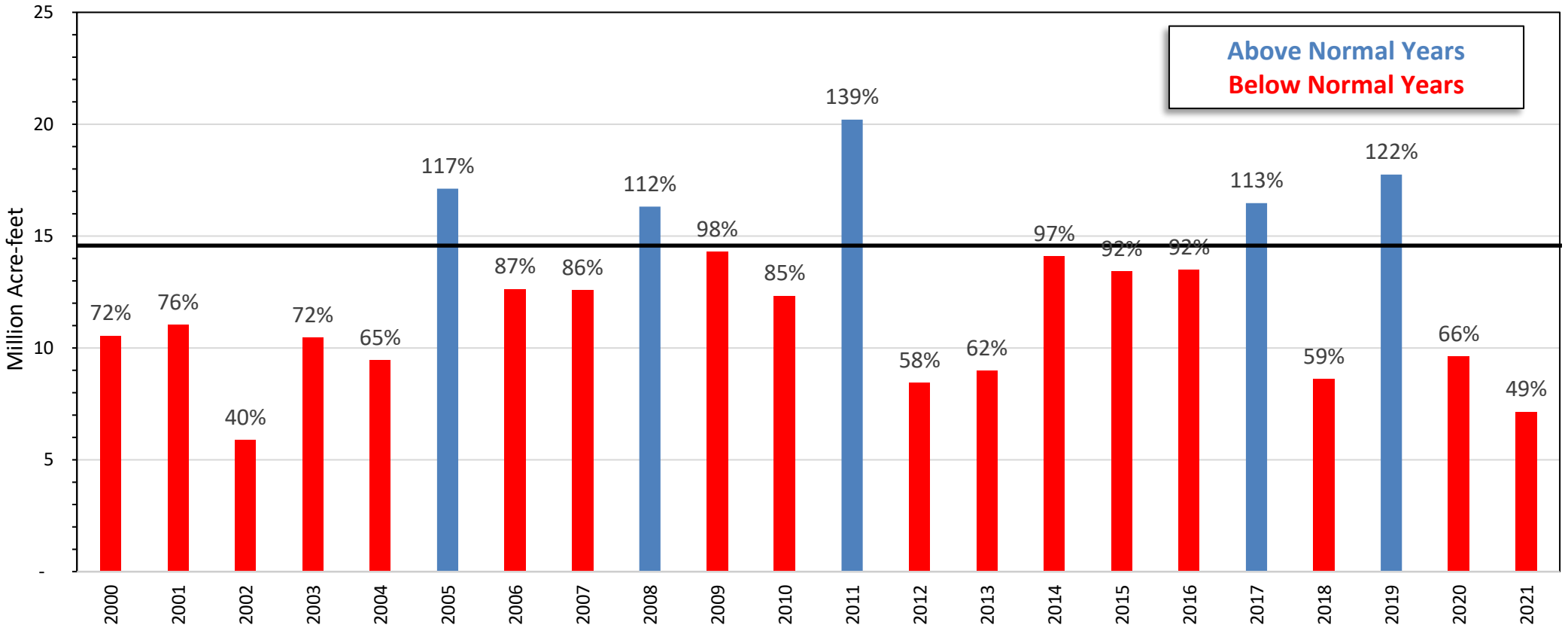
The total volume to be divided—15 million acre-feet—was based upon average flows during the previous decade.

Allocations were based primarily on agricultural use or potential use.



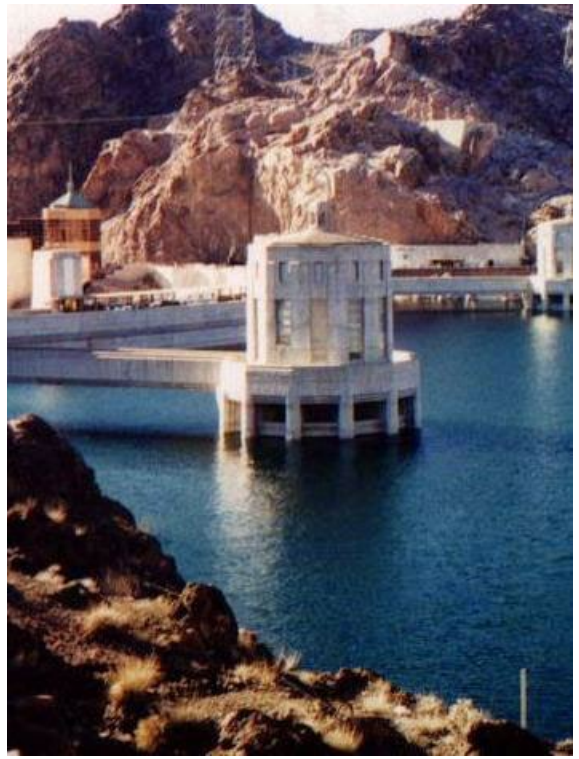
Aridification

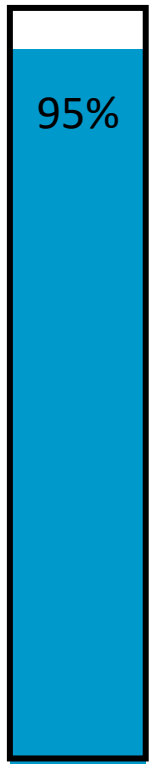
In the early 2000s, the Colorado River began to experience significantly decreased inflows.



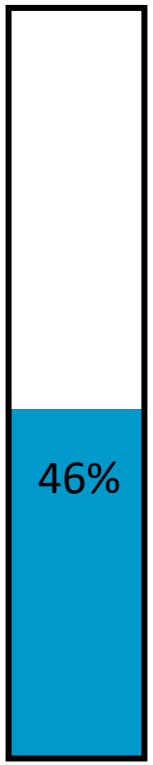
Drought conditions have significantly depleted Lake Mead storage.

1999

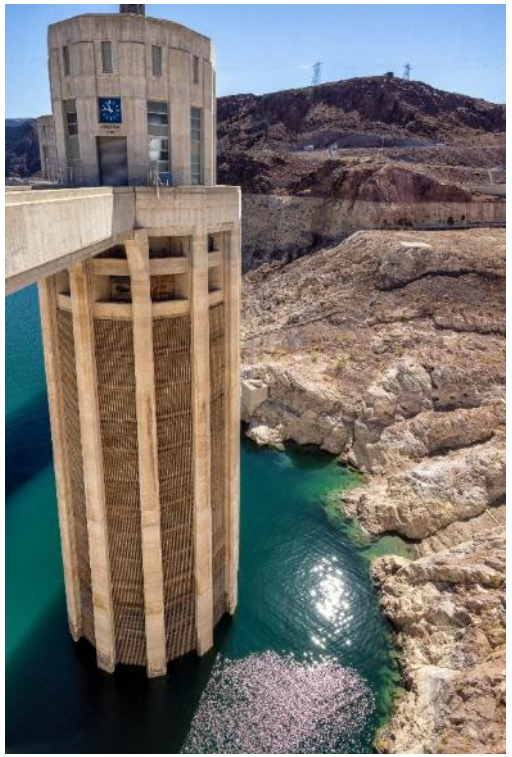


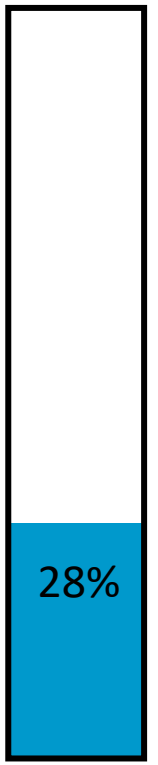


2004

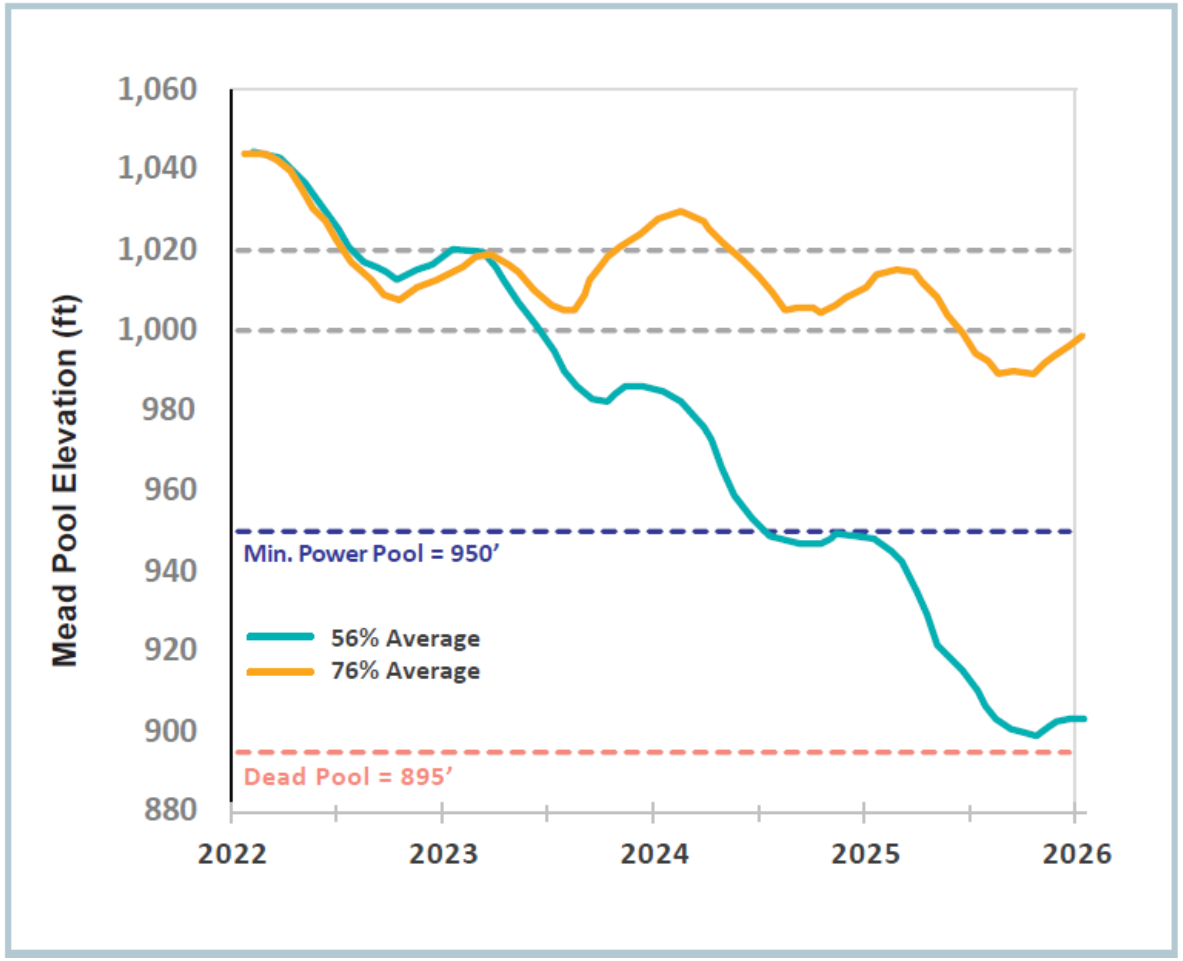


2022





Lake Mead's water elevations are projected to decline.



Declining water levels:

- Reduce water storage
- Reduce availability of water supplies for Lower Basin States (Shortages)
- Renders portions of Southern Nevada's water infrastructure inoperable
- Reduces hydropower production
- Increases treatment costs
- Jeopardizes downstream releases to Arizona, California or Mexico

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

Lake Mead Elevation	NV's Shortage Reduction	Available to Nevada
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

Lake Mead is at significant risk of falling below 900 feet.

At that elevation:

- Reservoir storage is less than 10 percent of capacity
- The SNWA's first two intakes are above the surface
- Hoover Dam is unable to release water downstream to Arizona, California or Mexico
- Hoover Dam can no longer generate power
- **<u>Nevada's allocation will be further reduced by an undefined, potentially significant quantity</u>**

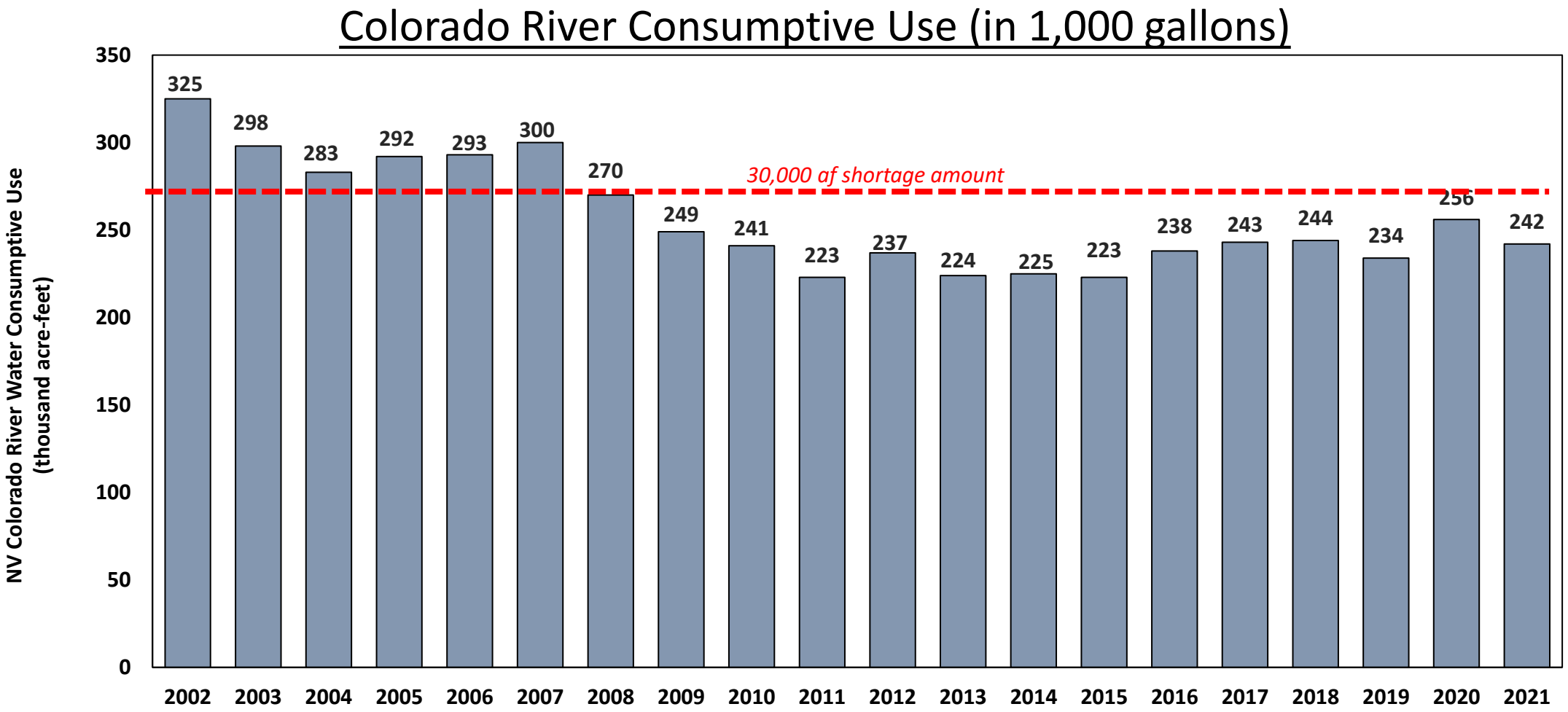
The federal government asked Colorado River users to reduce use.

On June 14, the U.S. Bureau of Reclamation Commissioner asked that all seven Colorado River Basin States reduce their diversions from the Colorado River **by 2 to 4 million-acre feet**.

Reducing demands will require participation from every state and every sector.

Basin states have not been able to come to an agreement to meet the Bureau of Reclamation's requested reductions in diversions.

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



Southern Nevada has spent decades preparing for drought.

INFRASTRUCTURE
Constructing major facilities and asset management

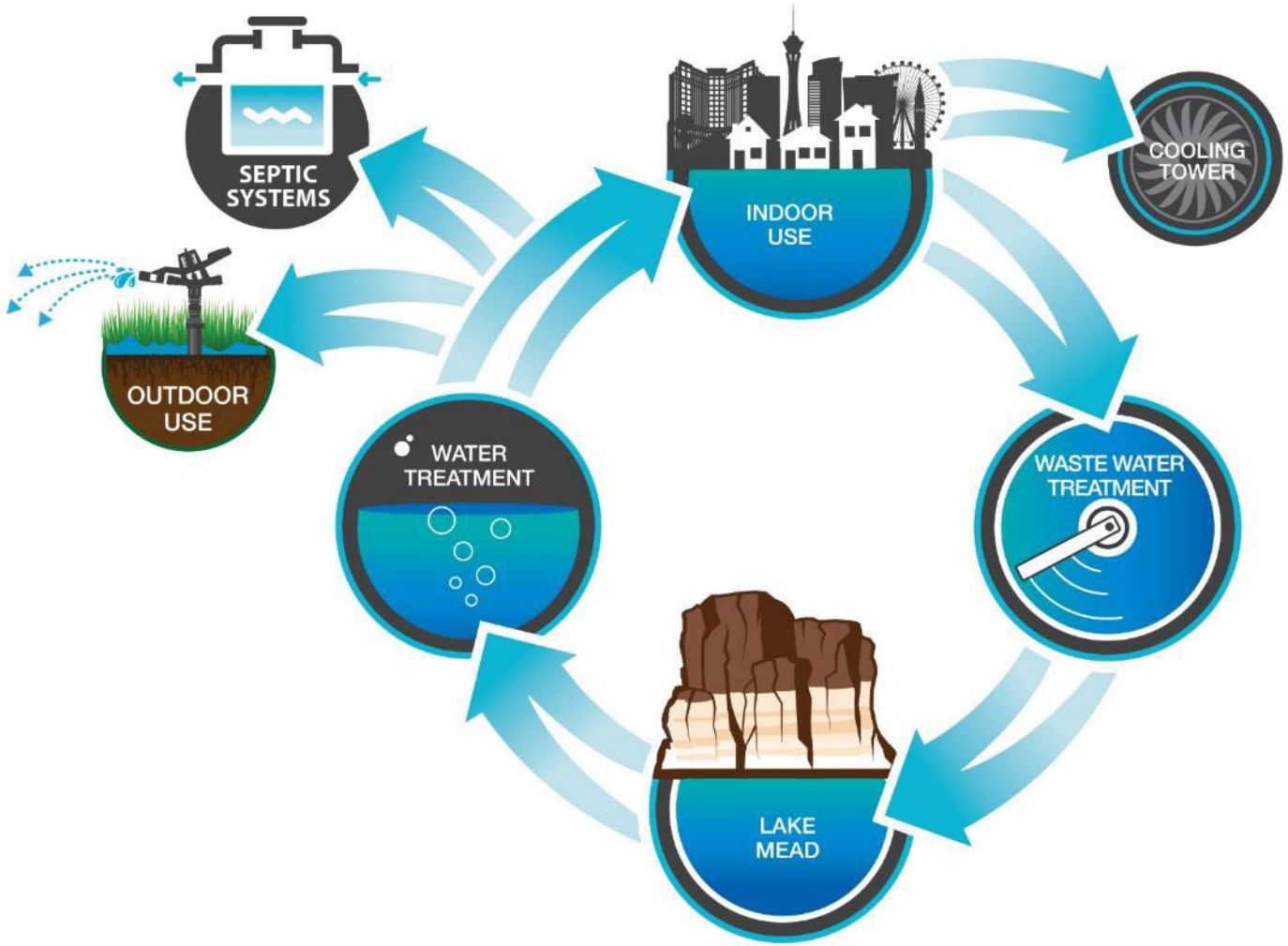
RESOURCE PLANNING
Working with partners & developing comprehensive plans to manage supplies

WATER BANKING
Storing water supplies for the future

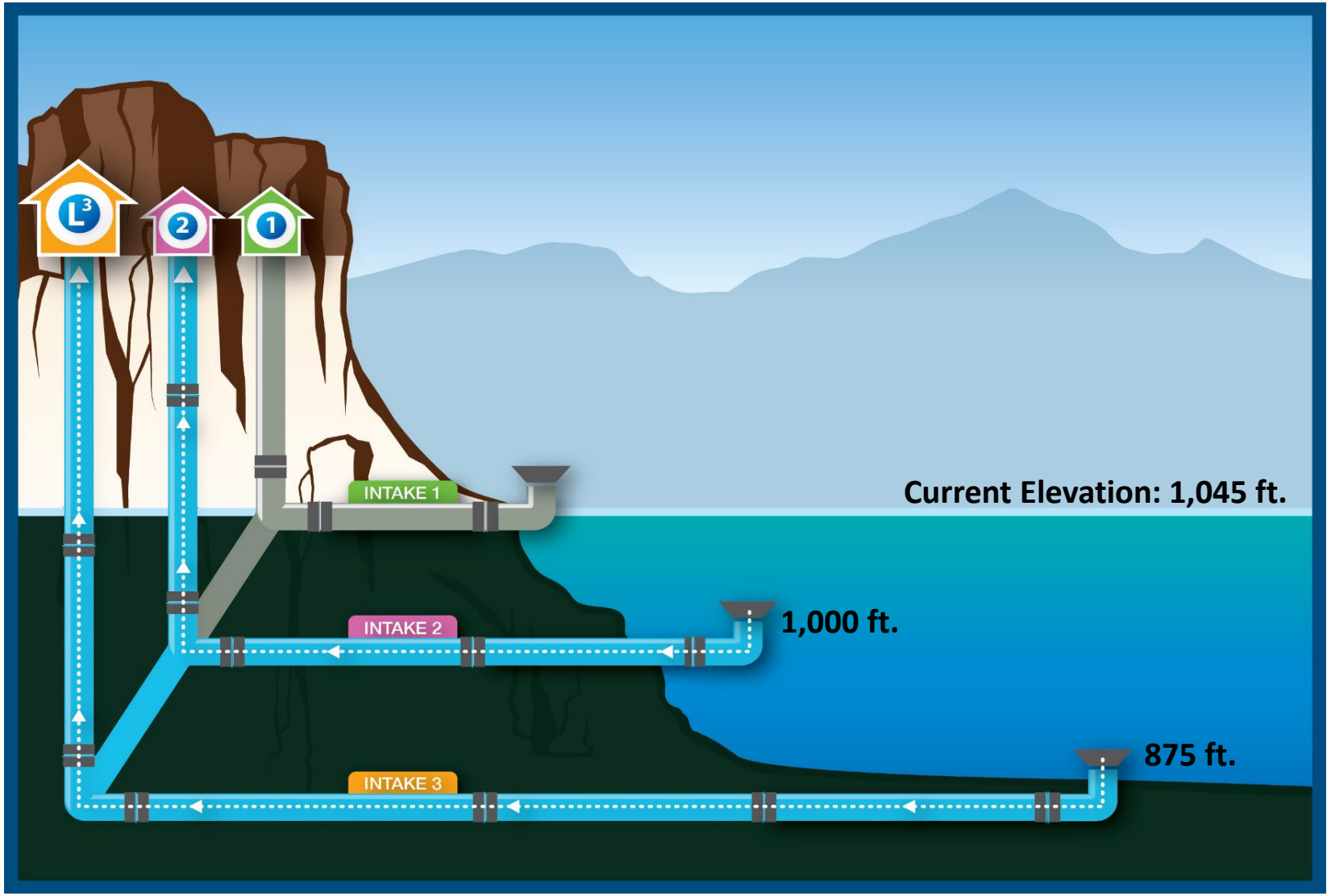
CONSERVATION
Incentives, programs, regulation & pricing

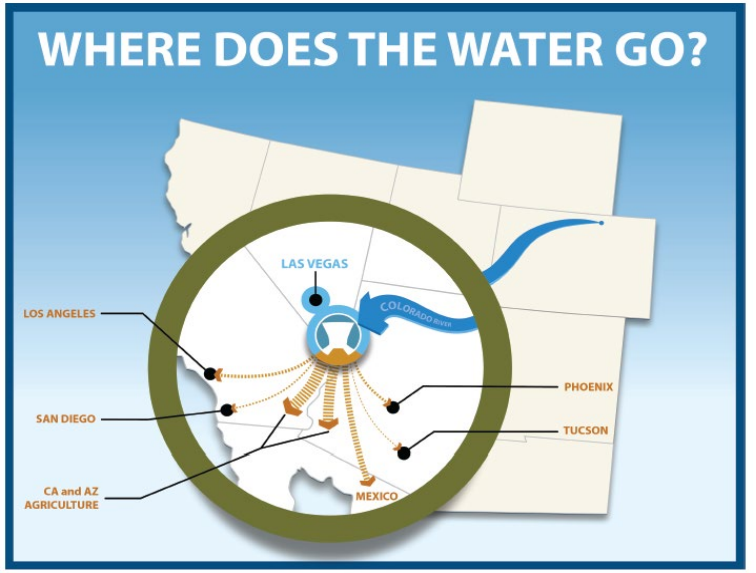
NEVADA'S ADVANTAGE: Indoor water recycling

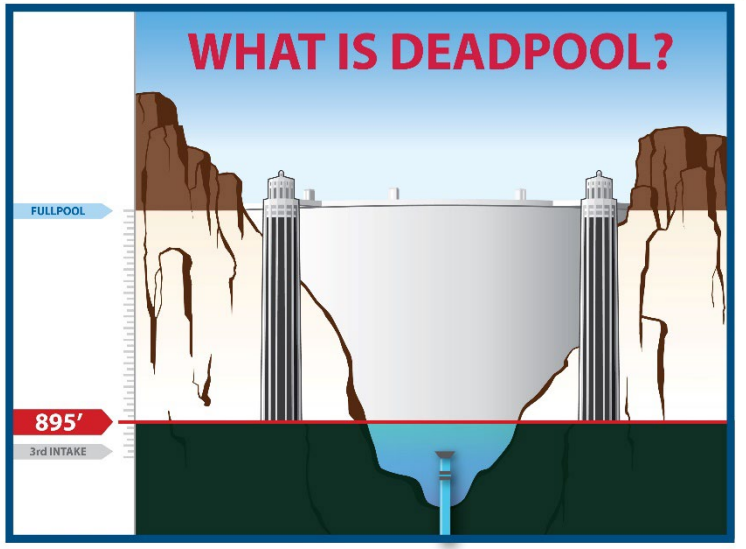
Southern Nevada recycles 99% of water used indoors, thereby extending the availability of its resources.



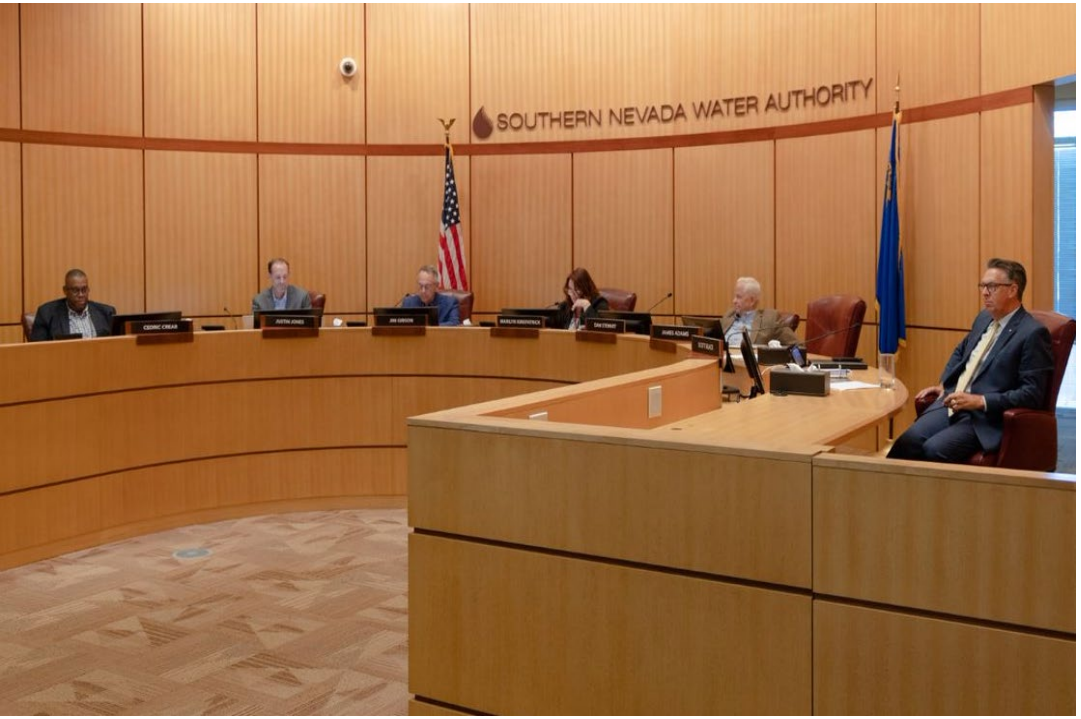
NEVADA'S ADVANTAGE: Infrastructure







NEVADA'S ADVANTAGE: Consistent regional policy with policy makers enabled to make tough decisions



SOUTHERN NEVADA WATER AUTHORITY

CITY OF LAS VEGAS NEVADA

BIG BEND WATER DISTRICT

CITY OF NORTH LAS VEGAS

LAS VEGAS VALLEY WATER DISTRICT

BOULDER CITY, NEVADA Home of Hoover Dam

Clark County Water Reclamation DISTRICT
The "Clean Water Team"

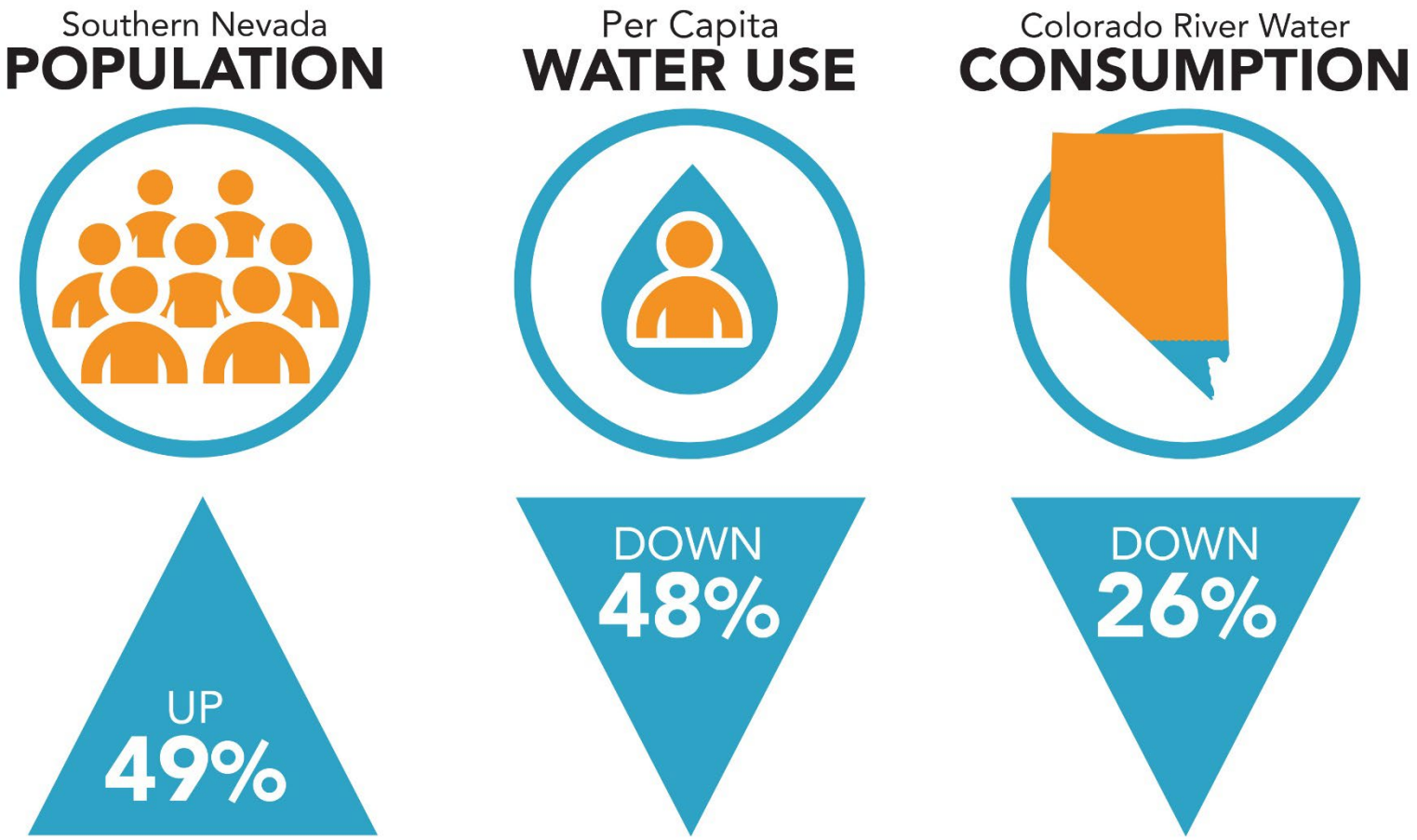
THE CITY OF HENDERSON
A Place To Call Home

NEVADA'S ADVANTAGE: Decades-long commitment to conservation

Enacted in the early 2000s:

- **Mandatory watering schedule**
- **Water-efficient development codes**
- **Water waste fees**
- **Tiered water rate pricing**
- **Golf course water budgets**
- **Rebate programs**
- **Significant investments in public outreach**

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



Approved in December, a new conservation goal will keep Southern Nevada on track to meet demands over the next 50 years.

Meeting Southern Nevada's water conservation goal requires limiting consumptive water uses:

Landscape Irrigation

Septic Systems

Evaporative Cooling

Export Products

Water Feature Evaporation

Facing the Challenge

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

Meeting local water demands requires new conservation efforts.

- Non-functional grass prohibited by state law
- Pool size limits
- Limits to new grass installations (only permitted in schools, parks, cemeteries)
- Evaporative cooling prohibited in new development
- Reduced golf course water budgets
- Punitive water rates for high water users

Recent Initiative: Non-functional Grass State Law

Assembly Bill 356 prohibits our community's water supplies from watering existing unused grass by 2027.

Single family residential homes excluded.

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

Recent Initiative: Limits to new grass installations

Grass is prohibited from all new development except in schools, parks and cemeteries.

Recent Initiative: Golf course water budgets

The construction of new golf courses in Southern Nevada is prohibited.

Current golf courses have a water budget of 6.3 acre-feet per irrigated acre.

Regional entities are currently updating codes to reduce to 4.0 acre-feet per year.

Recent Initiative: Pool size limits

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

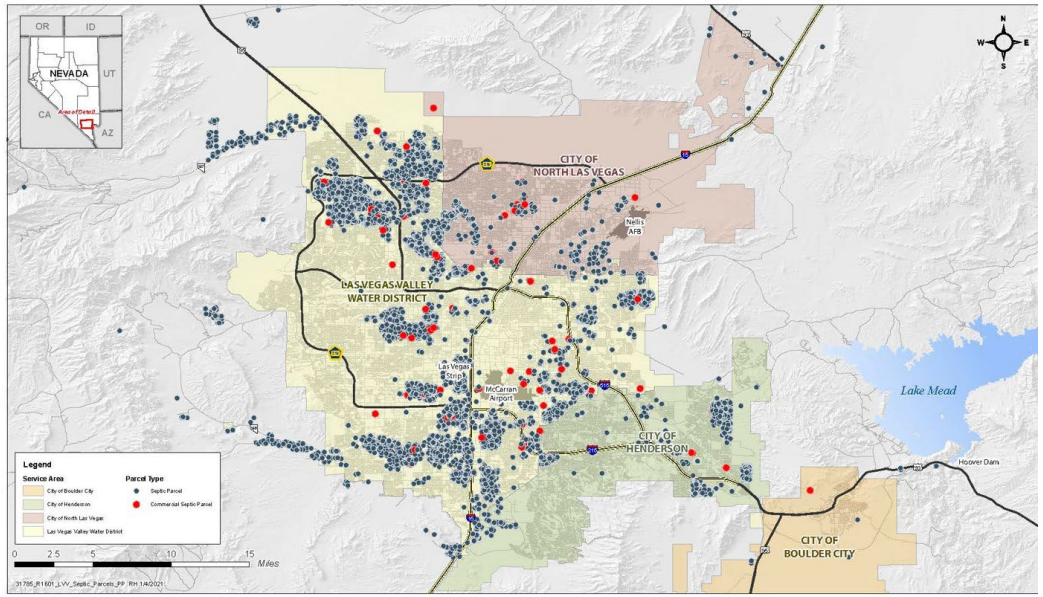
New pool construction is limited to a 600 square foot total surface area to reduce wasteful development practices and consumption due to evaporation.

Recent Initiative: Evaporative cooling moratorium

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

In September, all new building permits will require dry-cooled air conditioning.

Recent Initiative: Septic System Prohibition



There are approximately 14,500 septic systems in the greater Las Vegas Valley.

Septic systems are posing a threat to Southern Nevada's water resources:

Loss of Resource: Wastewater discharged to septic systems cannot return to Lake Mead for return flow credits

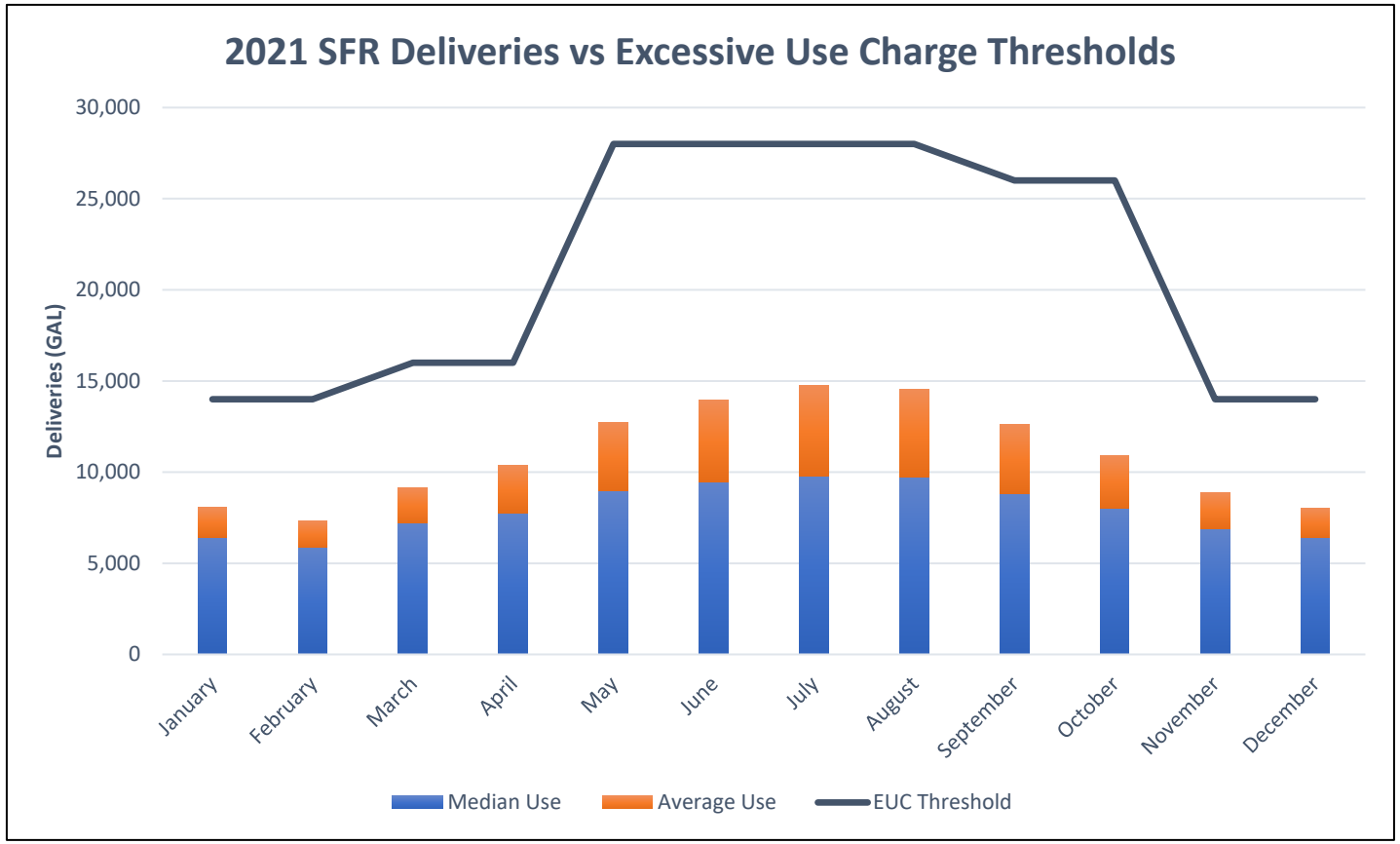
Water Quality: Septic tank effluent contains nitrates, which are being detected in LVVWD monitoring wells

RECENT INITIATIVE: Water Pricing Changes

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

Season	Threshold (GAL)	Bills Impacted by Excessive Use Charge
Winter *(Nov-Feb)*	14,000	12%
Spring *(Mar-Apr)*	16,000	9%
Summer *(May-Aug)*	28,000	9%
Fall *(Sep-Oct)*	26,000	10%

EUC = $9.00 per thousand gallons over the threshold



Ongoing: Water Smart Landscaping Turf Rebate

$3 / square foot for first 10,000 square feet; $1.50 thereafter

Rebate requires conservation easement

Conservation easement can be removed if rebate (plus interest) is paid back

Ongoing: Seasonal Watering Restrictions

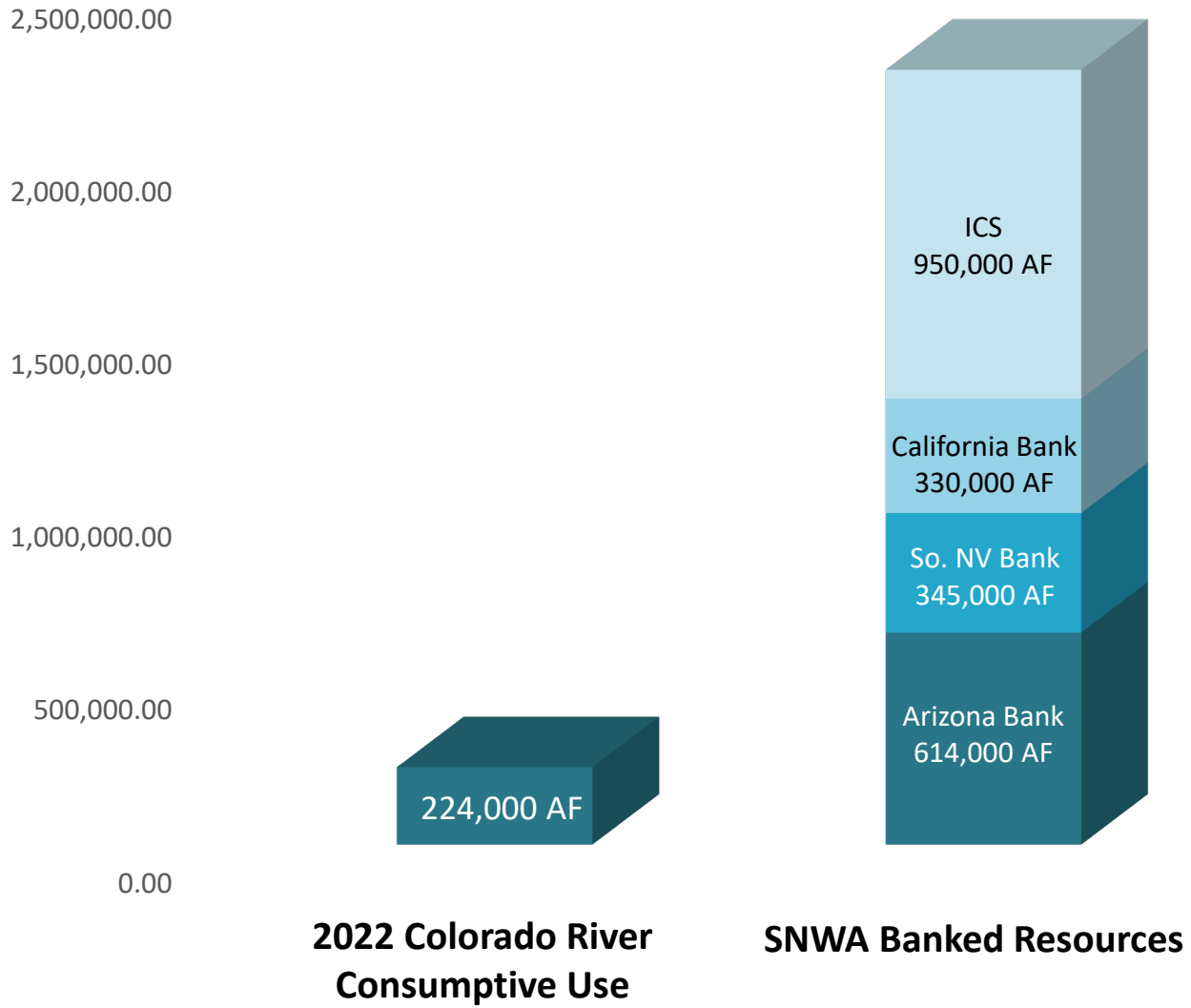
Ongoing: Water Waste Investigations

- Broken sprinklers or bubblers
- Time of Day
- Day of week
- Overspray

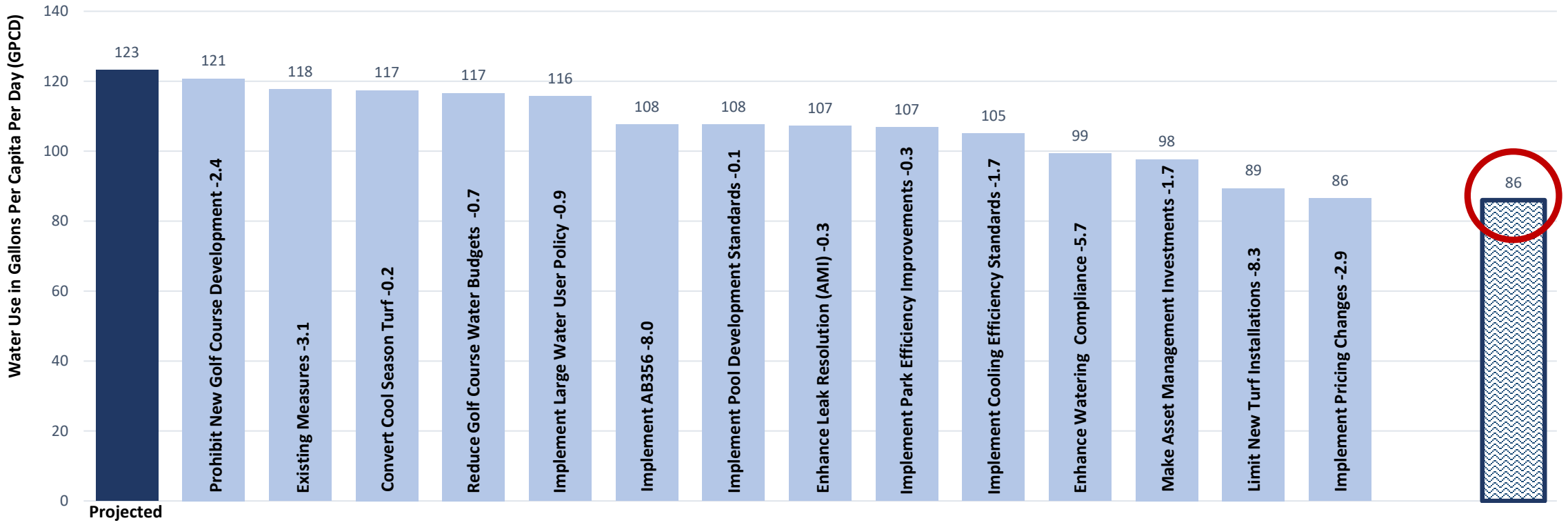
Ongoing: Water Banking

Southern Nevada has stored 2.2 million acre-feet of water.

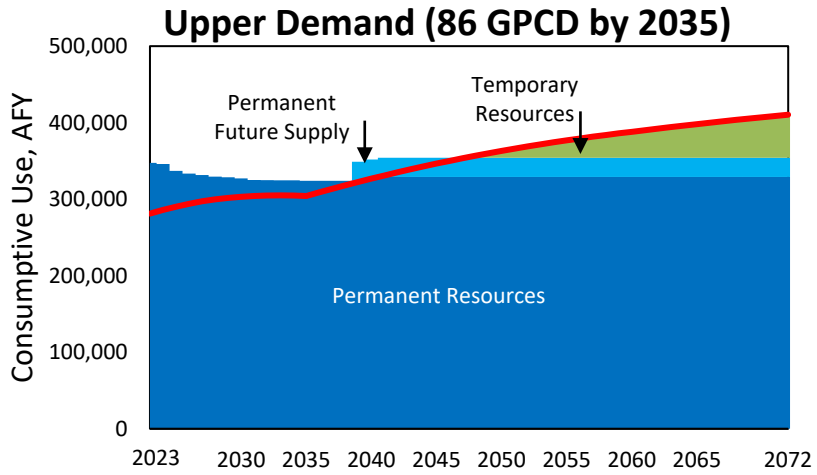
This is more than nine times Nevada's 2022 consumptive Colorado River water use.

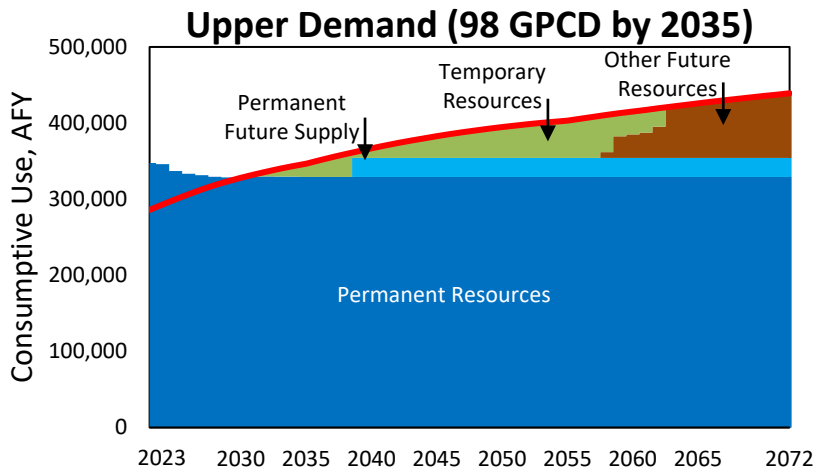


Meeting the Conservation Goal



Reducing demands now delays need for future resources.



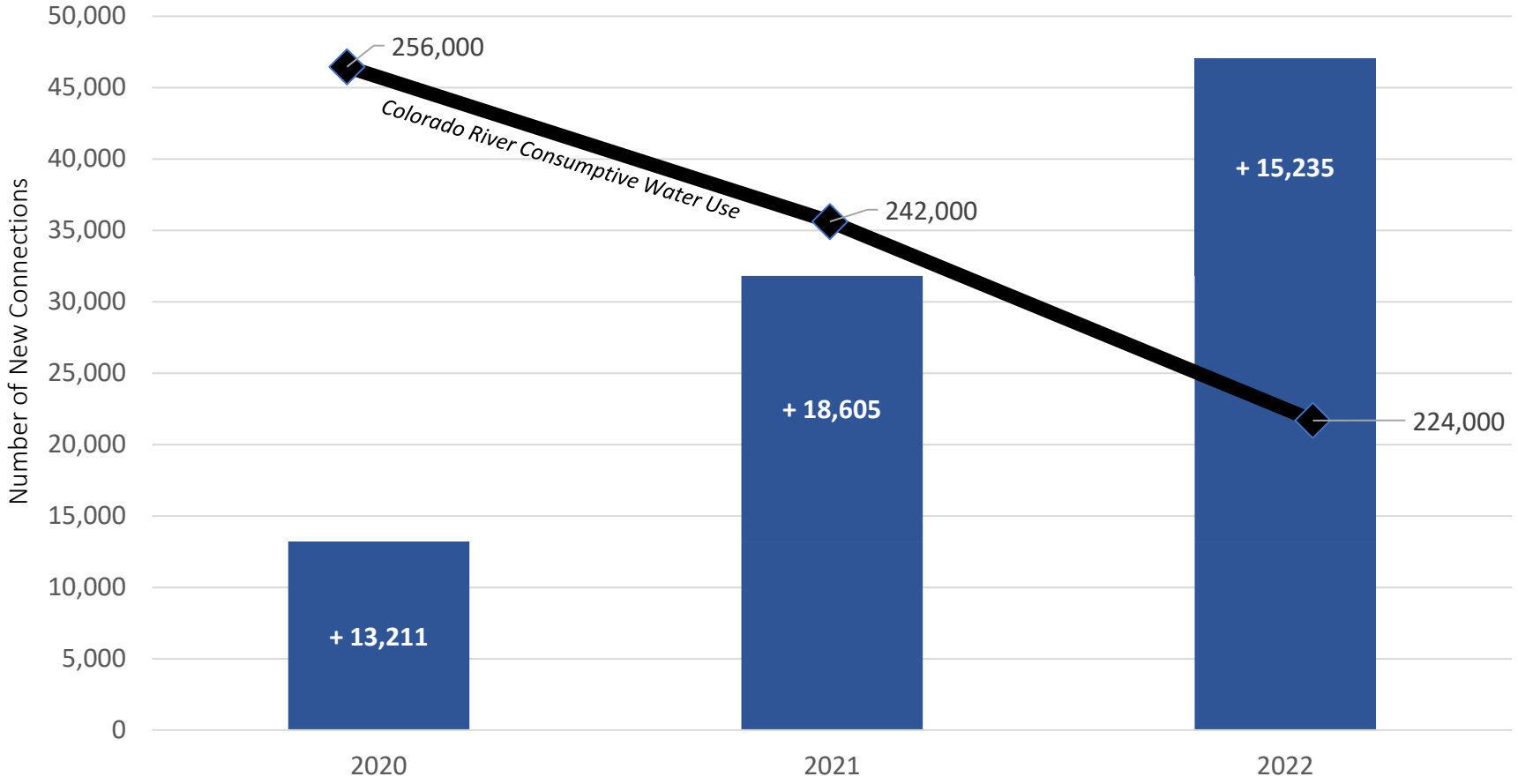


Supply and Demand Scenarios
(11.0 MAFY Natural Flow)

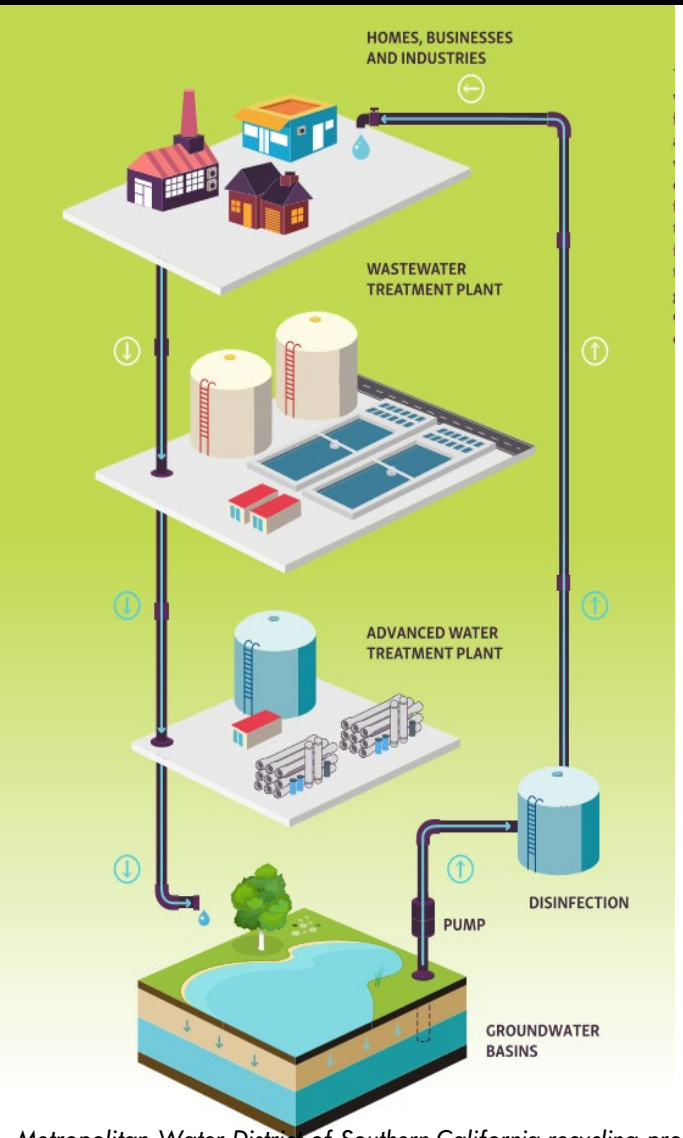
* Scenarios assumes Permanent Future Supply comes online in 2039.

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.



Meeting future demands



Metropolitan Water District of Southern California recycling project example

Additional water resources are needed to meet Southern Nevada's long-term demands.

- **The SNWA has been successful working with Colorado River partners to manage shared resources**
- **An opportunity to invest in a new, large Southern California water recycling project could yield 25,000 acre-feet per year**
- **Future projects take time to evaluate, negotiate, fund and construct**


SOUTHERN NEVADA WATER AUTHORITY™