Water Conservation & Resource Planning

2021 WATER RESOURCE PLAN

The SNWA reviews its water resource plan annually.

Key Inputs:

- Population forecast from the University of Nevada, Las Vegas Center for Business and Economic Research (CBER)
- Hydrologic modeling from the U.S. Bureau of Reclamation
- Conservation progress (actual and projected)

2021 WATER RESOURCE PLAN

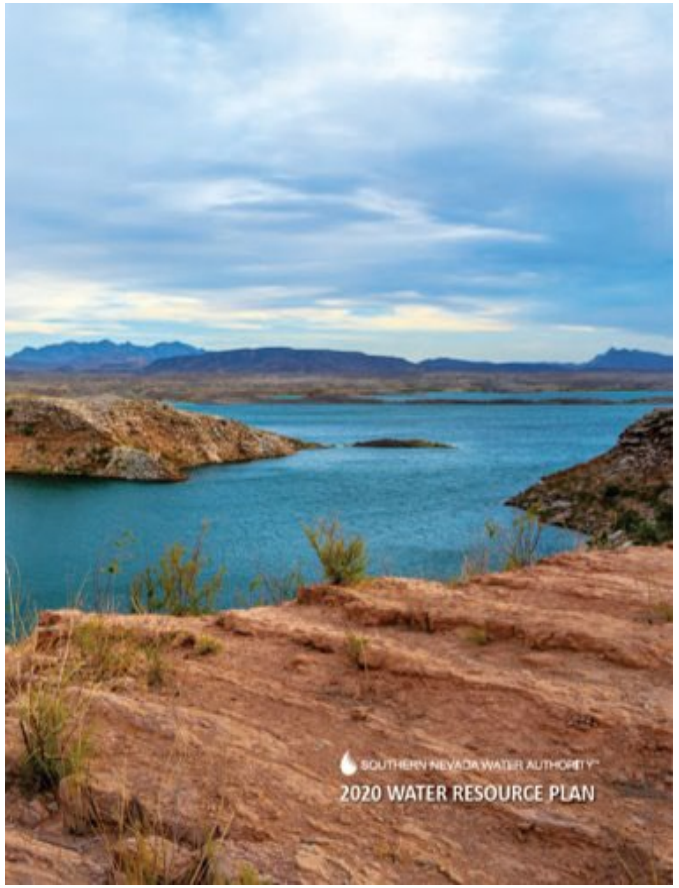
The SNWA's Water Resource Portfolio includes a diverse set of resource options that will be used in tandem with demand reduction tools to reliably meet the community's current and future water resource needs.

Permanent Resources	Temporary Resources	Future Resources
Colorado River (SNWA)	**Southern Nevada Groundwater Bank**	**Transfers and Exchanges – Permanent Future Supply** Desalination & Colorado River Partnerships
Nevada Unused Colorado River (Non-SNWA)	**Interstate Bank** (Arizona)	**Transfers and Exchanges –** Virgin River/Colorado River Augmentation
Tributary Conservation ICS	**Interstate Bank** (California)	**Garnet & Hidden Valleys Groundwater**
Las Vegas Valley Groundwater Rights	**Intentionally Created Surplus** (Lake Mead storage)	**Tikaboo & Three Lakes Valley Groundwater**

2021 WATER RESOURCE PLAN

2021 Plan Changes:

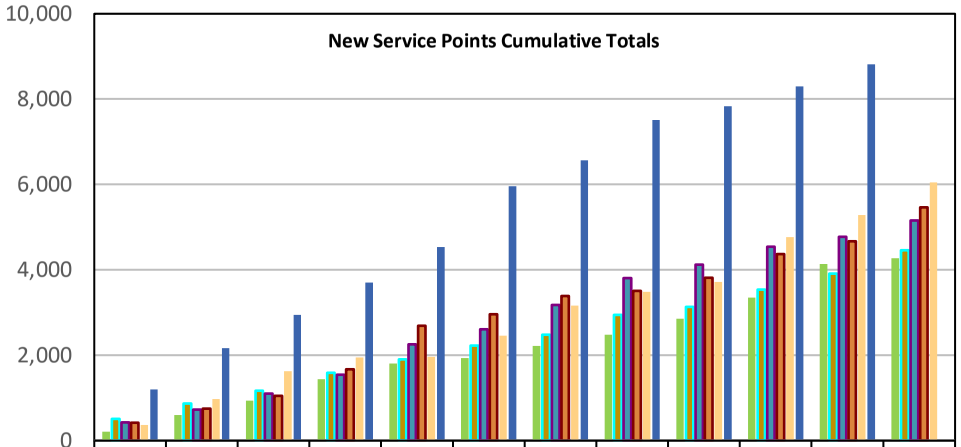
- Extended the planning horizon through 2072.
- Updated demand range based on the new population forecast.
- Applied new assumptions about conservation achievements.
- Incorporated the latest Colorado River supply outlook.
- Developed planning scenarios that reflect supply impacts under variable hydrology.
  - 14.7 MAFY
  - 12.9 MAFY
  - 11.0 MAFY



Supply and demand inputs have changed significantly.

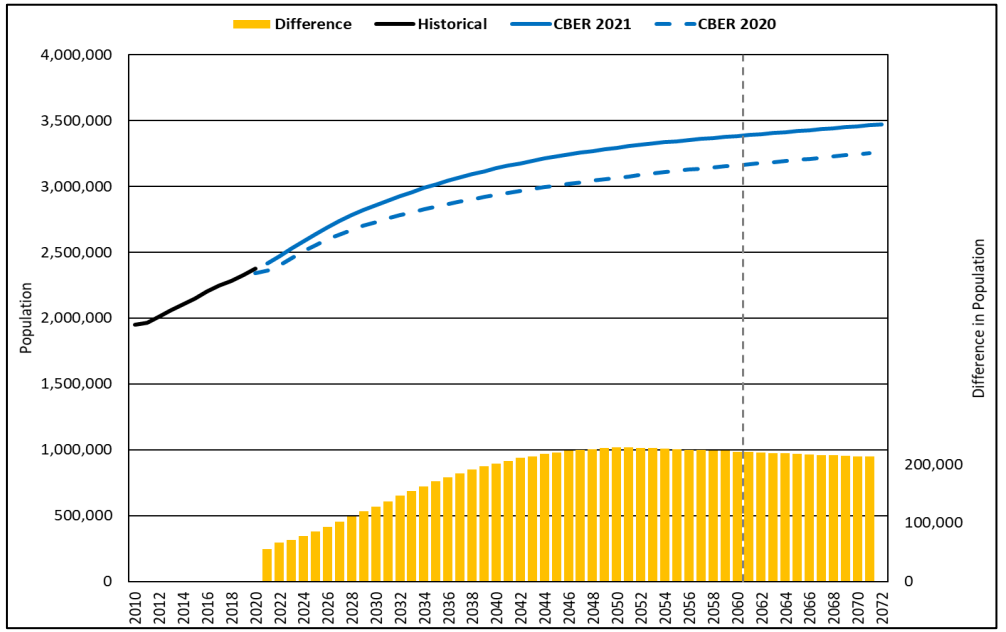
2021 WATER RESOURCE PLAN

New account growth and longer-term forecasts are much higher than prior years.



	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2016	212	601	940	1,440	1,811	1,935	2,221	2,482	2,855	3,355	4,136	4,277
2017	515	869	1,172	1,594	1,903	2,230	2,483	2,950	3,135	3,536	3,917	4,464
2018	432	727	1,101	1,546	2,258	2,607	3,180	3,806	4,125	4,546	4,772	5,155
2019	426	754	1,056	1,672	2,696	2,965	3,391	3,512	3,816	4,367	4,668	5,464
2020	371	978	1,628	1,949	1,967	2,463	3,164	3,489	3,722	4,766	5,283	6,049
2021	1,200	2,172	2,949	3,704	4,535	5,957	6,562	7,506	7,832	8,298	8,814	

New Account Growth (LVVWD)

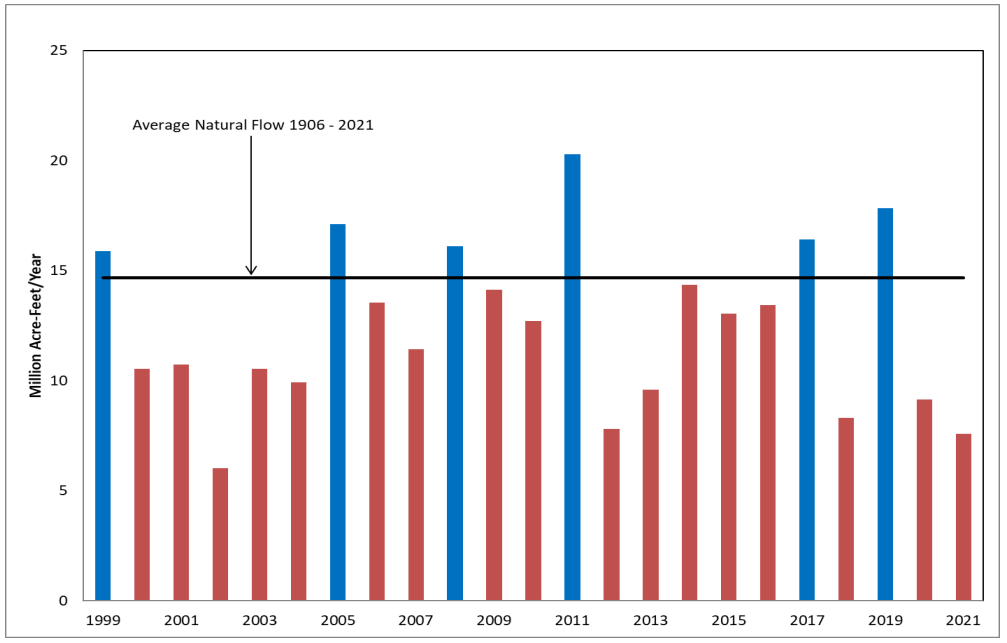


2021 CBER Forecast

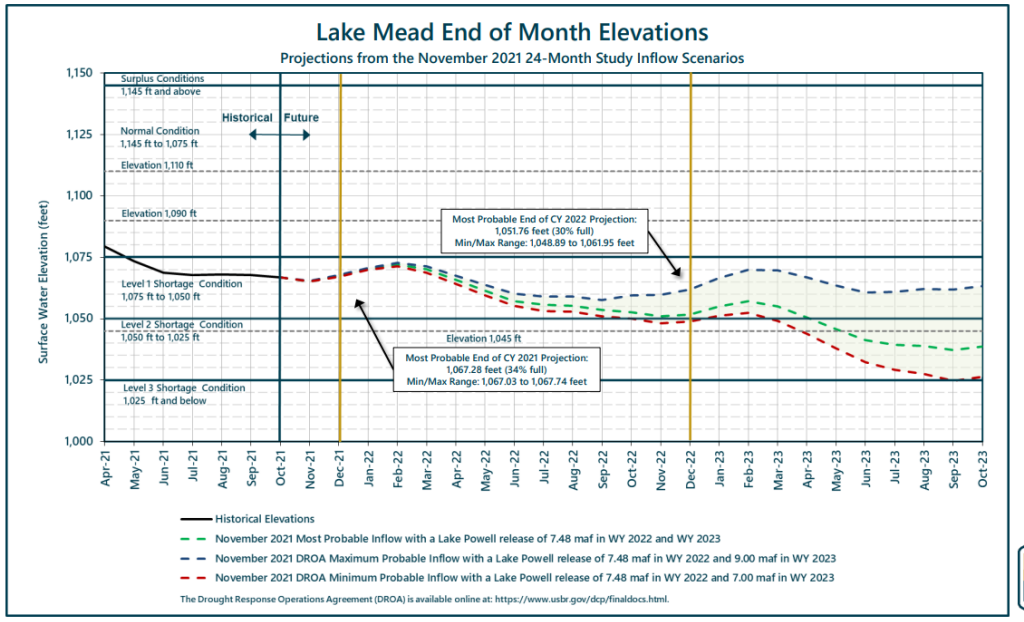
This affects the volume and timing of future resource needs.

2021 WATER RESOURCE PLAN

Annual Colorado River inflows have been at or below 11.0 million acre-feet for nearly half of the last 22 years.



Colorado River Inflows



24-Month Study

Further water-level declines are expected.

2021 WATER RESOURCE PLAN

There is a high probability for shortage over the long-term planning horizon.

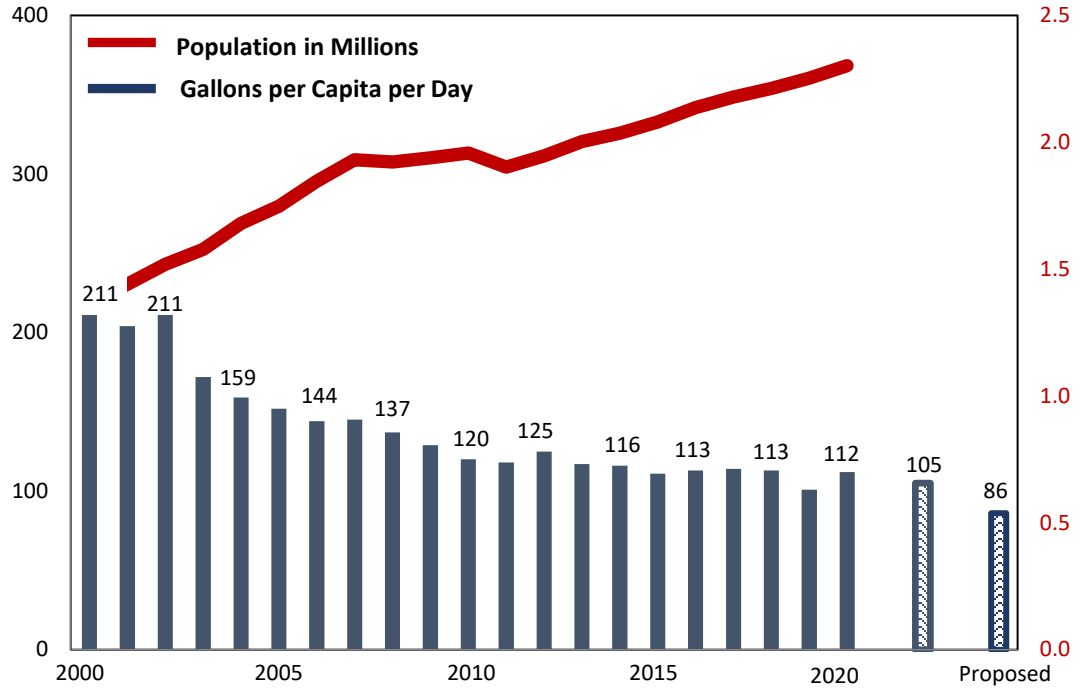
Lake Mead Elevation (ft. above mean sea level)	2007 Interim Guidelines Shortages		Minute 323 Delivery Reductions	Total Combined Reductions	DCP Water Savings Contributions			Binational Water Scarcity Contingency Plan Savings	Combined Volumes by States and Country					
	AZ	NV	MX	Lower Basin & Mexico Total	AZ	NV	CA	MX	AZ Total	NV Total	CA Total	Lower Basin Total	MX Total	Lower Basin & Mexico Total
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**

Nevada is making DCP contributions and will take shortage next year but additional reductions from all stakeholders are needed to preserve Colorado River operations.

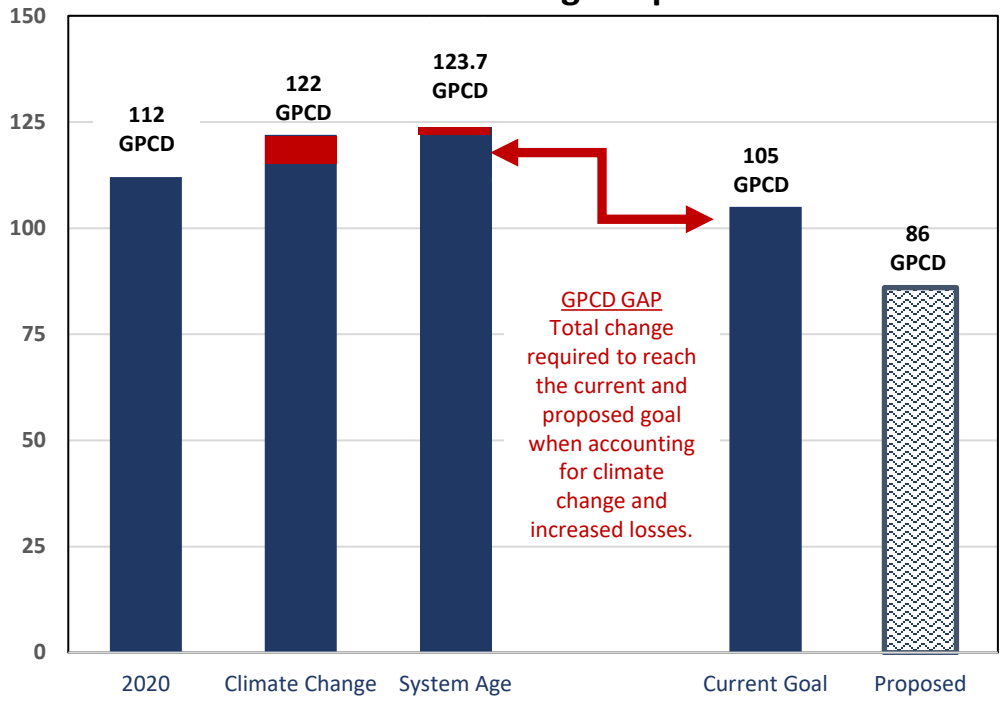
2021 WATER RESOURCE PLAN

Higher levels of efficiency are needed to address population growth, offset supply impacts due to shortage, reduce upward pressure from climate change, and maximize the availability of existing water supplies.

Conservation Goal Progress



Climate Change Impacts



WATER RESOURCE PLAN UPDATE

As part of its 2021 planning effort, the SNWA considered:

- The water resource implications of higher demands and lower flows over the planning horizon.
- The extent to which additional conservation could extend permanent resources and delay the use of temporary and future resources.
- Specific conservation actions that could be implemented to achieve additional conservation and efficiency gains.

2021 WATER RESOURCE PLAN

As recommended by IRPAC, the SNWA is focused on reducing consumptive water use.

Landscape Efficiency

Cooling Efficiency

Water Loss Control

Irrigation Compliance

New Development Efficiency

2021 WATER RESOURCE PLAN

Existing and planned measures do not go far enough.

Current Programs & Policies		
Golf course water budgets	Mandatory watering restrictions	Incentive programs
Customer leak notification	Asset management programs	Tiered water rates
Water waste enforcement & fees	Out-of-Valley Water Use Policy	Utility leak detection
Turf limits	Turf development standards	Education & outreach

Work in Progress		
AB356 non-functional turf removal (2026)	AMI upgrades (2024) and leak resolution	Increased water waste enforcement
Cooling efficiency research & studies	Large water user policy (new development)	

Additional actions are needed to address changing conditions.

2021 WATER RESOURCE PLAN

Additional actions are needed to address changing conditions.

<u>Conservation Opportunities for Existing Users:</u>

- Reduce golf course water budgets
- Require high-efficiency cooling retrofits
- Implement park efficiency improvements
- Make water rate changes to incentivize conservation
- Develop and implement a septic system conversion policy

2021 WATER RESOURCE PLAN

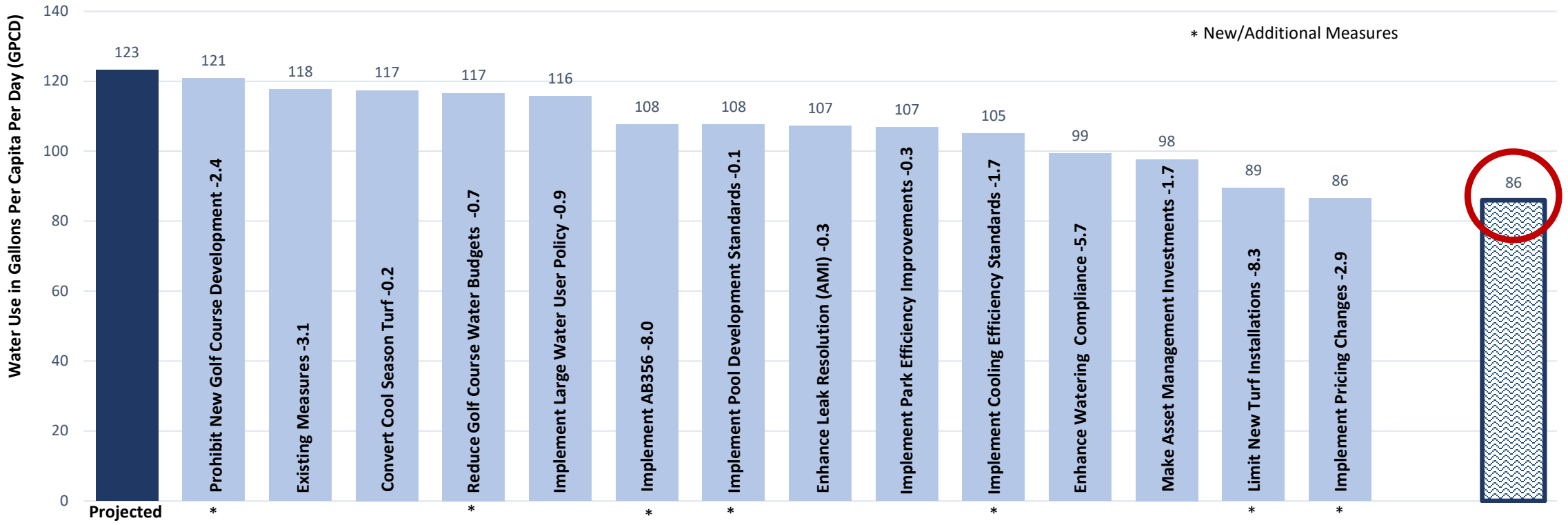
Additional actions are needed to address changing conditions.

<u>Conservation Opportunities for New Development:</u>

- Prohibit new golf course development
- Limit new pool construction size
- Update development standards for cooling technology
- Restrict turf in new development
- Implement large water user policy

2021 WATER RESOURCE PLAN

Achieving higher levels of efficiency will extend the availability of current resources and reduce the need for temporary and future resources.

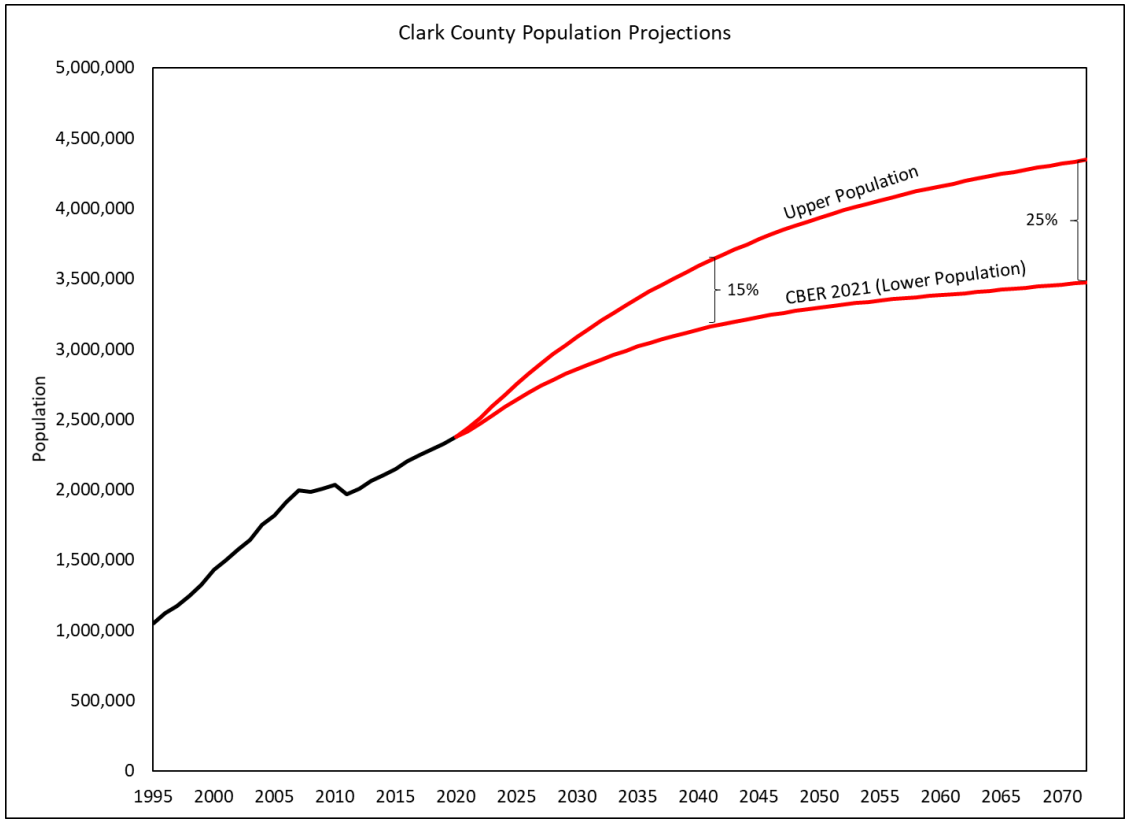


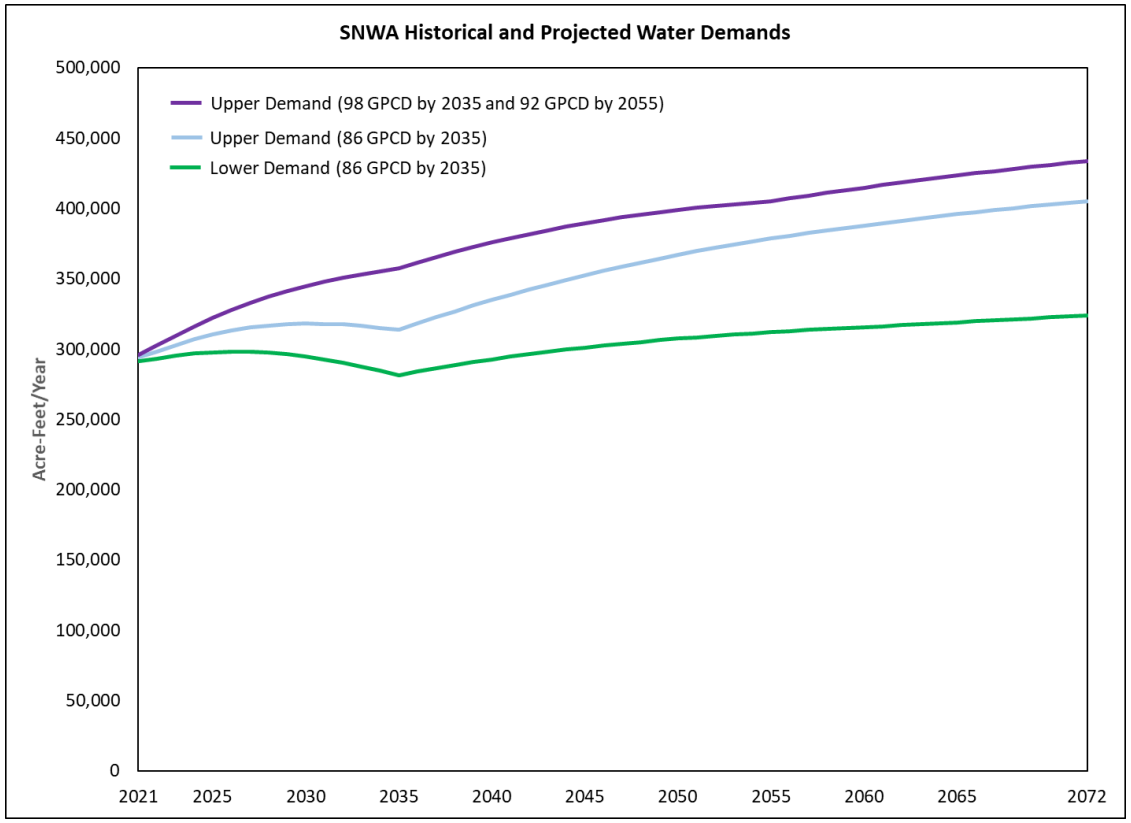
It will also offset supply reductions associated with shortage and help to reduce upward pressure on demands associated with climate change.

2021
Planning Assumptions
& Planning Scenarios

2021 WATER RESOURCE PLAN

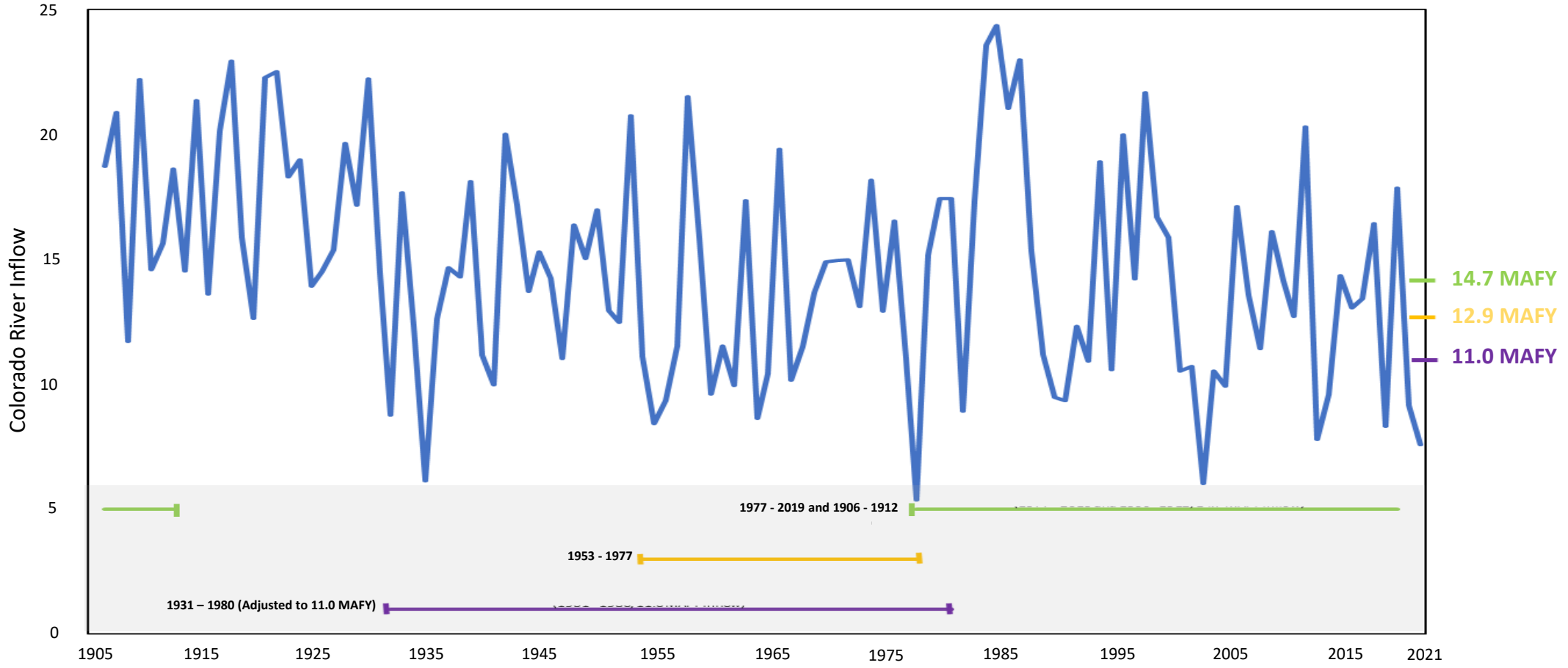
The 2021 Water Resource Plan considers higher population and lower per capita water use.





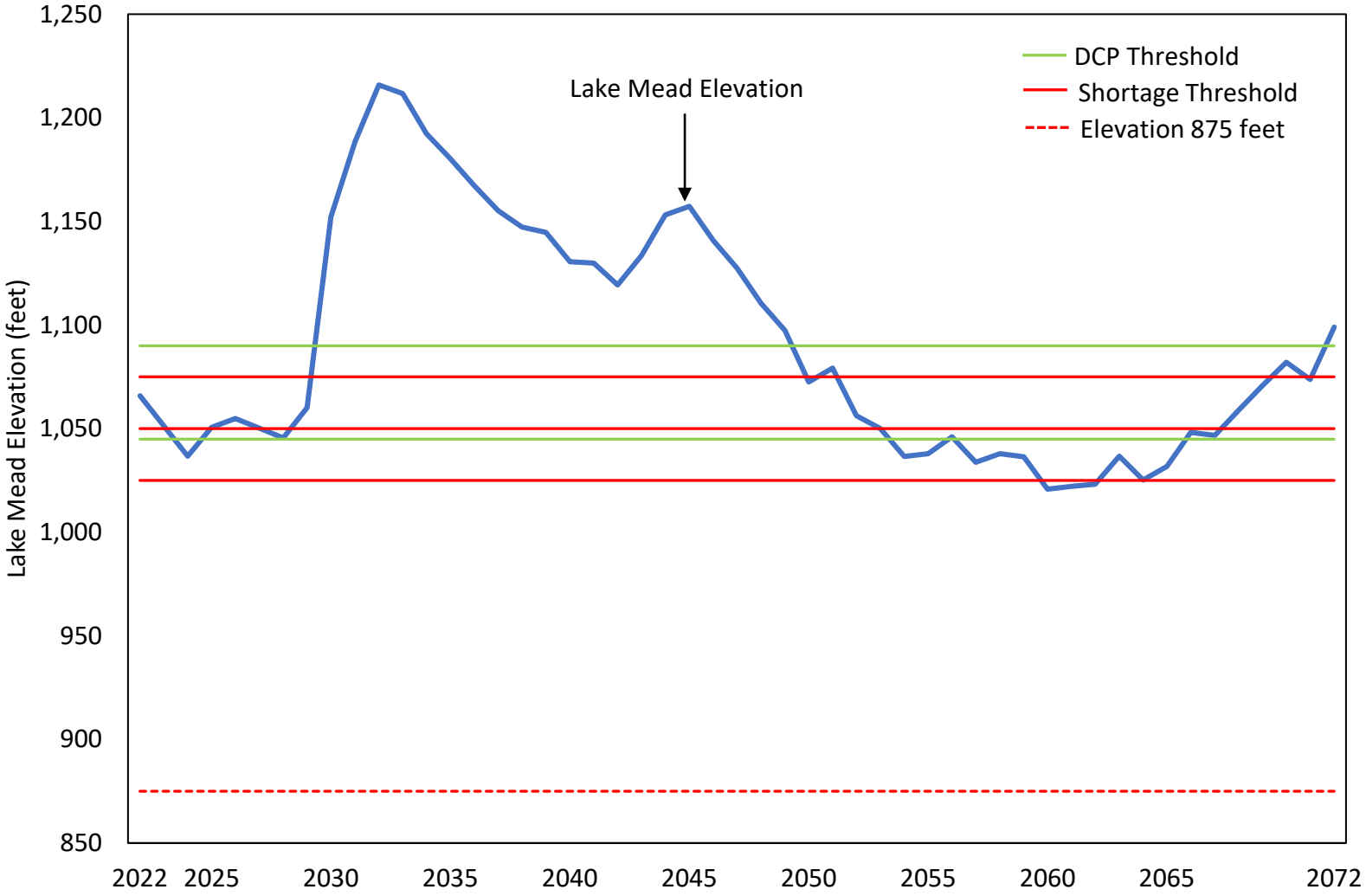
2021 WATER RESOURCE PLAN

The 2021 Water Resource Plan considers three water supply conditions.



14.7 MAFY Inflow Planning Scenarios

2021 WATER RESOURCE PLAN



14.7 MAFY Inflow

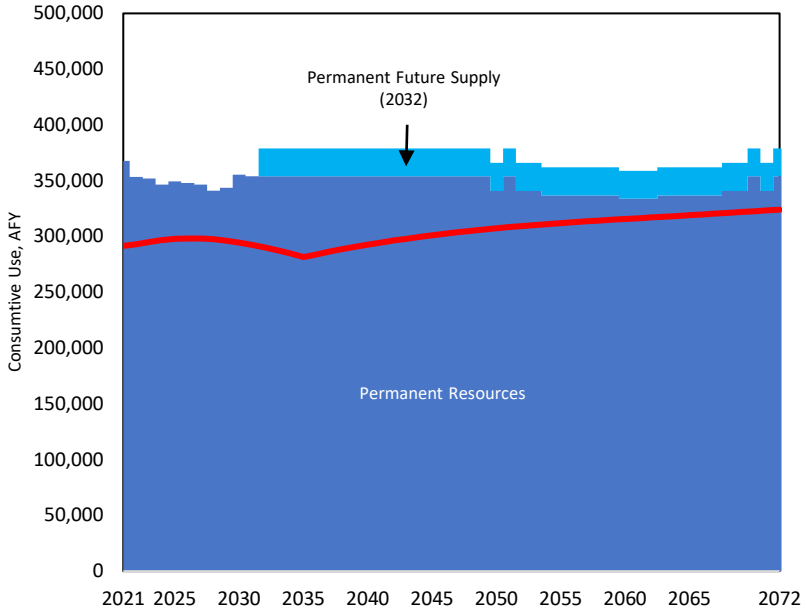
This hydrology is more optimistic than current conditions.

Over the most recent 22-year period, there were five years with inflows at or above 14.7 MAF.

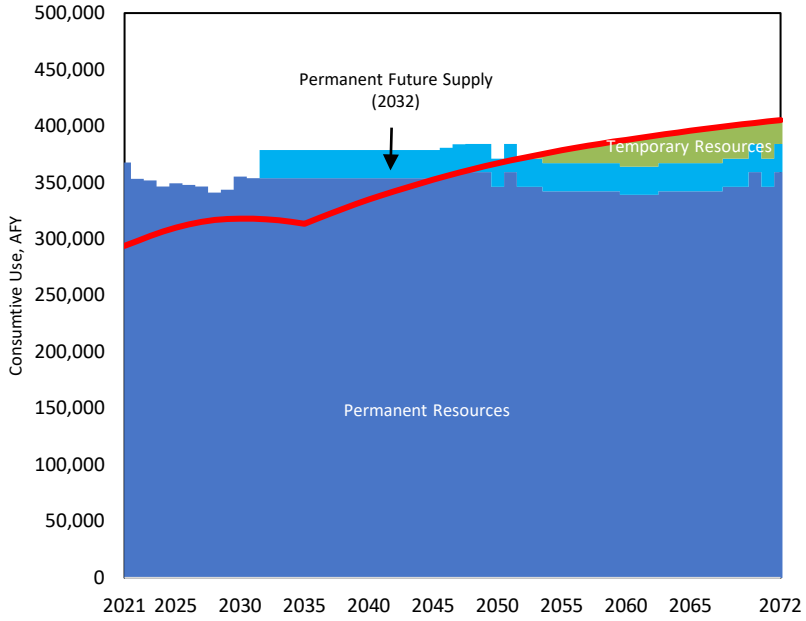
2021 WATER RESOURCE PLAN

14.7 MAFY Inflow Scenarios

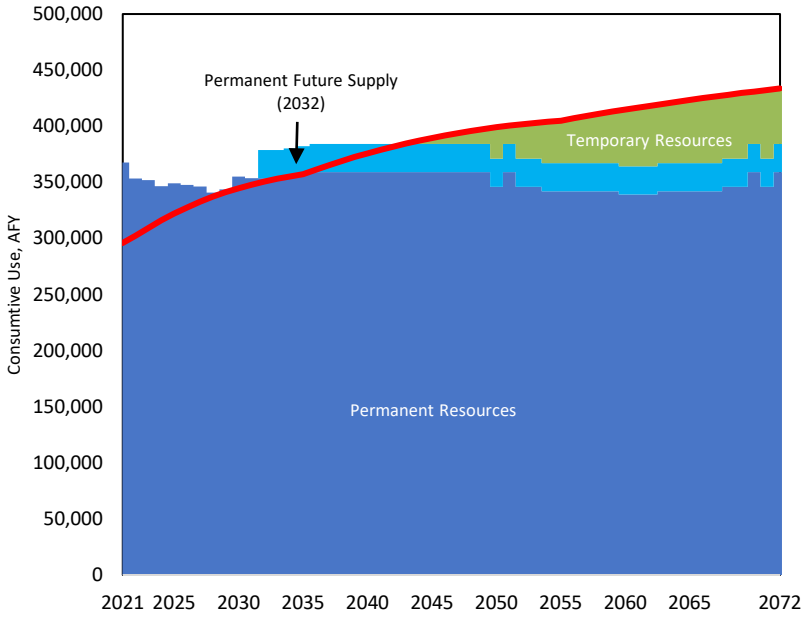
Lower Demand
(86 GPCD by 2035)



Upper Demand
(86 GPCD by 2035)

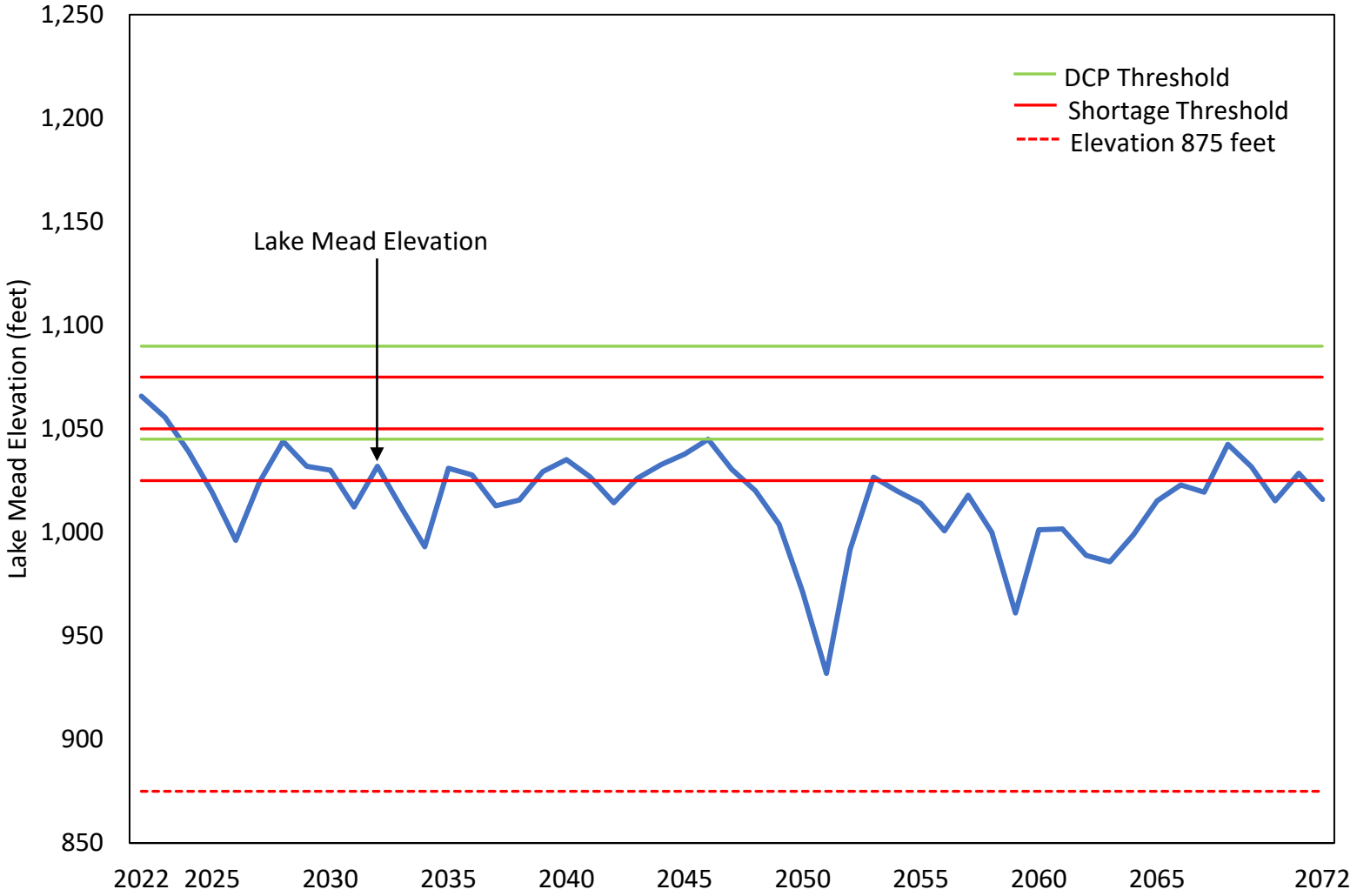


Upper Demand
(98 GPCD by 2035 and 92 GPCD by 2055)



12.9 MAFY Inflow Planning Scenarios

2021 WATER RESOURCE PLAN



12.9 MAFY Inflow

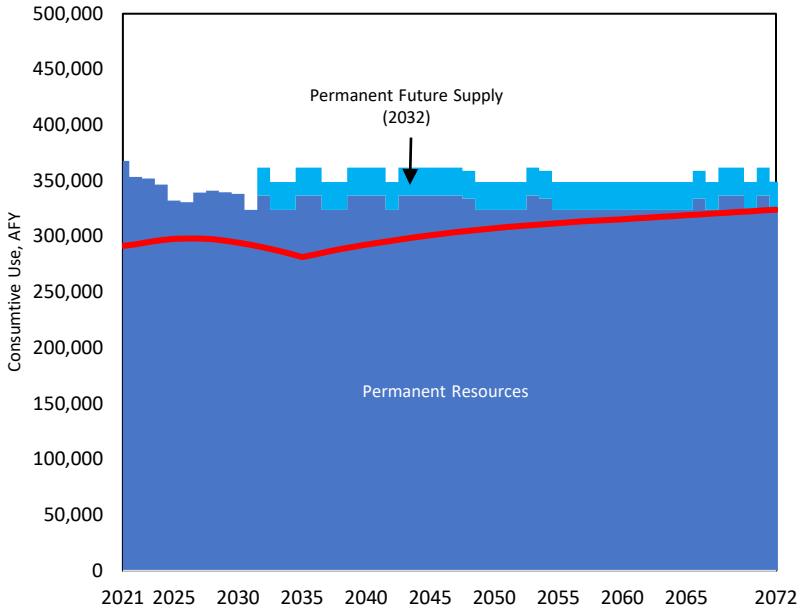
This hydrology is slightly more optimistic than current conditions.

Over the most recent 22-year period, inflows average approximately 12.3 MAF.

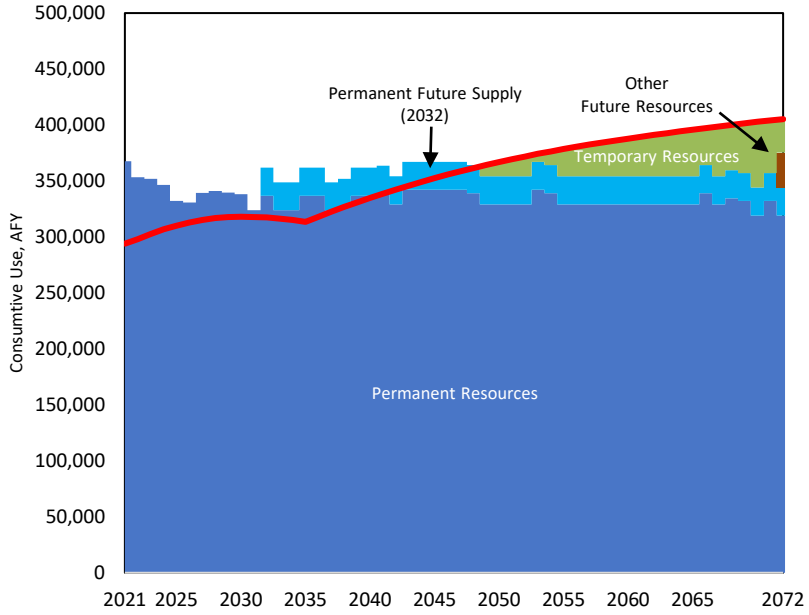
2021 WATER RESOURCE PLAN

12.9 MAFY Inflow Scenarios

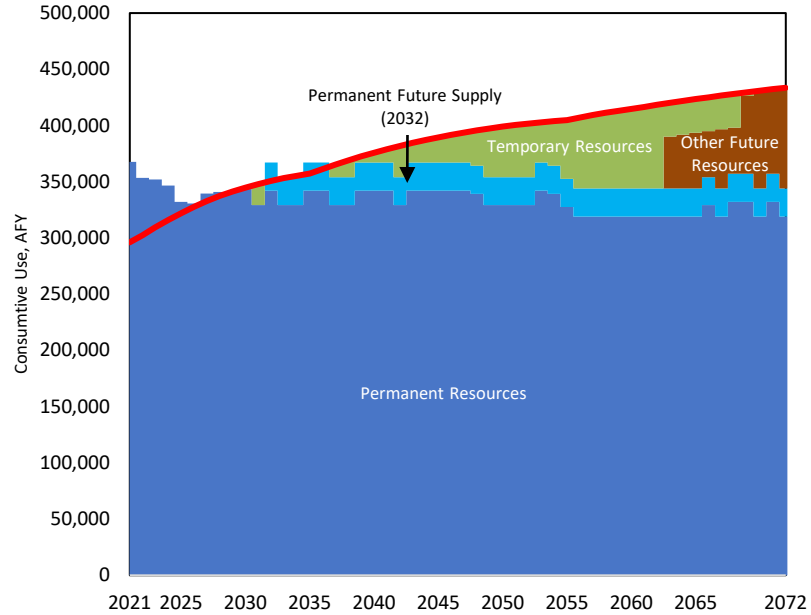
Lower Demand
(86 GPCD by 2035)



Upper Demand
(86 GPCD by 2035)

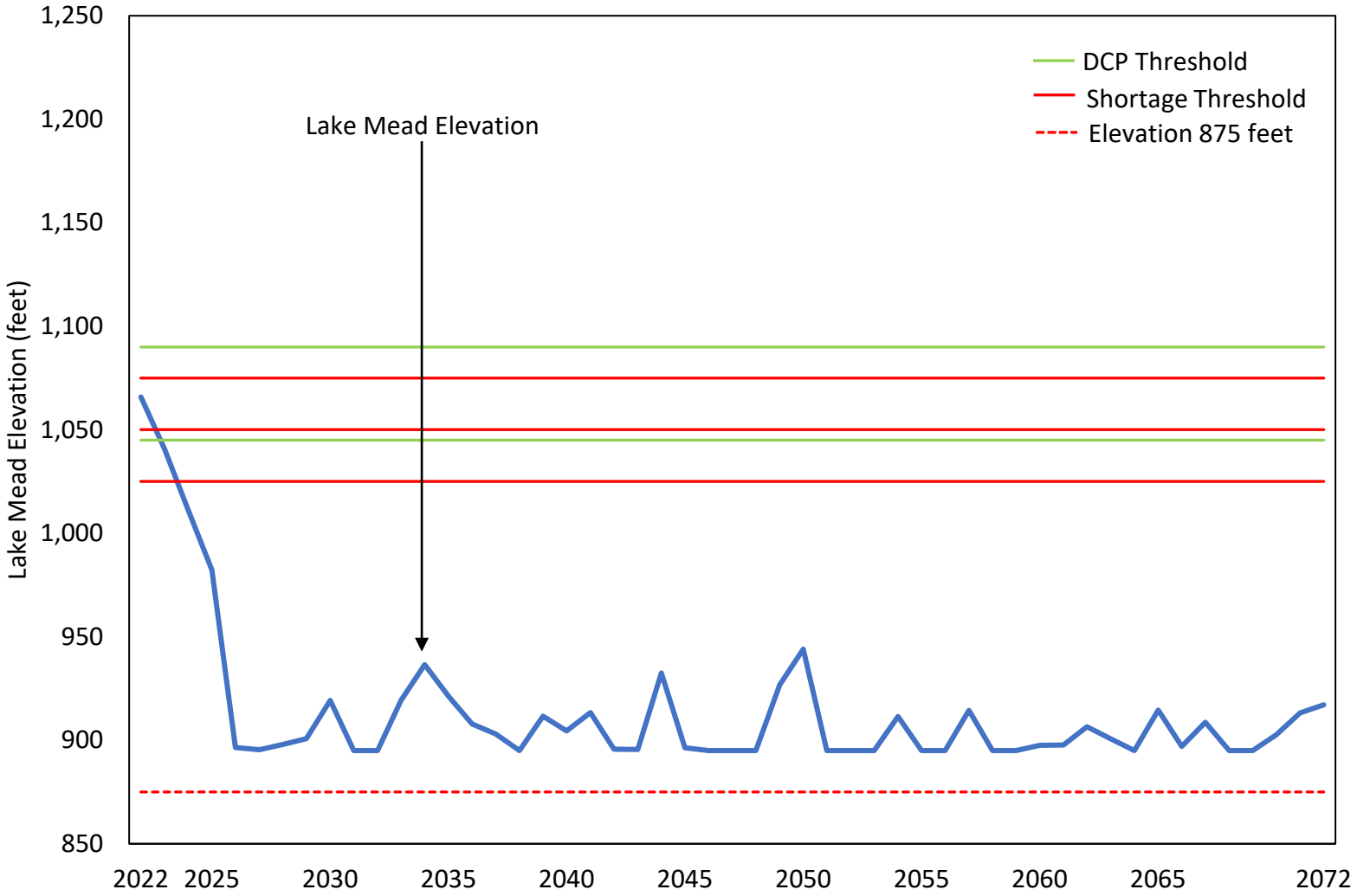


Upper Demand
(98 GPCD by 2035 and 92 GPCD by 2055)



11.0 MAFY Inflow Planning Scenarios

2021 WATER RESOURCE PLAN



11.0 MAFY Inflow

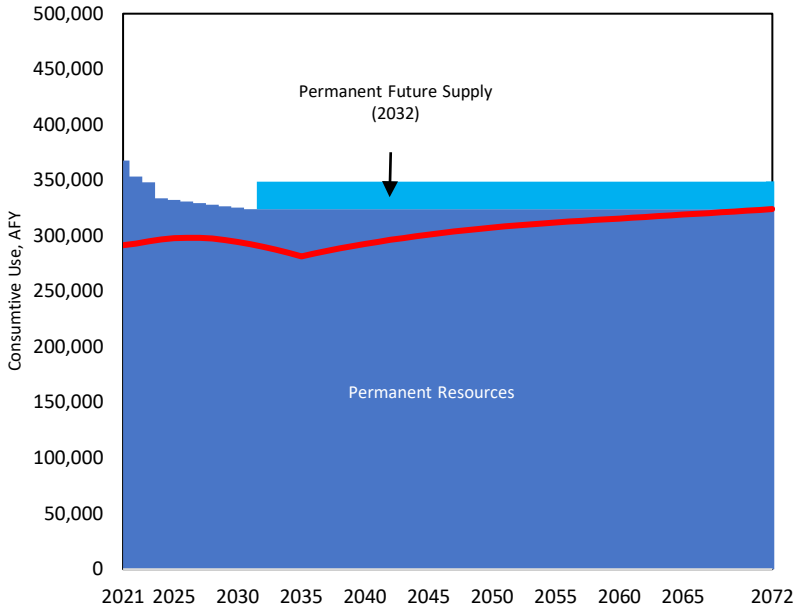
This hydrology is less optimistic than current conditions but reflects the potential for significant hydrological change.

Over the most recent 22-year period, there were nine years with inflows at or below 11.0 MAF.

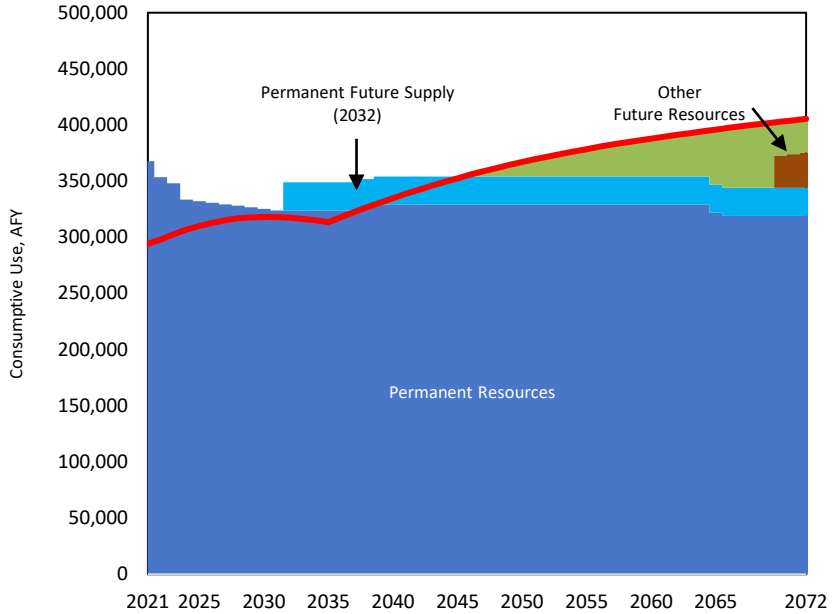
2021 WATER RESOURCE PLAN

11.0 MAFY Inflow Scenarios

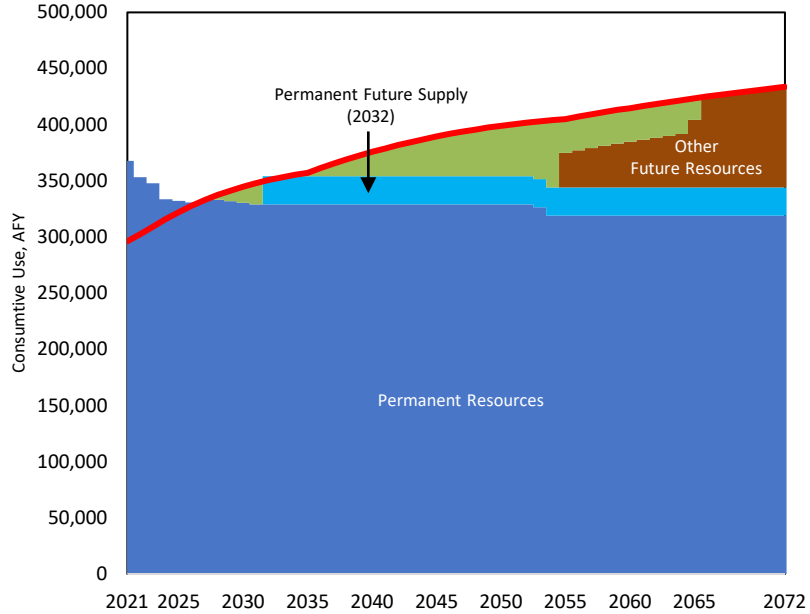
Lower Demand
(86 GPCD by 2035)



Upper Demand
(86 GPCD by 2035)



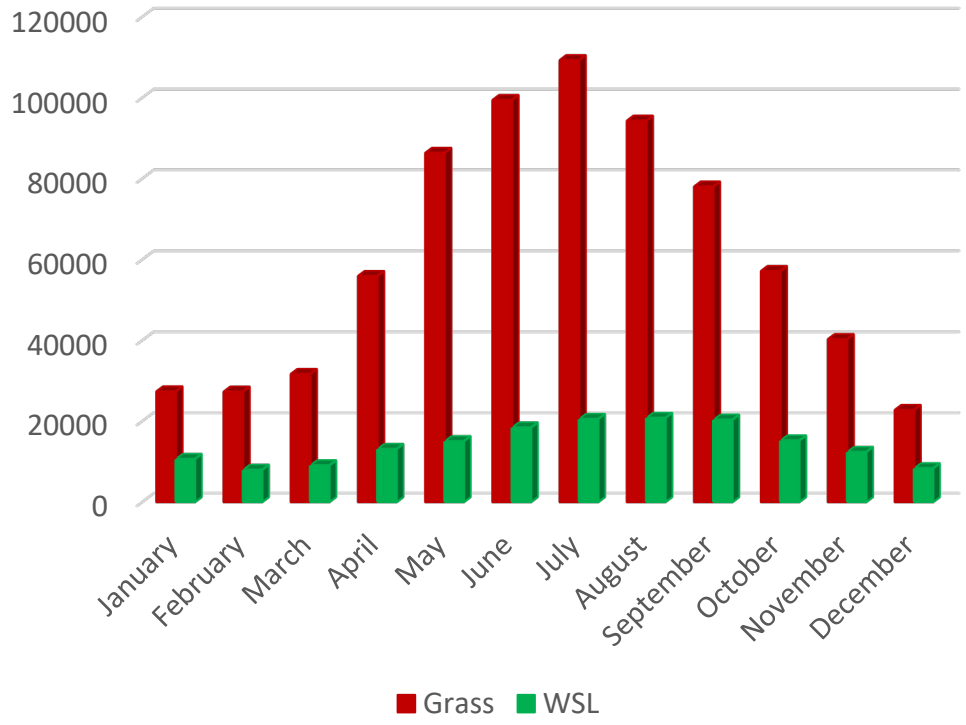
Upper Demand
(98 GPCD by 2035 and 92 GPCD by 2055)



AB356 and Turf Definitions

AB-356

A long-term analysis of turf conversion projects shows that drip-irrigated landscapes use an average of ~75 percent less water per year



Potential water savings associated with replacing non-functional turf could reach 9.5 billion gallons (29,150 acre-feet)

NONFUNCTIONAL TURF

A new law passed during the 81st Legislative Session 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.)

N**on-functional** turf is now defined as:

“Non-functional Turf” means irrigated lawn grass area not meeting the below definition of Functional Turf, including without limitation, such areas in the following locations:

- Streetscape Turf: except as otherwise specified turf located along public or private streets, streetscape sidewalks, driveways and parking lots, including but not limited to turf within community, park and business streetscape frontage areas, medians and roundabouts

- Frontage, Courtyard, Interior and Building Adjacent Turf: turf in front of, between, behind or otherwise adjacent to a building or buildings located on a property not zoned exclusively as a single-family residence, including but not limited to maintenance areas and common areas.

- Certain HOA-Managed Landscape Areas: turf managed by a homeowner association that does not provide a recreational benefit to the community or that otherwise does not qualify as Functional Turf, regardless of the property zoning.

Functional turf is now defined as:

"Functional Turf" means an irrigated lawn grass area that provides a recreational benefit to the community and is:

(a) located at least 10 feet from a street (except as otherwise specified), installed on slopes less than 25 percent, and not installed within street medians, along streetscapes or at the front of entryways to parks, commercial sites, neighborhoods or subdivisions; and

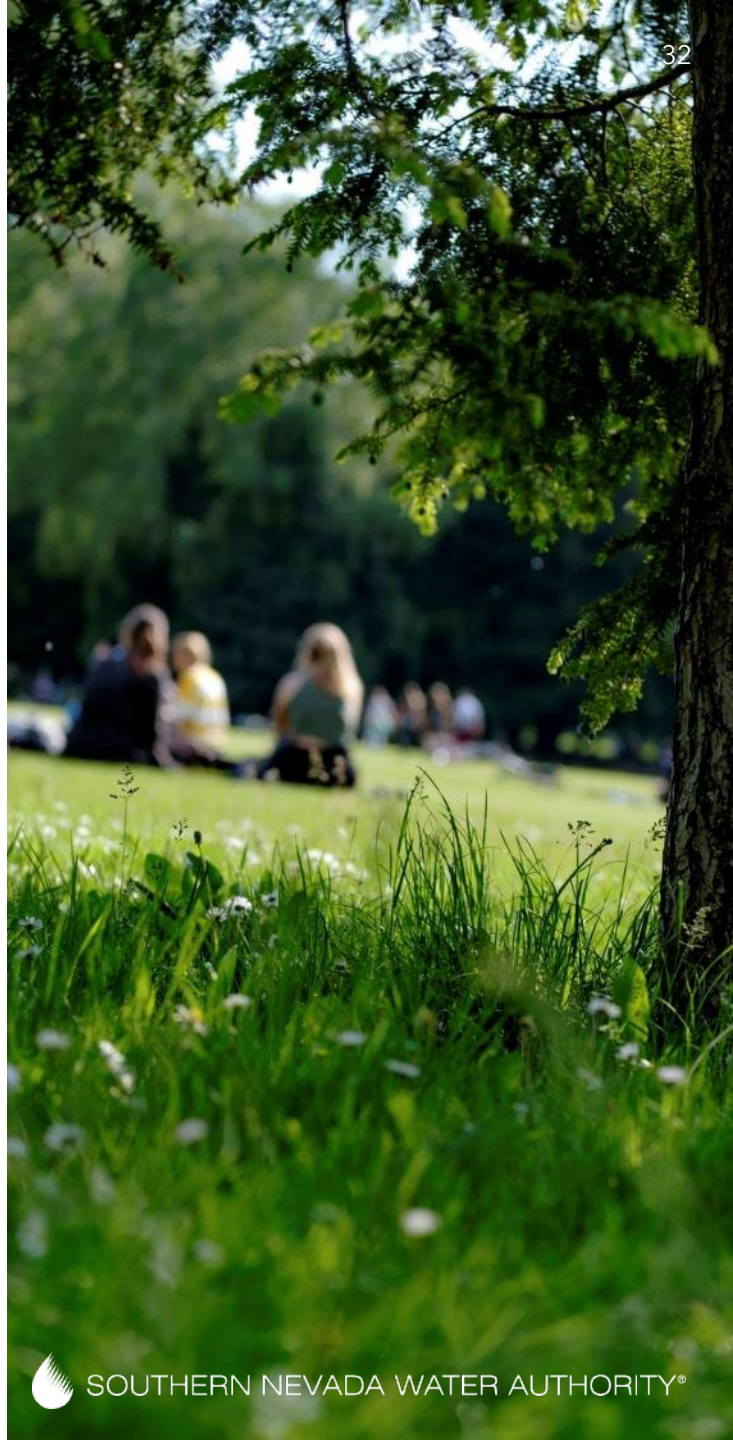
(b) Active/Programmed Recreation Turf, Athletic Field Turf, Designated Use Area Turf, Golf Course Play Turf, Pet Relief Turf, Playground Turf or Resident Area Turf, as these terms are further defined and qualified.

FUNCTIONAL TURF TYPES

“Active/Programmed Recreation Turf” means irrigated lawn grass in an active/programmed recreation area on homeowner association-owned or managed property or at a public park or water park (excluding park streetscape and community frontage areas).

Active/programmed recreation turf at existing properties must be:

- 1,500 contiguous square feet or greater.
- Co-located with facilities, including but not limited to trash bins, benches, tables, walking paths and/or other recreational amenities.
- Located at least 10 feet from a public or private street or interior facing parking lot unless:
  - The contiguous turf area is at least 30 feet in all dimensions; or
  - The turf is immediately adjacent to an athletic field



FUNCTIONAL TURF TYPES

“Athletic Field Turf” means irrigated lawn grass used as a programmed sports field or for physical education and intermural use that is 1,500 contiguous square feet or greater, not less than 30 feet in any dimension, and located at a school, daycare, youth recreation center, senior center, public park, private park, water park or religious institution.

Athletic Field Turf may be located less than 10 feet from a public or private street or interior-facing parking lot if the contiguous turf area is at least 30 feet in all dimensions.

FUNCTIONAL TURF TYPES

“Designated Use Area Turf” means irrigated lawn grass designated for special use at cemeteries and mortuaries.

RECOMMENDATION #2 (cont.)

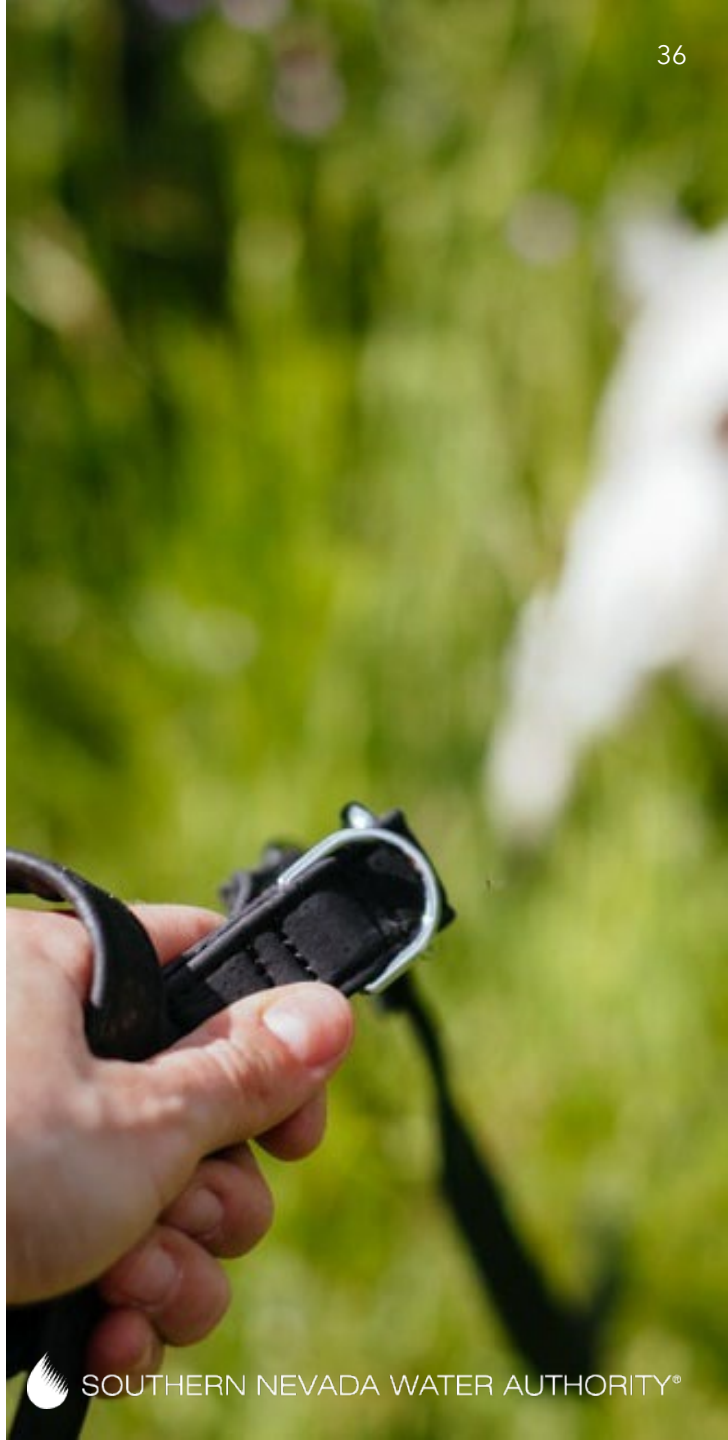
FUNCTIONAL TURF TYPES

"Golf Course Play Turf" means irrigated lawn grass at a golf course in driving ranges, chipping and putting greens, tee boxes, greens, fairways and rough.

RECOMMENDATION #2 (cont.)

FUNCTIONAL TURF TYPES

"Pet Relief Turf" means irrigated lawn grass in a property providing commercial and retail services for pets that is designated for pet use (such as veterinarians or boarding facilities). Pet Relief Turf may not exceed 200 square feet.



FUNCTIONAL TURF TYPES

“Playground Turf” means irrigated lawn grass in designated play areas with playground amenities, including but not limited to slides, swings and climbing structures on homeowner association-owned or managed property or at a public park, water park, school, daycare, youth recreation center, senior center or religious institution.

Playground Turf may be located less than 10 feet from a public or private street if fenced.

FUNCTIONAL TURF TYPES

“Resident Area Turf” means up to 150 square feet of irrigated lawn grass per dwelling unit at multi-family residential properties, single-family attached properties, commercial/multi-family mixed use properties, extended stay hotels/motels, or assisted living and rehabilitation centers used by tenants for recreation and leisure.

Resident Area Turf must be in areas reasonably accessible for active use by residents and therefore may not be located in streetscape frontages, parking lots, roundabouts, medians, driveways and other non-accessible or exclusive-use areas such as commercial courtyards.

Implementation

The SNWA is allocating staff and resources to meet the anticipated demand for Water Smart Landscapes projects

- Initial response to the legislation has been a 200+ percent increase in multi-family conversion appointments and a 300+ percent increase in commercial/institutional appointments
- The SNWA has engaged a third-party contractor to support administrative/processing activities; staff at peak levels is expected to surpass 20 FTE
- Incentive outlays over the next five years are expected to surpass $300 million
- The SNWA will continuously engage affected property owners throughout the implementation period