September 10, 2014

Conservation & IPS3 Update

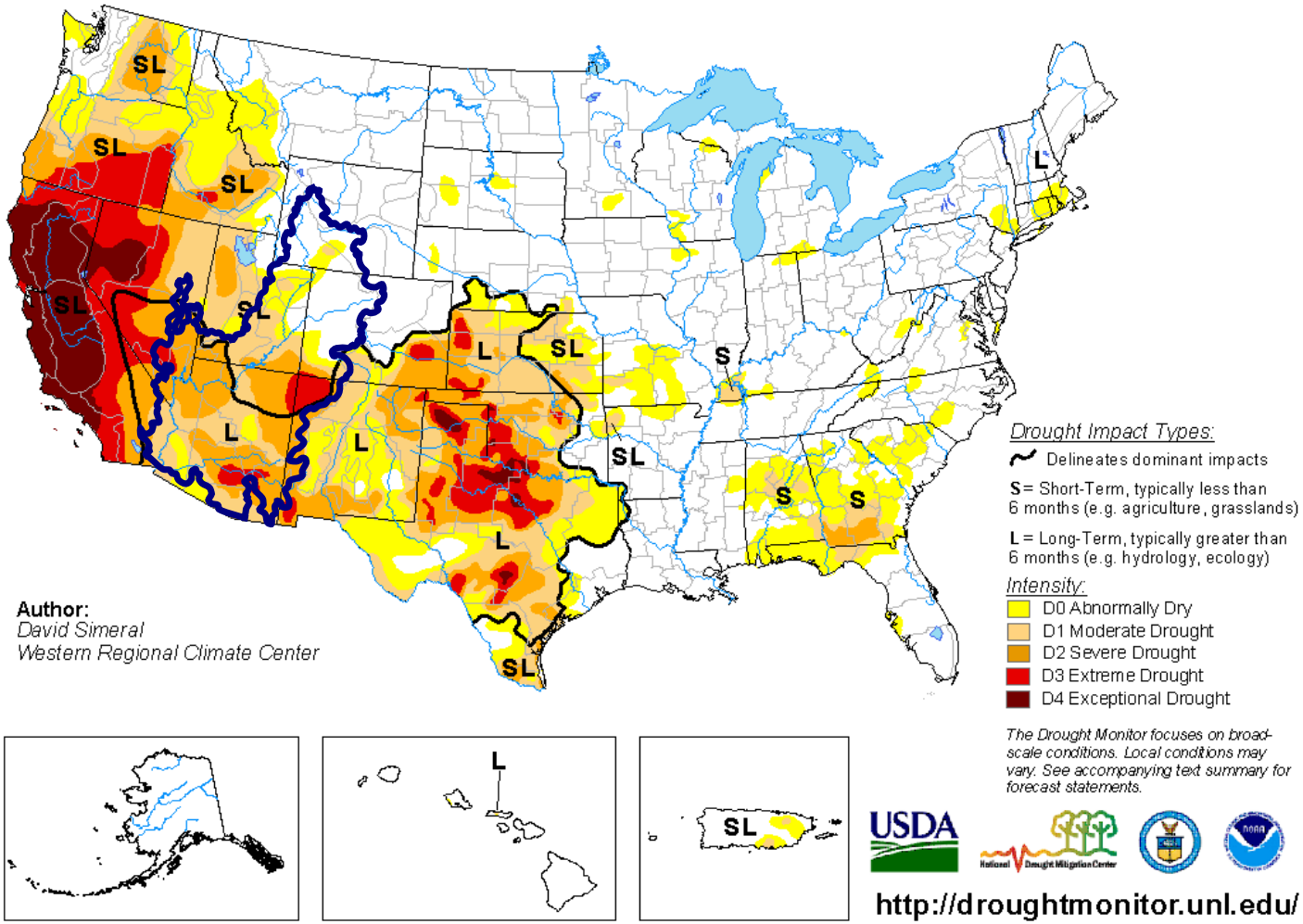
Meeting Topics

- **Drought update**
- **Key questions for IRPAC**
- **Attribute finalization**
- **Conservation**
- **Intake Pumping Station No. 3**

Drought Update

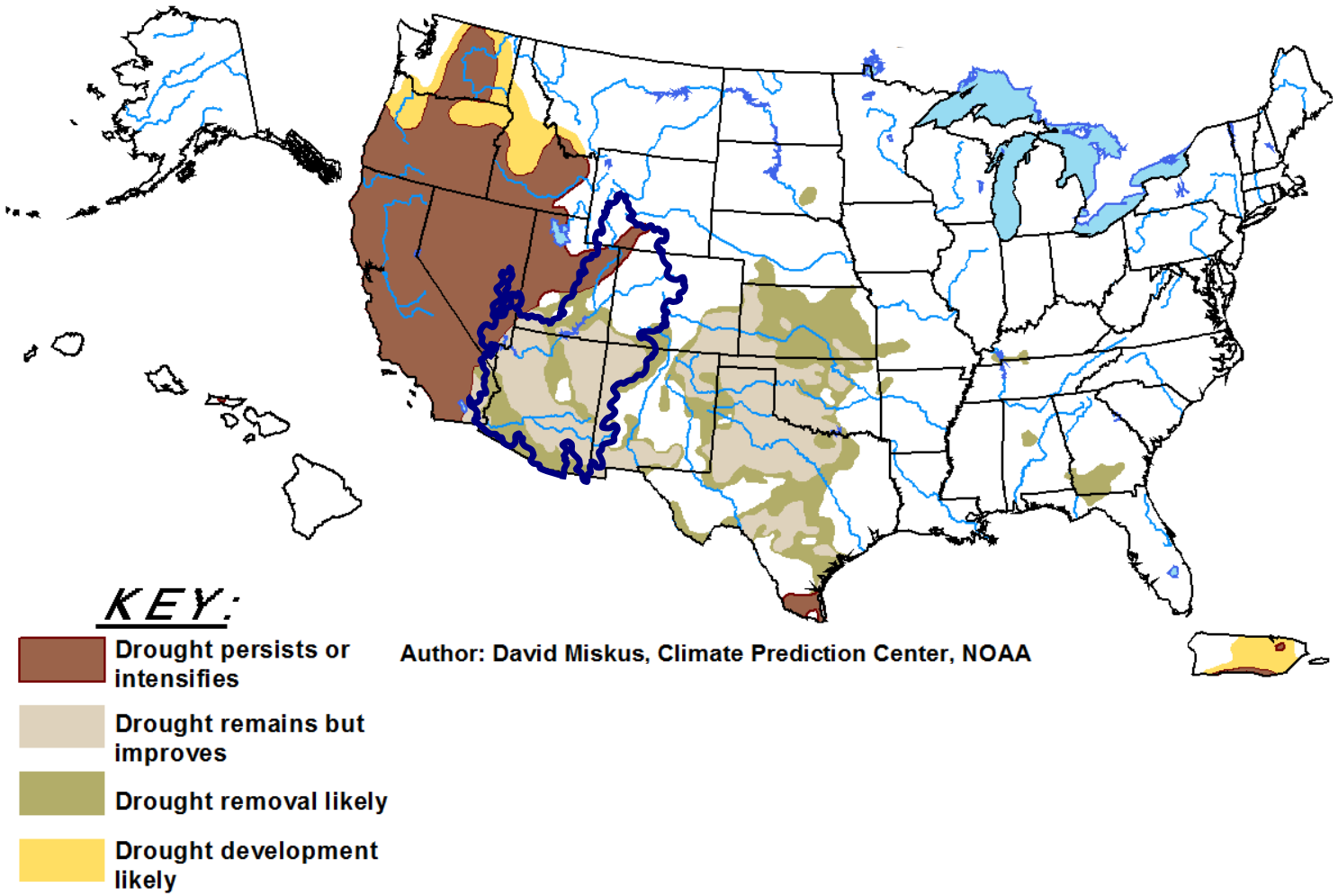
Drought Monitor

(September 2, 2014)



Drought Outlook

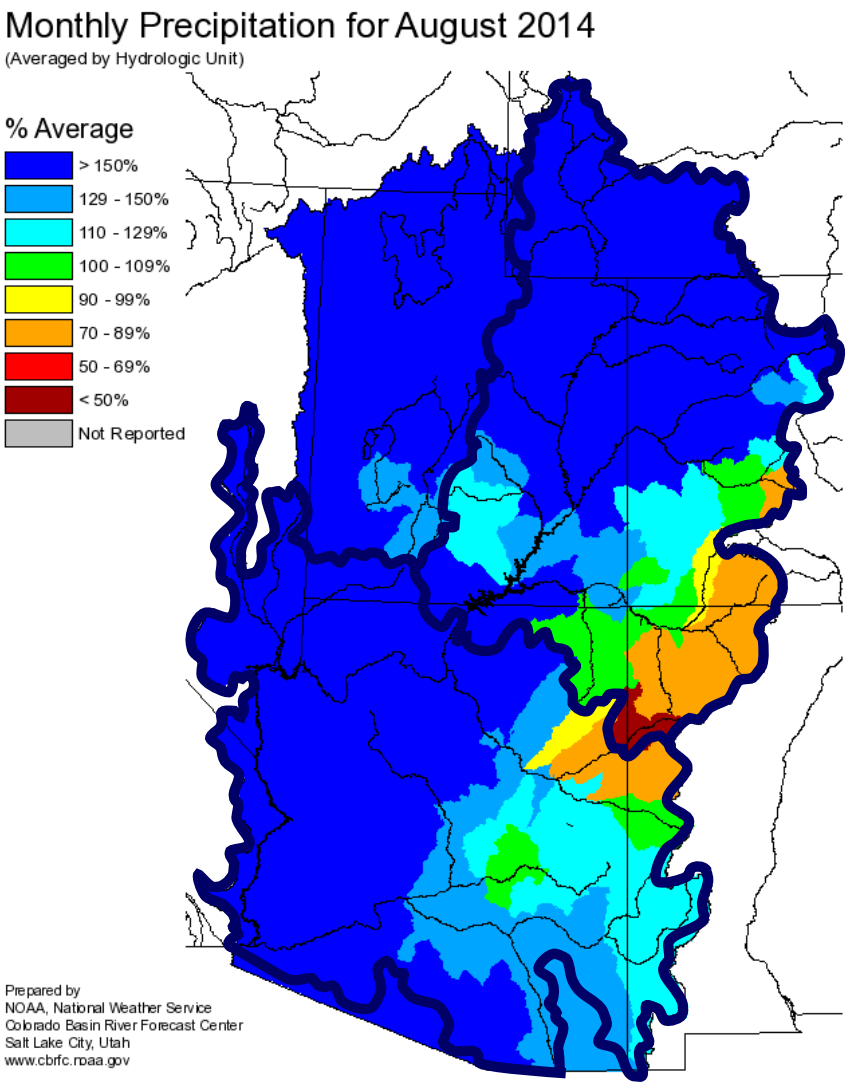
(Valid August – November, 2014)



Source: National Oceanic Atmospheric Administration and the U.S. Department of Commerce

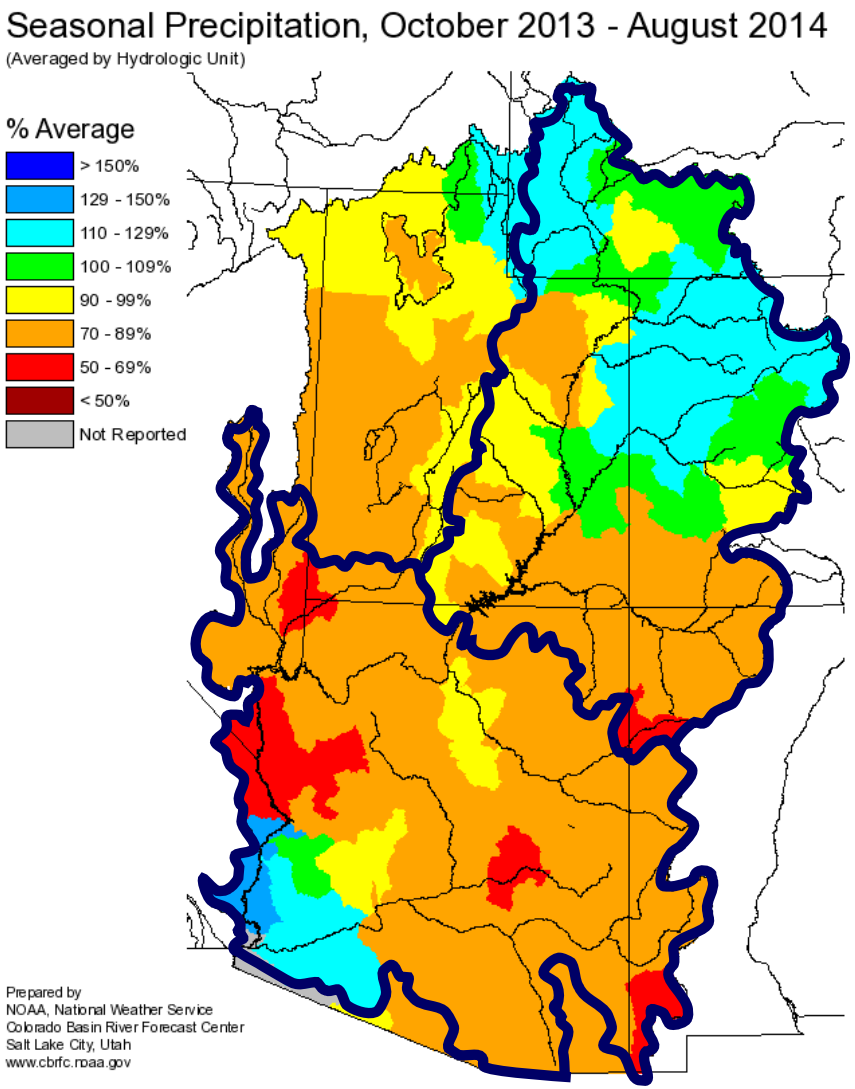
Colorado River Basin Conditions

- **August 2014 precipitation:** 180% of average



Colorado River Basin Conditions

- **August inflow to Lake Powell:** 103% of average
- **Snow Pack:** N/A
- **Water Year 2014 Precipitation:** 102% of average
- **Forecasted Water Year 2014 Inflow to Lake Powell:** 95% of average

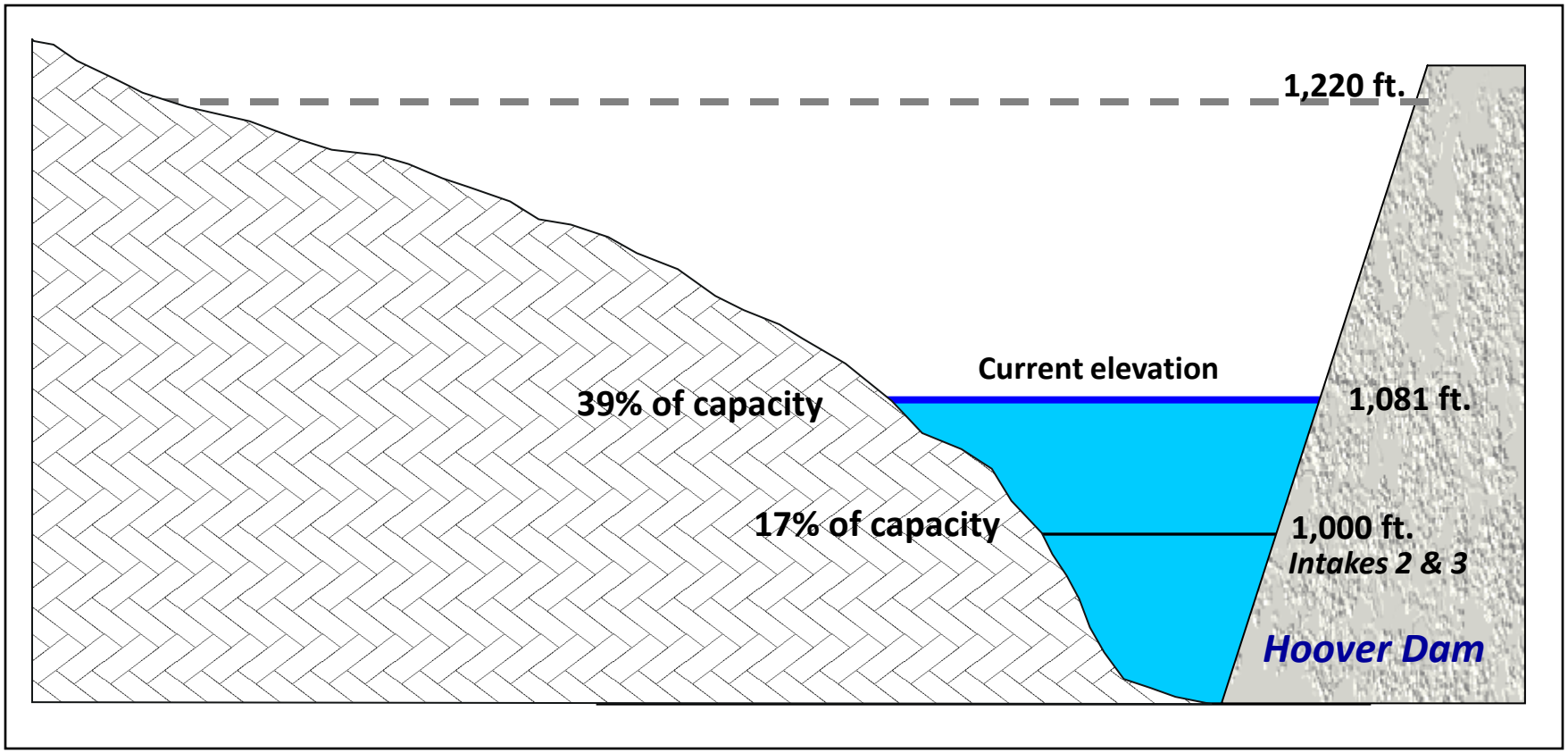


Precipitation and Inflow Forecast – Lake Powell

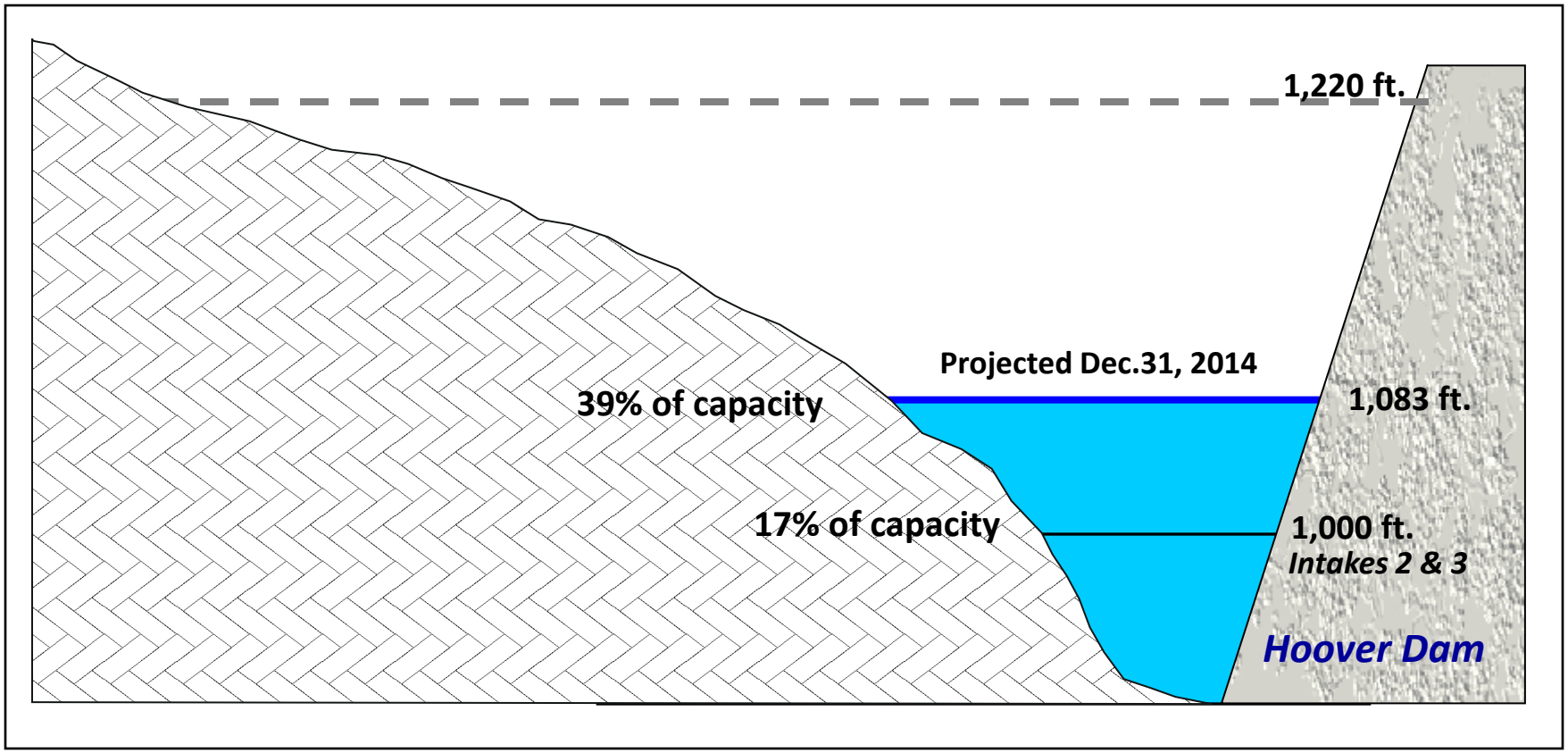
	2013 Water Year		2014 Water Year	
Month	Actual Precipitation	Inflows Forecast	Actual Precipitation	Inflows Forecast
Jan	72%	61%	96%	93%
Feb	78%	54%	102%	96%
Mar	76%	49%	103%	105%
Apr	78%	42%	103%	103%
May	80%	45%	101%	100%
Jun	77%	44%	97%	95%
Jul	80%	41%	101%	94%
Aug	81%	40%	102%	95%
Sept	90%	46%		
Actual	91%	47%		

Source: Bureau of Reclamation, Lower Colorado Water Supply Reports

Current Lake Mead Elevation



Projected Lake Mead Elevation



Key Questions for IRPAC

Key Questions

The SNWA Board of Directors requested recommendations from IRPAC that address several critical topics. Key issues include:

- ✓ **Conservation in Southern Nevada**
- ✓ **Colorado River system conservation**
- ✓ **Intake Pumping Station No. 3**
- ✓ **Funding drought mitigation efforts**
- ✓ **In-State water resource project**

Attribute Development

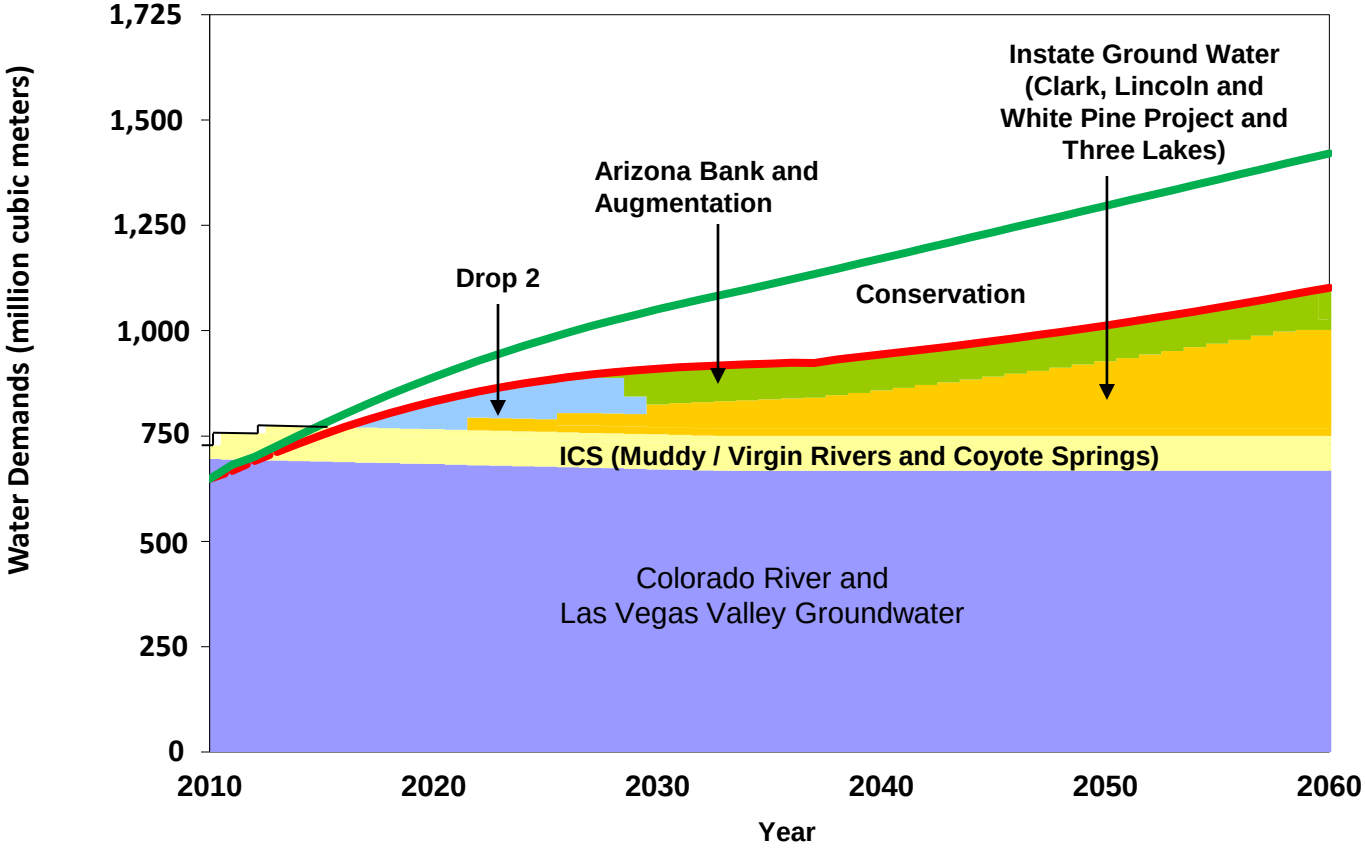
Attribute	Weight	Measure
Reliability		Resilience to hydrologic variability of Colorado River: Score 1 if no change from current condition, 5 if independent of river hydrology
		Resilience to climate change: Score 1 if high susceptibility to climate change, 5 if no impact from climate change
		Probability of not meeting water demands
		Amount of water demand shortfall
Minimize Implementation Risk		Score 1 if highly complex regulatory/technical/public process, 5 if not complex
		Score 1 if extensive multi-state and/or federal cooperation required, 5 if multi-state and/or federal cooperation not required
		Years required to implement
Cost Effectiveness		Initial Capital Cost ($)
		NPV (Capital and O&M) ($)
Supports Economic Development		Competitiveness of average SFR water rate with other cities: Score 1 for maximum change from current position on 62-City Municipal Water Rates Survey, score 5 if no change
Impacts to quality of life		Score 1 restricts existing consumptive water use, 5 allows water efficient consumptive water use
Water Use Efficiency		Score 1 if no change from existing condition, 5 for most change
Environmental Sustainability		
		Total Score
		Weighted Score

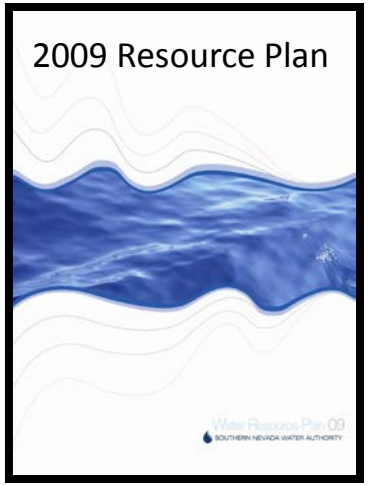
Conservation

Conservation

The SNWA administers one of the nation's most comprehensive and successful water conservation programs.

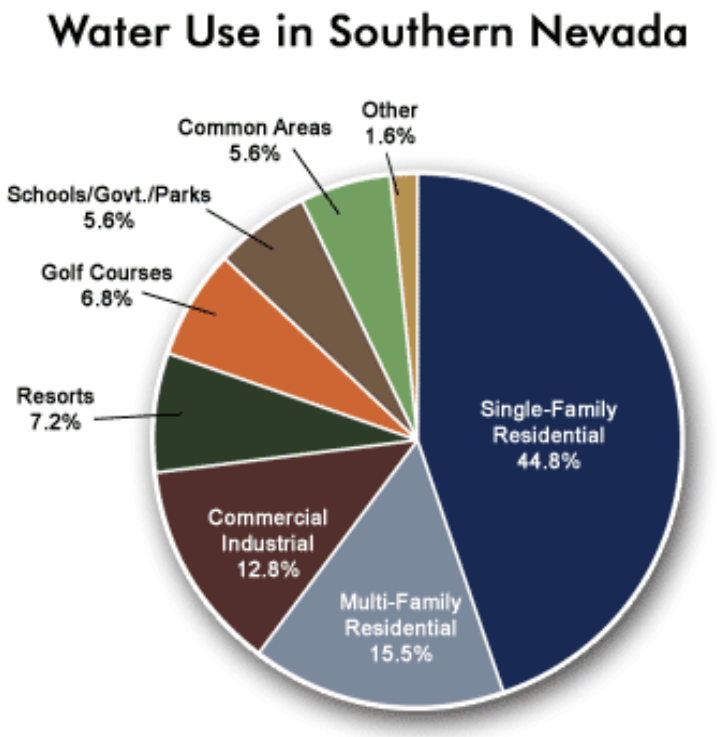
Conservation plays a critical role in determining the community's water needs



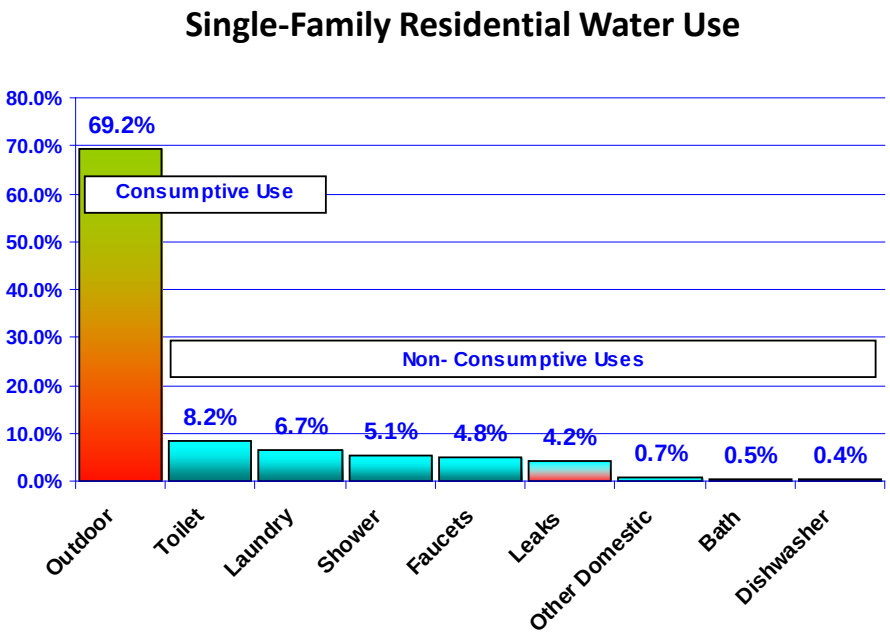


Conservation

How is water used in Southern Nevada?

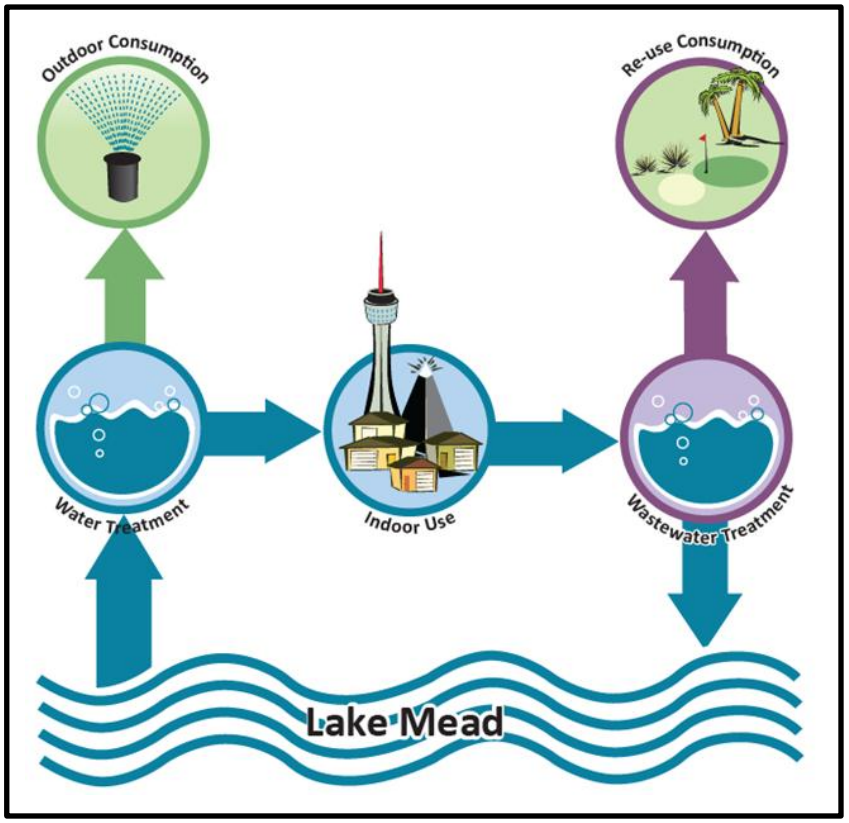


Based upon 2010 municipal metered potable and non-potable water use in the Southern Nevada Water Authority's metered service area.

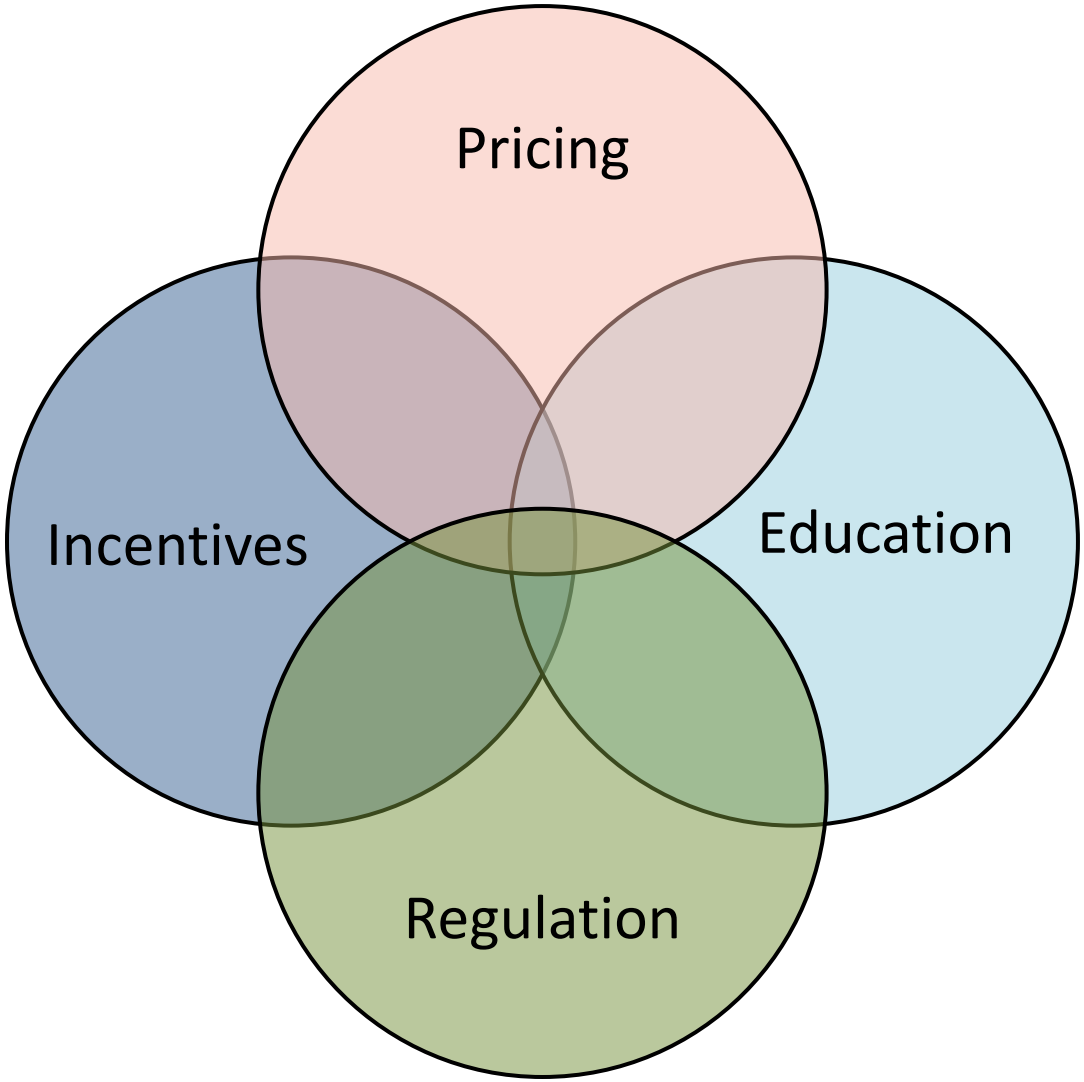


Conservation

More than 95 percent of all indoor water is captured, treated and reused



The SNWA's approach to conservation involves an integrated four-pronged approach.



Conservation Initiatives

- Incentives
  - ✓ Landscape rebates
  - ✓ Car wash coupons
  - ✓ Water Efficient Technologies
  - ✓ Pool cover rebates
- Education
  - ✓ Conservation Helpline
  - ✓ Water Smart Contractor program
  - ✓ Water audits
  - ✓ Water Smart Home program
  - ✓ Water Upon Request program
  - ✓ Water Conservation Coalition
  - ✓ Water Smart Innovations Conference
  - ✓ Demonstration gardens and classes
  - ✓ H2O University
- Pricing
  - ✓ Tiered water rate structure
  - ✓ Golf course water budgets
- Regulation
  - ✓ Development codes
  - ✓ Watering restrictions
  - ✓ Water waste investigations

Incentives

Programs include:

- ✓ **Water Smart Landscapes**
- ✓ **Pool Cover Rebate**
- ✓ **Water Smart Car Wash**
- ✓ **Water Efficient Technologies**
- ✓ **Rain Sensor and Smart Controller Rebates**

Incentives

Water Smart Landscapes Program is the world's most successful turfgrass reduction incentive program

- $205 million invested to date
- 78 billion gallons saved
- 170 million square feet of turf converted

Southern Nevada has removed enough grass for a roll of sod to span nearly 90 percent of earth's circumference!

Incentives

The Water Efficient Technologies program incentivizes large-scale investments in water conservation

Each participant can earn up to $150,000 for implementing new, water-saving technologies

This program targets commercial and multi-family properties

To date, 174 projects have been completed, generating a cumulative savings of nearly 8 billion gallons of water

Education

The SNWA partners with different sectors within the community to encourage water efficiency

- ✓ **Water Conservation Coalition**
- ✓ **Water Upon Request**
- ✓ **Linen Exchange Program**
- ✓ **Water Smart Home**
- ✓ **Water Smart Contractor**
- ✓ **Springs Preserve**
- ✓ **WaterSmart Innovations**

Education

The Water Conservation Coalition is a public/private partnership designed to promote water-efficient practices

Initiatives include:

- ✓ **Presentations to business and professional organizations**
- ✓ **Disseminating information through members' employee newsletters and websites**
- ✓ **Conducting water conservation projects for groups or properties in need of assistance**

Education

Water Smart Home extends our community's water supply while providing builders a competitive advantage

Homes built through the program must meet strict indoor and outdoor efficiency standards

Water Smart Home was the basis for a national program developed by the EPA

A Water Smart Home can save up to 75,000 gallons per year compared to similar homes built a decade ago

More than 10,000 Water Smart Homes have been built since the program's inception

Education

The Springs Preserve provides conservation tools

- ✓ **Water Smart Contractor Training**
- ✓ **Community Outreach and Education**
- ✓ **Demonstration Gardens**

Education

The SNWA hosts WaterSmart Innovations, the world's largest urban water efficiency conference

- ✓ Annual event includes more than 100 sessions from experts in a variety of water-related fields
- ✓ New water-saving technologies are exhibited in the exposition hall
- ✓ Thousands of attendees from around the globe share best practices in water efficiency

Pricing

To encourage water efficiency while maintaining affordable rates for fixed-income customers, Southern Nevada's water purveyors utilize a multi-tiered rate structure

Southern Nevada's water purveyors utilize aggressive conservation-oriented rate structures

- ✓ **"Lifeline" water rates are some of the Southwest's lowest at about $1.00 per 1,000 gallons**
- ✓ **High-consumption users pay more than $4.00 per 1,000 gallons**

Regulations

Southern Nevada's water use regulations are among the most restrictive in the nation

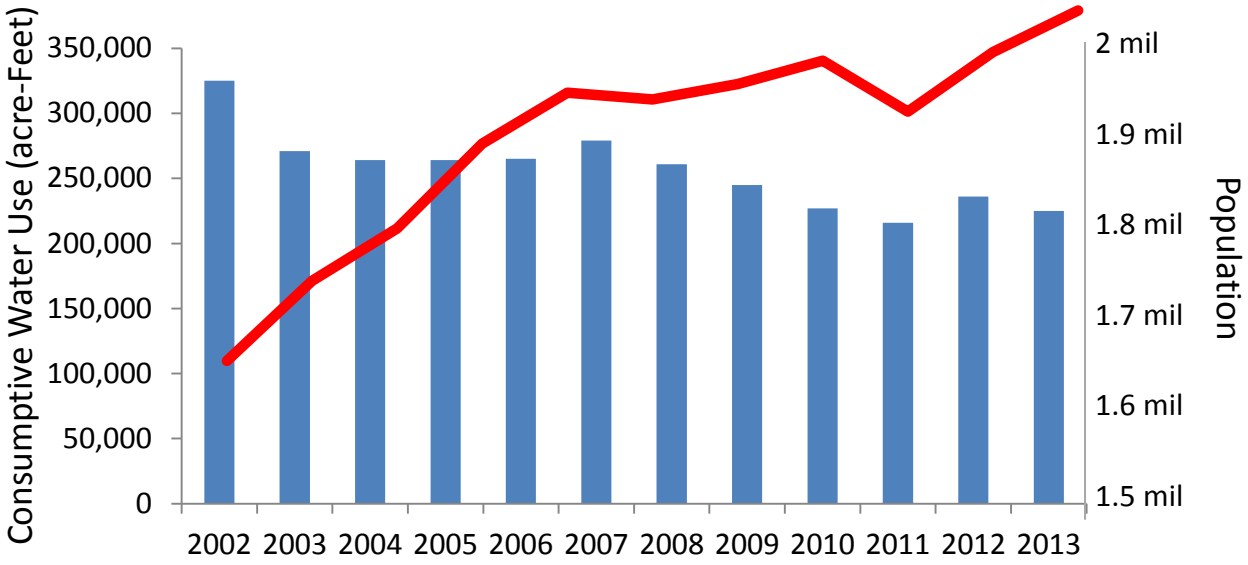
Local municipalities set and enforce water efficiency regulations, which were developed in conjunction with the SNWA

- ✓ **Turf limitations for new construction**
- ✓ **Mandatory watering restrictions**
- ✓ **Commercial misting system and facility/ equipment-cleaning restrictions**
- ✓ **Water waste investigations**

Watering Group	Winter November - February	Spring / Fall March - April / September - October	Summer May - August
A	Monday	Monday, Wednesday, Friday	Any day
B	Tuesday	Tuesday, Thursday, Saturday	Any day
C	Wednesday	Monday, Wednesday, Friday	Any day
D	Thursday	Tuesday, Thursday, Saturday	Any day
E	Friday	Monday, Wednesday, Friday	Any day
F	Saturday	Tuesday, Thursday, Saturday	Any day

Impact to Water Consumption

Thanks to these efforts, Southern Nevada consumptively used about <u>32 billion gallons</u> less water in 2013 than in 2002, despite adding 480,000 new residents and serving nearly 40 million annual visitors.



Investing in Efficiency

The Southern Nevada Water Authority has invested more than $200 million in conservation measures

- ✓ **Direct customer incentives**
- ✓ **Administrative support of conservation programs**
- ✓ **Community education and outreach**

Conservation Headwinds

Although Southern Nevada is approaching its goal, several factors make the "last 10 pounds" difficult to lose

- ✓ **Diminishing pool of turf reduction candidates**
- ✓ **Increased economic activity**
- ✓ **Climate change**
- ✓ **Inflation effect on incentives**

Measuring Progress

Gallons Per Capita Per Day (GPCD) is the most common method of tracking water efficiency. However, it has limitations:

- ✓ **No standard formula among cities***
- ✓ **Doesn't account for 40 million temporary residents (300K+ annualized)**
- ✓ **Doesn't reflect indoor water recovery**
- ✓ **Doesn't help communities prioritize initiatives**

* Colorado River Basin State group discussing uniform GPCD formula

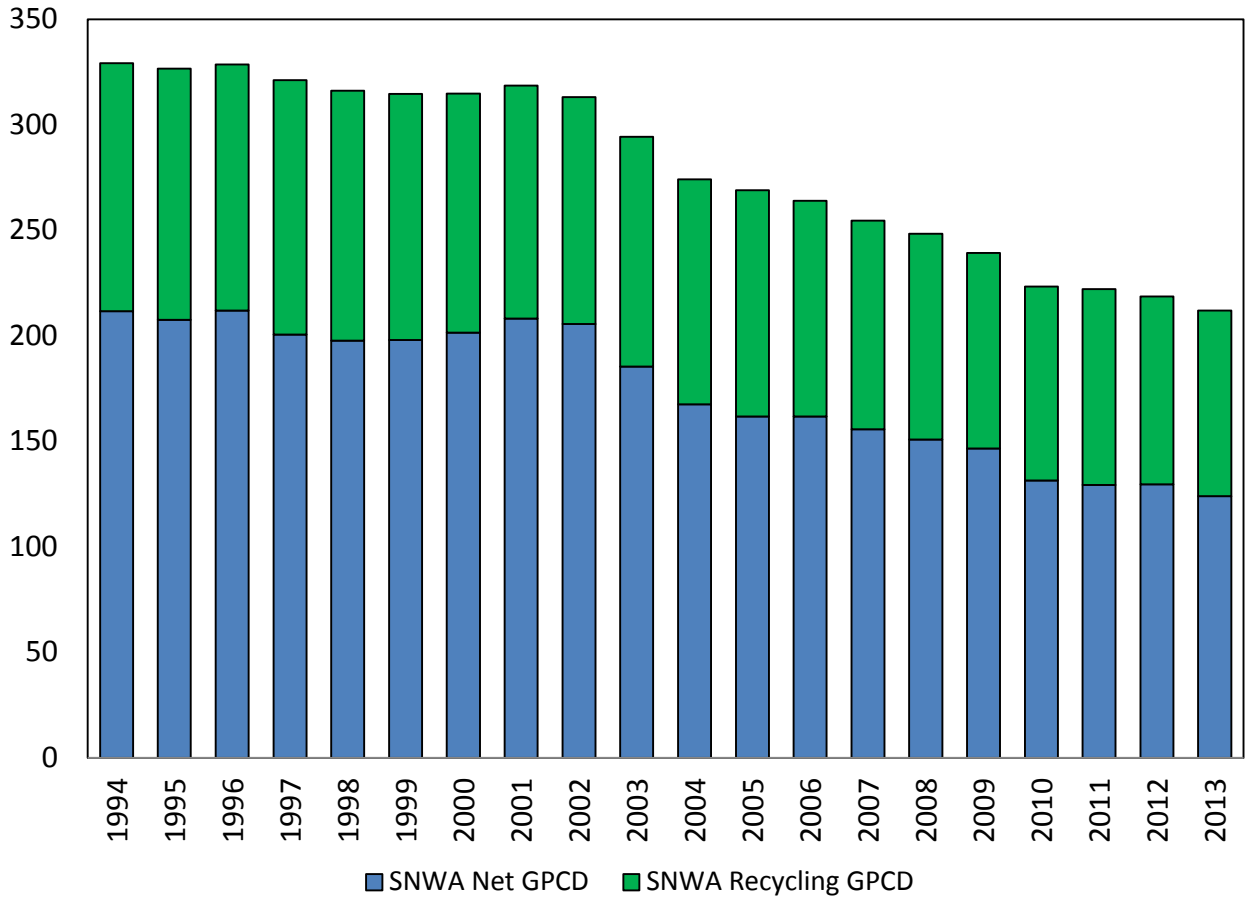
Measuring Progress

"Net GPCD" is a more accurate measure of Southern Nevada's water footprint

- ✓ **Accounts for recovered indoor water**
- ✓ **Emphasizes initiatives that extend the community's water supply**

Measuring Progress

Gross versus Net GPCD in Southern Nevada



The Cost of Conservation

Although conservation has many benefits, it is not without its costs

- ✓ **Expenditures for programs and incentives**
- ✓ **Decreased water sales**
- ✓ **Demand hardening**

Attributes Application

- ✓ Should the SNWA wait until it reaches the current GPCD goal before developing another or begin exploring a new target?
- ✓ Should the SNWA evaluate both “gross” and “net” consumption to educate the community about water use and help prioritize conservation initiatives?

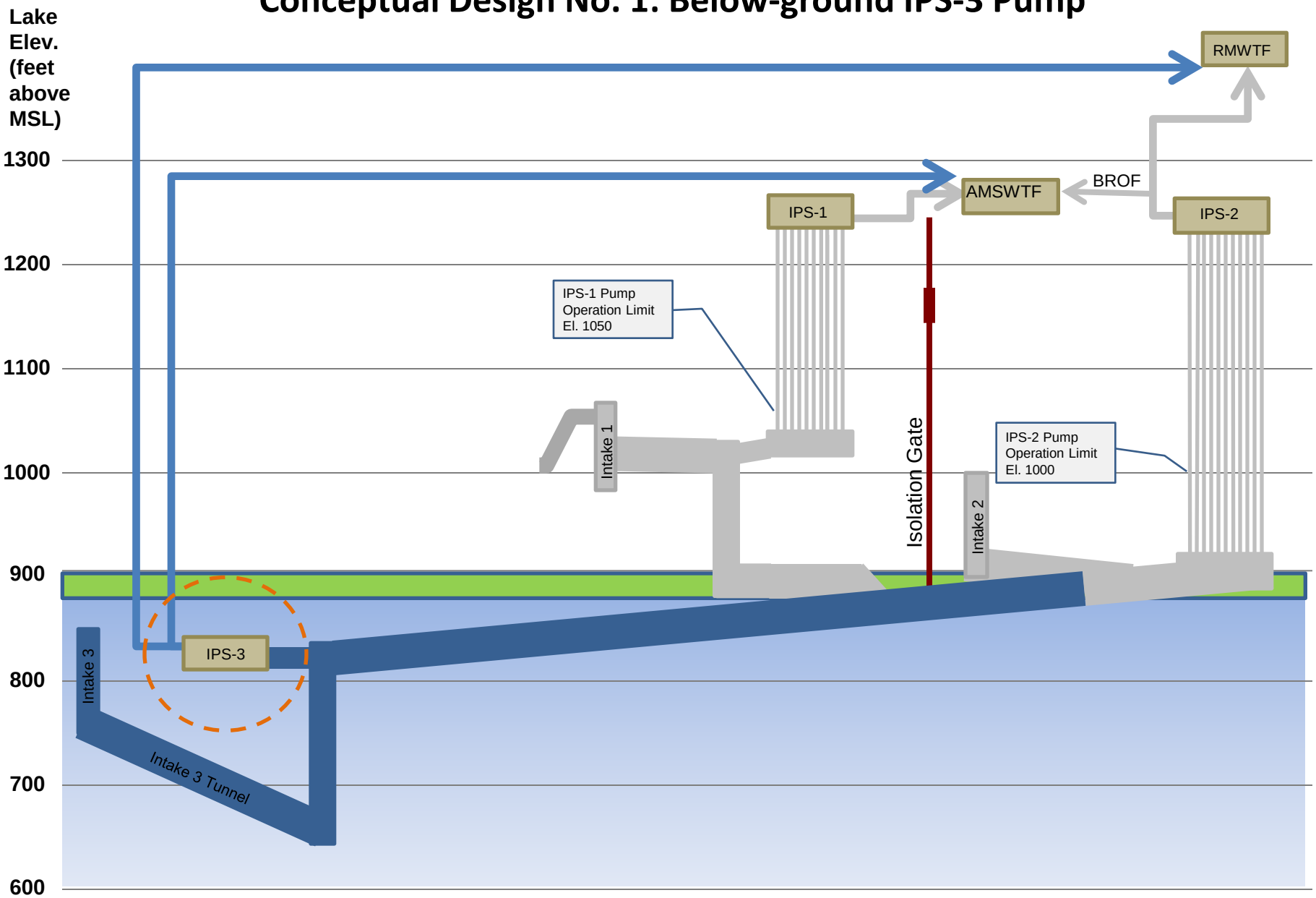
Intake Pumping Station No. 3
EVALUATION FINDINGS

Intake Pumping Station No. 3

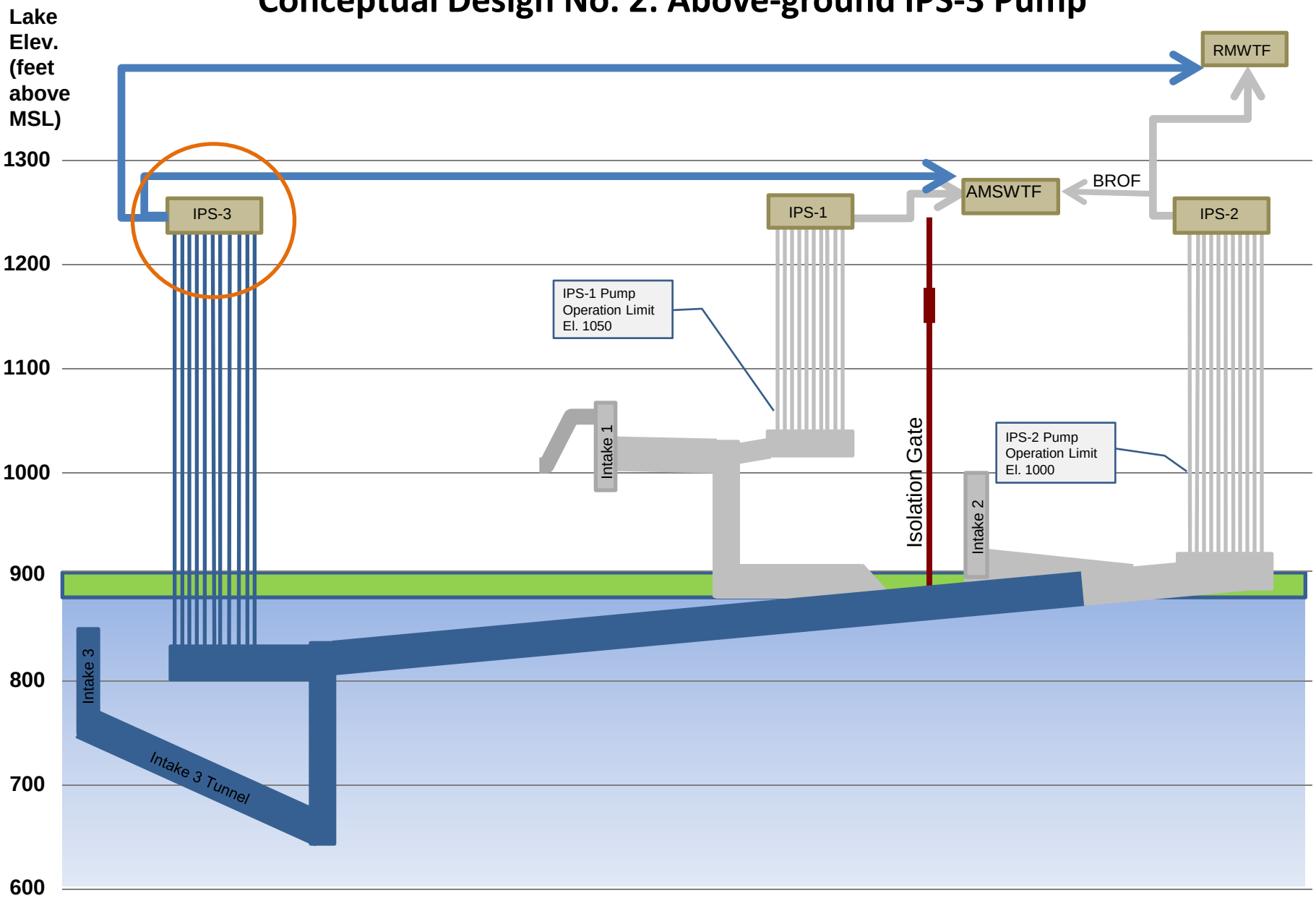
Purpose and Need

- Allows SNWA to pump water below elevation 1,000 feet (study evaluates a pumping elevation at 875 feet)
- Preserves pumping capacity for Southern Nevada
- Provides a backup pumping station if Intake No. 1 and Intake No 2 are inoperable due to low lake levels
- Does not provide a new source of water; only protects access to Lake Mead

Conceptual Design No. 1: Below-ground IPS-3 Pump



Conceptual Design No. 2: Above-ground IPS-3 Pump



Intake Pumping Station No. 3

Design Evaluation Criteria

- Cost
- Time to construct
- Electrical infrastructure and loads
- Pump and discharge line design
- Vulnerability to significant outages
- Maintenance time and costs

Intake Pumping Station No. 3

Recommended Alternative

- Above-ground option
  - ✓ 2.5 years less time to design and construct
  - ✓ Reduced exposure to failure due to flooding of subterranean chamber
  - ✓ Lower cost than subterranean option
  - ✓ Reduced maintenance costs and greater access to facilities

Intake Pumping Station No. 3

Key Project Components

- More than 30 high-volume pumps with total capacity of 900 million gallons per day
  - 600 mgd to Alfred Merritt Smith Water Treatment Facility
  - 300 mgd to River Mountains Water Treatment Facility
- Electrical infrastructure
- Large-diameter discharge pipelines
- Major surface excavation
- Subterranean forebay and large-diameter well shafts

Intake Pumping Station No. 3

Cost

- Preliminary estimate = $610 million (Class 5 pre-design estimate)
  - Includes 30 percent construction contingency (only utilized as necessary)
  - Includes design and construction management costs
  - Does not include additional water treatment modifications that might be necessary at very low elevations

Implementation Timeline

- Design – One year
- Construction – Four years

Las Vegas Valley Water District
2014 MUNICIPAL WATER RATES SURVEY
AVERAGE MONTHLY BILL ($) FOR 11,600 GALLONS

Utility	$10 - $20	$20 - $30	$30 - $40	$40 - $50	$50 - $60	$60 - $70	$70 - $80	$80 - $90	$90 - $100	Over $100
Santa Barbara, CA (OC)										146.38
Sants Fe, NM										145.01
Colorado Springs, CO (OC)										130.32
Santa Cruz, CA (OC)										119.77
Seattle, WA (OC)										118.92
Santa Barbara, CA										112.60
Seattle, WA										104.27
San Francisco, CA										103.25
Santa Cruz, CA									94.01	
Flagstaff, AZ (OC)									93.55	
Reno, NV (Unmetered)									91.37	
Portland, OR									90.94	
Colorado Springs, CO								86.87		
San Diego, CA								86.74		
Flagstaff, AZ								85.04		
Marin, CA (MMWD)								83.10		
Los Angeles, CA							75.04			
Santa Rosa, CA							71.80			
Oakland. CA (EBMUD)						68.47				
San Jose, CA (Company)						66.86				
Pheonix, AZ (OC)						63.75				
San Jose, CA (City)						63.40				
Tucson, AZ						62.77				
62 City Average						60.80				
Houston, TX						60.35				
Pasadena, CA (OC)					58.96					
Tacoma, WA (OC)					53.70					
Cheyenne, WY					53.28					
Reno, NV (Metered)					50.60					
Riverside, CA (OC)				49.60						
Long Beach, CA				49.00						
San Antonio, TX (OC)				48.95						
Kingman, AZ (OC)				48.95						
Pasadena, CA				48.22						
Denver, CO (OC)				46.83						
Victorville, CA				45.04						
Tacoma, WA				44.75						
Dallas, TX				44.57						
Boulder, CO (OC)				43.22						
Scottsdale, AZ				42.80						
North Las Vegas, NV				42.79						
Pheonix, AZ				42.73						
Henderson, NV				42.52						
Denver, CO				42.30						
San Antonio, TX				42.25						
Billings, MT (OC)				41.71						
Las Vegas, NV				41.62						
Billings, MT				41.11						
Boulder, CO			38.52							
Kingman, AZ			37.42							
Salt Lake City, UT (OC)			37.32							
Anaheim, CA (OC)			36.25							
Boise, ID			35.49							
El Paso, TX			34.36							
San Bernardino, CA			33.83							
Riverside, CA			33.07							
Anaheim, CA			33.06							
Albuquerque, NM			32.88							
St. George, UT			30.18							
Salt Lake City, UT		29.17								
Redding, CA		29.08								
Cedar City, UT		27.80								
Boulder City, NV		25.03								

Based on LVVWD Average Monthly Single-Family Consumption of 11,600 gallons and a 5/8 or 3/4 Inch Service Charge for Comparison.

OC - Outside City
MMWD - Marin Municipal Water District
EBMUD - East Bay Metropolitan Utilities District

Las Vegas Valley Water District
2014 MUNICIPAL WATER RATES SURVEY
AVERAGE MONTHLY BILL ($) FOR 10,000 GALLONS

Utility	$10 - $20	$20 - $30	$30 - $40	$40 - $50	$50 - $60	$60 - $70	$70 - $80	$80 - $90	$90 - $100	Over $100
Santa Barbara, CA (OC)										113.37
Sants Fe, NM										110.33
Colorado Springs, CO (OC)										109.22
Seattle, WA (OC)									96.33	
Santa Cruz, CA (OC)									94.23	
Reno, NV (Unmetered)									91.37	
San Francisco, CA								89.33		
Santa Barbara, CA								87.20		
Seattle, WA								84.46		
Portland, OR								83.08		
San Diego, CA							74.05			
Santa Cruz, CA							73.97			
Colorado Springs, CO							72.78			
Flagstaff, AZ (OC)							72.43			
Marin, CA (MMWD)						66.82				
Flagstaff, AZ						65.83				
Los Angeles, CA						63.40				
Santa Rosa, CA						60.52				
San Jose, CA (Company)					59.44					
Oakland. CA (EBMUD)					59.36					
San Jose, CA (City)					56.00					
Pasadena, CA (OC)					51.53					
62 City Average					51.24					
Houston, TX				48.94						
Tacoma, WA (OC)				48.59						
Pheonix, AZ (OC)				48.16						
Cheyenne, WY				45.92						
Tucson, AZ				45.17						
Reno, NV (Metered)				45.14						
Riverside, CA (OC)				43.73						
Kingman, AZ (OC)				42.74						
Pasadena, CA				42.14						
Victorville, CA				41.90						
San Antonio, TX (OC)				41.02						
Long Beach, CA				40.81						
Tacoma, WA				40.48						
Henderson, NV			38.60							
North Las Vegas, NV			38.37							
Boulder, CO (OC)			38.30							
Scottsdale, AZ			37.01							
Denver, CO (OC)			36.78							
Billings, MT (OC)			36.07							
Las Vegas, NV			35.58							
Billings, MT			35.47							
San Antonio, TX			35.30							
Dallas, TX			34.47							
Boulder, CO			33.60							
Denver, CO			33.38							
Kingman, AZ			32.85							
Pheonix, AZ			32.35							
Anaheim, CA (OC)			32.12							
Salt Lake City, UT (OC)			31.51							
Boise, ID			31.43							
San Bernardino, CA			30.95							
Albuquerque, NM		29.93								
Anaheim, CA		29.20								
Riverside, CA		29.15								
St. George, UT		28.62								
Cedar City, UT		26.20								
El Paso, TX		26.18								
Redding, CA		25.91								
Salt Lake City, UT		25.13								
Boulder City, NV		22.53								

Based on LVVWD Average Monthly Single-Family Consumption of 10,000 gallons and a 5/8 or 3/4 Inch Service Charge for Comparison.

OC - Outside City
MMWD - Marin Municipal Water District
EBMUD - East Bay Metropolitan Utilities District

Upcoming Meetings

October 15

November 5

December 3

SOUTHERN NEVADA WATER AUTHORITY®