RECLAMATION

Managing Water in the West

Colorado River Basin:
System Status Update and Outlook for 2018 and 2019

Daniel Bunk
River Operations Manager
Boulder Canyon Operations Office, Lower Colorado Region

Colorado River Citizens Forum in Yuma, Arizona
January 24, 2018

U.S. Department of the Interior
Bureau of Reclamation

Topics

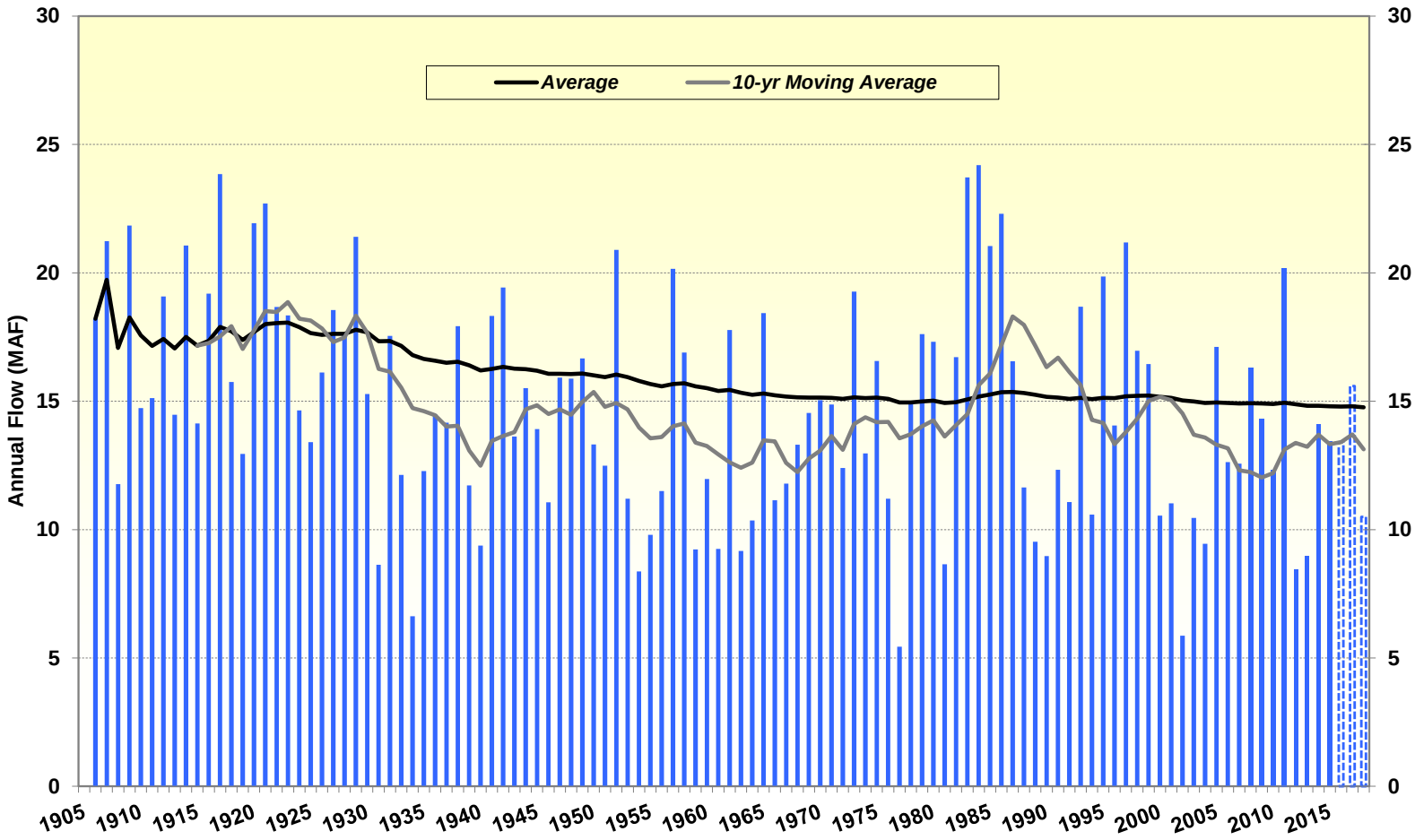
- Overview of the Colorado River Basin
- Colorado River Drought
- Projected Conditions
- Drought Response Activities
- Summary

Overview of the Colorado River System

- 16.5 million acre-feet (maf) allocated annually
  - 7.5 maf each to Upper and Lower Basins and 1.5 maf to Mexico
  - 13 to 14.5 maf of basin-wide consumptive use annually
- 16 maf average annual “natural flow” (based on historical record)
  - 14.8 maf in the Upper Basin and 1.3 maf in the Lower Basin
- Inflows are highly variable year to year
- 60 maf of storage (nearly 4-times the annual inflow)
- The System is operated on a type hydrologic budget

RECLAMATION

Natural Flow
Colorado River at Lees Ferry Gaging Station, Arizona
Water Year 1906 to 2018



RECLAMATION

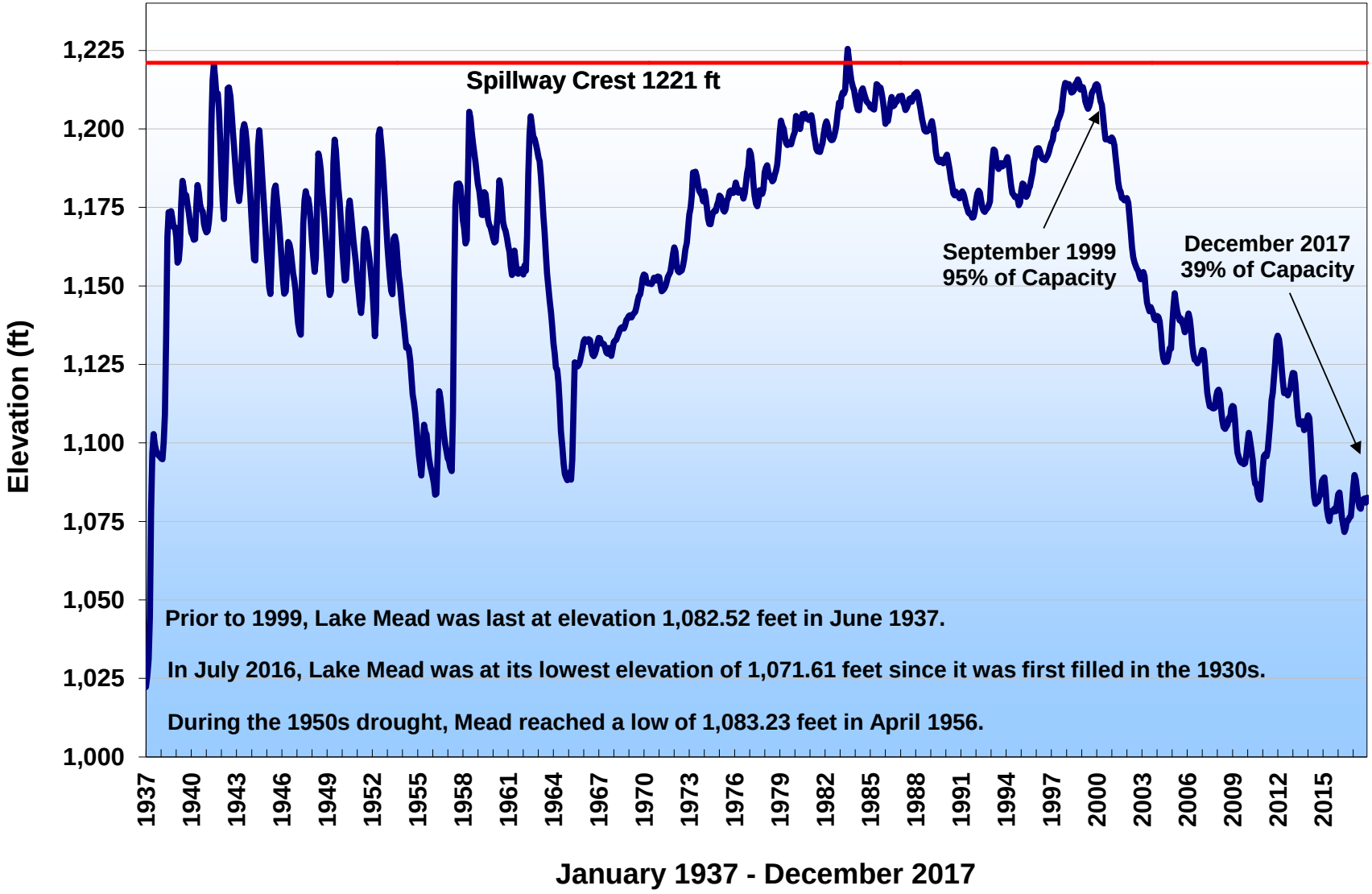
Water Budget at Lake Mead

Given current water demands in the Lower Basin and Mexico, and a minimum objective release from Lake Powell (8.23 maf), Lake Mead storage declines by about 1.2 maf annually (equivalent to about 12 feet in elevation).

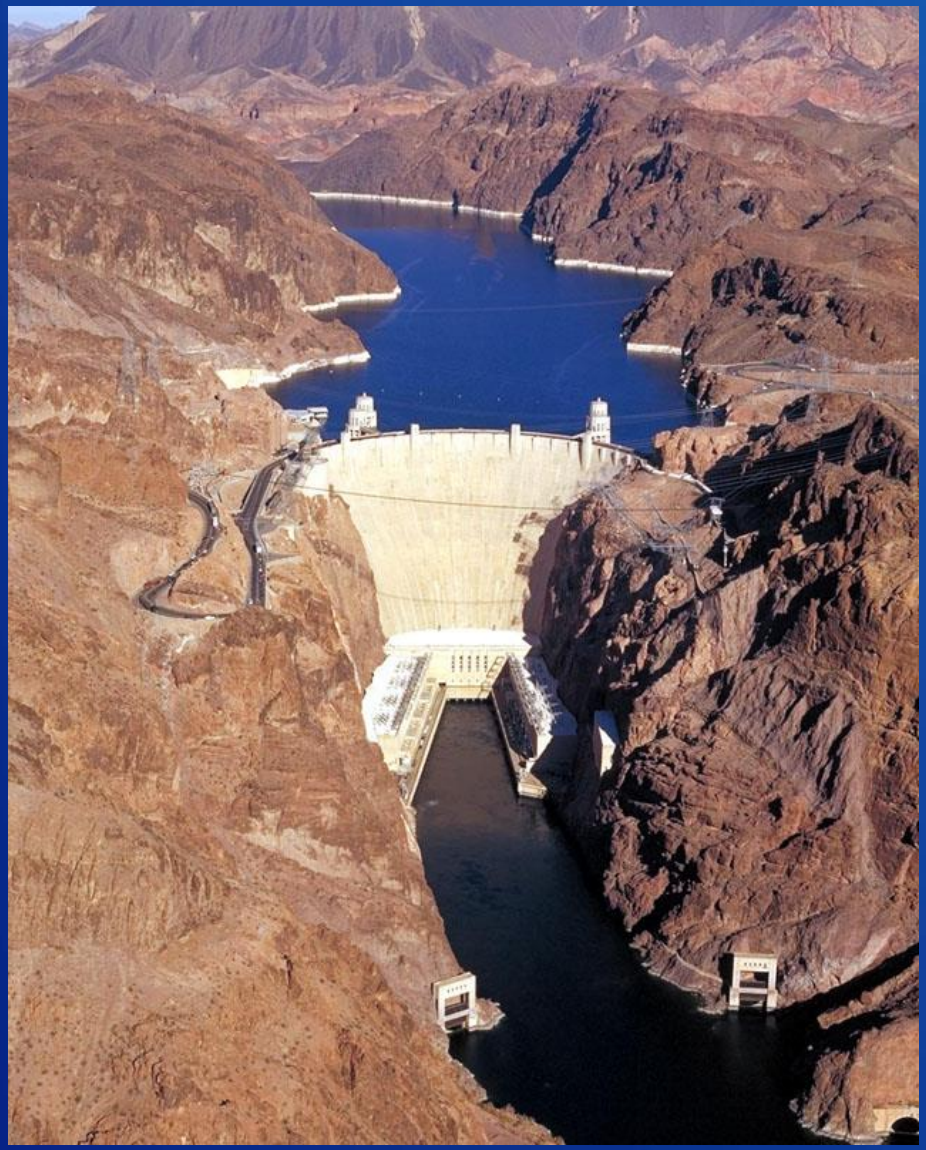
Inflow (Powell release + side inflows above Mead)	9.0 maf
Outflow (Lower Division State apportionments and Mexico Treaty allocation, plus balance of downstream regulation, gains, and losses)	-9.6 maf
Mead evaporation loss	-0.6 maf
Balance	-1.2 maf

RECLAMATION

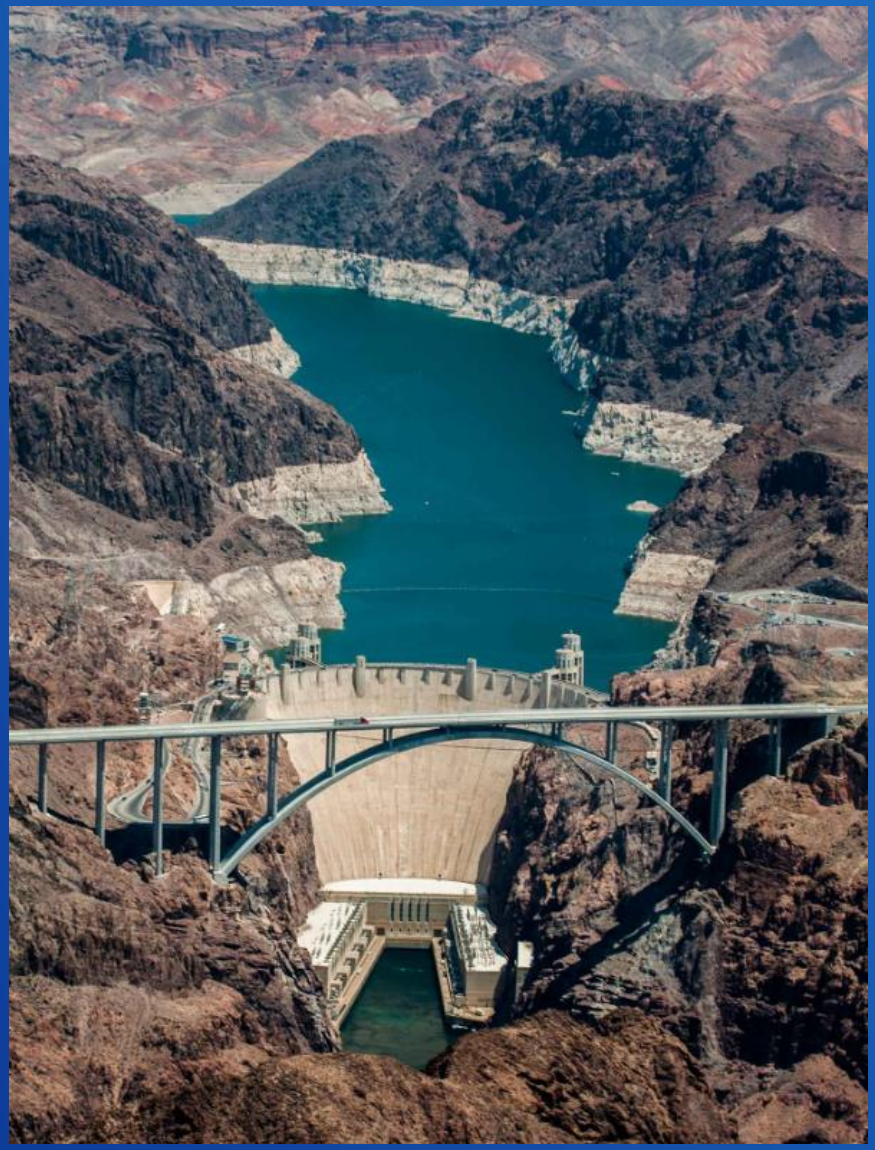
Lake Mead End of Month Elevation



RECLAMATION



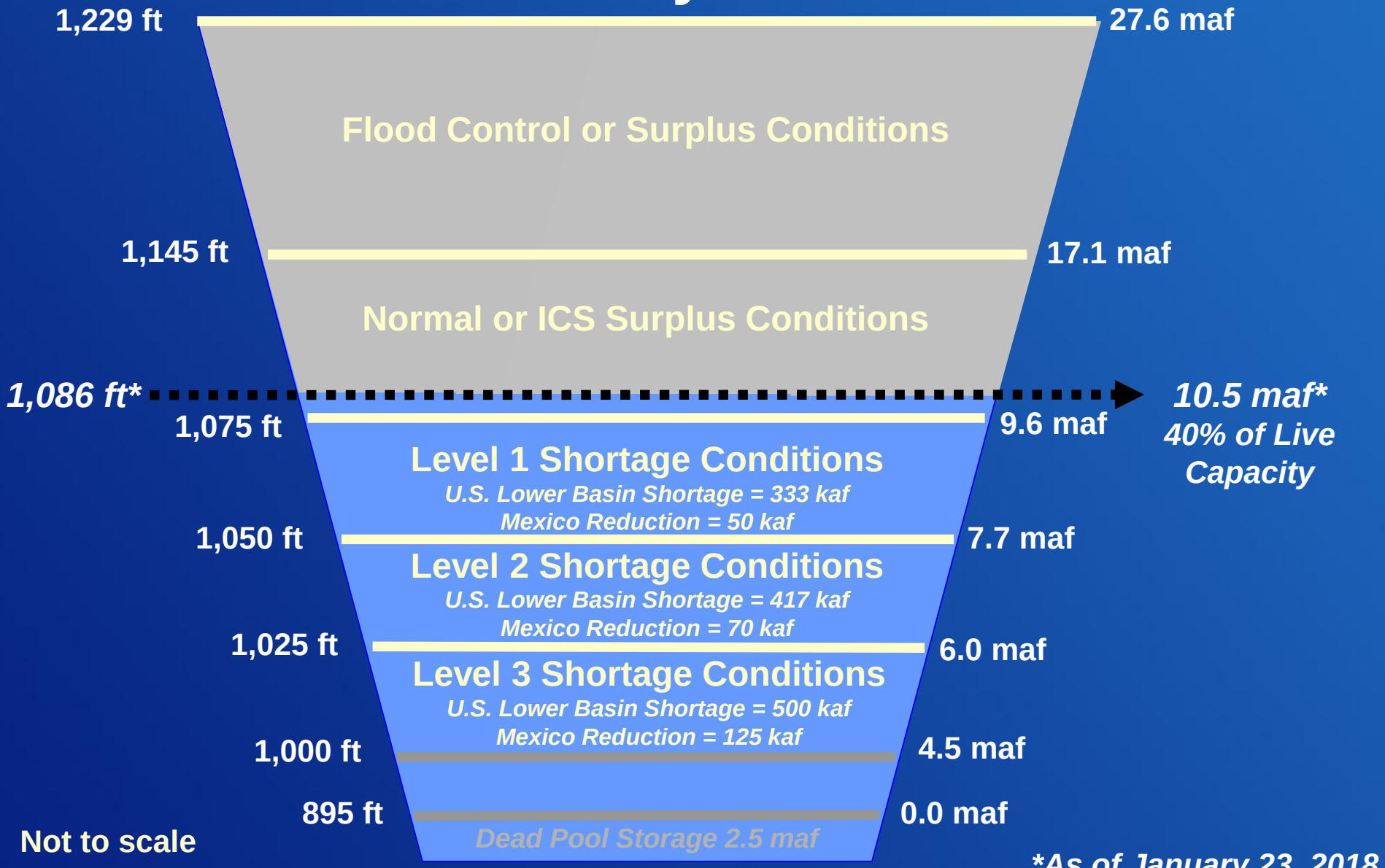
Lake Mead near Hoover Dam in 2000



Lake Mead near Hoover Dam in 2016

RECLAMATION

Lake Mead – Key Elevations[1,2]



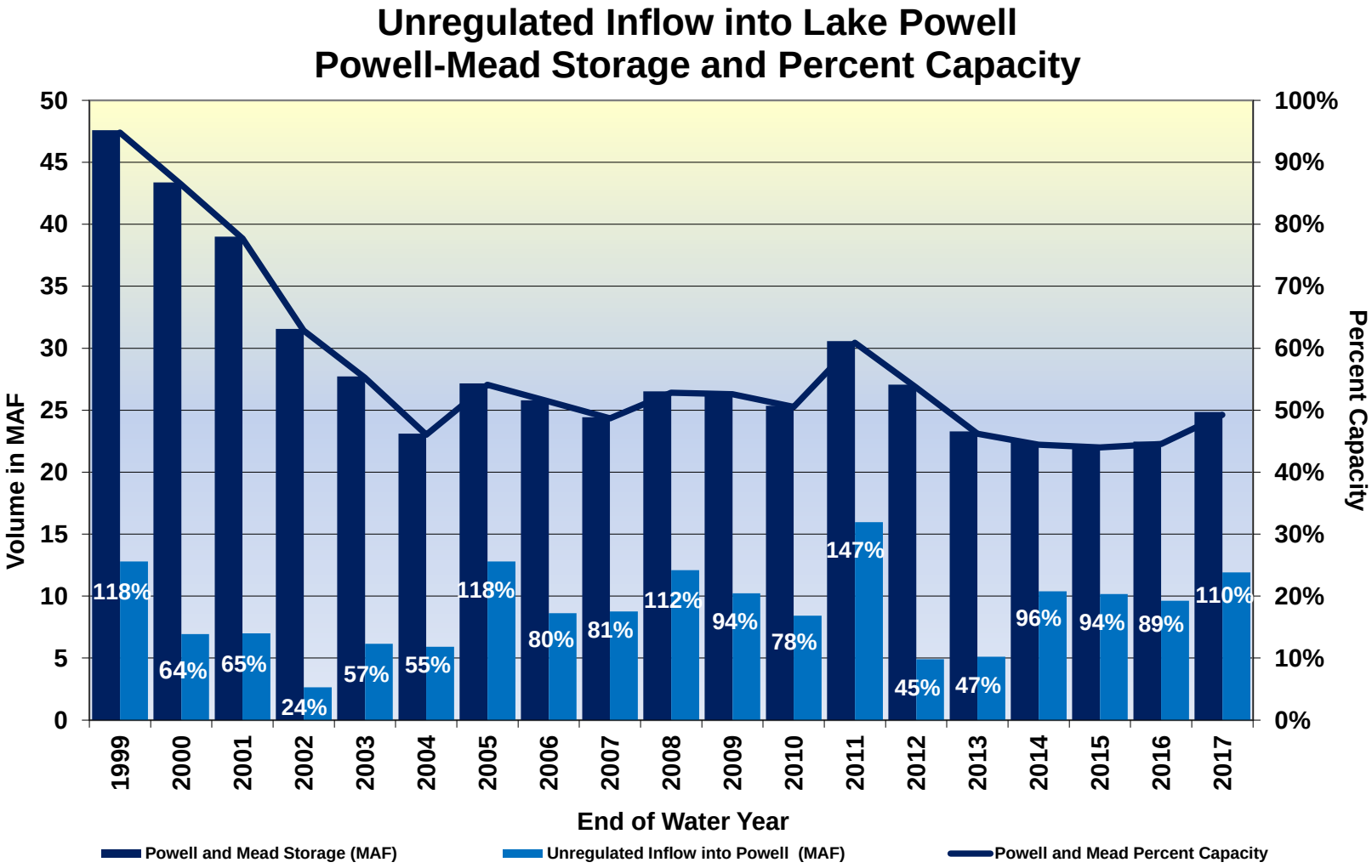
*As of January 23, 2018

[1] U.S. Lower Basin shortage volumes based on the 2007 Interim Guidelines (in place 2007-2026).

[2] Mexico reductions based on Minute 323 (in place 2017-2026).

RECLAMATION

State of the System (Water Years 1999-2017)[1]



[1] Percentages at the top of the light blue bars represent percent of average unregulated inflow into Lake Powell for a given water year. The percent of average is based on the period of record from 1981-2010.

RECLAMATION

Upper Colorado River Basin

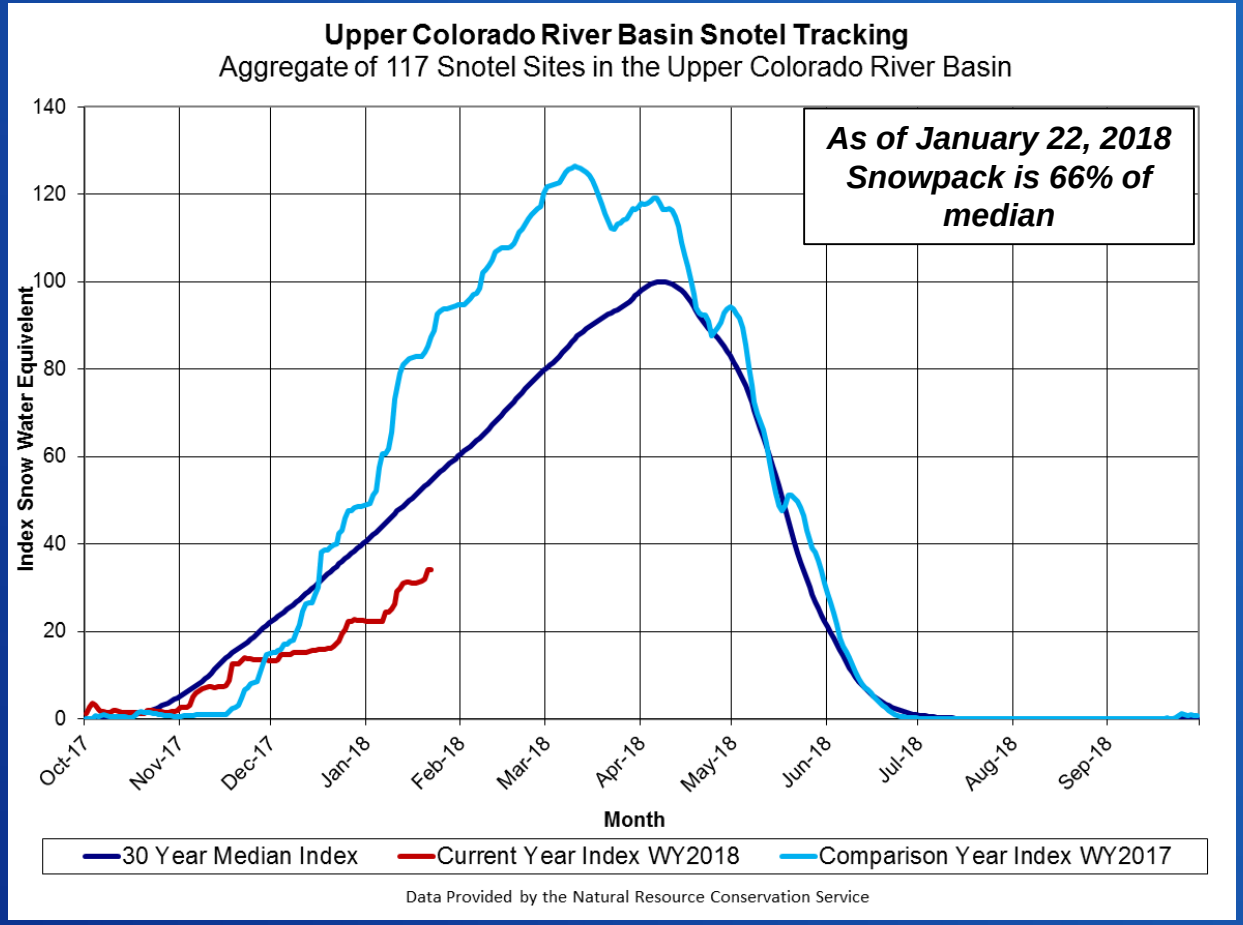
Water Year 2018 Snowpack and Forecasted Inflow

Water Year 2018

Forecasted Inflow into Lake Powell

6.7 maf

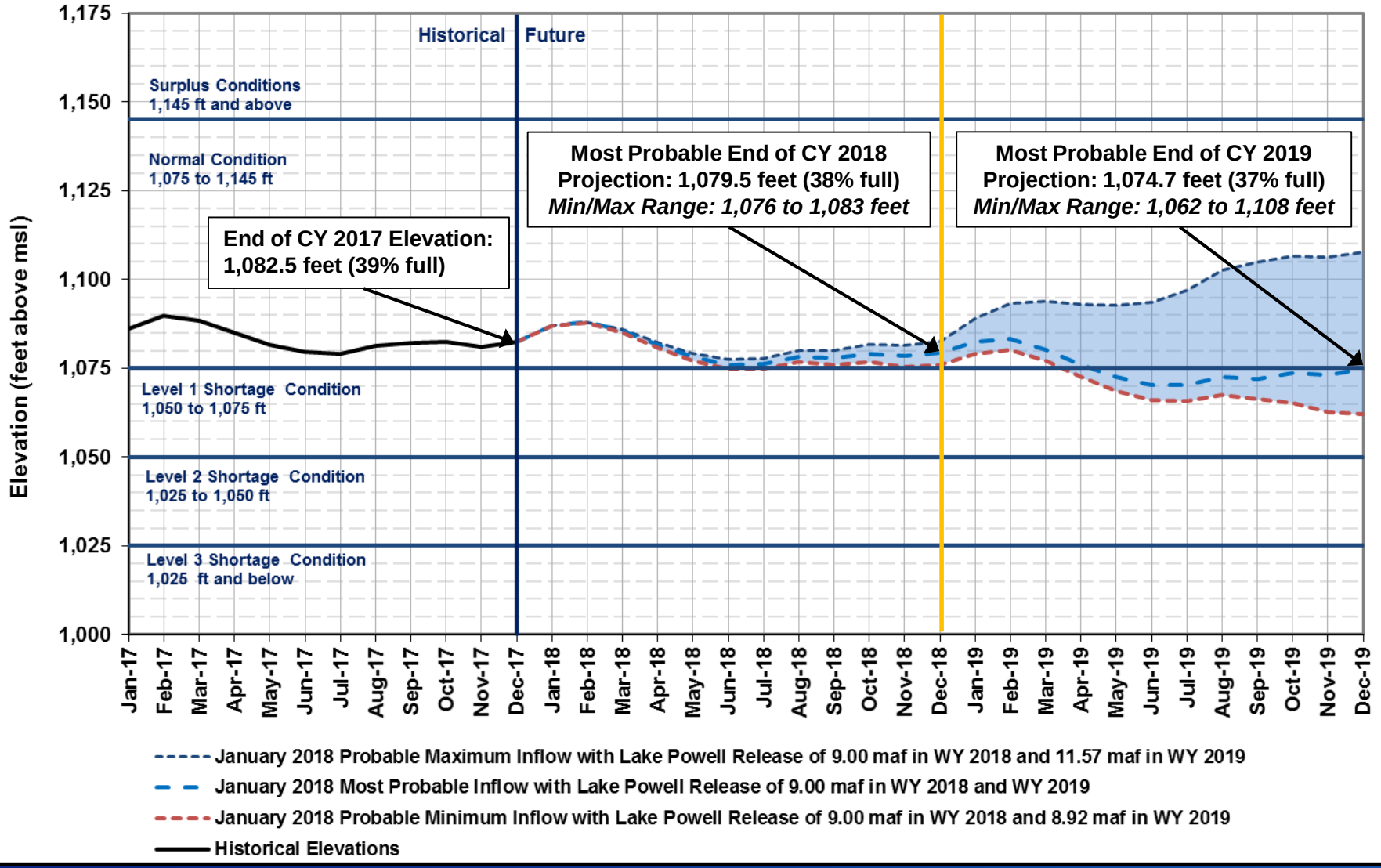
(62% of average)



RECLAMATION

Lake Mead End of Month Elevations

Projections from January 2018 24-Month Study Inflow Scenarios



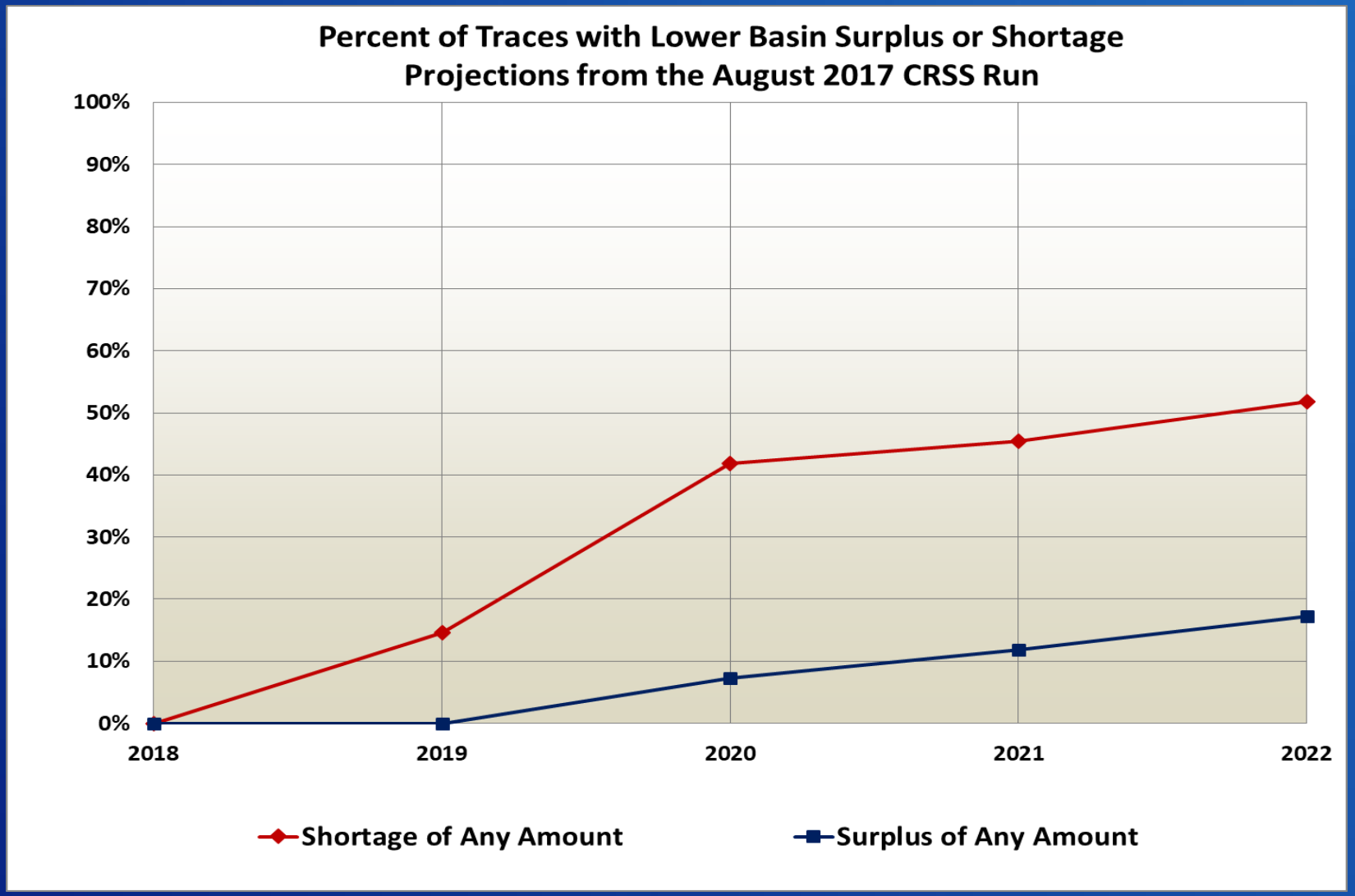
RECLAMATION

Drought Response Activities

- Through 2017, storage and conservation programs have resulted in nearly 20 feet of additional elevation in Lake Mead
  - U.S. Intentionally Created Surplus
  - Mexican deferred delivery
  - Lower Basin Drought MOU voluntary protection volumes
  - Pilot System Conservation Program
  - Other system conservation agreements
- Additional Lower Basin drought response discussions are on-going
  - Goal is to reduce the risk of reaching critically low Lake Mead elevations through voluntary actions

Lower Basin Shortage and Surplus Projections[1,2]

5-Year Outlook



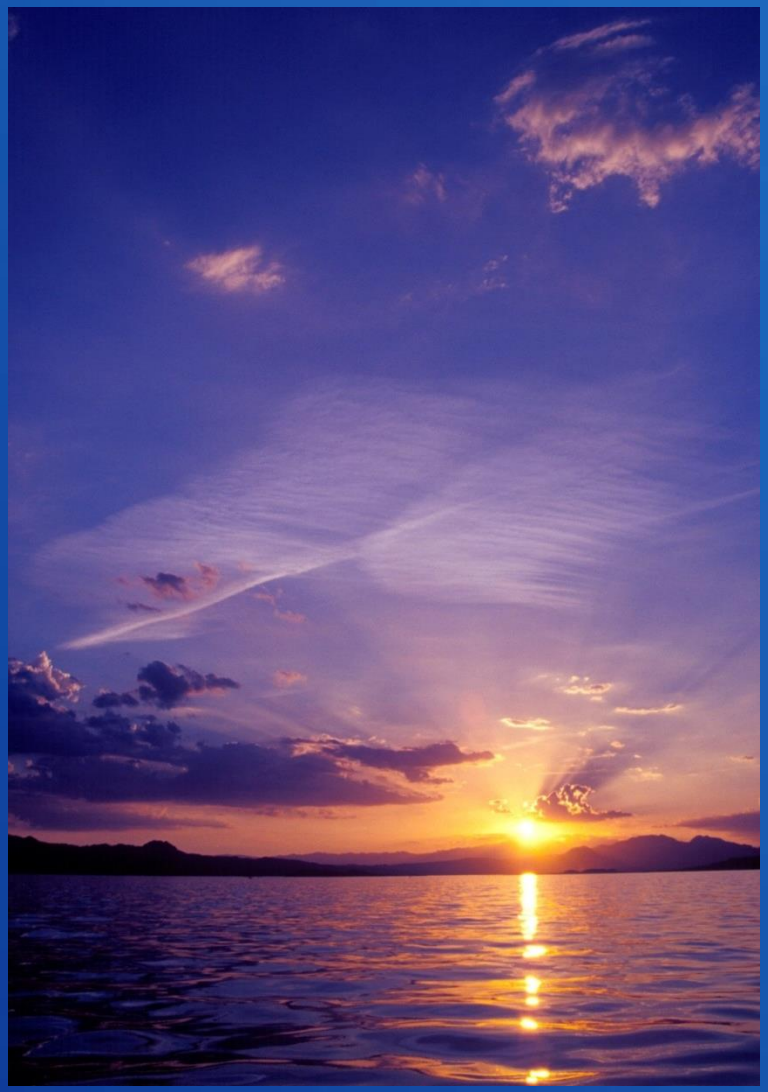
[1] Percentages computed from 110 hydrologic inflow sequences based on resampling of the observed natural flow record from 1906-2015.

[2] Percentages shown may not be representative of the full range of future possibilities that could occur with different modeling assumptions.

RECLAMATION

Summary

- The Colorado River Basin continues to experience an unprecedented drought
- Even with above average inflow and a slight improvement in system conditions in 2017, there is a chance for Lower Basin shortage as early as 2019
- Cooperation and collaboration will be key in finding sustainable solutions and addressing current and future challenges




For more information:
https://www.usbr.gov/lc/riverops.html