# Water Planning & Stewardship Committee

Item #6c

Subject: Report on Colorado River Drought Contingency Planning

Purpose: Update the Committee on the ongoing Colorado River drought contingency planning effort undertaken by the U.S. Bureau of Reclamation, Arizona, California, and Nevada, and water agencies in the three states

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Summary

The U.S. Bureau of Reclamation, Arizona, California, Nevada, and water agencies in the three states are considering ways to increase the amount of water in storage in Lake Mead by allocating voluntary reductions in use, recoverable when Lake Mead's elevation increases, and authorizing the delivery of Intentionally Created Surplus water at lower lake elevations to incentivize the storage of such water in earlier years .

# Report on Colorado River Drought Contingency Planning

Water Planning & Stewardship Committee
Item 6c
June 13, 2016

# Report Overview

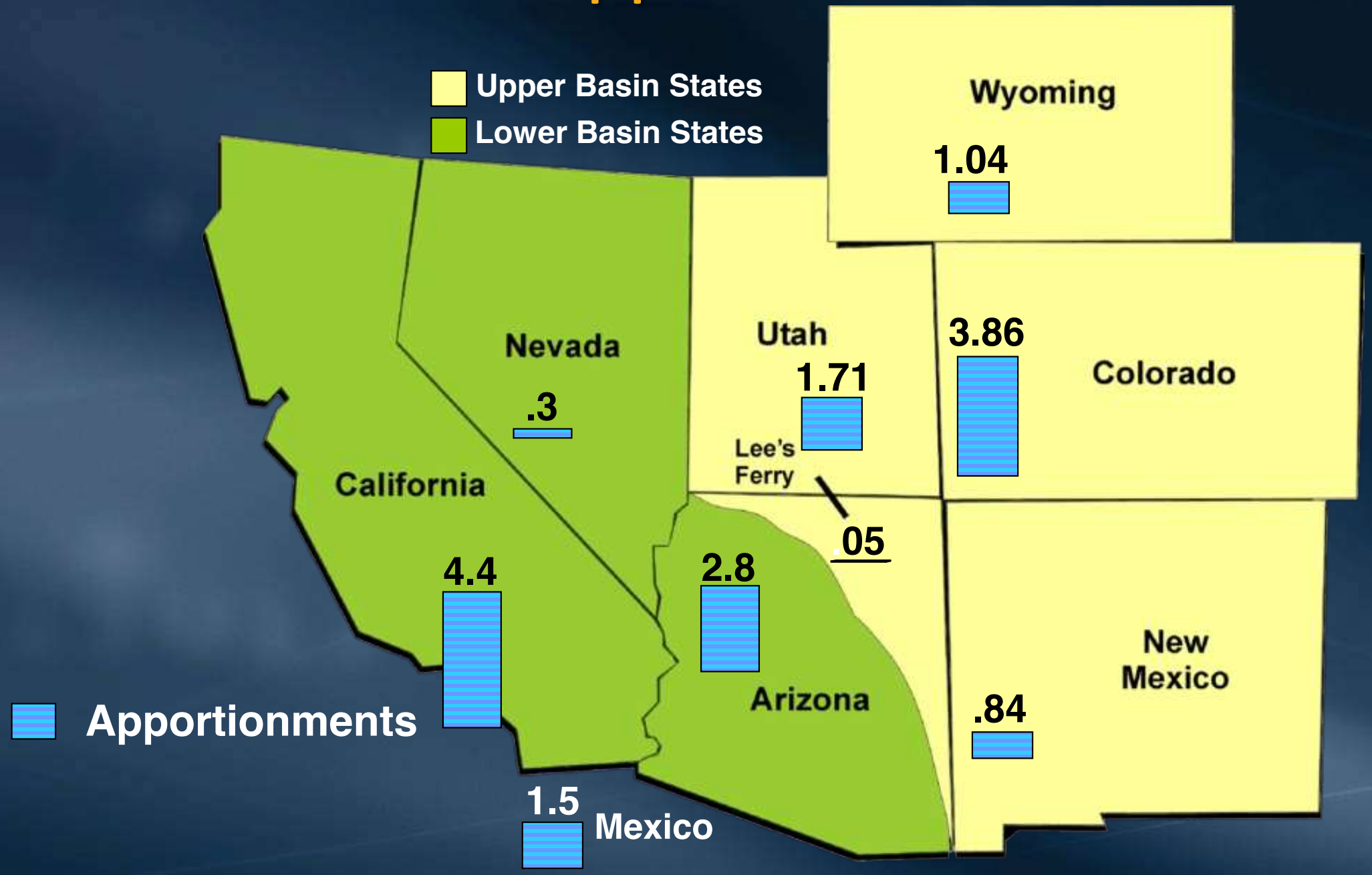
- Law of the River provisions governing allocations and shortages
- 2007 Guidelines for Lower Basin Shortages and Coordinated Reservoir Operations
- Update on drought contingency planning discussions


Colorado River Basin
WY
UT
NV
CO
NM
CA
AZ
MEXICO
UPPER BASIN
LAKE POWELL
LEE FERRY
LAKE MEAD
LAKE MOHAVE
LAKE HAVASU
LOWER BASIN
California Aqueduct
Los Angeles Aqueduct
Colorado River Aqueduct
MWD
CVWD
IID
PVID
Yuma Project
All-American Canal
COLORADO RIVER DELTA
GULF OF CALIFORNIA

# 1922 Colorado River Compact

- Divides Colorado River watershed in two basins
- Apportions 7.5 mafy each of Colorado River System to Upper Basin and Lower Basin
- Colorado River System includes tributaries
- In addition to 7.5 mafy, Lower Basin given right to increase its use of system waters by 1 mafy
- Future obligations to Mexico “shall be equally borne by the Upper Basin and the Lower Basin”

# Colorado River Apportionments (Million acre-feet)



# 1922 Compact and 1944 Treaty Allocations

| | |
|---|---|
| Upper Basin<br>Lower Basin<br>Mexico | 7.5 mafy<br>7.5 mafy + 1.0 mafy<br>1.5 mafy |
| Total | 16.5 – 17.5 mafy |

# Lower Basin Use/Mexico Obligation

| | |
|---|---|
| Arizona<br>California<br>Nevada | 2.8 mafy<br>4.4 mafy<br>0.3 mafy |
| Mexico | 0.75 mafy |
| Total | 8.25 mafy |

# 1968 Basin Project Act

- Authorizes construction of Central Arizona Project
  - In shortage, CAP is limited to assure CA deliveries of 4.4 maf
- Secretary to adopt criteria for long-range operations
  - Objective is to release 8.23 mafy from Lake Powell to meet Upper Basin's obligations for Lower Basin and Mexico
- Declares Mexico delivery is a "national obligation"
  - Subject to feasible plan to augment Colorado River – no feasible plan to date

# Colorado River System

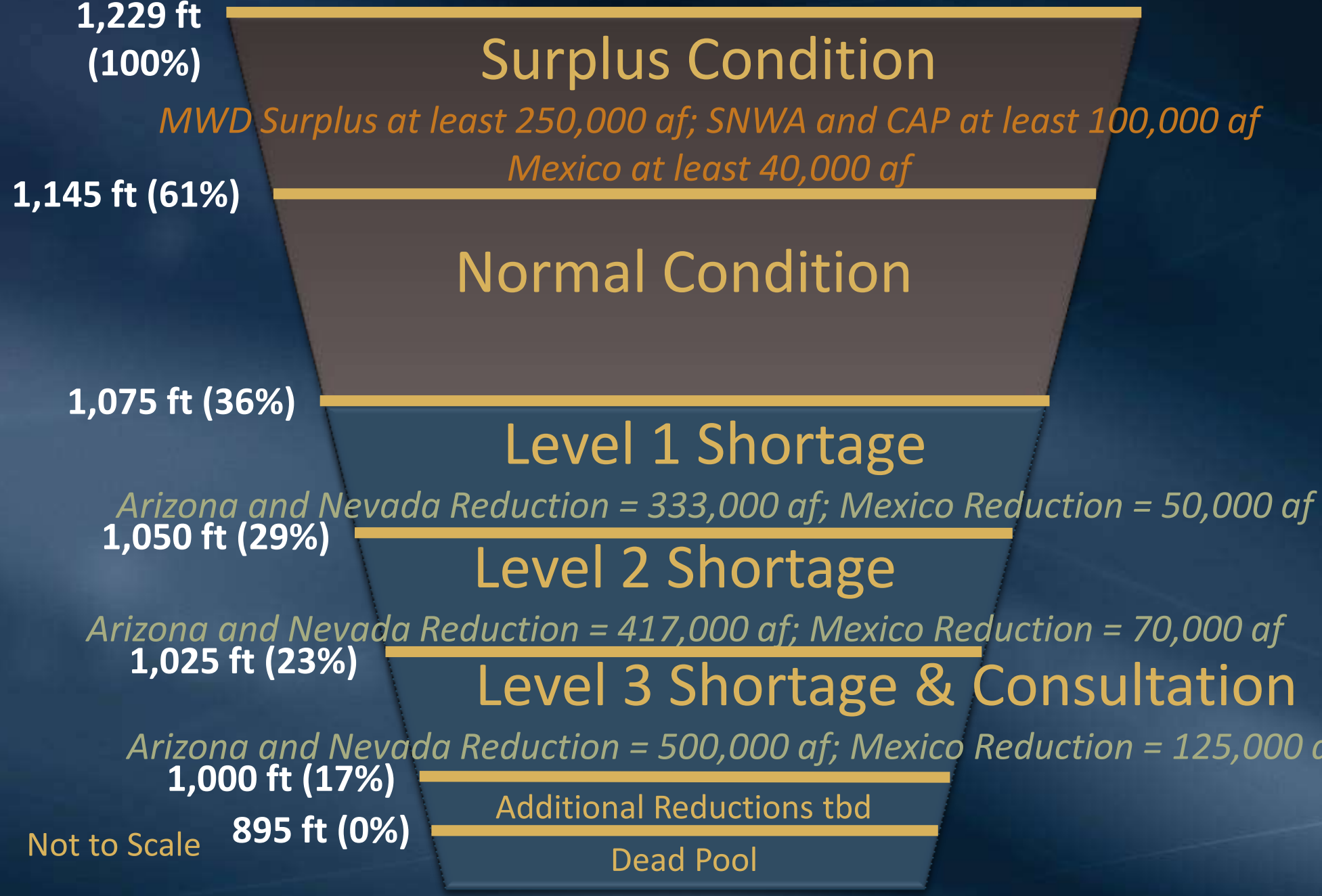
| **Mainstream Water Supply** | |
|---|---|
| Upper Basin Compact Release | 8.25 mafy |
| Tributary Inflow above Mead | 0.75 mafy |
| Total Inflow | 9.0 mafy |
| **Lower Basin Water Use and Losses** | |
| LB States Allocations under BCPA | -7.50 mafy |
| Mexico | -1.50 mafy |
| Evaporation/Conveyance Losses | -1.20 mafy |
| Net Deficit | -1.2 mafy |

# 2007 Interim Guidelines

- Improve reservoir operations
- Provide water supply predictability
- Provide mechanisms for storage and delivery of water from Lake Mead
- Avoid critically low reservoir levels
- 20 year term (through 2026)

President Roosevelt observing Lake Mead in 1935

# Lake Mead – Key Delivery Elevations[1]





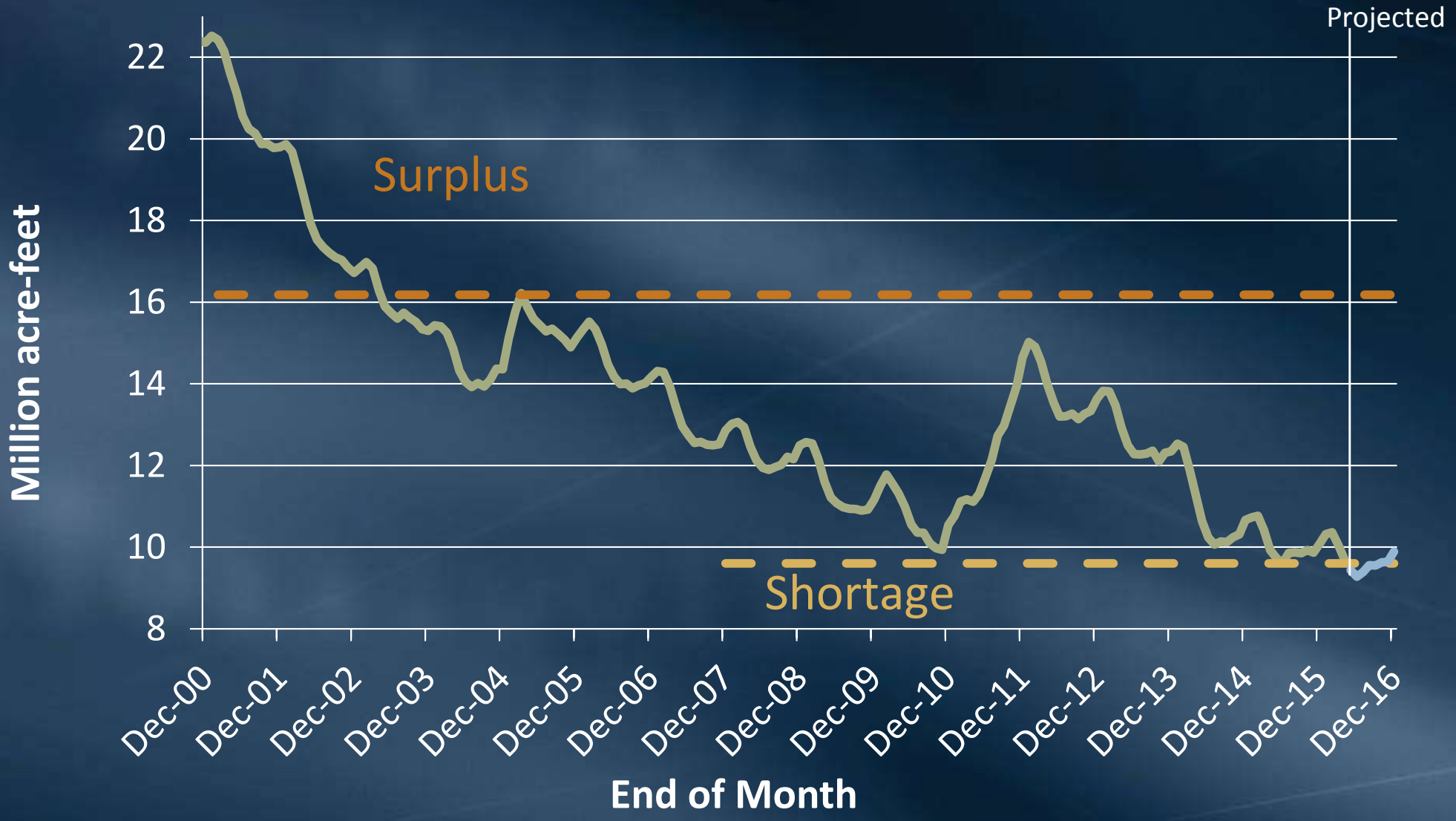

Arizona and Nevada reductions from Normal or ICS Condition based on the 2007 Interim Guidelines; Mexico reductions based on Minute 319.

# Past Efforts to Slow Lake Mead's Decline

- 2007 Interim Guidelines
  - Extra Lake Powell releases (9.0 MAF)
  - Intentionally Created Surplus
- MWD, CAP, SNWA, USBR Projects
  - Drop 2 Reservoir
  - Yuma Desalting Plant Pilot
  - Drought MOU
  - System Conservation Agreement
    (w/Denver Water and Six Agency Committee)

# Lake Mead Storage

## 2000-2016, Actual and Projected



# Probability of Lake Mead Elevation

## Less than 1,020 ft in any month

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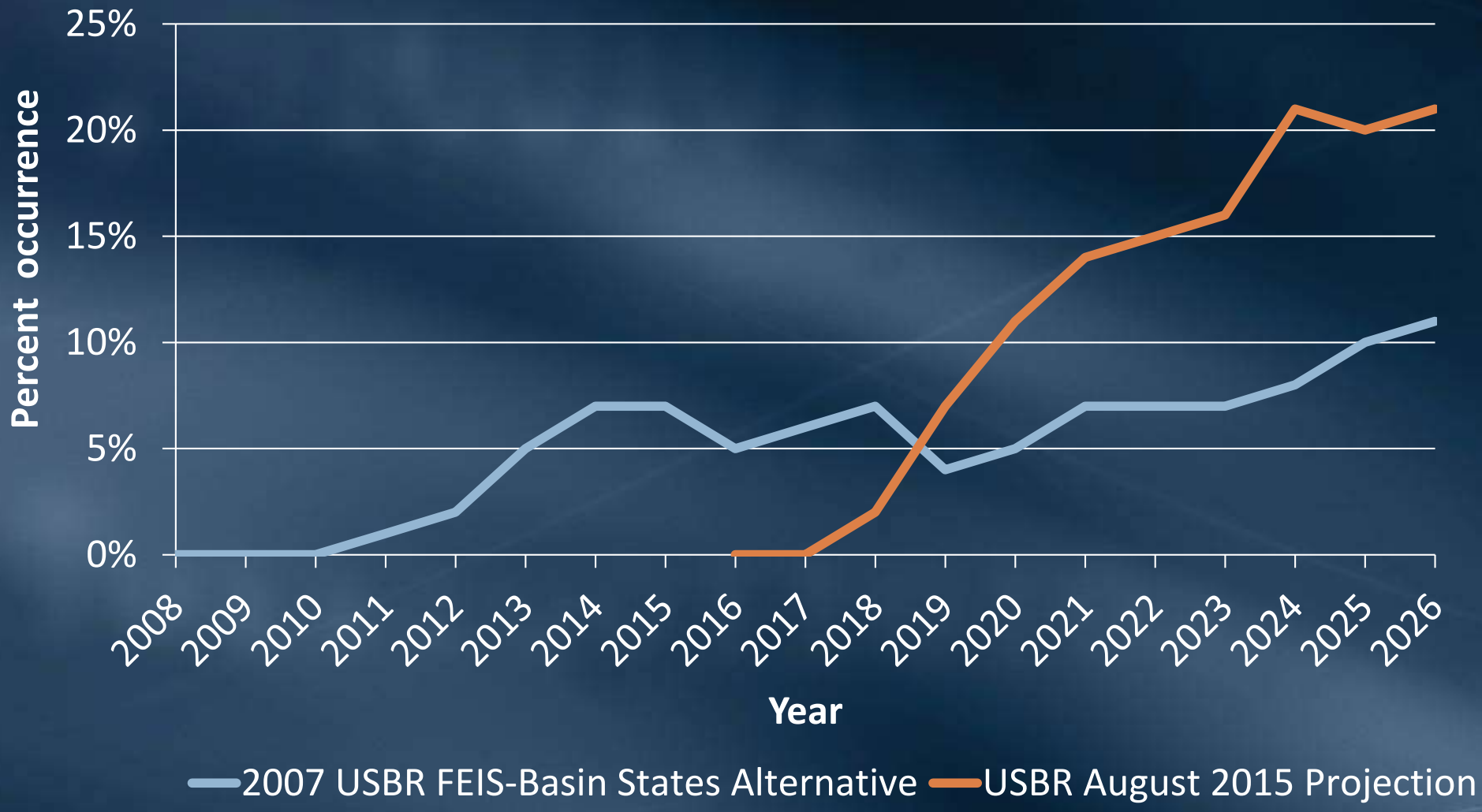


# Lower Basin Drought Contingency Discussions

- Lower Basin states concerned with increased possibility of Lake Mead falling below 1,025 feet
- Exploring additional actions to further slow Lake Mead's decline
- USBR and states have developed a concept, which is under discussion among agencies

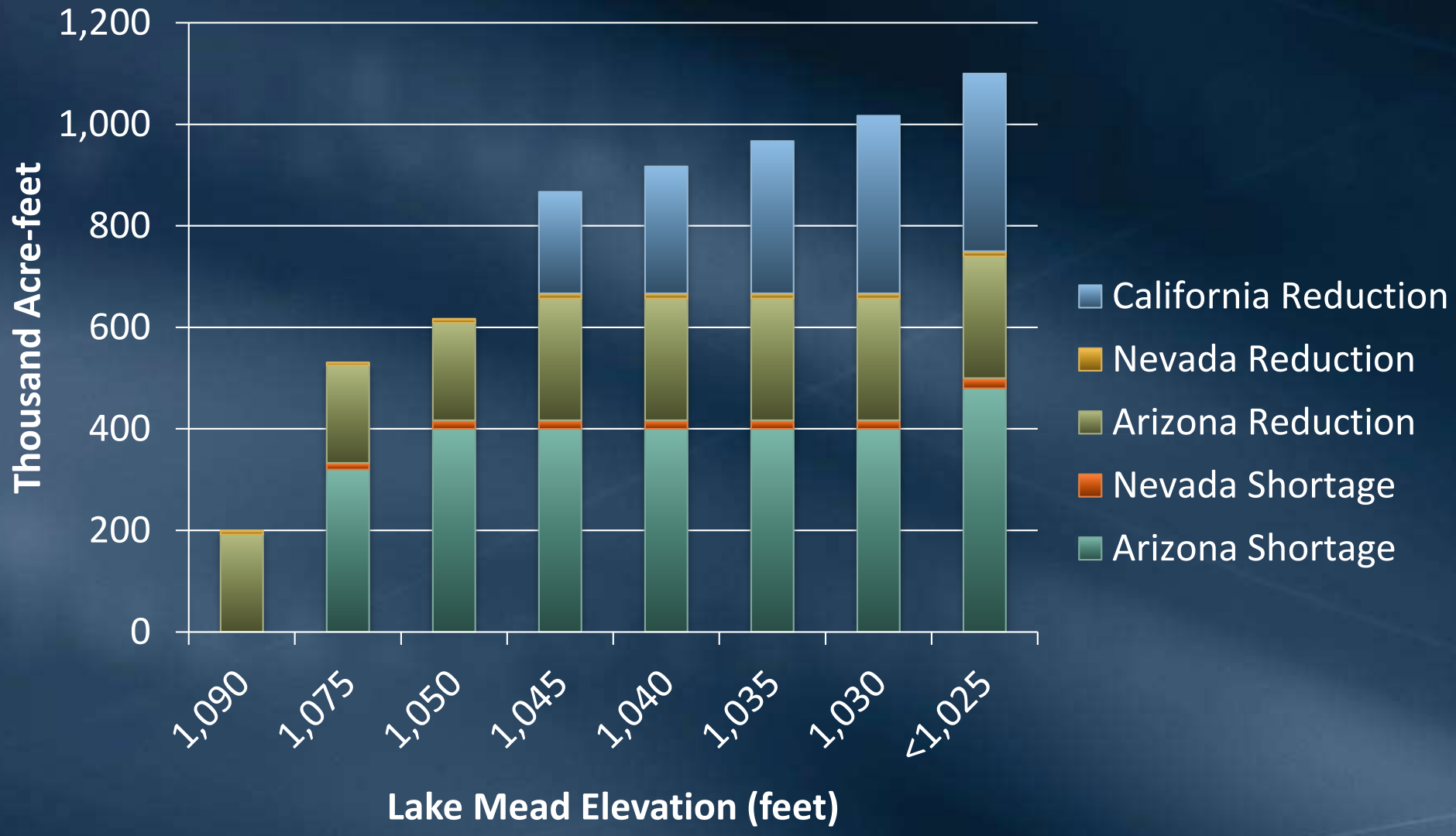
# California's Goals in Drought Discussions

- Protect California's senior priority
- Avoid future conflict from critically low storage levels in Lake Mead
- Increase flexibility to meet water needs
- Incentivize Lake Mead storage opportunities

# Major Components of Drought Discussions

- Increased flexibility to recover ICS
  - Current rules limit ICS recovery below 1,075’
  - Recovery down to 1,025’
- Voluntary reductions to each state
  - Reductions would be recoverable when Lake Mead recovers
  - AZ and NV incur additional reductions early; CA later

# Potential Voluntary Reductions



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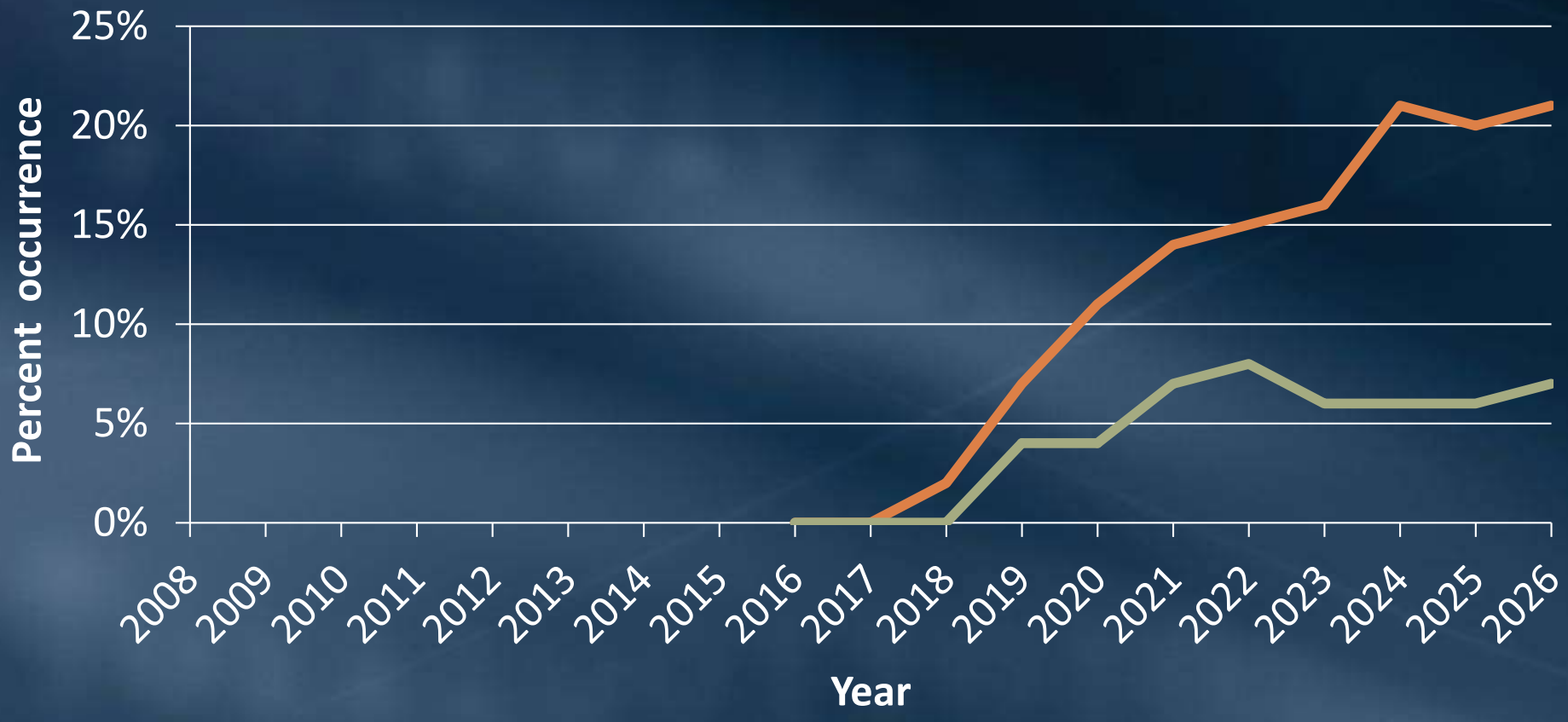
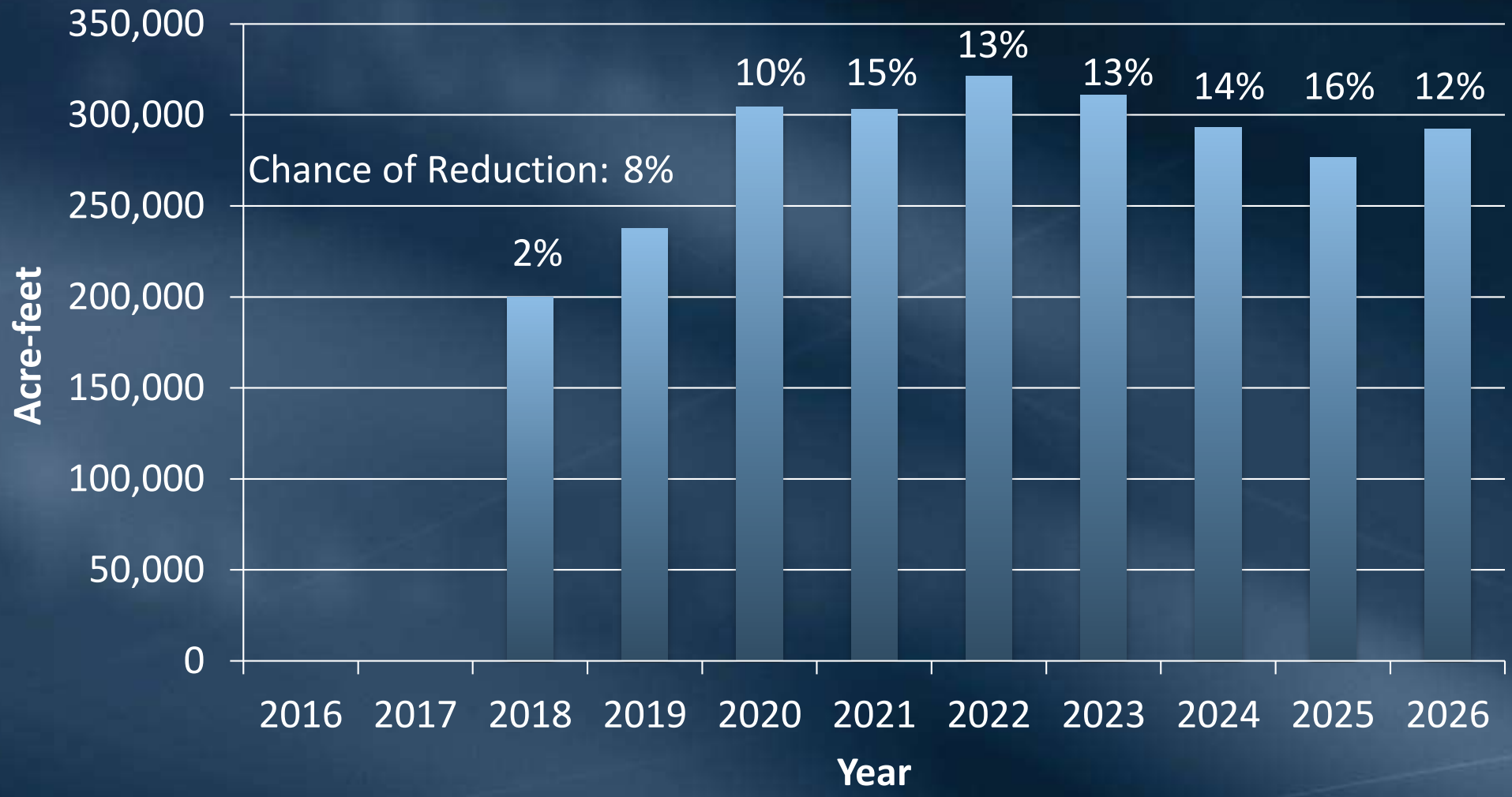


# Impacts of Conceptual Reductions to California

- Based on historic data, there would be a 71% chance that California would not contribute to reductions
- If a reduction occurs, water recoverable when Lake Mead reaches 1,110 feet before 2036
  - Modeling suggests that there would be a 23% chance of recovering water by 2036

# Frequency and Magnitude of CA Reductions



# Next Steps

- Each state to discuss sharing of reductions
- Concepts of discussions among states to be finalized
- Other issues would need to be addressed
- If agreement reached by all parties, would seek Board approval in fall of 2016


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928