Arizona WRRC Annual Conference

OUR WORN OUT WATER SECURITY BLANKETS

Anne J Castle
Getches-Wilkinson Center
University of Colorado
March 21, 2016

Reliance on Historical Record

- Look at the past to predict the future
- Stationarity

Historic Drought in Colorado River

Comparison With History
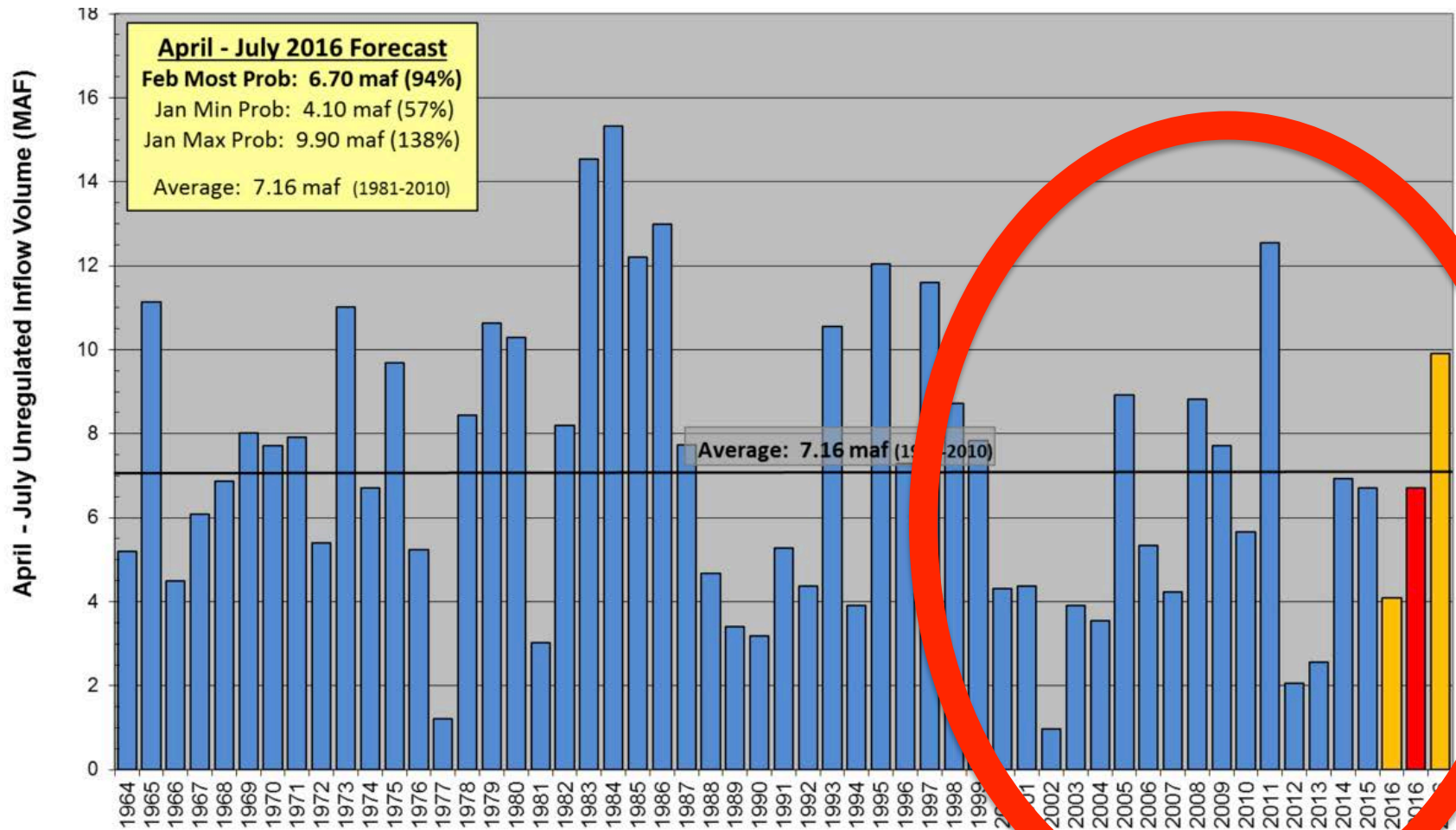
April – July Inflows to Lake Powell (Source: US Bureau of Reclamation)

Historic Drought in Colorado River
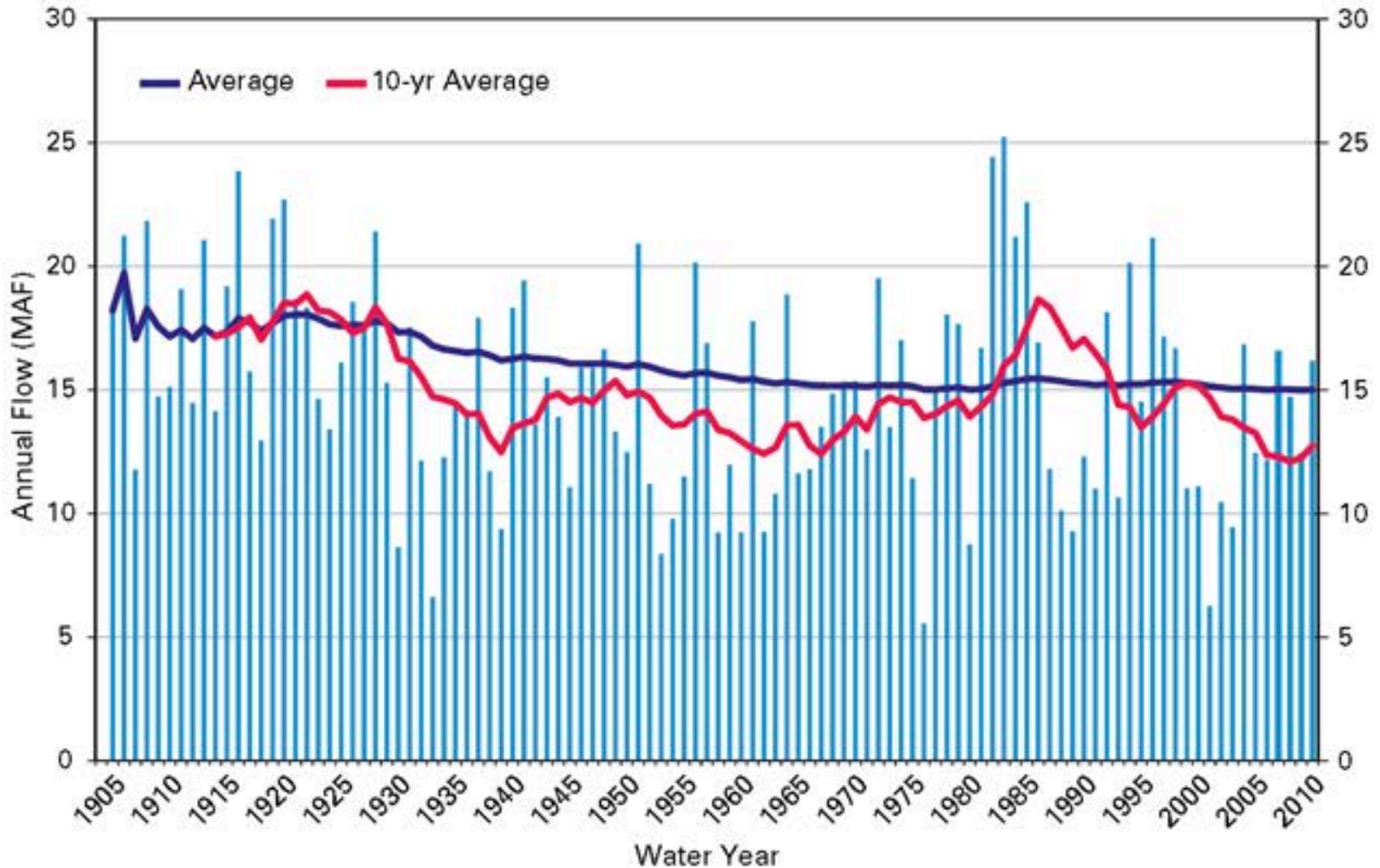
Source: U.S. Bureau of Reclamation

More Changes Predicted

- Warmer Temperatures = More Decreases in Runoff

- 5 - 20% less runoff by 2050

- Some show > 50% by 2100

- Stationarity – not a good planning tool

NATIONAL CLIMATE ASSESSMENT REGIONAL TECHNICAL INPUT REPORT SERIES

ASSESSMENT OF CLIMATE CHANGE IN THE SOUTHWEST UNITED STATES

A Report Prepared for the National Climate Assessment

Edited by:
Gregg Garfin
Angela Jardine
Robert Merideth
Mary Black
Sarah LeRoy

ISLANDPRESS
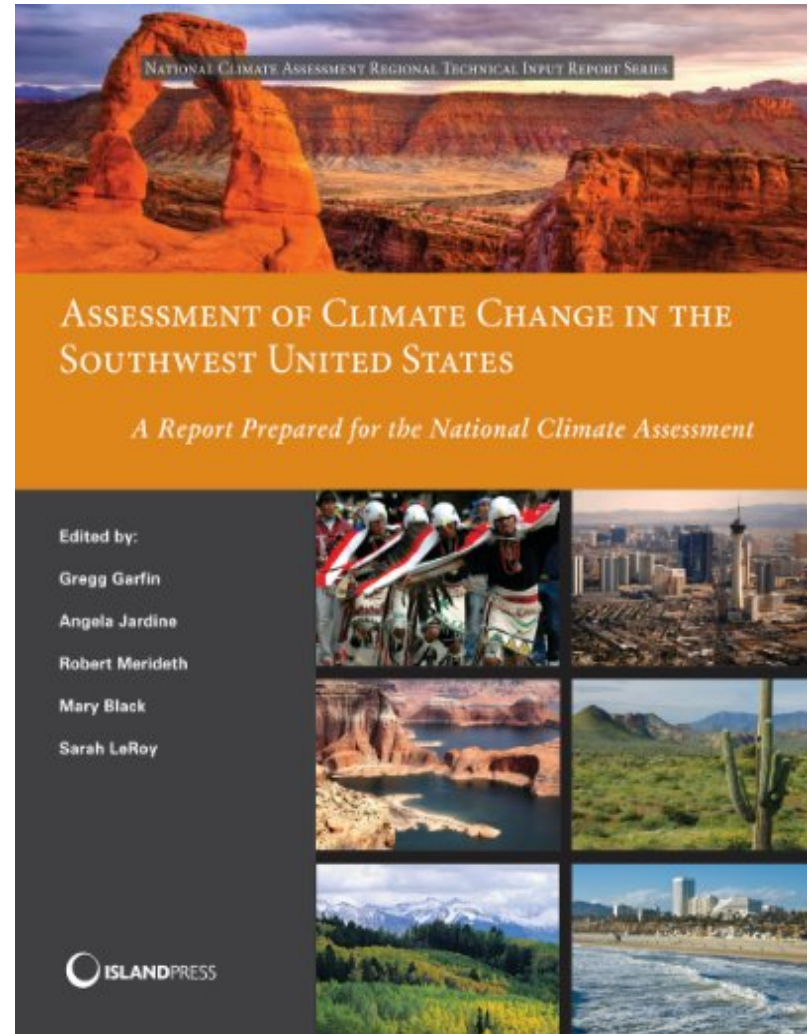
Big Reservoirs Will Protect Us

The Colorado River system has 60 million acre feet of storage capacity

Lake Mead

- Two largest reservoirs in US

- 4-5 times the annual flows

Lake Mead Annual Water Budget

Inflow = 9.0 MAF

Outflow = 9.6 MAF

Mead Evap = 0.6 MAF

Balance = -1.2 MAF

Source: US Bureau of Reclamation

Lake Mead Since 2000
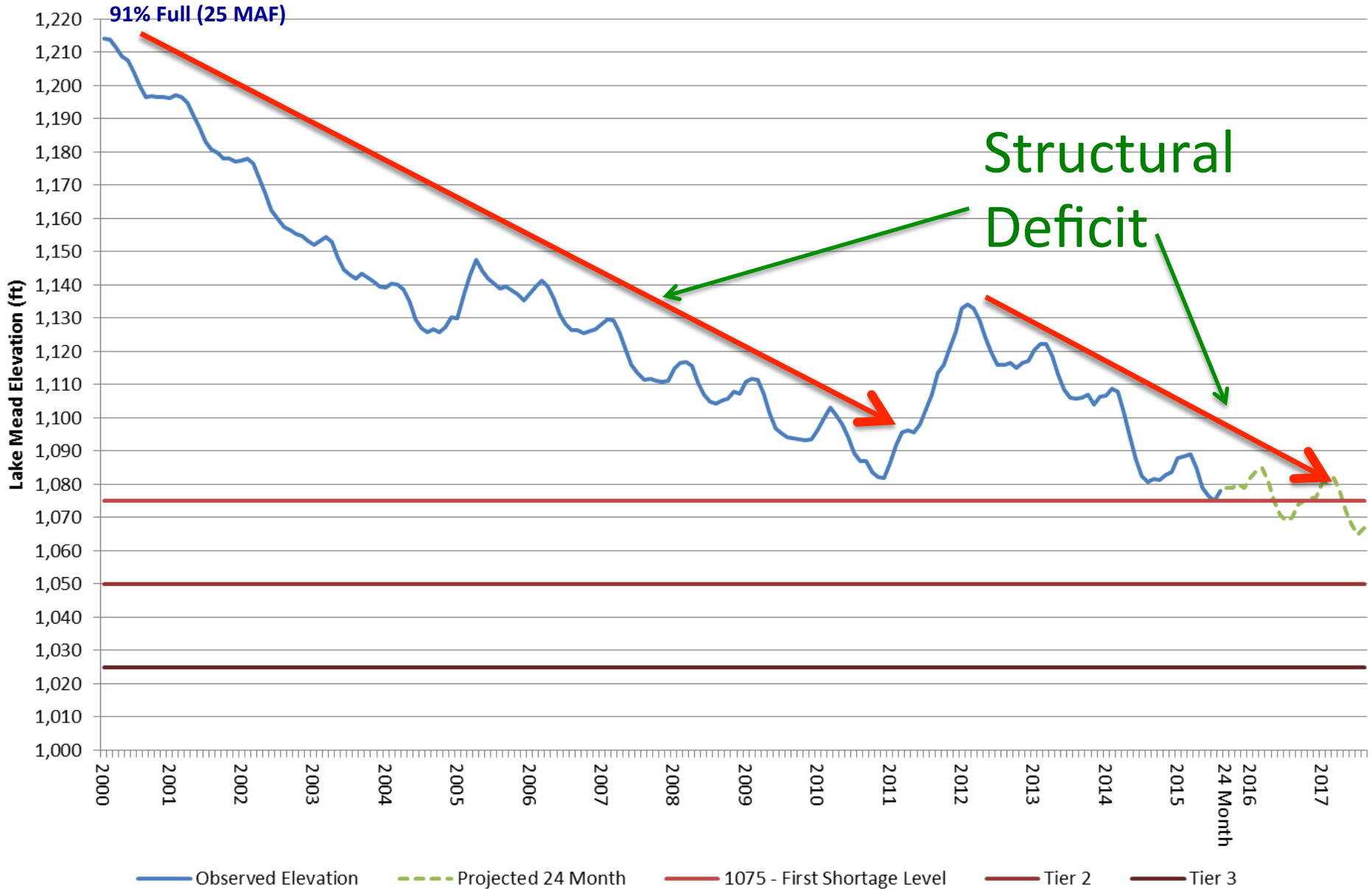
Source: Central Arizona Project

Lake Powell Annual Water Budget

Inflow (15 yr avg)   =   12 MAF

Release Obligations = 8.2 MAF

Remaining   ≈   4 MAF

UB Usage (5 yr avg) = 4.5 MAF

Balance   = -0.5 MAF

California Reservoirs

- 42 MAF surface storage
- Currently about half full
- Managed for fish and environmental purposes, not just water supply

No Injury Rule

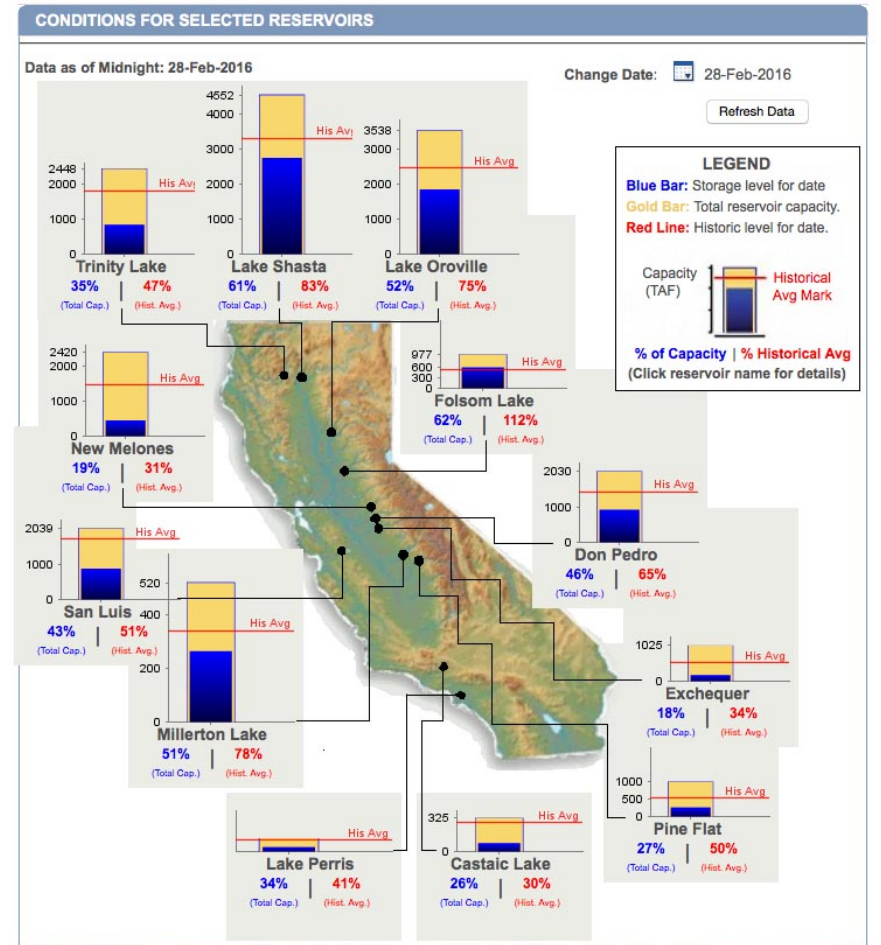- Standard used to judge a proposed change of water right
  - Change in type or place of use
- Can't injure or harm other water rights

No Injury Rule

- Water right owners are entitled to no change in stream conditions

- Essential to protection of property interests

No Injury Rule - Problems

- Proving a negative

- No recognition of uncertainty

- No scaling of process relative to potential for adverse impact

- Can create risk to water right itself

No Injury Rule - Problems

- Time consuming
- Very expensive
- Incentivizes permanent "buy-and-dry" transactions

Strategies

- Scenario planning

- Drought contingency planning

- Triggers for levels of response actions

Strategies

- Flexible processes
  - Nimble
  - Scaled to size, need, potential for injury

- New legal structures
  - Water banks
  - Water trusts
  - Split season leases

New and Better Security Blankets