



# CITIZENS' WATER ADVISORY COMMITTEE (CWAC)

Wednesday, May 4, 2016, 7:00 a.m.  
Director's Conference Room  
Tucson Water, 3<sup>rd</sup> Floor  
310 W. Alameda Street, Tucson, Arizona

## Legal Action Report

### 1. Roll Call:

The meeting was called to order by CWAC Chair Brian Wong at 7:03 a.m. Those present and absent were:

#### Present:

Brian Wong	Chairperson, Representative, City Manager
Catlow Shipek	Representative, City Manager
Mark Taylor	Representative, City Manager
Chuck Freitas	Representative, City Manager
Mitch Basefsky	Representative, City Manager
Jean McLain	Representative, City Manager
Placido dos Santos	Representative, City Manager
Mark Stratton	Representative, City Manager
Ryan Lee	Representative, Ward 1
Michelle Crow	Representative, Ward 2
George White	Representative, Ward 4
Mark Lewis	Vice Chair, Representative, Ward 5
Kelly Lee	Representative, Ward 6 (arrived after roll call)
Timothy Thomure	Tucson Water, Director, Ex-Officio Member

#### Absent:

Mark Murphy	Representative, Mayor
Jackson Jenkins	Pima County Regional Wastewater Reclamation Department Director, Ex-Officio Member

#### Tucson Water Staff Present:

Sandy Elder	Deputy Director
Scott Clark	Deputy Director
Jeff Biggs	Water Administrator
Britt Klein	Water Administrator
Pat Eisenberg	Water Administrator
Andrew Greenhill	Intergovernmental Affairs Manager
Wally Wilson	Chief Hydrologist
Fernando Molina	Water Program Superintendent
Daniel Ransom	Water Conservation Supervisor
Candice Rupprecht	Public Information Specialist
Johanna Hernandez	Staff Assistant
Kris LaFleur	Staff Assistant
Beth Kleiman	Hydrology Intern

#### Others Present:

Chris Avery	City of Tucson, Attorney's Office
Amy Stabler	City of Tucson, Ward 6
Mike Block	Metro Water
Colby Bowser	Pima County Regional Wastewater Reclamation Department
Amy McCoy	Ecosystems Economics
Kerry Schwartz	University of Arizona
Madeline Ryder	University of Arizona

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2. **Announcements** – Vice Chair Lewis commented on his observation of a water audit process and recommended members take advantage of this educational opportunity; Chair Wong presented former member Amy McCoy's appreciation award (taken out of order, after Item 3). Member Freitas briefly discussed the Beyond the Mirage film (taken out of order, with Item 9).
3. **Call to Audience** – Metro Water's Mike Block provided a fact sheet regarding the Bureau of Reclamation's Lower Basing Study project, and announced an opportunity for interested parties to be added to a notification list, additional information will be available after the meeting.
4. **Review of April 6, 2016 Legal Action Report and Meeting Minutes** – Committee Member Freitas motioned to approve the Meeting Minutes of April 6, 2016. Vice Chair Lewis seconded. Motion passed unanimously by a voice-vote of 11-0.
5. **Director's Report** –

Member Crow arrived at 7:06 a.m.

Member Ryan Lee arrived at 7:08 a.m.

- a. **Mayor and Council Items** – The Mayor issued a Proclamation regarding Drinking Water Week at the May 3<sup>rd</sup> Mayor and Council, Tucson Water is running a photo contest on social media as part of the recognition. A public hearing will be held on May 17<sup>th</sup> regarding Tucson Water's proposed rates, the Town Halls were completed successfully, with 30 or so attendees and great questions.
- b. **Informational Items** – Tucson is celebrating 15 years of successful Clearwater production, a commemoration event will held on May 25<sup>th</sup>.

Colorado River negotiations are ongoing; an op-ed was printed on Sunday discussing Tucson's position.

The City of Tucson will be sending a delegate to the One Water Summit in June to discuss water management.

Tucson Water's 84 inch pipeline will be shut-down for repairs 9<sup>th</sup>-20<sup>th</sup>, the Utility will be supplementing deliveries with groundwater during repairs.

### 6. Subcommittee Reports –

**Technical, Planning, and Policy Subcommittee** – On behalf of Subcommittee Chair Murphy, Subcommittee Member Basefsky reported that the TPP received a presentation regarding rainwater harvesting and green infrastructure.

**Finance Subcommittee** – Subcommittee Chair Stratton reported that the Subcommittee will meet on May 26<sup>th</sup>; the Subcommittee will discuss scheduling, process, and other efforts.

**Conservation and Education Subcommittee** – Subcommittee Chair Shipek reported that the Subcommittee will meet next Tuesday; the Subcommittee will discuss the meaning and measurement of conservation.

**Bill Redesign Ad-Hoc Subcommittee** – Subcommittee Chair Freitas reported that the Subcommittee met and discussed the focus group results, saw various samples, and provided further input. The Subcommittee will meet once again before bringing the sample to the full Committee.

**RWRAC Update** – Member Taylor reported that the RWRAC approved the 2017 financial plan, including a recommended 4% increase that is going through the process.

7. **Measuring Conservation** – Amy McCoy presented a PowerPoint regarding measuring conservation. Mrs. McCoy discussed what conservation means in relation to current conditions of CAP shortage, drought, and the need for CAP system users to support the system. CAP curtailments and shortage conditions were reviewed. Reductions in municipal demand increase the flexibility of water resource management. If one gallon per capita per day equals 1200 AF then conservation can be measured in terms of how it can help adapt to possible CAP curtailments. All sources of water (CAP, groundwater, reclaimed, effluent, rainwater, stormwater) are one holistic resource that together provides flexibility in the management of water resources, in conjunction with excess water created by reductions in demand, and outreach and investment in conservation. The option of shifting excess water to support the CAP system, and how that will benefit the users of the CAP system, was

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discussed. Several questions were purposed for further thought and discussion. The Committee discussed the value and relative cost of conservation.

8. **Drought Presentation**<sup>1</sup> – Member Basefsky presented a PowerPoint on CAP Water Issues. The recent study of Colorado River water supply and demand was reviewed. The study reflected that demand eventually exceeds supplies. The gap between supplies and demand is 3.2 million AF. Factors of the imbalance include the long-term 16-year drought, climate change, and the structural deficit of the system. These factors result in a 10 to 12-foot annual decline in Lake Mead. Current provisions for CAP curtailments in the event of a declaration of shortage were discussed. The current state of the river reservoirs, and future elevation projections were discussed. Projections reflect possibilities of shortage in 2016, and increased probability in 2017. Risks of elevation drops include delivery curtailments, reductions in hydropower generation, intervention by the Secretary of the Interior, cavitation risk for hydropower generation, inability to meet deliveries, and possible dead pool. Options for Secretary intervention were discussed in regards to following the Law of River and/or Exercising New Authority. Adaptations strategies include groundwater storage, lower basin drought response Memorandum of Understanding, pilot system conservation projects, bypass and excess flow workgroups, augmentation projects, and lower basin drought contingency plans. Long-term and short-term options for addressing the structural deficit were discussed. The goal is to bend the curve of decline in elevation of Lake Mead. The drought contingency plan currently being considered would include all lower basin states and the Bureau of Reclamation voluntarily reducing demands on the River to protect elevations of 1025 feet and over. This plan would overlay the current shortage sharing agreement.

Tucson Water staff member Wally Wilson provided a PowerPoint on Tucson Water's reliability with consideration to anticipated shortage. General CAP allocations and priorities were discussed. The allocations and priorities in the Tucson Active Management Area (AMA) specifically were reviewed. The effect of Tier 1-3 shortages on the Tucson AMA was discussed. Projections based on a set of assumptions were made regarding possible future build out, expected build out demand, and supplies to meet that demand with presumed CAP reductions were presented. These projections don't reflect the need to supplement CAP supplies until 2040. At that point, Water Bank water, Long-Term Storage Credits, recycled water, and groundwater are all possible alternative supplies to CAP water.

9. **Future Meeting / Agenda Items** – See projected agenda.
10. **Adjournment** – Meeting was adjourned at 9:09 a.m.

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<sup>1</sup> Member Freitas departed at 8:40 a.m. and returned at 8:43 a.m.

## Lower Santa Cruz River Basin Study

**Contact:** Eve Halper, 623-773-6279, ehalper@usbr.gov

**Background:** For over 60 years, residents of the Lower Santa Cruz River (LSCR) Basin in Southern Arizona relied on groundwater to meet most water supply needs, with pumping greatly exceeding replenishment. In 1993, the Central Arizona Project (CAP) began delivering Colorado River water to the LSCR Basin. However, there are still significant supply-demand imbalances due to a lack of water delivery infrastructure, insufficient recharge and recovery capacity, and the cost of constructing new facilities.

Uncertainty about the future compounds these issues. The CAP has junior priority rights on the Colorado River; thus CAP sub-contractors will bear the brunt of imminent shortages. Climate change poses additional threats and may aggravate the impacts of future droughts. The 3-year study's overarching goal is to identify where physical water resources are needed in order to mitigate supply-demand imbalances and to develop a strategy to improve water reliability for the municipal, industrial, agricultural, cultural and environmental sectors.

The LSCR Basin Study will be a technical assessment and will not make statements of policy or future commitments by Reclamation or its cost-share partners.

**Cost-Share Partners:** Southern Arizona Water Users Association, Pima Association of Governments (PAG), Cortaro-Marana Irrigation District, Arizona Department of Water Resources (ADWR), Central Arizona Water Conservation District, and the University of Arizona.

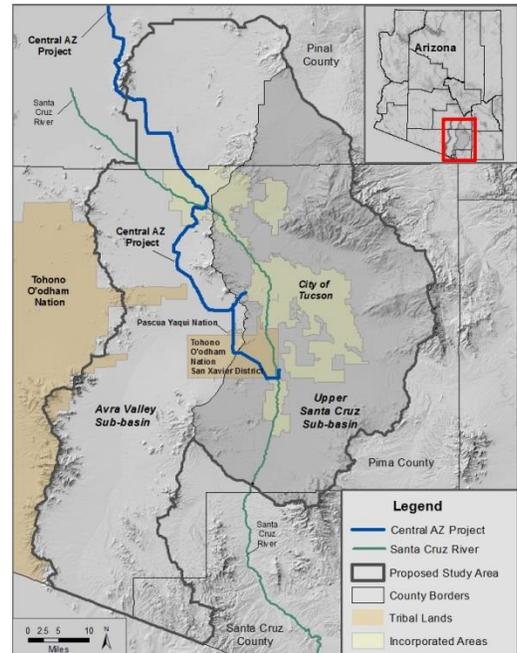
**Study Area:** The LSCR Basin Study Area encompasses the groundwater basin designated by ADWR as the "Tucson Active Management Area" (TAMA). Most water use takes place between the Pima County / Santa Cruz County line south of the Tucson metropolitan area, and the Pima County / Pinal County line to the north.

### Study Objectives include:

- Development of future demand projections under a variety of growth scenarios
- Selection of relevant climate change scenarios, including Colorado River shortages.
- Update of the ADWR TAMA Groundwater Model to evaluate effects of scenarios on groundwater levels, including shallow groundwater (riparian) areas
- Development of system reliability metrics to identify infrastructure vulnerabilities
- Formulation of adaptation and mitigation strategies to address water supply vulnerabilities and preserve groundwater dependent (riparian) ecosystems.
- Assessments of adaptation and mitigation strategies and trade-off analysis

**Public Involvement:** The PAG will be the lead agency for stakeholder involvement. A Stakeholder Advisory Team will be coordinated through PAG's Watershed Planning Subcommittee or Environmental Planning Advisory Committee. There will also be public meetings, news releases, informational mailings, a study website and an email address for submission of comments.

**Cost:** The total cost of the 3 year study is \$785,750. Cost-share partners will contribute \$393,000 of in-kind services (e.g. staff time, facilities). Reclamation's contribution of \$392,750 may only be used to support work performed by Reclamation or its contractors.

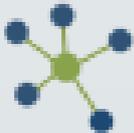




# Water Conservation: Beyond the Numbers

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CWAC | May 4, 2016

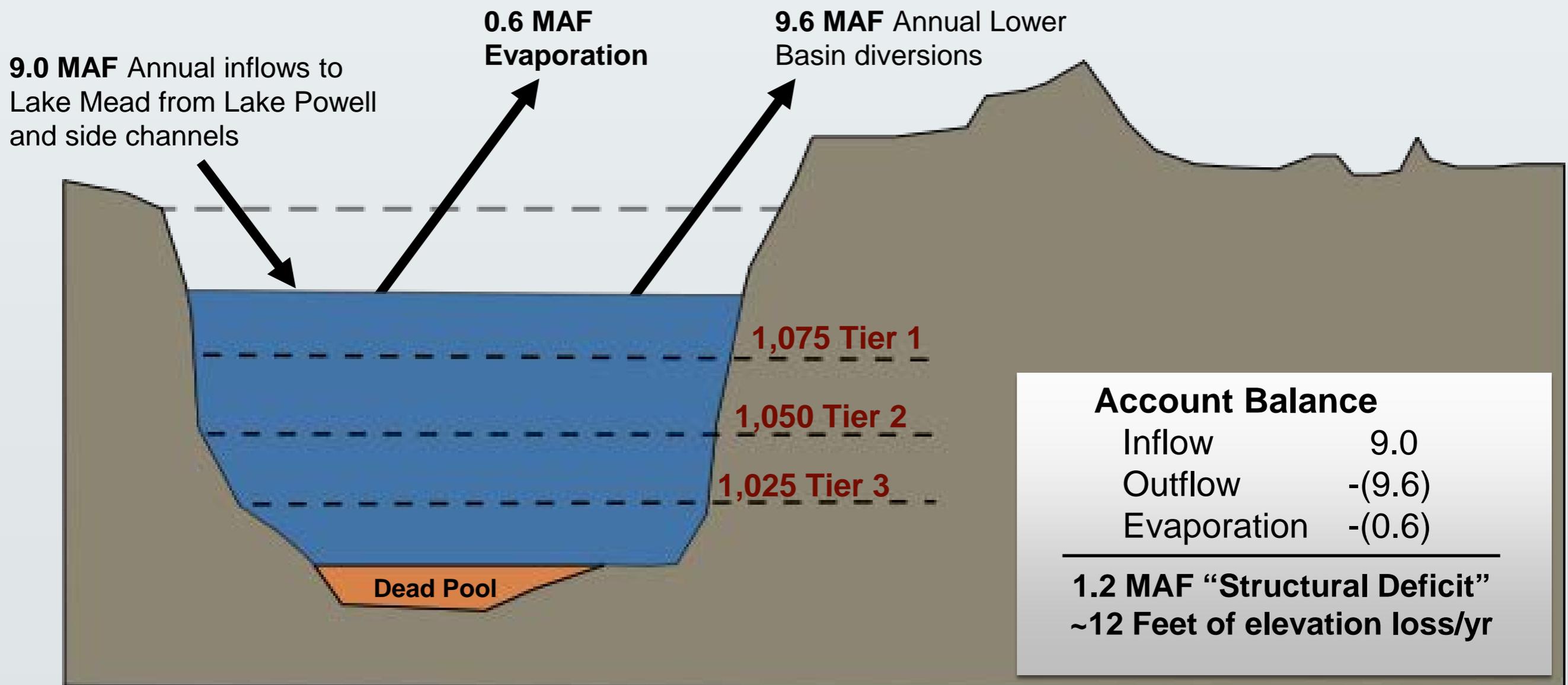
ecosystem  
economics 

*Amy McCoy*

# Emerging Basin Dynamics



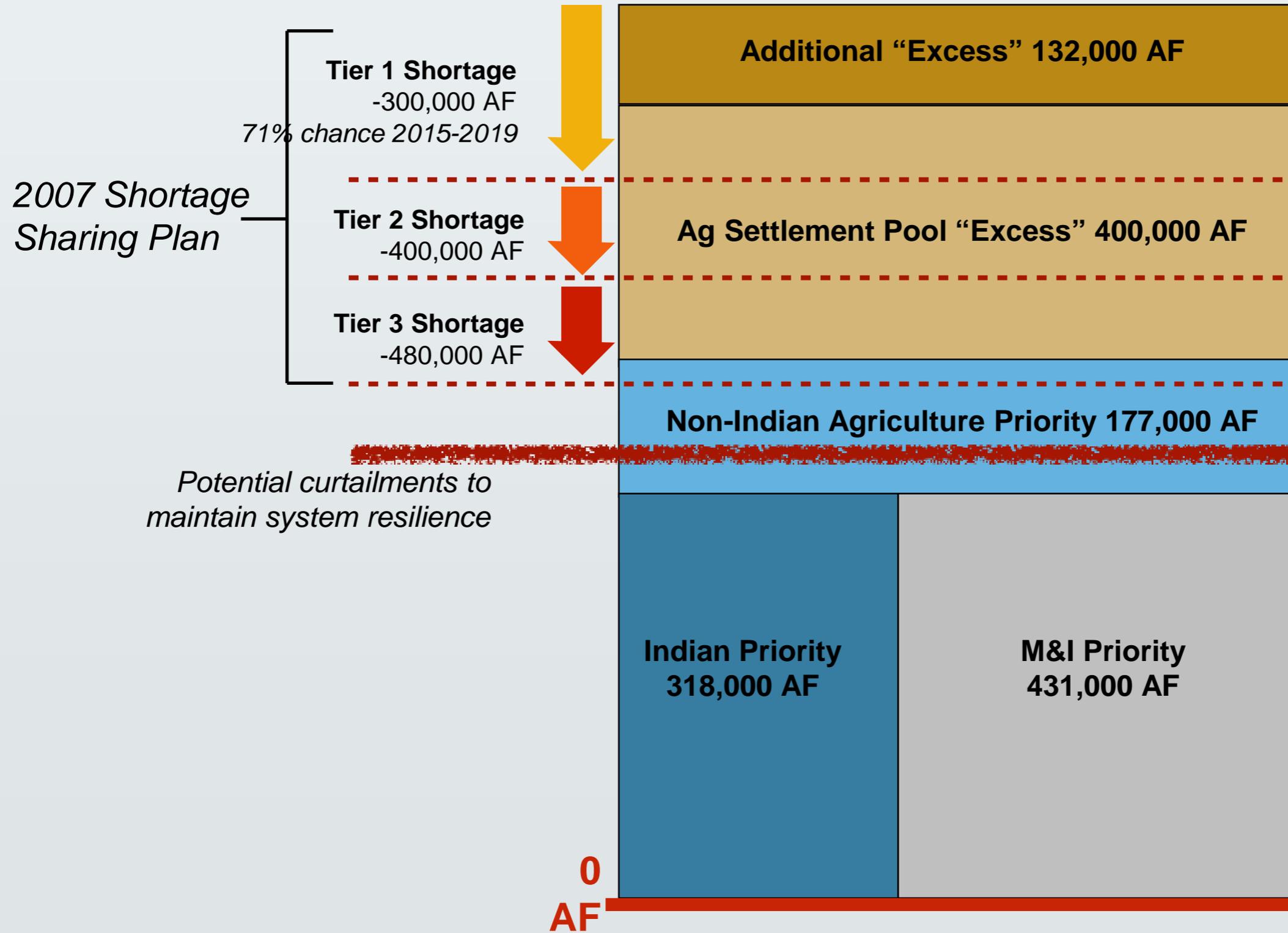
Lake Mead Structural Deficit  
Current Elevation: 1,078ft



# Emerging Basin Dynamics



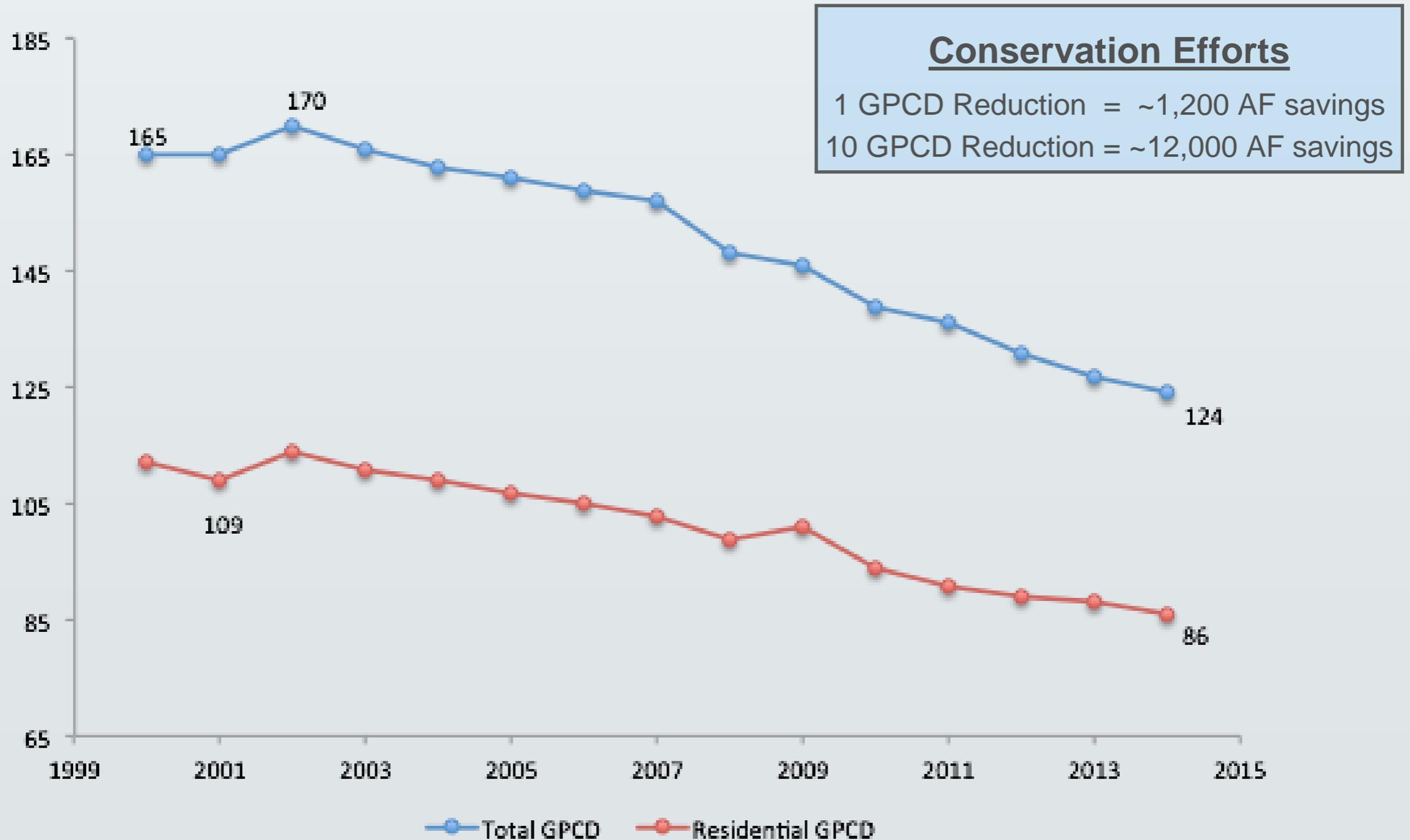
## CAP Delivery Curtailments 2007 Shortage Sharing Agreements



# Tucson Water Service Area GPCD



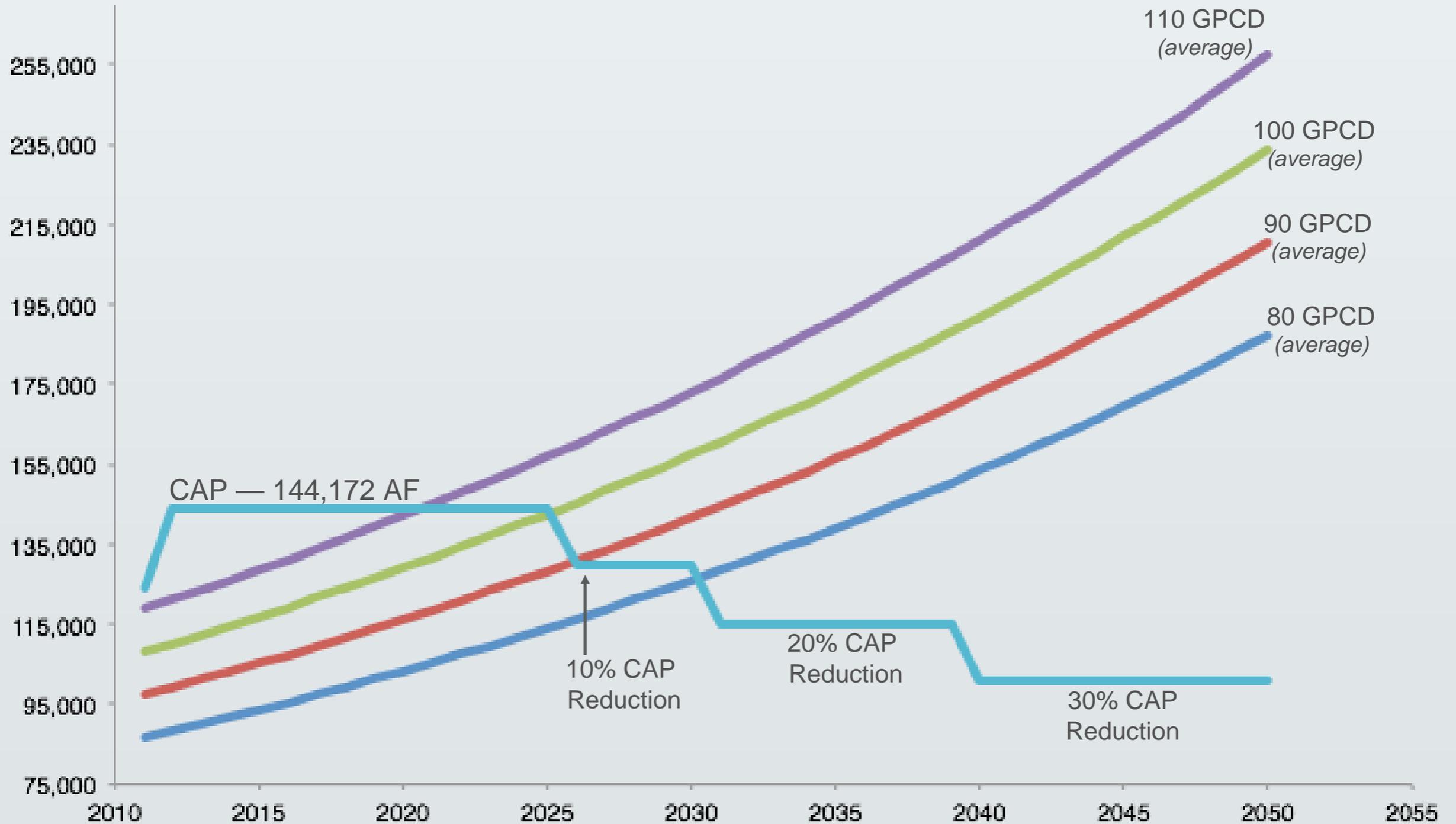
Changes in Municipal Demand



# Driving Forces



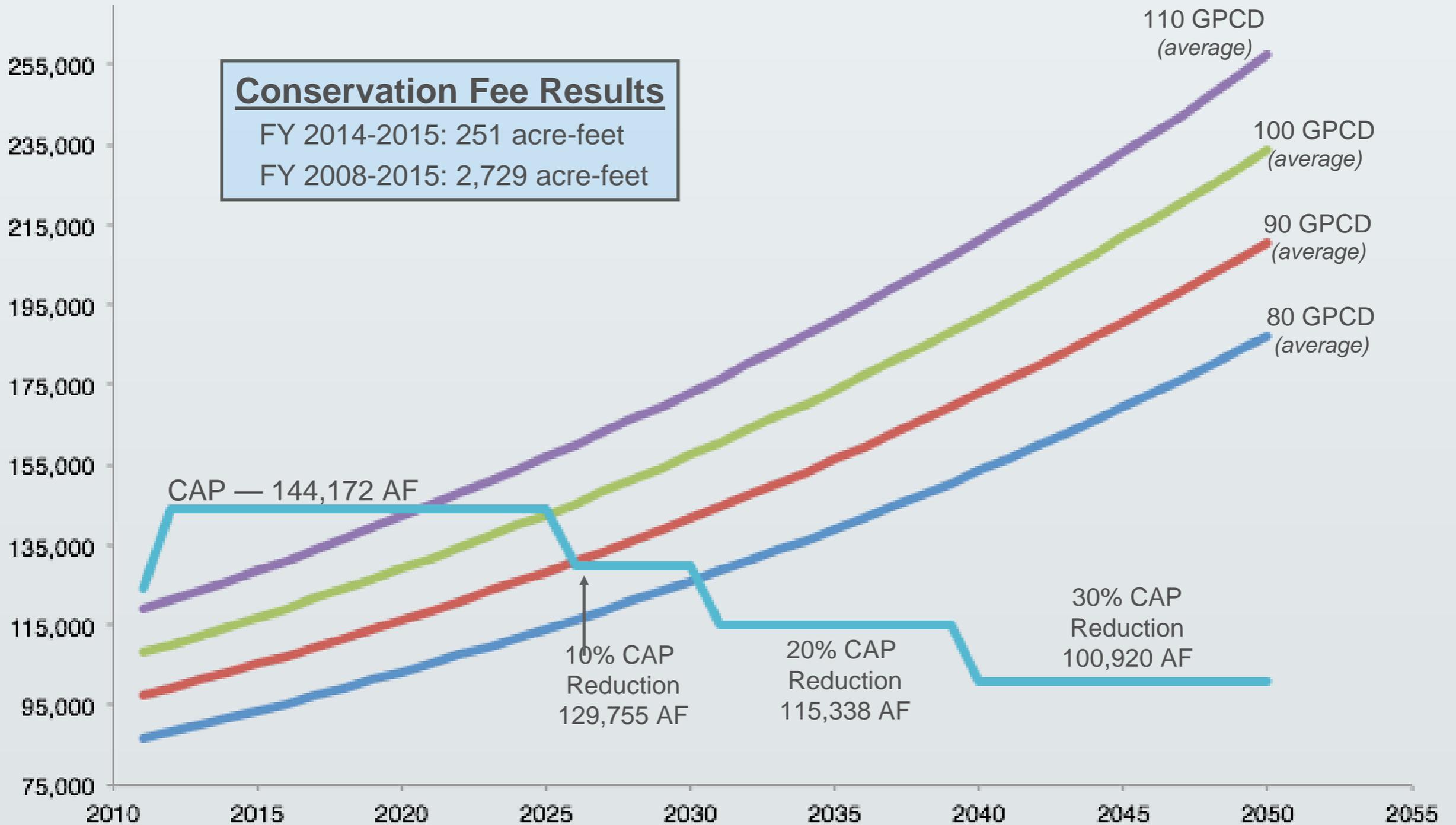
Changes in Municipal Demand



# Driving Forces



Changes in Municipal Demand

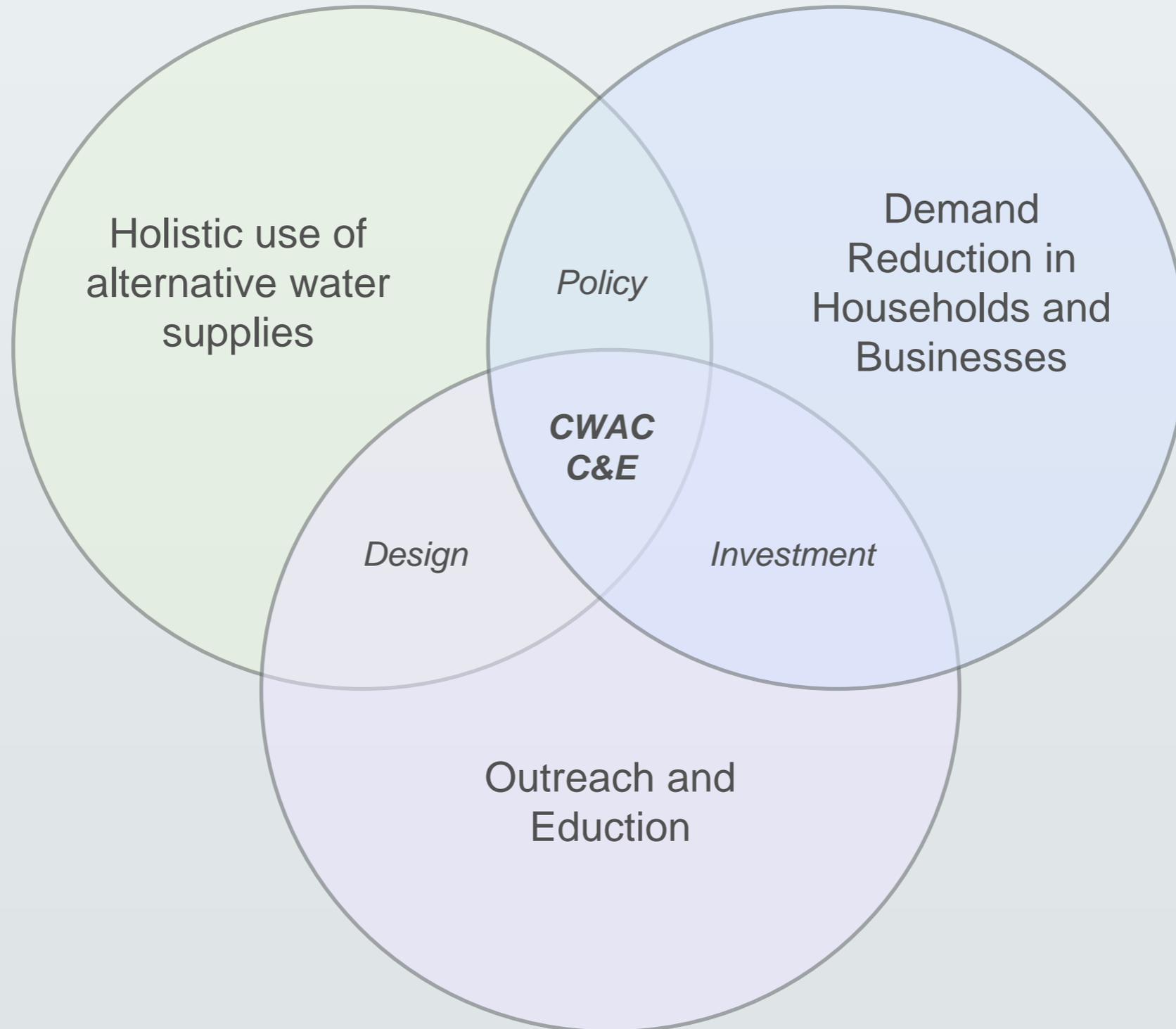


# Driving Forces

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Reducing Demand Increases Flexibility

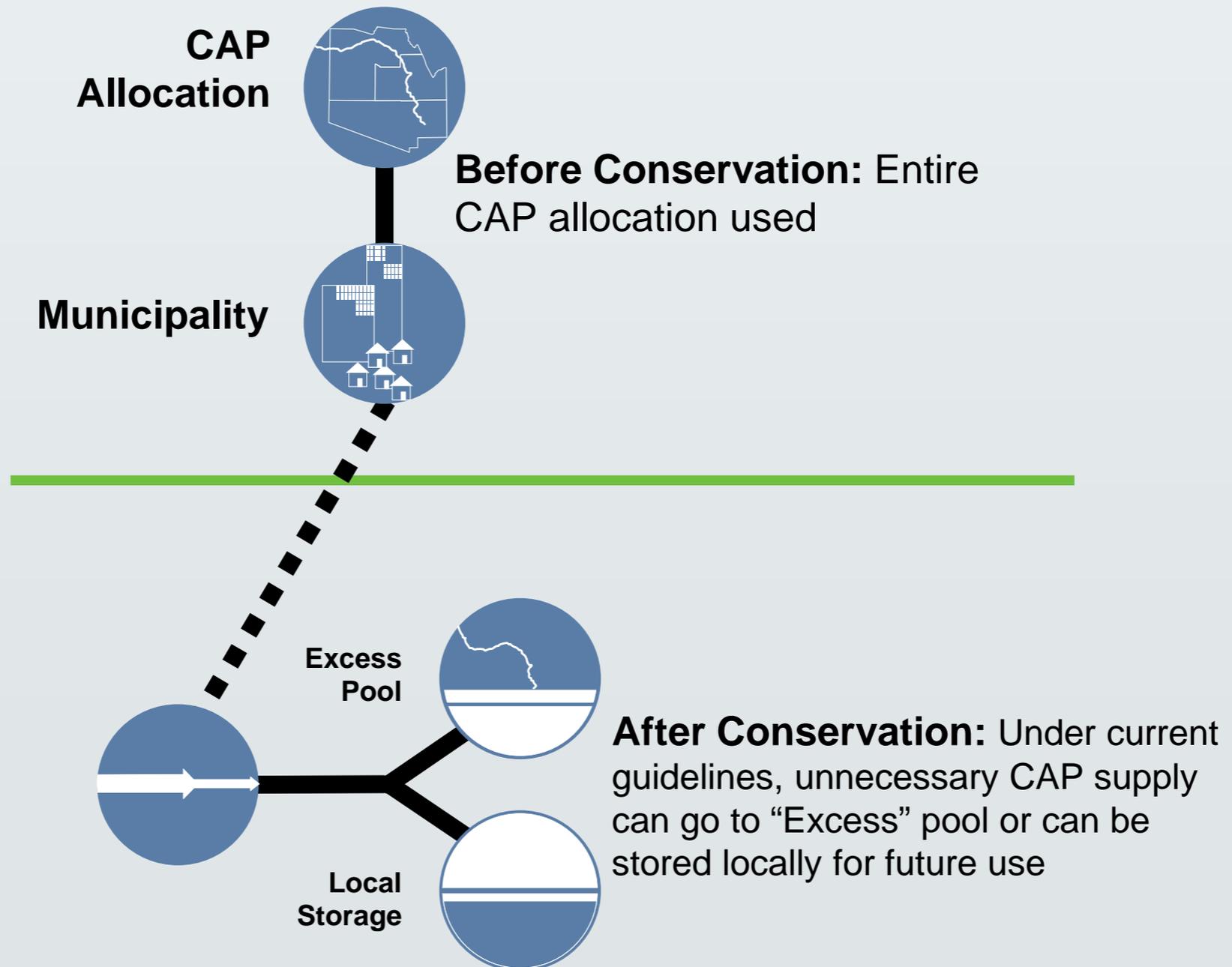


# Driving Forces

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Reducing Demand Increases Flexibility

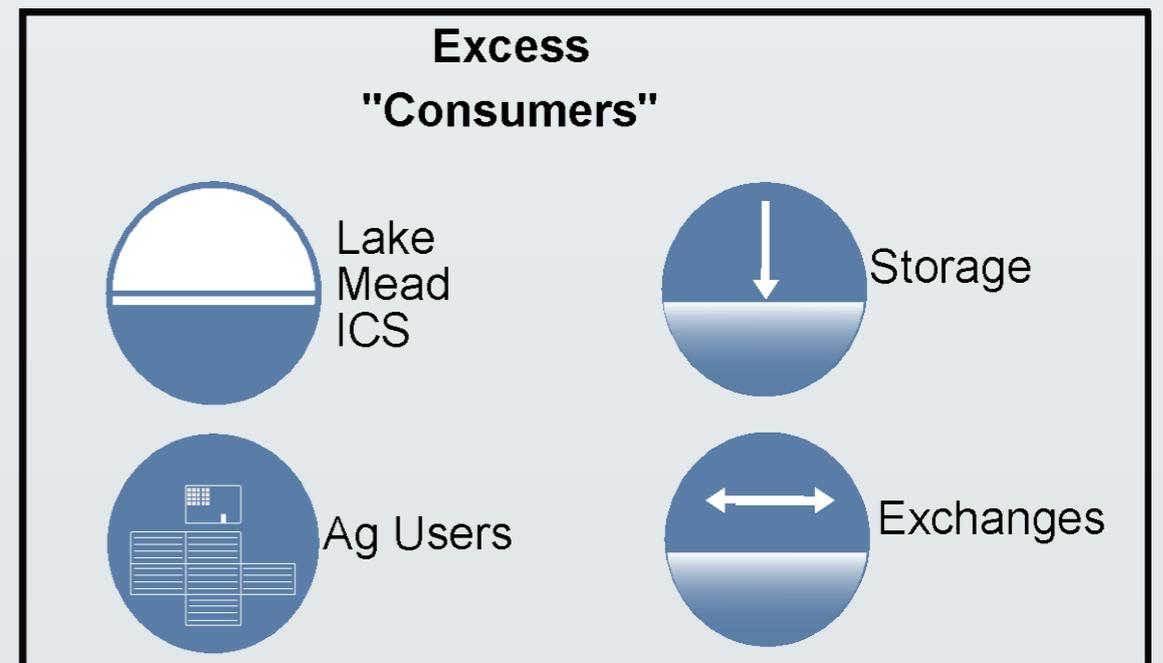
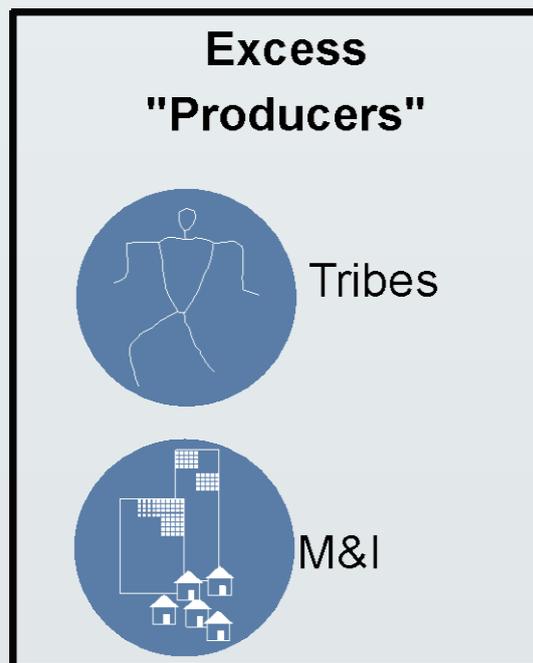


# Increased Flexibility in Local Supplies

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Greater Capacity to Invest in System Resilience



# Questions for Discussion

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## System Resilience, Stability, and Reliability

What are the comparable costs of:

1. Having more water with less certainty and reliability?
2. Having less water with more certainty and reliability?

# Questions for Discussion

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## System Resilience, Stability, and Reliability

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1. Having more water with less certainty and reliability?
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What are the barriers to increasing conservation efforts for the purpose of creating a healthier and more stable system?

1. Willingness to pay
2. Clear understanding of what constitutes “reliability”
3. The value of reliability

# Questions for Discussion

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## System Resilience, Stability, and Reliability

What are the comparable costs of:

1. Having more water with less certainty and reliability?
2. Having less water with more certainty and reliability?

What are the barriers to increasing conservation efforts for the purpose of creating a healthier and more stable system?

1. Willingness to pay
2. Clear understanding of what constitutes “reliability”
3. The value of reliability

What does managing for “enough” instead of “more” mean from:

1. Operational policies
2. Conservation efforts and broad use of local water supplies
3. Economic drivers
4. System reliability



Thank you for your time

# Central Arizona Project *Water Issues Update*

Citizens' Water Advisory  
Committee

May 4, 2016

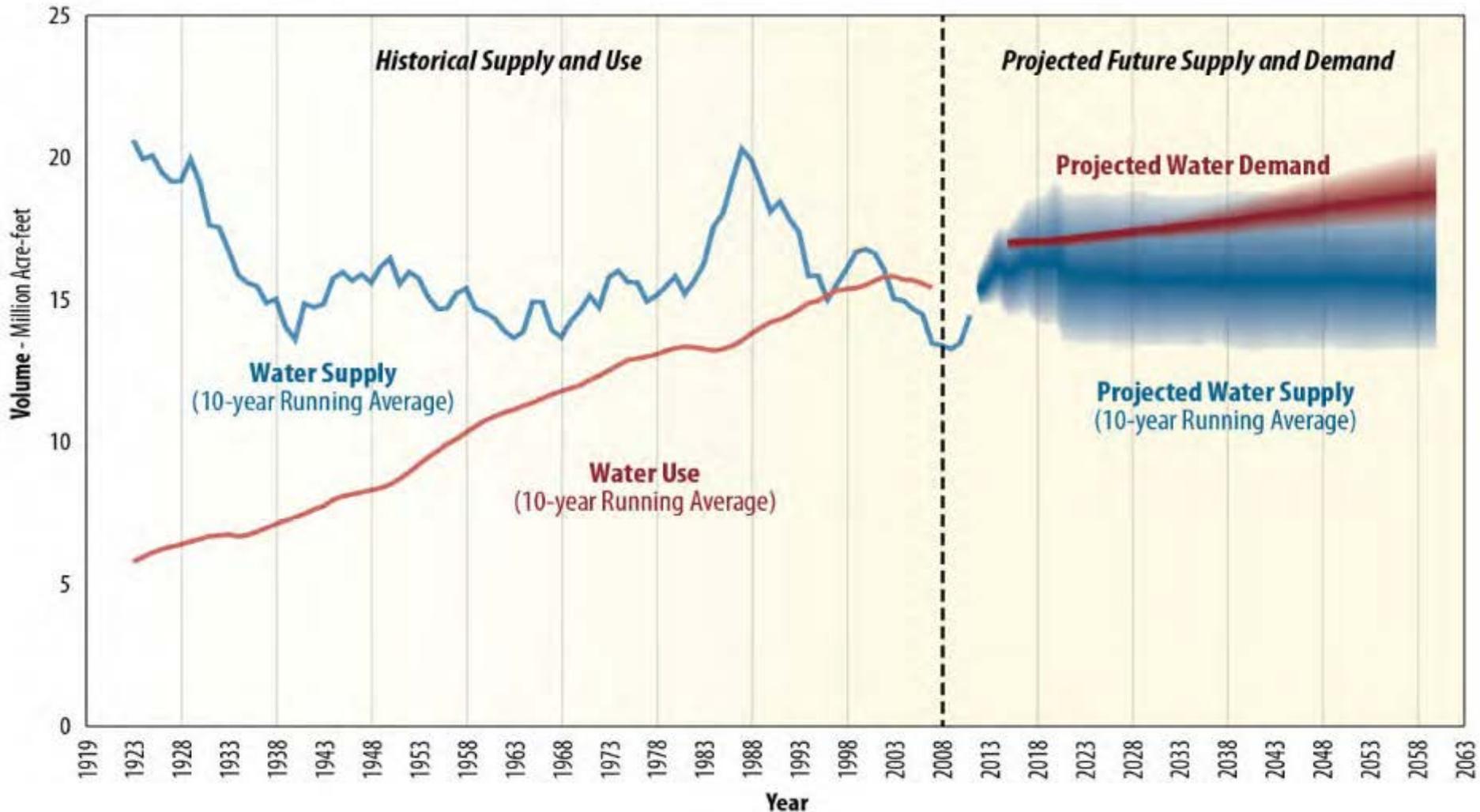
Mitch Basefsky  
Communications, Pima/Pinal



YOUR WATER. YOUR FUTURE.

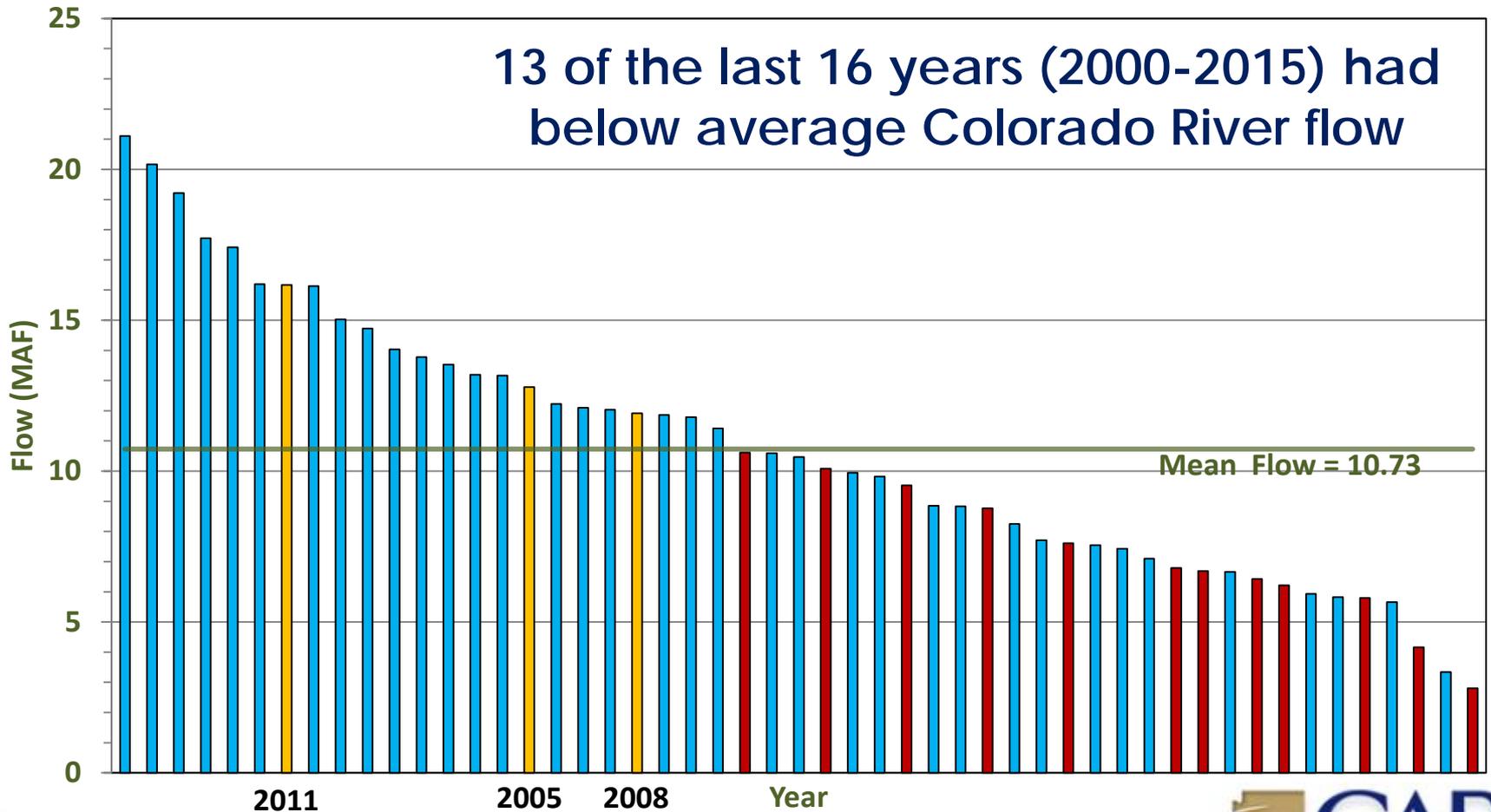
# Three Colorado River Challenges – A Growing Gap

## Colorado River Water Supply and Demand Study



# Three Colorado River Challenges – An Extended Drought

## Historical Colorado River Flow



# Colorado River Shortage

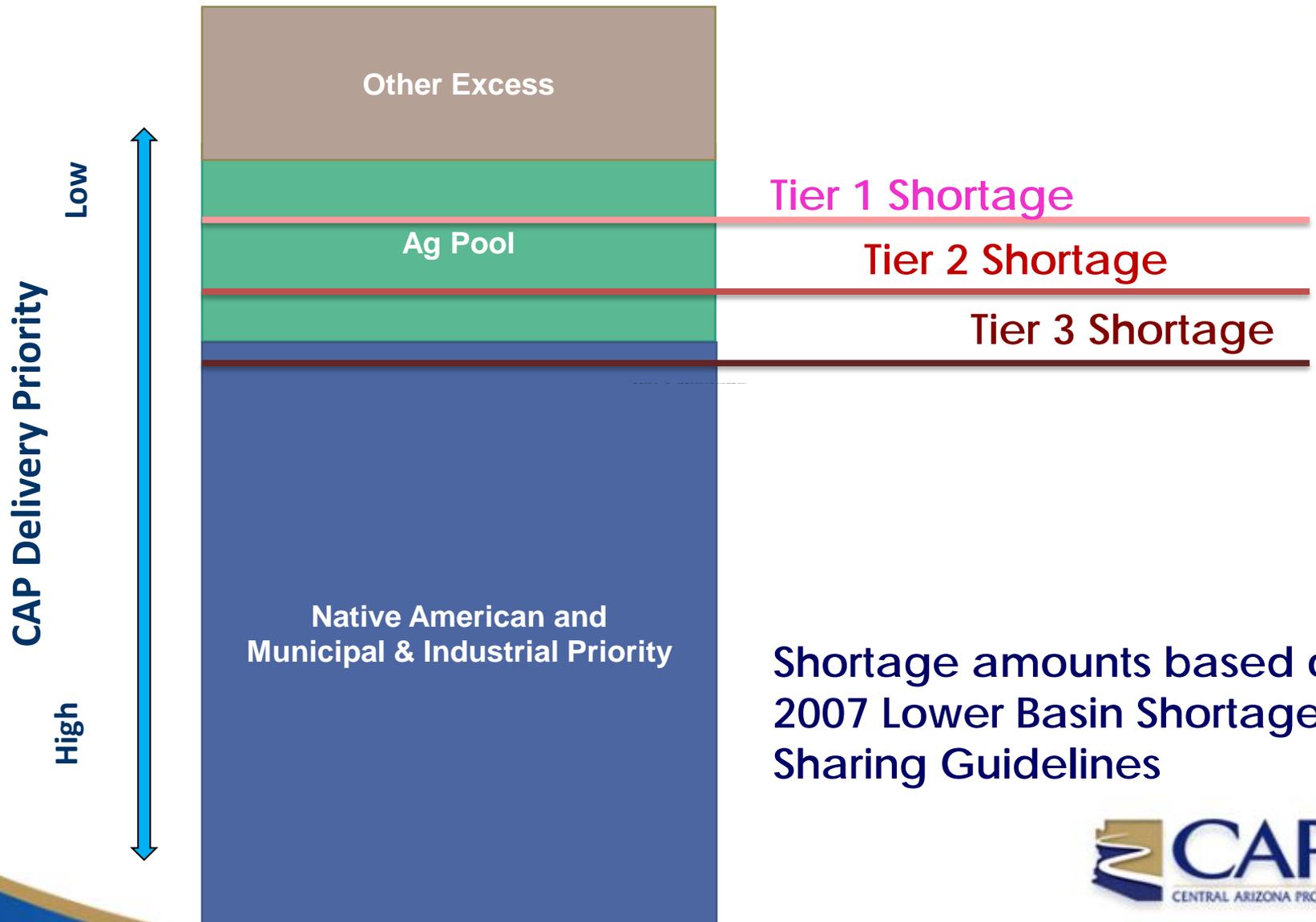
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Shortage is a reduction in Colorado River water supply and is declared by the Secretary of the Department of Interior based on the water elevation of Lake Mead

Lake Mead Elevation	Arizona Reduction	Nevada Reduction	Mexico Reduction
1075'	320,000 AF	13,000 AF	50,000 AF
1050'	400,000 AF	17,000 AF	70,000 AF
1025'	480,000 AF	20,000 AF	125,000 AF

**CAP will bear all of Arizona's reduction during a shortage**

# Shortage Impacts on CAP Customers



Shortage amounts based on  
2007 Lower Basin Shortage  
Sharing Guidelines

# Three Colorado River Challenges – A Long-Avoided Risk

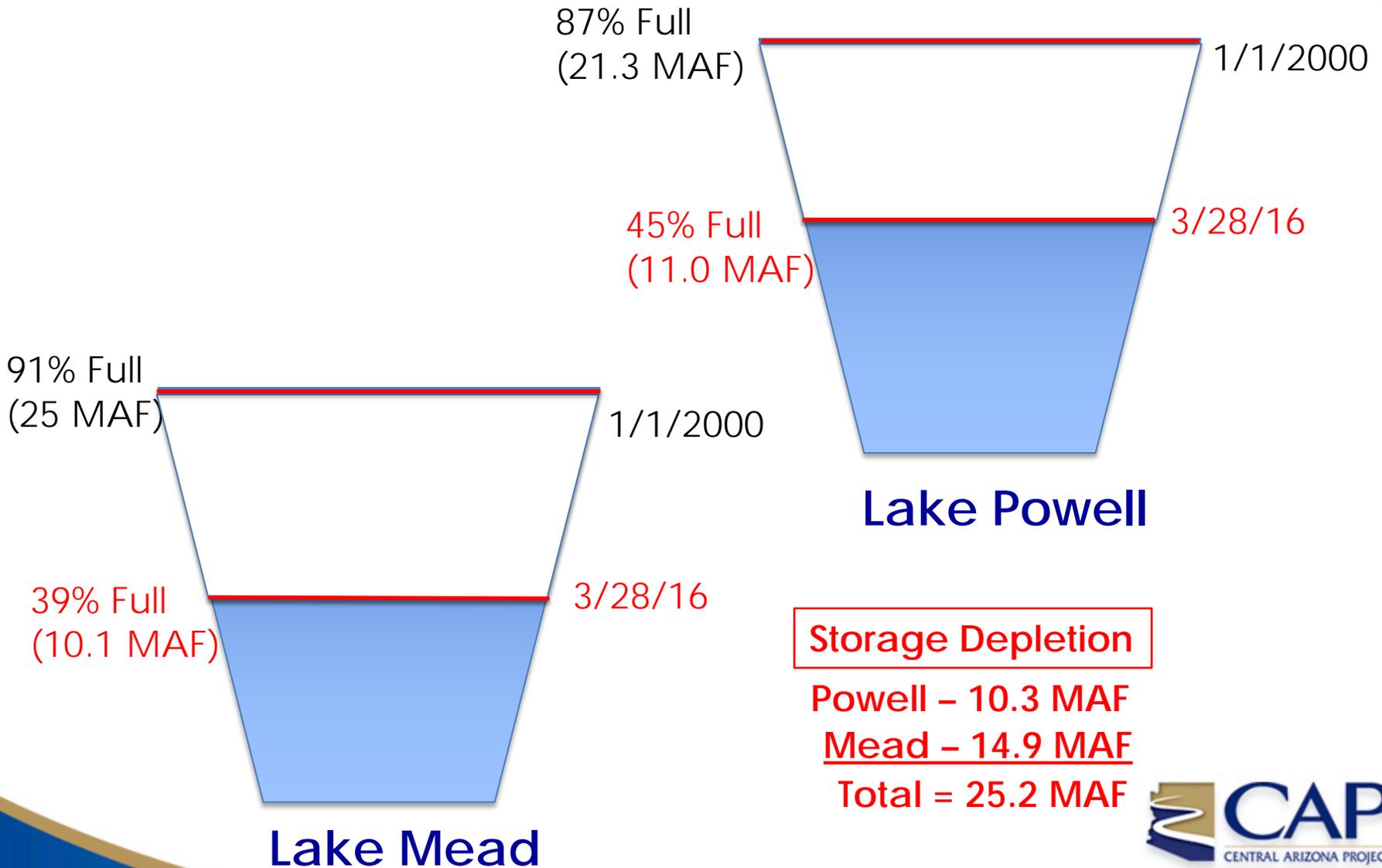
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## Structural Deficit at Lake Mead

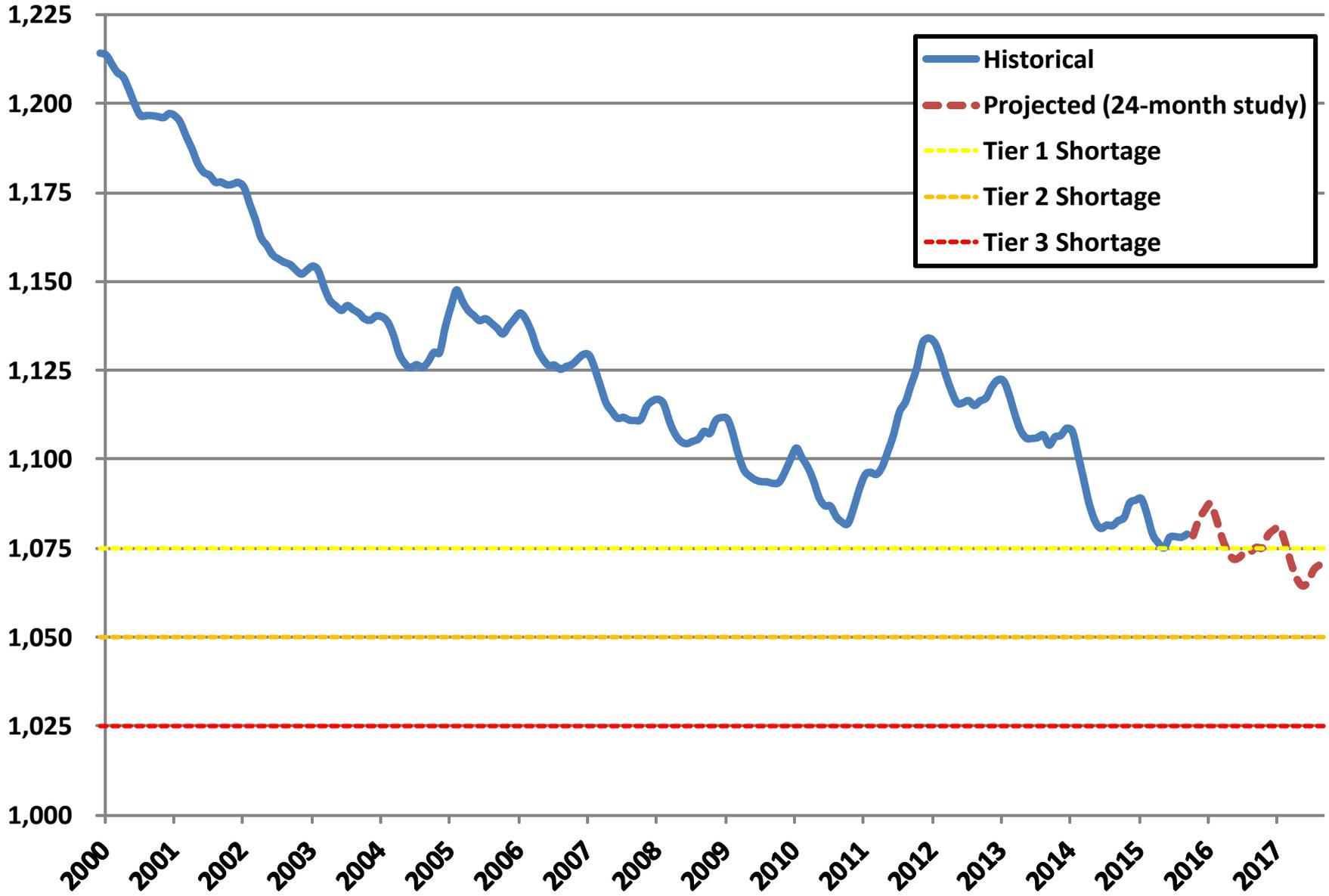
Normal Inflow (Release from Lake Powell plus smaller rivers)	9.0 MAF
Normal Outflow	9.6 MAF
Evaporation	0.6 MAF
Balance	-1.2 MAF

Approximately 12 foot decline in normal year

# Status of Colorado River Reservoirs



# Lake Mead End of Month Elevation (ft)



# Risks from Lake Mead Decline

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## At 1075'

- Arizona takes 320 KAF shortage reduction

## At 1050'

- Arizona takes 400 KAF shortage reduction
- Reductions in hydropower generation

## At 1025'

- Arizona takes 480 KAF shortage reduction
- Secretary **will** take additional actions to protect Lake Mead
- Significant cavitation risk for hydropower generation

## At 1000'

- Active storage in Lake Mead is equal to CA's allocation (~4.4 MAF)
- "Run of River" operations - insufficient storage to meet deliveries to AZ, CA, NV, and MX

## At 895'

- Dead pool; only 2 MAF in storage

# What if Mead Drops Below 1025'?

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The Secretary of the Interior can choose to do the following:

- 1. Follow the Law of River** – allow Mead to decline and allocate Lower Basin supply according priorities per Law of the River
  - When orders exceed supply, Arizona/CAP will be reduced first
  - Potentially 0 allocation to CAP + Reductions to AZ On-River users
- 2. Exercise New Authority** – Secretary applies discretion to reprioritize deliveries to the Lower Basin and/or protect Mead elevation by reallocating user reductions
  - Huge uncertainty in how Secretarial action will affect AZ
  - Potentially significant reductions to Arizona On-River users + CAP

Options 1 & 2: CAP, Arizona, & Nevada in a very vulnerable position

Option 2: Creates uncertainty for California contractors



# Current Adaptation Strategies

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CAP, in cooperation with ADWR and other partners in Arizona, is working with the other Basin States and the Bureau of Reclamation to address Colorado River water supply issues through the following actions:

## **Groundwater Storage**

Nearly 4 million acre-feet stored by CAP through the Arizona Water Banking Authority

## **Lower Basin Drought Response MOU**

Interstate plan targeting 740,000 acre-feet of system water in Lake Mead

## **Pilot System Conservation Project(s)**

Interstate funding to conserve system water to protect Lake Mead (target 75,000 acre-feet)

# Current Adaptation Strategies

## Bypass and Excess Flows Workgroup (ADWR-BOR co-chairs)

Options for reducing, replacing, and/or recovering bypass flows to Mexico, saving 100,000 acre-feet/yr

May include partial operation of the Yuma Desalting Plant



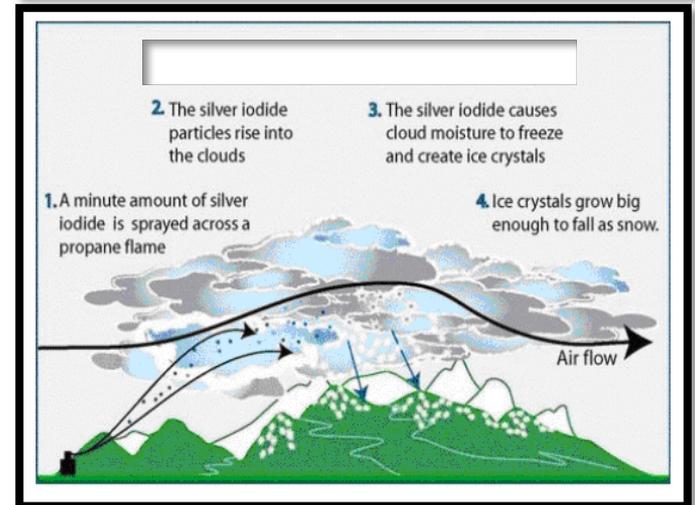
## Augmentation Projects

Cloud seeding projects in Wyoming, Colorado, and Utah

Desalination (brackish and seawater)

## Lower Basin Drought Contingency Plan

Other ongoing discussions to further improve Lake Mead elevations



# Addressing the Structural Deficit

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## Long-term (2020-2026+)

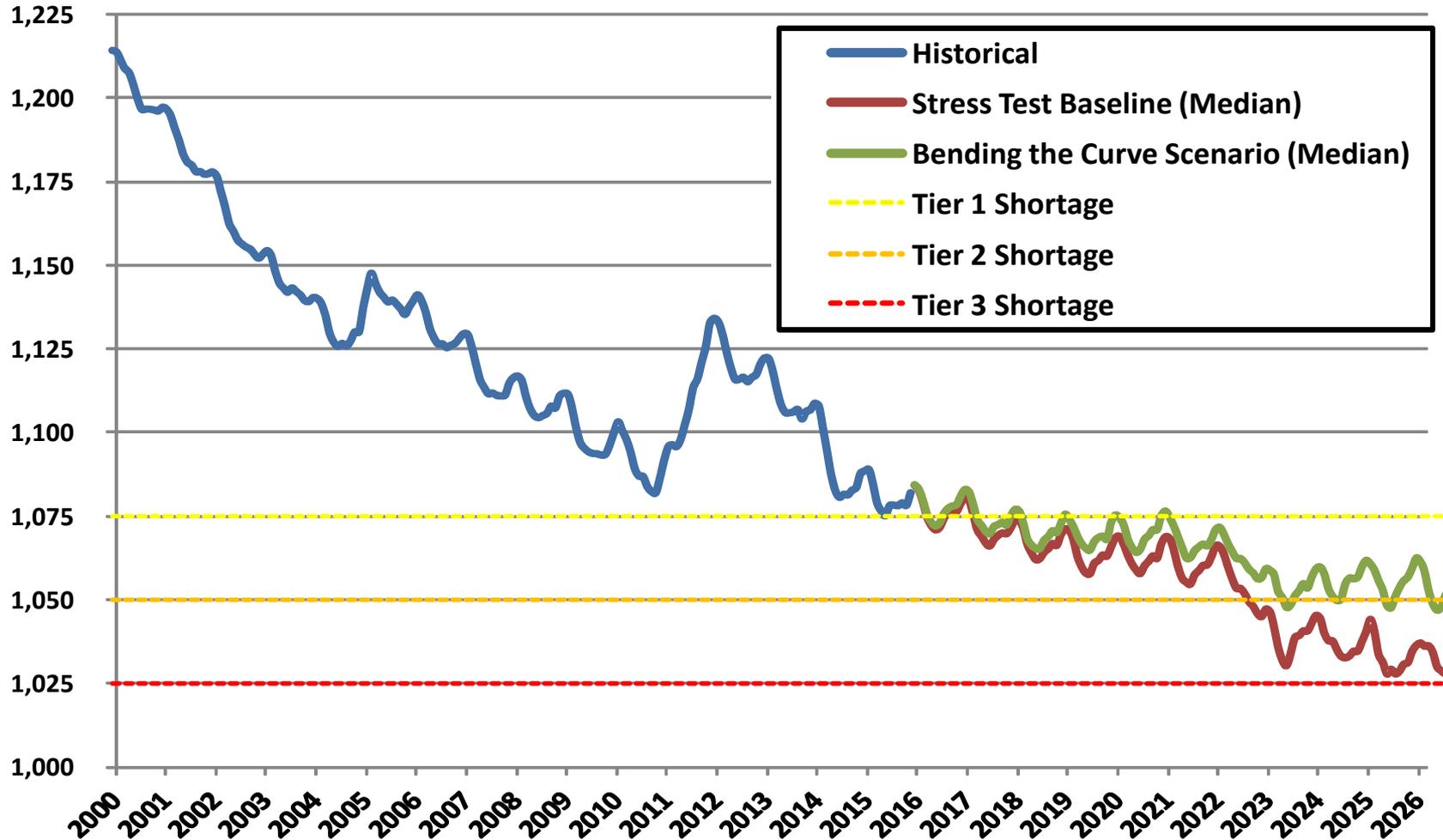
- Augment the system
- Attempt to address the structural deficit as part of the new guidelines beginning in 2027 (post-2007 Guidelines)

## Short-term (2016-2026)

- Implement MOU and Pilot System Conservation projects (through 2017)
- Potential Western-wide Drought Legislation - Senate
- Develop a Drought Contingency Plan that provides certainty for measures adopted by the Secretary below 1025'

# Goal: Bending the Curve

Lake Mead End of Month Elevation (ft)



# Drought Contingency Plan

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- Collaborative process between the Lower Basin states, key agencies, and the Bureau of Reclamation
- All Lower Basin States and Reclamation to participate in voluntary reductions or increase conservation
- Goal is to improve protection of Lake Mead above 1025'
- Ensure that interim actions operate within the framework of the 2007 Guidelines and in coordination with the Upper Basin
- Arizona process to frame options, approaches, and allocate impacts of a Drought Contingency Plan among Arizona users

# Central Arizona Project *Water Issues Update*

Citizens' Water Advisory  
Committee

May 4, 2016

## QUESTIONS?



YOUR WATER. YOUR FUTURE.



# Water **Reliability**

## Tucson's Water Reliability With Anticipated Shortage

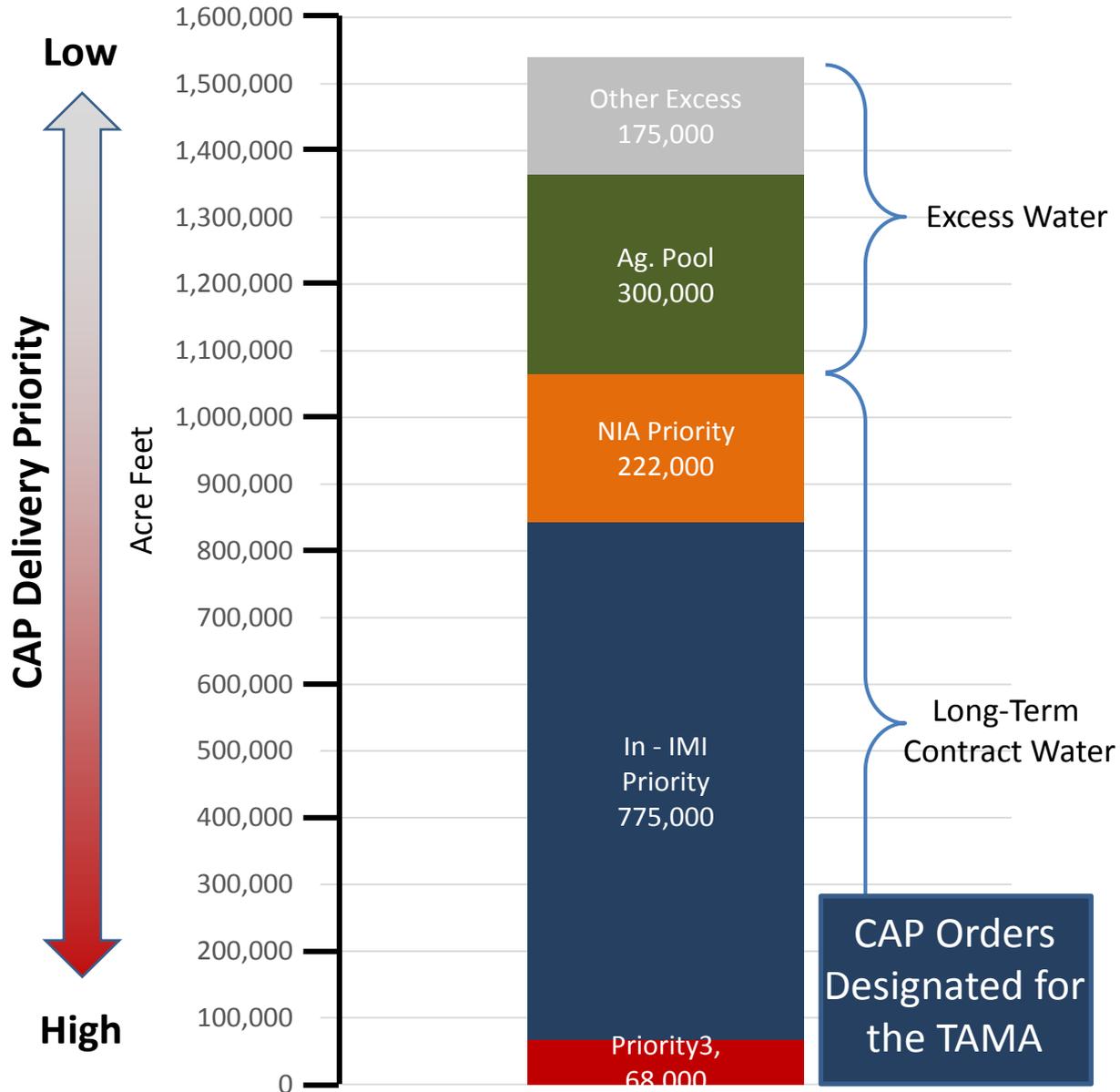
Presenter:

Wally Wilson, Chief Hydrologist

CWAC May 04, 2016



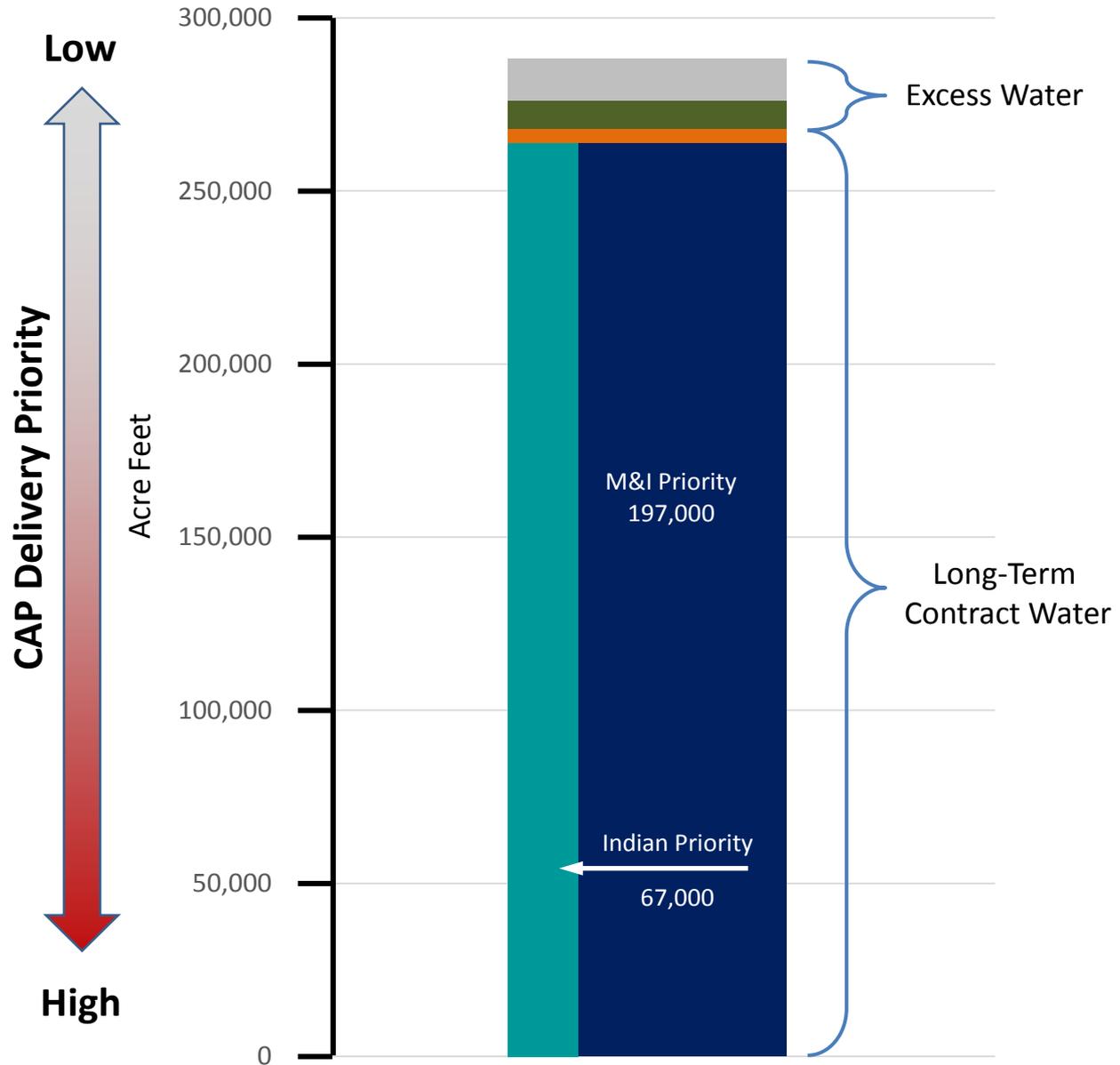
# 2017 Projected CAP Orders



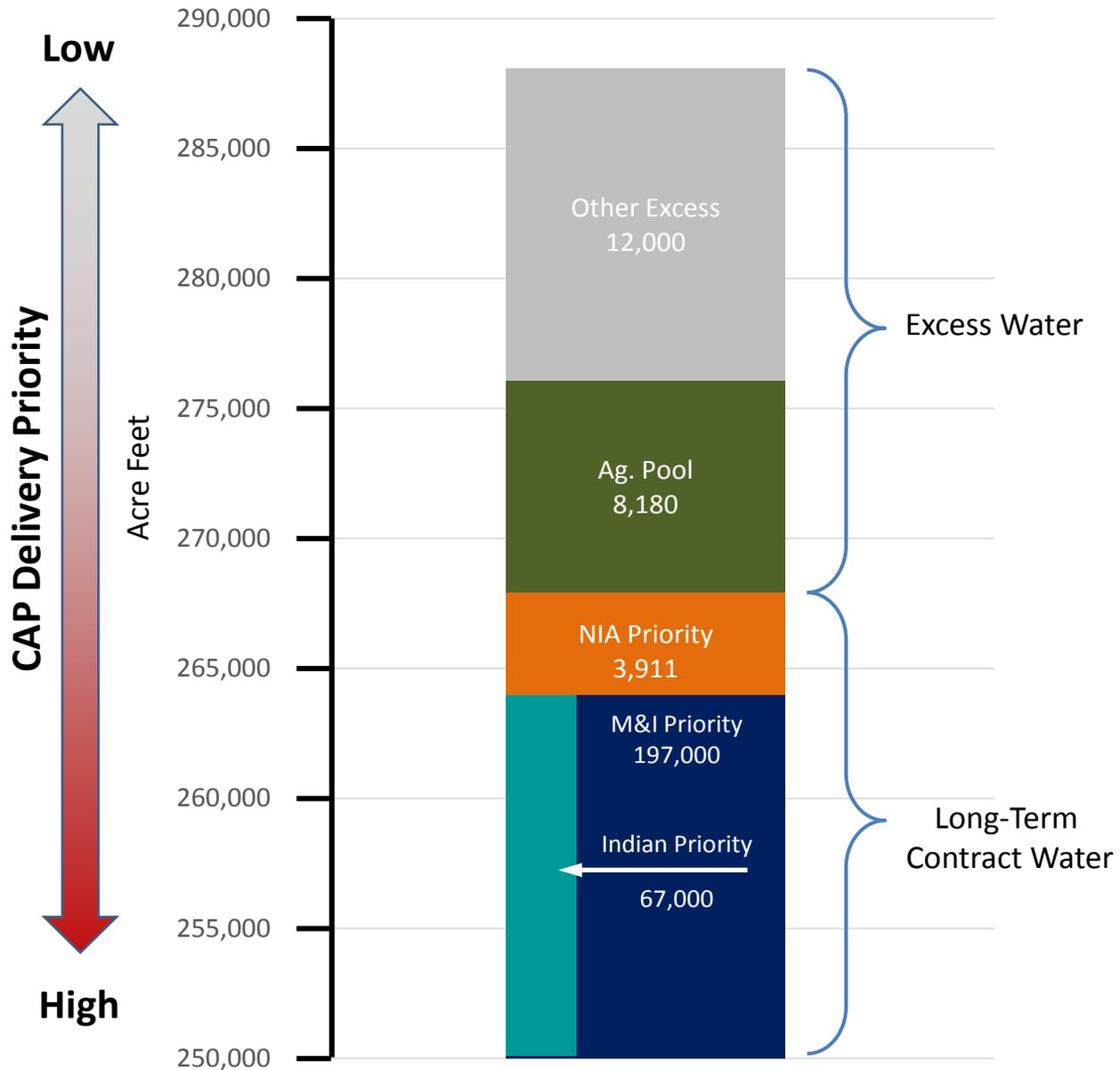
Information Provided By:



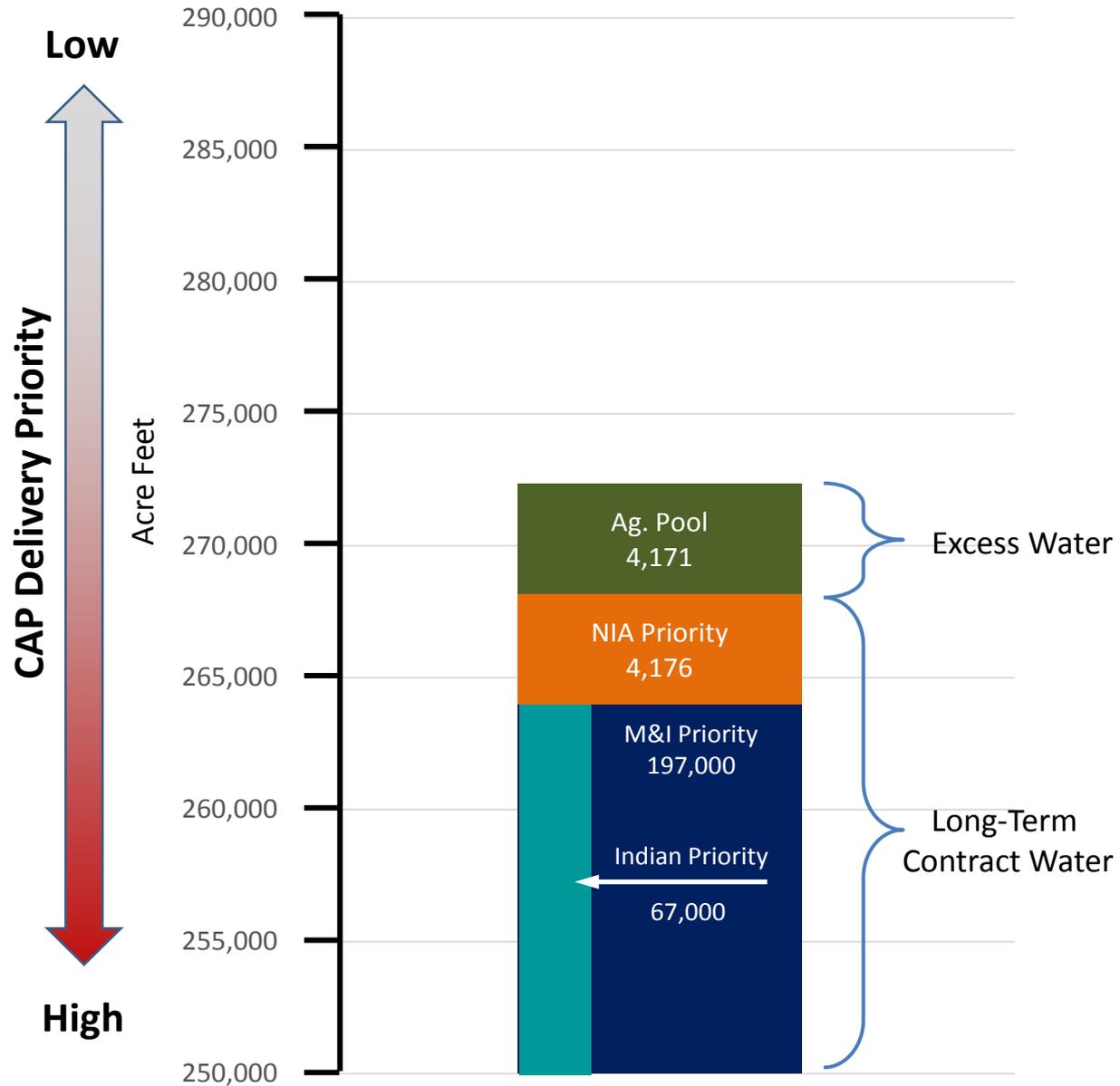
# 2017 Projected TAMA CAP Orders



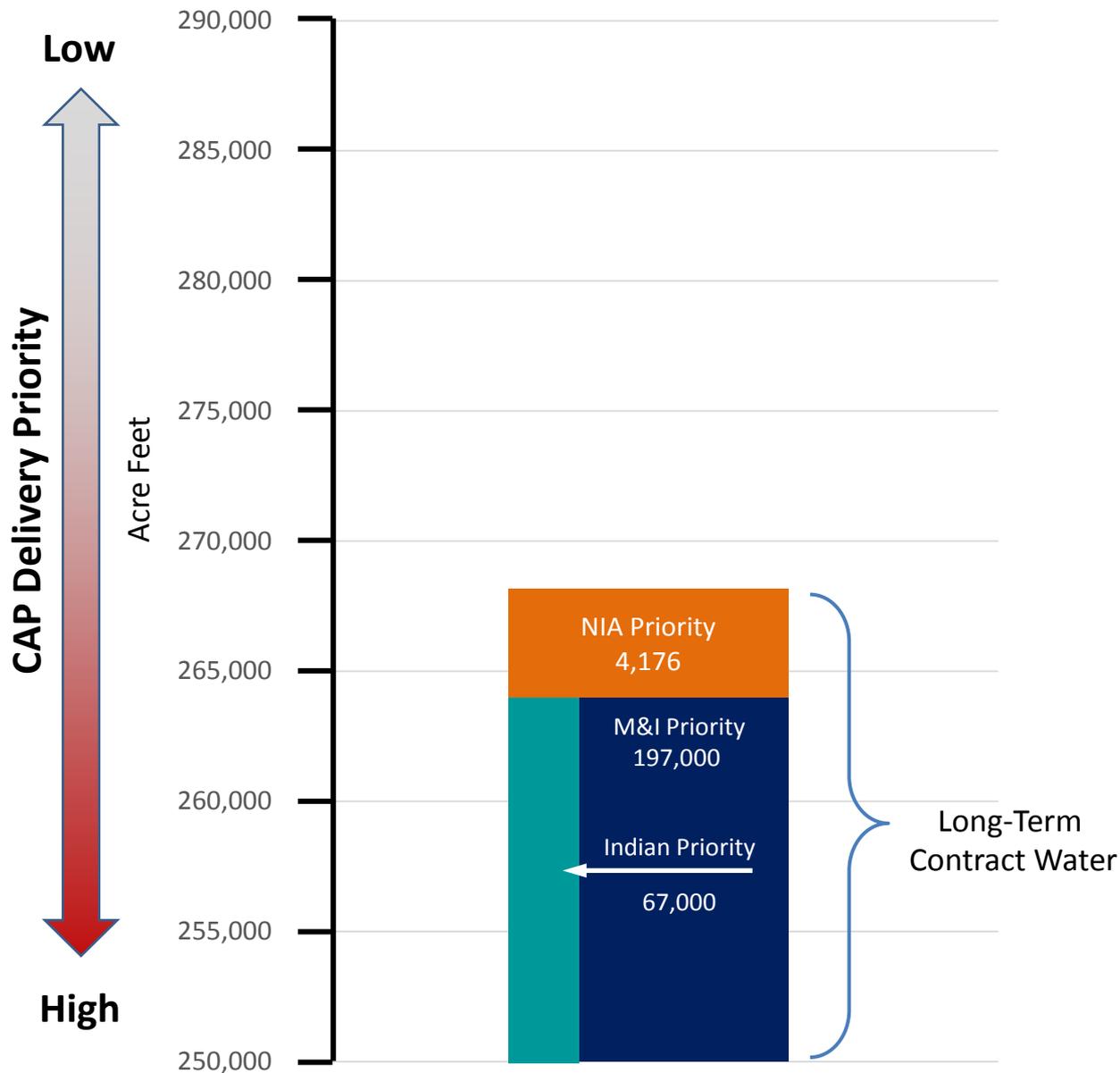
# 2017 Projected TAMA CAP Orders



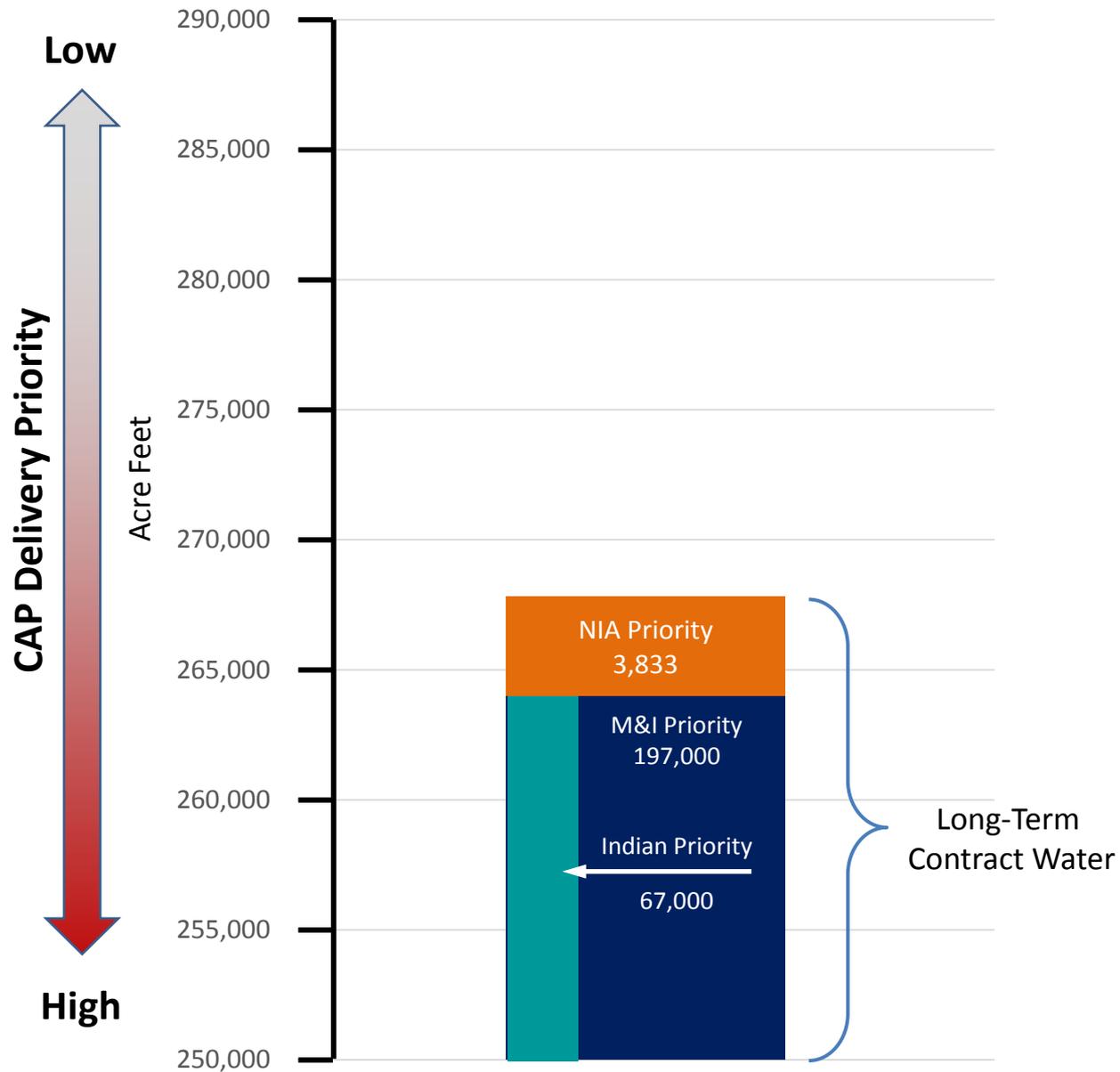
# Tier 1 TAMA CAP Reductions During Shortage (2007 Guidelines)



# Tier 2 TAMA CAP Reductions During Shortage (2007 Guidelines)



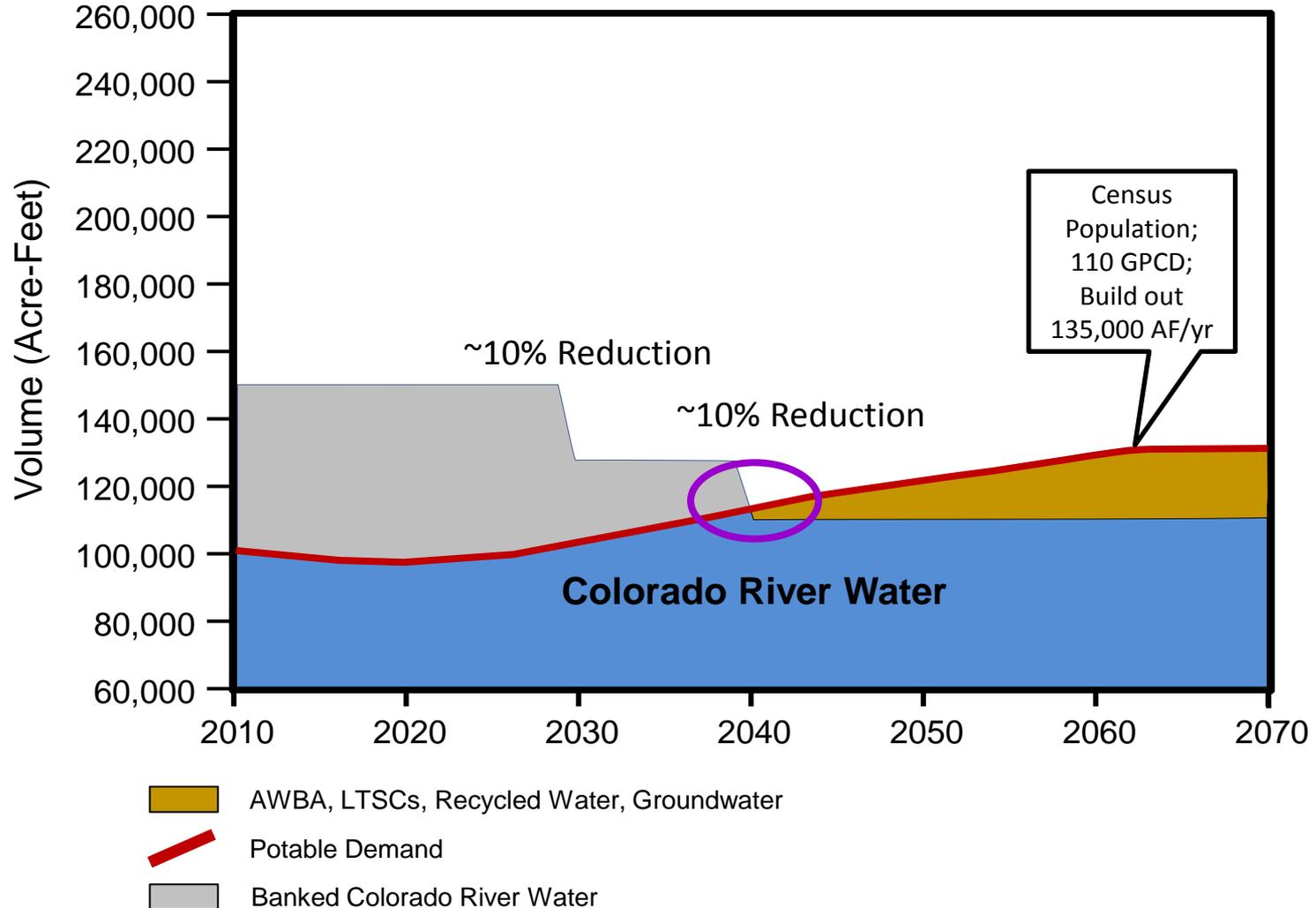
# Tier 3 TAMA CAP Reductions During Shortage (2007 Guidelines)







# Demand Projection With Potential CAP Reductions





# Water **Reliability**

## Tucson's Water Reliability With Anticipated Shortage

# Questions

