Exploring Water Exchanges in Central Arizona

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Objectives

- Explore how water exchanges could help Arizona water users conserve water, be flexible during drought and shortage, and ensure water and economic security
- Compare the current water system with possible scenarios that actively utilize water exchanges
- Investigate what could be learned from a water exchange platform/water transaction discovery tool

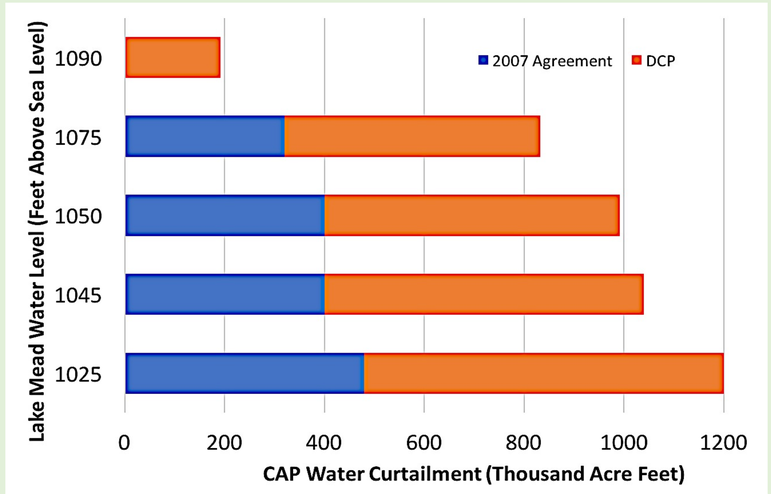

Figure 1: Shows how CAP water would be curtailed under the 2007 Agreement and the ***proposed*** DCP, as Lake Mead's levels drop

Background - The Need for Exchanges

The Colorado River supplies water to over 35 million people and irrigates 5 million acres of agricultural land[1]. Central Arizona Project (CAP) diverts ~1.5 Million Acre-Feet (MAF) from the Colorado River annually[1]. The Colorado River is over-allocated by ~1.2 MAF annually and Lake Mead has dropped to 37% of its capacity[1]. If Lake Mead's levels continue to drop, a shortage could be declared with curtailments to CAP water diverted from the Colorado River[1] (2007 Agreement) (Figure 1). A Drought Contingency Plan (DCP) is a key proposal to proactively conserve water[2] (Figure 1). Water exchanges are voluntary agreements and transactions between water users aimed to effectively share limited resources.

How could water exchanges help Central Arizona water users adapt to changing Colorado River supplies?

Qualitative Methods

Research was conducted through a literature review and expert interviews.

Comparative Findings

Current Water System:

- Linear, over-allocated, strict priority allocation
- Difficult for water users to see each others' portfolios
- Proactive management for system health is complicated
- Creates future vulnerabilities for some water users

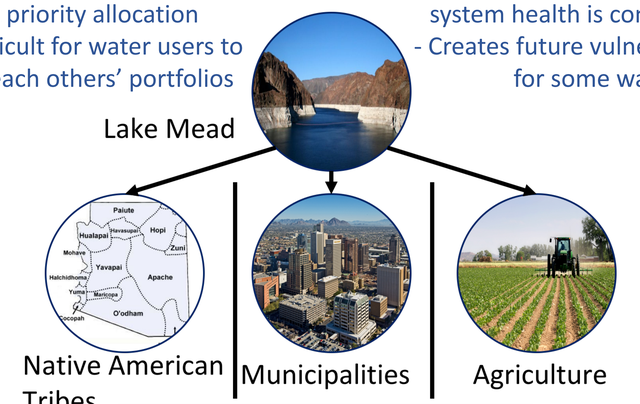

Figure 2: Illustrates ***current*** water system

Potential Water System with Exchanges:

- Circular, flexible, collaborative
- Greater transparency between water user portfolios
- Water could be shared among users and the environment
- Efficiently meets individual and collective needs despite varying supplies

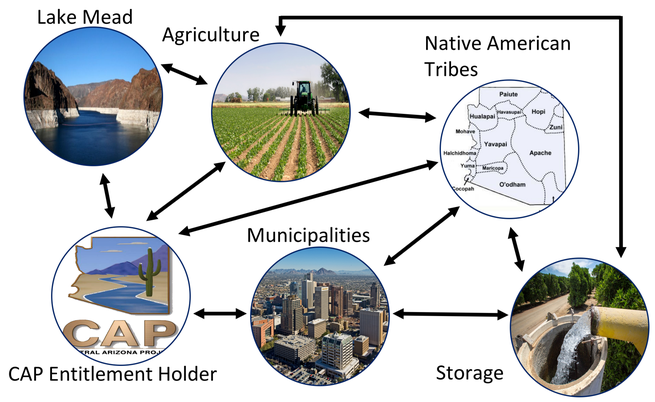

Figure 3: Demonstrates the ***potential*** of water exchanges

Quotes from Experts

"In the face of changing water supplies, exchanges could help water users adapt by sharing a limited supply of water."[1]

"With the versatility exchanges could provide, communities could move water to where they need it most, with greater ease."[2]

"Without adaptability to curtailments, some underground storage and agricultural users in Central Arizona could see their Colorado River deliveries reduced sharply. Exchanges could potentially provide water users a way to collectively share the benefits and burdens of a changing water supply."[3]

"Water shortages could create a perception of competition for resources, but exchanges could increase transparency between water user portfolios and allow the redistribution of water."[4]

"A future with exchanges could include collaborative and creative partnerships between water users, to share water amongst themselves, Lake Mead and local riparian habitats."[5]

Conclusion and Next Steps

Water exchanges could make it easier for water users to share Arizona's limited supply of Colorado River water for continued water security and economic prosperity. A water system with exchanges could have the flexibility to move water between users, store water underground, or conserve water in Lake Mead. The next step is to develop a water exchange platform/exploratory simulation tool that would address open questions, help define the potential and limitations of exchanges, and allow water stakeholders to learn more about exchanges.

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References: [1]Castle, A. et al. (2016). Colorado River Policy: Opportunities for Tangible Progress. Getches-Wilkinson Center for Natural Resources, Energy, and the Environment. 7p.
URL: http://www.colorado.edu/law/sites/default/files/Colorado%20River%20Policy%20Opportunities%20for%20Tangible%20Progress.pdf
[2]Central Arizona Project. (2016). Drought Contingency. URL: http://www.cap-az.com/departments/planning/colorado-river-programs/drought-contingency

Interviewees: [1]Benjamin Bryce, J.D. Candidate; Law and Sustainability Fellow, Arizona State University; [2]Sara Gerlitz; Water Resources Management Assistant, City of Phoenix; [3]Christopher Kuzdas, Water Program Manager, Environmental Defense Fund; [4]Jennifer Diffley, J.D.; Junior Partner, Culp & Kelly, LLP; [5]Amy McCoy, Director, AMP Insights, LLC