

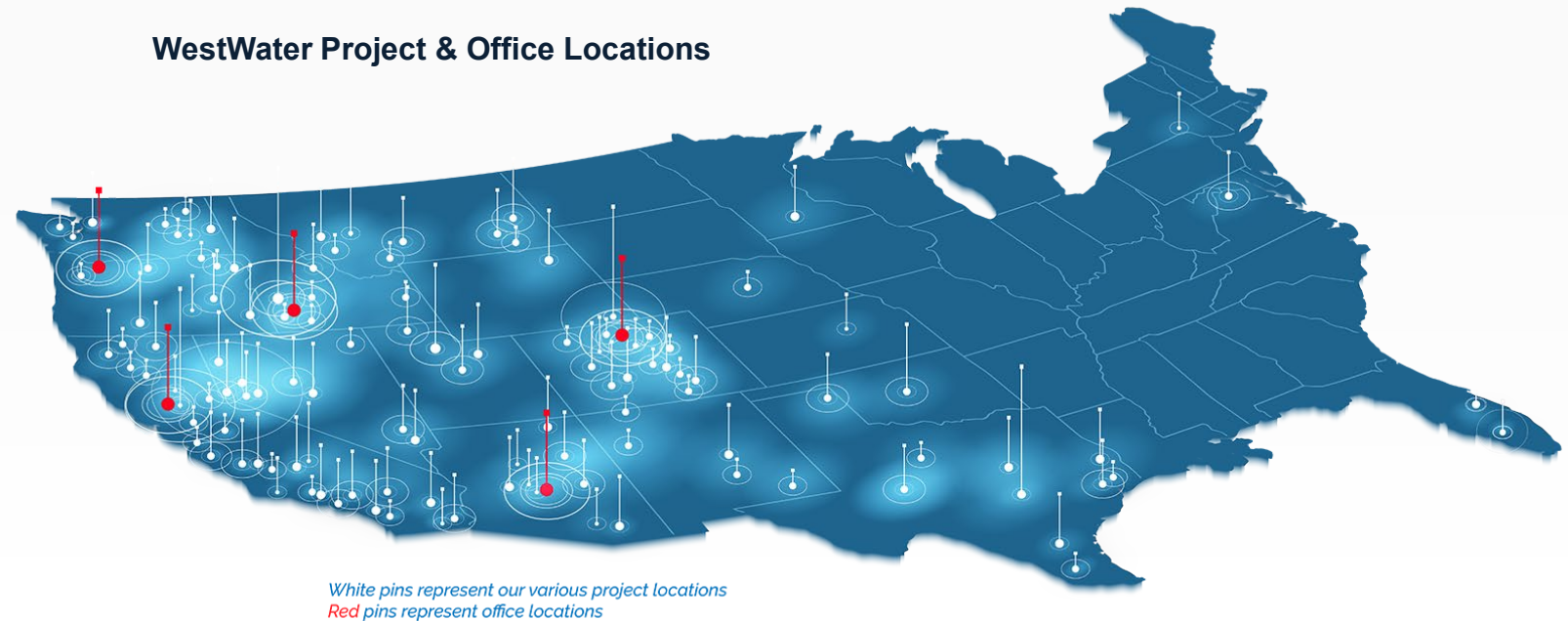
# Water Market Update

AZ ASFMRA | February 25, 2022



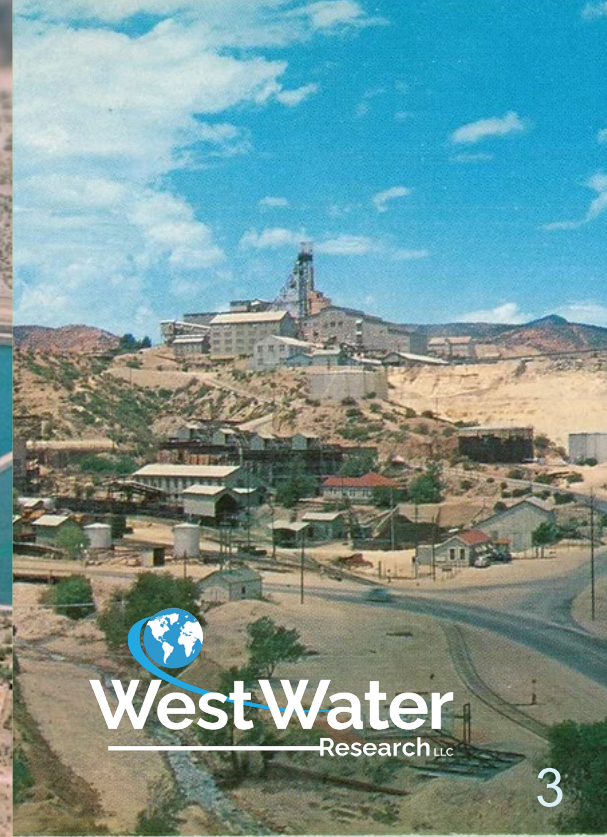
# WestWater Research Overview

- Transaction and valuation advisory firm specializing in water markets and water resource development.
- Nationwide practice with over \$1B in water asset transaction closings.
- Serves public, private, and non-profit clients across the agricultural, municipal, industrial, and environmental sectors.

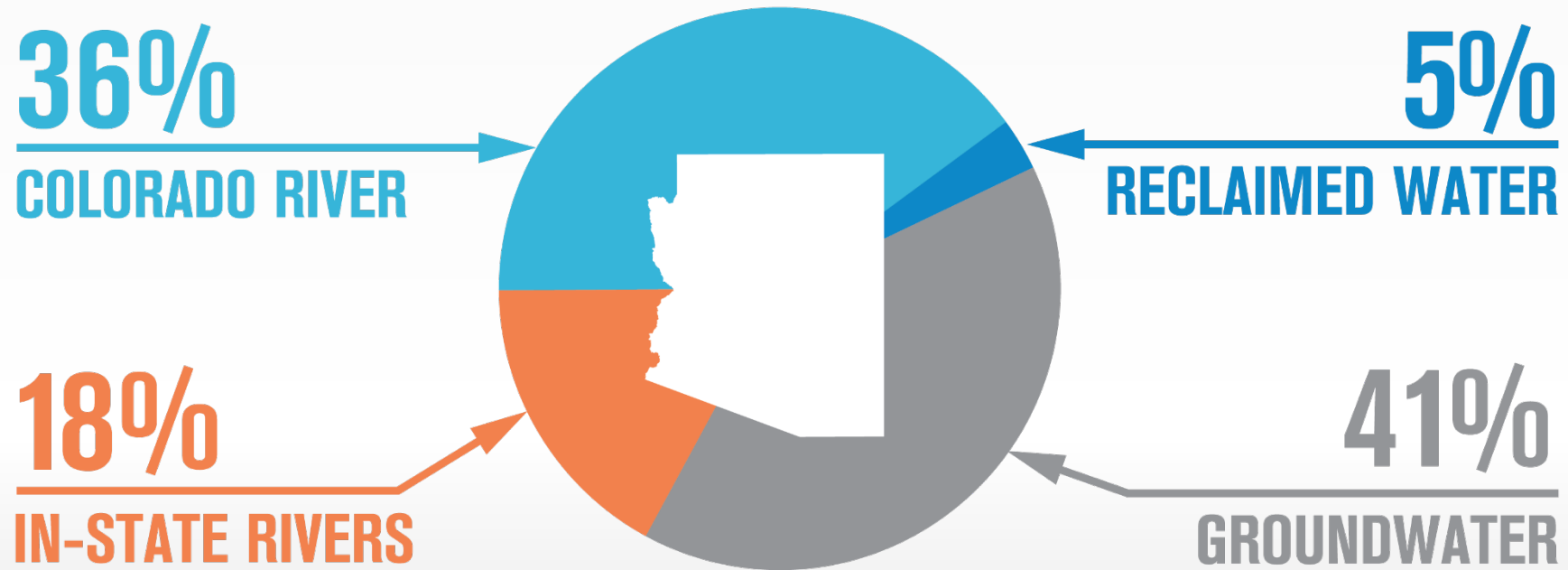


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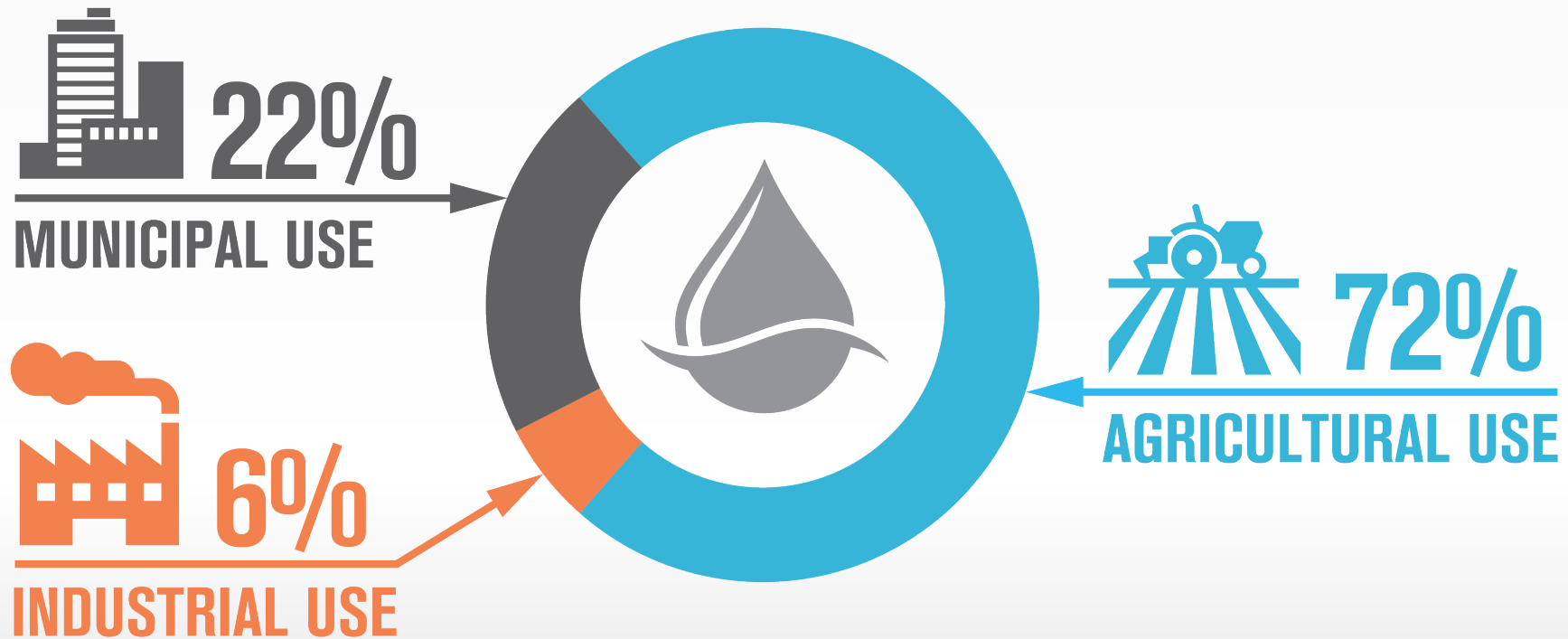


# ARIZONA WATER SUPPLY



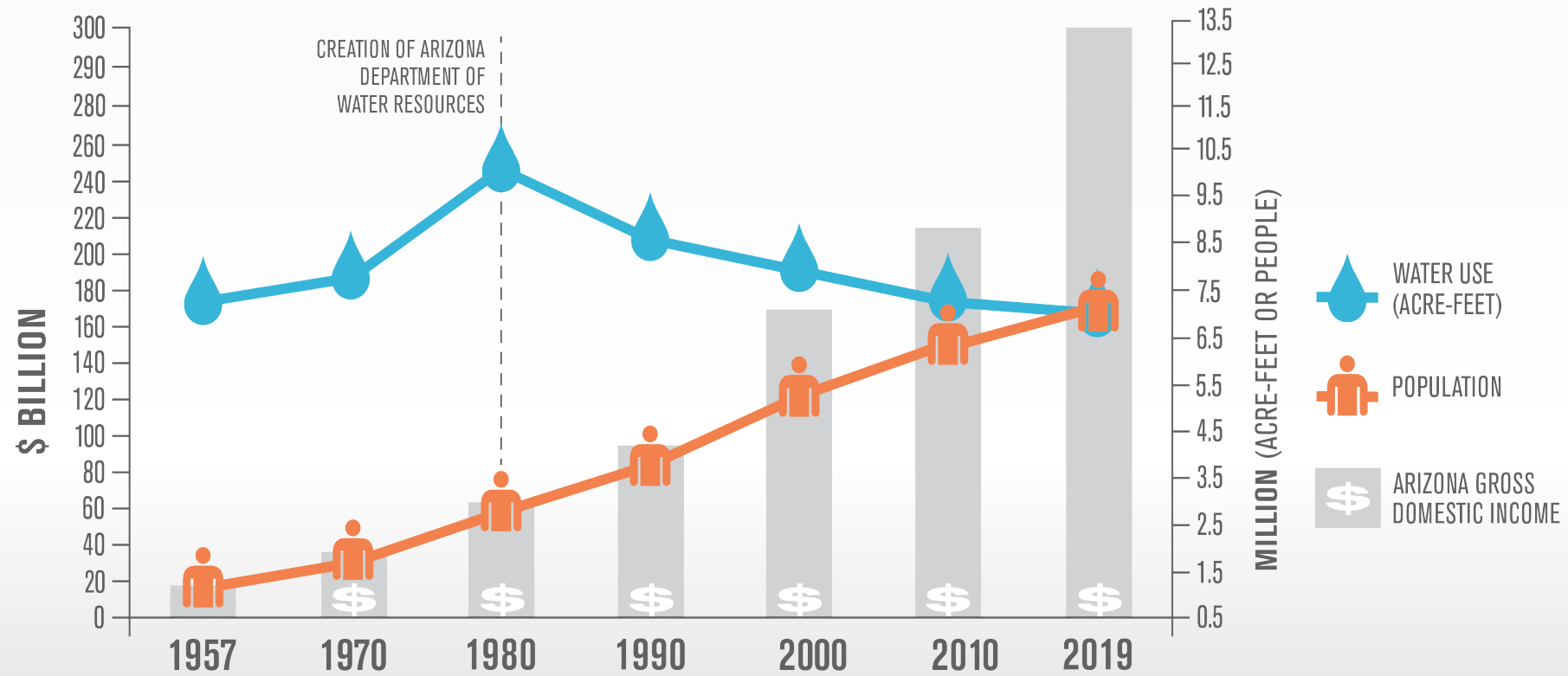
SOURCE: ADWR, 2020

# ARIZONA WATER USE BY SECTOR



SOURCE: ADWR, 2020

# ARIZONA WATER DEMAND AND POPULATION GROWTH



SOURCE: ADWR, 2020

## Active Management Areas

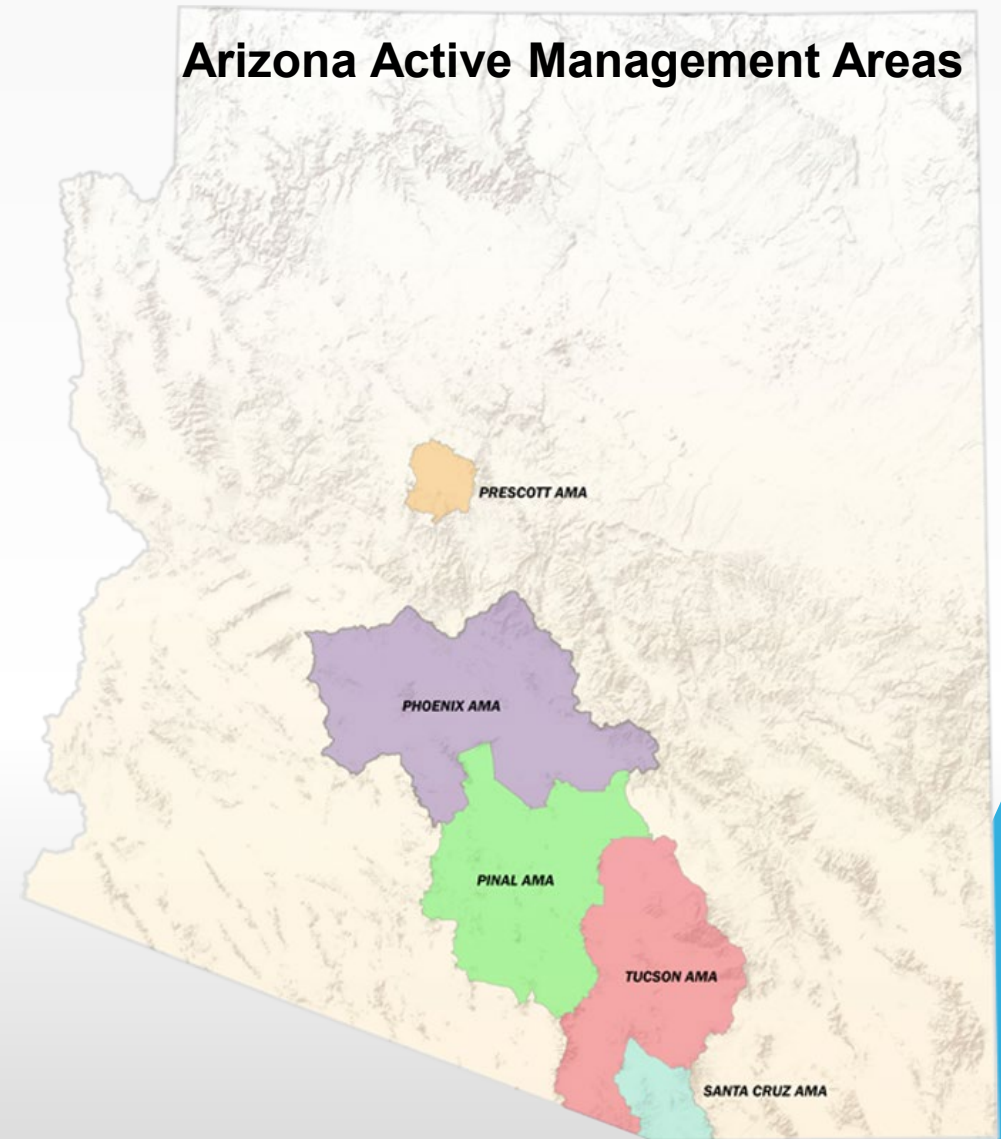
# Regulatory Framework

### 1980 Groundwater Code

- Established Active Management Areas.
- Required groundwater rights for non-exempt withdrawals.
- Quantified and allocated multiple types of groundwater rights.
- Required that developers of new subdivisions demonstrate a 100-year Assured Water Supply.

### Underground Storage and Recovery Program

- Eligible supplies of renewable water may be stored underground at permitted recharge facilities.
- Stored water may be recovered annually, or left in storage to create Long-Term Storage Credits (LTSC).
- LTSC are marketable between willing sellers and buyers.
- Permitted recovery wells can be used to recover stored water from within the AMA where storage occurred.



# Trading Activity and Participation

## Arizona Water Market Participants

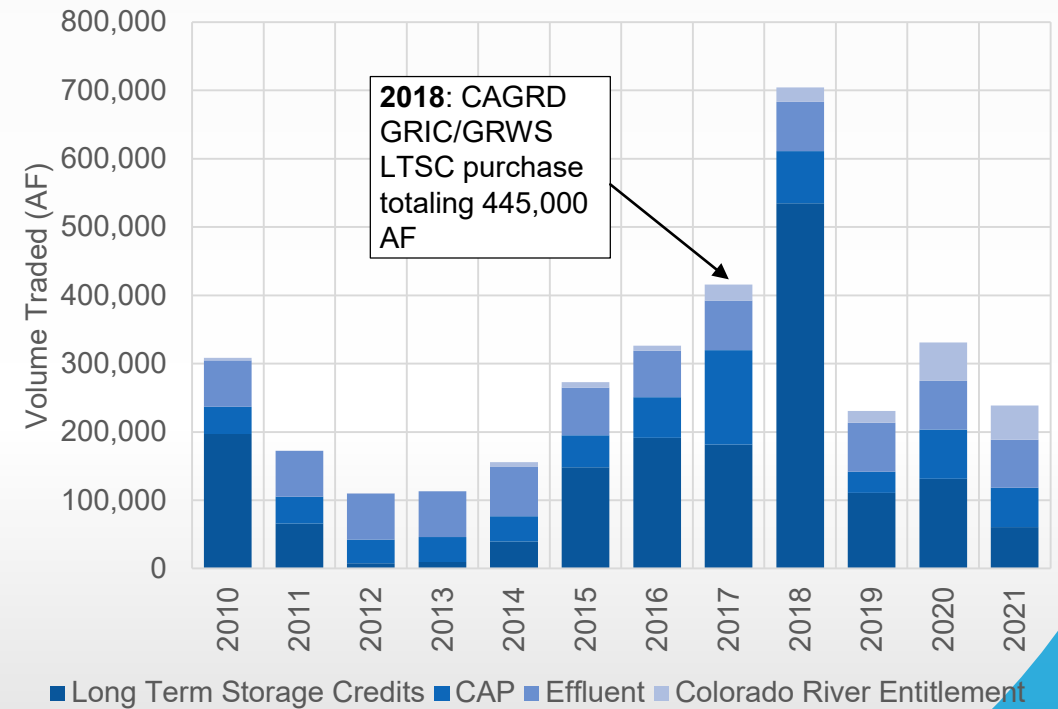
### Sellers



### Buyers



## Arizona Volume Traded by Water Type 2010-2021\*

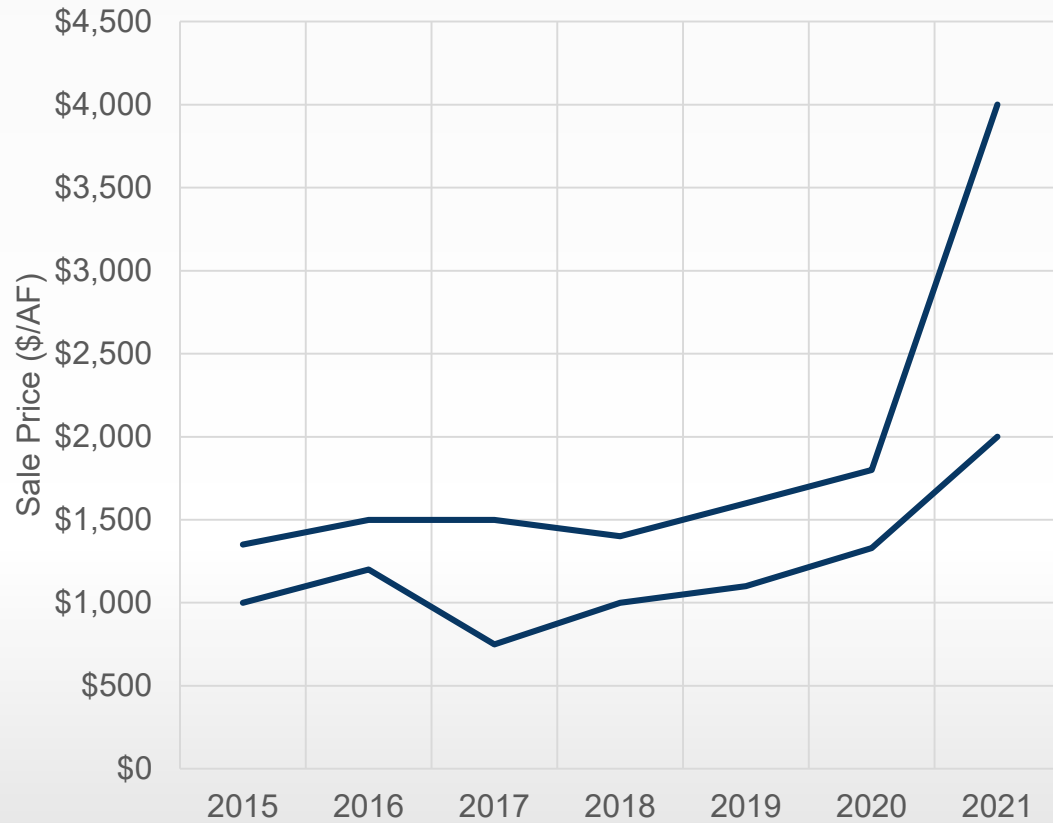


\*2021 volumes for Long Term Storage Credits, CAP, Colorado River Entitlements are through September. Volume of effluent is estimated through year end.

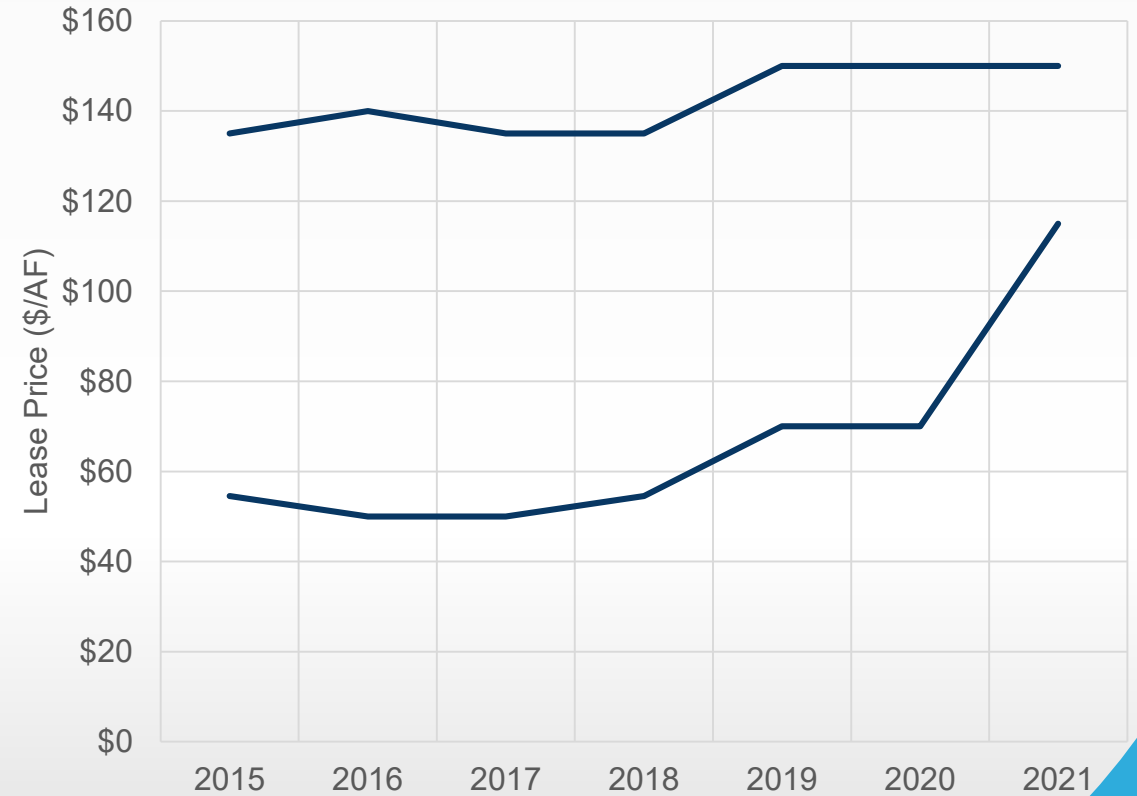


# Phoenix AMA Type 2 Rights

## Phoenix AMA Type 2 Sale Price Range, \$/AF



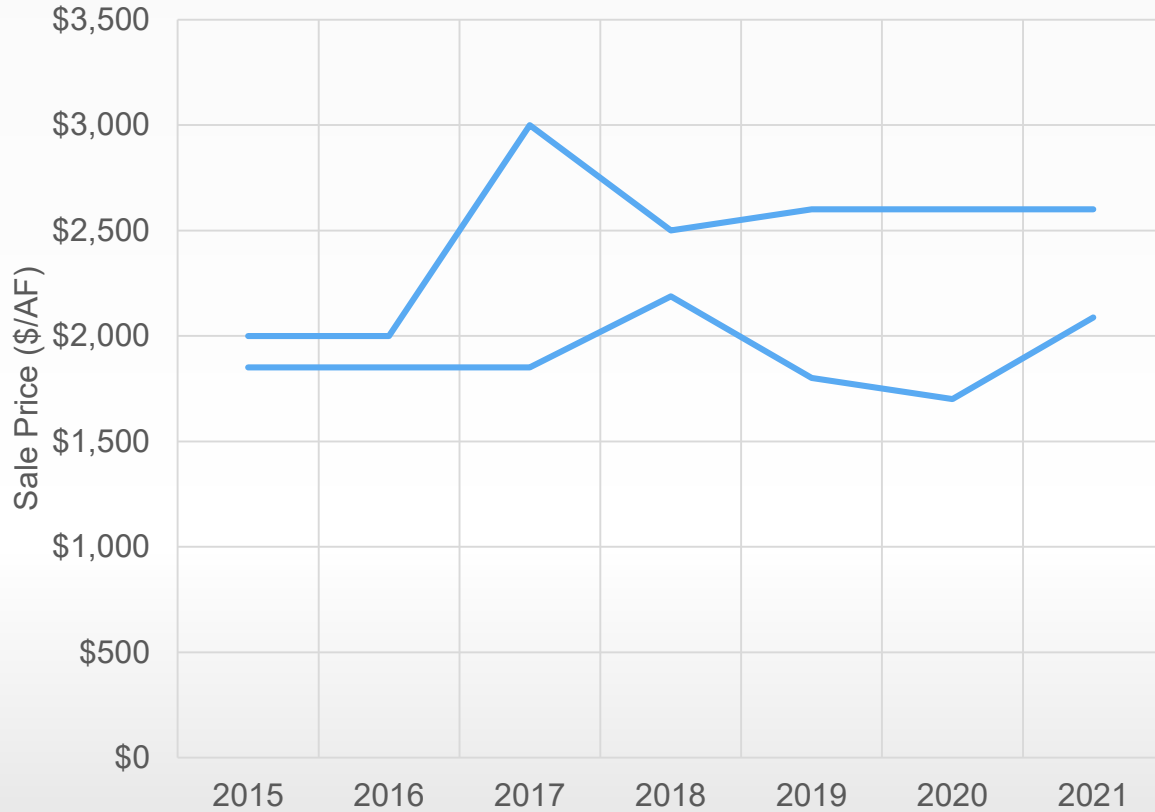
## Phoenix AMA Type 2 Lease Price Range, \$/AF



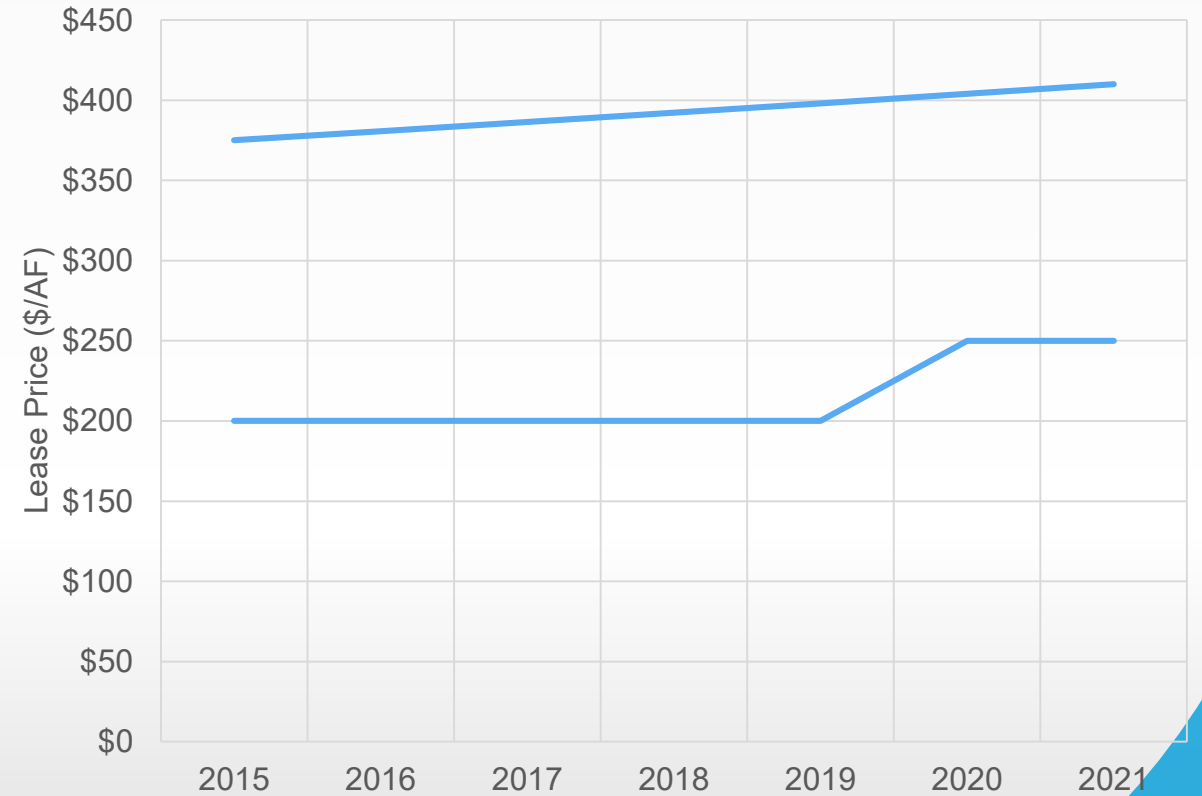
# Tucson and Prescott AMAs

## Type 2 Rights

### Tucson AMA Type 2 Sale Price Range, \$/AF



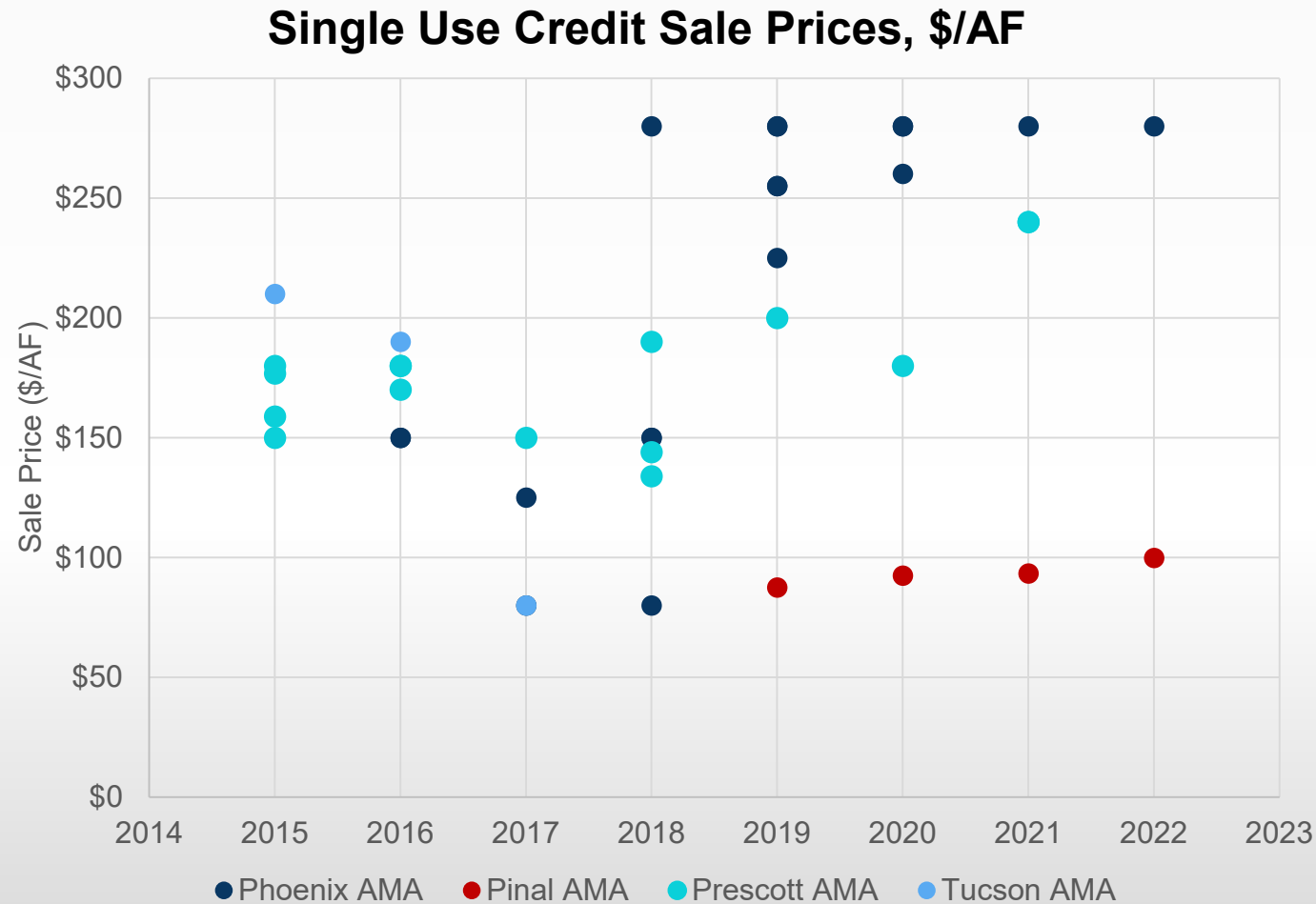
### Tucson AMA Type 2 Lease Price Range, \$/AF



**Prescott AMA:** Recent sale at \$9,500/AF, leases at \$250 - \$385/AF with limited trading activity.

# Active Management Areas

## Extinguishment Credits

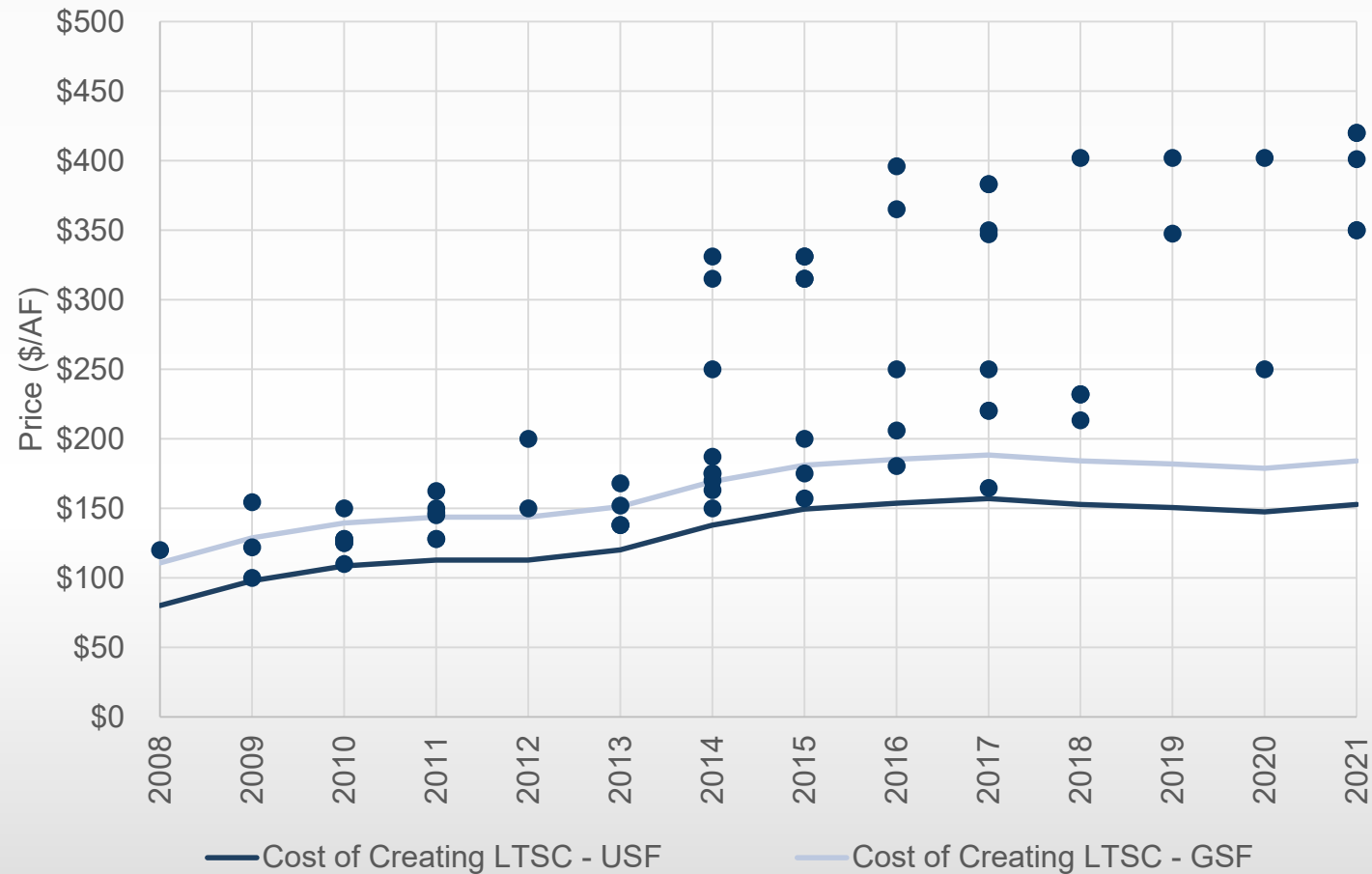


**Pinal AMA Perpetual Credits:**  
\$2,500/AF for 50 AF  
Closed Jan 2022

## Phoenix AMA

# Long-Term Storage Credits

### Phoenix AMA LTSC Prices, 2008-2021\*



\*For multi-year agreements, only the first year is shown.

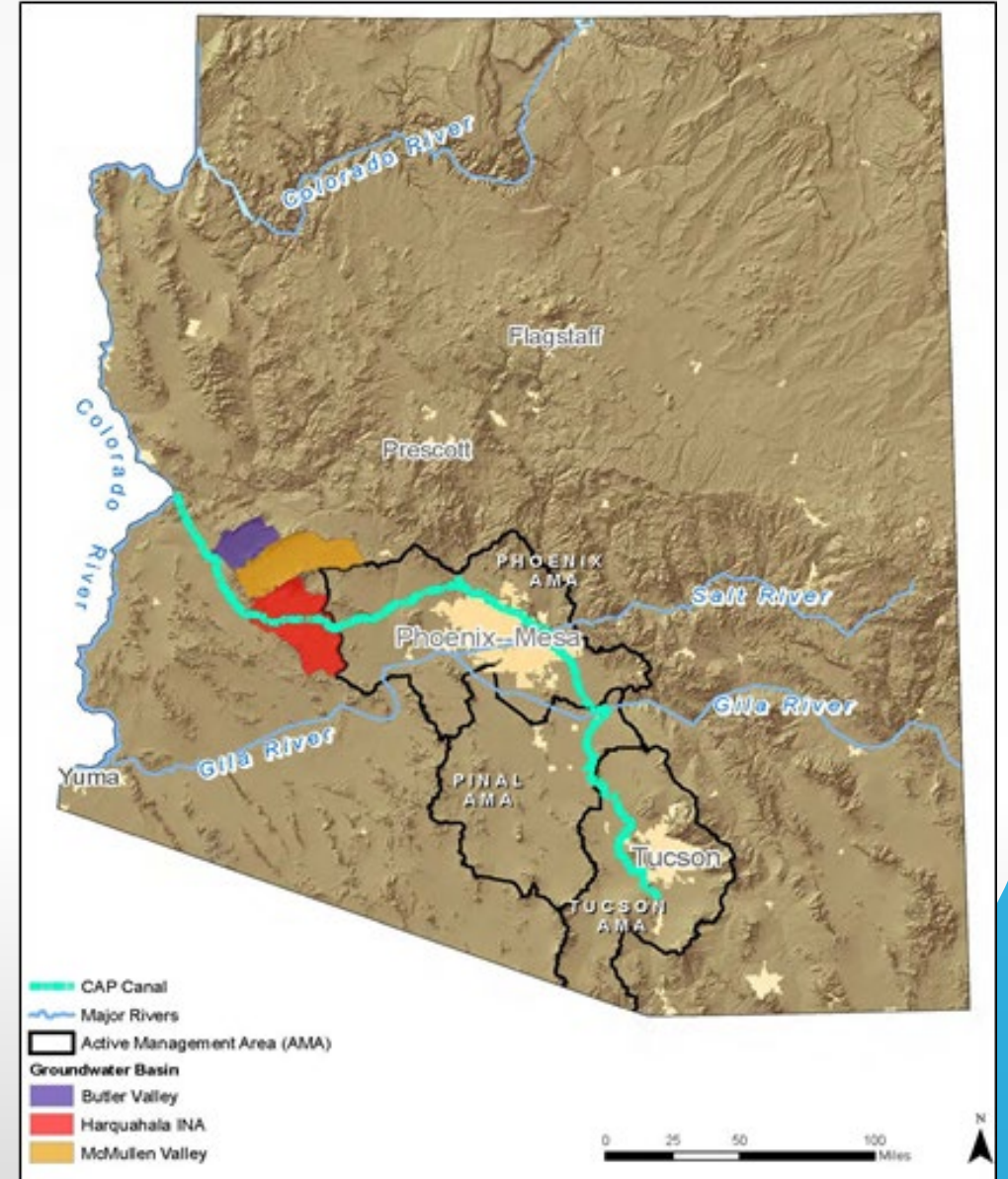
# Harquahala Valley

## Imported Groundwater

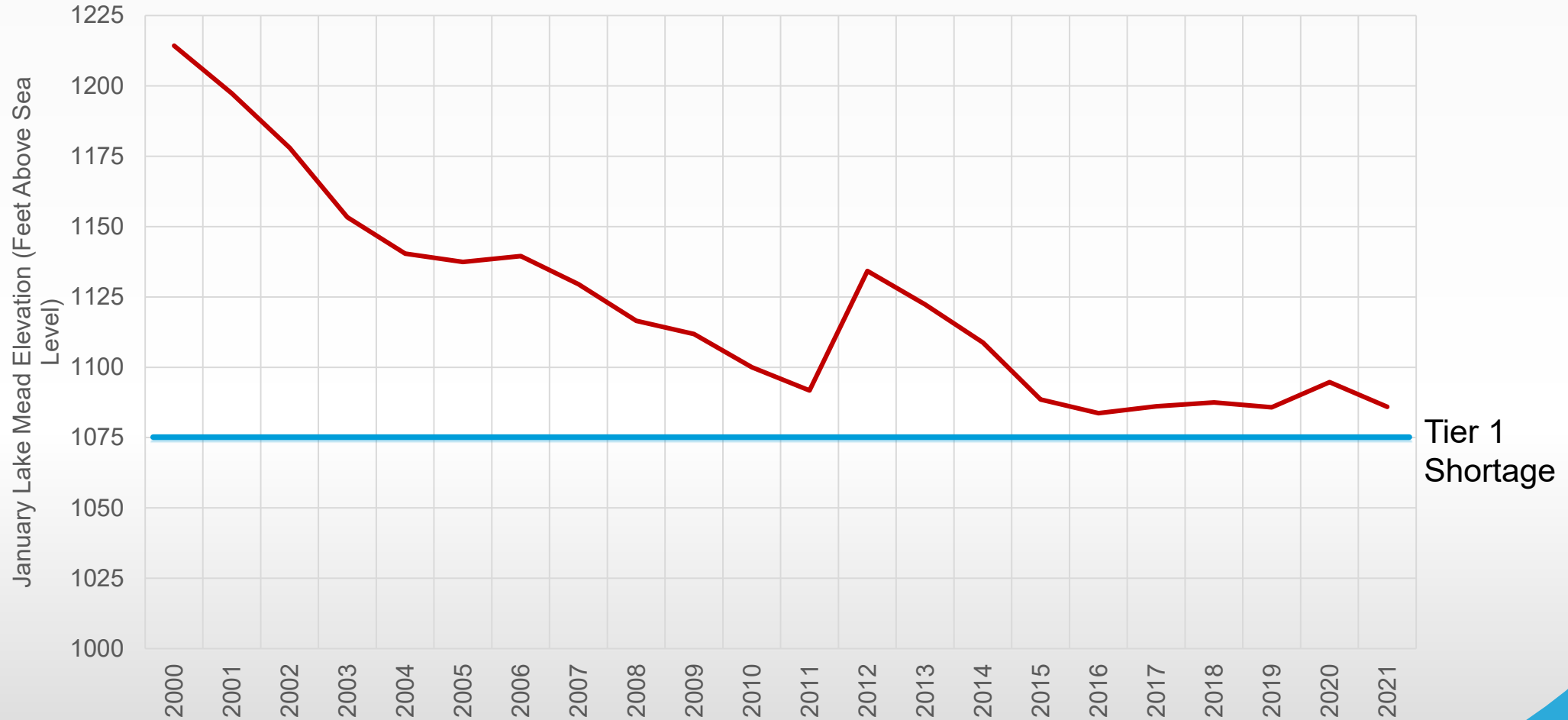
- Transaction: Purchase of lot with exportable groundwater rights
- Date: Nov 2021
- Buyer: Queen Creek
- Volume: 5,000 AF per year
- Price: \$6,000/AF plus cost of transporting water

## Long-Term Storage Credits

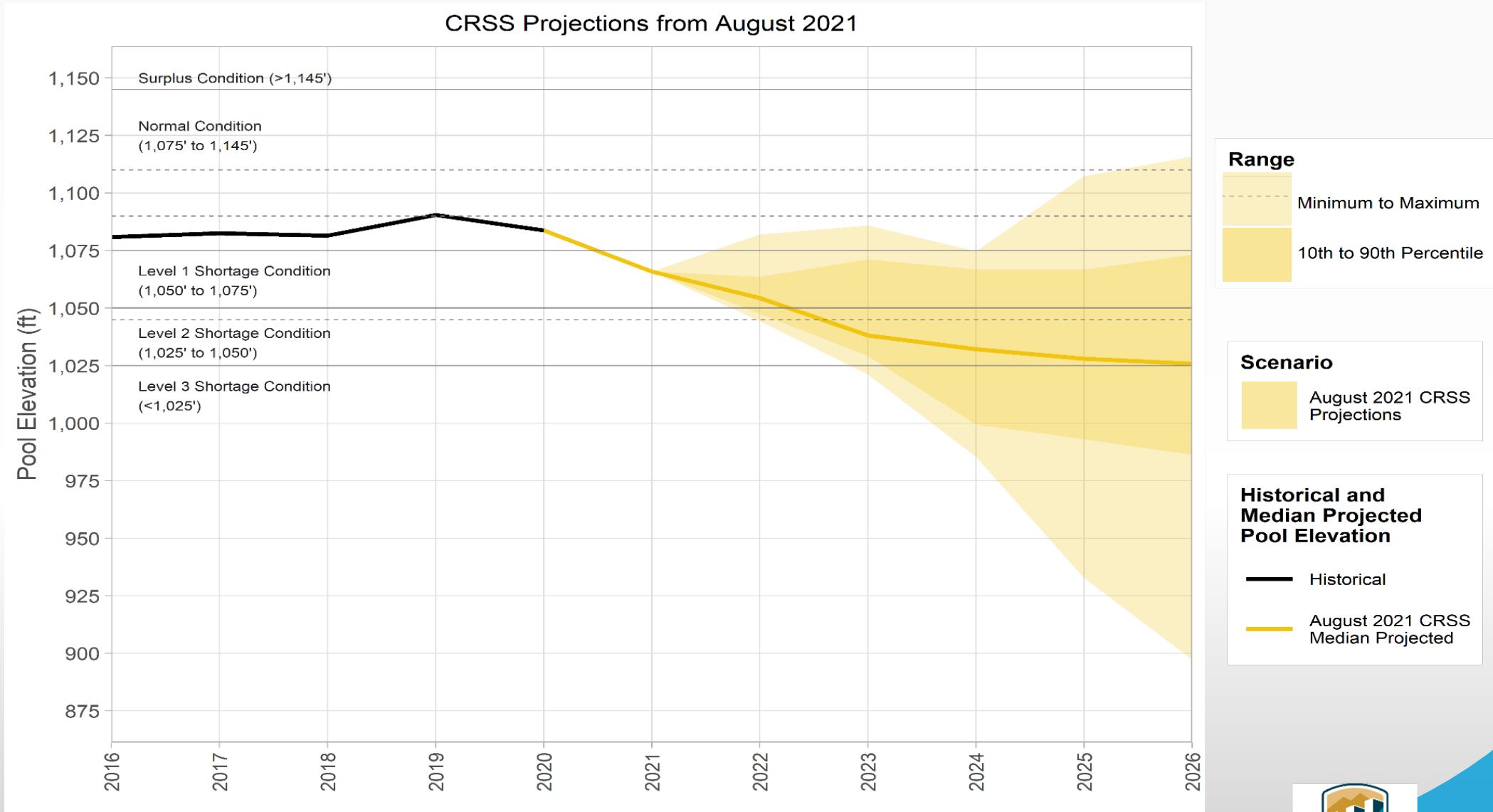
- Transaction: Call option to purchase 55,000 AF
- Date: Option exercised Dec 2021
- Buyer: Renewable energy developer
- Seller: Vidler Water Co
- Price: \$400/AF



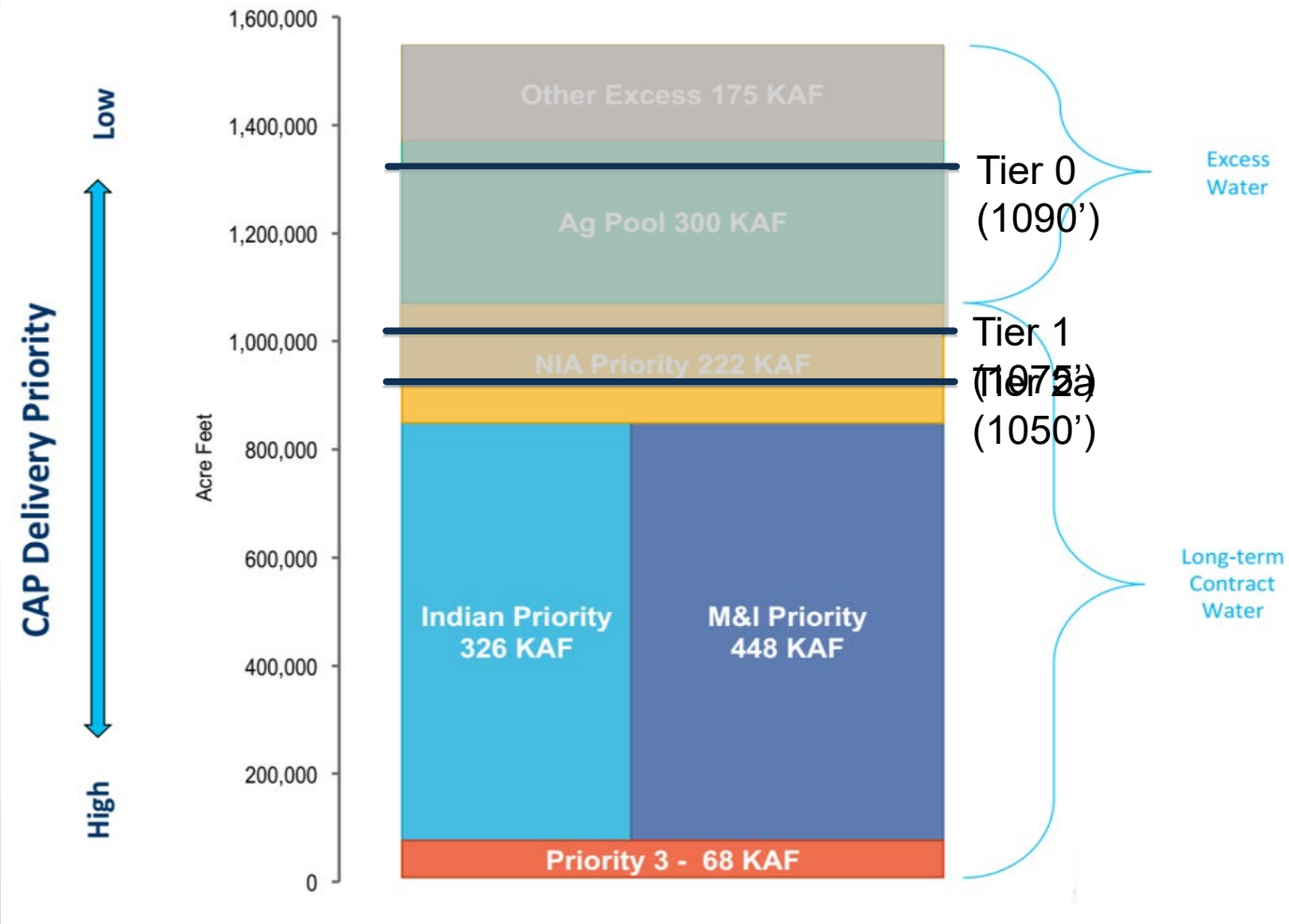
# Historic Lake Mead Elevations



# Lake Mead Elevation Projections



# CAP Shortage Reductions





## Colorado River

# Palo Verde ID Rotational Fallowing

### 2004 Agreement with Metropolitan

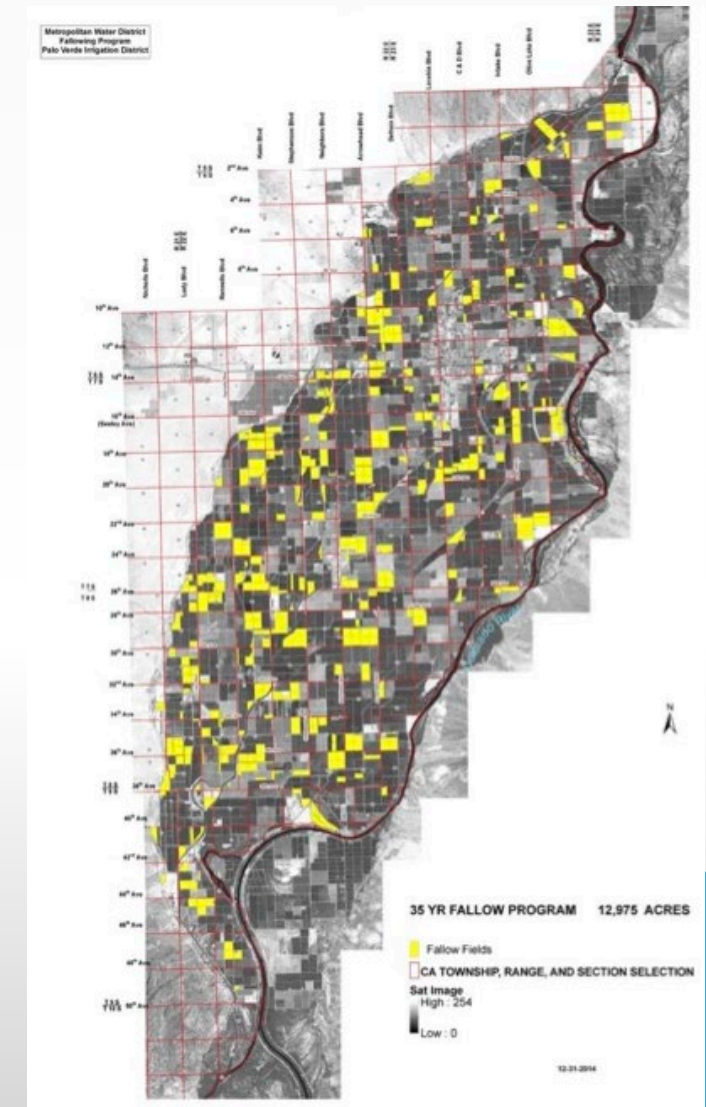
- Term: 35 Years.
- Upfront Payment: \$3,170 per enrolled acre.
- Annual Payment: \$602 per fallowed acre (CPI-escalated).
- Minimum Call: 6,000 priority 1 acres (7% of district and landowner acres).
- Maximum Call: 26,500 priority 1 acres (29% of district and 35% per landowner).

### 2009-2010 Short-Term Emergency Fallowing

- Purpose: Provide supplemental dry-year supplies to Metropolitan.
- Additional Fallowed Acres: Up to 15% of each farmer's irrigated land.
- Payment: \$1,665 per acre.

### 2021-2024 Voluntary Supplemental Fallowing

- Purpose: Conserve water in Lake Mead to mitigate shortage reductions.
- Additional Fallowed Acres: 13,333 acres per year.
- Payment: \$909 per acre funded by USBR, CAWCD, Metropolitan, and SNWA.



Colorado River

# Bard Water District Partial Season Fallowing

**Purpose:** Reduce Bard's consumptive use of Colorado River water to improve Lake Mead elevations.

**Term:** Two years, 2018-2019.

**Structure:** Partial season fallowing of 2,000 acres for the four-month period April 15-August 15.

**Conservation Savings:** Fallowing instead of irrigating a forage crop between produce crops. Estimated savings of 3,600 AF or 1.8 AF per acre.

**Grower Compensation:** \$324 per acre in 2018, \$337 per acre in 2019.



# Arizona 4<sup>th</sup> Priority Entitlement Sales

- **GSC Farm-Queen Creek, 2018:** Latest attempt to transfer Fourth Priority mainstem rights into Central Arizona.
  - Price: \$10,000/AF for each AF approved for transfer.
  - ADWR's Initial Recommendation: 1,078 AF of the total 2,083 AF of historic consumptive use may be transferred.
  - ADWR's Latest Recommendation: 2,033 AF of the total 2,083 AF may be transferred.
  - **Still under review by USBR.**
- **Western Water-Ehrenberg, 2019:** On-river transfer from agricultural to urban use.
  - Price: \$9,900/AF of historic consumptive use.
  - Volume: 60 AF of historic consumptive use.

# Water Market Outlook

**Type 2 Rights:** Prices will continue rising and trading activity will remain robust so long as industrial development continues in Central Arizona.

**Extinguishment Credits:** Prices and trading likely to continue at current levels driven by subdivision development.

**Long-Term Storage Credits:** Prices are rising as a result of growing competition among buyers, a limited number of sellers, decreasing availability of Colorado River water, and rising cost of storing Colorado River water due to shortage declaration.

**Harquahala Valley:** The next big bucket of water for Central Arizona development.

**Colorado River:** Federal and State efforts to mitigate shortage will drive new transactions with ag for system conservation water. Off-river transfers continue to be difficult.





# Thank You

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