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## Plan Requirements

The Plan must include **an estimate** of CAGR's projected groundwater replenishment obligation for current members and potential members for the 100 calendar years following the submission of the Plan, **based on reasonable projections** of real property and service areas that could qualify for membership in the ten years following the submission of the Plan.



August 18, 2022 CAGR & US Committee presentation

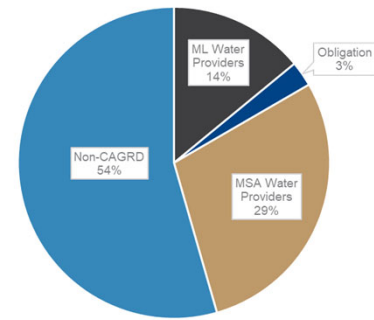
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## Analytical Challenges

Water supply and demand projections are riddled with elements of uncertainty and complexity.

There are additional challenges with projections of CAGRD's replenishment obligation because Excess Groundwater is only associated with a portion of a Member's demand, and that portion is influenced by decisions by those providers.

Municipal Demands, 2021  
1.3 MAF Total



Source: ADWR, Phoenix, Pinal and Tucson AMAs



## Previous Plans

The Obligation projections in the 2015 Plan were more realistic than the ones in 2005, but still overestimated. Contributing factors include:

- Reliance on optimistic official growth projections
- Under-appreciation of strategies to reduce or avoid Obligation
- Underestimation of conservation trends
- No explicit constraint on Physical Availability of groundwater

*The 2011 and 2019 Mid-Plan Reviews discuss these factors in greater detail*



## Key Factors

CAGRD's replenishment obligation is primarily associated with Member Land subdivisions. Key factors include:

- The rate, location, and type of growth
- Excess Groundwater reporting strategies
- Conversion to Member Service Areas
- Water conservation

Member Service Area replenishment obligation is more unique to each water provider, and tied to the management of their available supply portfolio, including the effects of shortage.

## Focus Groups: Growth & Housing



Four 90-minute, virtual meetings throughout November



6-8 participants in each meeting



Pre-survey questionnaire, >50% response rate



✓ Home Builders  
✓ Developers

✓ Academic  
✓ Redevelopment & Infill Experts

## Focus Groups: Common Themes



Consumer Demographics and Preferences



Housing Affordability and Rent Stability



Densification in Single-Family and Multi-Family



The Nature of Work



Water Resources



Tradeoffs and Access to Existing Infrastructure



Urban Amenities and Urban Form

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## Member Land Obligation Factors

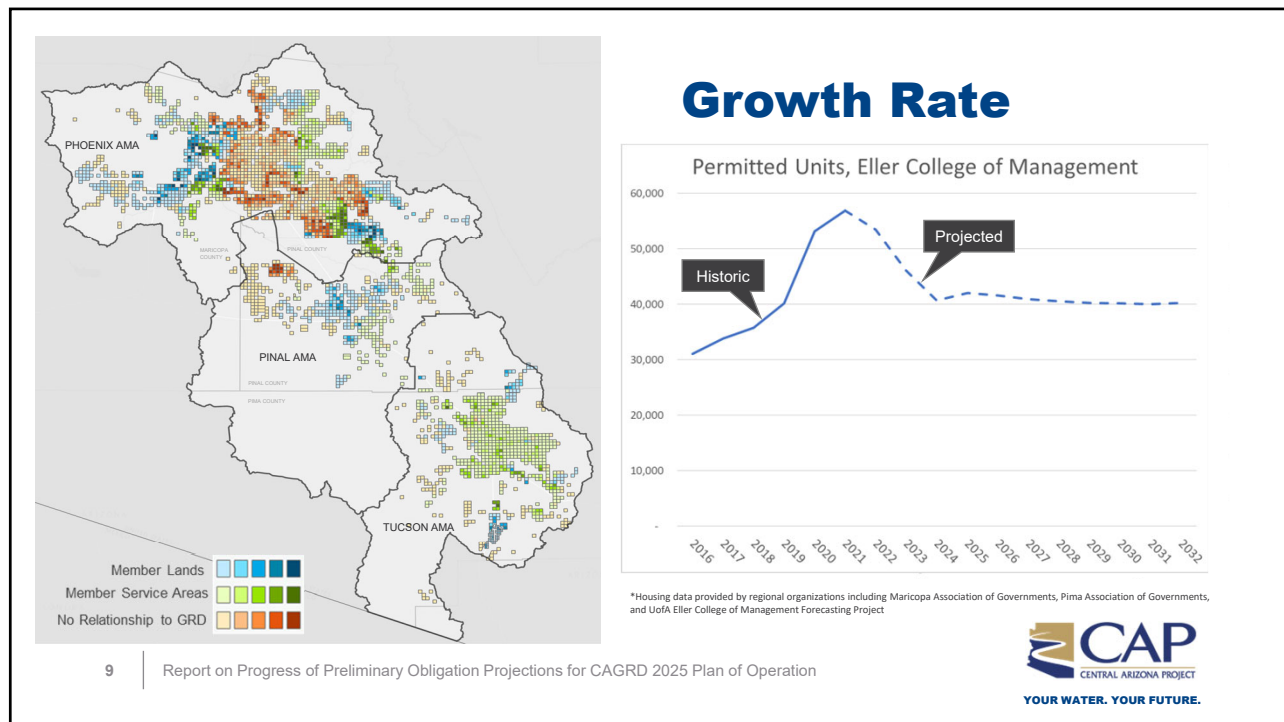
Status of Member Land Lots	Growth Rate	Growth Location	Type of Growth	Reporting Strategies	Member Changes	Conservation
Constructed				✓	✓	✓
Enrolled, Not Constructed	✓	✓	✓	✓	✓	✓
Future Enrollment	✓	✓	✓	✓	✓	✓

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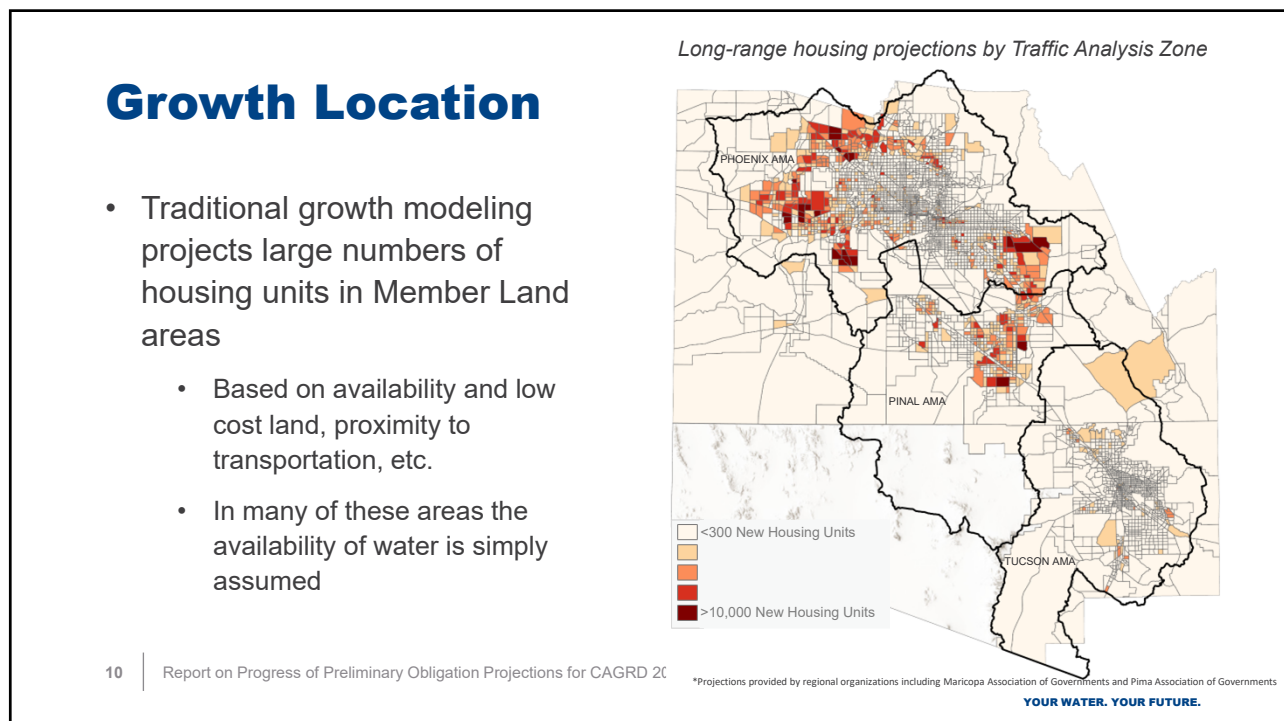
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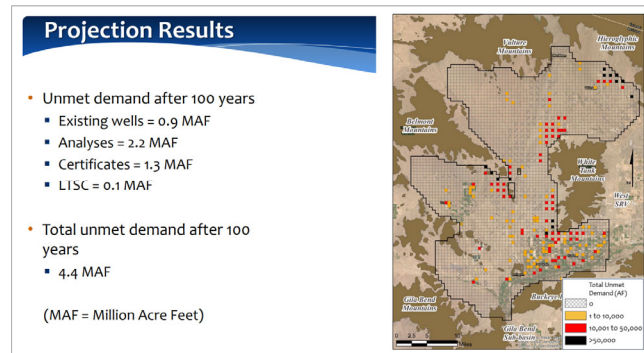


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## Growth Location

- Satisfying the 100-year AWS Physical Availability requirement on the basis of groundwater is becoming more difficult in many areas
- Groundwater for AWS purposes has been overallocated in the Pinal AMA and portions of the Phoenix AMA



Results from Lower Hassayampa Sub-basin 100-Year Assured Water Supply Projection, ADWR, 2023



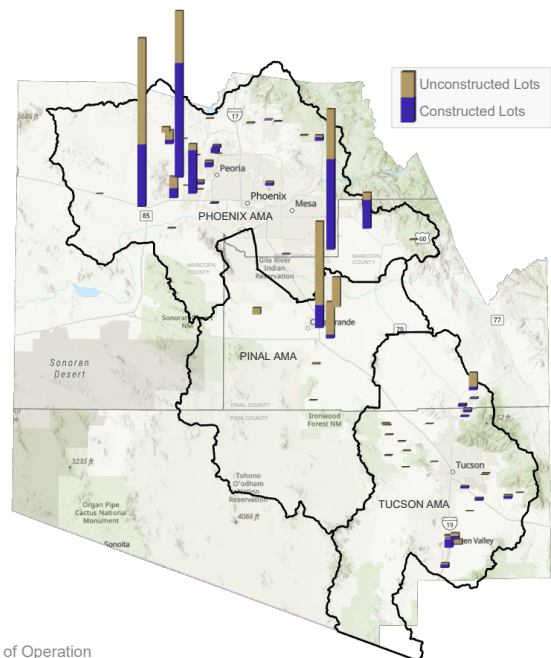
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## Growth Location

- Existing vs. New Member Lands
  - Enrolled Member Lands have already obtained a Certificate of AWS and demonstrated a 100-year supply
  - Lots that are enrolled but not yet constructed are likely to absorb a large share of the Member Land growth

AMA	Enrolled ML Lots	Not Yet Constructed
Phoenix AMA	220,000	80,500 (36%)
Pinal AMA	62,700	51,500 (82%)
Tucson AMA	25,000	9,700 (38%)



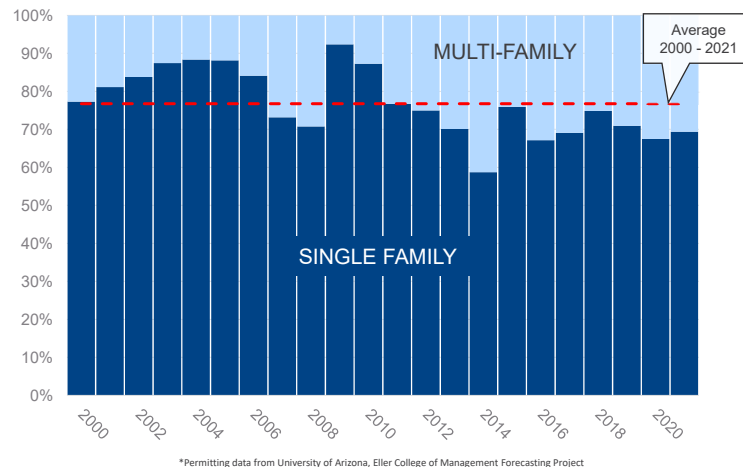
YOUR WATER. YOUR FUTURE.

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## Growth Type

- The proportion of multi-family housing units has increased in the past decade
- This is associated with urban densification, and results in lower per capita water use



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## ML Excess Groundwater Reporting

- Groundwater allowance use by Member Land water providers can significantly influence the volume and timing of Excess Groundwater reported to the CAGR
  - Affected by the nature of a Member Land and when it was enrolled
  - A ML's groundwater allowance can be used until the balance is exhausted or additional Extinguishment Credits are pledged
- Non-groundwater supplies, including effluent and recovered Long-Term Storage Credits, can further reduce CAGR reliance

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## ML to MSA Conversion

- A Member Land water provider seeking a Designation of AWS may opt to enroll in CAGRDR as Member Service Area
  - The AWS requirements apply to all MSA demands, including pre-1995 subdivisions
  - Barring the acquisition of additional renewable supplies by the water provider, conversion to an MSA will increase reliance on CAGRDR replenishment
- The Town of Queen Creek and City of Buckeye have indicated a desire to enroll as MSAs, but are also acquiring renewable supplies

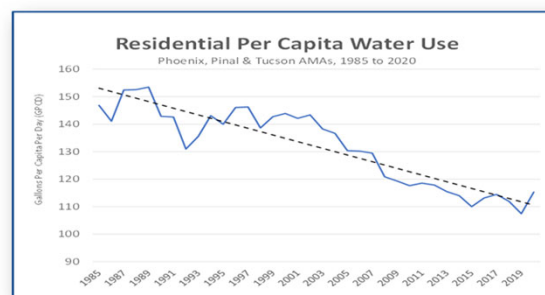
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## ML Conservation

- Conservation through landscaping changes, indoor fixture replacement, and behavioral changes has reduced the overall per capita rate in the municipal sector, and the water use per lot in CAGRDR Member Lands.
- A significant portion of CAGRDR Member Land housing is approaching 20+ years since construction.



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## Member Service Areas

- Member Service Areas have a fundamentally different relationship with the CAGRDR than water providers serving Member Lands
  - Charges for CAGRDR's replenishment are collected directly from the MSA, rather than through a property tax assessment
  - As Designated providers, MSAs have greater control over the management of their water supply portfolio, including acquisition of new supplies
  - Reporting Excess Groundwater is typically the most costly way for MSAs to satisfy the annual AWS renewable supply requirement
- MSA replenishment obligation could increase due to shortage impacts to the provider's supply portfolio, or changes in the relative pricing of other supplies

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## Preliminary Assumptions

- **Growth Rate:** Steady growth, but lower than official forecast
- **Growth Location:** Greater Physical Availability constraints on new ML enrollment; some shift to MSAs and non-CAGRDR
- **Growth Type:** Multi-family ratio stays above historic average
- **Excess Groundwater Reporting:** Current strategies to reduce CAGRDR reliance begin to lose effectiveness during the 20-year period
- **ML to MSA Conversion:** If conversions occur, the increase in AWS demand is largely offset by renewable supplies acquired by the provider
- **Conservation:** Gradual flattening of historic trends through 20-year period
- **Member Service Areas:** Total MSA obligation stays near current levels, with fluctuating reliance by individual MSAs, and periodic increases due to shortages

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## Preliminary Obligation Estimates

		20-Year	100-Year
<b>Member Lands</b>	Constructed Lots	45-55 KAF	60 KAF
	Enrolled, Not Constructed Lots	10-25 KAF	30 KAF
	Future Enrolled Lots	8-12 KAF	15-20 KAF
<b>Member Service Areas</b>		10-15 KAF	10-15 KAF
<b>TOTAL</b>		<b>73-107 KAF</b>	<b>115-125 KAF</b>

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## Questions?

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