

Cost Assessment of Groundwater Replenishment Obligations for the Central Arizona Groundwater Replenishment District

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Purpose of the CAGRD

- Provides a mechanism for developers and water providers to demonstrate 100-year water supply under Assured Water Supply rules
- Regulated by the Arizona Dept. of Water Resources (ADWR).

Assured Water Supply (AWS) rules:

- Designed to protect groundwater supplies within Phoenix, Tucson, and Pinal Active Management Areas (AMAs), where groundwater overdraft is the most severe.
- Ensure that people purchasing subdivided land within an AMA have a water supply of adequate quality and quantity.

CAGRD Membership

Those who cannot demonstrate AWS but want to use groundwater, can enroll as member in the CAGRD. Members pay the CAGRD to replenish amount of groundwater pumped or delivered in the AMA that exceeds limitations imposed by AWS rules.

Two types of membership:

- **Member Service Areas (MSAs)**
 - Enrollment for water providers
- **Member Lands (MLs)**
 - Enrollment for land developers

CAGRD Member Fees

Three types of fees:

- **Enrollment fees**- one-time fee that must be paid when applying for membership in the CAGRD.
- **Activation fees**- one-time fee that must be paid after the member becomes enrolled in the CAGRD before development can begin.
- **Annual fees**- Water providers and land developers pay a tax to the CAGRD according to the number of acre-feet of excess groundwater they deliver each year.

Projected CAGRD Obligations

Figure 1. (source: cagr.com)

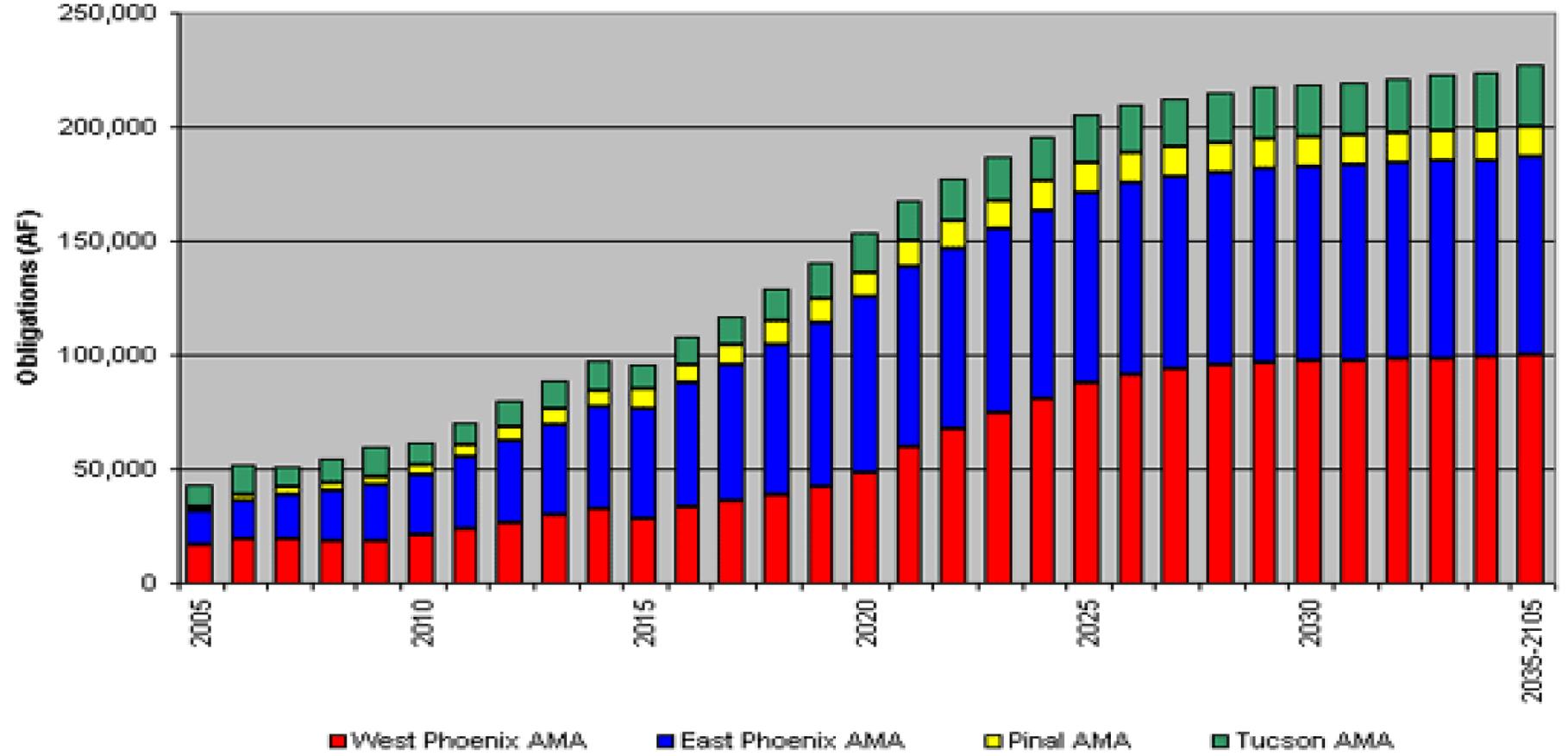


Figure 2. Projected Costs of Replenishment per AF per year

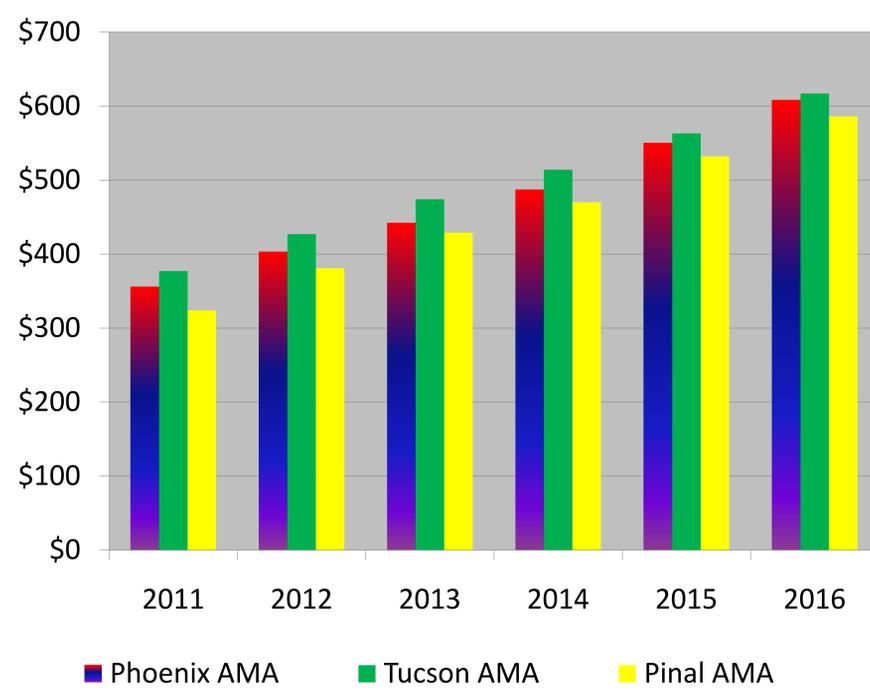
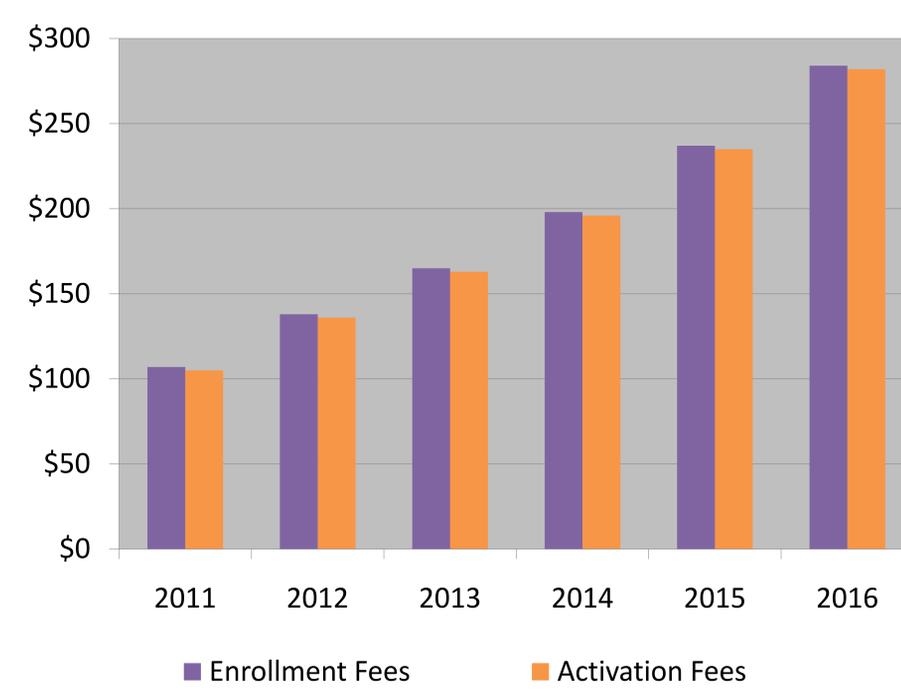


Figure 3. Projected One-time Member Fees per year



How will member fees be affected by the cost of fulfilling CAGRD's future groundwater replenishment obligations?

- Replenishment obligations are projected to be over 227,000 ac-ft by the year 2035.
- Replenishment costs for each AMA are projected to rise to around \$600 per ac-ft by the year 2016.
- One time fees for new members are projected to more than double in the next 5 years.

Calculating replenishment costs and assessment of fees:

- Raw data collection
- Graphical analysis of data
- Literature review.

Future Projections

With the rise in population and land development in the Valley, the number of members in the CAGRD will continue to grow, increasing demand for water supplies, causing the CAGRD's replenishment obligations to increase.

As a result, member fees and rates will increase immensely over time in order for the CAGRD to be able to fulfill its replenishment obligations.

Because of the rise of the cost of replenishment, the CAGRD has established a conservation program designed to educate members and encourage them to practice water conservation. The goal is to reduce the rate of member consumption so that the CAGRD will have lower replenishment obligations and the subsequent rates and fees for members will not increase as much as the current projections suggest.

Acknowledgements: Katja Brundiers, Omayya Ahmad, & Ray Quay of DCDC



Sources: CAGRD Plan of Operation (2004); CAGRD Executive Summary (2011); CAGRD Annual Reports to ADWR (2008, 2009). CAGRD Enrollment & Activation Fee Policy (2008). Figure 1 data from CAGRD website (cagr.com); Figure 2 & 3 data from CAGRD Final Rate Schedule (2010); This material is based upon work supported by the National Science Foundation under Grant SES-0951366, Decision Center for a Desert City II: Urban Climate Adaptation. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

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