Markets for Reclaimed Water and the Role of Private Investment

July 2019
WestWater Research Overview

• Economic and financial advisory firm specializing in water resources.
• Nationwide practice with offices in four states.
• Professional team of economists and MBAs.
• Expertise in water markets and water resource planning.
• Diverse clients across the public, private, and non-profit sectors.
Markets for Reclaimed Water

DEFINING THE MARKET
### Reclaimed Water Market Transactions

<table>
<thead>
<tr>
<th>We ARE talking about...</th>
<th>We ARE NOT talking about...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voluntary transactions.</td>
<td>Non-potable water service.</td>
</tr>
<tr>
<td>Negotiated prices.</td>
<td>Prices reflecting the cost of treatment and conveyance infrastructure.</td>
</tr>
<tr>
<td>Sales, leases, exchanges.</td>
<td>No value assigned to the water resource.</td>
</tr>
<tr>
<td>Value assigned to the water resource.</td>
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</table>
Markets for Reclaimed Water

ARIZONA
Central Arizona Reclaimed Water Use

- The Phoenix area reuses or recharges approximately 82% of its effluent.

Evolution of Arizona’s Reclaimed Water Market

Notable Events

- SROG-Buckeye Irrigation Co
- Prescott Valley Effluent Auction
- SROG-Palo Verde
- Liberty-CAWCD P3

SROG – Palo Verde (1973)

- **Water Use:** Palo Verde is the largest generator in the US (4,030 MW), and only nuclear plant using 100% reclaimed water for cooling.
- **Term:** Thru 2050
- **Annual Volume:** Up to 80,000 AF
- **Up-Front Payment:** $30M over four years.
- **Annual Payment:** $144/AF in 2019, changes to a four-tier structure in 2026 ranging from $198-$474/AF.
Prescott Valley Effluent Auction (2007)

• **Project:** Auction of 2,274 AF (100-year supply) of recharged effluent.

• **Objective:** Raise funds to finance the Town’s Big Chino Valley groundwater importation project.

• **Outcome:** Completed sale that could generate up to $67M for the Town.
  – Price floor guaranteed by a pre-auction bid of $43 million.
  – Attracted multiple competing buyers.
  – Winning bidder was a New York-based private equity fund.
  – Sales of effluent rights have begun to developers seeking a 100-year Assured Water Supply.

• **Recognition:** Named 2008 “Water Deal of the Year” by *Global Water Intelligence.*
Liberty Aquifer Recharge Facility (2014)

- **Public-Private Partnership** between CAGRD and Liberty Utilities for development of a new reclaimed water recharge facility in Litchfield Park, AZ.

- **CAGRD Contributed $4.8M** in exchange for a 100-year lease of 2,400 AF, and a right to purchase 2,600 AF per year of recharge credits.

- **Liberty Contributed $1.2M** and 5,000 AF of reclaimed water.

- **Recognition**: Nominated for 2014 “Water Deal of the Year” by *Global Water Intelligence*. 
## Arizona Reclaimed Water Market Participants

<table>
<thead>
<tr>
<th>Sellers</th>
<th>Buyers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bisbee.</td>
<td>Buckeye Irrigation Company.</td>
</tr>
<tr>
<td>Chandler.</td>
<td>Freeport-McMoRan</td>
</tr>
<tr>
<td>Globe.</td>
<td>Frito Lay.</td>
</tr>
<tr>
<td>Liberty Water.</td>
<td>Golf courses.</td>
</tr>
<tr>
<td>Metro Water.</td>
<td>Land developers.</td>
</tr>
<tr>
<td>Pima County.</td>
<td>Palo Verde Nuclear Generating Station.</td>
</tr>
<tr>
<td>Prescott Valley.</td>
<td>Private equity funds.</td>
</tr>
<tr>
<td>SROG Cities.</td>
<td>Reliant Energy.</td>
</tr>
<tr>
<td>Superstition Mountains CFD #1</td>
<td>Tribes.</td>
</tr>
<tr>
<td>Surprise.</td>
<td></td>
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<tr>
<td>Tolleson.</td>
<td></td>
</tr>
<tr>
<td>Tucson.</td>
<td></td>
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<tr>
<td>US Bureau of Reclamation.</td>
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</tbody>
</table>
Markets for Reclaimed Water

LEGAL/REGULATORY ISSUES
## Enabling Regulatory Conditions

<table>
<thead>
<tr>
<th></th>
<th>Arizona</th>
<th>California</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ownership</strong></td>
<td>WWTP owner</td>
<td>WWTP owner</td>
</tr>
<tr>
<td><strong>Downstream Users</strong></td>
<td>No claim</td>
<td>Protected from injury</td>
</tr>
<tr>
<td><strong>Change of Use</strong></td>
<td>No regulatory process</td>
<td>SWRCB change petition</td>
</tr>
<tr>
<td><strong>Reclaimed Water Recharge</strong></td>
<td>More straightforward</td>
<td>More complicated</td>
</tr>
</tbody>
</table>
Markets for Reclaimed Water

CALIFORNIA
California Reclaimed Water Use

- 1.28 Million acre-feet of reclaimed water discharged to the ocean annually.
- Most ocean discharge occurs in growing and water-short urban areas.

California Reclaimed Water Use

- State of California’s recycled water use goal is 2.53 Million AF by 2030.
- Achieving this goal will require significant infrastructure investment (up to $80B by some estimates).

How Markets Can Help – An Example

Legend:
- Agreement
- Reclaimed Water Option Agreement
- Reclaimed Water Purchase Agreement
- Payment

Municipality

Industrial Facility

New Infrastructure: Secondary Treatment & Conveyance

Private Investor

Privileged and Confidential Information
Key Elements of a Successful Project

✓ Control of reclaimed water supply.
✓ High credit quality reclaimed water purchaser(s).
✓ Long-term reclaimed water purchase agreement with purchaser(s).
✓ Consistent/predictable cash flow.
✓ Clarity regarding infrastructure construction, ownership, and O&M responsibilities.
✓ Manageable construction risk (cost and timeline).
✓ Reasonable and transparent cost of capital.
Key Takeaways

• Market transactions of reclaimed water have enabled Arizona to become a leader in water reuse.

• The private sector and private investment have catalyzed expansion of water reuse in Arizona.

• While California reuses a relatively small portion of its reclaimed water, the State has established aggressive reuse goals.

• Achieving California’s water reuse goals will require significant capital, and public/private sector cooperation.
Thank you

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