

# The Transformation of Reclaimed Water

A Perspective of Direct Deliveries versus Indirect Potable Reuse

Mark Holmes  
City of Goodyear



# Topics

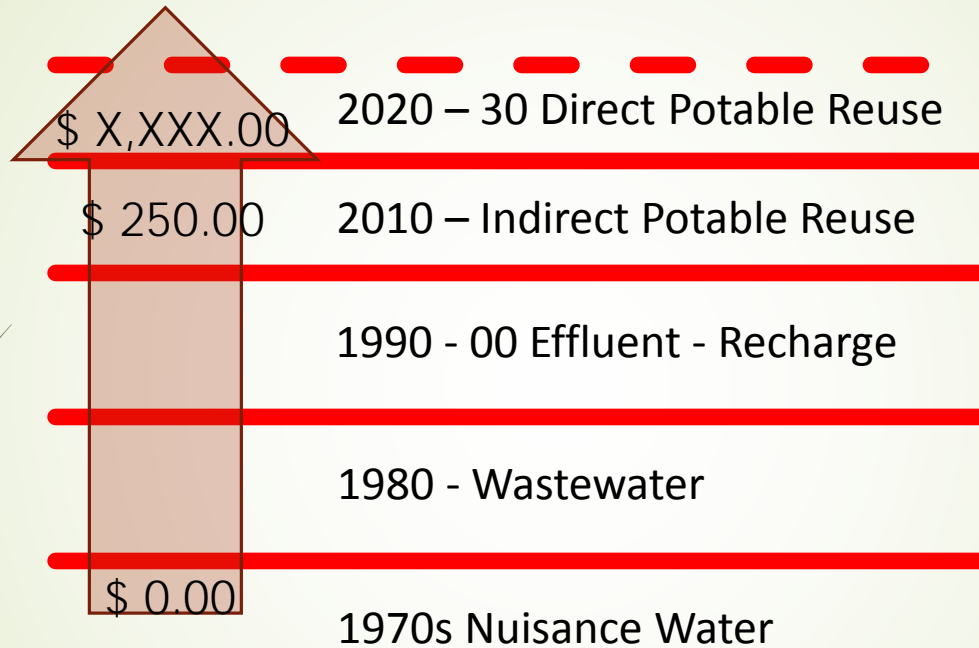


1. Water Resources Value vs. Amenity Value
2. Direct non-potable vs. indirect potable reuse
3. Water reuse efficiency and sustainability
4. Summary

# RECLAIMED WATER VALUE

COST OF SERVICES

REVENUES



WATER EFFICIENCY  
DROUGHT FIRMING

## WATER RESOURCES VALUE



# Direct Delivered Reclaimed Versus Indirect Potable Reuse (IPR)



# Direct Delivered Reclaimed

## A. Primarily delivered to water intensive uses:

Public or Private

1. Turf Facilities
2. Agricultural uses
3. Electric Generation
4. Industrial uses
5. Recreational Amenities
6. Others

## B. Directly Delivered through a secondary infrastructure – “Purple Pipe” in addition to a potable system – *increasing or doubling* the costs of services

1. Effluent Storage
2. Pumps
3. Transmissions systems
4. Distribution systems
5. Valves
6. Meters

## C. Challenges

1. May still require disposal system(s) in lowest demand months
2. May not have enough effluent within peak demand months
3. Provides only one single reuse
4. Can create master planning challenges
5. Water Quality issues – salinity, TDS, and others that can create challenges for some uses
6. May rely on financial subsidies to pay for “purple pipe” system deliveries operations, maintenance, and replacement and capital improvement planning
7. Direct delivered reclaimed water sold at a significantly reduced rate
  - a) Does it provide an unfair advantage for competition for entities that must purchase potable water?
  - b) More importantly, is a cheap water supply used as efficiently or sustainably as an expensive one (potable water)?
8. During future shortages would curtailments affect direct non-potable users based on disposal issues?

# Indirect Potable Reuse (IPR)

- A. Effluent is stored underground and recovered for future use
- B. Once recovered the effluent is delivered via potable water transmission and distribution systems
  - 1. Requires only one distribution infrastructure – “no purple pipe” reduced operation, maintenance, and replacement costs, and overall costs of services and CIP
  - 2. Potable water sold at potable water rates
    - a. Efficiency and conservation built into the rates
  - 3. Percent of reused water is recovered and made available for additional reuses
  - 4. Provides better master planning
  - 5. May provide better aquifer management
  - 6. Balance water demand peaking
  - 7. Effluent can be banked and recovered when needed in the future “drought proofing” your service area.
  - 8. Best water quality to meet all uses
  - 9. Would not require subsidies
  - 10. Can be curtailed thus all customers are treated fair and consistent



## C. IPR Challenges

1. Effluent must be recharged and stored within the aquifer
  - a. Requires various permits, infrastructure, and recharge systems
2. Effluent stored underground must be recovered via recovery well systems and treated to potable standards
3. Is not suitable for all areas and one size does not fit all

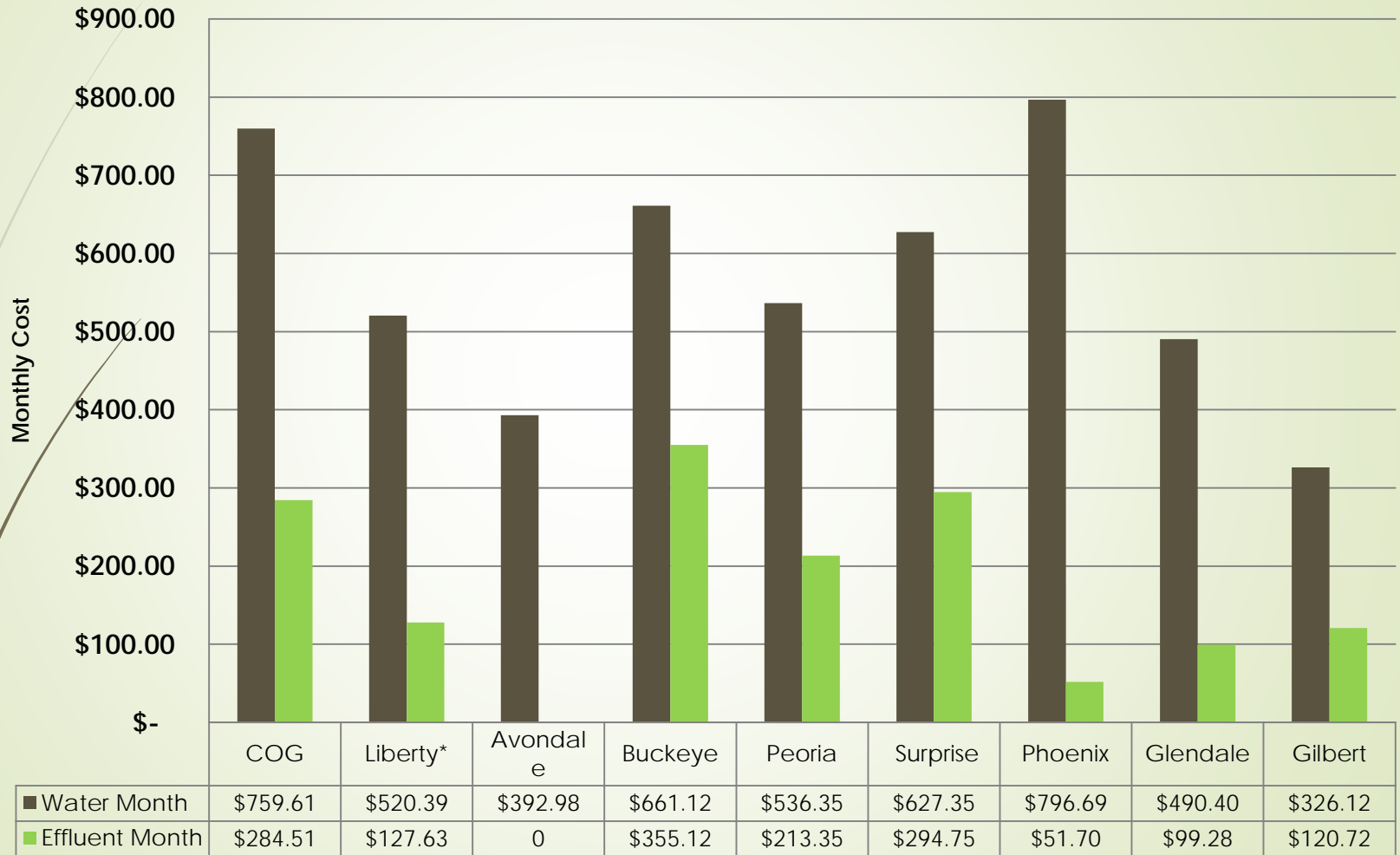





# Water Reuse Efficiency and Sustainability

# Monthly Potable vs. Effluent Revenues

(150,000 gal + 2" meter base)





| Irrigation 2" meter |                |                | Potential<br>Subsidy |
|---------------------|----------------|----------------|----------------------|
| 150,000 gal         | Water<br>Month | Effluent Month |                      |
| <b>COG</b>          | \$ 759.61      | \$ 284.51      | <b>\$ 475.10</b>     |
| <b>Liberty*</b>     | \$ 520.39      | \$ 127.63      | <b>\$ 392.75</b>     |
| <b>Avondale</b>     | \$ 392.98      | \$ 0.00        | <b>\$ 0.00</b>       |
| <b>Buckeye</b>      | \$ 661.12      | \$ 355.12      | <b>\$ 306.00</b>     |
| <b>Peoria</b>       | \$ 536.35      | \$ 213.35      | <b>\$ 323.00</b>     |
| <b>Surprise</b>     | \$ 627.35      | \$ 294.75      | <b>\$ 332.60</b>     |
| <b>Phoenix</b>      | \$ 796.69      | \$ 51.70       | <b>\$ 744.99</b>     |
| <b>Glendale</b>     | \$ 490.40      | \$ 99.28       | <b>\$ 391.12</b>     |
| <b>Gilbert</b>      | \$ 326.12      | \$ 120.72      | <b>\$ 205.40</b>     |

6/29/2013 6:01:00 AM

## Talk of the Town: Prescott's hidden million-dollar subsidy

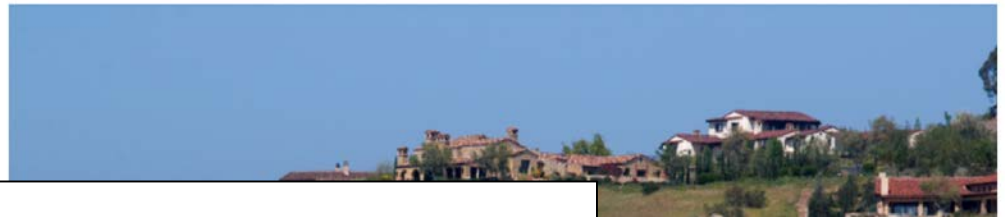
By Howard Mechanic

At a [Prescott City Council](#) meeting in May, many and even outrage at continuing city subsidies for many Letters to the Editor and commenters at do golf course subsidies from the city's general fund time has a much larger city subsidy been mentio Antelope Hills.

## How Your Water Rates Subsidize Golf Courses

By ROB DAVIS | April 11, 2010

f t g+ p in e



### The water subsidy for golf courses 'scandal'

Posted by George J Janczyn on April 17, 2010



Balboa Park Golf Course is not yet using reclaimed water

"How your water rates subsidize golf courses" is the headline in a recent Voice of San Diego article by Rob Davis that will probably stir up some indignation around town. The article says that "475 businesses, homeowners associations, golf courses and public agencies" get a 78% discount on *reclaimed water* which is subsidized by regular water users. The article cites Michael Shames, executive director of UCAN, who suggests that discounted prices for reclaimed water users may be illegal, and that "City Councilwoman Donna Frye called it "out-of-whack" and promised to hold a public hearing on it." In a subsequent PBS Editors Roundtable discussion, Voice of San Diego executive editor Andrew Donohue said a normal discount for reclaimed water should be only 10% and that the City had been keeping the subsidy for industrial use a secret.

I really don't see a scandal here.

First, the discount isn't a secret (although details on its financial impact may be hard to obtain). The City's *Guaranteed Water for Industry Program* is where the discounted water has been publicly documented [the discount is also documented [here](#)]. Initially the discount was only for businesses certified under the program, but presently the \$0.80 per HCF price (which they wrote was a 50% discount) applies to all purchasers of reclaimed water (with the exception of Poway which is charged more because it didn't pay certain capacity fees). [There is no discount for the fixed base fee, however. All water users pay the same base



North City Water Reclamation Plant



# Summary

1. The value of reclaimed water has created a significant paradigm shift.
2. Indirect potable reuse has been the next logical step towards direct potable reuse.
3. If your system has direct deliveries of reclaimed water how much is the subsidy, who is paying it, and is it transparent?
4. When the time is right in Arizona for direct potable reuse, how much reclaimed water will be available?
5. When the value of reclaimed water hits a critical inflection point will any subsidies be tolerated especially considering the increasing costs of services and costs for new water supplies?
6. If you are contemplating current or future direct deliveries have you evaluated the value of the water resources and the return on investment for direct deliveries versus indirect potable reuse?



Questions or Comments??