

Recycled Water: Changing Values and Views

As population grows throughout the arid western United States and scarce water resources become increasingly strained, more western cities are taking a hard look at effluent as a potentially valuable water asset.

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Municipal and industrial wastewater (effluent) has long been viewed as a nuisance. Historically, cities dealt with this waste management challenge by discharging treated effluent to surface streams, or by relying on local golf courses to soak up the supply.

However, as population grows throughout the arid western United States and scarce water resources become increasingly strained, more western cities are taking a hard look at effluent as a potentially valuable water asset. Increasing water values, regulatory forces, and heightened social acceptance for wastewater reuse are giving rise to commercial opportunities surrounding effluent.

Wastewater reuse involves recapturing effluent, and treating it to potable standards. Effluent is unique; not only is it a renewable resource, but a city's effluent supply grows concurrent with water demand in its service area. There are a variety of ways that cities can generate value from wastewater



reuse. While interest in effluent as an additional water source is piquing around the West, two factors prevent widespread implementation of wastewater reuse.

The first barrier to investment in wastewater reuse is negative public perception, which is perhaps better known as the “yuck factor.” Americans have been consuming wastewater that upstream cities discharge to rivers for centuries, but few like the idea of drinking water that once was coursing its way through city sewers. However, the “yuck factor” is waning as water values rise, and awareness of the environmental benefits of wastewater reuse grows.

The second hurdle facing effluent value realization is the lack of regulatory certainty surrounding ownership and rights to use effluent.

In many areas, ownership of effluent is a legal grey area. Where legal entitlements are hazy, markets are slow to develop.

Despite these challenges, markets for effluent are emerging in several regions where fresh water is particularly scarce. In these areas, municipalities are beginning to realize value from effluent streams. While “purple pipe” systems have facilitated some limited effluent marketing, such systems generally require costly infrastructure, and involve relatively small water volumes. We are now seeing markets develop for large volumes of effluent where prices reflect the value of the supply rather than the cost of pumps and purple pipes. These early-stage effluent markets provide a glimpse into the future for the rest of the West, where we expect wastewater reuse to become more prevalent over

time. Central Arizona's burgeoning metropolitan areas are leading the charge in realizing the value of effluent. Effluent marketing began in the 1970's when a group of Phoenix-area cities struck long-term deals to lease reclaimed water to the Buckeye Irrigation Company, and Palo Verde Nuclear Generating Station. The lease of effluent for cooling purposes at the Palo Verde Nuclear Generating Station was renewed in 2010, with the price scheduled to reach as high as \$474 per acre-foot by 2026.

Central Arizona's effluent market was further kick-started when the state implemented its underground water storage and recovery program in the 1980's. This program allows municipalities to recharge high-quality effluent into local aquifers, creating credits that can be recovered from other areas of the same aquifer. The credits are

freely transferable among water users, and a competitive market has emerged for recharge credits. This regulatory framework enabled the Town of Prescott Valley to monetize the rights to its effluent supplies at a 2007 auction, generating as much as \$67 million for the Town.

Signs of life have also been observed in other regional effluent markets. In California, the City of Ridgecrest made news in 2008 when it entertained offers from three entities to purchase effluent for cooling purposes at a nearby solar energy facility. In Washington, Microsoft partially funded the development of a new wastewater treatment facility for the City of Quincy in exchange for the right to use effluent supplies for cooling at the local Microsoft data center.

Now that wastewater reuse is becoming more socially acceptable

and the rules surrounding effluent ownership are becoming clearer, we are seeing changes in how cities deal with effluent. What was formerly a nuisance has become a real value-creating proposition. Commercial opportunities around effluent are not limited to sales or leases of effluent supplies. They may also include pricing effluent into concession contracts with treatment facility operators, and swapping effluent for alternative supplies suitable for direct human consumption. While western states are still a long way from allowing direct human consumption of effluent, we anticipate that fewer water managers will overlook effluent opportunities in the future.



Matt Payne is an Associate with WestWater Research, and leads the company's Southwest office in Phoenix. Payne's broad experience includes valuation analyses of water rights and infrastructure for municipalities, investors and law firms. He also frequently performs due diligence support of water asset transactions, and sources water investment opportunities. Currently, Matt is developing the first-ever price index for water rights in the American West.

