# *POTABLE REUSE PROGRAM POSITION STATEMENT*

## *TERMINOLOGY*

Indirect potable reuse refers to the planned incorporation of appropriately treated recycled water into a raw water supply, such as in a raw water impoundment or a groundwater aquifer, resulting in mixing and assimilation, thus providing a buffer. Direct potable reuse has not been explicitly defined by regulation, but refers herein to the introduction of appropriately treated recycled water either directly into the potable water system downstream of a water treatment plant or into the raw water supply immediately upstream of a water treatment plant. Eventually, we may wish to eliminate the distinction between indirect and direct potable reuse, and refer instead to simply potable reuse to include the fullest possible range of intentional potable reuse projects.

## *OPPORTUNITY*

California is facing a water crisis and needs to optimize all potential water resources in the state, including recycled water for indirect or direct potable reuse. The need to optimize these recycled water uses in California results from the continued declining trend in fresh water resources for drinking and other uses as a result of growth/demand, droughts, water rights, protection of environmental flows for wildlife, and climate change. Conservation alone will not meet California's future water demand.

To partially address this water supply gap, the California Legislature established a goal to increase water recycling to 1 million acre feet annually (MAF) by 2010 (Section 13577, Water Code). In 2009 water recycling accounted for only about 0.65 MAF of California's 43 MAF annual water use. Approximately 3.5 MAF of fresh water is discharged to the ocean as wastewater and much of this could be available for reuse to meet the urban water demand as it grows beyond the current level of 9 MAF.

Recycled water can meet future demand by offsetting potable demand as a landscape irrigation supply and as a potable supply. Meeting future water demand by using recycled water for landscape irrigation alone is infeasible due to factors such as seasonality of demand, community disruption associated with construction of

### *CALIFORNIA WATER FACTS*

***Quantity*** [1]

Total statewide water use = 43 MAF*
Urban water use = 9 MAF
Agricultural water use = 34 MAF
Recycled water use = 0.65 MAF
Wastewater discharge to ocean = 3.5 MAF

***Cost*** [2]

Typical cost for parallel distribution of tertiary treated supply = $2100/AF*

Typical cost for advanced membrane treatment + advanced oxidation = $800/AF

***Energy*** [3]

Water sector uses 19% of California's electricity and 32% of its natural gas

Energy required to deliver 1 acre-foot to an Orange County water system:

- Ocean desalination = 3,700 kWh
- State Project water = 3,500 kWh
- Colorado River water = 2,500 kWh
- Highly treated recycled water = 1,500 kWh

*AF = acre-foot
MAF = million acre-feet (per year)

parallel distribution systems, and the cost of building the recycled water distribution system from the water reclamation plant to the use sites.

Draft indirect potable reuse regulations allow required recycled water introduced into reservoirs or aquifers to undergo long travel times prior to use as potable supply. However, indirect potable reuse is infeasible for many water utilities due to a lack of large reservoirs or suitable groundwater geology.

Potable use offers opportunities to meet the legislative goal because larger amounts of recycled water can be used at lower costs and proven technology to safely support potable reuse projects are cost effective. For example, the unit cost of parallel nonpotable distribution is about 3 times that of the cost of an advanced treatment process for a potable reuse project. The energy needed to produce water considered suitable for potable reuse can be far less than alternative sources of fresh water (see Water Facts sidebar).

Environmental organizations, regulators and legislators have expressed their desire in 2009 to consider direct potable reuse.

## *CHALLENGES*

While a small number of indirect potable reuse projects have been approved and permitted in California, some general challenges must be addressed to determine when and if potable reuse projects can be implemented:

- Public perception
- Health risk
- Technological capabilities (treatment, process reliability, disposal of treatment residuals, monitoring)
- Cost considerations
- Treatment residuals disposal
- Lack of established regulations for all types of potable reuse
- Lack of resources in Department of Public Health to approve draft indirect potable reuse regulations and develop new direct potable reuse regulations
- Lack of a clear roadmap of when and how to develop a potable reuse project

## *MISSION STATEMENT*

Initial Mission (2010 – 2013): Assess the barriers to potable reuse in California and, if eliminating barriers appears feasible, develop a plan to address potable reuse barriers.

Long-Term Mission (2014 – 2018): Address and eliminate barriers to potable reuse in California as appropriate.

## *STRATEGIES*

Led by WateReuse California, the following strategies will be followed in 2010 through 2013 by WateReuse and its members to accomplish the initial mission:

- Identify and assess barriers to direct potable reuse. Develop plan to address barriers if they are considered feasible to address.
- A known barrier is the gaps in knowledge needed to support a regulatory process, including treatment and water quality monitoring, relative risk, absolute and other knowledge gaps. Identify gaps needed to support the regulatory process in cooperation with NWRI, DPH, and SWRCB with input from experts with the highest qualifications. Develop funding to address these knowledge gaps.
- Seek legislation and funding to support DPH and SWRCB participation in regulatory process.
- Participate actively in the development of potable reuse regulations
- Actively develop treatment residuals disposal solutions, possibly including filling knowledge gaps, development of regulations, and legislation.
- Develop and implement (as appropriate) a stakeholder information plan to characterize and address market barriers. This is expected to include social research, focus groups, opinion surveys and other assessment activities.

[1] All values (except 0.65 MAF recycled water) are from the page 4-10 of the January 2009 Draft of the California Water Plan (http://www.waterplan.water.ca.gov/cwpu2009/index.cfm). Recycled water use of 0.65 MAF is from the WateReuse water recycling database updated with information about specific California water recycling projects.

[2] City of Santa Rosa, Incremental Recycled Water Program. http://ci.santa-rosa.ca.us/DEPARTMENTS/UTILITIES/IRWP/Pages/default.aspx

[3] *Hidden Potential: Recycled Water and the Hidden Water-Energy-Carbon Nexus*. WE&T, November 2008. And pers. comm. from Shivaji Deshmukh, Orange County Water District.

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