Expanding Tucson's Recycled Water Program from a Foundation of Past Success

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From Finite Groundwater to Renewable Supplies







Transition to Renewable Water Supplies





Primary Renewable Supply is Colorado River Water







Long History of Water Reuse in Tucson

Tucson Water has been producing and delivering reclaimed water since 1984
Reclaimed water delivered to nearly 1,000 sites
18 golf courses
65 schools
700+ single family homes







Current Reclaimed Water Customer Base (percent of use by volume)









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Long-term Drought in the Colorado River Basin Lake Mead Water Levels (2000-2015)



Source: Bureau of Reclamation Records

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Potential Shortage in CAP Allocation









Recycled Water Program Plans & Progress







Goals of the Recycled Water Master Plan



Fully use the City's recycled water entitlement for the benefit of Tucson Water customers

Collaborate with Mayor & Council, Tucson Water customers, and other stakeholders on recycled water issues and investment decisions

Maintain Tucson Water's commitment to the local environment









National Water Research Institute (NWRI) Independent Advisory Panel

Dr. Anne Browning-Aiken Public Policy U of A – Udall Center

Chemist/Toxicologist

Dr. Shane Snyder (Chair)

Ron Wildermuth,

Public Outreach / Water Utility Representative West Basin MWD, Manager of Public and Government Affairs

> Dr. Jorg Drewes, Treatment Engineer Colorado School of Mines

Dr. Ian Pepper Microbiologist U of A – Soil, Water & Environmental Science

U of A - Chemical & Environmental Engineering

Michele Robertson Hydrologist Montgomery and Associates **Bob Hultquist,** Water Reuse Regulatory Criteria Independent Consultant, Former CDPH







Independent Advisory Panel Letter of Support

"It is the unanimous conclusion of the Panel that the efforts described in the *Recycled Water Master Plan* will be a **landmark development** in the acceptance and implementation of IPR and will contribute to the **City of Tucson's renewable water resources portfolio**.

The proposed new recycled water programs identified in the *Recycled Water Master Plan* will supplement existing sources and provide a greater degree of independence, thus improving the **reliability and sustainability** of existing water supplies."





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Recycled Water Master Plan Recommendations

Continue to invest in the Reclaimed Water System to maintain efficient service to existing and potential future customers

Pursue full utilization of the City's recycled water entitlement through potable reuse to diversify renewable supplies





Implementing the Master Plan Recommendations

- Phased program
- Positive steps towards full utilization of the resource as part of the urban water cycle
- Continuous coordination with the City's leadership, Tucson Water customers, and community
- Periodic review and update to reflect industry trends and changing conditions



Recycled Water Program Concept



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Seasonal variation in available recycled water impacts potable reuse concept









Seasonal variation in available recycled water impacts potable reuse concept









Seasonal variation in available recycled water impacts potable reuse concept





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Conveyance Route

CAP Canal

1.25

2.5 Miles

Recharge,

Recovery &

Purification

North of

CAVSARP

CAVSARP

SAVSARP

Tres Rios WRF

Agua Nueva WRF

2

Recharge, Recovery & Purification Near Reclaimed Water Facilities

Advanced Water Purification Concept



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Residuals management can be a challenge for inland reuse programs



Major coastal programs have the benefit of an ocean outfall



Concentrate management system









Customer Outreach Activities







Customer surveys and focus groups inform & educate outreach efforts

% of Tucson Water Customers Surveyed (12/2014)	Description
86%	Believe Tucson will need additional water supplies in the future
89%	Believe it is "very important" Tucson Water increase water recycling to meet long term needs
72%	Believe current technology can be used to further purify reclaimed water to make it pure and safe for drinking
58%	Are comfortable or neutral with Tucson Water purifying wastewater for future use as drinking water

What measures would improve customer comfort level?







Increasing Customer Comfort Level

Likelihood to Increase Comfort Level	Action to Increase Comfort Level		Independent
63%	Knowing that nationally recognized health and medical experts endorse the safety of the water		Advisory Panel facilitated by NWRI
58%	Knowing that Tucson Water is the utility that will be producing and purifying the water		Speakers
56%	Hearing about other communities that are already drinking purified water		Bureau & Focus Groups
61%	A tour of a facility to see how advanced technology is used to produce purified water		Demonstration
55%	Tasting the purified water	-1	Facility







What are the Benefits of Potable Reuse? **Provides** • A reliable, safe, and local supply Drought preparedness Supports Economic development Energy use and environmental Reduces impacts vs. water importation







Next Steps



FY	2015 20	16 2017	2018 2	019	2020			>	20XX	\rightarrow
	Master Plan Complete	Demo Facility	onstration Operating					Purified	Water Deliverie Clearwater Bl	es to lend
	Continuous Outre	each								
	Technical Investigatio	ons								
		Process Se Demonstra	lection & tion Project							
	Research & Support	Regulatory	Financi Plannir	ial 1g						
				Perm	itting (2-3	years	s lead time)			
					Design <i>(5-10 уе</i>	& Co ears le	ead time)			







Questions?







