



RECYCLED WATER MASTER PLAN

Renewable Water Resource for the Future



Mayor & Council Meeting
July 8, 2014



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Water Reliability

A Series of Investments To Ensure Tucson's Water Future



Water Supply

Water Quality

**Water
Customers**

**Operations
& Systems**

**Water Conservation
& Efficiency**



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Water Reliability means Tucson Water's customers can count on...

- Safe and high-quality water
- Ongoing maintenance and improvement of our water supply and delivery system
- A financially stable utility
- Improvements in energy efficiency throughout the water system



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Water Reliability means Tucson Water's customers can count on...

- *Long-term planning and appropriate infrastructure and program investment*
- *Maximizing the use of all local, renewable water resources*
- *Clear and timely communication about our water and how to use and re-use it efficiently*



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Water Plan 2000-2050 (2012 Update)

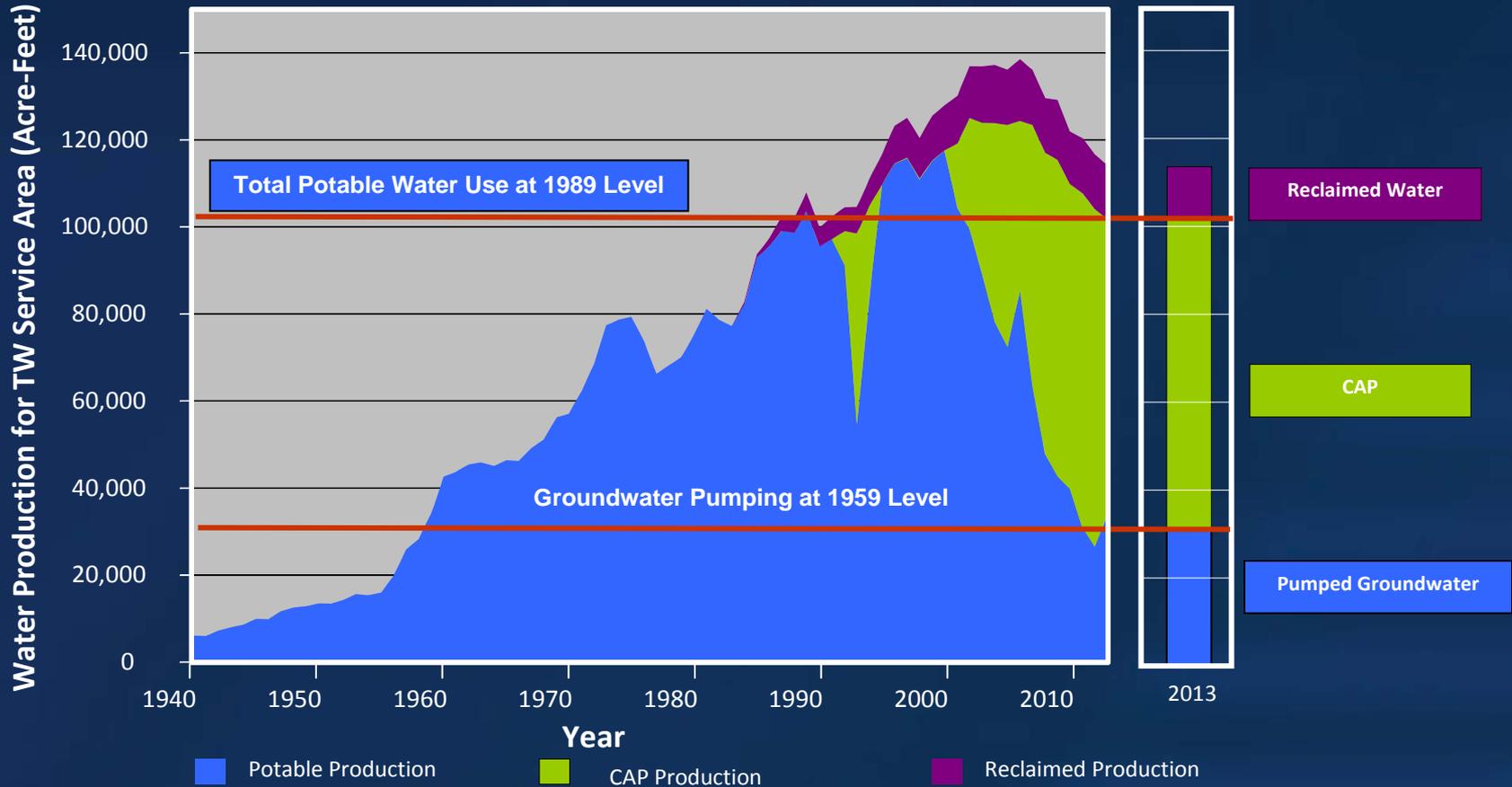
- We are purchasing and storing our entire CAP allocation of 144,172 acre-feet per year
- We are continuing to plan for and implement programs to fully utilize our renewable water resources
- Recycled water is an important resource to diversify our renewable water supply portfolio



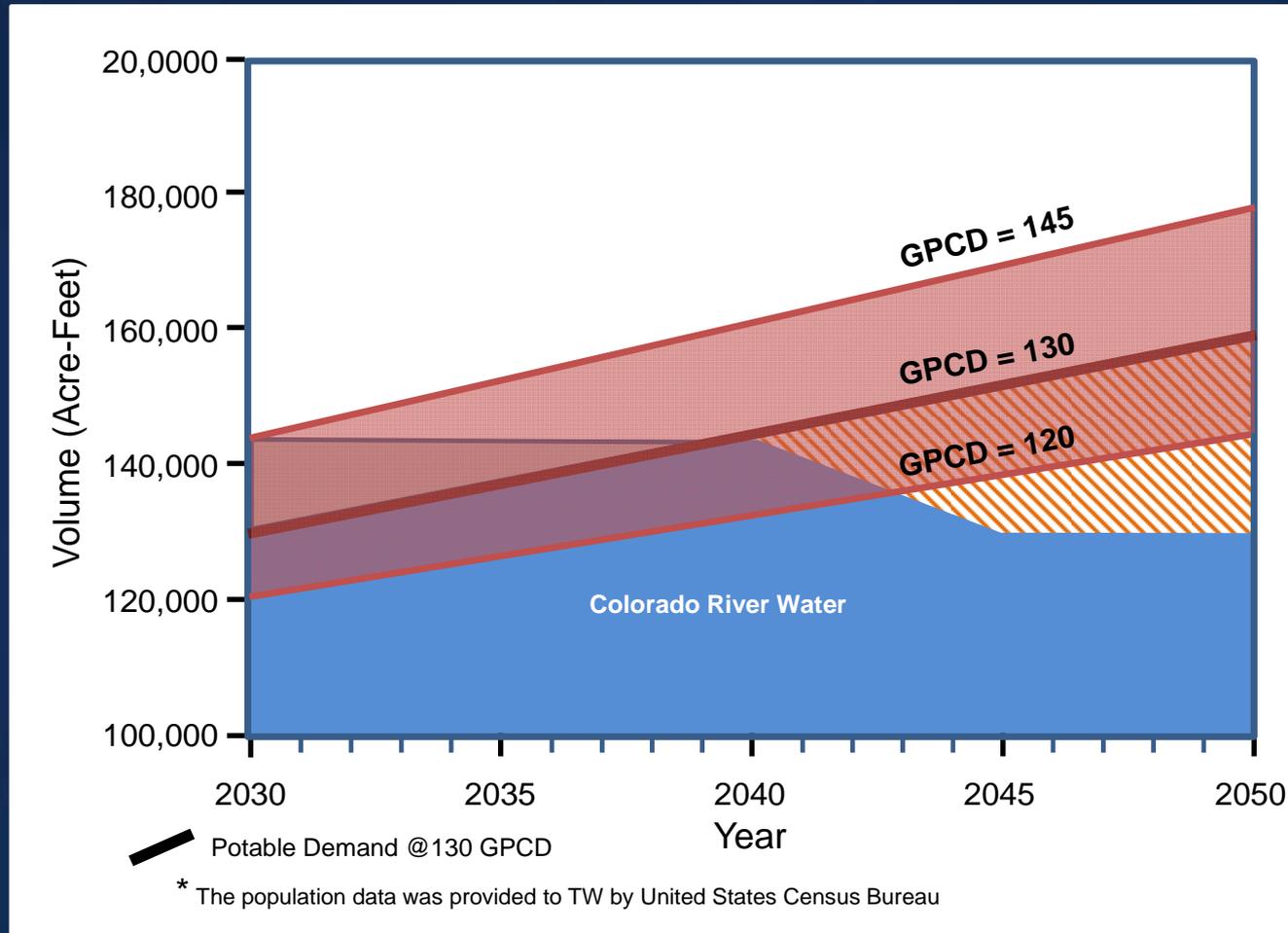
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Transition to Renewable Supplies



Potable Water Resources In Addition to CAP

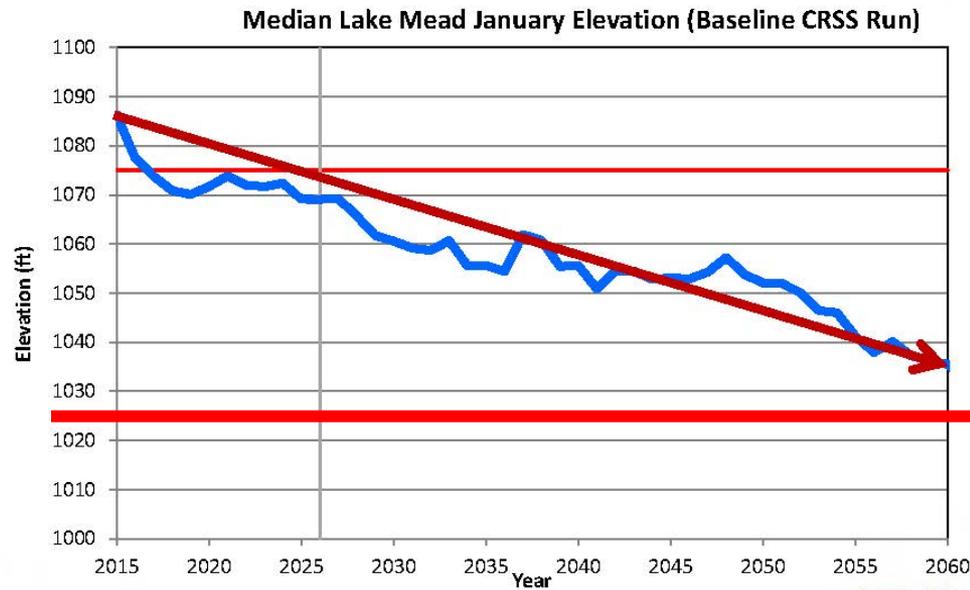


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Basin Study – Baseline Run

Longer-Term Outlook

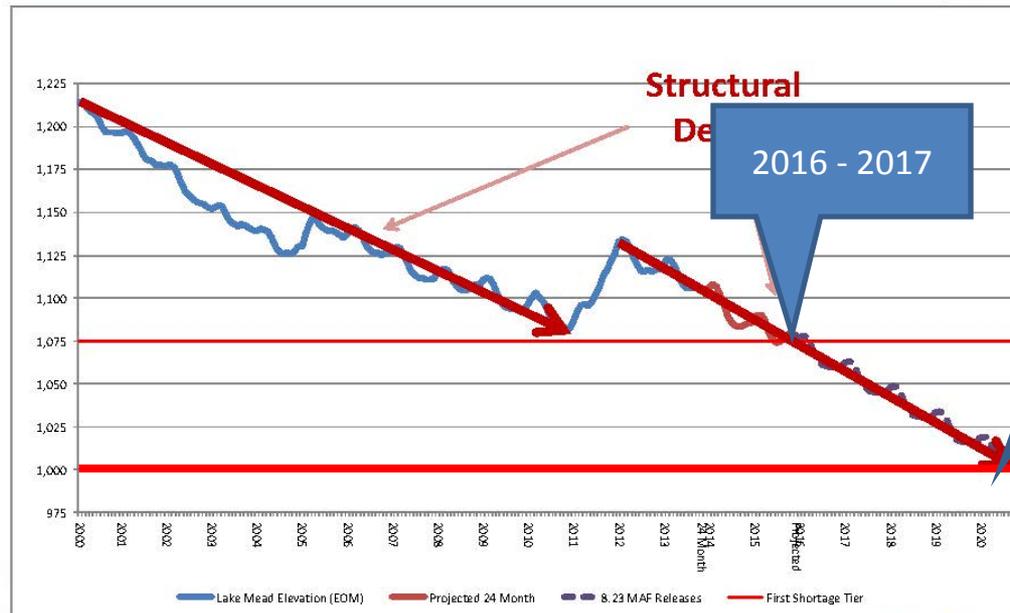


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Lake Mead Levels

Near-Term Outlook



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Secretary's Options

Option 1: Current Agreement - Allow Lake Mead to fall below elevation 1000

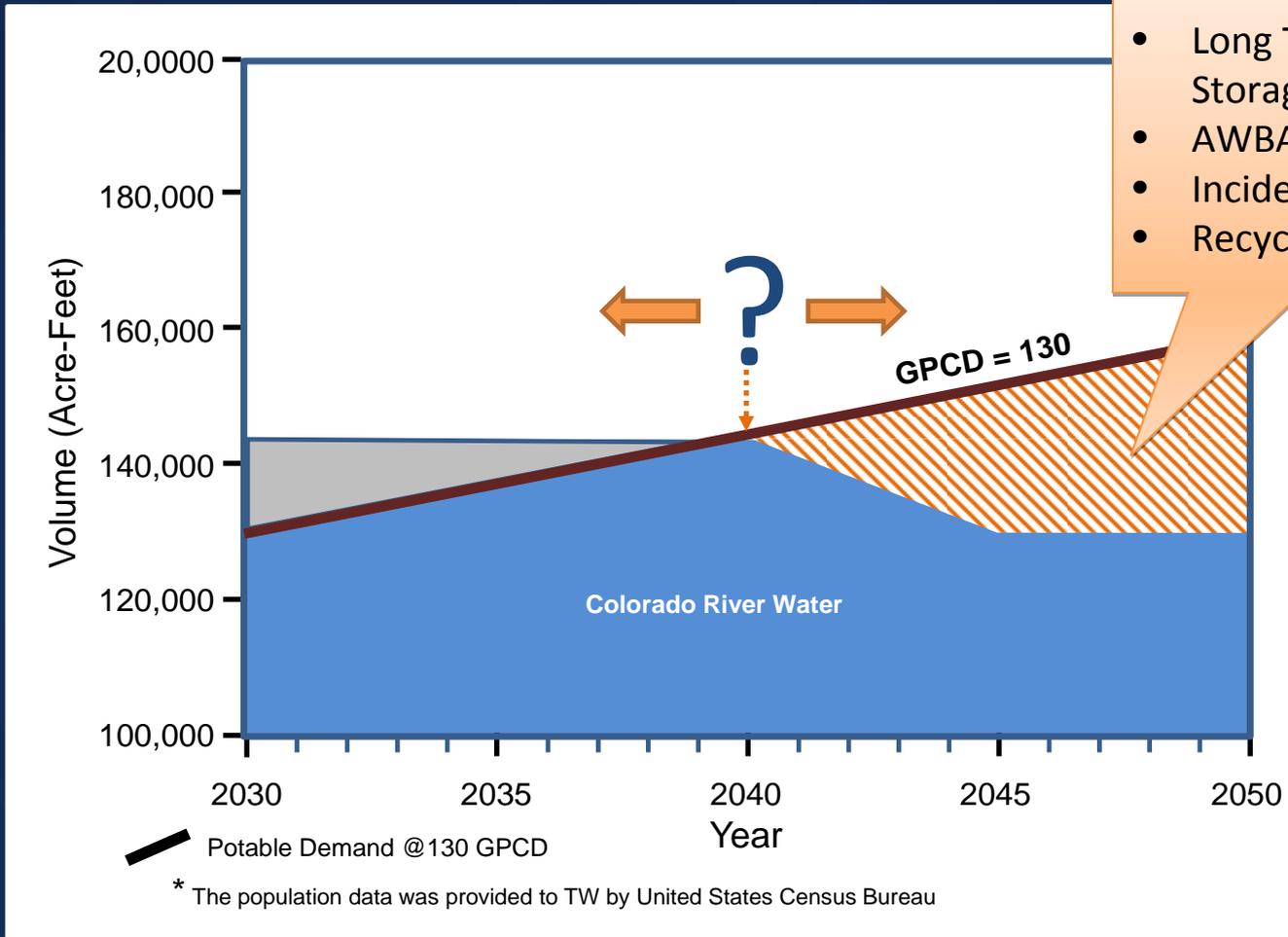
- Follow the Lower Basin Shortage Sharing Agreement
- At 1000' Lake Mead elevation Las Vegas unable to draw water
- At 895" Lake Mead elevation no water flows out (Dead Pool)

Option 2: Secretary option if no agreement - Protect Elevation 1000 in Lake Mead:

- Take emergency action to protect core Municipal and Indian deliveries
- CAP could continue to receive 960,000 AF/y



Potable Water Resources In Addition to CAP



- Long Term CAP Storage Credits
- AWBA
- Incidental Recharge
- Recycled Water



Water Plan Update Recommendations

- Recycled water is an important resource to diversify our renewable water supply portfolio
- Determine the best way to fully utilize and develop our recycled water resources to meet future demands



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Recycled Water Program Outline

1. Project background
2. Role of recycled water in the *Water Reliability* program
3. Coordination with Pima County
4. Engagement with Independent Advisory Panel
5. CWAC support
6. Program implementation
7. Customer Outreach and Education

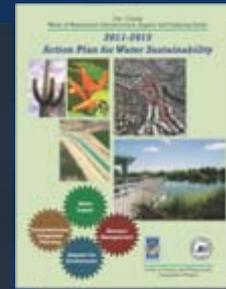
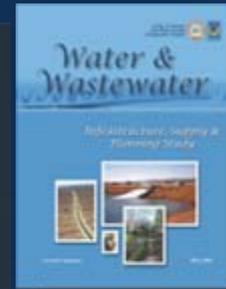
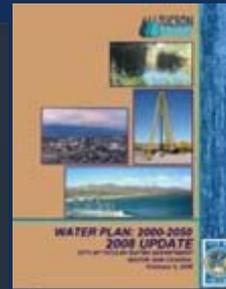
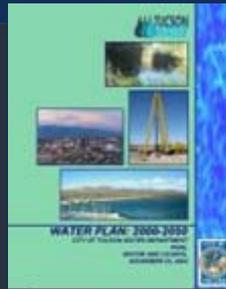
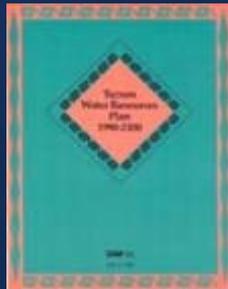
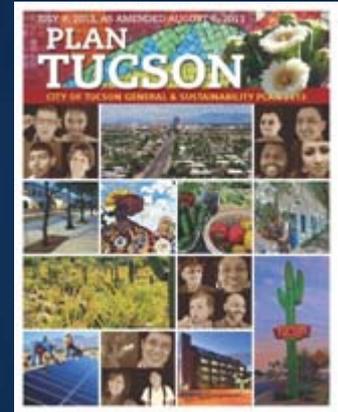


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Drivers for Recycled Water Program

- City of Tucson
 - *Plan Tucson*
 - *Tucson Water Resources Plan 1990-2100*
 - *Water Plan: 2000-2050 and Updates*
- City of Tucson / Pima County
 - *Water & Wastewater Infrastructure and Supply Planning Study*



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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 Conservation Effluent Pool to benefit the local environment



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Coordination with Pima County

- Pima County is an important player in Tucson's Recycled Water Program efforts
- Source water quality and effluent entitlement projections are critical to the recycled water program
- ROMP investments have improved the quality of the recycled water resource



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National Water Research Institute (NWRI) Independent Advisory Panel

Dr. Shane Snyder (Chair), Chemist/Toxicologist
U of A – Chemical & Environmental Engineering

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

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

Michele Robertson, Hydrologist
Montgomery and Associates

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

Bob Hultquist, Water Reuse Regulatory Criteria
Independent Consultant, Former CDPH



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Independent Advisory Panel Letter of Support

NWRI

National Water Research Institute

Joint Powers
Agreement Members December 19, 2013

Inland Empire
Utilities Agency
Irvine Ranch
Water District
Los Angeles
Department of
Water and Power
Orange County
Sanitation District
Orange County
Water District
West Basin
Municipal Water District

Mr. Jeff B. Biggs
Administrator, Strategic Initiatives Division
Tucson Water
P.O. Box 27210
Tucson, AZ 85726-2710

Subject: Tucson Water *Recycled Water Master Plan*

Dear Mr. Biggs:

The National Water Research Institute (NWRI) is pleased to transmit this letter on the findings of an NWRI Independent Advisory Panel (Panel) to provide expert peer review of the Tucson Water *Recycled Water Master Plan*. The Panel determined that a thorough technical review of the viable recycled water strategies has been conducted by Tucson Water. The proposed recycled water programs will enhance Tucson Water's overall water supply reliability.

Background on the *Recycled Water Master Plan*

The *Recycled Water Master Plan* process was initiated in 2010 by the City of Tucson and the Tucson Water Department for the purpose of providing an integrated recycled water program that maximizes the City's recycled water resources and creates a reliable, sustainable water future for the community it serves. Tucson Water has historically employed the Reclaimed Water System to produce reclaimed water for irrigation and other non-potable uses. However, projections made as part of the *Recycled Water Master Plan* process have shown that limited additional demands are anticipated for the Reclaimed Water System. Therefore, a component of the *Recycled Water Master Plan* involves evaluating new recycled water programs to recharge and replenish the City's groundwater basins and, after advanced treatment and blending, to supplement drinking water supplies. The new recycled water programs may include indirect potable reuse (IPR), which involves the use of highly treated recycled water to replenish groundwater aquifers.

Panel Purpose and Activities

A 501(c)3 nonprofit, NWRI specializes in facilitating expert panels on behalf of water and wastewater agencies, as well as local, county, and state government agencies, to provide third-party scientific and technical review by leading experts. In 2011, NWRI was asked to form and coordinate an Independent Advisory Panel to provide expert peer review of the Tucson Water *Recycled Water Master Plan*. The Panel was comprised of seven members representing local and national expertise in environmental engineering, water reuse regulations, toxicology, hydrogeology, microbiology, environmental planning, public relations, and other relevant fields. Panel members included:

18700 Ward Street
P.O. Box 8096
Fontana Valley, California
92728-8096
(714) 378-3278
fax (714) 378-3375
www.nwri-us.org

“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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Citizens' Water Advisory Committee (CWAC)

- Briefed Technical, Planning, and Policy Subcommittee in April 2012
- Briefed CWAC in June 2012
- Fully supportive of the program and its effort to increase water reliability



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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 indirect potable reuse (IPR) to diversify renewable supplies



Implementing the Master Plan Recommendations

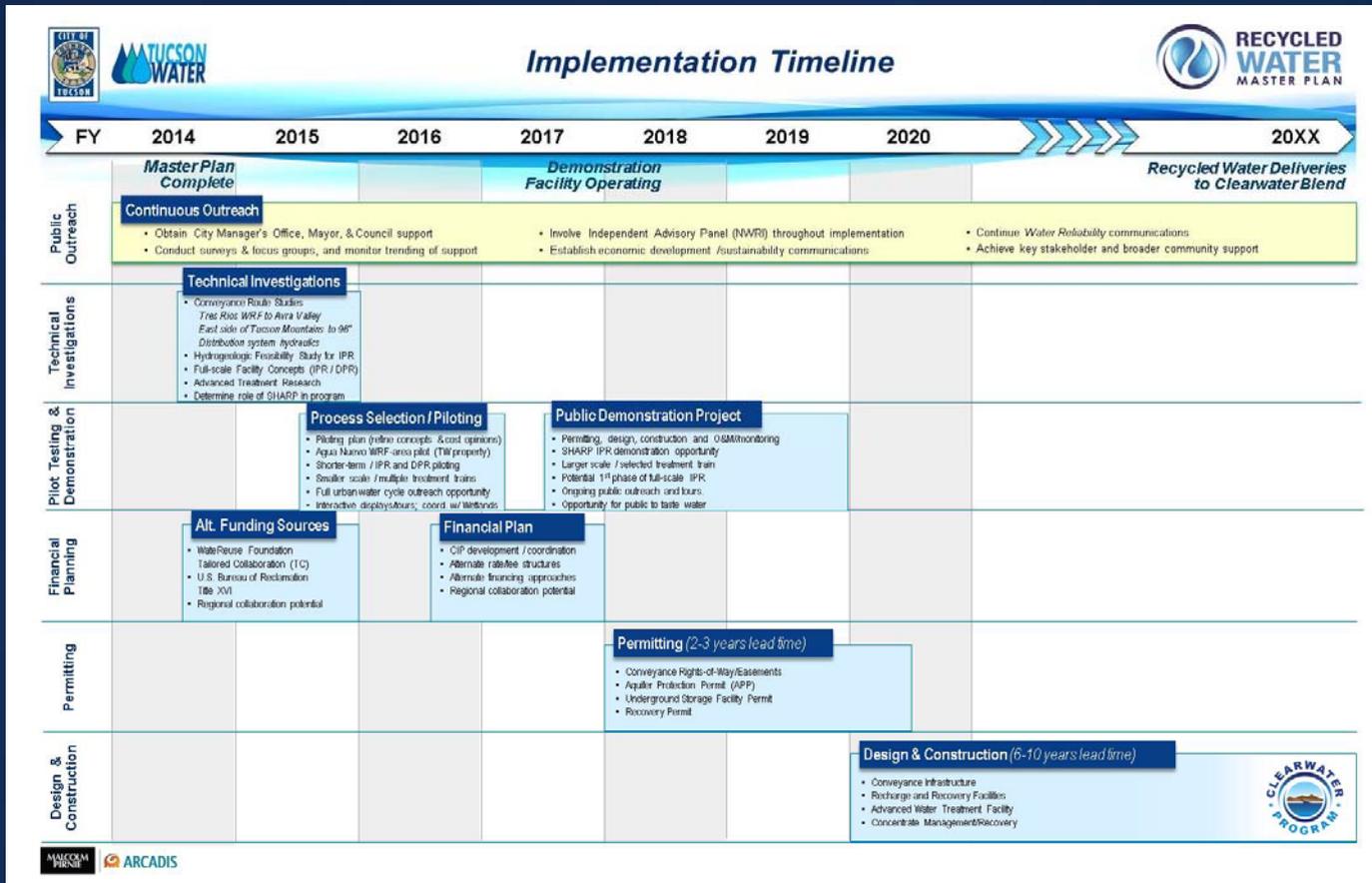
- Phased program
- Positive steps towards full utilization of the resource as part of the urban water cycle
- Continuous coordination with the City's leadership, Tucson Water customers, and community
- Periodic review and update to reflect industry trends and changing conditions



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Implementation Timeline



Program Implementation

- Model implementation after successful programs
 - Continuous outreach
 - Technical investigations
 - Process selection / piloting
 - Public demonstration project
 - Financial plan
 - Permitting
 - Design & construction
- Maintain the program's continuity to achieve goals
 - Funding in 5- and 10-year CIP



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Recycled Water Customer Survey

Completed in December 2013

% of Tucson Water Customers Surveyed	Description
85%	Believe Tucson will need additional water supplies in the future
91%	Believe it is “very important” Tucson Water increase water recycling to meet long term needs
65%	Believe current technology can be used to further purify reclaimed water to make it pure and safe for drinking
51%	Are comfortable or neutral with Tucson Water purifying wastewater for future use as drinking water



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Recycled Water Customer Survey Results (cont'd) water

What measures would improve customer comfort level?

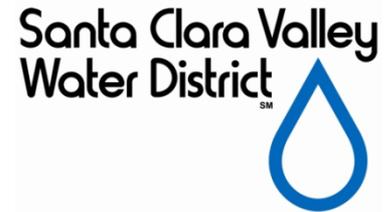
Likelihood to Increase Comfort Level for Potable Reuse	Action to Increase Comfort Level for Potable Reuse
67%	Knowing that nationally recognized health and medical experts endorse the safety of the water
61%	Knowing that Tucson Water is the utility that will be producing and purifying the water
57%	Hearing about other communities that are already drinking purified water
66%	A tour of a facility to see how advanced technology is used to produce purified water
54%	Tasting the purified water



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Water reuse is happening worldwide as a sustainable practice with locally-controlled, renewable water supplies



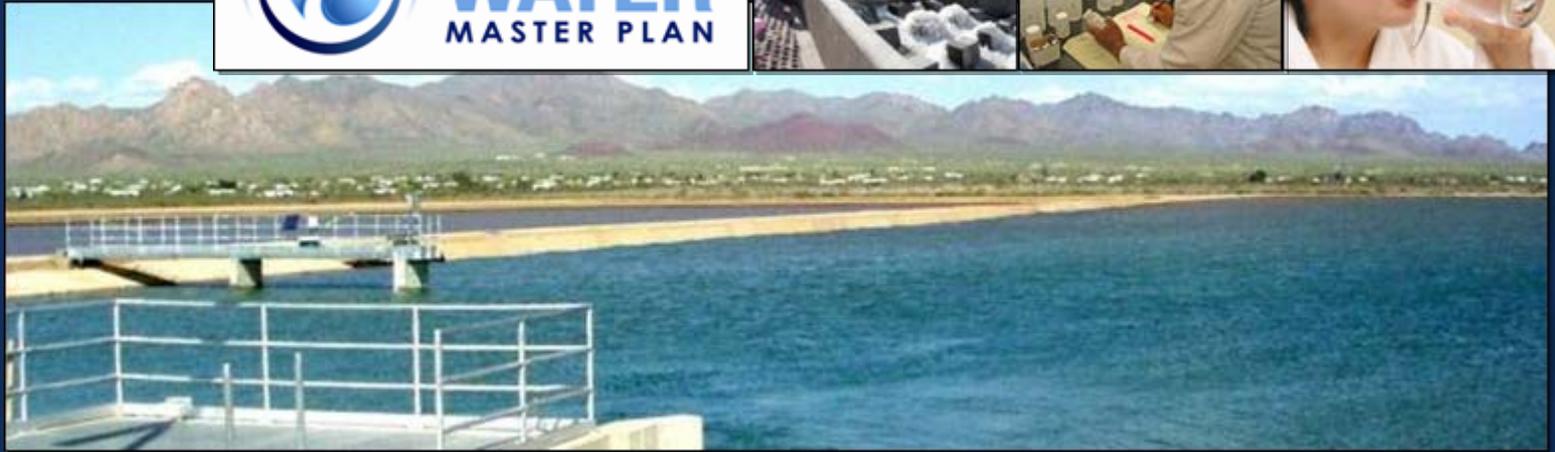
Summary

- Recycled Water Master Plan is integral to Tucson Water's continuous planning for resource reliability
- Recycled water is a locally-controlled, renewable resource
- Expanding recycled water use is supported by past and future significant community investments
- Recycled water resources are currently available to supplement Tucson's water supply and support the City's commitment to the environment



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The Recycled Water Master Plan charts a course for program implementation



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