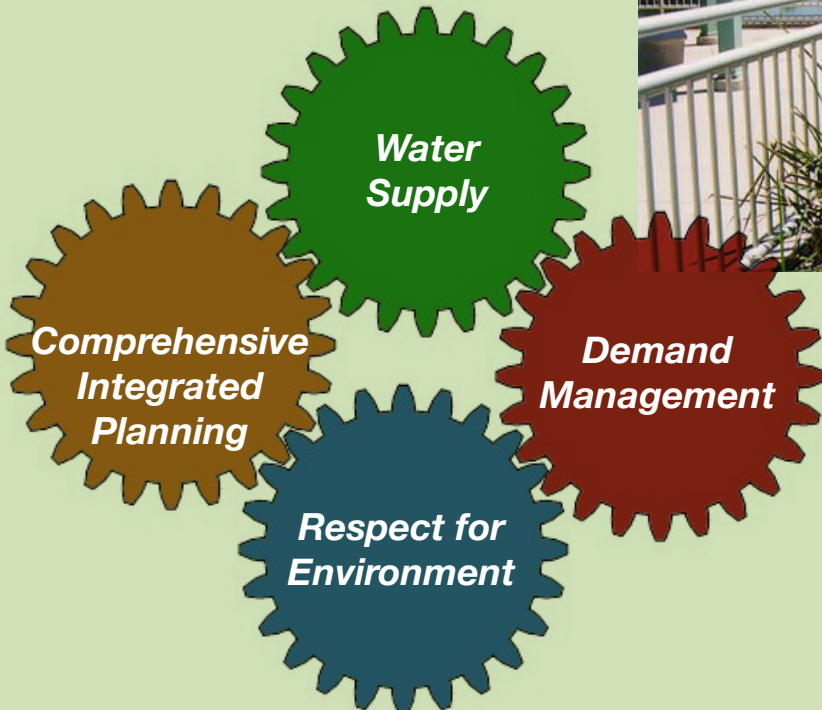


2011-2015

Action Plan for Water Sustainability



City/County Goals for Water Sustainability

The Governing Boards

October 2010

City of Tucson Mayor and Council

Robert Walkup, Mayor
Regina Romero, Ward 1
Paul Cunningham, Ward 2
Karin Uhlich, Ward 3
Shirley Scott, Ward 4
Richard Fimbres, Ward 5
Steve Kozachik, Ward 6

Pima County Board of Supervisors

Ann Day, District 1
Ramón Valadez, Chairman,
District 2
Sharon Bronson, District 3
Raymond J. Carroll, District 4
Richard Elías, District 5

The Governing Boards of the City of Tucson and Pima County adopted Resolution No's. 21479 (February 2010) and 2010-16 (January 2010) establishing shared goals and recommendations for sustainable water planning. The Governing Boards further directed staff to implement the goals and recommendations through an Action Plan. The enclosed City/County Action Plan for Water Sustainability fulfills this charge.

COMPREHENSIVE INTEGRATED PLANNING

Goal: Encourage sustainable urban forms- Ensure that the form of growth enhances beneficial water/energy, environment, economic and social outcomes through inclusion of diverse housing types and compact, environmentally sensitive and walkable communities.

Goal: Direct growth to suitable growth areas- Direct future growth away from environmentally sensitive areas and closer to existing infrastructure through infrastructure investments, regulation, policies, and open space acquisitions.

Goal: Integrate land use and water resources planning- Enhance efforts to link land use and water resources planning to foster increased use of renewable water resources in new development and to balance economic, environmental and human needs for water.

Goal: Growth should pay for itself over time and be financially sustainable- Ensure that the full cost of new development is considered and that growth related costs for water and wastewater are recovered.

RESPECT FOR ENVIRONMENT

Goal: Preserve existing riparian areas through coordinated regulation, policy, and outreach- Pursue a coordinated approach to preserving existing riparian areas and foster increased public support of protection and maintenance of healthy ecosystems.

Goal: Identify needs and opportunities for future restoration- Pursue a collaborative, comprehensive and systematic strategy to identify needs, opportunities, resources and partnerships to implement cost-effective regional environmental restoration.

Goal: Ensure that public projects are multi-benefit including restoration, stormwater management, recharge and public amenity- Maximize beneficial use of reclaimed water, rainwater and stormwater in flood control, water and wastewater treatment facilities and other capital projects.

Goal: Ensure the future of riparian and aquatic habitat along the effluent-dependent reach of the Santa Cruz River- Evaluate alternative strategies for protection of the riparian and aquatic habitat along the effluent-dependent reach of the Santa Cruz River building upon prior research and planning studies.

Goal: Develop water supply for the environment- Ensure an adequate amount of water is available to meet the seasonal needs of restored habitats.

City/County Goals for Water Sustainability (Continued)



*Water in the desert is is precious.
We must provide for our future
generations.*

*Phase 1 and 2
Water Study Reports
and background
information are
available at:
[www.tucsonpimawater
study.com](http://www.tucsonpimawaterstudy.com)*

WATER SUPPLY

Goal: Work collaboratively to acquire new water supplies for reliability - Expand cooperative efforts to buttress our existing supplies and diversify our water resource portfolio to prepare for potential shortages stemming from climate change and drought.

Goal: Maximize and make efficient use of effluent and other locally renewable water supplies - Reduce use of groundwater for non-potable water needs through greater emphasis on locally-renewable resources such as reclaimed water, rainwater and gray water.

Goal: Address regulatory barriers to maximizing local supplies - Pursue regulatory changes that will protect public health and safety yet provide flexibility to foster increased uses of reclaimed water to offset use of groundwater for non-potable demands.

Goal: Be Prepared for climate change and drought - Pursue adaptive, flexible, multi-pronged preparedness strategies such as diversification of water supplies, improved demand management and increased reliance on water harvesting.

DEMAND MANAGEMENT

Goal: Increase the effectiveness of conservation programming through coordinated planning and evaluation – Improve monitoring of water use trends to increase our ability to target inefficient and high water use areas, and to encourage innovation in water conservation research, methods, and reporting.

Goal: Establish common water conservation goals and targeted methods – Develop shared goals to provide a foundation for increasing regional consistency and coordination.

Goal: Manage demand through the design of the built environment – Incorporate consistent low water usage development standards into new construction and establish land forms that reduce the “water footprint” of the built environment.

Goal: Manage demand through changing behaviors – Enhance coordinated education programs to enable implementation of efficient practices. Assess public preferences for conservation to better understand and communicate the benefits of conserving water.

Goal: Increase the use of rainwater and stormwater – Coordinate efforts to maximize and evaluate the benefits of rainwater harvesting to meet outdoor needs, reduce demands on potable supplies, increase floodwater retention and limit migration of contaminants.

Acknowledgements

The contributions of the people listed here to the successful completion of the City/County Water Sustainability Action Plan are greatly appreciated.

This Action Plan fulfills the direction provided in the City and County Resolutions (No. 21478 and 2010-16 respectively) to define the actions to be taken next to implement the shared City/County goals and recommendations as described in the Phase II Water Study Report (December 2009).

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Using a soil probe is a good way to check watering depth and assure that your plants have enough water.

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Introduction



“We Americans are spoiled. We wake up in the morning and turn on the tap, and out comes as much water as we want for less than we pay for cell phone service or cable television.”

- Robert Glennon, Morris K. Udall Professor of Law and Public Policy, Rogers College of Law, University of Arizona, from “Unquenchable: America’s Water Crisis and What to Do About It,” 2009

In April 2008 the City of Tucson and Pima County initiated a joint effort for sustainable water resource planning known as the “City/County Water and Wastewater Infrastructure, Supply and Planning Study” (Water Study). The City/County Water Study is a multi-year effort to identify ways the City and County, which respectively own and operate the region’s primary water and wastewater utilities, can work together to advance more cooperative and sustainable water planning.

After two years of intensive study under the guidance of a joint City/County Citizens Advisory Committee, City and County staff prepared the Phase 2 Water Study Report. The Phase 2 Report built upon the Phase 1 Report that preceded it and establishes a framework for sustainable water resources planning including 19 goals and 56 recommendations within four interconnected elements: Water Supply, Demand Management, Comprehensive Integrated Planning and Respect for Environment.

The City of Tucson Mayor and Council and the Pima County Board of Supervisors adopted the Phase 2 Report through City and County resolutions (No. 21478 and 2010-16 respectively), and directed staff to work together to create an Action Plan for implementing the Phase 2 goals and recommendations.

The following Action Plan represents a dramatic shift in business as usual for the City and County. It advances a set of 87 specific actions grouped within 14 City/County programs to

implement the Phase 2 goals and recommendations and to achieve the following outcomes within the five-year planning horizon:

- Water, wastewater and stormwater resources are planned in an integrated fashion.
- More renewable water resources including effluent, reclaimed, stormwater and rainwater and greywater are put to use in an efficient manner.
- Water resource policies help further economic goals.
- Collaborative efforts are undertaken to acquire new water, to achieve greater flexibility in use of existing supplies, and to align and enhance standards for water use efficiency.
- Improved water quality resulting from regional wastewater treatment facility upgrades (i.e. the Regional Optimization Master Plan or ROMP) is matched to needs for recharge, environmental restoration and public amenities such as parks, golf courses and ball fields.
- Land use, infrastructure and water resources planning are linked and foster optimum use of renewable water resources in future growth areas and increased water and energy efficiency outcomes in new development.
- Water is dedicated and allocated to environmental needs, sensitive riparian ecosystems are preserved and maintained, and cost-effective and collaborative environmental restoration projects are advanced.
- Public values are considered in water resources planning and public awareness of the human, environmental and economic benefits of improving water use efficiency is increased.

Sustainable Water Planning: The Statewide Framework

“Water management involves great complexities, especially when dealing with growth, water scarcity and recognition of environmental water needs. If the solutions were easy, we’d have identified them. Collectively, on multiple geographic scales and across water using sectors, we must work together to develop and implement solutions.”

--Sharon B. Megdal, Director, Water Resources Research Center, University of Arizona, from “Water Policy Innovations and Challenges in Arizona”; Rural Connections; May 2010



The Tucson Active Management Area

Prior to the delivery of renewable Central Arizona Project (CAP) water, the Tucson region was the largest metropolitan area solely dependent on non-renewable groundwater resources. Beginning in the 1940s, groundwater withdrawals began to exceed replenishment and, like other growing areas of the state, the Tucson area began to experience groundwater overdraft leading to the lowering of groundwater tables and subsequent loss of riparian habitat, subsidence and declines in water quality.

The 1980 Arizona Groundwater Management Act (GMA) gave the state control of groundwater pumping and established a statewide goal known as “Safe Yield” within the Phoenix, Tucson and Prescott Active Management Areas (AMAs). Safe yield means that by 2025 the AMAs must pump groundwater at a rate no greater than the rate of natural and artificial replenishment. To reach safe yield by 2025, water users in the AMAs must offset all the groundwater uses that total more than the net natural recharge with renewable resources, like CAP water and effluent, or with artificial recharge.

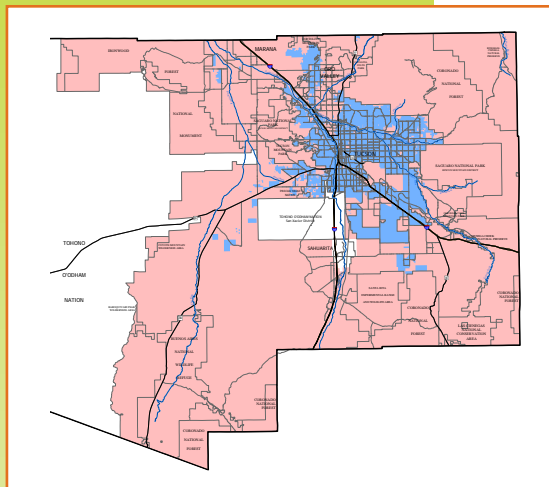
The Arizona Department of Water Resources (ADWR) administers the safe yield goal through a series of ten-year management plans for each AMA. The Tucson AMA is currently operating under the Third Management Plan and the Fourth Management Plan is under development. Despite positive progress toward attaining

the safe yield goal, ADWR notes in its Third Management Plan: “given current projections, the AMA will not reach safe-yield by 2025.”

Although of critical importance, even if the safe yield goal were met, it would not solve all the issues related to groundwater overdraft. Under the 1980 GMA, development may continue to mine groundwater through purchase of paper water recharge credits from the Central Arizona Project. State law allows for withdrawals in one part of the AMA to be offset by recharge in another, hydrologically disconnected location. As such, safe yield applies strictly on an AMA-wide basis and can result in continued problems related to localized overdraft within sub-basins. A Safe Yield Task Force is currently deliberating on the topic of how to address the challenges of meeting safe yield in the Tucson AMA and the Fourth Management Plan, when completed, will provide specific steps to reach safe yield.

Additionally, the City / County Water and Wastewater Study recognized the need to go beyond safe yield when establishing a framework for sustainable water planning. In the Phase I Report the Oversight Committee concluded: “A definition of sustainable water management must consider the regional impacts of water use at the watershed scale and the localized impacts to aquifers and groundwater-dependent ecosystems. It must establish a link between sustainable groundwater use and the provision of renewable water sources to areas impacted by groundwater overdraft.”

City / County Water Utilities

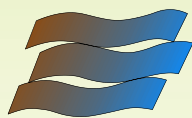


Service area for Tucson Water (blue) and Pima County Regional Wastewater Reclamation Department (pink).



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Pima County Regional Flood Control District

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The primary sources of water addressed in this Action Plan are managed by three utilities: The City of Tucson, Tucson Water Department operates and maintains the potable and reclaimed water systems; (2) Pima County Regional Wastewater Reclamation Department (RWRD) operates and maintains a regional wastewater conveyance and treatment system that generates the effluent used in the City of

Tucson's reclaimed system; and (3) The Pima County Regional Flood Control District (RFCD) manages stormwater resources.

This Action Plan focuses on activities that will advance integrated water resource planning for all these sources of water within the combined service areas of Tucson Water and Pima County Regional Wastewater Reclamation Department. Many of the activities are well suited to being implemented in partnership with other jurisdictions, water and wastewater providers and stakeholders and, where feasible and appropriate, the City and County will include outreach to potential partners as they implement these activities.

Tucson Water serves approximately 800,000 customers and accounts for 72% of municipal demand in Pima County. As depicted in the map above, the City's obligated service area extends outside of its incorporated boundaries. Pima County is the Designated Management Agency for all

of Pima County except the Tohono O'odham Nation and the Town of Sahuarita. The Pima County RWRD provides 97% of the total treatment capacity for Pima County. For further details on infrastructure, supply and capacity of each of these two utilities see the Phase I Water Study Report at www.tucsonpimawaterstudy.com.

Additionally, the Phases 1 and 2 Water Study reports highlighted the importance of rainwater and stormwater as a supplemental source of locally renewable water. Historically, stormwater has been treated as a safety hazard and managed for disposal not for beneficial use. The Phase 2 goals include a heightened emphasis on integrating land use and water resources planning which includes incorporating beneficial use of stormwater as feasible in new development and capital improvement projects. The Pima County Regional Flood Control District is responsible for regional flood control needs in Pima County including constructing major flood control facilities, purchasing flood and erosion-prone land, operating the community's flood warning system, and providing floodplain management activities for all unincorporated county areas. This includes activities aimed at enhancing wildlife, recreation and riparian habitats along watercourses and floodplains and constructing and operating groundwater recharge facilities that also have flood control benefits, among other services.

Action Plan Overview

“We need to balance *human, environmental and economic needs for water.*”

-Phase 1 Report, page 33, Vol. 1, Executive Summary



The City/County Water Sustainability Action Plan spans the five-year period from January 2011 to December 2015. It is a living plan that will be modified along the way as needed in response to changing conditions such as the evolution of a regional process for sustainable water planning. Inter-disciplinary teams of staff from the following City and County departments developed the Plan:

- City/County Administration
- City of Tucson, Tucson Water Department
- Pima County Regional Wastewater Reclamation Department
- Pima County Regional Flood Control District
- City/County Sustainability Offices
- City/County Planning and Development Services Departments
- Pima County Department of Environmental Quality
- City/County Transportation Departments
- City/County Parks and Recreation Departments
- City of Tucson Department of Housing and Community Development

The Action Plan describes a range of activities with timelines to implement the goals and recommendations in the Phase 2 Report. Many of the recommendations and goals of the Phase 2 Report involved refinements or expansions to existing City and County programs. As such, the activities are organized within City/County programs to ensure

that the action plan moves forward despite the resource constraints both the City and County are operating under due to the economic downturn. The programs and activities are designed to be implemented with current resources. In some cases, additional resources would allow actions to be completed more quickly and would allow for an enhanced implementation. However, the Plan does not rely on additional resources to move forward. Some activities have existing grant funding associated with them, and City and County staff will be pursuing additional partnerships and outside funding to support implementation of other activities.

A joint City/County Staff Steering Committee will continue to meet on a quarterly basis to coordinate and oversee the Action Plan implementation. To track and measure progress, staff have included 11 indicators of success across the four elements. Over the next year, the Steering Committee will continue to meet to develop baselines and targets for the indicators. This will allow the development of an annual “City/County Report Card” on sustainable water planning. This annual report card will be developed and distributed to elected officials, citizen advisory committees and posted on the City/County Water Study website (www.tucsonpimawaterstudy.com), at the end of each year of the five year Action Plan.

Partnership Opportunities Stemming from Action Plan



The Sweetwater Wetlands provides recharge benefits, wildlife habitat and outdoor recreational opportunities for the public. Tours are available for groups. Call Tucson Water at (520) 791-4331.

Public values are considered in water resources planning and public awareness of the human, environmental and economic benefits of improved water use efficiency is increased.

Opportunities for partnerships are identified throughout the Action Plan and the City and County are committed to ensuring on-going public outreach and education through participation in regional efforts, updates to the City/County Citizen Advisory Committees and Planning Commissions, and maintenance of the City/County Water Study website.

Following are examples of activities identified in the draft City/County Action Plan that could benefit from being implemented in partnership with regional stakeholders such as the University of Arizona (UA), the Southern Arizona Water Users Association (SAWUA), Water Conservation Alliance of Southern Arizona (Water CASA), Pima Association of Governments (PAG), the Arizona Department of Water Resources (ADWR), and business and environmental interested parties among others.

Economic Collaboration

The economy, including the importance of water for economic base job creation was an important theme throughout the Study and this is reflected in several activities in the Action Plan. Within the Comprehensive Integrated Planning element, an activity is included to improve regional partnerships toward economic base job creation within desired growth areas including center core revitalization.

Environmental Collaboration

The Respect for the Environment element relies heavily on collaboration and regional partnerships to address riparian restoration and preservation including the following activities: (1) coordinating for future bond funding to acquire riparian habitat for preservation; (2) establishing a working group to advance cost-effective, regionally coordinated environmental projects; (3) developing a coordinated riparian habitat preservation outreach program; and (3) extending reclaimed water lines to Vail to protect Cienega Creek.

Pumping Recharge Disconnect

The hydrologic disconnect between where pumping of groundwater occurs and where it is recharged as groundwater replenishment is a significant regional problem, primarily outside the Tucson Water service area, that will require a regional solution. The City and County are currently participating in a Safe Yield Task Force and the emerging regional process for water sustainability to address the pumping /recharge disconnect. In addition, Tucson Water is working to implement wheeling agreements with other providers to deliver renewable wet water resources to areas that currently rely on groundwater.

Research and Evaluation

There is a need for better data collection to determine how best to direct efforts toward drought planning, water conservation programming, and groundwater and environmental monitoring. Better data can also be used to

Partnership Opportunities Stemming from Action Plan (Continued)

gauge the water conservation potential of new development and of specific measures such as water harvesting. This is considered an appropriate arena for engaging in a regional dialogue to improve the quality and usefulness of the data gathered.

More robust cost-benefit analysis tools are needed for future integrated resource planning and decision making to better account for environmental, energy, social preference and other impacts and trade-offs associated with different supply and demand scenarios.

Water Conservation Goals and Education

Establishing measurable water conservation goals was identified as a regional item. The City and County have identified a benchmark study as an initial step to gather background information on measurable goals. Related to this, a common glossary of terms and more consistent outreach, education and standard methods (e.g. for water harvesting and greywater use) are needed.

Scenario Planning

The City and County envision holding a scenario planning forum with regional stakeholders and drought and climate change experts to further the Study's goals related to climate change preparedness and drought planning.

