

## EXECUTIVE SUMMARY

### Background

The City of Tucson Drought Preparedness and Response Plan (Plan) was adopted by Mayor and Council November 28, 2006, as required by A.R.S. §45-342. An implementation ordinance (No. 10380) was approved March 20, 2007. The Plan recognized that drought impacts do not occur suddenly or without warning, and acknowledged that with proper planning and review it is unlikely the community will find itself in an emergency situation caused solely by drought. The Plan called for annual reporting on local and regional indicators to be monitored as triggers for implementing or rescinding various stages of drought response that may be required to ensure Tucson Water's water resources and system characteristics are not compromised by drought impacts.

The Plan triggers for escalating drought response stages meet the statutory requirement for drought response indicators to be directly tied to a water provider's water resource availability and the ability to deliver those resources. For Tucson Water, water resource availability requires review of both regional (Colorado River) and local conditions that may impact supplies, whereas evaluation of infrastructure reliability primarily requires review of the potable and reclaimed water distribution systems (local system indicators).

The adopted Plan established four drought response stages, outlined an action plan for responding to potential drought-related impacts on Tucson Water's system and water supplies, and addressed the issue of emergency supplies. The Plan also demonstrated the success of the long-term financial investment the community has made in securing and implementing use of renewable water resources, which has provided a considerable ability to withstand the impacts of sustained drought on Tucson Water's supplies.

Tucson Water's regional indicators are severe or sustained drought on the Colorado River watershed, including declared shortages on the Colorado River; or a drought status "above normal" declared by the Arizona Department of Water Resources (ADWR) for the Santa Cruz Watershed, which includes the City of Tucson. Local system drought impact indicators for Tucson Water include measures of aquifer storage, potable and reclaimed water production capacity (i.e.: measures of water supplies and the ability to deliver them where needed), and gallons per capita per day (GPCD) use. While GPCD is not a "drought indicator" per se, monitoring GPCD allows the Utility to better assess whether drought response measures previously implemented are having the desired effect. Tucson Water's declining GPCD in the face of long-term drought indicates both the responsiveness and the general drought awareness of the Utility's customers.

Tucson Water's drought preparedness planning is an ongoing process closely linked with long-range water resource planning. All successful planning requires periodic updates of any written plans to incorporate new data and adjust planning scenarios to reflect real-life conditions. In addition there is a statutory requirement to update the Plan every five years.

This update meets the statutory requirement and also incorporates experience gained from five years of declared Stage 1 Response. However, over the last five years increasing data related to climate change that may impact current definitions of "drought" and the possibility that drought may become the new normal has driven the need to incorporate climate change, or variability, into long range planning efforts. This update begins to integrate Tucson Water's broader climate change planning efforts into the drought preparedness plan. Over the next five years, the goal is to have the drought preparedness and response plan become one component of an *Integrated Drought Preparedness and Response/Climate Change Adaptability Plan (Integrated Plan)* for the Utility.

Much of Tucson Water's current water resource planning efforts mitigate future supply uncertainty. Storing excess CAP water now, mitigates against future Colorado River shortages. Investment in conservation now provides a hedge against drought, similar to storing excess CAP. Developing and securing multiple supply alternatives, such as effluent and recycled water, will give Tucson Water the flexibility to respond to changing supply conditions.

### Drought Response Stages and Response Measures

The Plan continues the drought response stages established in the original Drought Preparedness and Response Plan including the following drought response stages:

- **Stage 1**
  1. *A Stage 1 drought response will be declared by the City Manager, on the advice of the Water Director, based on either one or both regional indicators. The regional indicators include a severe and sustained drought on the Colorado River or a declaration of drought within Tucson's watershed (Santa Cruz Watershed) posted on the Arizona Department of Water Resources website. During Stage 1, local system indicators will primarily be monitored for implementation of specific response actions.*
  2. *The focus of Stage 1 response actions will include:*
    - *Public notification and information on drought issues;*

- *Changes in system operations (such as expedited well maintenance) and/or system modifications (such as well drilling and well maintenance and other system maintenance programs to reduce system losses such as meter replacement and leak detection) deemed necessary by the Water Director; and*
  - *Self-administered water audits by City departments to identify water-saving and water efficiency measures for City buildings, City-maintained landscapes and City-owned water-cooled equipment.*
  - *Possible additional measures may include voluntary self-audit programs for commercial, multi-family and industrial users.*
- **Stage 2**
    1. *A Stage 2 drought response also will be declared by the City Manager, on the advice of the Water Director, primarily based on regional indicators. Specifically, if an initial shortage (i.e., a shortage affecting only excess or lower priority uses, not municipal uses) is declared on the Colorado River, the City will elevate to Stage 2 drought responses. In addition, local system indicators, in conjunction with a declaration of drought in the Santa Cruz Watershed posted on the ADWR website, could trigger elevation to Stage 2 or may trigger additional response actions.*
    2. *The focus of Stage 2 response actions will include:*
      - *Continuation of all Stage 1 actions, with intensified public education and additional system or operational actions;*
      - *Mandatory implementation of water reductions or efficiencies identified during Stage 1 audits for all City uses of potable water;*
      - *All potable water users will be requested to make additional voluntary reductions;*
      - *Mandatory self-audits will be required for multi-family users, and for commercial and industrial users at/or exceeding monthly usage of 325 cubic feet (Ccf); and*
      - *Irrigation restrictions will be required for multi-family, commercial, and industrial customers, with potential exemptions/variances available for sites demonstrating that minimum efficiency criteria are met and maintained.*
- **Stage 3**
    1. *A Stage 3 drought response will be declared by Mayor and Council, upon the recommendation of the City Manager, based on either one or both of the following drought indicators: reductions in CAP deliveries to the City or local*

*system indicators in conjunction with a declared drought in the Santa Cruz Watershed posted on the ADWR website.*

2. *The focus of Stage 3 response actions may include:*

- *Continuation of all previous actions under Stages 1 and 2;*
- *Prohibition on operation of fountains at multi-family, commercial, and industrial sites.*
- *Mandatory water reductions by all potable water users (percentage to be determined by existing conditions); and*
- *Plumbing retrofit on resale for residential, commercial, multi-family, and industrial users.*

• **Stage 4**

1. *A Stage 4 drought response will be declared by Mayor and Council, upon the recommendation of the City Manager, based on one or both of the following drought indicators: additional reductions in CAP deliveries to the City or local system indicators in conjunction with a declared drought in the Santa Cruz Watershed posted on the ADWR website.*

2. *The focus of response actions for Stage 4 may include:*

- *Continuation of Stage 1, 2, and 3 response actions and implementation of appropriate provisions of the City's Emergency Water Conservation Ordinance No. 8461. These provisions include but may not be limited to:*
- *No outdoor irrigation unless the City Manager designates a schedule of appropriate watering days;*
- *No washing of sidewalks, driveways, parking areas, tennis courts, patios, or other impervious surface areas with water from an open hose, or a spray nozzle attached to an open hose, or under regular or system pressure, except when required to eliminate conditions that threaten public health, safety, or welfare;*
- *No outdoor use of any water-based play apparatus connected to a pressurized source;*
- *No operation of large commercial water-cooled space and equipment cooling systems below an operating efficiency level of two cycles of concentration (see Glossary);*
- *No serving water to customers of restaurants and other food service establishments unless water is specifically requested by the customer;*

- *No operation of outdoor misting systems in public areas;*
- *No filling of new swimming pools, fountains, spas or other exterior water features; including no draining and refilling of exterior water features; and*
- *No washing of autos, trucks, trailers, and other types of mobile equipment, except at facilities equipped with wash water recirculation systems, and for vehicles requiring frequent washing to protect public health, safety, and welfare.*
- *In addition, staff will develop additional response actions if warranted. For example, “demand offset programs” may be developed and implemented – meaning that new commercial and residential development may not be permitted unless the projected water demand of that development is “offset” through water demand reductions elsewhere, such as through retrofitting older facilities to reduce water consumption.*

### Emergency Supplies

The Plan also continues short-term reliance on groundwater resources as backup supplies for the potable system, but acknowledges that long-term, non-sustainable reliance on groundwater is not a preferred alternative. Both mandatory demand reductions and the development of alternative renewable water supplies will be strategies utilized by Tucson Water to avoid or minimize long-term reliance on groundwater. In addition, the use of potable water as a backup for the reclaimed water system will be prohibited during drought response stages 2, 3, and 4. The Plan limits existing interconnect agreements with other water utilities to emergency situations only. Requests for backup supplies from other water utilities will continue to be considered on a case-by-case basis and only at a level which will protect public health and safety (i.e., essential uses); backup supplies for non-essential uses in the service areas of other water utilities will not be considered during drought. Complimenting this response strategy is the on-going efforts to reach regional solutions for utilizing renewable water resources to reduce the need for requests from other local water providers for emergency supplies from Tucson Water.