

# **2011 WATER RESOURCE PLAN**

## **EXECUTIVE SUMMARY**



**CITY OF PHOENIX**  
**WATER SERVICES DEPARTMENT**

*November 28, 2011*

## PLAN OVERVIEW AND PURPOSE

The term “scarcity” is often used to characterize water availability in the Sonoran desert environment. Yet, for more than 100 years, the City of Phoenix has continually overcome obstacles in fulfilling its mission to provide safe, abundant, reliable and affordable water supplies to its customers. Today, the City maintains a well diversified water supply portfolio which is sufficient to meet the needs of this growing community for decades to come. The high level of water supply security the City enjoys today has resulted from the City’s dedication to progressive water supply development projects, and the efforts of our customers to use water more efficiently. A continued focus on these elements will better prepare the City and its customers to adapt to conditions that could change rapidly and significantly.

This 2011 Water Resource Plan addresses a wide array of factors that will influence water availability and water demand over the next 50 years. Chief among these factors are the potential impacts of long-term drought and climate variability, availability of “insurance” supplies, and the ability of customers to adapt water usage to meet available supplies when shortfalls exist. The water supply assessment and deficit management strategies incorporated within this Plan are designed to guide water acquisition, water management and infrastructure actions necessary to ensure sustained water availability for current customers and anticipated growth over the next 50 years under a variety of demand and surface water shortage conditions.

### ***WATER PLANNING GOAL:***

***Availability of safe, sustainable, reliable and affordable water supplies sufficient to meet the needs of City customers during all foreseeable conditions.***

## PLANNING APPROACH AND QUESTIONS ADDRESSED

The City’s approach to water resource and demand management planning can be summarized through four basic functions:

- ***Anticipating*** potential conditions affecting the timing and depth of water supply deficits such as cyclical shortages, climate variability, service area growth rates, per-unit water use, regulatory and institutional developments using the best available scientific and socioeconomic information;
- ***Preparing*** near-term and long-term strategies for responding to deficits including supply acquisition, infrastructure development, demand management and regional coordination together with action trigger points;
- ***Monitoring*** water supply and demand conditions such as reservoir levels, watershed health, climate trends, demand trends and growth characteristics to identify progression toward action trigger points; and
- ***Acting*** on pre-selected plan elements upon reaching trigger points to ensure sufficient implementation lead time.

Basic questions that drive the research and ultimate actionable decisions include: 1) How much growth will Phoenix experience in the next 50 years? 2) When and under what conditions would there be insufficient water available to meet service area demands? 3) What strategies are available, and at what cost, to avoid supply deficits? 4) What is the economic value of reducing or eliminating supply deficits? 5) How much “shortage insurance” can the City afford (i.e. what risk levels can be covered)? and 6) What actions must be taken and at what junctures to reduce or eliminate deficit risk?

The first three chapters of this Plan describe the regional water planning environment, Phoenix’s water supply portfolio and the City’s water demand characteristics. Chapter 4 illustrates water supply and demand ranges representing a multitude of growth and supply availability scenarios to identify potential deficit conditions at any point in time. Chapter 5 describes a variety of demand and supply strategies available to reduce or avoid supply deficits, and Chapter 6 sets forth key near term actions items to ensure adequate preparation for eventual supply shortages.

## **INTEGRATION OF PRIOR PLANNING EFFORTS AND REGULATORY REQUIREMENTS**

The last complete assessment of Phoenix water supplies was documented in the 2005 Water Resources Plan Update. Since that time, the City has acquired additional CAP supplies, modified its groundwater well inventory, and researched potential impacts of more extreme climate variability than that reflected in historic records. In addition, per-unit water demand and wastewater flows in Phoenix have declined significantly since 2005, and the City has conducted substantive research to assess how these trends may impact supply deficits and future standards for water and wastewater infrastructure.

The City of Phoenix has historically maintained separate water resource, conservation and drought management plan documents for various aspects of water supply sufficiency in the service area. These components have become increasingly interdependent, and as such, this Plan presents an integrated approach in seeking to reduce the risk of future deficits resulting from surface water shortfalls.

This document is consistent with A.R.S. §45-342 which requires water providers to develop and periodically submit a “System Water Plan” to the Arizona Department of Water Resources (ADWR). A System Water Plan by statute is comprised of a Water Supply Plan, a Drought Preparedness Plan and a Water Conservation Plan. The City is exempt from the requirements for a Water Supply Plan on the basis of its current Designation of Assured Water Supply (discussed in Section 2). This *Water Resource Plan*, together with the City’s 2000 Drought Management Plan and Ordinance, constitute a Drought Preparedness Plan by addressing both water supply and water demand management approaches in minimizing impacts to Phoenix customers during drought-related shortages. Phoenix complies with the Water Conservation Plan requirements as it is subject to requirements prescribed in ADWR’s Management Plans.

## SUMMARY OF CONCLUSIONS FROM THIS PLAN

Key conclusions derived from this Plan are as follows:

1. Phoenix is well situated to accommodate anticipated growth over the next 50 years with current water supplies under full supply (non-shortage) conditions;
2. Growth in demand within Phoenix, and among other users dependent on the same source watersheds, increases susceptibility to drought-related surface water shortages which may be intensified by long-term variability in climate patterns;
3. Based on current reservoir storage conditions, the depth of Phoenix's water supply portfolio, reduced demand growth forecasts and recent Colorado River reservoir management agreements, it is unlikely that Phoenix will experience a water supply deficit prior to 2020;
4. Deficits of 20,000 AF per year (approximately 5% of anticipated demand) could occur in the early 2020s, and could climb significantly higher by 2035 under the most severe shortage scenarios anticipated in this Plan;
5. A combination of strategies including demand management, local well utilization and recovery of water stored underground by the Arizona Water Banking Authority (AWBA) will be sufficient to address initial deficits occurring after 2020;
6. The severity of more significant deficits in successive decades can be reduced through gradual implementation of water efficiency improvements, demand curtailment strategies and development of additional water supplies; and
7. Collaborative regional efforts to manage demand and to enhance supplies are likely to provide more cost-effective long term solutions than traditional "go it alone" initiatives.