Introduction

Colorado Springs Utilities is preparing an Integrated Water Resource Plan (IWRP). The IWRP is a long-term strategic plan for providing a reliable, sustainable water supply to Utilities’ customers in a cost-effective manner. It is a holistic approach to water resource planning that focuses on water supply while incorporating water demand, water quality, infrastructure reliability, environmental protection, water reuse, financial planning, energy use, regulatory and legal concerns, and public participation.

The first step in the IWRP was to identify and prioritize issues, risks and vulnerabilities associated with Utilities’ raw water system now and when our service area is fully developed. The greatest issues, risks and vulnerabilities were organized into six categories. This Issue Paper summarizes risks in the Demand Increases category.

Background

» Utilities has an obligation to meet the water needs of all residential, commercial and industrial customers in its service territory.

» From 1950 through 2013, water use in the Colorado Springs area increased from about 11,000 ac-ft/yr to a 5-year average of approximately 82,000 ac-ft/yr. This is a 750% increase; over the same time population increased 960%.

» Colorado experienced significant drought periods in the 1950s, 1970s, 1980s, 2000s, and 2010s, each of which triggered drought response measures that temporarily reduced water use. The permanency of reduced use after the 2002-03 and 2012-13 droughts is not currently known.

» Municipal and industrial water demand in our service territory is a function of many broad influences, such as population, climate, demographics, conservation policies, economic conditions, military installations, age of water fixtures, and age of water system infrastructure. Each of these influences is affected by numerous other factors, all of which vary over geographic areas and time.

» Residential customers account for 61 percent of total water use in Colorado Springs. About half of metered residential water on an annual basis is used for outdoor landscape watering.

» Utilities prepares water demand projections regularly to support water supply planning and revenue planning activities.

» Utilities has temporary contracts to supply water to two regional entities outside our service territory. Other regional entities have needs that we could meet in the future.

Discussion

High priority risks related to water Demand Increases are summarized on the following page.
» **Population Growth** – The Colorado State Demographer estimates that population will steadily increase in Utilities’ water service territory from about 453,400 in 2012, to about 556,000 in 2030, and about 685,500 at buildout (beyond 2050). Forecasts of the rate of growth and the ultimate population of Utilities’ service territory at buildout include substantial uncertainty.

» **Residential Per Capita Use Changes** – Our conservation programs have been effective in reducing residential per capita water use. While residential per capita use continues to trend downward, there is uncertainty over the minimum achievable and sustainable per capita use for our residential customers.

**Conceptual Example of Demand Hardening**

» **Demand Hardening** – Demand hardening is observed when increased water use efficiency makes it more difficult to reduce water use (e.g., through outdoor watering restrictions) during a shortage period or a drought. Evidence of demand hardening has been seen in our system as residential per capita water use levels decline. We have historically relied on demand management as a tool to get through droughts; this tool will be less effective in the future.

» **Future Water Demand Forecast** – Based on current information and assumptions, water demand is anticipated to increase from about 82,000 acre-ft/yr at present to about 139,000 acre-ft/yr at buildout, based on a moderate growth scenario (58% increase).

» **Water Conservation** – Utilities is committed to being a leader in water conservation in Colorado. Effective conservation programs will continue to reduce per capita water use compared to historical levels.

» **Climate Effects** – Changing climatic conditions affect water demand as well as supply. A hotter, drier future climate would increase demand for outdoor water use to sustain landscape vegetation.

» **Regionalization** – Utilities has opportunities to provide water to small regional water providers in the Colorado Springs area. If regional water service contracts are executed, they would commit supplies to customers not considered in the population and demand forecasts currently used for planning.

In the next step of the IWRP analysis, Utilities will quantify the impacts of Demand Increases and other key risks on our raw water system. Projects, programs and policies will then be evaluated for mitigating the impacts of those risks. The most robust solutions will be combined into a roadmap for future water resources decision-making.