Chapter 7

Water Shortage Contingency Planning

This chapter provides guidance for describing the water shortage contingency planning of an urban water supplier. Included is guidance for reporting the staged response to a water shortage, such as a drought, that occur over a period of time, as well catastrophic supply interruptions which occur suddenly.

Water shortage contingency planning is a sustained and strategic planning process to prepare and respond to water shortages. Good planning and preparation can help agencies maintain reliable supplies and reduce the impacts of supply interruptions.

The following sections are included in this chapter:

7.1 Stages of Demand Reduction

7.2 Determining Reductions

7.3 Revenue and Expenditure Impacts

7.4 Water Shortage Contingency Resolution or Ordinance

7.5 Catastrophic Supply Interruption

7.6 Minimum Supply Next Three Years

DWR published the Urban Drought Guidebook, DWR 2008, which provides extensive guidance for water shortage contingency planning, more detail than can be addressed in one chapter of the 2015 UWMP Guidebook. Water agencies are strongly encouraged to view The Urban Drought Guidebook for additional information related to this chapter. Link to the Drought Guidebook.

CWC 10632 (a) The plan shall provide an urban water shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier:

7.1 Stages of Demand Reduction

CWC 10632 (a)
(1) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage

(4) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

(5) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

(6) Penalties or charges for excessive use, where applicable.

Complete Table 7-1 and include a narrative description of the stages of action to be undertaken by the supplier in response to water supply shortages. See subsections 7.1.2 and 7.1.3.

The number of stages is at the discretion of the water supplier. Typically, water agencies will have between 3 and 5 stages. The stages will demonstrate increasing water shortages and increasing levels of prohibitions. **Agencies must include a stage that addresses a reduction of 50 percent in water supply.**

Recommendation
Key savings are to be found in mandatory measures that address irrigation of landscape, particularly turf. (Use and Effectiveness of Municipal Water Restriction During Drought in Colorado, Douglas S Kenny 2004.) Water agencies are encouraged to include measures that limit turf and other landscape irrigation.

7.1.1 Defining Water Features

CWC 10632. (b) … for purposes of developing the water shortage contingency analysis pursuant to subdivision (a), the urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.

Health and Safety Code Section 115921. As used in this article the following terms have the following meanings:
(a) "Swimming pool" or "pool" means any structure intended for swimming or recreational bathing that contains water over 18 inches deep. "Swimming pool" includes in-ground and aboveground structures and includes, but is not limited to, hot tubs, spas, portable spas, and non-portable wading pools.

If an agency chooses to prohibit or limit water use in water features, this prohibition or limitation does not apply to swimming pools or spas, which must be listed separately. Water features are to be defined separately from swimming pools and spas.

7.1.2 Narrative Description

The narrative description of the stages of demand reduction must include:

- A designation for each stage, i.e., numbering stages, 1, 2, 3, etc…
- A description of the specific water supply conditions that are applicable to each stage. Some examples of this include specific reservoir levels, levels of precipitation, groundwater availability, or water delivery estimate from wholesalers.
- A description of how the agency will enforce prohibitions that are included in Table 7-1. For example, in the case of most prohibitions, agencies will issue a warning followed by increasing levels of fines for repeat offenses. In the case of rationing, the agency may rely upon a drought rate structure that penalizes customers for water use above the allotted amount. (See recommendation below).

Recommended

- If a rate structure is used as an enforcement mechanism, a brief narrative description of the rate structure is recommended. Also, see subsection 7.3, Impacts to Revenue and Expenditures, in order to avoid duplication in describing the rate structure.
- If an agency has a unique variation on a prohibition listed in Table 7-1, a description may be included in this narrative.

Examples of actions that may be employed by the water supplier at various stages:

- Expand public information campaign on water conservation
- Provide rebates on water efficient plumbing devices and fixtures (toilets, shower heads, etc...) or water conservation kits
- Increase water waste patrols
- Offer water use surveys to all customer classes
- Implement a drought rate structure or surcharge
- Implement a moratorium on new connections

Examples of Voluntary Restrictions:

- Lodging establishment offer an opt-out of linen services
- Restaurant kitchens use pre-rinse spray valves
- Restaurants serve drinking water on request only
- Customers repair leaks, breaks, and malfunctions in a timely manner
- Customers prevent landscape irrigation runoff to streets and gutters
- Use automatic shut off on hoses
- Cover pools and spas

Examples of Mandatory Prohibitions:

- Limit landscape irrigation to certain hours
- Limit landscape irrigation to specific days
- Prohibit runoff from landscape irrigation
- Prohibit sprinkler irrigation of landscapes
- Prohibit landscape irrigation except for trees and shrubs
- Prohibit landscape irrigation
- Prohibit the use of potable water for washing of hard surfaces
- Prohibit washing of vehicles, except at facilities that use recycled water
- Restrict water use for aesthetic water features, such as fountains
- Restrict filling of residential swimming pools
- Prohibit use of potable water for construction and dust control
- Prohibit water use above allotment

7.1.3 Complete Table 7-1

Table 7-1 Stages Of Demand Reduction		
Stage No.	**Water Supply Condition or Percentage Supply Reduction[1]**	**Water Supplier Actions and Prohibitions**
		Drop down menu
[1]One of the stages of action must be designed to address a 50 percent reduction in water supply.		

7.2 Determining Reductions

CWC 10632(a) (9) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

Discuss how the water supplier will measure and determine actual water savings made from implementing the stages of the water shortage contingency plan. This requirement can be addressed by relying upon water meters to record the production and consumption of water.

7.3 Revenue and Expenditure Impacts

CWC 10632 (a) (7) An analysis of the impacts of each of the actions and conditions described in subdivisions (1) to (6), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

7.3.1 Include a discussion of the impacts of each stage to the agency's revenues and expenditures.

Discuss the expected change in revenue and expenditure at each stage of demand reduction listed in Table 7-1. Agencies typically experience a decrease in revenue with reduced water sales. Expenditures can also be expected to increase during water shortages as a result of increased outreach to customers about water conservation, possibly as a result of purchasing new water supplies, and possibly as a result of developing and implementing a drought rate structure.

7.3.2 Include the proposed measures to overcome these potential impacts on revenues and expenditures.

Rate Structures and Surcharges

Well-designed rate structures can reduce the potential financial effects of water shortages and enable the supplier to recover its purchase, treatment, and delivery costs, as well as the additional costs related to the water shortage response program.

If the agency relies, or will rely, on its rate structure to overcome potential financial impacts, include a brief description of the rate structure, especially any features that relate to drought, such as drought surcharges or excess use charges. Agencies may include a detailed discussion of their rate structures as an appendix to the UWMP and provide a brief summary in this section.

RATE CASE STUDY?

Use of Financial Reserves

Discuss the agency's planned use of financial reserves to address decreased water sales during a water shortage. It is a sound operating practice for water suppliers to maintain a dry-year contingency reserve fund to protect revenue through two or more consecutive years of supply reductions below normal demand levels. Rate hikes, surcharges, or borrowing strategies are expected in agencies without an established reserve or when the reserve has become depleted.

Other Measures

Include a discussion of any other proposed measures that the water agency may take to overcome impacts to revenues and expenditures. For example, some agencies may consider postponement of capital improvements or reduction in agency staff.

7.4 Resolution or Ordinance

CWC 10632 (a)(8) A draft water shortage contingency resolution or ordinance.

Include a draft or approved/adopted water shortage contingency resolution or ordinance in the UWMP.

Contingency planning before a shortage allows selection of appropriate responses consistent with the varying severity of shortages. Water agencies are required to develop the resolution or ordinance for submittal with the UWMP. However, it is at the discretion of the agency if they choose to adopt their resolution or ordinance in advance of a water shortage, or to hold it as a draft to be adopted when needed.

7.5 Catastrophic Supply Interruption

CWC 10632(a)(3) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

Identify what actions will be taken by a water supplier if there is a catastrophic reduction in water supplies. Catastrophic supply interruptions differ from the staged drought response addressed earlier in this chapter in that catastrophic interruptions occur suddenly and can immediately jeopardize a large portion, or all, of an agency's water supply.

The Water Code requires that agencies specifically address catastrophic interruptions due to a regional power outage or an earthquake.

Some actions that agencies may have in place include system interconnections with suppliers in the region, participation in comprehensive regional disaster plans, or participation in the Water/Wastewater Agency Response Network (WARN), a network of agencies which supports and promotes statewide emergency preparedness, disaster response, and mutual assistance matters for public and private water and wastewater utilities. Their Web site can be found at www.calwarn.org.

To address this requirement, an agency may summarize language from its Emergency Response Plan (ERP), as required by the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Public Law 107-188). Section 1433(b) requires community water systems serving populations greater than 3,300 to either prepare or revise an ERP that incorporates the results of its Vulnerability Assessment, found in section 1433(a).

Recommendation

If an agency receives water from the delta, the Delta Plan recommends that the UWMP include a plan for possible interruption of water supplies for up to 36 months due to catastrophic events impacting the Delta.

7.6 Minimum Supply Next Three Years

CWC 10632 (a) (2) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.

This subsection of the water code is addressed by completing Table 6-6, Supply and Demand comparison – Multiple Dry Years, from Chapter 6.