

Problem and Objective Statements

Water Supply Reliability

Problem

The Bay-Delta system provides the water supply for a wide range of instream, riparian, and other beneficial water uses which are authorized by appropriative, riparian, and pre-1914 water rights. While some water users depend on the Delta system for only a portion of their water supply, others have become highly or totally dependent on Delta water supplies. As water use and competition among uses has increased during the past several decades, conflicts have increased among users of Delta water. Heightened competition and conflict during certain seasons or during water-short years has magnified the impact from natural fluctuations in the hydrologic cycle.

In response to declining fish and wildlife populations, water flow and timing requirements have been established for certain fish and wildlife species with critical life stages dependent on freshwater flows. These requirements have reduced flexibility to meet the quantity and timing of water exports from the Delta. There are concerns that additional restrictions that might be needed to protect species could increase the uncertainty of Delta water supplies. This basic disparity between water needs and water availability has created economic uncertainty in the water service areas and increased potential conflict over supplies.

A related concern is the vulnerability of the Delta water transport system of levees and channels to catastrophic failure due to earthquakes, structural failure, or overtopping during floods. This system is also vulnerable to general failure as a result of decreasing levee stability. Such failures in the system could result in interruptions in water use in the Delta or water transport across the Delta for periods which could vary in length from days to several months.

Objectives

The goal for water supply reliability is to reduce the mismatch between Bay-Delta water supplies and current and projected beneficial uses dependent on the Bay-Delta system. This can be accomplished by addressing several objectives which collectively reduce the conflict among beneficial water uses, improve the ability to transport water through the Bay-Delta system, and reduce the uncertainty of supplies from the Bay-Delta system. These water supply reliability objectives in summary form are:

- Improve access to water for **in-Delta agricultural water needs**
- Maintain adequate water supply and timing to meet expected **in-Delta municipal and industrial water needs**

- Provide adequate supply and timing that meet expected **in-Delta environmental water needs**
- Improve **export water supplies** to help meet agricultural, municipal and industrial, and environmental water needs
- Improve the adequacy of Bay-Delta water to meet **Delta outflow needs**
- Improve the reliability of the Bay-Delta system water supply by reducing the **vulnerability of the levees** that protect it
- **Improve the predictability** of the water supply availability from the Bay-Delta system for agricultural, municipal and industrial, and environmental water users

The mismatch between supplies and projected beneficial uses needs to be addressed for both the short and long-term planning horizons. The mismatch will be addressed from both the supply and demand sides.

Linkages

Improvements to water supply reliability are also directly linked to improvements for ecosystem quality, water quality, and the levee system integrity.

Ecosystem Quality - A critical issue which affects water supply reliability is the impact of water supply diversions on the ecosystem, especially endangered species. Therefore, water supply reliability can be improved by actions which recover and protect endangered species. By reducing the conflict between the ecosystem and water diversions, the opportunities to transport water through the Delta may be increased. This reduction in conflict will create flexibility to more effectively use water supplies through water management programs such as water transfers and increases in water supply. Supply increase actions may consist of conjunctive use, coordinated operation of existing reservoirs, developing new surface and groundwater storage, development of groundwater resources, and water reclamation.

Water management programs that alter the timing of Delta inflow can produce additional benefits, providing Delta inflow when it is beneficial to Delta aquatic habitat and improving water quality in Delta channels. Similarly, water management programs that provide opportunities to alter timing of Delta outflow can benefit Suisun Bay and San Francisco Bay while at the same time providing opportunities for additional water supply transport across the Delta. This can reduce conflict among beneficial uses and provide benefits for the ecosystem and for water supply reliability. To effectively reduce the conflict between ecosystem water needs and other beneficial uses of water dependent on

the Bay-Delta system, water management programs will need to reduce or manage demand, improve Delta water transport capabilities, and reduce the risk to the transport system from catastrophic failure.

Water Quality - Another issue which affects water supply reliability is the quality of water in the Delta. Improved water quality increases the opportunity for timing of diversions and for use of the water.

Levee System Integrity - Steps to more effectively manage the risk associated with catastrophic failure of the Delta levees will reduce potential interruptions for in-Delta and export water supply.

Phase II Alternatives

The three Phase II Alternatives were designed to address the Program objectives and to take advantage of the linkages from improvements in all four resource categories. Each alternative includes many features to improve water supply reliability and to provide opportunities for new supplies including:

- New flexibility in moving water within the Bay-Delta system so that all of the water management tools, including water use efficiency, water transfers, and supply augmentation are available to the water service agencies to match quantity and timing of supply with beneficial use patterns. The approach for moving water and the resultant flexibility and opportunities varies among the alternatives.
- Potential new storage would hold water as new supplies for all uses, thereby improving predictability.
- A water use efficiency program will help improve water management.
- An extensive ecosystem restoration program is expected to help reduce the conflict between the ecosystem and water diversions and increase opportunities to transport water through the Delta.
- A water quality program will improve water supply reliability by allowing more flexibility in diversion timing.
- A levee system integrity program reduces the potential for water supply interruption.