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Water Management

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Executive Summary

A water management strategy for the Bay-Delta Estuary, by necessity, must be one element of the broader resource management strategy to manage ecosystem resources, water quality, the integrity of the estuary's levee system, and the reliability of water supplies derived from the estuary. This broad resource management approach is required because the problems in each of the four resource areas cannot be effectively addressed without addressing problems in each of the other resource areas. There are also benefits to be realized by taking advantage of the synergistic relationships between actions in each of the four resource areas. The need for a broad approach is particularly evident in the water supply reliability area as the problems with the Bay-Delta ecosystem, the degraded water quality, and levee system integrity concerns all have significant impact upon to the reliability of water supplies derived from the system. Consequently, the water management strategy described in the following paragraphs must be viewed as only a part of a broader resource management strategy for the estuary, considering the linkages to the broad strategy and to the individual management strategies for the other three resource areas.

Strategy

The problems associated with reliability of water supplies derived from the Delta can be summarized at the highest level as:

1) A mismatch between supply and demand for water derived from the Delta for agriculture, urban and ecosystem uses and,
2) A high degree of uncertainty over the seasonal availability of water supplies and the capability of the system to attenuate variability in supply over longer hydrologic cycles.

The strategy for reducing the mismatch between supply and demand for water supplies derived from the Delta is to attack the problem on several fronts. Employing this broad arsenal of actions, in combination, will result in:

Reducing the rate of growth in demand by increasing the efficiency of current and future use of Delta water through:

- Increased Urban and Agricultural Water Conservation measures as detailed in the Water Use Efficiency Program.[1]
- Implementing the higher levels of water recycling included in the Water Use Efficiency Program [1] and providing higher quality urban water to increase the feasibility of recycling.

[1]Refer to the description of the Water Use Efficiency Program for specific details.

- Implementing management techniques to ensure efficient uses of Delta water diverted for wildlife refuge uses.[1]

Increasing supplies of Delta water and alternatives to Delta water by improving capabilities to accommodate market-driven willing seller water transfers through:

- Developing a water transfer brokering process and institution that facilitates documentation and permitting, the marketing of transfers, and the wheeling aspects of water transfers.[2]

- Developing measures to improve the institutional coordination needed to accomplish water transfers.

- Improving the physical Delta capabilities of the solution alternatives to accommodate water transfers. [2]

Increasing other supplies of Delta water and alternatives to Delta water through:

- Developing watershed management programs in the upper watersheds.[3]

- Developing additional groundwater banking programs.[4]

- Development of additional offstream surface storage.[4]

- Conjunctively managing surface and groundwater storage facilities to optimize reliability.

- Developing operational plans for new facilities which achieve ecosystem and water supply reliability goals.[4]

- Developing operations for new storage components to achieve efficient use of Delta conveyance capabilities.

- Providing higher quality export water which will, over time, reduce the portion of agricultural supplies required to leach salts from the soil matrix and reduce the portion of agricultural supplies needed to achieve several San Joaquin River water quality standards.

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[2]Refer to CALFED Transfers Work Group Discussion Papers for additional detail.

[3]Refer to the CALFED Watershed Management Strategy for additional detail.

[4]Refer to the CALFED Storage and Conveyance Component Report for additional detail.

All of the elements described above can serve to reduce the uncertainty over variability in supply both seasonally and between years. Water use efficiency measures can reduce demand but because of the effects of "demand hardening" can increase the premium on reliability. This is also true of water quality measures. Historically, water transfers have played a more important role in addressing year to year variability, especially during dry and critical portions of the hydrologic cycle, by increasing available supplies during those periods.

While no single element of this water management strategy can fully address the water supply problems of the Delta, the combined benefits of the various elements can work together to produce an effective approach to reducing the mismatch between supply and demand of Delta water supplies and decrease uncertainty over the availability of Delta water.

The benefits of this Water Management Strategy are detailed below.

Average year demand reduction/supply augmentation

- Up to 750,000 acre feet of urban water conservation above the levels attributed to current BMPS;
- A range of 125, 000 to 200,000 acre feet of additional agricultural water conservation above the baseline;
- Up to 1,000,000 acre feet of additional recycled water;
- Between 150,000 and 700,000 acre feet (depending upon the alternative chosen) of additional water supply for agriculture, urban, and ecosystem beneficial uses from conveyance and storage improvements;
- Between 100,000 and 1,000,000 acre feet (depending on the alternative chosen) of physical conveyance capacity to accommodate water transfers.

Dry and Critical Year Supply Augmentation

- Between 100,000 and 800,000 acre feet (depending on the alternative chosen) of additional water supply for agriculture, urban, and ecosystem beneficial uses from conveyance and storage improvements;
- Up to 160,000 acre feet of additional water supply from conjunctively managed groundwater storage;
- Between 100,000 and 1,000,000 acre feet (depending on the alternative chosen) of physical conveyance capacity to accommodate dry and critical period water transfers.

The estimates represent potential contributions. Actual performance of the elements will be determined by the relative economics of each element. Water users work to satisfy their demand from available sources by taking them in order from the least to the most expensive, other things being equal. Of course, given the diversity of sources and users, other things are not always equal. Each source has unique characteristics in terms of reliability from year to year and from season to season, water quality, and other factors. For each water user, determining which sources to buy will be based on both cost and these other factors. These factors are examined in the Integrated Resource Plans (IRP) of each water district. Future

economic studies will further narrow the range of contributions by each element by examining the IRP's of the major water districts and relating the elements in a coarse system wide analysis.

In summary, CALFED's Water Management Strategy relies on efficient use of water in the system, water banking programs, a watershed management program, an effective market driven water transfer program, physical changes to the storage and conveyance system, and modifications to system operations to simultaneously reduce demand pressure and increase available supplies, particularly during dry and critical periods. This "systems" approach to water management operates on all the key elements of the Bay-Delta watershed and water development system to produce an integrated, efficiently managed system which addresses the future mismatches between supplies and water demands for agriculture, ecosystem water needs, and urban supplies and accommodates the hydrologic variability in the watershed.

Water Management Strategy