



Water Storage Investment Program (Water Bond, Chapter 8)

Program Goals, Objectives, and Principles – Final

After March 2017 and before January 2022, the California Water Commission will commit the \$2.7 billion in Proposition 1 Water Storage Investment Program funds to qualified water storage projects that will provide public benefits to California, improve the operation of the state water system, are cost effective, provide a net improvement in ecosystem and water quality conditions, and provide measurable improvements to the Sacramento-San Joaquin Delta or the tributaries to the Delta.

1.0 Introduction

In November 2014, California voters overwhelmingly approved Proposition 1, the Water Quality, Supply, and Infrastructure Improvement Act of 2014 affirming the need for a safe and reliable supply of water to support the state’s economy, environment, and quality of life. The bond includes \$2.7 billion for public benefits of water storage projects that provide measurable benefits to the Delta ecosystem or its tributaries. The California Water Commission (Commission), through the Water Storage Investment Program, will fund the public benefits of eligible water storage projects. Public benefits are defined as ecosystem improvements, water quality improvements, flood control benefits, emergency response, or recreational purposes.

The Commission will select projects for funding on a competitive basis based on expected return for public investment. Eligible projects must provide measurable benefits to the Delta ecosystem or its tributaries and include the following projects types:

- Surface storage projects identified in the CALFED Record of Decision, with the exception of projects that are prohibited by the California Wild and Scenic Rivers Act
- Groundwater storage projects and groundwater contamination prevention or remediation projects that provide storage benefits
- Conjunctive use and reservoir reoperation projects
- Local and regional surface storage projects that improve the operation of water systems in the state and provide public benefits

This document describes the framework for how the Water Storage Investment Program will be planned and implemented by providing the California Water Commission’s overarching goals, objectives, and principles for funding the public benefits of storage projects.

1.1 Water Storage in California

Water storage has played a key role in California where the quantity, timing, and location of water demand frequently does not match the natural water supply availability. Water storage is fundamental to managing variability in water supply for human purposes and is a critical tool for providing water management flexibility in California.^{1, 2} A water balance analysis presented in the California Water Plan Update 2013 indicates that in an average water year like 2010, the total water used in California was just over 40 million acre-feet (MAF) of which about 23 MAF (~58%) came from surface water and about 15 MAF (~38%) came from groundwater.³ Both surface storage and groundwater storage are critical to meeting the State’s water needs.

California’s statewide water system is made up of many local, state, and federal projects. These projects include facilities such as dams and reservoirs, hydropower plants, canals, water diversion structures,

¹ Jay Lund, Armin Munévar, Ali Taghavi, Maurice Hall, Anthony Saracino, Leo Winternitz, and Jeffrey Mount, 2014. *Integrating Storage in California’s Changing Water System*. November.

² DWR, 2014a. *California Water Plan Update 2013*. Bulletin 160-13. Volume 3 Resource Management Strategies. Chapter 13 Surface Storage CALFED.

³ DWR, 2014b. *California Water Plan Update 2013*. Bulletin 160-13. Volume 1 – The Strategic Plan.

recharge basins, extraction wells, water banks, etc. Many of these facilities were developed in the early to mid-20th century, and were not designed, constructed, or operated as an integrated water management system. Over time, operations of the two largest water supply projects, the State Water Project (SWP), operated by the California Department of Water Resources (DWR), and the Central Valley Project (CVP), operated by the U.S. Department of the Interior's Bureau of Reclamation (Reclamation), have been integrated based on the Coordinated Operations Agreement⁴ (COA) that was initiated in the 1970's and finalized in 1986⁵.

DWR's System Reoperation Study indicated that California's water infrastructure is physically interconnected to the extent that it is technically feasible to move water around the system from Trinity County in the north to Imperial County in the south. Therefore, changes in water management at any point may have consequences throughout the rest of the system and the inherent physical interconnections in the system provide opportunities for improving water management benefits via more integrated management arrangements.⁶

Lund et al documented in *Integrating Storage in California's Changing Water System* (2014) that California has approximately 1,400 regulated surface water reservoirs with a total storage capacity of about 42 MAF. These facilities are owned and operated by a mix of local, state, and federal agencies for a variety of purposes. Groundwater storage capacity dwarfs surface storage capacity. California has approximately 850 MAF to 1.3 billion acre-feet of groundwater in storage. Much of this groundwater, however, is of poor quality or too deep to be economically extracted for drinking or agricultural use. Only a small portion of California's total water storage in surface storage and groundwater that is within the reach of extraction wells can be "managed" – the timing of water availability, location, conveyance facilities, and type of storage are all important factors for managing water.⁷

The CVP and the SWP are the two largest water storage and delivery systems within the state. The CVP consists of 20 reservoirs, 11 power plants, and more than 500 miles of canals and aqueducts, with a total storage capacity of more than 11 MAF. Project purposes include: flood management; navigation; provision of water for irrigation and domestic uses; fish and wildlife protection, restoration, and enhancement; water quality, power generation, and recreation. The SWP consists of 34 storage facilities, reservoirs and lakes; 20 pumping plants; four pumping-generating plants; five hydroelectric power plants; and about 700 miles of open canals and pipelines. The SWP's purpose is to store and distribute water for agricultural, municipal, and industrial uses in Northern California, the San Francisco Bay area, the San Joaquin Valley, the Central Coast, and Southern California. Other SWP functions include flood management; water quality maintenance; power generation; recreation; and fish and wildlife enhancement.

⁴ The Agreement between the United States of America and the State of California for Coordinated Operation of the Central Valley Project and the State Water Project was authorized by PL 99-546 in 1986.

⁵ DWR, 2014c. *System Reoperation Study Phase 2 Report. Strategy Formulation and Refinement*. February.

⁶ DWR, 2014c.

⁷ Lund et al, 2014.

The California Water Plan Update 2013 indicates groundwater is an important water source for municipal drinking water, agriculture, and individual water users across California. Groundwater is also a vital source of flow in many streams, providing support for aquatic and riparian habitat. Benefits of groundwater storage include low evaporation loss, low susceptibility to adverse impacts from natural and human induced hazards, and less maintenance costs. In an average year (based on 2005-2010 data), groundwater meets about 40 percent of California’s agricultural, urban, and managed wetlands water uses (about 16.5 million acre feet per year). The importance of groundwater as a resource varies regionally.⁸

1.2 Water Storage as an Integral Part of California’s Water Management Solution

Water storage projects can provide a robust set of benefits, including water supply reliability for municipal and industrial uses, agriculture, and ecosystem purposes. Surface storage can also provide water to improve flow regimes and temperatures to increase fish survival in rivers and the Delta; flood storage space; water quality improvements; hydropower generation; and recreation. Groundwater storage can provide groundwater recharge and subsidence avoidance or stabilization. When conjunctively managed storage projects can provide all or many of these benefits.

Storage can act as an integrator of strategies to improve water supply reliability and provide other benefits. Improving water supply reliability depends upon the ability to capture and store water during peak flows and during wet years. Water storage serves a “water savings account” that allows water to be captured and stored until needed and allows for more efficient water use when integrated with other water management tools, such as conservation and recycling. For example, water conserved through water use efficiency practices, such as reduced irrigation, could be stored in surface or groundwater storage facilities and “saved” for use at another time and for another purpose.

Major state and federal planning efforts such as CALFED, Delta Vision and, most recently, the Delta Stewardship Council’s Delta Plan all conclude that we cannot afford to ignore water storage as an integral part of a comprehensive set of water solutions. (Fiorini, 2013)

In addition to Proposition 1 affirming the role of storage as part of a comprehensive approach addressing the varied challenges facing California’s water resources, major state and federal planning efforts such as CALFED, Delta Vision and the Delta Stewardship Council’s Delta Plan all conclude that we cannot afford to ignore water storage as an integral part of a comprehensive set of water solutions.⁹ More recently, the California Water Action Plan concluded that California needs to expand its water storage capacity.

⁸ DWR, 2014d. California Water Plan Update 2013. Bulletin 160-13. Volume 3 Resource Management Strategies. Chapter 9 Conjunctive Management and Groundwater Storage.

⁹ Fiorini, 2013. Issue Paper. *Smaller May be Better at Getting Storage Projects off the Ground.*

Table 1 summarizes the ways expanded water storage can address water management challenges described in the California Water Action Plan¹⁰ and other previous planning efforts identified above.

Table 1. Summary of Water Management Challenges and Potential Water Storage Benefits

Water Management Challenge	Potential Water Storage Benefit
Water supplies are uncertain and unreliable due to California’s diverse hydrology and geography.	Water storage facilities are an essential tool for ensuring water is available when it is needed—either storing winter precipitation for use in the summer months or storing excess water from wet years for use during dry years.
The 2007-2009 and 2010-present droughts are a reminder of the urgency of managing water for dry periods.	Increased water storage can help reduce the impacts of dry periods—storage can act as an “emergency fund” helping to ensure that water is available for use when it is most needed.
Currently, groundwater levels are at or near their historical lows and surface water storage is at a fraction of average.	The impacts of four consecutive dry years underscore the urgency of increasing the capacity, reliability and integration of surface and groundwater storage. Increasing groundwater storage, with an emphasis on groundwater recharge, can allow groundwater levels to recover and basins may be managed in a sustainable manner.
Population growth and climate change will stress the water management system further.	Expanded storage, in conjunction with a diverse portfolio of resource management strategies, is an important tool for mitigating the effects of population growth and a changing climate.
Groundwater and surface water have been managed historically as separate resources.	Managing both resources together, rather than in isolation, allows water managers to use the advantages of both resources for maximum benefit. With passage of the Sustainable Groundwater Management Act in 2014, opportunities to combine surface and groundwater storage will be essential to both achieve sustainability and to maintain or improve reliability.
Many Californians do not have access to clean drinking water and environmental water quality targets for ecosystem purposes are not always met.	Water storage, when strategically located and operated, can make water releases to improve water quality for many purposes.
Native fish species populations and aquatic and riverine habitats continue to decline and the Delta ecosystem is widely recognized as being on the verge of an ecological disaster.	Water storage can be operated for ecosystem purposes, such as maintaining necessary flows and providing lower temperature water at critical times.
More than 7 million Californians and \$580 billion in assets are directly exposed to flood hazards (DWR, 2013). ¹¹	Historically, water storage has provided important flood control benefits by attenuating peak flows during large storm events.

¹⁰ California Natural Resources Agency, California Department of Food and Agriculture, and California Environmental Protection Agency, 2014. California Water Action Plan.

¹¹ DWR, 2013. *California’s Flood Future Report Highlights. Recommendations for Managing the State’s Flood Risk*. Final. November.

2.0 Program Goals and Objectives

The Commission is committed to promoting policies that encourage the sustainable management of water and a healthy environment, and serving as a primary agency for public discussion of water issues. The Commission recognizes that water supply reliability, a changing climate, and declining natural systems are critical issues in California water management. Consistent with the California Water Action Plan, the Commission will implement the Water Storage Investment Program to “move California toward more sustainable water management by providing a more reliable water supply for our farms and communities, restoring important wildlife habitat and species, and helping the state’s water systems and environment become more resilient”. The goals of the Water Storage Investment Program support the three broad objectives of the California Water Action Plan: “more reliable water supplies, the restoration of important species and habitat, and a more resilient, sustainably managed water resources system (water supply, water quality, flood protection, and environment) that can better withstand inevitable and unforeseen pressures in the coming decades.”

The following overarching goals of the Water Storage Investment Program represent the values of the Commission and help achieve the desired outcomes of the California Water Action Plan:

- Provide for a transparent public process
- Maximize the expected return for public investment as represented by the magnitude of public benefits
- Support the co-equal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem
- Improve water supply reliability in average and dry years for all purposes through water storage projects
- Increase local and regional water supply reliability (i.e., “self-reliance”); thereby, reducing reliance on water supplies conveyed through the Delta
- Promote and provide incentives for integrated, multi-benefit projects
- Promote integration of projects that will collectively provide benefits that are greater in sum than of the individual projects
- Maximize system resiliency to ensure public benefits are provided in an uncertain future (e.g., under climate change scenarios)

The following program objectives are based largely on statute and provide an overarching framework for which the Commission will implement the Water Storage Investment Program:

- By March 2015, the Commission will initiate a stakeholder and public engagement process to ensure the Water Storage Investment Program is implemented in an open, transparent, and fair manner. The Commission will work with a broad array of stakeholders to develop the regulations and guidelines that will shape the Water Storage Investment Program.

The California Water Commission is committed to promoting policies that encourage the sustainable management of water and a healthy environment, and serving as a primary agency for public discussion of water issues. (CWC Strategic Plan, 2012)

- By December 15, 2016, the Commission will develop and adopt by regulations, through the Administrative Procedures Act, methods for the quantification and management of the public benefits of water storage projects, which shall include:
 - Priorities and relative environmental value of ecosystem benefits as provided by the California Department of Fish and Wildlife; and
 - Priorities and relative environmental value of water quality benefits as provided by the State Water Resources Control Board.
- By March 2017, the Commission will release draft project solicitation and evaluation guidelines for the Water Storage Investment Program and conduct meetings to consider public comments before finalizing the guidelines.
- After March 2017 and before January 2022, the Commission will select projects through a competitive public process that ranks proposed projects based on expected return for public investment.

3.0 Program Principles

This section presents the principles applicable to how the Commission will implement the Water Storage Investment Program. The principles are taken from statute, policy, and the Commission’s strategic plan that express the values of the Commission.

- The Commission is committed to an open public process on all issues. All of its meetings are open to the public to allow public participation.
- The program will be developed and implemented in accordance with all statutory requirements associated with the bond, as well as all State requirements for sound fiscal management and accountability, program implementation, California Environmental Quality Act, and the Administrative Procedures Act.
- The program will be developed and implemented in accordance with Executive Order B-30-15 and special consideration will be given to actions that both build climate preparedness and reduce greenhouse gas emissions; take flexible and adaptive approaches for uncertain climate impacts; protect the state's most vulnerable populations; and consider natural infrastructure solutions.
- The program will support and implement the objectives of the California Water Action Plan for sustainable management of California’s water resources.
- The Commission intends to engage the public; stakeholders; and State, federal, and local agencies in an open and transparent public process as it develops and implements the program. Most materials and work products will be available online or upon request.
- The Commission will consult with Native American tribal governments and consider the Human Right to Water requirements in its decision-making.
- The program will use best available science and established economic principles to evaluate the public benefits of projects.
- Special consideration will be given to projects that provide the greatest statewide benefit, provide multiple benefits, and that leverage other public and private investments.

- The regulations, guidelines, project solicitation packages and other program materials will be developed with the intent to provide clear information and guidance and supported with a commitment to providing the necessary technical and program assistance to participating agencies and project applicants.
- The Commission acknowledges the findings in the Water Quality, Supply, and Infrastructure Improvement Act of 2014 that
 - Water conservation and recycling should be encouraged. (California Water Code §79701(g))
 - Protecting lakes, rivers, and streams, cleaning up polluted groundwater supplies, and preserving water sources that supply the entire state are crucial to providing a reliable supply of water and protecting the state's natural resources. (California Water Code §79701(i))
 - Sustainable water management depends upon reducing or reversing groundwater overdraft and water quality impairment of groundwater basins. Investments to expand groundwater storage and reduce and reverse overdraft and water quality impairment of groundwater basins can provide extraordinary public benefit and are in the public interest. (California Water Code §79701(j))