

Water Storage Investment Program Concept Paper Form

Please complete the questions below and return your completed concept paper by email to cwc@water.ca.gov by 5:00 p.m. on March 31, 2016. Completed concept papers should not exceed four pages.

Contact Information

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Agency/Organization Name: San Joaquin Valley Water Infrastructure Authority
Agency Type (select one): <input type="checkbox"/> Public Agency <input type="checkbox"/> Nonprofit Organization <input type="checkbox"/> Public Utility <input type="checkbox"/> Tribe <input type="checkbox"/> Mutual Water Company <input checked="" type="checkbox"/> Local Joint Powers Authority <input type="checkbox"/> Other:

Project Information

Project Name: Temperance Flat Reservoir
Project Type: <input checked="" type="checkbox"/> CALFED Surface Storage <input type="checkbox"/> Groundwater Storage <input type="checkbox"/> Groundwater Contamination Prevention or Remediation <input type="checkbox"/> Conjunctive Use <input type="checkbox"/> Reservoir Reoperation <input type="checkbox"/> Local Surface Storage <input type="checkbox"/> Regional Surface Storage <input type="checkbox"/> Other:
Estimated Project Cost: \$2.8 billion (2014 dollars, plus \$0.4 billion interest during construction)
Estimated WSIP Funding Request: \$1.4 billion (2014 dollars)
Please describe your project, including location, water source, facilities, and operations: <p>In the Friant Division of the Central Valley Project (CVP), the 520 thousand acre-feet (TAF) storage capacity of Millerton Lake, located on the upper San Joaquin River, is small relative to the average annual inflow of approximately 1.8 million acre-feet (MAF). Because of its limited size, Millerton Lake is operated as an annual reservoir with no provision for long-term carryover supplies. The development of additional storage capacity in the watershed would provide operational flexibility and the ability to capture additional water in wet years for management in successive years.</p> <p>The proposed project is a dam and reservoir located in the upstream portion of Millerton Lake at river mile (RM) 274 of the San Joaquin River, known as Temperance Flat. The Temperance Flat Dam would be approximately 665 feet high, with the dam crest at elevation 1,005 feet above mean sea level (ft msl), and a crest length of approximately 3,360 ft. Temperance Flat Reservoir would provide approximately 1,260 TAF net additional storage (1,330 TAF total storage, of which 70 TAF would overlap with the existing Millerton Lake), and a net additional reservoir surface area of about 4,680 acres at the top-of-active storage elevation of 985 ft msl. The reservoir would extend about 18.5 miles upstream from RM 274 to Kerckhoff Dam.</p> <p>Additional facilities include a diversion tunnel, an intake structure, a powerhouse and transmission facilities, a valve house to control releases, access roads, miscellaneous construction-related features, downstream safety measures, decommissioning of the Kerckhoff Hydroelectric Project facilities,</p>

modifications to Kerckhoff Dam appurtenant structures, new and relocated recreation facilities, demolition or relocation of utilities in the reservoir area, and various environmental commitments.

The operations of Temperance Flat Reservoir would include capture of additional wet year water and management of water from the San Joaquin River for multiple purposes, including agricultural water supply reliability, municipal and industrial (M&I) water supply reliability, ecosystem enhancement, flood damage reduction, recreation, water quality, emergency response, and hydropower generation. The addition of Temperance Flat Reservoir to the storage system would enable a comprehensive change in the operations of Friant Dam.

Temperance Flat Reservoir could be implemented as part of a larger regional plan that includes groundwater recharge/banking, development and management of other local water resources, flood flow management, watershed management actions, and integration with operations of facilities in other nearby watersheds and south-of-Delta facilities.

Per Water Code section 79753, the Commission may only fund the public benefits of water storage projects. Further, ecosystem improvements must make up 50% of the funded public benefits (Water Code section 79756(b)). What public benefits does your project provide? (select all that apply):

- Ecosystem Improvements Water Quality Improvements Flood Control
 Emergency Response Recreation

Please describe the magnitude of the public benefits and how the project will be operated to provide the public benefits:

The monetized annual public benefits of the project are estimated as follows (using 2014 dollars):

Ecosystem Improvements: Increased abundance in spring-run Chinook salmon (*Oncorhynchus tshawytscha*) with enhanced flow and water temperature below Friant Dam; benefits estimated between \$31.9 million and \$451.3 million

Flood Control: Incidental flood space (flood space available during November through February at the 90 percent exceedence) increased between 236 to 476 TAF; benefits estimated between \$4.0 million and \$5.5 million

Emergency Response: M&I Emergency Water Supply available during Delta Export Disruption increased between 121 to 197 TAF; benefits estimated between \$12.3 million and \$22.1 million

Recreation: Sum of potential annual visitor-days at Millerton Lake and Temperance Flat RM 274 Reservoir increased between 69,000 to 120,000; benefits estimated between \$3.2 million and \$6.6 million

Improvements to Urban Water Quality are also expected but have not been quantified.

Water Code section 79752 requires that funded projects provide measurable improvements to the Delta ecosystem or to the tributaries of the Delta. Please describe how your project provides ecosystem improvements in the Delta or tributaries to the Delta:

The San Joaquin River is a major tributary to the Delta. Chinook salmon (*Oncorhynchus tshawytscha*) populations are known to be affected by many factors, including water temperature and flow conditions. Temperance Flat Reservoir provides opportunities to manage stored water supplies in a way that could enhance temperature and flow conditions in the San Joaquin River downstream from Friant Dam. Temperance Flat Reservoir would improve the capability, reliability, and flexibility to release water at suitable temperatures for salmon and other native fish downstream from Friant Dam, and would increase the total volume of cold water in Millerton Lake and Temperance Flat RM 274 Reservoir, resulting in improved water temperature conditions for salmon and other native fish in the San Joaquin River. Temperance Flat Reservoir would improve the temperature of water released to the San Joaquin River for the critical September through December spawning period for spring- and fall-run Chinook salmon and steelhead. The improved temperature and flow conditions in the San Joaquin River with Temperance Flat Reservoir would result in increased abundance in spring-run Chinook salmon during long-term and dry hydrologic conditions.

*Note that the San Joaquin River Restoration Program (SJRRP) is assumed to be implemented in the future without-project conditions and Temperance Flat Reservoir would not be used to meet obligations of the SJRRP but would enhance ecosystem conditions and provide operational flexibility.

Water Code sections 79755 and 79757 require the Commission to make a finding that a project will advance the long-term objectives of restoring ecological health and improving water management for beneficial uses in the Delta prior to allocating funding for a project. Please describe how your project could help advance the long-term objectives of restoring ecological health and improving water management for beneficial uses in the Delta:

Temperance Flat Reservoir could contribute to ecosystem enhancement for the San Joaquin River, the broader Delta system, and species that rely on the Delta, including anadromous fish. Temperance Flat Reservoir would increase the ability to make cold-water releases, and enhance water temperature and flow conditions for salmon and other native fish in the San Joaquin River downstream from Friant Dam in dry and critically dry periods.

Temperance Flat RM 274 Reservoir could contribute to additional flow releases to the San Joaquin River during critical periods for fish species. Temperance Flat RM 274 Reservoir contributes to Delta-dependent species restoration through improving conditions for salmon spawning, rearing, and outmigration.

Please describe any other benefits provided by your project, such as water supply reliability benefits, and the potential beneficiaries:

In addition to public benefits, Temperance Flat Reservoir would also provide benefits for agricultural water supply reliability, M&I water supply reliability, and hydropower. Specific beneficiaries depend on the operations selected, but are expected to include CVP and SWP contractors, most notably those within the Friant Division and other areas south of the Delta. The monetized annual water supply reliability benefits of the project are estimated as follows (using 2014 dollars):

Total Water Supply: Long-Term Average CVP and SWP Deliveries would increase between 61 to 87 TAF annually; Dry and Critical Year CVP and SWP deliveries increased between 19 and 121 TAF annually

Agricultural Water Supply Reliability: Long-Term Average CVP and SWP Agricultural deliveries would increase between 30 to 94 TAF annually; benefits estimated between \$16.5 million and \$28.7 million

M&I Water Supply Reliability: Long-Term Average CVP and SWP M&I deliveries increased up to 40 TAF annually; benefits estimated to be as much as \$44.3 million

*Note: The magnitude of water supply that could be developed by Temperance Flat Reservoir is strongly influenced by CVP and SWP operating conditions and conveyance availability. Operations of Temperance Flat RM 274 Reservoir could also be integrated with the broader CVP and SWP South-of-Delta export and storage system, or other local supplies in the San Joaquin and Tulare Lake Basins, to provide additional water supply reliability by capturing additional Delta water supply in wet years through exchange.

Hydropower Generation: 14.7 to 16.1 gigawatt-hours (GWh) per year increase in Friant Dam hydropower generation