Santa Clara Valley Water District
Comment Letter - Revisions to Proposed Bay-Delta Plan Amendments
July 27, 2018

Attachment 1
Technical Comments on Proposed Amendments to Bay-Delta Plan

Summary

On March 17, 2017 the Santa Clara Valley Water District (District) submitted comments on the proposed amendments to the Bay-Delta Plan and draft Substitute Environmental Document (SED). This attachment provides information in response to the State Water Board's response to our comments and additional analysis of significant impacts to Santa Clara County, focusing on three areas:

1. Additional information in response to State Water Board comments regarding the District's March 17, 2017 comment letter.
2. Updated analysis on the potential impacts to Santa Clara County from the State Water Board's proposed adaptive range of 30 to 50 percent unimpaired flows.
3. Additional information on the cost and availability of water transfers as potential replacement supplies to minimize impacts of water supply reductions.

Additional information in response to State Water Board comments regarding the District's March 17, 2017 comment letter

The proposed amendments to the Bay-Delta Plan would establish an adaptively managed flow requirement on the Tuolumne River that would range between 30 percent and 50 percent of unimpaired flow with a starting point of 40 percent. The Final SED estimates impacts to San Francisco Public Utilities Commission (SFPUC) water reliability in Appendix L, indicating that San Francisco's Regional Water System (RWS) water supplies could experience an average shortage of 137 TAF during each year of a repeat of the 1987-1992 drought. Such a shortage would impact Santa Clara County's water supply reliability because the County relies on RWS supplies to meet 15 percent of its demand. The District's March 17, 2017 comment letter included an analysis of how this could impact the District's and Santa Clara County's water supply reliability. The State Water Board's response appears to dismiss the District's concerns by implying the District overstated potential impacts. Key issues raised by the State Water Board and the District's response are provided below.

a) *The State Water Board claims the District amplified water supply effects by using SFPUC's future demands instead of fiscal year 2012-2013 actual demands or fiscal year 2015-2016 drought demands.*

> *Response*: In a water supply planning approach, which the State Water Board itself assumes affected entities would use[1], it is standard practice to analyze and plan for

[1] "*The SED analysis is based on the reasonable assumption that affected entities such as SFPUC would use a water supply planning approach, to prepare for times when water supplies would be reduced."* State Water Board Master Response 8.5 at 5.

future demands. District staff is unaware of any planning analysis that utilizes past demands to assess a future impact, as this typically does not provide for a well-reasoned analysis.

b) The State Water Board claims the District amplified water supply effects by pro-rating SFPUC's wholesale rationing approach for system-wide shortages greater than 20 percent.

Response: The District disagrees with this claim given that SFPUC and their wholesale customers do not have an agreed upon plan to allocate supplies for system-wide shortages greater than 20 percent. Extrapolating from data on existing conditions to predict responses outside of the known range of responses is a common and accepted practice in water supply planning processes. With public health and safety at stake, it is entirely reasonable and appropriate to make conservative assumptions for water supply planning purposes.

However, to evaluate the full range of potential water supply impacts, the District updated its analysis to also include a fixed allocation approach resulting in lower cutbacks to SFPUC wholesale customers and larger cutbacks to SFPUC retailers. This fixed allocation approach is used by the Brattle Group in the report SFPUC attached to its March 17, 2017 comment letter on the Revised SED[2], as well as a more recent 2018 Brattle Group report that SFPUC submitted to FERC[3]. The results of this updated analysis are provided below.

c) The State Water Board claims the District amplified water supply effects by assuming the Scenario 2 interpretation of the Fourth Agreement.

Response: The Fourth Agreement between SFPUC and Turlock and Modesto Irrigation Districts allocates responsibility to meet instream flow requirements below New Don Pedro Reservoir that may be imposed on the irrigation districts during the FERC relicensing, among other things. According to SFPUC's March 2017 comment letter to the State Water Board, Article 8 of the Fourth Agreement could result in San Francisco being responsible to provide approximately 51.7 percent of the State Water Board's proposed flow requirement which corresponds to Scenario 2 in the State Water Board's analysis. In contrast, the State Water Board's Scenario 1 assumes SFPUC and the irrigation districts might modify their agreement whereby SFPUC might agree to provide monetary compensation to the irrigation districts in exchange for the irrigation districts agreeing to provide all of the water necessary to meet the new flow requirements. As SFPUC points out in footnote 6 of their March 2017 comment letter, "As a water supply provider to approximately 2.6 million people throughout the Bay

[2] San Francisco Public Utilities Commission. 2017. *Bay Area Socioeconomic Impacts Resulting from Instream Flow Requirements for the Tuolumne River*. March 2017
[3] San Francisco Public Utilities Commission. 2018. *Socioeconomic Impacts of Water Shortages within the Hetch-Hetchy Regional Water System Service Area*. January 2018

Area, San Francisco must utilize worst-case scenarios for water supply planning purposes."

d) *The State Water Board claims the water rationing-only approach used in the District's analysis is not a reasonably foreseeable method for compliance and that its use amplified water supply effects*

Response: While the District will make every reasonable effort to compensate for a reduction in available supplies, there is no guarantee that any such efforts will be successful. The District is already planning to invest about $2 billion over the next ten years in new water supply projects to help fill the gap between future water demands and supplies that is predicted to occur even without the State Water Board's proposed amendments. Under such compromised conditions imposed by the proposed amendments, water rationing may be the only feasible recourse open to the District.

In addition, the State Water Board states that transfers can be secured to offset any water supply reductions caused by the proposed amendments. (see SED Appendix L, at 26). The District does not agree that the State Water Board's approach is reasonably foreseeable. Based on our experience, the District will be hard pressed to find the volume of transfer supplies necessary to compensate for reductions as a result of the proposed amendment. In dry years, demand exceeds available transfer supplies, and sellers face political and environmental pressures to abstain from transferring water outside of their region. Implementation of the proposed Phase 1 reductions in supply will exacerbate this situation, increasing the demand on even more limited water supplies. In years when transfer supplies are more plentiful, conveyance capacity across the Delta can be limited. For example, in 2016 there was no conveyance capacity for new transfers of non-SWP/CVP water. Conveyance losses are also high; as much as 35 percent of purchased water can be lost in transit.

Whether SFPUC and the District choose to address the potential water supply shortage created by the State Water Board's proposed amendments with water rationing, water transfers, or some other method does not change the fact that the State Water Board's own analysis estimates there would be an average shortage in SFPUC water supplies of 137 TAF during each year of a repeat of the 1987-1992 drought. Based on SFPUC's predicted future demand of 297 TAF, this would constitute a 46 percent shortage in supply that SFPUC and its water users, including common customers with the District, would need to find some way, or ways to replace. In relation to SFPUC's fiscal year 2012-2013 demands of 250 TAF, this reduction equates to a shortfall of almost 55 percent of the water supply for approximately 2.6

million people and the 19th largest economy in the world[4]. That is a very large quantity of water to make up by any approach.

The District's analysis likely understates potential water supply impacts, especially in light of the State Water Board's reference to future, unknown minimum reservoir carryover storage targets (see SED Appendix K at 28) and the recent Phase 2 Framework for the Sacramento/Delta Update to the Bay-Delta Plan which contemplates an additional two million-acre-feet reduction in available water supplies resulting from the proposed 55 percent unimpaired flow requirement. While it is still unknown how much of that supply reduction will be assigned to the State Water Project (SWP) and Central Valley Project (CVP), it is probably a safe assumption that the District will see additional impacts to its water supplies, either as reductions in SWP and CVP imports or as reduced availability of supplemental transfer supplies, if the Bay-Delta Plan is updated according to the Framework.

e) *The State Water Board states that "the SCVWD analysis does not display modeling results in context of the complete water supply portfolio for SCVWD. The RWS provides approximately 15 percent of SCVWD's water supply portfolio. Any reductions to the SFPUC portion of SCVWD's water supply portfolio are likely to be addressed by the substantial flexibility they currently have in their system (e.g., use of water from the Central Valley Project [CVP] or SWP).* (See SED Master Response 8.5 at 50)"

Response: As described in the District's March 17, 2017 comment letter, the District's modeling analysis did indeed include and integrate the entire water supply portfolio for Santa Clara County, including recycled water, local surface water developed by both the District and by other agencies such as San Jose Water company, groundwater, conservation, SWP and CVP supplies, and groundwater banking in the Central Valley. It is through this comprehensive analysis that optimizes the functionality of its various supplies that specific shortage impacts have been determined. The State Water Board's statement that reductions in SFPUC deliveries would be addressed by flexibility in the District's system is unsupported by any analysis and is contrary to the careful work produced by those that understand and operate the District's water supply system. Further, the State Water Board claim that "*any reductions to the SFPUC portion of SCVWD's water supply portfolio are likely to be addressed by the substantial flexibility they currently have in their system (e.g., use of water from the Central Valley Project [CVP] or SWP)"* does not take into consideration the State Water Board's recent Phase 2 Framework which contemplates an additional 2 million acre-feet reduction in available water supplies resulting from the proposed 55 percent unimpaired flow requirement on the Sacramento River and its tributaries and how that requirement may impact those SWP and CVP supplies.

[4] Bay Area Council Economic Institute. 2018. *Continuing Growth and Unparalleled Innovation: Bay Area Economic Profile, Tenth in a Series.* July 2018.

Updated analysis on the potential impacts to Santa Clara County from the State Water Board's proposed adaptive range of 30 to 50 percent unimpaired flows

The District's March 17, 2017 comment letter only included analysis of the proposed 40 percent of unimpaired flow requirement. The District has since updated its Water Evaluation and Planning (WEAP) model to better reflect future conditions and operations and to evaluate the full proposed adaptive range of 30 to 50 percent of unimpaired flow. The District also evaluated the range of possible shortage allocation scenarios between SFPUC and its wholesale customers.

Updates to the WEAP model in the updated analysis include reduced demand projections compared to the 2015 Urban Water Management Plan 2040 demand levels to reflect the following:

1) Assumption that retailers will meet their 20x2020 water use reduction targets (per Senate Bill X7-7)
2) Additional conservation savings based on the District Water Use Efficiency Model and new demand management programs
3) Updated growth projections based on studies from retailers and regional agencies

In addition to changes in demand projections, the District removed some potential infrastructure projects from the model that have not yet been approved by the District's Board of Directors or are not under construction since there are significant regulatory and financial uncertainties (e.g., indirect potable reuse). In their place, District Board-approved planning projects related to conservation, demand management, and storm water capture were added to the model.

The District also updated imported water assumptions to better reflect future regulatory assumptions. The original WEAP model used an imported water scenario representing existing regulatory conditions. The District replaced the imported water dataset with the scenario for greater outflows to the San Francisco Bay that is provided in the Department of Water Resources' 2015 Delivery Capability Report.

The District also evaluated an additional shortage allocation approach in which SFPUC and its wholesale customers agree to allocate shortages greater than 20 percent according to the same split specified in the Water Shortage Allocation Plan for a 20 percent shortage. This fixed allocation approach is used by the Brattle Group in the report SFPUC attached to its March 17, 2017 comment letter on the Revised SED[5], as well as a more recent 2018 Brattle Group report that SFPUC submitted to FERC[6]. The fixed allocation approach allocates at least 62.5 percent of the available RWS supplies to the wholesale customers and results in more water being available to these customers than under the prorated allocation approach the District used for its March 17, 2017 comment letter on the Revised SED. However, SFPUC has provided no guarantee that the fixed allocation approach would be employed during a future shortage of greater than 20 percent, and so it can best be used as an optimistic bookend when considering the range of impacts to Santa Clara County. The modeling shows reductions in deliveries during a repeat of the drought even without the unimpaired flow

[5] San Francisco Public Utilities Commission. 2017. *Bay Area Socioeconomic Impacts Resulting from Instream Flow Requirements for the Tuolumne River*. March 2017
[6] San Francisco Public Utilities Commission. 2018. *Socioeconomic Impacts of Water Shortages within the Hetch-Hetchy Regional Water System Service Area*. January 2018

requirements. The table below shows the additional shortage that would be attributed to the unimpaired flow requirement.

Table 1: Average Annual Incremental Impacts of Phase 1 Unimpaired Flow Requirements on SFPUC's RWS, its Wholesale Customers, and its Wholesale Customers in Santa Clara County During a Repeat of the 1987 to 1992 Drought.

Unimpaired Flow Requirement	SFPUC RWS System-wide Shortage[a]		SFPUC RWS Wholesale Shortage[b]		SFPUC RWS Wholesale Shortage (Santa Clara County)[b,c]	
	Percent	(TAF/yr)	Percent	(TAF/yr)	Percent	(TAF/yr)
30%	20%	60	18%-27%	37-56	21%-32%	12-18
40%	34%	101	41%-48%	63-99	35%-55%	21-32
50%	49%	145	44%-69%	91-141	50%-78%	29-45

[a] *Per SFPUC's analysis of a 2040 demand of scenario (297 TAF/yr). Represents the median shortage level over the 1987-1992 period.*

[b] *The Water Shortage Allocation Plan between SFPUC and the wholesale customers only specifies allocations for system-wide shortages of up to 20 percent. For shortages greater than 20 percent the District considered a range of possible outcomes bookended by two different assumptions:*

1. *Fixed allocation approach: Wholesale customers would continue to receive the same percentage share of the water as dictated for a 20 percent shortage under the Water Shortage Allocation Plan (62.5 percent).*

or

2. *Prorated allocation approach: Shortages to wholesale customers above 20 percent would be prorated based on the allocations under a 20 percent shortage. For example, since a 20 percent system-wide shortage results in a 28 percent shortage to the wholesale customers, a 40 percent system-wide shortage would result in a 56 percent shortage to the wholesale customers. 40% X (28% / 20%) = 56%.*

[c] *Assumes demand of 59 TAF/yr based on projections in the Urban Water Management Plans for the affected Santa Clara County agencies. Full delivery projections are smaller than total allocated amount.*

The District used the updated WEAP model to analyze how the projected shortages to SPFUC RWS wholesale customers in Santa Clara County would affect the entire District service network under the full proposed adaptive range of unimpaired flow requirements and under both water shortage allocation approaches.

The District is already in the process of updating its Water Supply Master Plan to respond to potential future water supply shortages. The Water Supply Master Plan will describe new water supply investments the District is planning to make to provide a reliable and sustainable water supply in a cost-effective manner. Many of these new water supply investments are already included in the District's base case scenario. In the base case, without the proposed unimpaired flow requirements, District modeling indicates that county-wide shortages occur in about 32 percent of years with an

average annual magnitude of 69 TAF[7]. The proposed flow requirements would increase the frequency of shortages by 4 to 15 percent and increase the average magnitude of those shortages by 5-19 percent.

Table 2. Percent of years Santa Clara County could be in shortage based on WEAP analysis[7].

SFPUC RWS Shortage Allocation Approach	Percent of Years in Shortage			
	No UF Requirement	30 % UF	40% UF	50% UF
Fixed	32%	36%	37%	43%
Prorated	32%	38%	43%	47%

Table 3. Average Magnitude of shortages in Santa Clara County based on WEAP analysis[7].

SFPUC RWS Shortage Allocation Approach	Average Magnitude of Shortage (TAF)			
	No UF Requirement	30% UF	40% UF	50% UF
Fixed	69	73	76	76
Prorated	69	83	82	79[8]

Additional information on the cost and availability of water transfers as potential replacement supplies to minimize impacts of water supply reductions

The State Water Board asserts that the impacts from the predicted supply reductions will not be as great as SFPUC and the District present because the affected water agencies will be able to secure transfer supplies to make up the difference. In its March 17, 2017 letter, the District commented that based on past experience it is not reasonable to assume the Bay Area would be able to secure a sufficient volume of transfer supplies to make up for the reductions anticipated under the 40 percent unimpaired flow requirement. The State Water Board's response does not address our stated concern that in dry years, demand exceeds available transfer supplies, and sellers face political and environmental pressures to abstain from transferring water outside of their region. Implementation of the 40 percent unimpaired flow requirements will exacerbate this situation, especially in light of the

[7] Based on modeling using 94-years of hydrologic data (1922 to 2015) and future demands.
[8] The magnitude of shortage decreases in the 50 percent unimpaired scenario relative to the 30 and 40 percent unimpaired scenarios because there are a greater number of shortages, many of which are smaller shortages that decrease the average size of shortage.

State Water Board's reference to future, unknown minimum reservoir carryover storage targets (see SED Appendix K at 28) and the recent Framework for the Sacramento/Delta Update which contemplates an additional two million acre-feet reduction in available water supplies resulting from the proposed 55 percent unimpaired flow requirement.

As an example, during the recent drought, surface water supplies, including available transfer supplies, were limited throughout California, resulting in the drawdown of local groundwater levels to the point of concern that land subsidence could be triggered in Santa Clara County, and significant land subsidence did indeed occur in the Central Valley. There were few sellers of transfer water and many buyers, and many of the potential sellers were reluctant to sell. With the State Water Board's 30 to 50 percent unimpaired flow requirement on the San Joaquin River and its tributaries, along with the potential 45 to 65 percent unimpaired flow requirement on the Sacramento River and its tributaries, there will be even less water available for transfer and more competition for that limited water during an extended drought.

The State Water Board's response also does not address our concern that in years when transfer supplies are more plentiful, conveyance capacity across the Delta and in SWP and CVP facilities can be limited. For example, in 2016, there was no conveyance capacity for new transfers of non-SWP/CVP water. Even if the District had been able to locate and negotiate additional transfer agreements, it would not have been able to arrange delivery of those supplemental supplies.

Finally, the State Water Board response does not consider the impact of conveyance losses on the quantity or cost of transfer supplies. The Department of Water Resources and U.S. Bureau of Reclamation apply carriage water losses to supplies transferred across the Delta that have ranged from 20 to 35 percent of the purchased water quantity. In drought years, losses have trended towards the higher end of this range. In other words, for every 1,000 acre-feet of water purchased, the buyer may only receive 650 acre-feet. This loss not only decreases the volume of water obtained but also increases the actual cost per acre foot of the water. For example, Table 8.5-6 in SED Master Response 8.5 lists the price at $665 per acre-foot for several purchases by the San Luis & Delta-Mendota Water Authority in 2015. However, in 2015, the U.S. Bureau of Reclamation applied a 35 percent carriage water loss which means the San Luis & Delta-Mendota Water Authority and its member agencies, including the District, received 35 percent less water than they paid for, and therefore, the cost for water actually received was $1,023 per acre-foot.