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 Agenda Item: 2.1
 Unclassified Manager: J. Maher
 Extension: 2073
 Director(s): All

BOARD AGENDA MEMO

SUBJECT: Preliminary Analysis of Bay Delta Conservation Plan Benefits and Costs to Santa Clara County

RECOMMENDATION:

Receive an update on and discuss the Bay Delta Conservation Plan (BDCP).

SUMMARY:

The purpose of this agenda item is to provide an opportunity for the Board to receive information and discuss ongoing Delta planning efforts that are critical both to restore the health of the Delta ecosystem, and to ensure the long-term reliability of water supplies conveyed through the Delta. This is the fourth of four Board workshops scheduled during the fall of 2013 to present information on the Bay Delta Conservation Plan (BDCP), a comprehensive plan that the Department of Water Resources and federal Bureau of Reclamation are expected to release for formal public review in mid December 2013. Each Board workshop focuses on unique aspects of and perspectives on this plan. The December 9 workshop will discuss regulatory assurances provided under the plan, water supply reliability benefits in the context of the District's Water Supply and Infrastructure Master Plan (Water Master Plan), the District's estimated share of costs, and potential impacts to water rates and taxes.

October 11 2013	Statewide Focus. Topics include 1) Overview of the BDCP and relation to other State planning efforts; 2) State and federal agency perspectives; and 3) Statewide economic impacts
November 8 2013	Delta Focus I. Topics to include 1) Perspective of in-Delta and environmental stakeholders, and 2) Habitat restoration and conservation in the Delta
November 14 2013	Delta Focus II. Topics to include 1) Overview of BDCP benefits and impacts to the Delta region, and 2) Condition of Delta levees and levee stability
December 9 2013	Local Costs and Benefits. Topics to include 1) BDCP benefits to Santa Clara County, and 2) BDCP costs to Santa Clara County (water rates, property taxes)

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Santa Clara County relies on imported water to meet 55 percent of its water needs, on average. Approximately 15 percent is diverted upstream of the Sacramento-San Joaquin Delta by the San Francisco Public Utility Commission's Hetch-Hetchy Project. The remaining 40 percent is conveyed through the Delta by the State Water Project (SWP) and federal Central Valley Project (CVP).

The District's SWP and CVP water supplies are vulnerable to risks and challenges facing the Delta. To reduce these risks, the District has joined with other public water agencies¹ and State and federal agencies to develop the BDCP, consistent with Board policy and CEO direction. The goals of the plan are to restore the health of the Delta ecosystem and the reliability of water supplies conveyed through the Delta, and it includes major investments in habitat restoration, measures to address environmental stressors such as predation and invasive species, and new diversion and conveyance facilities to help restore natural flow patterns in the Delta. The District, as a water contractor of both the SWP and federal CVP, anticipates both potential future benefits and costs from the proposed plan.

Workshop Agenda

Following introductions and a brief description of Santa Clara County water supplies, this fourth workshop will be divided into two parts:

1. Invited guest speakers will provide their perspectives on the importance of the BDCP to Santa Clara County and the economy of Silicon Valley, and information on key attributes of the proposed conservation plan, including regulatory assurances under the State and federal endangered species acts.
2. Staff will present a preliminary analysis of BDCP benefits and costs to Santa Clara County (Attachment 1)

Invited guest speakers include:

John Laird, Secretary of the California Natural Resources Agency

Prior to his appointment as Resources Secretary, Mr. Laird represented California's 27th Assembly District, which includes portions of Santa Cruz, Monterey and Santa Clara Counties. In this position, he gained extensive experience with many of the environmental and water management policy issues facing the State, including those related to the Delta, and developed an understanding of Santa Clara County's water supply needs.

Casey Beyer, Senior Advisor to the President, Silicon Valley Leadership Group

Mr. Beyer has over twenty-five years of experience in business, community and public policy development. He has served in executive management positions in the public, private and non-profits sectors with a focus on strategic business and economic development, energy and environmental policy, housing and land use, and federal/state legislative policy. Casey served the State of California as the Chief Assistant Secretary of State and was the Chief of Staff and Senior Staff Director for California Congressman

¹ Public water agencies are State Water Project and Central Valley Project water contractors, including Alameda County-Zone 7 Water Agency, Kern County Water Agency, Metropolitan Water District of Southern California, Santa Clara Valley Water District, San Luis & Delta-Mendota Water Authority, and Westlands Water District.

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and state Senator Tom Campbell who represented Silicon Valley in the 1990s. Mr. Beyer completed his master studies at San Jose State University in Urban and Regional Planning with academic emphasis on Energy Conservation Management and undergraduate degree at the University of California Santa Barbara in Urban American History & Environmental Studies.

Marc Ebbin, Principal, Ebbin, Moser, and Skaggs LLP (BDCP legal consultant)

Marc Ebbin is a principal at the firm of Ebbin, Moser & Skaggs, LLP, where he focuses on legal and policy matters involving state and federal environmental and natural resources regulation. He currently advises clients on complex environmental and natural resource regulatory matters, and is the principal legal consultant to the Department of Water Resources on BDCP regulatory assurances. Mr. Ebbin served as Special Assistant to Secretary Bruce Babbitt of the U.S. Department of the Interior. While at the Interior Department, Mr. Ebbin assisted in the development and implementation of departmental policies concerning the Endangered Species Act and habitat conservation planning, management and planning of national parks, and the relationship between federal environmental policies and state and local government and private landowner interests. Mr. Ebbin has been named by Law & Politics, Inc. as a "Super Lawyer", an honor bestowed on the top 5% of attorneys in Northern California. Mr. Ebbin received his JD from the University of Wisconsin and BA from Hamilton College. Mr. Ebbin is a member of the State Bars of California and Wisconsin.

Overview of Board Agenda Memo

The following information is presented in this Board agenda memo:

- A. Background for BDCP Analysis
 - A.1 Board Policy and CEO Interpretations Related to a Long-Term Delta Solution
 - A.2 District's Water Master Plan
 - A.3 Overview of Bay Delta Conservation Plan
- B. Summary of Preliminary BDCP Analysis
 - B.1 Benefits of BDCP to Santa Clara County
 - B.2 Costs of BDCP to Santa Clara County
 - B.3 Implications of the BDCP Future "No Action" Scenario for Santa Clara County
- C. Next Steps
 - C.1 BDCP Schedule
 - C.2 Resolving Outstanding Issues
 - C.3 Interim Financing
 - C.4 Board Schedule

This information supplements previous BDCP updates and special Board meetings on Delta planning efforts that are described in Attachment 2.

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A. Background for BDCP Analysis

A.1. Board Policy and CEO Interpretations Related to a Long-Term Delta Solution

Board policy direction supporting staff engagement in BDCP includes:

Ends Policy 2.0, "There is a reliable, clean water supply for current and future generations."

Ends Policy 2.1, "Current and future water supply for municipalities, industries, agriculture and the environment is reliable;" and

Ends Policy 2.1.3, "Protect, maintain and develop imported water."

In addition, the Board has established Executive Limitations that are relevant to development of the BDCP, including:

Executive Limitation 4.2, "Spend in ways that are cost-efficient."

Executive Limitation 6.5, "Protect water rights and rights of way."

To achieve the Board's Ends Policies, the CEO has adopted a strategy to "Aggressively pursue the Delta solution to achieve the coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem, all in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place." (S 2.1.3.2). These coequal goals were established by the State legislature in the 2009 Delta Reform Act. The CEO Directions and Interpretations listed in Attachment 3 provide guidance to staff participating in BDCP development.

In addition, the preliminary staff analysis of the BDCP was guided by CEO Interpretation S 2.4, "Develop water supplies designed to meet at least 100 percent of average annual water demand identified in the District's Urban Water Management Plan during non-drought years and at least 90 percent of average annual water demand in drought years" (District Outcome Measure).

A.2. District's Water Master Plan

Santa Clara County has invested in a diverse water supply portfolio to meet the needs of approximately 1.8 million residents, and support economic activity ranging from Silicon Valley companies to irrigated agriculture in south County. Local reservoir water and imported water delivered to on-stream and off-stream groundwater recharge areas and to drinking water treatment plants successfully halted the historic groundwater overdraft that occurred in the mid-1900's, including land surface subsidence of up to 13 feet in some areas of north County. However, ongoing planning analyses show the potential for future water supply shortages by 2035, primarily in long-term drought periods.

On October 9, 2012, the Board adopted the District's Water Master Plan to achieve long-term water supply reliability in Santa Clara County through 2035. The plan's "Ensure Sustainability" strategy has three key elements: (1) secure existing water supplies and infrastructure that comprise the baseline system; (2) optimize the use of existing supplies and infrastructure; and (3) expand recycled water and conservation. Through this plan, the objective of meeting 100 percent of average annual demand in non-drought years, and at least 90 percent of demand in drought years can be met.

Securing the baseline system includes maintaining long-term average Delta-conveyed supplies of about 170,000 acre-feet per year (AFY), and the BDCP is evaluated in this context. Other baseline investments include nearly doubling the amount of conservation from 55,000 AFY to

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99,000 AFY in 2030, and increasing non-potable recycled water use from 18,000 AFY in 2012 to about 30,000 AFY in 2035. In addition, the plan calls for expanding supplies through at least 20,000 AFY of indirect potable reuse, and 300 AFY of graywater reuse. The Water Master Plan will result in meeting all future growth in the County's water needs through water use efficiency, and reducing the County's reliance on Delta-conveyed imported water from 40 percent to 30 percent.

A.3 Overview of Bay Delta Conservation Plan

The BDCP is a long-term (50-year) conservation strategy being developed to meet the permit requirements of a Natural Communities Conservation Plan (NCCP) and Habitat Conservation Plan (HCP) under State and federal Endangered Species Acts (ESA) for operation of the State Water Project and Central Valley Project. Initiated under a collaborative planning agreement in 2006 by the Department of Water Resources (DWR), Bureau of Reclamation (Reclamation), other State and federal agencies, water contractors and environmental stakeholders, the BDCP is designed to contribute to the recovery of 57 species that depend on the Delta ecosystem. It includes a total of 22 conservation measures (CMs), outlined below and described in more detail in Attachment 4:

- CM 1, Delta Conveyance: New north Delta diversion facilities with state-of-the-art fish screens would reduce pumping levels in the south Delta, and help restore more natural flow patterns for fish. Water would be conveyed from the north Delta in two parallel tunnels with a total capacity of 9,000 cubic feet per second (cfs).
- CM 2-11, Habitat Development: Up to 113,000 acres of new and restored habitat, including 65,000 acres of tidal marsh and 5,000 acres of riparian forest, would be developed to reduce impacts of historical land conversion in the Delta, improve food supplies for fish and reduce impacts of invasive species and predators.
- CM 12-22, Other Stressor Reduction: Measures include addressing mercury, urban stormwater runoff, and in-Delta diversions, controlling invasive species, improving migratory pathways, reducing predatory fish and illegal harvest, and constructing hatcheries.

BDCP conservation measures will be accomplished through an Implementation Office with oversight by the State and federal permitting agencies, and supported by a comprehensive science program and adaptive management program.

Although the BDCP is a key element of the Delta planning framework established by the State Legislature in 2009, it is not the only effort needed to accomplish the "co-equal goals" of restoring the Delta ecosystem and water supply reliability for California. The Delta Stewardship Council, Delta Protection Commission, Delta Conservancy and State Water Resources Control Board all have important roles in the planning framework. In addition, the State, through the Resources Agency and Department of Water Resources, is working with stakeholders to develop its long-term California Water Plan, and near-term Water Action Plan. These lay the foundation for State support of broader measures including water use efficiency, groundwater management, integrated regional water management, and potential development of surface storage to improve water supply reliability.

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B. Summary of Preliminary BDCP Analysis

Analyses of BDCP benefits and costs to Santa Clara County were based on comparisons of impacts “with vs. without” the BDCP proposed project, using information available through the BDCP 2nd Administrative Draft. These analyses will be refined after the BDCP Public Review Draft is released, and certain remaining policy issues are resolved.

B.1 Benefits of BDCP to Santa Clara County

Imported water supplies support many beneficial uses in Santa Clara County. Imported water conveyed through the Delta is the primary source of supply for the County’s three drinking water treatment plants, and provides, on average, half the water delivered to the groundwater recharge system. During dry and critically dry years, such as 2013, nearly 90 percent of the County’s water supply is imported, and deliveries to on-stream recharge and off-stream ponds support local habitat.

Benefits of BDCP generally fall into three categories:

- a) Reduced regulatory risk and improved long-term average water supply reliability (or avoided loss of long-term average water supply);
- b) Reduced risk of a prolonged imported water supply interruption due to seismic events and climate change; and
- c) Improved quality of imported water conveyed through the Delta, and reduced salt loading to the groundwater basin.

B.1.a Reduced regulatory risk and improved long-term average water supply reliability.

Existing long-term average SWP and CVP water deliveries south of the Delta total 4.7 million acre-feet per year (MAF/Y), on average. Under the future “no action” scenario², it is projected that future deliveries could drop as low as 3.5 MAF/Y in response to regulatory constraints. Attachment 5 illustrates the impact of past regulatory actions on water availability south of the Delta. Under the BDCP proposed project, SWP and CVP deliveries could range from 4.7 MAF/Y to 5.6 MAF/Y, depending on the level of Delta outflow that regulatory agencies decide is needed at the time new conveyance facilities become operational (the “Decision Tree” process).

The difference in long-term average annual water supplies between the future “no action” scenario and the BDCP proposed project provides the basis for determining Santa Clara County’s water supply benefits. Compared to the future “no action” scenario, staff estimates that average annual deliveries of SWP and CVP water to the County would increase by 39,000 acre-feet to 44,000 acre-feet with the BDCP proposed project.

The comprehensive, large-scale ecosystem improvements and flexible, science-based management provided by the BDCP proposed project are expected to protect and help recover threatened and endangered fish, and create a sustainable Delta environment for the future. In addition to these environmental benefits, this would significantly stabilize and protect imported water from continuing regulatory reductions, and reduce litigation associated with SWP and CVP operations.

² The future “no action” scenario is consistent with the “Existing Conveyance Low-Outflow Scenario” and the “Existing Conveyance High-Outflow Scenario” described in BDCP Appendix 9A, Section 9.A.1.

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B.1.b Reduced risk of a prolonged imported water supply interruption due to seismic events and climate change.

As described at the November 14, 2013 Board workshop (“Delta Risks and Overview of the Bay Delta Conservation Plan”), an important risk to reliable water supply conveyance through the Delta is the condition of the 1,100 miles of levees in the Delta, and their vulnerability to seismicity and climate change. With the interior of many Delta islands more than 20 feet below sea level, the non-engineered levees built on fragile soils act as dams that will be under increasing pressure with sea level rise. At present, geologic experts estimate that there is a 63 percent chance of a major seismic event affecting the Delta by 2036. Modeling shows that such a seismic event could cause levee failures and flooding of multiple islands, with sea water intrusion into the central and south Delta interrupting Delta exports for up to two years or more. For Santa Clara County, these scenarios could result in shortages of up to 170,000 acre-feet a year, depending on local hydrology and groundwater basin conditions. A key point is that water shortages and the risk of shortages related to a Delta outage can continue well past the time that normal deliveries of imported water are restored if the County’s groundwater reserves are depleted in response to the outage (see Attachment 6). Until these reserves are replenished, the County is more vulnerable to subsequent dry periods.

Although the State is likely to continue its emergency response planning and may address some Delta levees, no substantial reduction in this risk scenario is likely to occur under the BDCP future “no action” scenario. In contrast, the BDCP proposed project would mitigate this risk by establishing a new isolated conveyance system, including construction of two tunnels with intakes on the Sacramento River well upstream of the area likely to be affected by salt water intrusion, and designed with 200-year flood protection.

B.1.c Improved water quality and reduced salt loading to the County’s groundwater basin.

The quality of water in the south Delta is affected by organic material discharged by urban and agricultural users, pollution in urban runoff, pesticides from agricultural drainage, and wastewater treatment plant discharges. To the extent that the BDCP proposed project diverts water in the north Delta, imported water quality would be better protected.

Operation of the new north delta intakes is also anticipated to decrease the average annual salinity of SWP and CVP Delta exports by about 22 percent under the BDCP proposed project compared to the BDCP future “no action” scenario. This would reduce the salt loading of deliveries to the District’s three drinking water treatment plants, and to the District’s managed groundwater recharge program. Current treatment plant processes do not substantially change the salt content of source water. Therefore, any improvement in the salinity of source water is reflected in the potable water that is consumed, and in potable water that is distributed through irrigation systems to landscaping. In total, staff estimates that reducing the salinity of imported water by 22 percent would reduce the amount of salt loading to the basin through landscape irrigation and managed recharge by 7,000 tons per year.

The District is currently in the process of completing Salt and Nutrient Management Plans for both the Santa Clara Subbasin and Llagas Subbasin. Preliminary analyses for the Santa Clara Subbasin show that current and expected future salt loading is greater than salt withdrawals, resulting in a projected increase in groundwater salinity concentrations. The reduction in salt loads associated with the BDCP proposed project would help to slow this projected increase, and protect water management options such as the expansion of non-potable recycled water.

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B.2 Cost of BDCP to Santa Clara County

B.2.a Total BDCP capital and O&M costs.

The estimated cost of the new north Delta diversion and isolated conveyance facilities (CM 1), including capital and operations and maintenance (O&M), is \$12.9 billion, and the estimated cost of the other 21 conservation measures is \$4 billion. Several additional plan components, including local government revenue replacement, monitoring and research, plan administration and provision for changed circumstances add another \$800 million, for a total BDCP cost of \$17.7 billion in present value dollars. It is anticipated that State and federal water contractors, including the District, will pay for CM 1, portions of CM 2-22 attributable to CM1 mitigation and additional plan components. Public funds from existing and future State bonds, federal appropriations, and other sources will be used to pay for fish and wildlife enhancement, recreation and other public benefits.

Several factors can affect BDCP costs for Santa Clara County, including the cost allocation between the SWP and CVP; cost allocations within the SWP and CVP; and the outcome of regulatory agency decisions on required Delta outflow (i.e. the Decision Tree process). The split of costs between the SWP and CVP is expected to “follow the water” once CM1 is operational, and this preliminary analysis is therefore based on current BDCP water supply modeling of long-term average deliveries to the SWP and CVP. Cost allocation within the SWP is likely to be based on SWP contract amounts (Table A), but cost allocation within the CVP is still being considered by the Bureau of Reclamation. This preliminary analysis assumes that the CVP share of BDCP costs will be allocated in proportion to long-term average CVP deliveries, and the District’s share of costs will be based on its share of these deliveries. A remaining factor affecting costs, the Decision Tree process, will not be completed until shortly before CM1 becomes operational (estimated by 2024).

For purposes of this preliminary analysis, the range of Santa Clara County costs is defined by two scenarios:

- High cost end: 50% SWP/50% CVP; higher delivery/lower outflow operations
- Low cost end: 55% SWP/45% CVP; lower delivery/higher outflow operations

Table 1. Total BDCP capital and O&M costs.

	Costs in constant 2012 dollars³ (\$ millions)	Costs in present value⁴ (\$ millions)
Total BDCP costs	\$24,754	\$17,686
Total BDCP costs allocated to SWP and CVP contractors*	\$16,930	\$13,323
Total BDCP costs allocated to District (estimated)	\$640 - \$740	\$504 - \$583

*Includes contractors’ share of capital and O&M for all plan elements (CM 1-22), changed circumstances, local government revenue replacement, monitoring and research measures, and plan administration. Costs exclude financing.

³ “Constant 2012 dollars” are project costs that have not been adjusted for inflation nor discounted to present value. It’s the cost of the project expressed in 2012 dollars, regardless of when the cost is expected to be incurred.

⁴ “Present value” represents the amount of money that would need to be invested today at a specific rate of return in order to meet future cash flow requirements. BDCP assumes a 5% nominal discount rate and a 2% inflation rate.

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B.2.b Impacts of BDCP on groundwater charges, SWP tax and monthly household costs.

The District's share of BDCP capital and O&M costs, in present value dollars, is estimated at \$504 million to \$583 million. It is anticipated that these costs will be financed over the 50-year period of the BDCP permit. Including financing costs, the present value of the District's total BDCP costs is estimated to be \$674 million to \$782 million. These estimates may change significantly based on a variety of factors including the discount rate, bond structure, and economic conditions, among other factors. It is anticipated that a portion of Santa Clara County's total costs will be repaid through the District groundwater charges, and a portion through the existing SWP ad valorem property tax. Preliminary 15-year analysis of these components shows the potential incremental cost due to BDCP increasing steadily to the levels shown in Table 2 and in Attachment 7. By fiscal year (FY) 2029, the incremental monthly cost per average household in north County would be \$7 to \$8, and in south County would be \$3 to \$4.

Table 2. Estimated incremental impact of BDCP on District groundwater charges, SWP tax and Santa Clara County monthly household costs.

	Incremental Impact of BDCP Proposed Project FY 2029
M&I groundwater charge increase (\$/AF)	
north county	\$132 - \$172
south county	\$87 - \$114
SWP tax increase, average single family (\$/year)	
north county increase	\$28 - \$31
south county	\$22 - \$24
Total increase per average household (\$/month)	
north county	\$7 - \$8
south county	\$3 - \$4

B.3 Implications of the BDCP Future "No Action" Scenario for Santa Clara County

The BDCP proposed project provides future long-term average water deliveries that are consistent with maintaining baseline imported water supplies as outlined in the District's Water Master Plan. Under the BDCP future "no action" scenario, however, the County's water supplies would not be sufficient to accomplish the District Outcome Measure of meeting 100% of average annual demands in non-drought years, and at least 90% of annual demands during drought years. Ongoing shortages between supplies and demands would result in groundwater overdraft and increased risk of inelastic land subsidence. The County could experience shortages of up to 129,000 acre-feet per year at the end of a long dry period, such as the 1987-1992 drought. Avoiding land subsidence in these circumstances would require short-term water use reductions of up to 50 percent, large imported water transfers, and/or other extraordinary water shortage contingency actions.

To avoid these impacts, staff anticipates that the Water Master Plan portfolio would need to be adjusted to try to make up the shortfall in annual water supplies, and mitigate the loss of other BDCP benefits. Staff estimates that roughly 30,000 acre-feet per year of alternative water

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supplies would need to be developed, on average, to make up the water supply shortfall, assuming that the CVP municipal and industrial reliability policy continues under the future “no action” scenario.

Staff analyzed two scenarios to fill the water supply gap:

- a) Conservation Scenario: Implement 30,000 AF/Y of additional water conservation, primarily in the residential sector; or
- b) Potable Reuse Scenario: Implement 30,000 AF/Y of direct potable reuse.

Each of these scenarios would require significant resources over and above the investments in water use efficiency currently outlined in the Water Master Plan, and each faces significant feasibility challenges.

Neither the conservation nor potable reuse scenario alone would completely address remaining risks of the BDCP future “no action” scenario. Despite increased regulatory shortages, the SWP and CVP would continue to provide a significant portion of the County’s water supply (about 24 percent) in the future “no action” scenario. These supplies would still be subject to the risk of prolonged interruption due to seismic events and climate change, and subject to degrading water quality. A thorough reevaluation of the Board-adopted Water Master Plan without the baseline investments in BDCP would likely identify the need for additional local surface water storage or other components, in addition to conservation and recycled water, to address these remaining risks and overall water management goals.

B.3.a Conservation Scenario: Implement 30,000 AF/Y of additional water conservation to partially mitigate BDCP Future “No Action” Scenario.

The current Water Master Plan includes a very aggressive target of 99,000 acre-feet of annual water conservation by 2030. Staff worked with a consultant specializing in the development of water conservation programs to analyze options for increasing annual savings by 30,000 AF/Y. Three types of programs were identified for this Conservation Scenario: landscape programs, expanded educational and sub-meter installation programs, and expanded commercial, industrial and institutional urinal programs. Implementing these programs would be challenging, and require significant resources. Assumptions were also made about city and County ordinance adoption and enforcement, and District financial support for programs.

The additional water conservation program costs were estimated to begin at \$1 million in FY15, increase to a maximum of about \$39 million in FY36, and taper off to \$15 million in FY50 and beyond. The 50-year present value cost of these additional programs is about \$540 million. The associated incremental groundwater charges (\$272 per AF in north County, \$58 per AF in south County) and monthly household costs (\$9 in north County, \$2 in south County) reflect the fact that water conservation reduces not only annual water use, but annual water revenue. The District’s capital obligations and a significant portion of its ongoing costs to operate, maintain and protect the water supply system are fixed. The result is that while water usage decreases, the effective cost per acre-foot of delivered water increases.

Implementing 30,000 AF/Y of additional conservation also could reduce flexibility to manage extended droughts or facility outages (including a prolonged Delta outage) through water use reduction measures. Typically, water use reductions are made first to the residential sector before affecting business and industry. With the elimination of 30,000 AF/Y of “buffer” for emergencies, business and industry will likely feel the effects of shortage sooner, with resulting greater economic impacts.

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B.3.b Potable Reuse Scenario: Implement 30,000 AF/Y of additional potable reuse to partially mitigate BDCP Future “No Action” Scenario.

The current Water Master Plan includes developing at least 20,000 AF/Y of indirect potable reuse by 2035 (delivering highly purified recycled water directly to a groundwater recharge area or local reservoir). For purposes of this conceptual analysis, staff assumed that an additional 30,000 AF/Y of potable reuse would be developed through a direct potable reuse project (delivering highly purified recycled water directly to the District’s drinking water treatment plants or groundwater recharge system). Implementation challenges include regulatory approval, brine disposal, public acceptance and political support. The California Department of Public Health does not currently permit direct potable reuse, but it is evaluating the feasibility of regulating direct potable reuse and is scheduled to produce its findings by the end of 2016. The advanced purification process produces a brine of highly concentrated salts, metals, and other compounds. The assumption is that the brine would be blended with treated wastewater and discharged to San Francisco Bay, but additional treatment or alternative disposal methods could be required, which would increase costs and/or limit the feasibility of advanced water purification. The District’s public opinion survey on recycled water use showed that, before providing information on advanced water purification, there is little public awareness or support for potable reuse. Support increases significantly after information is provided about the treatment process for potable reuse. Still, it is a large step for the County to go from zero potable reuse today, to more than 50,000 AF/Y of potable reuse in this planning horizon.

The capital costs to construct an advanced water purification facility and pipeline to the District’s raw water system were estimated at \$277 million (present value); construction would begin in FY17, and the facility would be operational in FY27. The 50-year present value cost, including capital and O&M, is approximately \$548 million. The associated incremental groundwater charges (\$259 per AF in north County, \$118 per AF in south County) and monthly household costs (\$9 in north County, \$4 in south County) reflect allocating these direct potable recycled water costs within Santa Clara County in the same manner that imported water costs are allocated, because it is essentially a substitute supply in the raw water system.

B.3.c Comparison of Conservation and Potable Reuse Scenarios with BDCP proposed project.

Table 3 compares costs of the BDCP proposed project with the Conservation and Potable Reuse Scenarios. Impacts to groundwater charges, SWP taxes and monthly household costs are shown in FY 2029, consistent with the 15-year timeline in the District’s rate projection model. This comparison shows that the Conservation and Potable Reuse Scenarios have similar total present value costs, but significantly greater impact on groundwater charges in north County, and slightly higher monthly costs per household.

It should be kept in mind that these scenarios only partially mitigate for the BDCP future “no action” scenario. Neither of them addresses Delta seismic and climate change risks for the remaining 24 percent of the District’s imported water supplies, nor addresses future degradation in water quality. In addition, the Conservation Scenario could limit future flexibility to respond to prolonged droughts or facility outages, and increases the risk of economic impacts to the commercial and industrial sectors. Both scenarios produce reliable “every year” supplies, although the County’s shortages occur primarily in prolonged droughts. This presents the water management challenge of regulating additional wet year water through development of new storage, or otherwise maintaining beneficial use of local and imported water rights. Finally, only the water supply investments in BDCP are leveraged with a comprehensive conservation program to contribute to recovery of 57 species and restore the Delta ecosystem.

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Table 3. Comparison of scenarios to mitigate BDCP Future “No Action” Scenario with BDCP proposed project.

	Incremental Cost impact		
	BDCP Proposed Project	30,000 AF of Additional Conservation*	30,000 AF of Additional Potable Reuse
Total District costs—present value (\$ million)	\$504-583	\$540	\$548
Groundwater charge increase in FY29 (\$/AF)			
north county	\$132 - \$172	\$272	\$259
south county	\$87 - \$114	\$58	\$118
SWP tax increase in FY29, average single family (\$/year)			
north county	\$28 - \$31	\$0	\$0
south county	\$22 - \$24	\$0	\$0
Total increase per average household in FY29 (\$/month)			
north county	\$7 - \$8	\$9	\$9
south county	\$3 - \$4	\$2	\$4

* Groundwater charges and total monthly cost per average household in the Conservation Scenario include the impact of reduced revenue due to reduced water usage.

C. Next Steps

C.1 BDCP Schedule

The Public Review Drafts of the BDCP and EIR/EIS are scheduled to be released on December 13, 2013, for a 120-day public comment period that closes in April 2014. The State and Federal lead agencies also will hold a series of public meetings during January and February 2014 to provide information about the project and accept formal comments. Thereafter, it is expected that processing comments and preparing the final BDCP will be accomplished within five or six months, with a Record of Decision/Notice of Determination (ROD/NOD) issued in October 2014.

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C.2 Resolving Outstanding Issues

During the period prior to issuance of the ROD/NOD, the State and federal agencies and water contractors served by the SWP and CVP will be working to resolve remaining policy issues and finalize the forms of agreement to implement BDCP. These include:

- a) Cost allocation and size of the BDCP Supplemental Adaptive Management Fund;
- b) Cost allocations between the State and federal governments for BDCP public benefits;
- c) Cost allocations between the SWP and CVP, and within each project, for CM1 and mitigation costs;
- d) Agreements establishing BDCP funding;
- e) Agreements establishing the BDCP Implementation Office;
- f) Agreements establishing the CM1 Design/Construction Office (DCO).

Although a range of potential BDCP costs to Santa Clara County is presented in this preliminary analysis, resolution of some of these outstanding issues could affect the final outcome.

C.3 BDCP Interim Funding

To date, the District and other participating SWP and CVP contractors have provided nearly \$240 million in funding for BDCP planning costs. Funding obligations have been shared equally between the SWP and CVP, with provision for future adjustment depending on final BDCP cost allocations. The District has participated in funding BDCP planning costs both as a SWP contractor, through agreements with DWR and the State Water Project Contractors Authority (SWPCA), and as a CVP contractor, through agreements with the San Luis and Delta-Mendota Water Authority (SL&DMWA) and Bureau of Reclamation. The District's share of the \$240 million funding has been approximately 5 percent, or \$12 million, including some advance CVP O&M payments that will be credited in future years by the Bureau of Reclamation. DWR estimates that existing BDCP funding will be fully committed by July 2014.

Participating SWP and CVP contractors are working to establish the next round of interim funding for the preconstruction phase, which includes design, permitting, land acquisition, and pre-ordering of equipment after ROD/NOD but prior to construction. So far, funding of BDCP planning costs has been provided on a pay-as-you-go basis. However, the next round of interim funding for preconstruction costs will include the issuance of debt, and the initial issuance is expected to provide approximately \$500 million. To ensure that bonds can be issued at the time of the ROD/NOD (October 2014), the District and other participating SWP and CVP contractors will be seeking Board approval of bond indenture and disclosure documents in February 2014, and authorization for the CEO to execute all necessary funding agreements. This allows

sufficient time for subsequent approval steps by the Boards and relevant governing committees of SWPCA and SL&DMWA, and by DWR. Decisions to actually fund the next phase of interim financing will be made at the time of the ROD/NOD, and requires a unanimous vote by the District and other participating SWP and CVP contractors.

SUBJECT: Preliminary Analysis of Bay Delta Conservation Plan Benefits and Costs to Santa Clara County

(12/9/13)

C.4 Board Schedule

Over the next few months, staff will be evaluating the BDCP Public Review Draft and refining the preliminary assessment of BDCP benefits and costs for Santa Clara County as remaining cost and financing issues are resolved. Staff expects to provide the Board with additional updates and recommendations before the ROD/NOD is finalized in October 2014:

Date	Subject
Jan 2014	BDCP Workshop #5 (CM1 costs and construction management).
Feb 2014	BDCP Interim Financing (approval of bond documents and CEO authorization for funding agreements).
Apr 2014	Review and discuss formal District comments on Public Review Draft BDCP and EIR/EIS.
July 2014	Review and update relevant Board Policy and CEO Interpretations.
Sept 2014	Review and discuss resolution of outstanding BDCP policy issues, and District status as a permittee.

FINANCIAL IMPACT:

None. Information only.

CEQA:

The recommended action does not constitute a project under CEQA because it does not have a potential for resulting in direct or reasonably foreseeable indirect physical change in the environment.

ATTACHMENTS:

Attachment 1: Staff Power Point Presentation
 Attachment 2: Previous BDCP Updates and Special Board Meetings on Delta Planning Efforts
 Attachment 3: Board Policy and CEO Interpretations Related to a Long-Term Delta Solution
 Attachment 4: Bay Delta Conservation Plan Conservation Measures (CMs)
 Attachment 5: Effects of Past Regulations on SWP and CVP Water Deliveries
 Attachment 6: Water Shortages in Response to Delta Outage
 Attachment 7: Incremental Impact on Monthly Costs per Average Household



Bay Delta Conservation Plan

Workshop 4

December 9, 2013



Santa Clara Valley
Water District



Board workshop schedule - BDCP

**October 11
2013**

Statewide Focus. Topics include 1) Overview of the BDCP and relation to other State planning efforts; 2) State and federal agency perspectives; and 3) Statewide economic impacts

**November 8
2013**

Delta Focus I. Topics include 1) Perspective of in-Delta and environmental stakeholders, and 2) Habitat restoration and conservation in the Delta

**November 14
2013**

Delta Focus II. Topics include 1) Overview of BDCP benefits and impacts to the Delta region, and 2) Condition of Delta levees and levee stability

**December 9
2013**

Local Costs and Benefits. Topics include 1) BDCP benefits to Santa Clara County, and 2) BDCP costs to Santa Clara County (water rates, property taxes)

Invited guests

- ▶ **John Laird**, Secretary, California Natural Resources Agency
- ▶ **Casey Beyer**, Senior Advisor to the President, Silicon Valley Leadership Group
- ▶ **Marc Ebbin**, Principal, Ebbin, Moser and Skaggs, LLP, consultant to the State

Overview of Santa Clara County Water Supply and BDCP

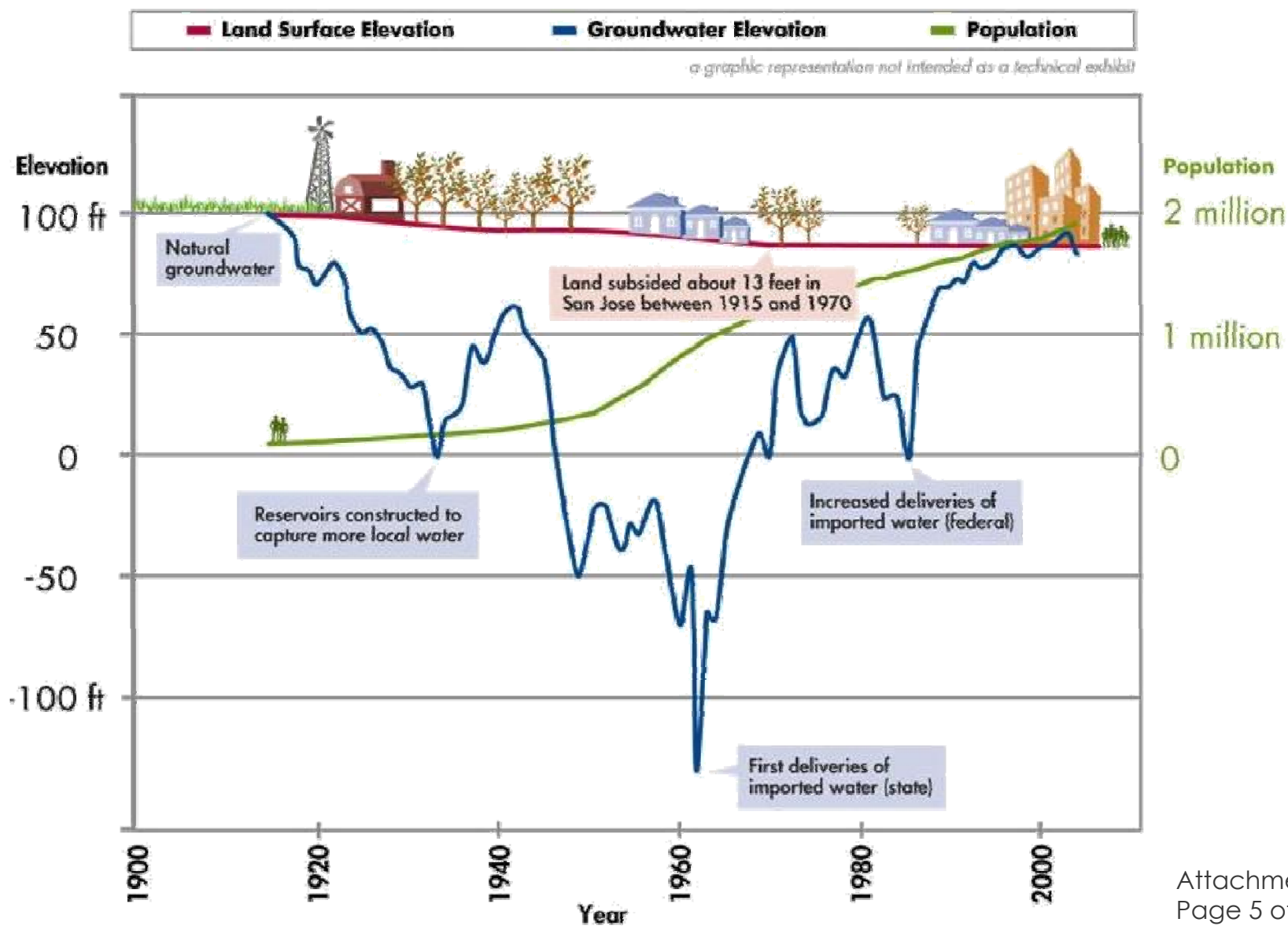
December 9, 2013



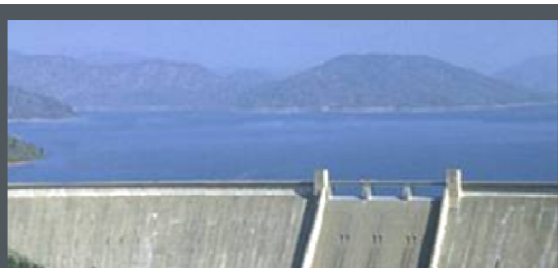
Santa Clara Valley
Water District



Protecting our groundwater basin



Imported water provides 55% of our supply

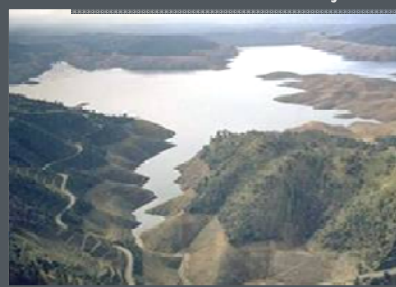


Shasta Lake

Federal Central Valley Project

Lake Oroville

State Water Project



Hetch Hetchy

San Francisco



Sacramento-San
Joaquin
River Delta

Santa Clara County

by the numbers

30% local water

15% natural groundwater
10% from reservoirs to
groundwater
5% from reservoirs to
drinking water
treatment plants

55% imported water

15% thru Delta to replenish
groundwater
25% thru Delta to drinking
water treatment plants
15% from Hetch Hetchy
system

5% recycled water

90%

10% water conservation

100%

Water Supplies

Delta is the hub of California's water system

Zone 7 Water Agency

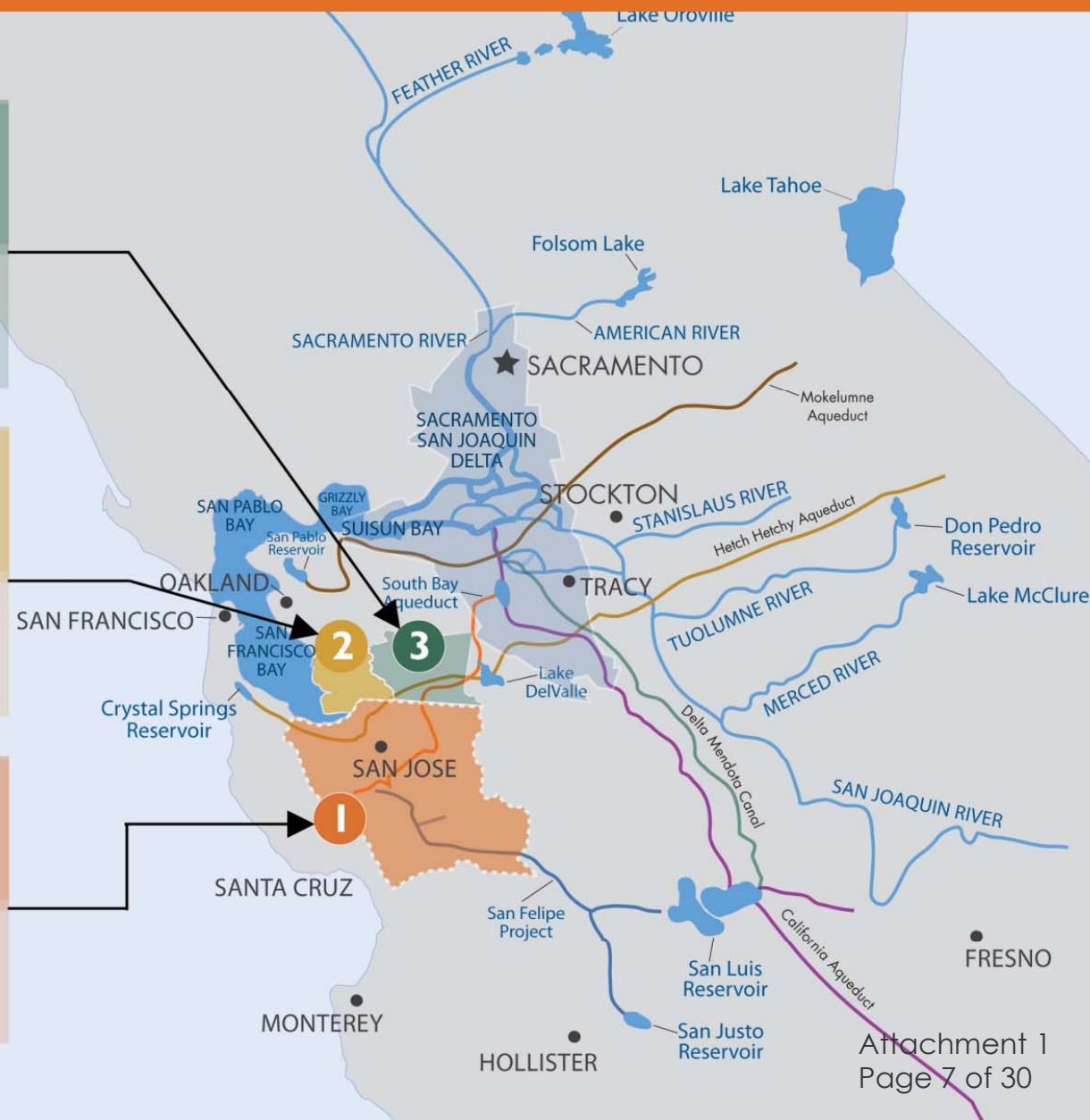
- Serves 220,000 people
- 87% Delta-conveyed water

Alameda County Water District

- Serves 340,000 people
- 40% Delta-conveyed water

Santa Clara Valley Water District

- Serves 1,800,000 people
- 40% Delta-conveyed water



Water Master Plan Strategy



Secure
existing
supplies and
infrastructure



Optimize the
use of existing
supplies and
infrastructure



Increase
water
recycling and
conservation

Meet drought year needs, adapt to climate change, manage uncertainty

BDCP part of an overall state water plan

The Bay Delta Conservation Plan supports the Delta Reform Act's co-equal goals:

- ✓ **water supply reliability**
- ✓ **ecosystem restoration of the Delta**



Preliminary Analysis of BDCP Benefits and Costs to Santa Clara County

December 9, 2013



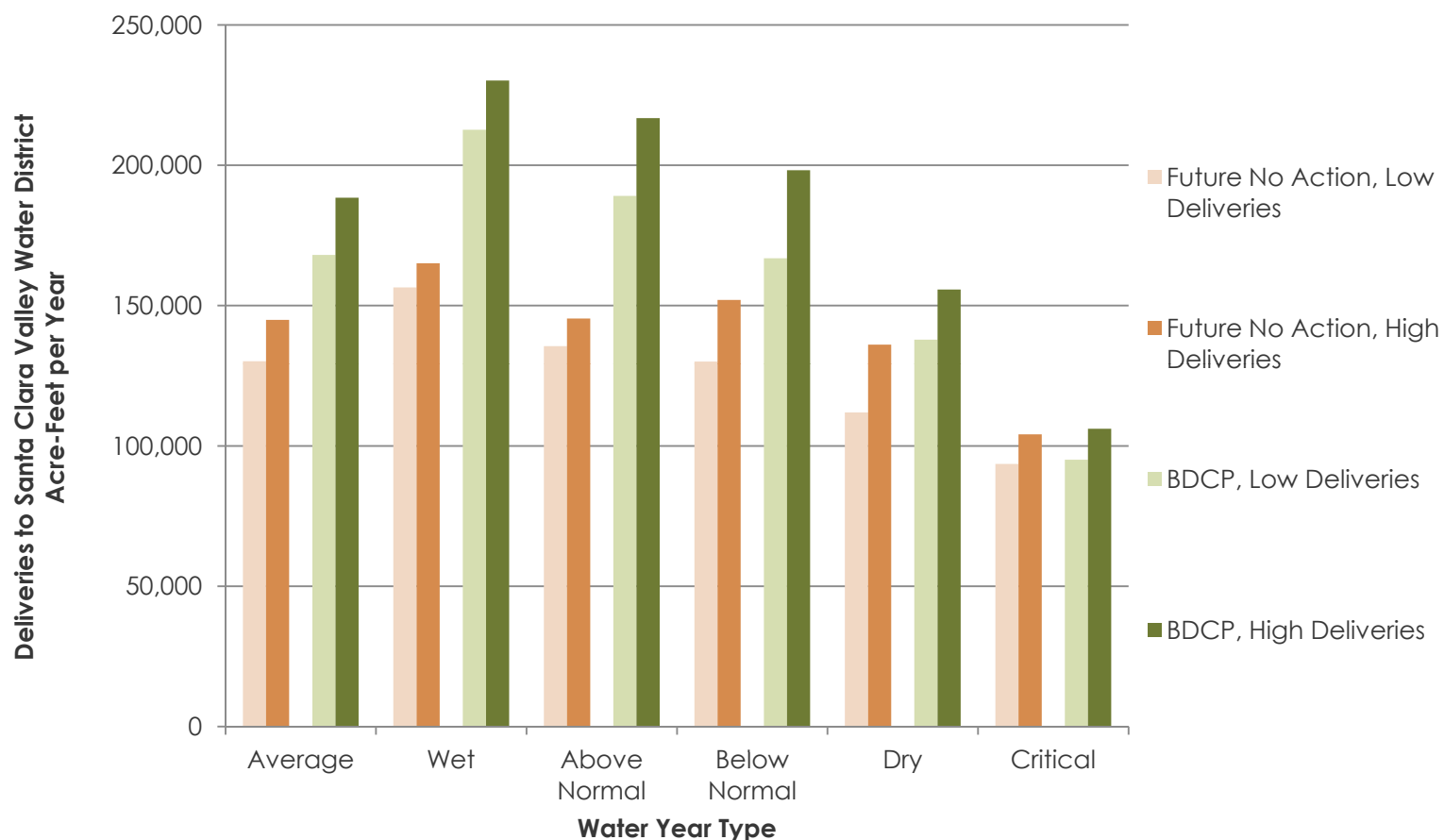
Santa Clara Valley
Water District



BDCP benefits

- ▶ Improved water supply reliability
- ▶ Seismic risk reduction
- ▶ Improved water quality
- ▶ Ecosystem restoration

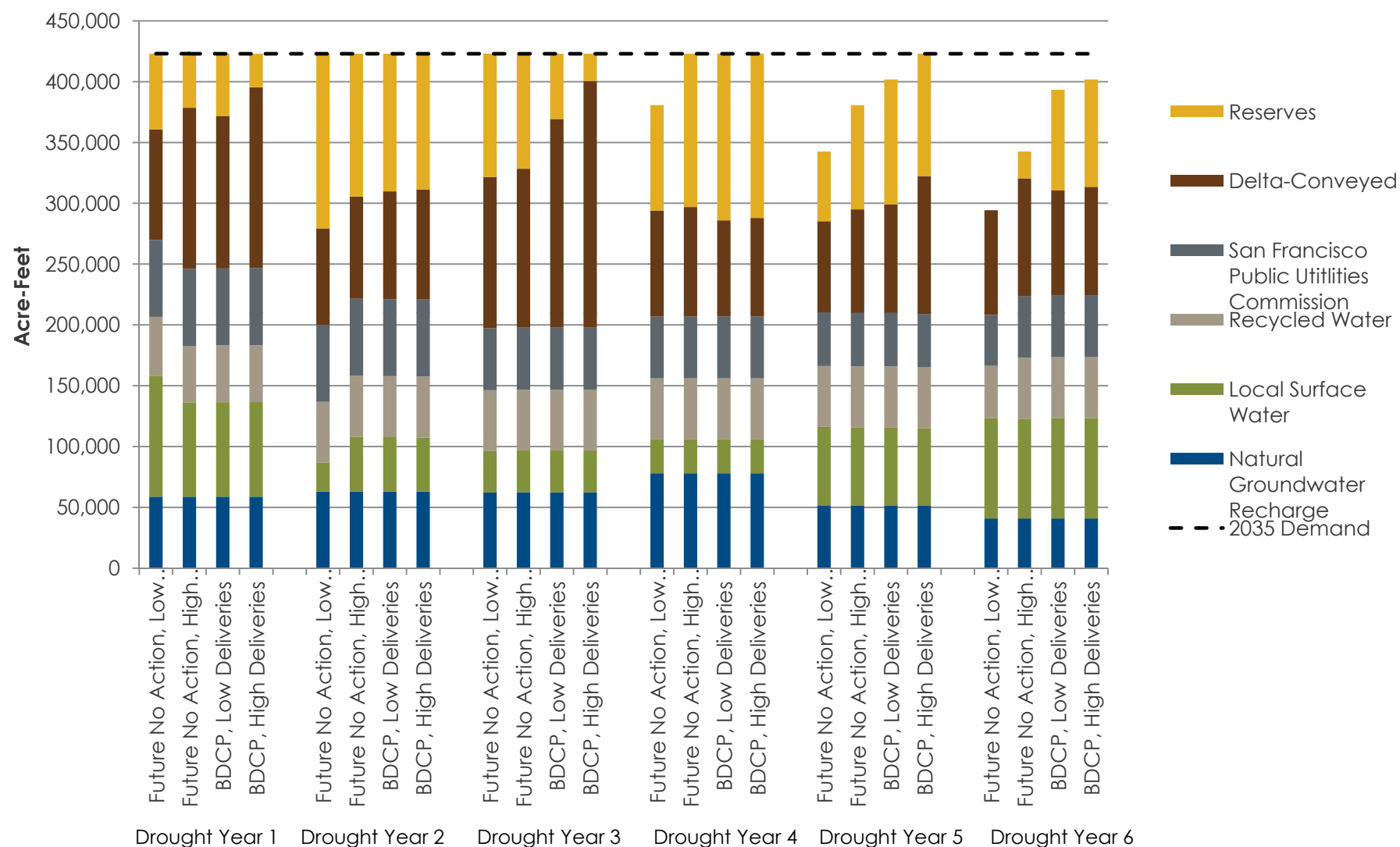
BDCP benefits: District water supply reliability



SWP/CVP Long-Term Average Annual Deliveries

BDCP:	4.7 MAF – 5.6 MAF
Future No Action:	3.5 MAF – 3.9 MAF

BDCP benefits: Drought reliability

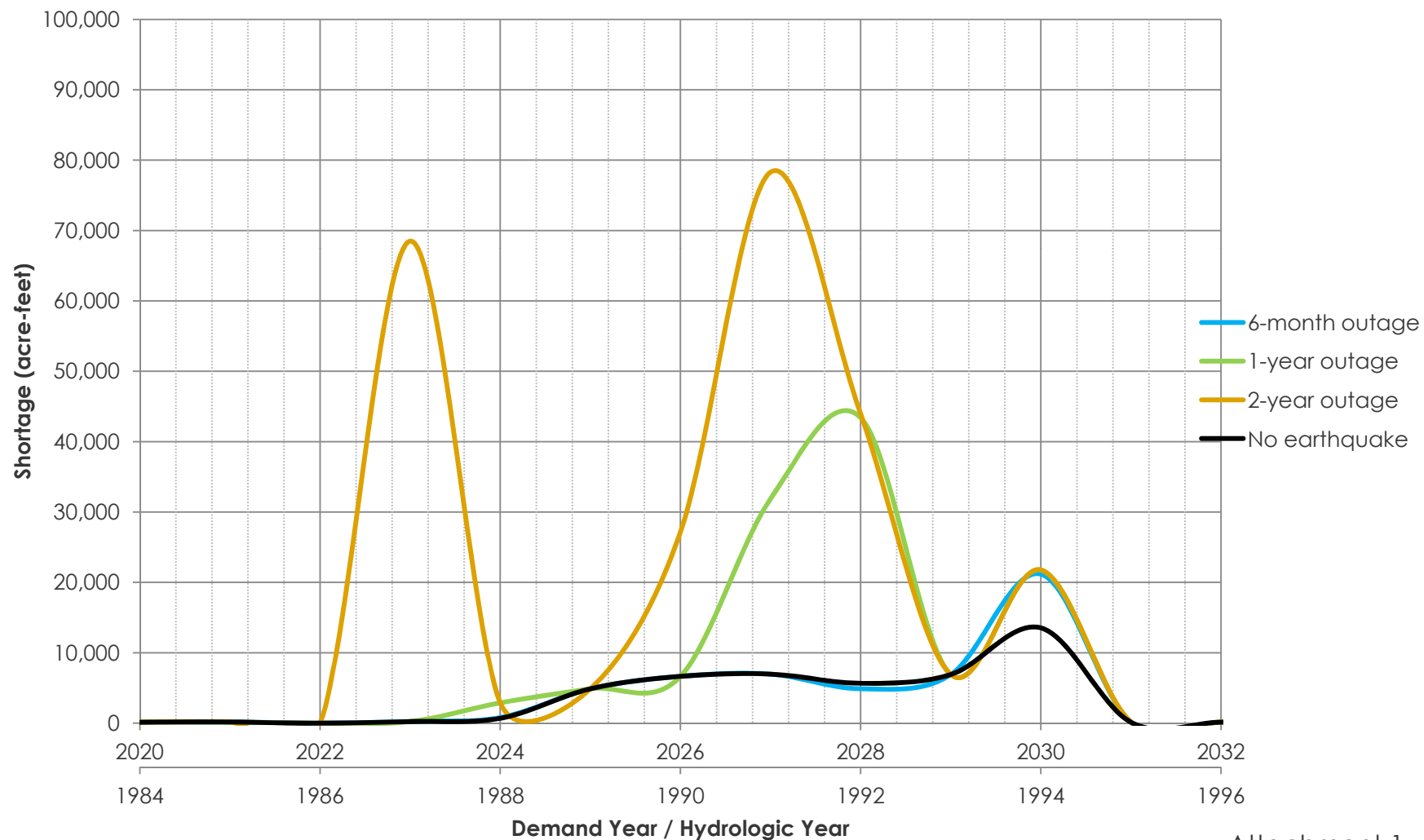


BDCP benefits: Reduced seismic and climate risks

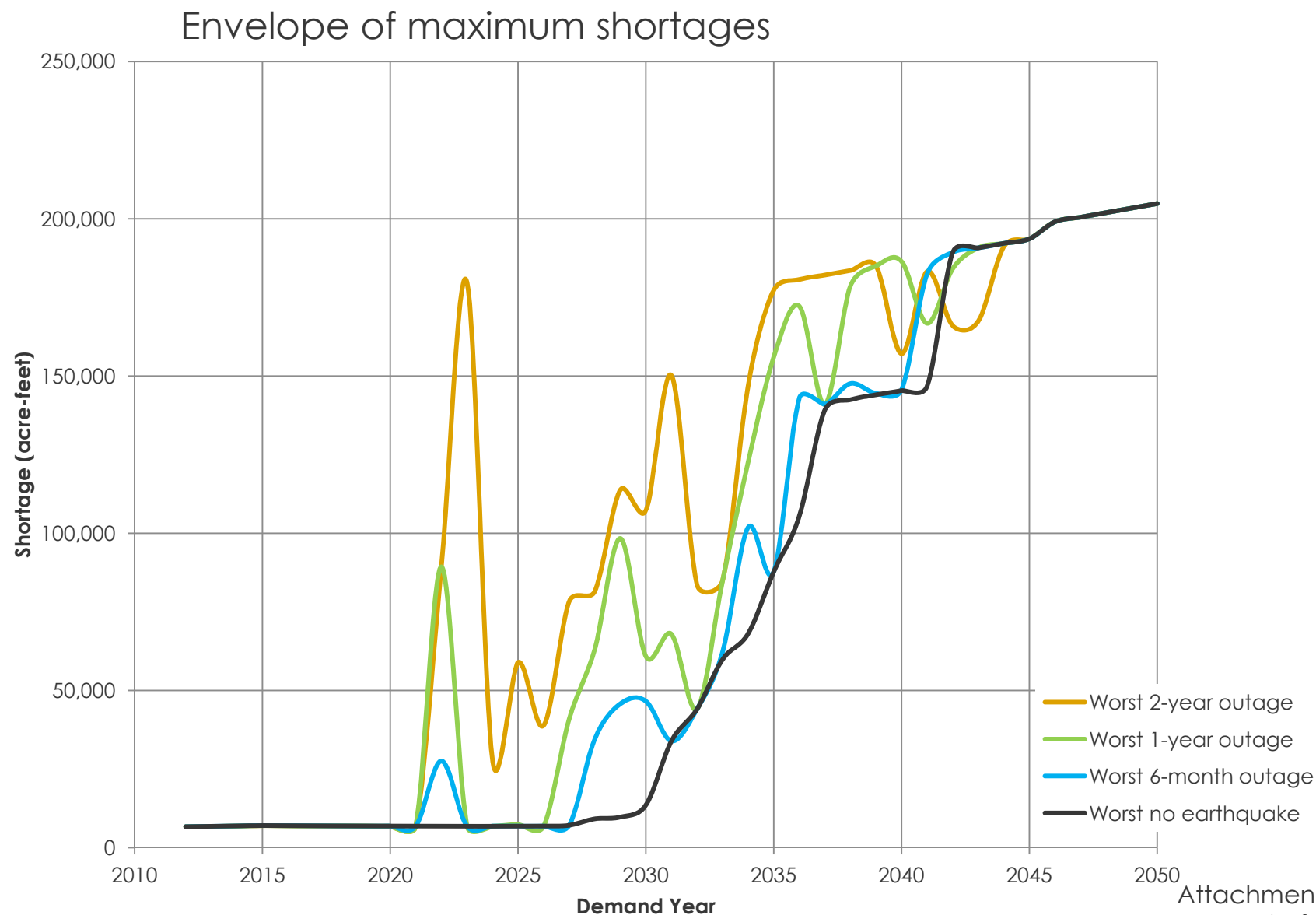
- ▶ New Delta conveyance isolates water deliveries from stressed Delta levees
- ▶ Designed with 200 year flood protection
- ▶ Provides insurance against sea level rise
- ▶ Enables more water to be captured during flood flows

BDCP benefits: Reduced seismic risks

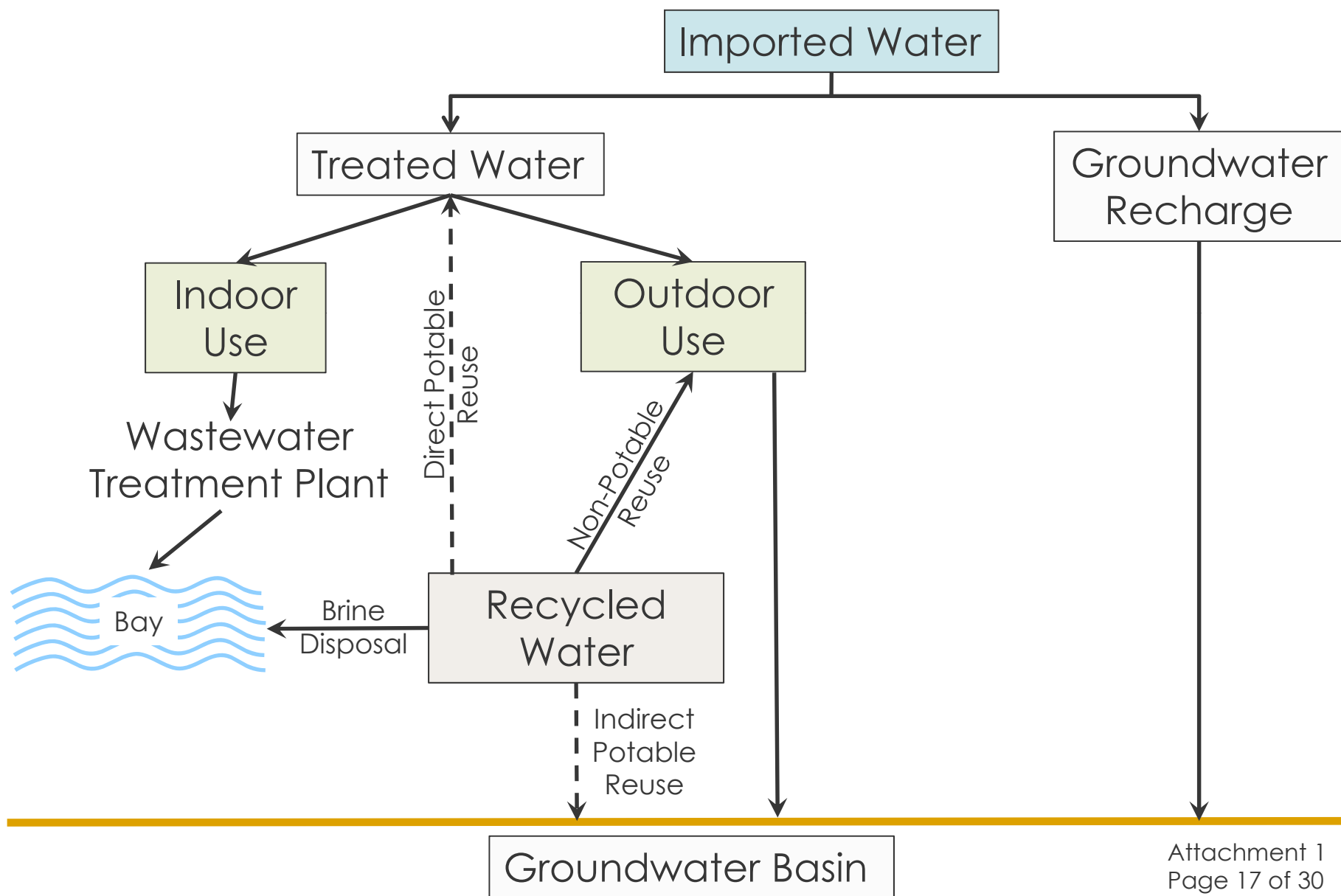
Drought scenario: Seismic event occurs just prior to a drought such as the one from 1987 – 1992.



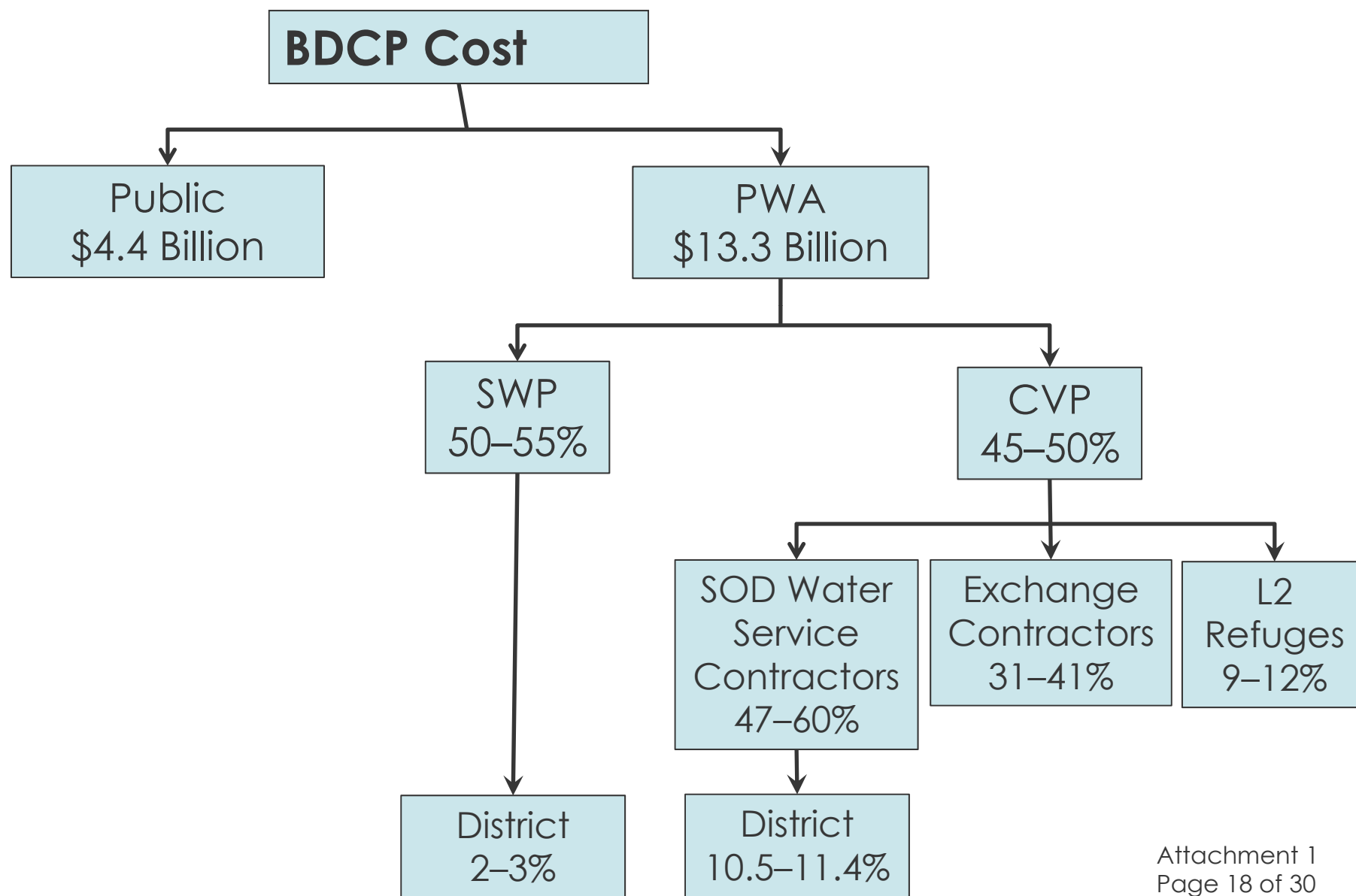
BDCP benefits: Reduced seismic risks



BDCP benefits: imported water quality



BDCP capital and O&M costs (present value \$)



BDCP capital and O&M costs

	Costs in constant 2012 dollars (\$ millions)	Costs in present value (\$ millions)
BDCP capital and O&M costs	\$24,754	\$17,686
BDCP costs allocated to SWP and CVP contractors*	\$16,930	\$13,323
BDCP costs allocated to District (estimated)	\$640 - \$740	\$504 - \$583

BDCP costs

Incremental Costs to Santa Clara County by FY2029		
M&I groundwater charge (\$/AF)	North County	\$132 - \$172
	South County	\$87 - \$114
SWP tax, average single family (\$/year)	North County	\$28 - \$31
	South County	\$22 - \$24
Total cost per average household (\$/month)	North County	\$7 - \$8
	South County	\$3 - \$4

BDCP cost assumptions

- ▶ Common assumptions:
 - District's CVP costs based on long-term average CVP deliveries
 - District's SWP costs based on contract amount
- ▶ High estimate:
 - higher deliveries/lower Delta outflow
 - 50/50 cost split between SWP/CVP
- ▶ Low estimate:
 - lower deliveries/higher Delta outflow
 - 55/45 cost split between SWP/CVP

Implications of BDCP Future “No Action” Scenario

- ▶ Supplies insufficient to meet:
 - 100% of average demands
 - At least 90% of demands in drought years
- ▶ Vulnerability to seismic risk, sea level rise, and climate change
- ▶ Degradation of water quality
- ▶ No comprehensive habitat restoration

Potential scenarios to offset impacts of no BDCP

► **Conservation Scenario:**

- Implement 30,000 AF/Y of additional water conservation, primarily in the residential sector

► **Potable Reuse Scenario:**

- Implement 30,000 AF/Y of direct potable reuse

► **These scenarios do not completely mitigate impacts of no BDCP**

Limitations of conservation and potable reuse scenarios

- ▶ Require significant investments
- ▶ Significant feasibility challenges
- ▶ SWP and CVP would continue to provide 24% of County's water supply
 - 24% of supply still at risk from seismic events and climate change
 - 24% of supply still subject to degrading water quality
 - Additional local surface water storage or other Water Master Plan components may be needed to address risks and overall water management goals

Comparison of scenario benefits

Benefit	BDCP Proposed Project		Conservation Scenario	Potable Reuse Scenario
	High Delivery	Low Delivery		
Meets water supply goal	✓	✓	✓	✓
Reduces risk from Delta outage	✓	✓	-	-
Flexibility for supply shortage response	✓	✓	-	✓
Improves water quality	✓	✓	-	?
Restores add'l Delta habitat	✓	✓	-	-

Feasibility -
Challenges

Regulatory approval required, public
and political support

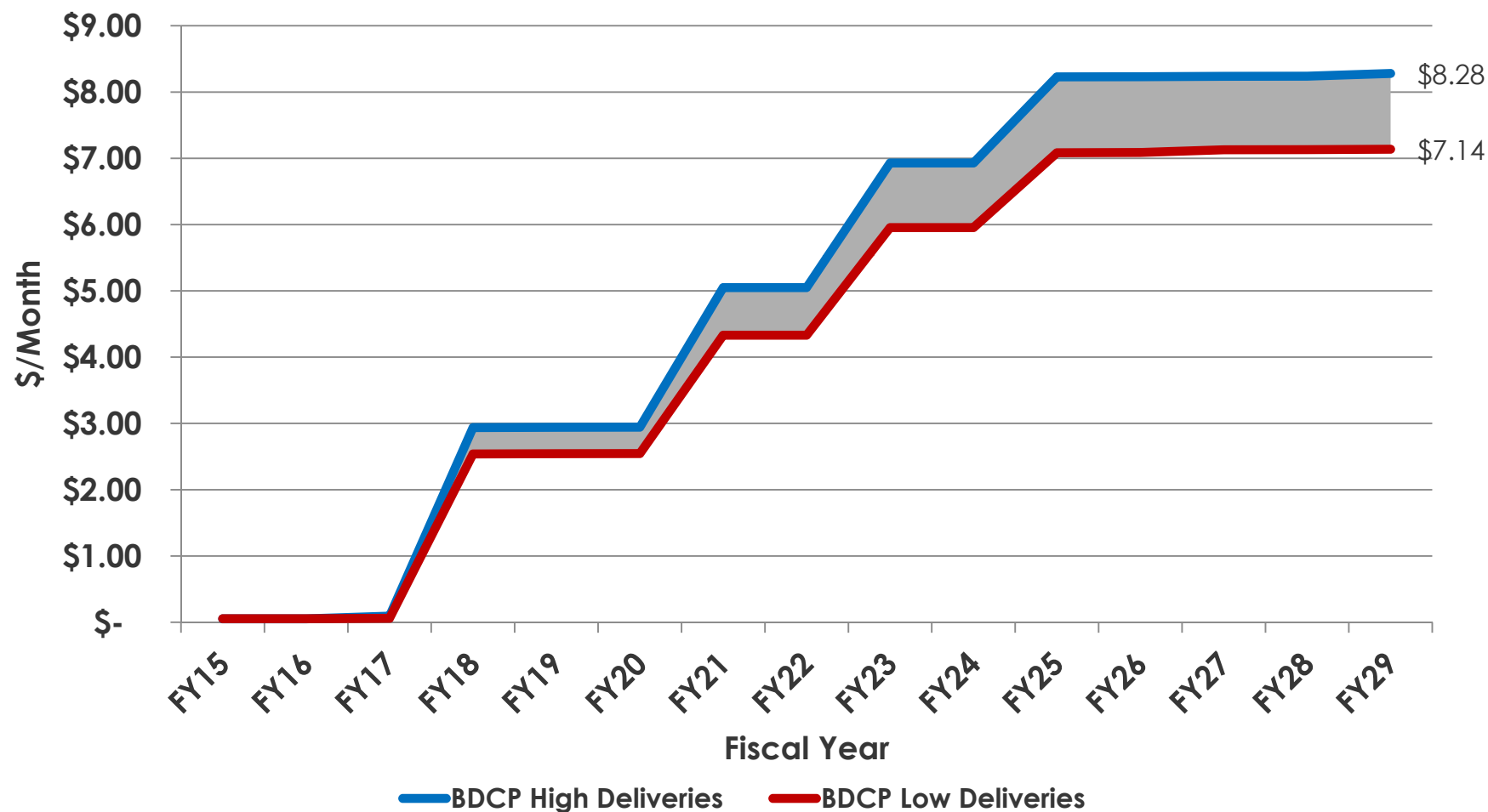
Local ordinances
required

Regulatory
approval
required, brine
disposal, public
and political
support

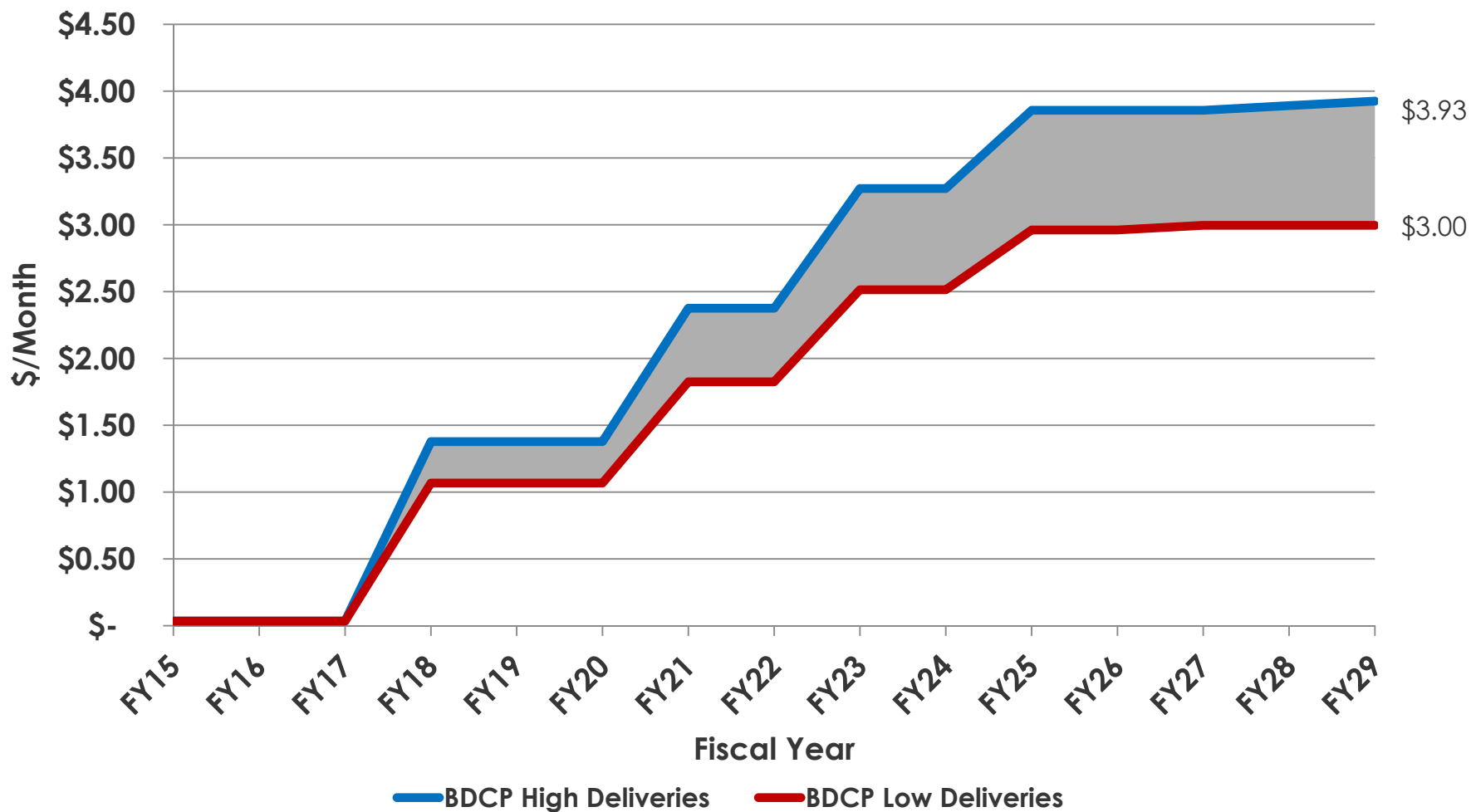
Comparison of scenario costs

Incremental Cost	BDCP Proposed Project	Conservation Scenario	Potable Reuse Scenario
Present Value (millions)	\$504 - \$583	\$540	\$548
M&I groundwater charge (FY29), \$/AF			
North County	\$132 - \$172	\$272	\$259
South County	\$87 - \$114	\$58	\$118
SWP tax, average single family (FY29), \$/year			
North County	\$28 - \$31	\$0	\$0
South County	\$22 - \$24	\$0	\$0
Total cost per average household (FY29), \$/month			
North County	\$7 - \$8	\$9	\$9
South County	\$3 - \$4	\$2	\$4

Incremental north county cost to average household



Incremental south county cost to average household



Next steps

The Public Review Draft BDCP and Environmental Impact Report/Environmental Impact Statement (EIR/EIS) are expected to be available for public review and comment in **mid December 2013** for 120-day review period.

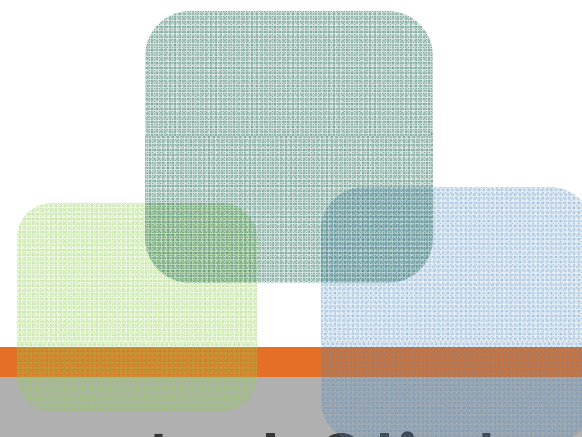


Public Draft EIR/EIS process will include:

- Educational workshops in the Delta
- In-Delta office hours
- Formal public hearings
- Documents available at local libraries and community centers
- Online information available at BayDeltaConservationPlan.com
- Public comment accepted via e-mail and standard mail
- Landowner liaison to answer questions

Next steps

Date	Subject
Jan 2014	BDCP Workshop #5 (CM1 costs and construction management).
Feb 2014	BDCP Interim Financing (approval of bond documents and CEO authorization for funding agreements).
Apr 2014	Review and discuss formal District comments on Public Review Draft BDCP and EIR/EIS.
July 2014	Review and update relevant Board Policy and CEO Interpretations.
Sept 2014	Review and discuss resolution of outstanding BDCP policy issues, and District status as a permittee.



Supplemental Slides

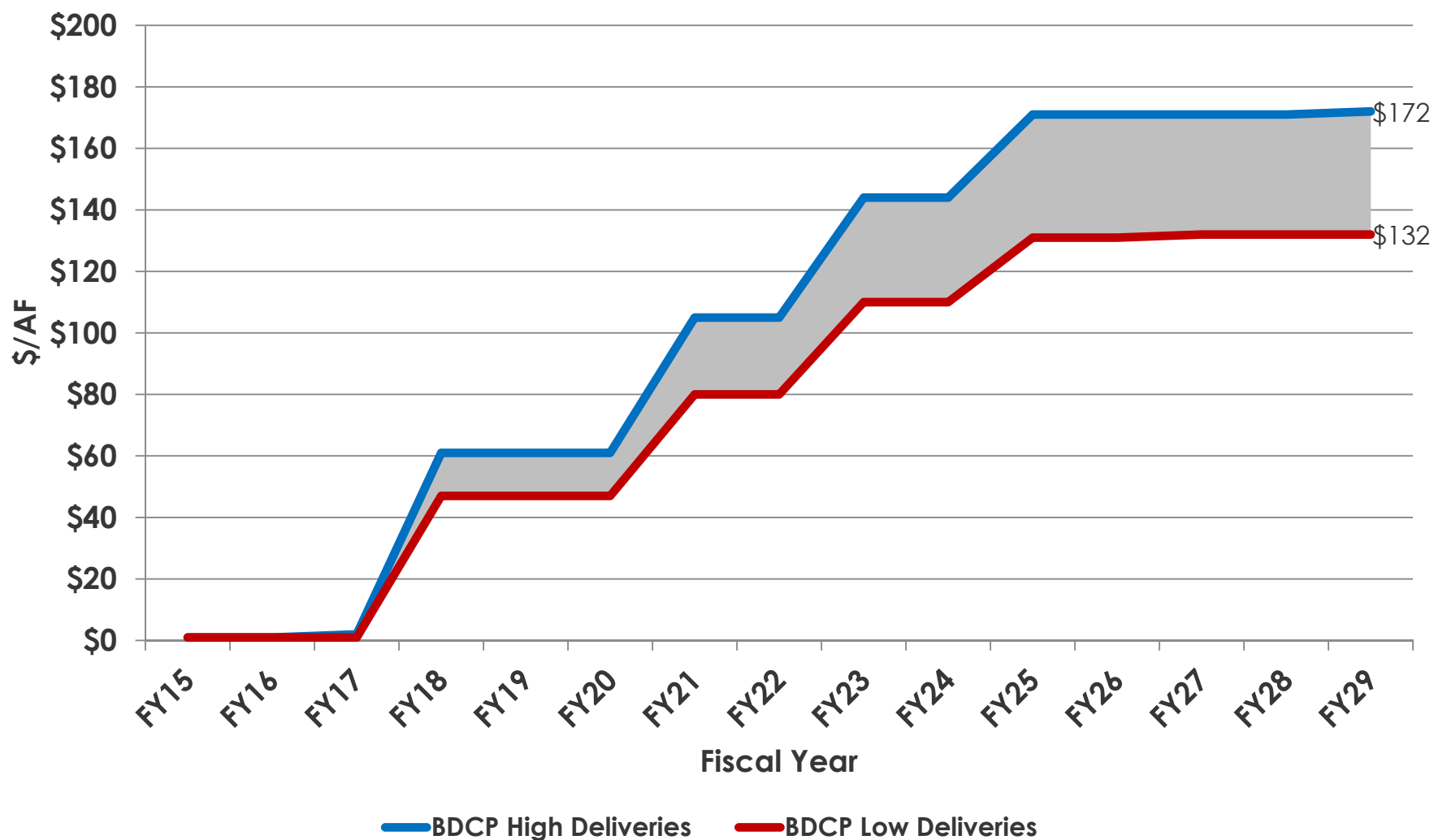
December 9, 2013

Santa Clara Valley
Water District

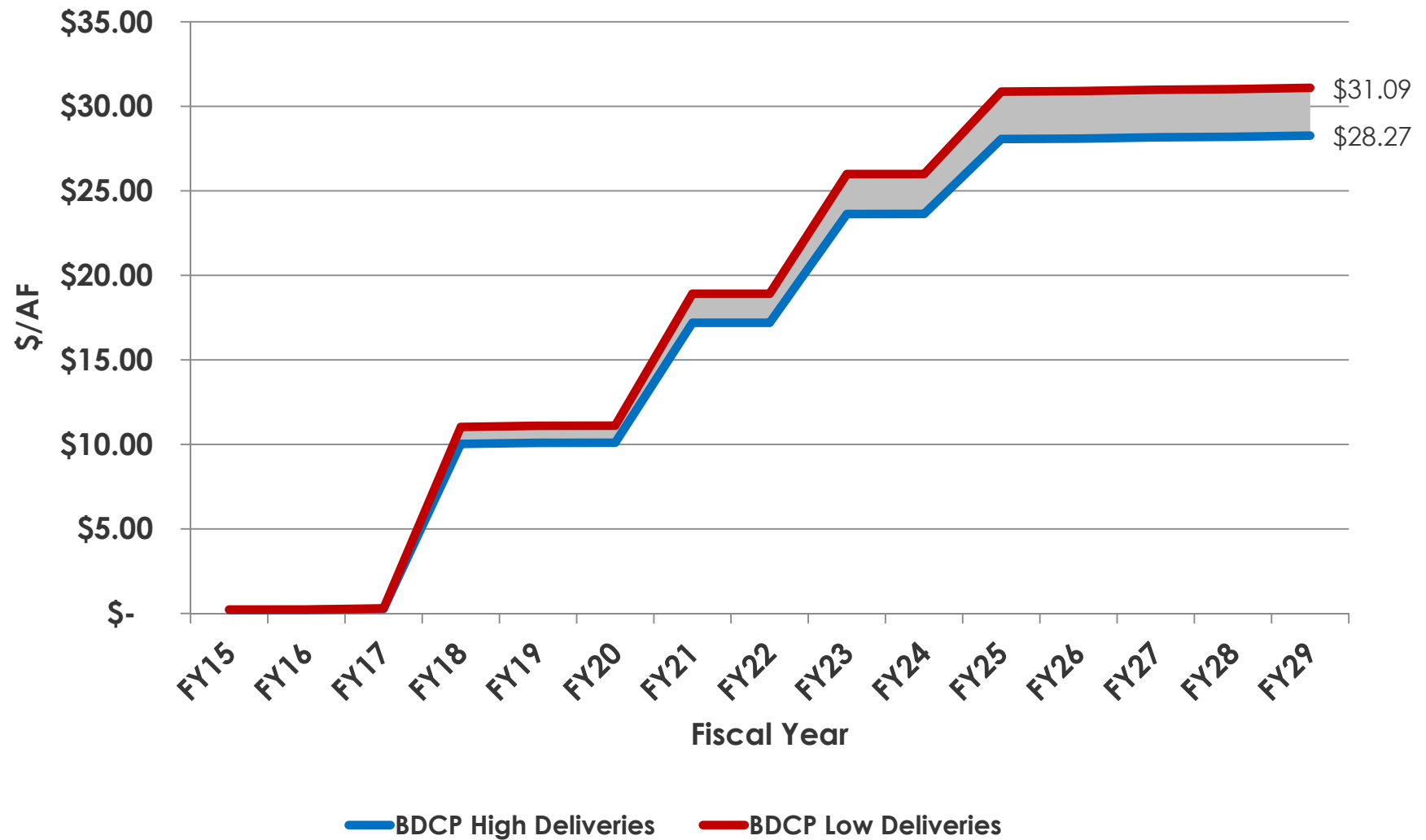


Attachment 1
Supplemental 1 of 5

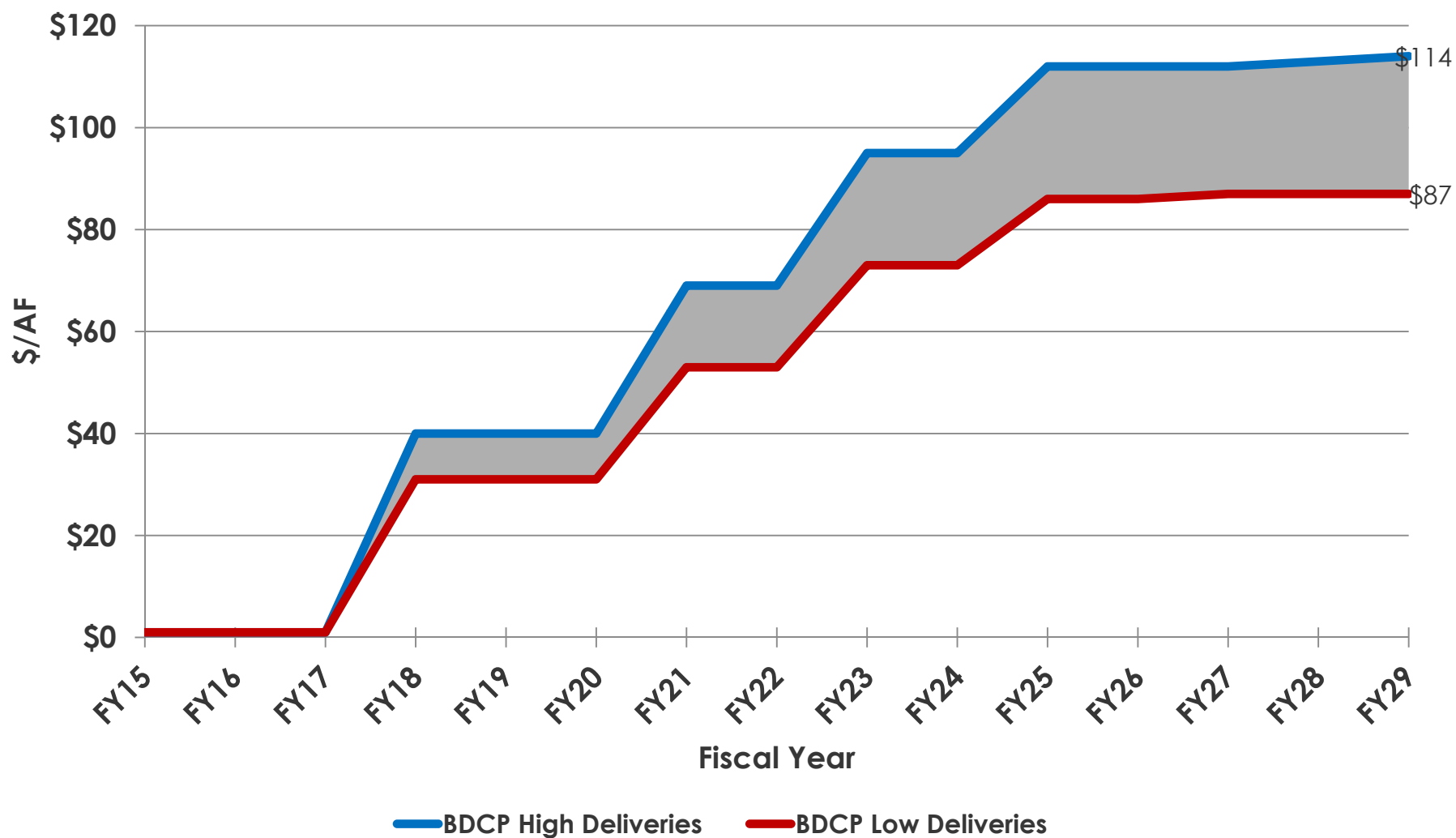
Incremental North County M&I Groundwater Charge



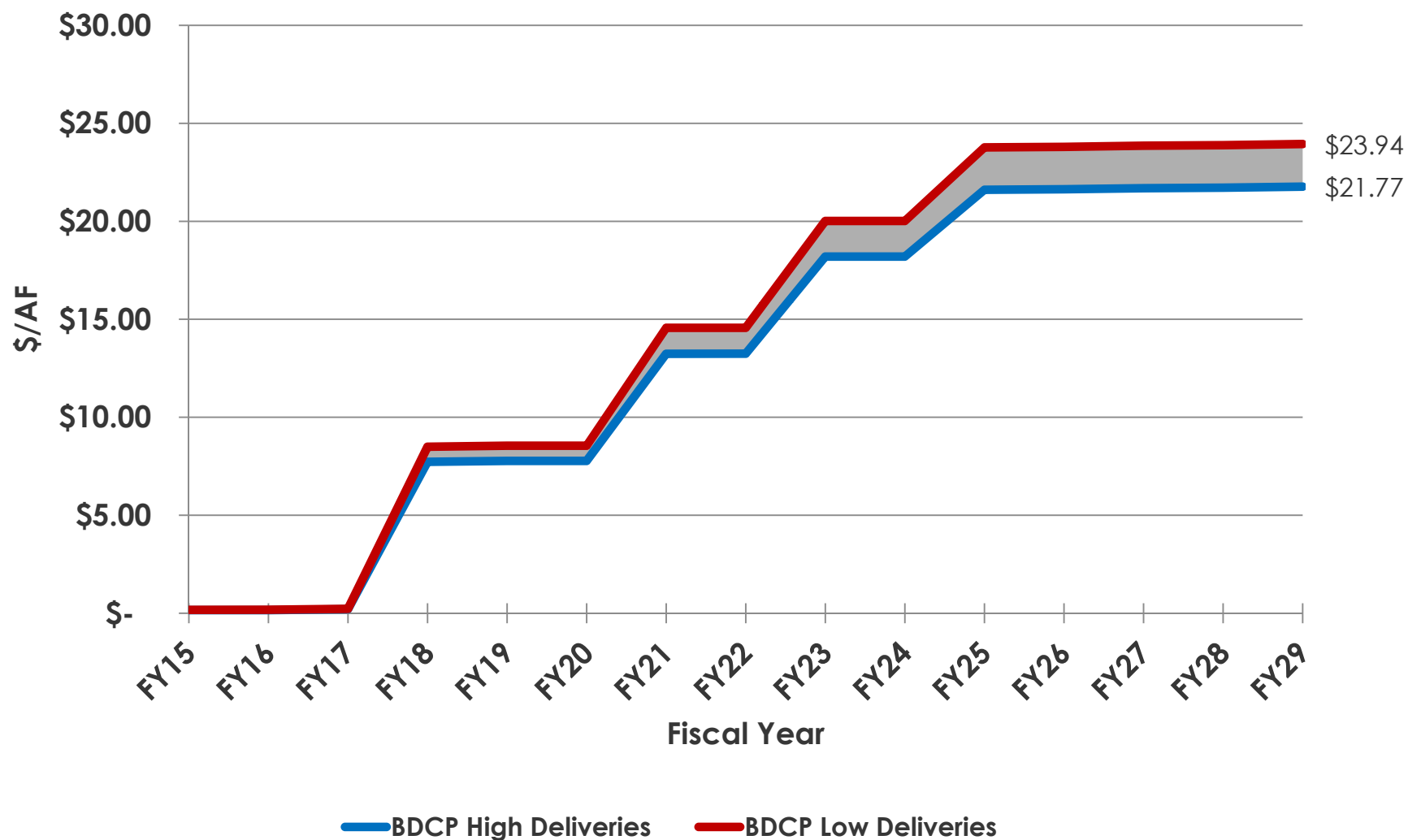
Incremental North County SWP Tax Analysis for Average Single Family



Incremental South County M&I Groundwater Charge



Incremental South County SWP Tax Analysis for Average Single Family



**Attachment 2: Previous BDCP updates and special Board meetings
on Delta planning efforts**

May 10, 2011	Board Agenda Item	Overview of Delta Issues
August 26, 2011	Board Workshop	Secretary of California Natural Resources Agency, John Laird, and several representatives of environmental groups discussed the ecosystem restoration goal of the BDCP.
October 14, 2011	Board Workshop	Deputy Secretary of the California Natural Resources Agency, Gerald Meral, and several general managers of California water agencies discussed the water supply reliability goal of the BDCP.
March 28, 2012	Board Workshop	Several elected officials and residents of Delta counties discussed the in-Delta perspective on BDCP, along with perspectives from Senior Policy Fellow at the Public Policy Institute of California, Ellen Hanak.
May 15, 2012	Board Agenda Item	Staff prepared a BDCP update following release of the preliminary administrative draft of the BDCP.
August 7, 2012	Board Agenda Item	Following the July 25 th announcement by the Governor and Obama Administration on key elements of the BDCP proposed project, staff provided an update on the Bay Delta Conservation Plan and results of an opinion survey.
February 26, 2013	Board Agenda Item	Prior to the release of the second Administrative Draft of the BDCP, staff provided an update on the BDCP and established a Board Ad Hoc Committee to assist the Board with developing policies relating to the District's engagement in the BDCP.
October 11, 2013	Board Workshop	Director of Department of Water Resources, Mark Cowin, Undersecretary of California Department of Food and Agriculture, Sandra Schubert, Administrator of NOAA Fisheries Northwest Region, Will Stelle and Economist David Sunding provided an overview of BDCP in relation to other State planning efforts and discussed the statewide economic impacts and perspective on BDCP.
November 8, 2013	Board Workshop	Department of Fish and Wildlife staff and several representatives of environmental and in-Delta interests discussed habitat restoration and conservation in the Delta and the perspectives of in-Delta users.
November 14, 2013	Board Workshop	Director of Department of Fish and Wildlife Chuck Bonham, technical experts in Delta risks, and BDCP project managers discuss Delta risks, the relevance of BDCP to Delta fisheries, and plan components and analysis.

Attachment 3
Board Policy and CEO Interpretations
Related to a Long-Term Delta Solution

Board Governance Policy provides the following guidance in addressing Delta issues related to the District's imported water supplies:

Global Policy

GP-1.1: The District will provide a healthy, clean, reliable, and affordable water supply that meets or exceeds all applicable water quality regulatory standards in a cost-effective manner. Utilizing a variety of water supply sources and strategies, the District will pursue a comprehensive water management program both within the county and statewide that reflects its commitment to public health and environmental stewardship.

Ends Policies

E-2.1: Current and future water supply for municipalities, industries, agriculture and the environment is reliable.

WS Objective 2.1.3: Protect, maintain and develop imported water.

CEO Strategy S.2.1.3.2: Aggressively pursue the Delta solution.

CEO Direction:

- D 2.1.3.2.a. The District's desired outcome is a cost-effective, comprehensive, long-term solution for the Delta that meets the water supply, water supply reliability, and water quality needs of Santa Clara County while balancing other beneficial uses and providing a sustainable Delta ecosystem.
- D 2.1.3.2.b. The District supports moving forward with environmental review and feasibility studies for a long-term Delta solution, including analyses of a dual Delta conveyance and a full range of isolated facility sizes.
- D 2.1.3.2.c. Continuing to rely solely on existing through-Delta conveyance for the District's imported water supplies is not acceptable because of the instability of existing Delta levees, underlying seismic risks, increasing threats of altered hydrology and sea level rise due to climate change, and ongoing regulatory uncertainty and concerns over the environmental health of the Delta.
- D.2.1.3.2.d. The long-term Delta solution should promote a resilient Delta ecosystem by basing all actions on sound science and addressing the full range of environmental stressors, including toxics, invasive species, and all watershed diverters.

Executive Limitations

EL-4.2: The Board Appointed Officer shall “spend in ways that are cost-efficient.”

CEO Interpretation:

- Costs of the long-term Delta solution should be allocated fairly to all beneficiaries.
- The District favors a flexible approach to cost allocation that maximizes the opportunity for discretionary allocations of cost based on incremental benefits.

EL-6.5: The Board Appointed Officer shall “protect water rights and rights of way.”

CEO Interpretation:

- Governance structures and operating agreements related to the long-term Delta solution must provide the ability to protect the value of the District's imported water assets, including water supply and banking contracts.

Attachment 4
Bay Delta Conservation Plan
Conservation Measures (CMs)

The BDCP proposed project includes 22 conservation measures designed to improve the health of the Delta ecosystem. The 22 conservation measures (“CMs”) described in the table below fall into three categories: Delta conveyance (CM 1); habitat development (CM 2-11); and measures to reduce other ecosystem stressors (CM 12-22).

CM	Description
Delta Conveyance Measure	
1	Water Facilities and Operation constructs new conveyance facilities and implements new operational criteria to improve water supply reliability and export water quality, increase operational flexibility, reduce fish entrainment and improve flow patterns.
Habitat Development Measures	
2	Yolo Bypass Fisheries Enhancement increases the frequency, duration and magnitude of floodplain inundation and improves fish passage. This measure improves spawning and rearing habitat, increases food production, and removes migration barriers.
3	Natural Communities Protection and Restoration acquires the land for conservation measures 4-11 to reverse past and eliminate future loss, fragmentation and degradation of natural communities.
4	Tidal Natural Communities Restoration restores at least 65,000 acres of tidal habitat including up to 10,000 acres of transitional uplands to accommodate sea level rise. This measure improves rearing habitat and increases food production.
5	Seasonally Inundated Floodplain Restoration restores 10,000 acres of seasonally inundated floodplain to increase the quantity and quality of rearing and spawning habitat and increase food production.
6	Channel Margin Enhancement improves channel margin habitat, for example, by replacing riprapped levees with vegetated benches to improve habitat conditions along migration corridors.
7	Riparian Natural Community Restoration restores 5,000 acres of native riparian forest and scrub that provides habitat for over 20 covered plant and wildlife species. This measure also provides cover, food and shade for migrating salmonids.
8	Grassland Natural Community Restoration reconnects fragmented patches of grassland and provides upland habitat adjacent to riparian and tidal communities for wildlife foraging and shelter including riparian brush rabbit and San Joaquin kit fox.
9	Vernal Pool and Alkali Seasonal Wetland Complex Restoration protects and restores vernal pools and alkali seasonal wetlands benefits for California tiger salamander and several species of shrimp, as well as several covered plant species.
10	Nontidal Marsh Restoration restores 1,200 acres of nontidal marsh foraging and breeding habitat for giant garter snake and western pond turtle and creates 320 acres of managed wetlands for greater sandhill crane roosting.
11	Natural Communities Enhancement and Management measure covers preparation and implementation of management plans for the previous 8 habitat restoration measures
Other Stressor Reduction Measures	
12	Methylmercury Management minimizes conditions that promote methylmercury production and reduces the potential for methylmercury to enter the food web.
13	Invasive Aquatic Vegetation Control takes actions to prevent the introduction and control the spread of invasive aquatic vegetation that provides habitat for predatory fish,

CM	Description
	displaces native fish, reduces water flow and turbidity which some native fish need to avoid predators and increase their own feeding success.
14	Stockton Deep Water Ship Channel Dissolved Oxygen Levels shares in funding the continued operation and maintenance of aeration facilities in the Stockton deep water ship channel to reduce salmon and steelhead migration delays. This may also benefit white sturgeon.
15	Localized Reduction of Predatory Fish reduces populations of nonnative predatory fish at predation hot spots to increase survival of migrating juvenile salmonids.
16	Nonphysical Fish Barriers uses a combination of light, sound and bubbles to redirect juvenile salmonids away from channels with higher mortality rates or direct them to channels with lower mortality rates.
17	Illegal Harvest Reduction provides funding to increase enforcement of fishing regulations to reduce the illegal harvest of salmonids and sturgeon.
18	Conservation Hatcheries develops a conservation hatchery to house genetically managed refugial populations of delta and longfin smelt and to provide a source of these smelt for experimentation.
19	Urban Stormwater Treatment provides funding for grants to implement stormwater treatment measures that improve water quality conditions for covered species.
20	Recreational Users Invasive Species Program provides funding for education and outreach as well as watercraft inspections to prevent the introduction of new invasive species and reduce the spread of existing invasive species by recreational users.
21	Nonproject Diversions provides funding to eliminate the diversions with the greatest risk to covered species.
22	Avoidance and Minimization Measures develops and implements measures for each BDCP project to avoid or minimize incidental take of covered species and minimize impacts on natural communities.

Attachment 5

Effects of Past Regulations on SWP and CVP Water Deliveries

Figures 1 and 2 illustrate the effect of regulations on availability of Central Valley Project (CVP) and State Water Project (SWP) water supply over time.

Figure 1. Long-term average SWP Table A allocations.

(Source: T. Erlewine, State Water Contractors, 11/26/2013).

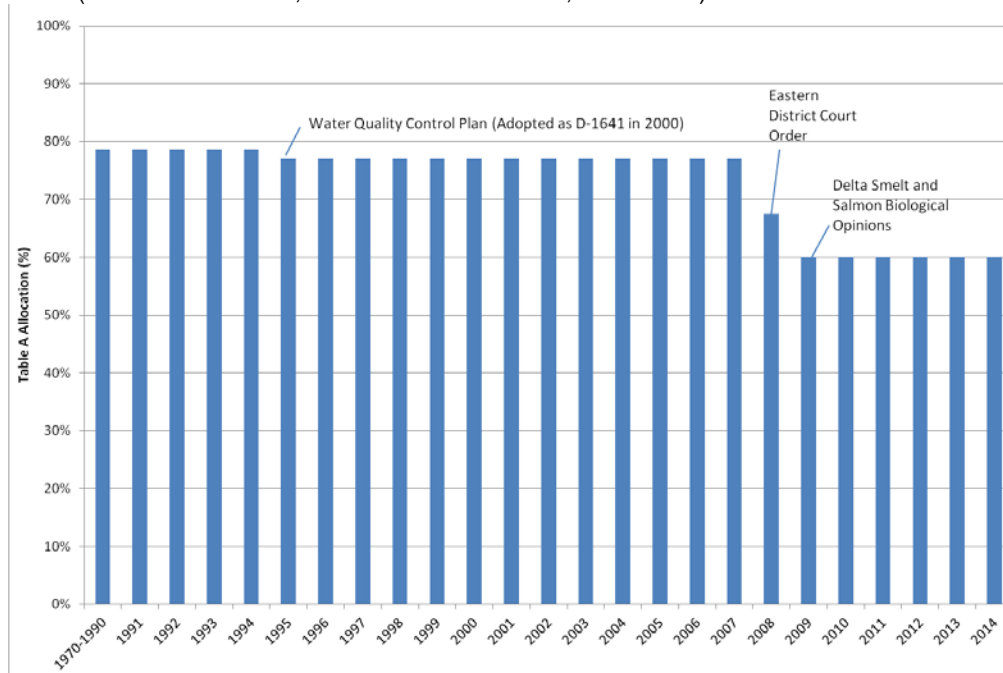
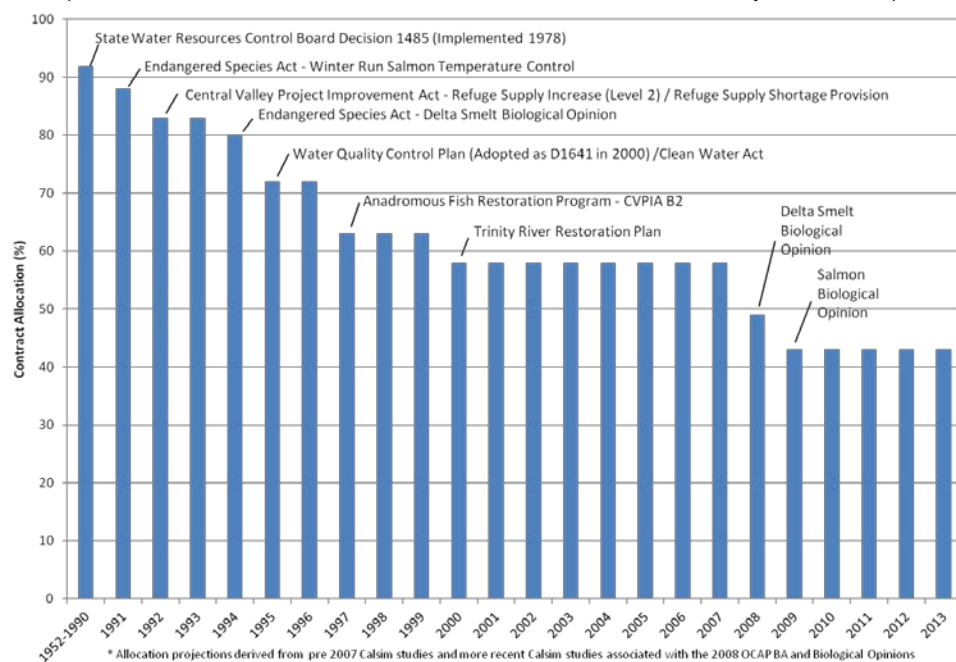


Figure 2. Long-term average CVP South of Delta Ag service contract allocations

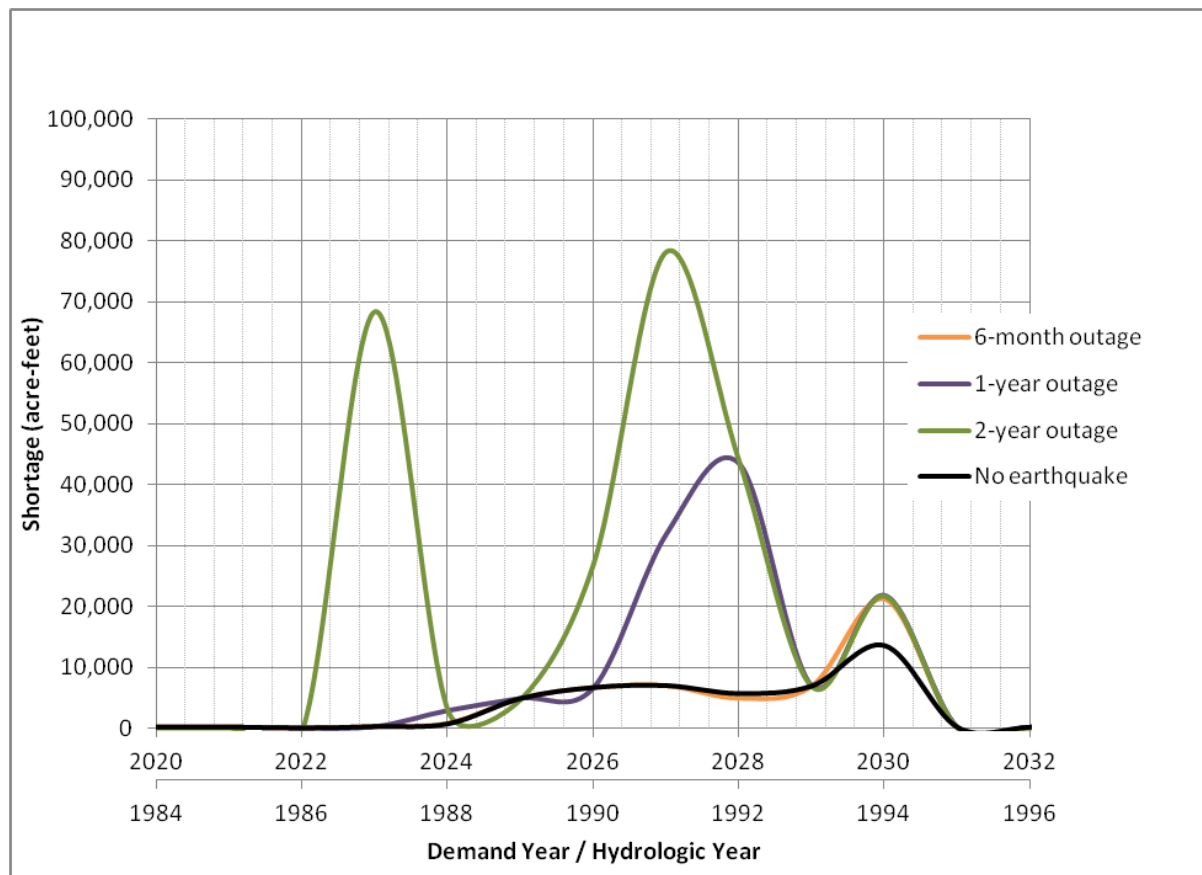
(Source: T. Boardman, San Luis & Delta-Mendota Water Authority 11/25/2013).



Attachment 6. Water Shortages in Response to Delta Outage

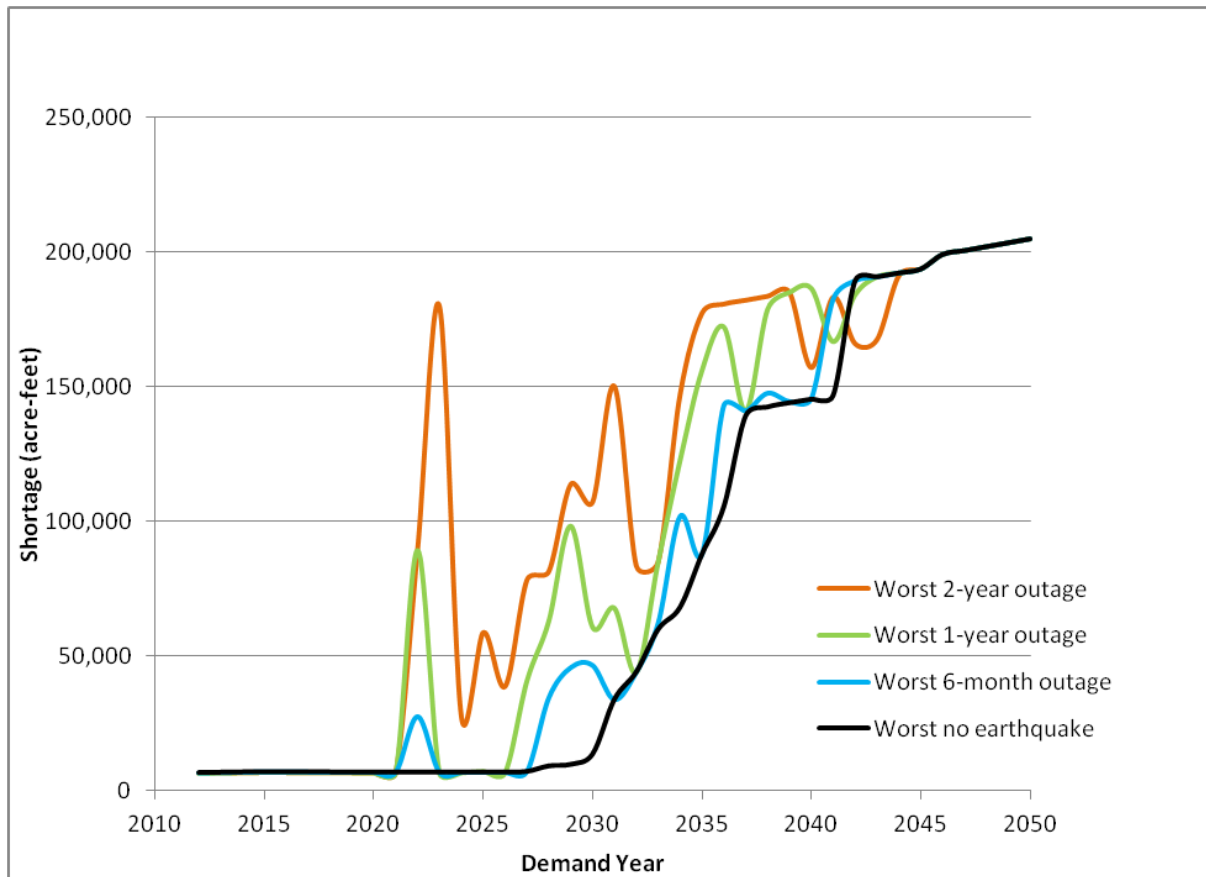
Staff evaluated shortages that Santa Clara County could experience if an earthquake resulted in cessation of exports in demand year 2022. Modeling analysis was performed to evaluate the shortages that could occur if Delta supplies were cut off completely for 6 months, 1 year, or 2 years. Cycles of 82 hydrologic sequences over a 39 year period (2012-2050) were evaluated. Figure 1 illustrates the shortages that would result if a multiple levee failure event occurred at the beginning of a 6 year drought similar to the one that occurred from 1987-1992. As can be seen, the impact from a major levee failure event can extend for a number of years beyond the time levees are fixed and State and federal project operations resume normal deliveries. The County's water reserves could be depleted, and if dry conditions continue after the event is over, water supplies may be insufficient to replenish those reserves for a number of years.

Figure 1. Total Shortages, Earthquake in 2022 Demand Year / 1986 Hydrologic Year.



The worst shortage that can occur in each year following the event is captured in the envelope of maximum shortages shown in Figure 2. Unlike the data shown in Figure 1, Figure 2 does not show consecutive shortages; it shows the worst shortages among the 82 sequences for each individual year.

Figure 2. Envelope of maximum shortages caused by a cessation of Delta exports.



Attachment 7 Incremental Impacts of BDCP on Monthly Costs per Average Household

The total impact of both District groundwater charges and tax increases in terms of monthly costs per household is shown in Figures 1 and 2.

Figure 1. Incremental North County Monthly Impact to Average Household.

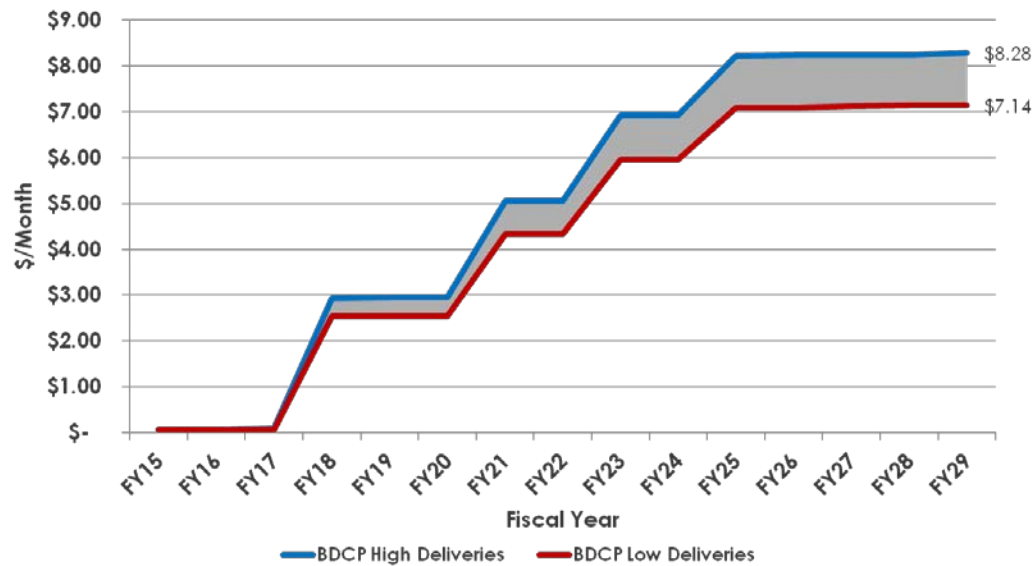


Figure 2. Incremental South County Monthly Impact to Average Household.

