

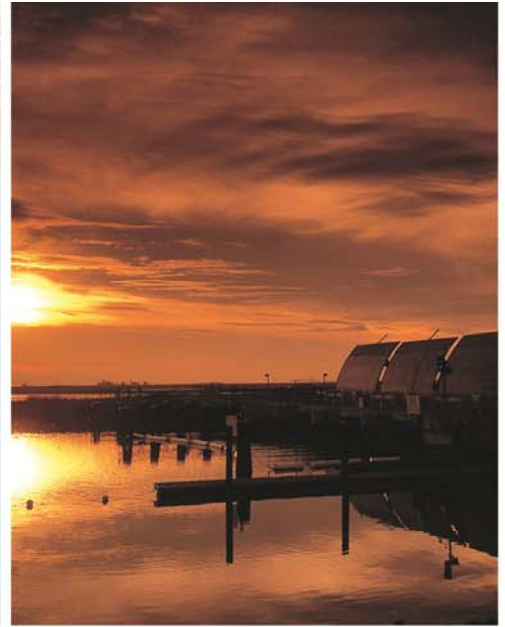


MODERNIZING THE SYSTEM: CALIFORNIA WATERFIX
INFRASTRUCTURE . OPERATIONS . FINANCE AND COST ALLOCATION



A California WaterFix Dialogue:
QUESTIONS AND ANSWERS

SEPTEMBER 2017



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INTRODUCTION

For more than a decade, Metropolitan and other public water agencies throughout California have been working toward a solution to address problems in the Sacramento-San Joaquin Delta that are reducing the reliability of water deliveries and contributing to a declining ecosystem. About one-third of the water that flows out of taps in Southern California comes from Northern California watersheds. Reliance on these supplies will continue even as our region makes advances in conservation and build new local supplies.

California WaterFix is the product of rigorous review, planning, scientific and environmental analysis and unprecedented public comment, including:

- Significant planning work for the design and construction of the project to address public comment about impacts to Delta communities and providing appropriate risk management strategies.
- Extensive analysis by water and wildlife agencies for conveyance system improvements and an operations framework that will improve water supply reliability, enhance fishery habitat and address climate change impacts.
- Development of project costs, cost allocation information and financing approaches.

Over the past several months, Metropolitan staff has provided detailed information on these and other issues in a series of policy white papers and other outreach materials, and made more than 100 presentations to elected officials, community leaders, businesses, water agencies and other organizations who have an important voice in the water policies and decisions that affect them. That essential public dialogue has included significant discussion, questions and responses about California WaterFix, its operations, construction, benefits and costs.

This document includes many of the most commonly asked questions about the project with responses from Metropolitan staff who are subject matter experts on a wide range of water management and planning, system operations, Delta science, construction, financing, and other related issues. These questions are organized into the following sections:

- Benefit Analysis and Assumptions
- Cost/Cost-Effectiveness
- Environmental Stewardship/Sustainability
- Equity
- Governance/Implementation
- Investment in Local Resources
- Uncertainties
- Other
- Comparison of Economic Studies



California WaterFix Benefit Analysis and Assumptions

What are the benefits of the California WaterFix?

Recognizing the significance of the State Water Project (SWP) supply, and the need to modernize the state’s conveyance system, Metropolitan’s Board of Directors adopted the Delta Action Plan and Delta Conveyance Criteria in June 2007 and September 2007, respectively. As explained in the second White Paper, “Modernizing the System: California WaterFix Operations,” the operational aspects of California WaterFix meet the board’s adopted Delta Conveyance Criteria by providing water supply reliability and improved water quality in an environmentally responsible manner.

Table 5 of White Paper 2 summarizes the benefits to Metropolitan:

TABLE 5: DELTA CONVEYANCE CRITERIA

Board-Adopted Delta Conveyance Criteria	California WaterFix
Enhance Ecosystem Fishery Habitat Throughout Delta	<ul style="list-style-type: none"> Provides extensive restoration of tidal marshes and channel margin habitat.
Allow Flexible Pumping Operations in a Dynamic Fishery Environment	<ul style="list-style-type: none"> Three new intakes in the northern Delta, along with the existing State Water Project intake in southern Delta, create the necessary flexibility to avoid conflicts between different fishery needs. The ability to manage the system using north and south Delta diversion locations, allow for improved flow patterns in the Delta to benefit fish during fish sensitive times.
Provide Water Supply Reliability	<ul style="list-style-type: none"> The California WaterFix proposal is consistent with Metropolitan’s IRP.
Improve Export Water Quality	<ul style="list-style-type: none"> Water quality from new northern Delta intakes is improved; salinity, for example, is improved approximately 20 percent.
Reduce Seismic Risks	<ul style="list-style-type: none"> Twin tunnels to convey water from northern Delta would protect future critical supply needs from natural disasters.
Reduce Climate Change Risks	<ul style="list-style-type: none"> Intakes in northern Delta are upstream of predicted long-term salinity intrusion due to climate change.



California WaterFix Benefit Analysis and Assumptions

Do costs follow benefits and “beneficiary pays” principle? What is the basis for the 45/55 CVP/SWP cost split?

As explained in the third White Paper, “Modernizing the System: California WaterFix Finance and Cost Allocation,” the costs of California WaterFix follow water supply benefits and the beneficiary pays principle. For the SWP 55 percent share of costs, California WaterFix would be treated like any other major improvement to the SWP system. Under the California Water Code, the Department of Water Resources (DWR) is responsible for the construction, maintenance, and operation of the SWP and for securing funding for related costs. The SWP share of California WaterFix costs would be paid by the SWP contractors in accordance with the long-term DWR State Water contracts.

SWP contractors must make fixed cost payments regardless of the amount of SWP water actually received. The State Water Contracts require payments to DWR in return for participation in the SWP storage and conveyance system. All SWP contractors must make payments according to their respective Table A contract amounts and for the portion of the SWP conveyance system needed to deliver their contracted water. The cost of power to deliver water varies with the amount of water delivered.

Therefore, each SWP contractor’s share of the costs of the SWP, including California WaterFix, are in proportion to their respective participation rights, the beneficiaries pay for their proportionate share of the new infrastructure.

With respect to the Central Valley Project (CVP) 45 percent share of costs, CVP contractors who commit to paying their respective shares of the cost will receive proportionate benefits, consistent with the beneficiary pays principle.

The CVP/SWP split is based on the historic water split in deliveries between the two projects, which in general has been approximately 45 percent CVP and 55 percent SWP. San Luis Reservoir is also split 45 percent CVP and 55 percent SWP.

What is the basis for Metropolitan’s estimate of water supply benefits of California WaterFix? Why don’t Metropolitan and other public agencies use the CEQA water yield baseline to estimate water supply benefits of California WaterFix?

In order to reasonably estimate what future water yields with and without California Water Fix would be, Metropolitan started with DWR’s modeling of future conditions and regulations with California WaterFix as modeled for the EIR/EIS. It then compared future water yield with modeling of the identical set of conditions but without California WaterFix. This is an appropriate comparison because it assumes consistent future conditions with and without California WaterFix. This modeling was also published by DWR in its 2015 Delivery Capability Report. It is reasonable to use the same modeling of anticipated future SWP reliability that DWR published in its 2015 Delivery Capability Report, which are the same modeled future conditions Metropolitan relied on in its 2015 Update to the IRP.



California WaterFix Benefit Analysis and Assumptions

Consistent with the state's CEQA Guidelines, DWR as the lead agency evaluated the potentially significant environmental impacts of California WaterFix with reference to the existing conditions baseline, which includes regulations that were in place at the time it issued the Notice of Preparation for the Environmental Impact Report in February 2009, along with regulations in the NMFS biological opinion that became operative shortly thereafter. This makes the CEQA existing conditions environmental baseline an inappropriate basis of comparison with regard to comparing future SWP water supplies with and without California WaterFix because the underlying conditions and regulations do not allow for an apples-to-apples comparison of future SWP water supplies with and without California WaterFix.

What percentage of export water flow is diverted at the northern intake? Will that reduce the amount of water flowing out of the Delta? Will this result in greater salinity intrusion into the Delta?

Operating criteria for California WaterFix will define the amount of water that can be diverted from the northern intakes based on a number of different conditions. Chief among these are what is known as by-pass flow criteria, which restrict diversions at lower Sacramento River flows but allow for greater diversions as river flows increase. Thus, during low river flow conditions, the percentage of export water diverted from the northern intakes will generally be lower than from the south, and during high river flows, the percentage from the north will generally be higher than from the south. On a long-term average basis, the split between north and south diversions is expected to be roughly 50/50. For the average of wet years, the amount from the northern intakes will be closer to 60 percent. For dry and critical years the average from the northern intakes will be closer to 30 percent.

Water diverted from the northern intakes will obviously reduce water flowing in the Sacramento River, but it will not necessarily reduce the amount of water flowing out of the Delta, and thus will not have an appreciable effect on seawater salinity intrusion. The total water flowing through the Delta will meet all applicable existing and new regulatory requirements to protect beneficial uses, including fish and wildlife, Delta agriculture, and in-Delta municipal and industrial uses. Compliance with D-1641 salinity standards is a requirement of the SWP and CVP water rights permits.

Does the project require new storage to be effective?

The modeling analysis shows that California WaterFix is effective in improving the operations and yield of the SWP without assuming any new storage. With California WaterFix, Metropolitan will be able to better utilize its historic investment in its groundwater and surface storage. Additional system storage elsewhere in the state, e.g., Sites Reservoir, would further increase the benefit of California WaterFix.

Do the final biological opinions make a difference to the analysis of the potential water yield?

No. The “Modernizing the System: California WaterFix Operations” White Paper was informed by the Recirculated and Final EIR/S, revised biological assessment, and biological opinions. The biological assessment was amended earlier this year but those edits did not change the modeling approach or water supply results reported in the Final EIR/S. The biological opinions analyzed the project described in the amended biological assessment and did not change the proposed initial California WaterFix operation

Can the SWP Contractors opt out of their shares? If Metropolitan will pick up transferred shares from others, how will those be paid? Will Metropolitan have to guarantee to accept transfer or purchase of unwanted allocations in order to finance the project?

While all SWP contractors south of the Delta would participate in California WaterFix, some contractors may wish to balance the increased reliability of the project against its increased costs. This would be accomplished by adjusting their contractual rights to Table A water through voluntary agreements with other SWP contractors, consistent with the tools and flexibility available under the existing SWP long-term contracts. The mechanisms being explored include permanent Table A transfers, multi-year transfers, and water banking. Payment would be on terms as negotiated by the SWP contractor parties. While staff has been engaged in constructive discussions with other SWP Contractors to explore such options, no authorization to enter into a transfer or banking agreement is being requested at this time. Metropolitan’s Board is being asked only to consider its action consistent with Metropolitan’s 25.9 percent share of overall project costs.

Why are the California WaterFix benefits different in the 2015 IRP and the 2015 UWMP?

The long term projected deliveries from the SWP with the California WaterFix are identical in both the IRP and the UWMP, 1.213 million- acre-feet on average.

The difference in the reports comes from what is reported as additional water supply due to California WaterFix. In the 2015 IRP it was assumed that, with no action to address long-term flow and fisheries issues through a long-term commitment to California WaterFix, more stringent flow regulations would be established for fishery protection resulting in SWP supplies of 837,000 acre-feet on average between 2020 and 2030. In 2030, the difference between this condition and with California WaterFix was shown as 376,000 acre-feet. In the 2015 UWMP, it was assumed that adaptive management and collaborative science actions would be established prior to the implementation of California WaterFix resulting in less stringent flow regulations resulting in SWP supplies of 984,000 acre-feet on average. In 2030, the difference between this condition and with California WaterFix is 229,000 acre-feet. The 2015 UWMP shows a total of 248,000 acre-feet of Delta Improvements in 2030, this number includes 19,000 acre-feet of improvement in Desert Water Agency and Coachella Valley Water District supplies in addition to the 229,000 acre-feet described above.



California WaterFix Benefit Analysis and Assumptions

What assumptions are being made by Metropolitan in calculating the cost impacts to member agencies?

Cost analysis on California WaterFix has been provided with all costs (capital, O&M, and mitigation). In the analysis, costs are assumed to be recovered through the volumetric water rate with a total sales assumption of 1.7 MAF. None of the costs were estimated as being recovered through fixed charges like property taxes. Member agency impacts from the cost of California WaterFix are thus dependent on their total consumption of Metropolitan services. Household impacts shown by Metropolitan were estimated by spreading the residential proportion of the total cost over the current number of households in the service area. Actual household impacts will be a function of the particular household's water use and the proportion of services that their retail water purveyors purchase from Metropolitan.

Note that the Department of Water Resources has not yet determined what proportion of the facilities will be classified as Conservation and Transportation within the SWP system.

On slide 30 of "Modernizing the System: California Water Fix Operations" White Paper, in estimating the water supply benefit, does the analysis assume that the north Delta diversions are always operated at full capacity of 9,000 cfs?

No. The modeling analysis is based on a range of hydrologic conditions that includes river flows. In turn, the river flows dictate the amount that would be diverted from the north Delta intakes, ranging from 0 to 9,000 cfs. Thus, there is no explicit assumption that river flows and operations operate at the upper end of its range in order to generate the modeled results that have been shown.

Are the assumed operations modeled out to 2040 to correspond with the IRP?

The IRP modeling projections through year 2040 use DWR modeling of SWP supplies that incorporate future climate change, population, and land use conditions. For the California WaterFix Biological Assessment, DWR developed modeling studies that reflect 2030 conditions. These studies are used to represent future conditions in the early long-term time period.

Can we meet the water quality goal of 500 TDS without a reliable SWP supply?

Metropolitan currently meets its regional water quality salinity goal of 500 total dissolved solids (TDS) by blending lower salinity State Water Project supplies with the higher salinity Colorado River Aqueduct supplies. To meet these blending goals, on average Metropolitan needs about 950,000 acre-feet of SWP supplies. Without the water supply reliability improvements provided by the California WaterFix, Metropolitan will be less likely to meet this salinity goal.



California WaterFix Cost/Cost-Effectiveness

Why are there so many different cost estimates? Which one is right?

The cost estimates for the project were developed by industry professionals after a rigorous review process. DWR used the most conservative estimate for project planning purposes (i.e., the highest cost estimate). This amount was adopted in 2014 by DWR and was later updated to 2017 dollars for ease of consideration. These estimates were summarized in the Modernizing the System: California WaterFix Finance and Cost Allocation white paper as follows:

Capital	State's Estimate (2014 \$)	2017 \$ ¹
Conveyance Facility	\$14.9B	\$16.3B
Mitigation	\$.4B	\$.4B
Total Capital	\$15.3B	\$16.7B

O & M	2014 \$	2017 \$
Conveyance Facility ²	\$40.3M	\$44.1M
Mitigation	\$18.6M	\$20.3M
Total O&M (Annual)	\$58.9 M/YR	\$64.4 M/YR

1. Based on annual escalation rate of 3 percent
2. When project is fully operational

What changed from the 2013 estimated household impact of \$5 per month to current estimates?

The 2013 estimated impact of the California WaterFix was based on similar capital and O&M costs but was based on a capital financing rate of 6.135%, a Metropolitan project share of between 25 percent and 30 percent and household water use of 20 hundred cubic feet. This resulted in an average household impact from \$3 to \$4 per month which was rounded up to \$5, as a conservative estimate.

The current estimate assumes capital financing rates of between 4 percent and 8 percent and a Metropolitan project share of 25.9 percent. Also the average household water use of 20 hundred cubic feet was a high assumption for household consumption. As such, the average household impact calculation has been revised and is now based on the number of households in the service area (see details on page 14 of California WaterFix "Modernizing the System: Financing/Cost Allocation" White Paper). The current estimated average household impact for the California WaterFix is \$2 to \$3 per month.

Do the water user and household costs include the financing costs, interest rates and potential cost overruns?

Yes. The cost estimates include all financing costs (principle and interest) and include contingencies to cover cost adjustments (36 percent on the water facility, 20 percent on land acquisition and 35 percent on the cost of environmental mitigation).



I'm hearing different estimates of project costs in the media and the internet. What's the cost of California WaterFix?

The overall costs for California WaterFix's proposed infrastructure improvements and environmental mitigation are described in the "Modernizing the System: California WaterFix Infrastructure" White Paper. These materials are drawn from cost estimates developed by DWR and rigorously analyzed by industry professionals.

These cost estimates reflect a significant engineering analysis that formulates and defines the design criteria for each major component of California WaterFix, resulting in the optimal alignment and other features. Based on these estimates, California WaterFix's capital costs are estimated to total \$14.9 billion in 2014 dollars. For White Paper 3, the cost estimates have been converted to 2017 dollars based on an annual escalation rate of 3 percent. In 2017 dollars, the capital cost for California WaterFix is estimated to be \$16.3 billion, excluding mitigation costs.

Will funding California WaterFix preclude Metropolitan and its member agencies from investing in the kinds of local water supply actions identified in the IRP and Metropolitan's and its member agencies' UWMPs?

The IRP has been and will continue to be a diversified and comprehensive approach to developing regional water supply reliability. Metropolitan, its member agencies and local agencies have made historic regional investments in conservation and local resources developments since the inaugural IRP in 1996, all while making multi-billion dollar regional investments in Metropolitan's storage portfolio, treatment and distribution system. California WaterFix is part of the overall regional strategy of stabilizing imported supplies and building increased water use efficiency and local supplies, and investments will continue to be pursued in each of the specified areas.

When do the costs for California WaterFix start showing up in the water bill?

If California WaterFix is approved by Metropolitan's Board and other public water agencies and the project starts in 2019, the costs for the California WaterFix will be incorporated in Metropolitan's rates and charges as soon as 2019. The initial impact will be very small and the full impact of the project will ramp up slowly and peak around 2033, when the project is completed and fully operational.

California WaterFix costs make up what percent of Metropolitan's 4.5 percent projected annual expected rate increase?

Metropolitan's Ten-Year Financial Forecast, produced as part of the fiscal year 2016/17 and 2017/18 Biennial Budget, estimated annual rate increases of 4.5 percent for 2019 through 2026, which included cost estimates for California WaterFix. The California WaterFix makes up 1 percent to 2 percent of the annual increases.



Where did the \$67 billion figure come from?

The San Jose Mercury News reported in December 2013 that a staff member of the Westlands Water District and a Citigroup bond consultant told the Westlands board that including long-term financing, the project would cost between \$51 billion and \$67 billion. The Westlands presentation looked at three scenarios. Each considered bonds issued for 30 years at 5 percent interest. They pegged the cost to build the tunnels at \$18 billion, and overall cost with financing at \$42 billion to \$58 billion. With the \$9 billion more in wetlands restoration, monitoring, and other costs included, the grand total is \$51 billion to \$67 billion.

These high cost scenarios are the result of using a costly financing technique called capitalized interest. When interest is capitalized, no interest payments are made but instead the interest charges are added to the principal balance of the loan. Due to the very long fifteen year construction period of California WaterFix capitalizing interest can substantially increase the cost of the project. As such, Metropolitan does not support capitalizing interest. Metropolitan's estimates for California WaterFix are based on financing with traditional, level annual debt service with no interest or principal deferral during construction.

What are the impacts when financing capital with 30-year term bonds?

Metropolitan's base case estimate for California WaterFix is based on financing with 40-year fixed rate bonds at an interest rate of 4 percent. When the project is fully operational this results in a Metropolitan cost impact of 13 percent and an average household impact within Metropolitan's service area of \$1.90 per month. See White Paper #3 for full details.

If however the project was financed with 30-year fixed rate bonds at an interest rate of 4 percent, Metropolitan's cost impact would increase to 15 percent and the average household impact would increase to \$2.20 per month.

What is included in the capital cost estimate? Do DWR's California WaterFix cost estimates include the cost of CCWD settlement or additional tidal marsh required in the biological opinions?

The capital cost estimate includes facility construction; program management, construction management and engineering; land acquisition; mitigation; and contingencies. Contingency as a percent of construction was established at 36 percent, which is appropriate for the level of design completed for the California WaterFix to date. Contingency as a percent of environmental mitigation was established at 35 percent. The cost of the CCWD settlement, as well as other future settlements or such things as additional, unanticipated costs of tidal marsh habitat or other additional mitigation requirements are covered within the overall contingencies contingency.

Is investment in local resources more cost effective than California WaterFix?

Developing new local supplies is an essential part of Metropolitan's IRP and local supplies benefit by the lower salinity water that the SWP provides as compared to imported Colorado River supplies.

New local supplies are expected to be much more costly to develop than California WaterFix. There is no savings if Metropolitan does not invest in California WaterFix. Instead, to meet the region's reliability goals, the region would need to spend two to three times more, based on our analysis of existing local supply projects and those that have been evaluated to date.

In addition, local water supplies are not immune from future risks and uncertainty, including changing hydrology and regulatory and permitting constraints.

The Operations White Paper and the Finance and Cost Allocation White Paper collectively showed the range of costs for an approximate 25.9 percent share of the costs and total water supply from a system with California WaterFix. Surveyed information from the 2015 IRP Update from the member agencies showed that the ranges of cost to develop specifically identified future projects in distributed storm water capture, recycled water and seawater desalination are two or more times the cost of California WaterFix (annual and per household). In addition, the investment in California WaterFix will make continued investment in local supplies more viable. The State Water Project with California WaterFix will play a role in sustaining the groundwater supplies of southern California through the replenishment and recharge of higher quality and more reliable water supply. The higher quality imported water also enables blending with Colorado River supplies to enable more efficient reuse of water through recycled water projects as it is easier to treat and allows for multiple treatments than more highly saline supplies.

Will the project disproportionately impact fixed-income and low-income households?

No. California WaterFix is favorable for fixed- and low-income households.

First, California WaterFix is more cost-effective than other local supply alternatives. A comparison of household impacts showed that California WaterFix would add \$2 to \$3 per household per month in the service area. Providing a similar level of water supply reliability with recycled water or seawater desalination would add \$5 to \$7 per month to those same households, thus California WaterFix will result in a savings of \$3 to \$5 per household per month.

Second, California WaterFix will help sustain the agricultural industry in California, resulting in more stable food prices in the future.

Third, California WaterFix will help to sustain and grow California's economic base. A reliable water supply is tied to a thriving economy and a thriving economy provides jobs and economic welfare to the state.



Instead of building a twin-tunnel California WaterFix project, would it be better to engage in a scaled-down project?

The California WaterFix is already a scaled-down project relative to the original design, and has been sized in a manner intended to meet regulatory requirements, including the ESA and CESA. The EIR/EIS evaluated even smaller-scale conveyance alternatives consisting of only one 3,000 cfs intake. Under this alternative, the limited ability to divert water in the north Delta would be greatly reduced and approximately 75 percent of Delta exports on a long-term average basis would continue to be diverted from the south Delta intakes. This level of dependence on south Delta intakes would greatly reduce operational flexibility and reliability, and reduce the ecological benefits of the project. Continued heavy reliance on the south Delta pumps would also leave the SWP more vulnerable in the event of levee failures from a seismic event, and less able to adapt to the effects of climate change.

How will environmental mitigation be funded and implemented?

Environmental mitigation required for California WaterFix will be funded by the public water agencies along with all other capital, operations and maintenance project costs, and is already included in the cost estimate. The cost estimate for environmental mitigation includes a 35 percent contingency.

Environmental mitigation for temporary and permanent impacts of construction impacts will be implemented in step with construction impacts, consistent with DWR's mitigation monitoring and reporting program (MMRP) and the requirements of the biological opinions and California Endangered Species Act incidental take permit. While DWR is ultimately responsible for ensuring implementation of the MMRP, the Delta Conveyance Design and Construction Joint Powers Authority (DCA) will be responsible for planning, land and conservation easement acquisition, and implementation, monitoring and reporting of mitigation measures during construction. After the DCA sunsets after construction and commissioning is completed, DWR, as the owner/operator, will be responsible for ensuring that any remaining monitoring and reporting requirements are met.

How does California WaterFix fit in with California EcoRestore?

California WaterFix and California EcoRestore are parallel state efforts intended to complement one another, and together advance the state's coequal goals for the Delta of reliable water supplies and restoration, enhancement and protection of the Delta ecosystem. Governor Brown has affirmed the state's commitment to furthering large-scale habitat restoration in the Delta in a separate program called California EcoRestore. While DWR is responsible for implementing California WaterFix, and that project includes habitat restoration as mitigation for construction and operational impacts, California Natural Resources Agency is tasked with implementing California EcoRestore in coordination with state and federal agencies to advance the restoration of at least 30,000 acres of habitat by 2020, including specific goals for restoration or enhancement of tidal wetlands, floodplain, upland, riparian, and fish passage improvements to benefit native species that spend all or part of their life cycles in the Delta.



More details on the relationship between California WaterFix, California EcoRestore, and other programs to advance environmental restoration in the Delta watershed is available at pages 19-21 of the “Modernizing the System: California WaterFix Operations” White Paper.

Why aren't the California WaterFix northern intake diversion criteria linear with respect to diversion amounts and Sacramento flow?

The bypass flow criteria controlling the operation of the North Delta Diversion ensure that Sacramento River flows remain at levels that are protective of the fisheries. The criteria vary by time of year and the status of the river flows with regard to monitored “pulse” flows. The bypass flow criteria are designed to be appropriately protective of the fishery needs and thus are not linear with regard to Sacramento River flow.

How will the project impact Greenhouse Gas emissions?

Construction-related GHG emissions will be net zero, meaning emissions will be reduced to the maximum extent feasible and any remaining emissions from the project will be offset elsewhere by emissions reductions of equal amount. This is an enforceable commitment and is included in DWR’s adopted Mitigation Monitoring and Reporting Program, and will be achieved in consultation with the relevant regional air quality districts, the U.S. Environmental Protection Agency, and the California Energy Commission.

While operations would increase GHG emissions from the SWP, the Final EIR determined that operational GHG impacts will be less than significant. DWR has adopted a Climate Action Plan (CAP), which calls for a reduction of GHG emissions to 50 percent of 1990 levels by 2020 and to 80 percent of 1990 levels by 2050. The implementation of California WaterFix would not affect achievement of these goals.

What is the real purpose of Metropolitan’s purchase of the Delta islands? Is it to be used on EcoRestore? If so, will the dollars spent on the purchase of the islands counts towards the Metropolitan contribution on the California WaterFix? Who else is paying for EcoRestore?

Metropolitan’s Board approved the purchase agreement for these lands to assist in improving Metropolitan’s SWP supply reliability, ensure continued high quality supplies, and enhance long-term ecosystem stability in the Delta.

These values are consistent with the state’s co-equal goals of an enhance Delta ecosystem and reliable water supply for California.



These lands could also provide future opportunities to reduce subsidence through carbon sequestration, develop food and shelter (i.e., tidal wetlands) for migrating salmon and delta smelt, strengthen levees against flooding and earthquakes along the fresh water corridor, and support state efforts in the proposed California WaterFix.

Metropolitan would be compensated for lands that are needed for the project, including lands for temporary construction areas or permanent facility sites or for mitigation areas.

Funding for habitat enhancements unassociated with California WaterFix mitigation will come primarily from Propositions 1 and 1E, AB 32 Greenhouse Gas Reduction Fund, and local, federal, and private investment. Funding used for developing projects to meet regulatory compliance responsibilities for California WaterFix and for the SWP/CVP in general, will come from state and federal water users.

How will the project benefit listed fish species?

As explained in the second White Paper, “Modernizing the System: California WaterFix Operations,” the environmental benefits of California WaterFix for listed fish species include reduced south Delta pumping, providing a more natural upstream-to-downstream flow pattern during periods important for fishery protection and less direct fish entrainment in the south Delta diversion facilities.

The California WaterFix biological opinions and the EIR/EIS incorporate a variety of measures designed to mitigate potential construction and operation impacts, and to enhance environmental conditions in the Delta, including habitat restoration, protection, enhancement, and management activities.

Are there any adverse impacts to listed fish species?

There are localized impacts on listed species, but overall, the project will have less than significant impacts on all listed fish species, and the fish agencies have concluded that the project will not jeopardize listed species and will meet the fully mitigated requirements of the California Endangered Species Act.

Would the tunnels increase the amount of energy used to transport water?

The tunnels can operate up to half capacity under certain river conditions with full gravity flow, requiring no additional energy. When there is a need for the tunnels to divert higher flows at the north intakes, there will be some increase in energy needed to convey the water south to the pump facilities.



California WaterFix Equity

Will urban and municipal water districts end up subsidizing the costs of agricultural users in the California WaterFix project?

No. The option being presented for board action assumes the SWP/CVP cost share of 55/45 percent, with Metropolitan's share of total costs at 25.9 percent. Metropolitan would not be committed to paying any more than its 25.9 percent share, and would not subsidize any other water contractor's share of project costs.

Can California WaterFix be funded? What if the federal water contractors don't fully participate? How many SWP/CVP agencies/members are needed to make the California WaterFix financially work?

California WaterFix funding was addressed in "Modernizing the System: California WaterFix Finance and Cost Allocation" White Paper. Metropolitan's share of funding is 25.9 percent share of overall project costs based on the assumption that the other public water agencies also decide to participate in the project. With respect to participation by the CVP contractors, or other SWP contractors, it is important to note that Metropolitan's Board will be asked only to consider its action consistent with Metropolitan's 25.9 percent share of overall project costs. In other words, Metropolitan's decision will not result in Metropolitan being required to fund more than its 25.9 percent share, nor will it authorize the general manager to commit Metropolitan to funding continued design and other pre-construction work. If other public water agencies decide not to participate in the project, staff will come back to the board with options for consideration.

Staff's analysis is on the current allocation of costs between CVP/SWP, and Metropolitan assuming a total of 25.9% of costs and benefits.



California WaterFix Governance/Implementation

What is a joint exercise of powers authority and why is one being used to construct the California WaterFix?

A joint powers authority (JPA) enables two or more public agencies to enter a contract to jointly exercise any powers common to the individual agencies to achieve a specified purpose. While the JPA agreement need not establish a new public entity separate from its members, such agreements often do. As public agencies, JPAs are subject to California's open meeting laws and Public Records Act requirements, and they must meet strict financial accountability requirements and provide for regular audits, among other things, in compliance with the California Joint Exercise of Powers Act. JPAs are often formed to carry out a variety of public functions, including construction and operation of regional airports, transit (e.g., highways, commuter rail service, subways, etc.), parks and open space, water supply, and fire protection, to name a few.

Forming a Delta Conveyance Design and Construction JPA (DCA) that will contract with DWR for the design and construction of California WaterFix provides a means for the beneficiaries of the project who will ultimately fund it, including Metropolitan, to pool expertise and resources to safely design, construct and deliver the project on time, on budget and in accordance with approved specifications, while managing risk prudently. A single-purpose entity is also more efficient as it can hire the exact expertise required and will have a mission solely focused on completing California WaterFix on time and within budget.

Is it appropriate that a JPA will buy DWR's bonds and issue bonds of its own?

DWR has filed a validation action seeking a judicial confirmation of DWR's authority to issue revenue bonds for State Water Project facilities, including California WaterFix. Validation actions are common in agency financing matters. During the pendency of the validation action, the marketability of California WaterFix Revenue Bonds to private investors may be affected. Therefore, DWR proposes the direct placement sales of bonds to a Finance JPA until resolution of the validation action. This approach is appropriate to allow financing to move forward and as a means of controlling financing costs.

Has staff considered the possibility of extending the DCA's duties to include operations of the WaterFix?

No. Under current law, DWR is charged with operating and maintaining the State Water Project, including California WaterFix. Delta Conveyance Design and Construction Joint Powers Authority (DCA) will be a single-purpose entity formed to complete design and oversee project construction, which is more efficient than DWR hiring additional staff, then downsizing at the end of construction. Operations would require different staff with different skill sets. The DCA sunsets when project construction and commissioning and any necessary follow-up actions are completed.



California WaterFix Governance/Implementation

How will the Adaptive Management Program work? How will Metropolitan be represented in that process? Is the Interagency Implementation and Coordination Group going to be a voting body?

The Adaptive Management Program (AMP) will enhance application of science to support decision making related to SWP/CVP operations of SWP/CVP Delta facilities and construction and operations of the California WaterFix. A key aspect of the AMP is the creation of an Interagency Implementation and Coordination Group (IICG) that will be responsible for coordinating and implementing the program. The IICG will have a designated representative from DWR, Reclamation, USFWS, NMFS, CDFW, a SWP contractor, and a CVP contractor. Adaptive management recommendations by the IICG shall be by consensus of the representatives. In the event of a dispute within the IICG, a representative may invoke a non-binding review panel process. In this event, a final decision will be by the entity with decision-making authority over the matter, after considering the panel opinions.



California WaterFix Investment in Local Resources

Is seawater desalination a feasible alternative to the California WaterFix?

Although Metropolitan and its member agencies are pursuing seawater desalination projects as part of its regional integrated resources program, the size and cost of replacing 300,000 to 400,000 AF of SWP supplies with seawater desalination makes desalination infeasible.

The current cost of desalination projects are around three times more expensive than California WaterFix. In addition, desalination projects have significant environmental, project siting, and product reliability hurdles to overcome as well.

Further, Metropolitan has made significant investments (including Diamond Valley Lake reservoir, Inland Feeder, etc.) over the last few decades to ensure a reliable, high quality SWP supply. Moving away from this strategy would strand all or a portion of these significant investments.

California WaterFix provides seismic reliability, adaptation to climate change, and water quality benefits for the SWP as a whole, which seawater desalination does not address.

How did staff calculate costs of alternative water supplies?

As part of the technical process of the 2015 IRP Update, staff surveyed its member agencies to identify potential local projects with their development status and estimated costs of construction and production. These costs, specific to each project identified by the member agencies, were used to develop the range of costs of alternatives, by type. For the comparisons to recycled water and seawater desalination, staff used the cost of a specific project as representative of the cost. For recycled water, the Regional Recycled Water Project was selected because cost information on that project was recently assessed and documented in the Feasibility Study finalized this year by Metropolitan. For seawater desalination, the Carlsbad Desalination facility was selected because it represented a recent and in-service larger scale project in the service area. The costs of both selected projects fell near or within the range of the surveyed costs of projects from the member agencies. The alternative costs are likely on the low side, given that the costs of future projects will likely increase as the required yield increases.



California WaterFix Uncertainties

What happens if a state or federal regulatory agency puts more restrictions on imported water supplies?

The primary purpose and water supply reliability benefit of California WaterFix is that the dual conveyance from the addition of the north Delta diversions, isolated tunnels and modernized fishery protections provide flexibility that allows the SWP/CVP to operate more effectively in the face of current and anticipated future regulations. Future regulations will affect the overall reliability of water supplies from the Delta, but the flexibility and redundancy from the dual-conveyance intake system will provide higher water supply reliability than the current system with only the south Delta intakes. In an uncertain future, whether that uncertainty arises from potential new regulations, climate change or potential seismic threats, the flexibility provided by California WaterFix will be more resilient and reliable than the current system. It should also be noted that other alternatives to California WaterFix are not immune to future regulatory challenges. Large-scale storm water capture, recycled water and seawater desalination are all subject to water quality and contaminant regulations that can and have affected their operations and projected yields and are susceptible to climate change effects.

What is the timing and potential impact of the litigation in which the Delta Plan was held to be invalid? If the Delta Plan is amended to comply with the trial court order, how might that affect water supply benefits, implementation schedule, and cost of California WaterFix?

The seven coordinated Delta Stewardship Council Cases are on appeal. The trial court has yet to file the record with the Court of Appeal, but is anticipated to do so soon. Once filed, that triggers a one-year briefing schedule, after which the Court of Appeal must set and hold a hearing, after which it will have 90 days to issue its opinion. Absent an order of the court, the appeals automatically stay the trial court's order, so the Delta Plan remains in effect. DWR is expected to file its Certification of Consistency in the coming months, prior to start of construction, which will precede the Court of Appeal's opinion.

If the Delta Stewardship Council were to amend the Delta Plan to comply with the trial court's order, it is unknown what targets it would adopt for achieving reduced reliance on water from the Delta, reduced environmental harm from invasive species, restoring more natural flows in the Delta, and increased water supply reliability, or what regulatory policy it may adopt to promote options for new conveyance, storage, and the operations of both to achieve the coequal goals. If those amendments occur after DWR certifies consistency, they would not apply retroactively.

Does the modeling take climate change into account, including Sea Level Rise, salt water intrusion, change in amount, type and timing of precipitation in the watershed?

Yes. The modeling of California WaterFix supporting the EIR/EIS incorporated anticipated impacts of climate change, and thus is incorporated in the estimated total project yields. California WaterFix is designed to be resilient to long-term estimates of sea-level rise (up to 55 inches) and provide higher water quality in the face of future salinity intrusion in the delta. The addition of the north Delta diversions and the isolated tunnel conveyance provide flexibility and capacity to adapt to changes in the amount, type and timing of precipitation because it increases the diversion capacity that can operate in conditions of periodic higher river flows that will result from warmer and more intense rain-driven storms as well as earlier snowmelt runoff periods

Has DWR performed sufficient engineering and collected adequate geotechnical data for the WaterFix alignment?

Yes, the amount of information collected to date is appropriate for this stage of the planning/decision process and corresponding level of design that has been completed to date. As the project moves toward construction, DWR or the DCA will obtain more information, and this information will be used to design the specific components of the system (tunnels, shafts, intakes and forebays).

The geotechnical program planned for the California WaterFix consists of multiple technologies to collect data. The total number of samples to be collected could be a maximum of 2,000, but if initial data shows good uniformity and consistency, then the number of samples collected could be less.

What are the costs estimates for the 50 percent confidence level and 100 percent confidence level?

As displayed in Figure 11 of White Paper 1, the Base plus Risk (with mitigation) shows the cost estimate at approximately \$10.4 billion for the 50 percent confidence interval and approximately \$12.7 billion for the 100 percent confidence interval (in 2014 dollars). In 2017 dollars, this is \$11.4 billion for the 50 percent confidence interval and \$13.9 billion for the 100 percent confidence interval.

What was the makeup of the risk assessment cost estimate focus group? Was it contractors, owners, or a mix of the two?

The group included owners' experts from both Metropolitan and DWR, and consultants with knowledge of the program and experience in heavy construction, cost estimating, tunnel contracting and TBM procurement.

Can California WaterFix be constructed on time and under budget?

Staff is confident that with the proposed structure of the DCA, and Metropolitan's continued involvement in the implementation of the project, California WaterFix will be constructed on time and on budget.

Experts who have reviewed the project implementation plans have determined that budget and schedule for California WaterFix can be properly managed with planning and the use of risk management strategies. For example, the cost estimates for the project have been scrutinized through extensive review and include sizeable contingencies. The Design and Construction JPA will consist of a program team of owners' representatives as well as consultants that are proven experts not only in technical subjects, but also in project/program management-related work dedicated to risk management in order to ensure effective management of schedule and budget. The program team will be continuously looking ahead to anticipate the potential for specific issues to arise and developing a plan to ensure that all risks are cost-effectively managed throughout the project.

Has the risk that some kind of invasive shelled aquatic species fouling up the intakes been considered?

Yes. Specifically the new fish screens will be continually cleaned with an automated screen-cleaning system that is monitored to ensure debris and aquatic build up is kept to a minimum. Those will be a different approach from what Metropolitan uses on the Colorado River Aqueduct Intake Pump Plant screens which are periodically taken out of service for massive cleaning operations. The automated system for California WaterFix will scrub the screens on a regular basis to remove invasive species. Also, the intakes are designed to be isolated in a modular form so that portions of the intake conduits can be taken out of service for cleaning while the rest of the structure remains in service, however, there should be very few occasions where the entire intake is removed from service for invasive species cleaning.

If Metropolitan moves forward with supporting the California WaterFix, what might cause Southern California to not receive the anticipated water supply benefits?

Even with California WaterFix, the SWP would continue to be regulated in the future. California WaterFix provides north intakes, which are critical for improved operational capability to manage for environmental and regulatory needs, while at the same time providing a reliable water supply. That improved capability along with a robust adaptive management plan that includes public water agency participation would contribute towards identifying management and regulatory actions that protect the fisheries needs as well as water supply reliability.

What are the top three reasons cited by opponents as to why Metropolitan should not participate in California WaterFix?

The top three reasons opponents cite are that California WaterFix is too costly, is a water grab that is bad for the Delta environment, and will not result in any new water supply. Each of these assertions is addressed in the White Papers. The third White Paper explains in detail how and why California WaterFix is an affordable, cost-effective project. In addition, the LADWP Ratepayer Advocate recently confirmed that the project would be affordable to households in Los Angeles. And while the project will have some significant and unavoidable impacts disclosed and analyzed in the Final EIR/EIS, the majority of impacts, including impacts to Delta water quality and sensitive environmental resources, including native fish species in the Delta and Delta watershed, will be less than significant, and the state and federal fishery agencies have determined that the project will not jeopardize listed fish species. And while some have claimed that California WaterFix will not result in “new” water supplies relative to current average SWP supplies, reasonable and reliable modeling indicates that SWP supplies will become less reliable without California WaterFix and that the project is a cost-effective means of restoring and protecting current average water supplies.

What happens if Metropolitan’s Board does not approve the project?

The state of California has indicated that without sufficient support from the public water agencies like Metropolitan, it would not proceed with the project.

Would both tunnels operate at the same time?

Except in the case of maintenance or repair outage, both tunnels would be operated at the same time.

If farmers use less water, is there more for urban areas?

In general, if farmers use less water for direct agricultural purposes, they have the ability nonetheless to transfer water to third parties through agreements and recharge their groundwater systems. If farmers do not divert the water and the water stays in the system, that additional water would follow water rights and contractual procedures to benefit other users.

How does the proposed project relate to the Delta Plan?

The Delta Reform Act established the coequal goals for the Delta and required the adoption of the Delta Plan to achieve those goals. It also expressly recognizes the need for new and improved conveyance infrastructure in the Delta to achieve the coequal goals. If DWR had adopted the BDCP, as originally proposed, and it met certain criteria in the Delta Reform Act, the BDCP would have been incorporated into the Delta Plan. As explained in the second White Paper, *Modernizing the System: California WaterFix Operations*, California WaterFix will further the coequal goals, consistent with the Delta Reform Act and the Delta Plan, but the project is now considered a covered action, which means DWR must certify consistency with applicable Delta Plan policies including the coequal goals before it can begin construction. DWR is expected to submit its certification in the coming months.

How is the project the same/different from the canals proposed in the 1980s?

The approach to Delta conveyance has changed since the Peripheral Canal was proposed. The proposed project is similar in that it proposes conveying water from a diversion point located in the north Delta to the existing CVP and SWP pumps located in the south Delta. Although similar in concept, the scope, goals and regulatory compliance of the proposed project are vastly different from the Peripheral Canal proposal. Key differences between the Peripheral Canal (1982) and California WaterFix include:

	Peripheral Canal (1982)	California WaterFix
Capacity	21,800 cfs	9,00 cfs
Type	43 miles of above ground, open channels with 1,000 foot right-of-way	35 miles of gravity-based underground tunnels
Conveyance	Fully isolated with no through Delta operations	Dual conveyance, allowing for through-Delta operations and more flexibility to maintain in-Delta water quality

The proposed CWF project considers threats to the Delta that were previously unknown or not well understood, changed circumstances, new scientific information, and a regulatory framework intended to better protect the environment. Water managers in decades past had limited information about climate change, sea level rise, subsidence and seismic risks to water supplies in the Delta. Today, new information is available and has been incorporated into the proposed project.

Are the seismic risks to Delta levees being overstated? What studies support the two in three chance of a major earthquake? Are the studies that support the two in three chance of a major earthquake outdated by more recent USGS or other studies?

US Geological Survey scientific earthquake probability reports published in 2003 and 2014 calculated a high probability for one or more large-scale earthquakes to occur in the San Francisco Bay Region (including the Delta) in 30 years. Participants in the USGS studies included scientific experts from federal and state governments, private industry, consulting firms, and academia.

The USGS and URS have also looked at individual faults in the region to assess specific ground movement and liquefaction.

In 2013, URS analyzed the Southern Midland fault near the west Delta and the West Tracy fault near the southwest Delta and found that they are capable of causing severe earthquakes and significant damage to Delta levees.

In 2015-16, USGS and URS analyzed the West Napa fault and found that although observed ground motions in the Delta were less than model predictions, the difference between predicted and observed ground motions would not significantly change calculated deformation to Delta levees.



California WaterFix Comparison of Economic Studies

Report:
Dr. Jeffrey Michael
Center for Business and Policy Research
Benefit-Cost Analysis of the California WaterFix
August 2016

Synopsis

The benefit-cost analysis presented in this report asserts that California WaterFix costs are four times larger than its benefits and that the project is thus not economically justified.

Key Findings

- The analysis is based on a project yield improvement of 225 TAF arrived from the biological opinion. This assumes that existing conditions continue, and this is not an appropriate assumption as it does not take into account the future degradation in water supply that is expected if nothing is done. The supply benefit should be based on the difference between the future yield of the project with and without California WaterFix. As such, the appropriate project yield is 1.3 MAF.
- When estimating the unit value of agricultural water, the report uses historic figures to arrive at \$150 per AF. While this might represent historic costs, it does not represent the value of water or the cost of alternatives.
- The report also uses a value of \$800 per AF for the value of alternative urban water supplies. This value is too low. Metropolitan's estimate of alternative supplies from recycling and desalination range from \$1,658 to \$2,412 per AF.
- While it is common for benefit-cost analysis to use discount rates above inflation (i.e., a real discount rate) to reflect a rate of return, this assumption might not provide a useful result for long-term water projects such as this. This is because discounting costs above inflation will underestimate the cost impact felt by future rate payers, and discounting the value of water above inflation implies a diminishing value of water in the future. In the report, the capital costs occur over the first 15 years and the supply benefits occur over the next 100 years. Since the supply benefits occur much later in time the report heavily discounted the supply benefits resulting in a low benefit-cost ratio. Lastly, the costs of alternative supplies were evaluated in simple unit cost terms with no discounting resulting in an apples-to-oranges comparison.



California WaterFix Comparison of Economic Studies

Report:

City of Los Angeles Office of Public Accountability/Ratepayer Advocate
California WaterFix Cost to City Ratepayers
August 2017

Synopsis

The report finds that California WaterFix is affordable to the city of Los Angeles households under a wide array of cost and water demand scenarios. The estimated impact to the medium single family resident household bill is \$1.73 per month.

Key Finding

- The report's cost impacts are within the range of Metropolitan's estimates.
-

Report (presentation):

Christopher Thornberg
Beacon Economics
The Bay Delta Conservation Plan: Should we DIG the tunnels?
November 2013

Synopsis

The report finds that without California WaterFix, water supplies are likely to be reduced from current levels. Based on a replacement cost analysis, the cost of California WaterFix are on average \$1000 per AF cheaper than alternative sources. And based on an economic cost-benefit analyses, "We think it is clear that the Tunnels' NPV is >0."

Key Finding

- The report's findings are consistent with Metropolitan's findings.
-

Report:

Blue Sky Consulting Group
The California State Treasurer's Office
The Bay Delta Conveyance Facility: Affordability and Financing Considerations
2014

Synopsis

The study finds that the cost of the Delta conveyance facility is within the range of urban and agricultural users' capacity to pay. On average the supply cost of California WaterFix is competitive when compared to alternative supplies. The report also found that the dry year cost per acre-feet is high. For agriculture, the project is affordable for high value crops but the Central Valley Project contractors will need to develop a financing mechanism to fund their share of the water facility.

Key Finding

- Urban impacts are similar to Metropolitan's estimates when displayed on same basis.
-



California WaterFix Comparison of Economic Studies

Report:
David Sunding
The Brattle Group
Statewide Economic Impacts
August 2013¹

Synopsis

This report studied the overall statewide benefits from the Bay Delta Conservation Plan, the predecessor of the California WaterFix and EcoRestore. As such, the report included environmental and other benefits that would not apply to a benefit cost analysis of California WaterFix alone.

Key Findings

The findings associated with the cost of the conveyance facility and the reliability and overall welfare benefits to the water contractors are consistent with WaterFix. The study found that the water supply reliability provided by the conveyance facility would result in a net improvement in the economic welfare of California residents of between \$4.8 billion and \$5.4 billion over the costs of the program. In addition to the net improvement in economic welfare, the report also identified job creation benefits and increases in statewide economic activity, much of which was due to the construction and water supply reliability provided by the conveyance facility.

¹ Study based on cost estimate in 2012 dollars.

Report:
David Sunding
The Brattle Group
DRAFT: CalWater Fix Economic Analysis
November 15, 2015

Synopsis

This report is an incomplete draft prepared for the California Natural Resources Agency.

Key Finding

Draft finding shows that the quantified net direct benefits for urban users were positive and slightly negative for agricultural users. The report did not finish quantifying indirect benefits.
