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CALIFORNIA WATERFIX
RELIABLE. CLEAN. WATER.

About the WaterFix Benefit-Cost Analysis

The *Economic Analysis of the California WaterFix*, released September 20, 2018, evaluates the project's value of water system improvements and the related costs and benefits to potential participants in both the urban and agricultural sectors.

The primary scenario analyzed in the report is for WaterFix as approved (capacity of 9,000 cubic-feet-per-second). It assumes that the State Water Project (SWP) contractors will pay for 67 percent of the capacity of WaterFix in proportion to their Table A allocations, and the Metropolitan Water District of Southern California (MWD), separate from its participation as a SWP contractor, is responsible for the remaining 33 percent that was earmarked for CVP contractor use. The report also considers market-rate financing and low-interest rate financing that may be available under existing and proposed federal law, as well as other participation scenarios.

WaterFix Benefit-Cost Analysis Conclusions

- In every scenario analyzed, WaterFix's benefits are greater than the costs to SWP urban and agricultural agencies—with or without Central Valley Project (CVP) participation. The report also shows a benefit to participating CVP agencies.
- SWP urban agencies would see about $3.1 billion in net benefits with WaterFix. Higher levels of net benefits occur when agencies can finance costs with federal low interest loans.
- SWP agricultural agencies would see about $400 million in net benefits with WaterFix. These benefits would increase with the availability of low interest loans but would lessen without participation in transfers of unwanted project capacity.
- Implementation of components of the Sustainable Groundwater Management Act significantly increases the value of WaterFix to agricultural water users and shows that WaterFix is complementary to the state's goal of ensuring the sustainability of groundwater reserves.
- WaterFix helps offset the impacts of climate change by reducing the effects of sea level rise on Delta exports, resulting in a benefit of several billion dollars.
- The cost of WaterFix to urban agencies is significantly less than alternative water supplies such as desalination or recycling.
- Transfer of WaterFix project benefits significantly increases the overall values of the project by reallocating capacity to users with the greatest willingness to pay for water supply reliability.

The table below shows the costs and benefits in dollars as well as the associated ratio of cost compared to benefit. Cost-benefit ratios are considered positive if they are over 1.0.

	SWP Urban	SWP Ag	CVP
Benefits	$13,275,882,162	$2,405,260,992	$3,367,416,939
Costs	$10,164,260,463	$2,005,809,457	$2,618,411,930
Ratio	1.31	1.20	1.29

Alternative Supplies

The model used to value the urban benefits of WaterFix assumes existing alternative water supplies and values the future shortages avoided by preserving SWP deliveries through WaterFix. The analysis also compares the unit cost of supplies preserved through WaterFix to the unit cost of water supply alternatives.

- Desalination costs from $2,000 to $4,000 per acre-foot.
- Recycling costs around $1,500 to $2,500 per acre-foot.
- The unit cost of supplies preserved through WaterFix is about $684 per acre-foot, and the unit cost of conveyance and treatment of that water is up to $550 per acre-foot depending on point of delivery.

WaterFix is a net benefit to ratepayers because it protects their most cost-effective source of reliable water supplies and billions of dollars of prior investments.

Factors That Influence Costs

The total design and construction costs for WaterFix, including mitigation and a contingency allowance, are conservatively estimated at $16.73 billion in undiscounted 2017 dollars. Operation and maintenance (O&M) mitigation for the first 15 years is estimated at $39.1 million per year. O&M costs are $64.4 million per year for the first 50 years of the project, and $44.1 million per year thereafter. The construction period is assumed to be 15 years under a maximum possible estimate and the life span of the project is assumed to be 100 years.

The analysis assumes a wheeling rate will be charged by MWD for use of the 33% capacity earmarked for CVP contractor use that is equal to the average cost of the project.

Time Value of Money

Calculating present value is a technique used by economists to evaluate investment.

The present value of costs of a project is the amount of money needed today to pay for these costs in the future. Think of present value as the size of an endowment that will cover future costs. It depends on both the rate of price inflation and the rate of return on the endowment.

Benefits and costs are “present values” calculated using a 3 percent real rate of interest and an assumed 100-year project life. Present value reflects the time value of money. The present value of project costs is calculated assuming that capital costs are financed as expenditures are made. Note that the present value cost of WaterFix is lower than the nominal value. This is typical in project analysis, and is because the assumed rate of return on investment exceeds the rate of price inflation.

Factors that Influence Benefits

- Yield assumptions: The analysis utilizes operational modeling, the results that show WaterFix protects about 1 million acre-feet of water per year for urban and agricultural contractors of both the SWP and CVP.

- Baseline: The benefits and costs of WaterFix are evaluated in relation to the projected future baseline conditions that would likely occur if WaterFix were not built, which includes additional regulatory criteria designed to minimize harmful reverse flows and additional amendments to the existing biological opinions for the SWP and CVP.

- Water supply benefits to urban agencies: The analysis looks at more than 200 wholesale and retail agencies throughout California, reflecting variation in real-world water rates among utilities under 81 sets of forecasted hydrologic time series and data, and corresponding supply availability.

- Water supply benefits to agricultural agencies: The analysis accounts for reductions in groundwater pumping and cost, decreases in fallowing, and increases in net returns from crop production. It also incorporates estimated effects of the Sustainable Groundwater Management Act and acknowledges that groundwater limitations can be expected to significantly increase the marginal value of surface water used for crop irrigation.
    - Where groundwater is a substitute for surface water, and when groundwater usage is constrained, the value of surface water increases.
    - By stabilizing surface water deliveries to agriculture, WaterFix is complementary to the state's objective of sustainable groundwater management.

- Water quality: WaterFix produces water quality benefits - lower salinity of water supplies exported from the Delta benefits farmers and urban water users.

- Earthquake reliability: By adding redundancy, WaterFix helps protect against numerous levee failures that could lead to island flooding, significant saltwater intrusion, and extended supply disruptions.

- Climate change mitigation: A notable feature of this report is that it monetizes the costs of climate change impacts and the benefits of offsetting those impacts. WaterFix maintains SWP and CVP deliveries at roughly their current levels, while without WaterFix, SWP and CVP yields fall significantly in response to sea-level rise. This feature of WaterFix is worth several billion dollars and is an important rationale for implementing the project.

The *Economic Analysis of the California WaterFix* is consistent with the Department of Water Resources' "Economic Analysis Guidebook."

For more information, visit: www.CaliforniaWaterFix.com.