

Facts about the WaterFix Cost-Benefit Analysis

The WaterFix Cost-Benefit Analysis analyzes the value of water system improvements and the related costs and benefits to potential participants in both the urban and agricultural sectors. The Department of Water Resources is pursuing the project as planned, but also exploring an option to stage implementation. This analysis focuses on Stage 1 under various scenarios. Should additional water agencies come forward to fund the 9,000 cubic feet per second (cfs) WaterFix in its entirety, or come forward to fund Stage 2, this economic analysis will be updated.

WaterFix Cost-Benefit Analysis Conclusions

- WaterFix Stage 1 passes a cost-benefit test for State Water Project (SWP) urban and agricultural agencies under all conditions analyzed.
- SWP urban agencies would see about \$2 billion to \$4 billion in net benefits depending on the scenario analyzed. Higher levels of net benefits occur when agencies can finance costs with federal low interest loans.
- SWP agricultural agencies would see several hundred million dollars in net benefits under several scenarios. These benefits would increase with the availability of low interest loans and with the ability to trade unwanted project shares with urban contractors.
- Central Valley Project (CVP) south-of-Delta contractors receive significant benefits in excess of costs from the use of up to 1,000 cfs of project capacity.
- The cost of WaterFix to urban agencies is significantly less than alternative water supplies such as desalination or recycling.
- WaterFix is a benefit to ratepayers because it protects their most cost-effective source of reliable water supplies and billions of dollars of prior investments.

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. It is also instructive to compare the unit cost of 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.
- Under Stage 1, water supplies preserved by WaterFix range between \$318 to \$428 per acre-foot for SWP urban agencies depending on the availability of low-interest financing.
- Even after adding costs of conveyance and treatment of up to \$600 per acre-foot depending on the point of delivery, the costs to urban agencies of preserving SWP supplies by investing in WaterFix are significantly below the costs of available alternative water supplies.

Detailed Cost-Benefit Findings

The tables below describe both 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.

In every scenario evaluated, the benefits outweigh costs.

Benefits of WaterFix, without a Federal Low-Interest Loan

Scenario		No Trading				Trading		
		SWP Urban	SWP Ag	CVP		SWP Urban	SWP Ag	CVP
5000-cfs SWP, 1000-cfs CVP	Benefits	\$8,140,289,432	\$2,429,463,066	\$1,803,817,134	Benefits	\$8,892,586,225	\$1,958,548,483	\$1,803,817,134
	Costs	\$6,015,512,510	\$2,339,365,976	\$1,670,975,697	Costs	\$6,683,902,788	\$1,670,975,697	\$1,670,975,697
	Ratio	1.35	1.04	1.08	Ratio	1.33	1.17	1.08
6000-cfs SWP Only	Benefits	\$9,281,100,044	\$2,892,740,115		Benefits	\$9,903,820,227	\$2,344,654,949	
	Costs	\$7,218,615,012	\$2,807,239,171		Costs	\$8,020,683,346	\$2,005,170,837	
	Ratio	1.29	1.03		Ratio	1.23	1.17	

Benefits of WaterFix, with 50% Financing from a Federal Low-Interest Loan Program

Scenario		No Trading				Trading		
		SWP Urban	SWP Ag	CVP		SWP Urban	SWP Ag	CVP
5000-cfs SWP, 1000-cfs CVP	Benefits	\$8,140,289,432	\$2,429,463,066	\$1,803,817,134	Benefits	\$8,892,586,225	\$1,958,548,483	\$1,803,817,134
	Costs	\$5,240,183,955	\$2,037,849,316	\$1,455,606,654	Costs	\$5,822,426,617	\$1,455,606,654	\$1,455,606,654
	Ratio	1.55	1.19	1.24	Ratio	1.53	1.35	1.24
6000-cfs SWP Only	Benefits	\$9,281,100,044	\$2,892,740,115		Benefits	\$9,903,820,227	\$2,344,654,949	
	Costs	\$6,288,220,746	\$2,445,419,179		Costs	\$6,986,911,940	\$1,746,727,985	
	Ratio	1.48	1.18		Ratio	1.42	1.34	

Benefits of WaterFix, with 100% Financing from a Federal Low-Interest Loan Program

Scenario		No Trading				Trading		
		SWP Urban	SWP Ag	CVP		SWP Urban	SWP Ag	CVP
5000-cfs SWP, 1000-cfs CVP	Benefits	\$8,140,289,432	\$2,429,463,066	\$1,803,817,134	Benefits	\$8,892,586,225	\$1,958,548,483	\$1,803,817,134
	Costs	\$4,464,855,400	\$1,736,332,656	\$1,240,237,611	Costs	\$4,960,950,445	\$1,240,237,611	\$1,240,237,611
	Ratio	1.82	1.40	1.45	Ratio	1.79	1.58	1.45
6000-cfs SWP Only	Benefits	\$9,281,100,044	\$2,892,740,115		Benefits	\$9,903,820,227	\$2,344,654,949	
	Costs	\$5,357,826,480	\$2,083,599,187		Costs	\$5,953,140,534	\$1,488,285,133	
	Ratio	1.73	1.39		Ratio	1.66	1.58	

Scenarios Analyzed

This cost-benefit analysis considers multiple alternative scenarios.

Capacity and Cost Allocation: The capacity of Stage 1 of WaterFix would be 6,000 cfs.

- Capacity Scenario 1: SWP pays for and utilizes 5,000 cfs of the available 6,000 cfs capacity
- Capacity Scenario 2: SWP pays for and utilizes 6,000 cfs of the available capacity

Trading: There is active discussion about allowing public water agencies to transfer their costs and benefits to other contractors.

- No Trading Scenario: All agencies would participate in the project and pay a share of costs determined by the Table A allocation.
- Trading Scenario: A limited amount of project benefits and costs would be reallocated from agricultural to urban users.

Financing: This report considers market-rate financing and low-interest rate financing that may be available under existing and proposed federal law.

- Scenario 1: Financing at market rates
- Scenario 2: Financing at low-interest rates for 50% of the project
- Scenario 3: Financing at low-interest rates for 100% of the project

WaterFix Cost

Tunnel Design & Construction:	\$10.7 billion
<u>Mitigation & Associated Actions:</u>	<u>\$377 million</u>
Total Cost:	\$11.1 billion

Operations & Maintenance Costs

O&M (during construction):	\$31.1 million annually
O&M (after construction)	\$49.5 million annually

The factors that influence costs include:

- Cost of the project: assumed to be \$11.1 billion in undiscounted 2017 dollars, and including construction and mitigation.
- Annual cost of operation and maintenance and related mitigation.
- Construction period: assumed to be 13 years (from 2018 to 2031).
- Life span of the project: assumed to be 100 years.
- Cost allocation, trading and financing scenarios as described above.

The factors that influence benefits include:

- Yield assumption: WaterFix Stage 1 protects about 860,000 acre-feet of water.
- Baseline: The benefits and costs of Stage 1 of WaterFix are evaluated in relation to the future baseline conditions that would likely occur if WaterFix were not built, including criteria designed to minimize harmful reverse flows and additional amendments to existing biological opinions.
- Water supply benefits to urban agencies: The analysis looks at more than 200 wholesale and retail agencies throughout California, capturing 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: Accounting for reductions in groundwater pumping and cost, decreases in fallowing, and increases in net returns from crop production.
- Water quality: Lower salinity of water supplies exported from the Delta benefit 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: Without north Delta intakes, yields may fall by roughly half their current levels due to climate change. The impacts are difficult to quantify and are not monetized in this report.