

California WaterFix Benefit Cost Analysis

PRESENTED TO
Metropolitan Water District

PRESENTED BY
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THE **Brattle** GROUP

WaterFix Investment Analysis

Basic Participation Structure Analyzed

- 6,000-cfs of capacity paid for by SWP contractors
- MWD will pay for an additional 3,000-cfs of capacity
- If other agencies use MWD's capacity, assume they will pay a wheeling rate equal to variable cost plus an equal share of capital repayment costs
 - Applies to both CVP and other SWP contractors
 - No wheeling rate paid in years when facilities are not used

WaterFix Water Supply Transfers

- Analysis assumes that 50,000 af of project benefits are transferred from SWP agricultural contractors to SWP urban contractors

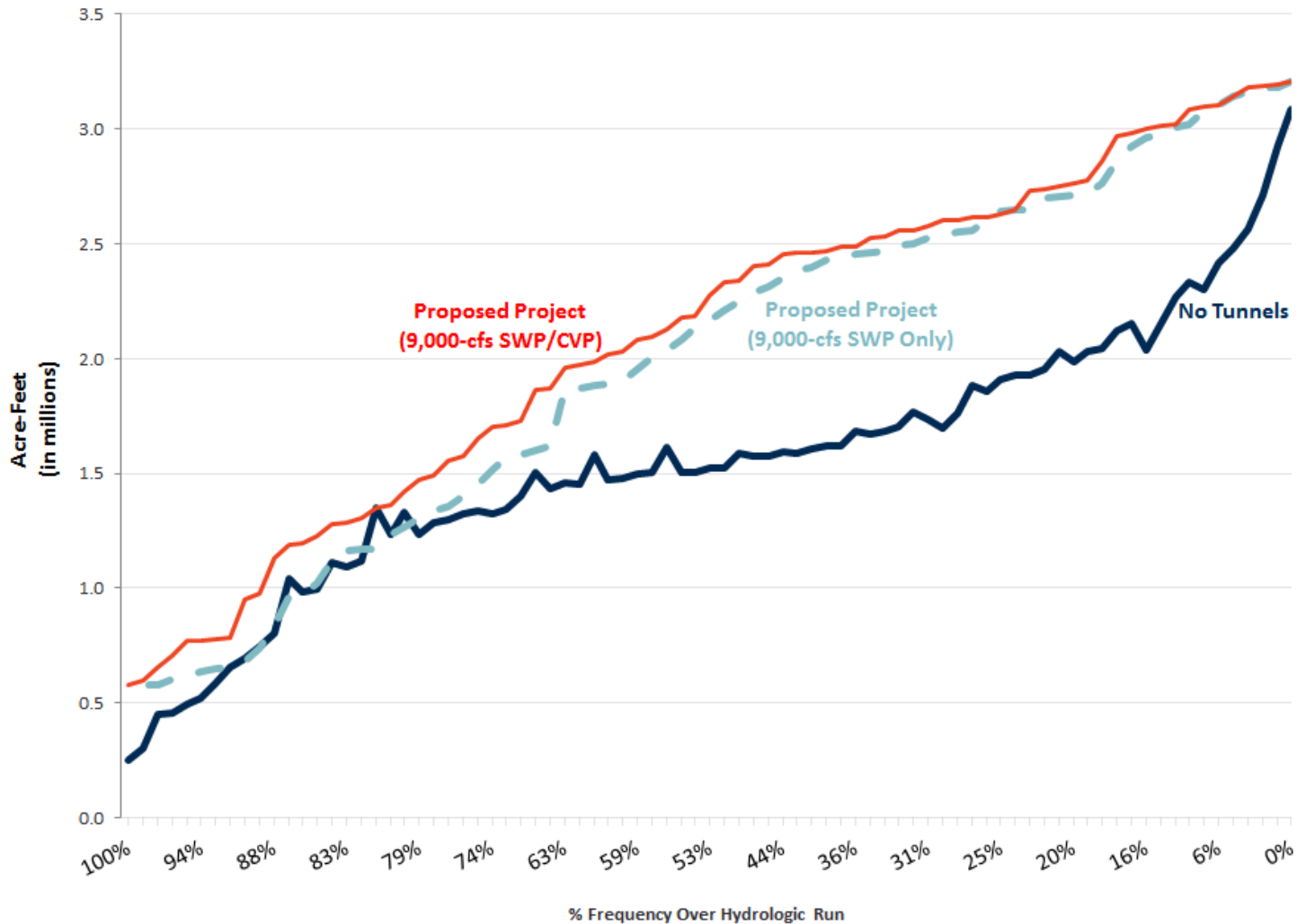
California WaterFix Cost Assumptions

Capital Costs by Year Incurred (2017 \$)

Cost Year	Program Management	Engineering Management	Construction	Contingency	Land Acquisition	Section 7 Mitigation	Total
2018	\$ 14,658,802	\$ 21,656,901	\$ 436,299	\$ 4,190,179	\$ 1,639,091	\$ -	\$ 42,581,270
2019	\$ 71,893,866	\$ 158,926,043	\$ 4,242,805	\$ 87,865,033	\$ 49,601,017	\$ 31,345,011	\$ 403,873,774
2020	\$ 31,656,733	\$ 176,725,831	\$ 29,761,633	\$ 166,530,400	\$ 70,735,768	\$ 31,465,109	\$ 506,875,475
2021	\$ 31,778,023	\$ 170,927,266	\$ 269,419,239	\$ 244,058,480	\$ 37,671,540	\$ 31,345,014	\$ 785,199,562
2022	\$ 31,656,733	\$ 102,158,848	\$ 523,624,063	\$ 346,102,402	\$ -	\$ 31,224,918	\$ 1,034,766,964
2023	\$ 31,535,443	\$ 87,397,969	\$ 842,585,134	\$ 401,972,738	\$ -	\$ 31,224,918	\$ 1,394,716,202
2024	\$ 31,535,443	\$ 96,983,340	\$ 888,134,113	\$ 364,041,236	\$ -	\$ 31,465,109	\$ 1,412,159,241
2025	\$ 31,778,023	\$ 81,196,609	\$ 803,325,988	\$ 366,841,552	\$ -	\$ 31,345,014	\$ 1,314,487,186
2026	\$ 31,598,970	\$ 93,168,589	\$ 909,798,406	\$ 365,441,395	\$ -	\$ 31,345,014	\$ 1,431,352,373
2027	\$ 29,832,936	\$ 98,904,394	\$ 976,543,911	\$ 345,065,536	\$ -	\$ 31,345,014	\$ 1,481,691,791
2028	\$ 29,002,208	\$ 104,508,378	\$ 1,067,424,676	\$ 265,099,903	\$ -	\$ 31,224,918	\$ 1,497,260,083
2029	\$ 28,891,088	\$ 99,153,057	\$ 954,993,842	\$ 264,084,195	\$ -	\$ 31,345,014	\$ 1,378,467,196
2030	\$ 29,002,208	\$ 105,105,741	\$ 1,075,870,196	\$ 265,099,903	\$ -	\$ 31,345,014	\$ 1,506,423,063
2031	\$ 28,529,858	\$ 106,762,514	\$ 1,133,900,810	\$ 202,328,152	\$ -	\$ 24,979,934	\$ 1,496,501,268
2032	\$ 25,321,501	\$ 73,454,331	\$ 745,884,008	\$ 851,078	\$ -	\$ -	\$ 845,510,918
2033	\$ 7,317,626	\$ 19,518,205	\$ 139,815,863	\$ 854,339	\$ -	\$ -	\$ 167,506,034
2034	\$ 1,032,121	\$ 10,150,633	\$ 14,105,253	\$ 847,817	\$ -	\$ -	\$ 26,135,824
2035	\$ -	\$ 4,217,996	\$ -	\$ 394,561	\$ -	\$ -	\$ 4,612,557
	\$ 487,021,583	\$ 1,610,916,644	\$ 10,379,866,239	\$ 3,691,668,897	\$ 159,647,415	\$ 401,000,000	\$ 16,730,120,778

Source: Metropolitan Water District of Southern California and ICF California.

State Water Project Deliveries- Probability of Exceedance



Average Annual Yields for the SWP and CVP with and without the WaterFix

Average Annual Yields (Acre-Feet) for State Water Project and CVP South of Delta Water Service Contractors in the 9,000-cfs SWP/CVP Scenario

	SWP Agencies		CVP Agencies
	Urban	Agricultural	
Proposed Project	1,992,232	719,733	950,923
No Tunnels	1,547,885	479,000	634,822
Incremental Yield	444,348	240,733	316,101

Source: California Department of Water Resources.

Average Annual Yields for the SWP Only with and without the WaterFix

Average Annual Yields (Acre-Feet) for State Water Project Contractors in the 9,000-cfs SWP Only Scenario

	SWP Agencies	
	Urban	Agricultural
Proposed Project	2,091,829	771,619
No Tunnels	1,547,885	479,000
Incremental Yield	543,945	292,618

Source: California Department of Water Resources.

Benefits Modeling

Four Benefit Categories

- Water supply¹
- Water quality
- Reduced seismic risk
- Sea level rise mitigation

Sea Level Rise Mitigation

- Quantified for the first time in the latest report
- Benefits analysis relies on modeling by DWR
- More recent modeling released during the recent California Climate Summit suggests our results are conservative

1 The term “supply” is used to refer to State Water Project’s purpose to deliver water supply to its contractors, which includes the functions of conserving and transporting water to those contractors. Other SWP purposes include recreation and flood control.

Benefits to Participating Agencies Exceed Project Costs in All Scenarios

Benefits and Costs in the Base Case Scenario

	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

Source: The Brattle Group.

Benefits to Participating Agencies Exceed Project Costs in All Scenarios (cont.)

Benefits and Costs for the 9,000-cfs SWP/CVP Scenario, Assuming No Transfers and No Federal Low-Interest Loan Program

	SWP Urban	SWP Ag	CVP
Benefits	\$12,595,260,401	\$2,856,058,668	\$3,367,416,939
Costs	\$9,361,936,680	\$2,808,133,239	\$2,618,411,930
Ratio	1.35	1.02	1.29

Source: The Brattle Group.

Benefits to Participating Agencies Exceed Project Costs in All Scenarios (cont.)

Costs and Benefits for the 9,000 SWP Only Scenarios, Assuming Trading and No Federal Low-Interest Loan Program

	SWP Urban	SWP Ag
Benefits	\$15,730,723,367	\$2,980,134,343
Costs	\$12,268,307,718	\$2,520,174,132
Ratio	1.28	1.18

Source: The Brattle Group.

Benefits to Participating Agencies Exceed Project Costs in All Scenarios (cont.)

Costs and Benefits for the 9,000 NOD SWP/CVP Scenario, Assuming Trading and 50% Federal Low-Interest Loan Program

	SWP Urban	SWP Ag	CVP
Benefits	\$13,275,882,162	\$2,405,260,992	\$3,367,416,939
Costs	\$8,477,574,383	\$1,747,366,605	\$2,618,411,930
Ratio	1.57	1.38	1.29

Source: The Brattle Group.

Conclusions

Consider Four Types of Benefits

- Benefits exceed costs in the base case scenario for all categories of project participants
- Allowing transfers of WaterFix water supplies increases overall benefits
- Project passes a benefit-cost test even without CVP participation
- Mitigating the impacts of sea level rise is a significant component of benefits

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