



Bella Machines

21457 SW 95th Court, Tualatin, Oregon 97062
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Los Angeles Desalination Project Cost Estimates @ 1BGD

Capital

Description	Cost
1. Haiwee Reservoir Headworks	\$200 million
2. LA Super Conduit Steel cost = \$6 billion, Labor \$2.5 billion	\$8.5 billion
3. San Andreas Fault Crossing: 30 ft Ø, C = 5D, C = \$150 million/mile TBM = (\$150 million/mile)(24.5 miles/bore)(2 bores) = \$7.35 billion Land Acquisition = \$200 million Surge Protection System = \$200 million	\$7.75 billion
4. Brine Conduit: 30 ft Ø, C = 5D, C = \$150 million/mile TBM = (\$150 million/mile)(24.5 miles)	\$3.675 billion
5. Coastal Conduit: 50 ft Ø, C = 5D, C = \$250 million/mile TBM = (\$250 million/mile)(34 miles)	\$8.5 billion
6. Beach Well Series	\$400 million
7. Sylmar Underground Facility	\$5.5 billion
8. Permits	\$200 million
Total Capital Investment (1-8)	\$34.725 billion



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Operating Expenses

Description	Cost
9. Labor: 210 people, average wages + benefits = \$200,000/yr	\$42 million/yr
10. Electricity: California Rates = \$150/MW•Hr E/V = 3.42 MW•HR/Acre•ft @ 1 BGD (\$150/MW•HR)(3.42 MW•HR/Acre•ft)(3069 Acre•ft/Day)(365 day/yr)	\$575 million/yr
11. Maintenance and Repair:	
a) Membrane Replacement: 50 ft long & 14" OD @1BGD total system membranes = 111,930 replace every 3 years (37,310 membranes/yr)(\$3216/membrane)	\$120 million/yr
b) Parts + Materials	\$120 million/yr
12. Chemicals & Mineral Additives	\$30 million/yr
13. Insurance + Legal Fees	\$15 million/yr
Total Operating Expenses (9-13)	\$902 million/yr

Cost per Acre Ft

14. Capital Investment = \$34.725 billion, US Dept of the Treasury I = 1.75% APR N = 100 yrs Solve for Annuity A _{day} = \$2,015,080/day	
$\$/\text{Acre}\cdot\text{ft} = (\$2,015,080/\text{day})(\text{day}/3069 \text{ Acre}\cdot\text{ft})$	\$657/Acre•ft
15. Operating Expenses = \$902 million/yr	
$\$/\text{Acre}\cdot\text{ft} = (\$902 \text{ million}/\text{yr})(\text{yr}/365 \text{ days})(\text{day}/3069 \text{ Acre}\cdot\text{ft})$	\$805/Acre•ft
All in Cost/Acre•ft (14-15)	\$1462/Acre•ft