



Pasadena Water and Power

**ADOPT A RESOLUTION OF THE CITY COUNCIL
IN SUPPORT OF THE CALIFORNIA WATERFIX
AND CALIFORNIA ECO RESTORE**

Presented by
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City Council
September 18, 2017
Agenda Item 12





Recommendations

Pasadena Water and Power

- **Find that adopting a resolution in support of the California WaterFix and the California Eco Restore is exempt from the California Environmental Quality Act per Guidelines Section 15061 (b)(3); and**
- **Adopt a Resolution in support of the California WaterFix and California Eco Restore**



Sacramento - San Joaquin Delta

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- **Sacramento & San Joaquin Rivers form the Sacramento-San Joaquin Delta (“Delta”)**
 - > Wetland consisting of marshes, levees, islands, and waterways
 - > Home to more than 500 plants & wildlife including the endangered delta smelt
 - > 1,150 square miles in area
 - > 1,100 miles of levees & 700 miles of waterways
 - > 4.9 million acre-feet (“MAF”) per year in water supplies to 25 million people & 3 million acres of agricultural land.



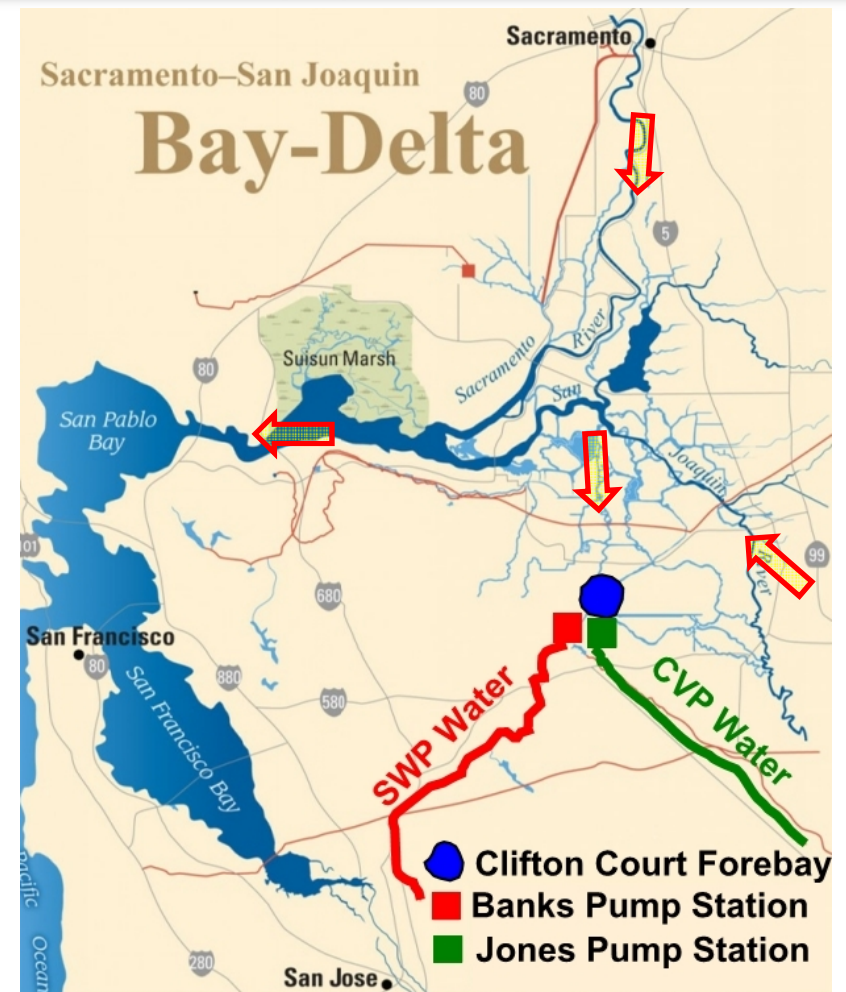
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Delta Major Hub of Water Exports

Pasadena Water and Power

- **South Delta diversion at the Clifton Court Forebay**
 - > Two large pumping plants
 - > Harvey Banks for the SWP
 - > Bill Jones for the CVP



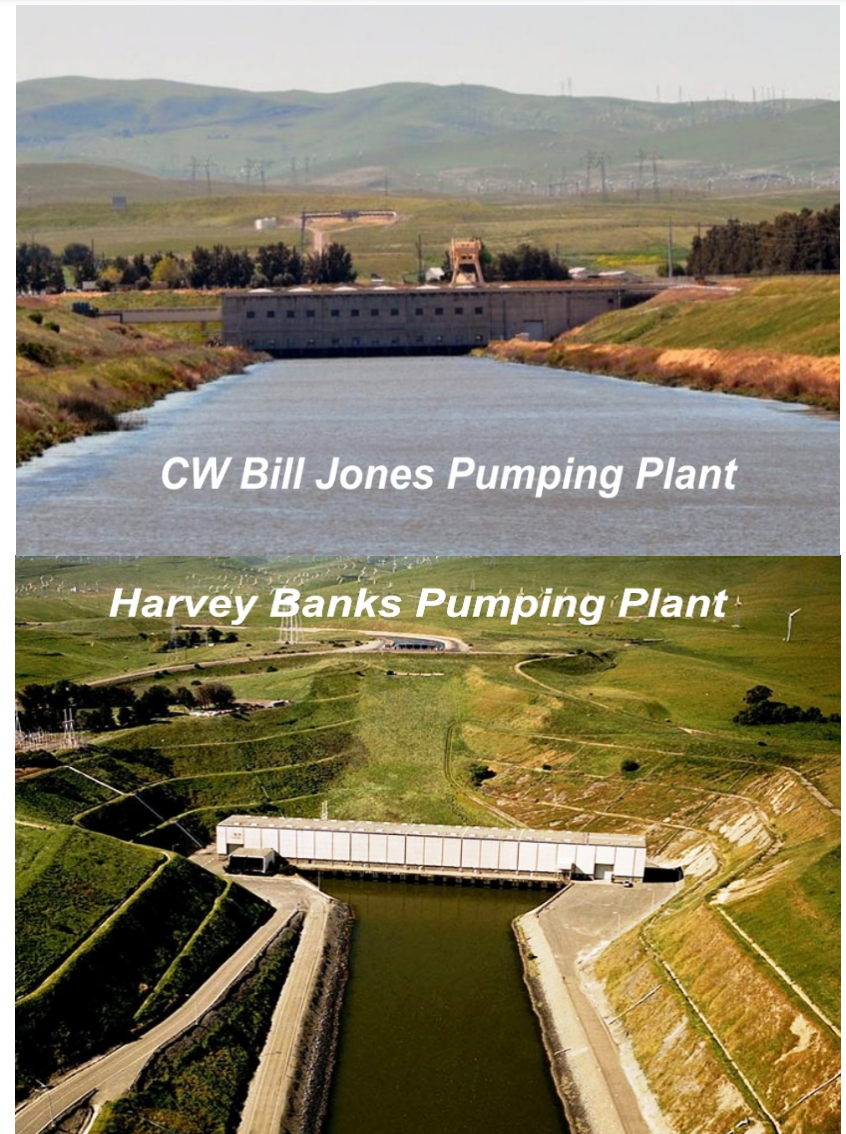
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Delta Major Hub of Water Exports

Pasadena Water and Power

- **South Delta diversion at the Clifton Court Forebay**
 - > Two large pumping plants
 - > Harvey Banks for the SWP
 - > Bill Jones for the CVP
- **Central Valley Project (“CVP”)**
 - > U.S. Bureau of Reclamation (“USBR”)
 - > Constructed in the 1940s
 - > 2.2 MAF/year for central California agricultural & farm land
- **State Water Project (“SWP”)**
 - > California Department of Water Resources (“DWR”)
 - > Constructed in the 1960s
 - > 2.7 MAF/year for central & southern California municipal and institutional
 - > Conveyed via California Aqueduct



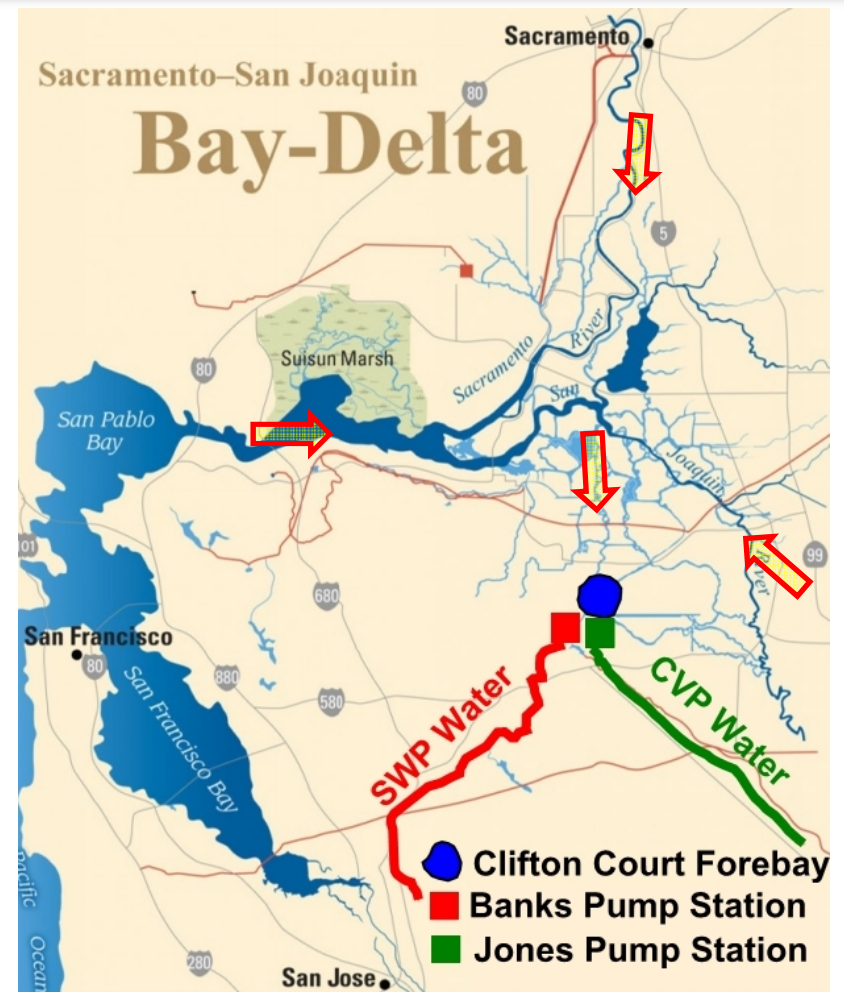


Delta Issues

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- **Reverse Flows – Pumps redirect river flows**

- > Entrain and trap fish (endangered Delta Smelt)
- > Introduce higher salinity



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Delta Issues

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- **Levee Vulnerability**
 - > Large seismic event and subsidence may breach levees
 - > Re-direct flows and impact downstream users
 - > Introduce chemicals & increased turbidity
 - > Costly repairs
- **Supply Reliability**
 - > Global warming & rising sea levels

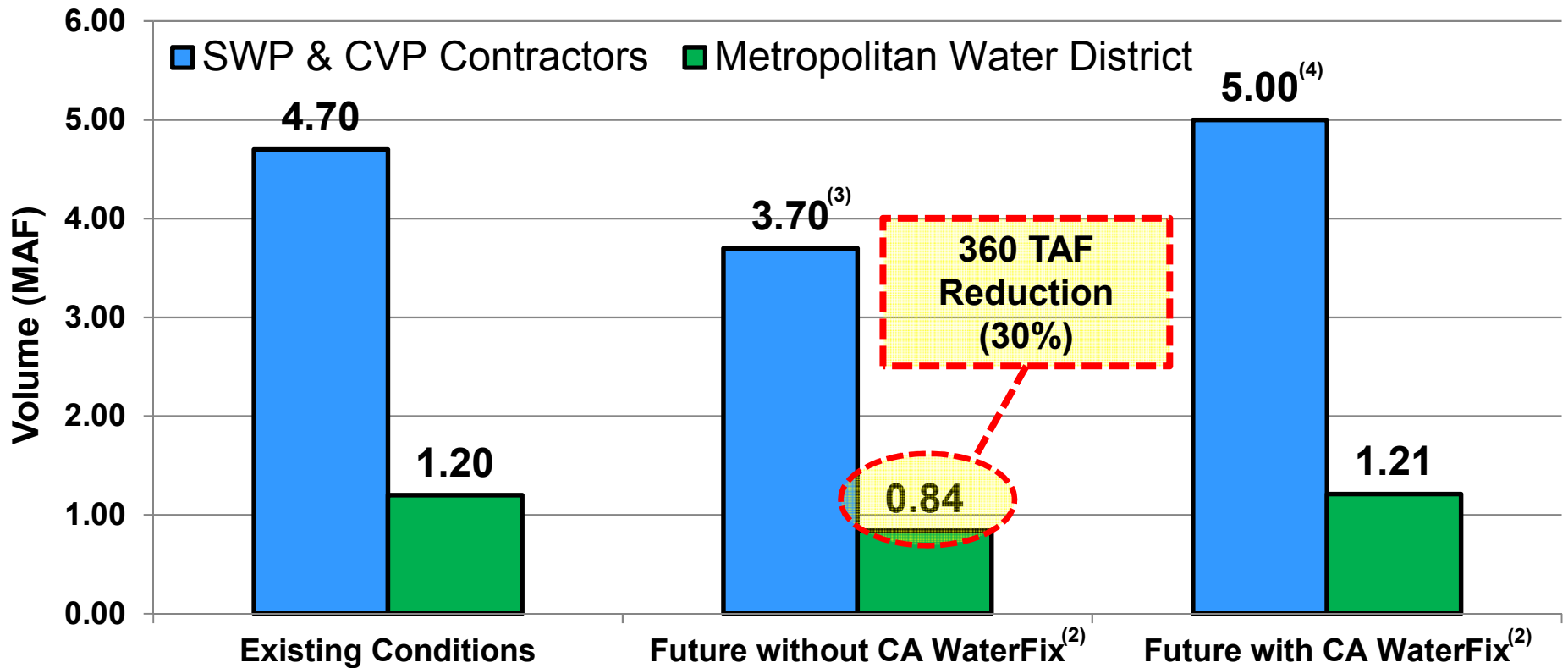




Water Delivery With and Without California WaterFix

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Average Conveyance⁽¹⁾



(1) All deliveries assumed with 2025 climate change impacts.

(2) Future scenarios analyzed under a range of outflow requirements & operating criteria.

(3) Future without CA WaterFix ranged from 3.5 to 3.9 MAF.

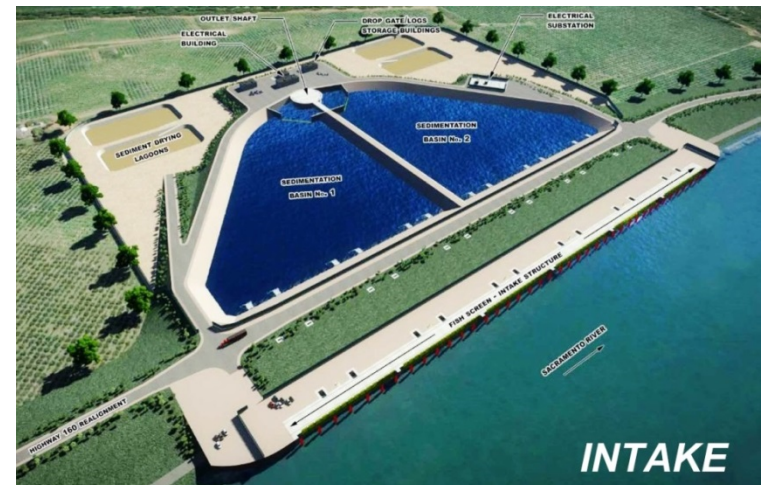
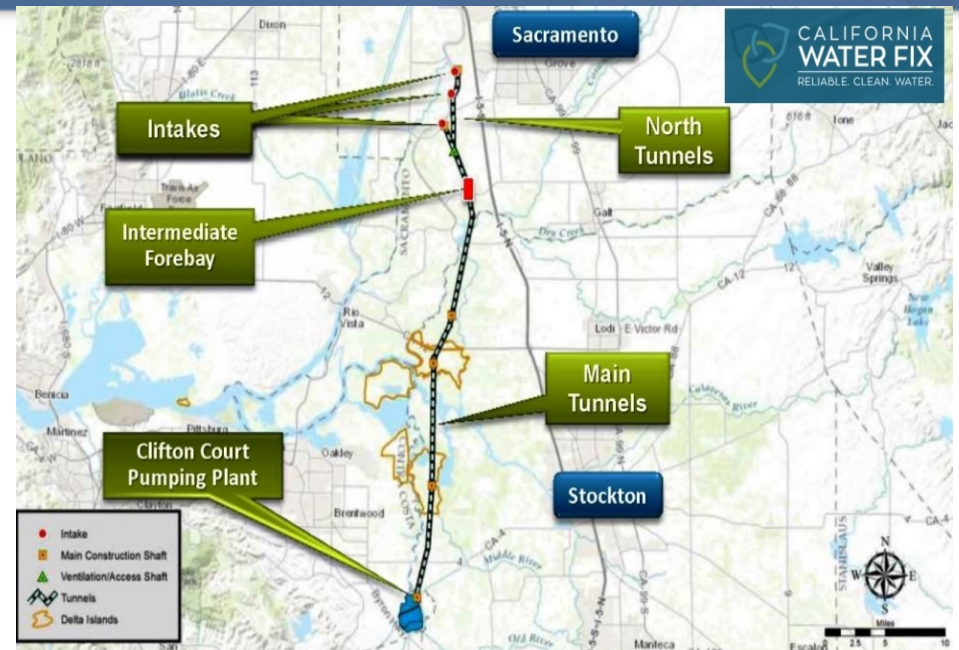
(4) Future with CA WaterFix ranged from 4.7 to 5.3 MAF.



California WaterFix

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- **3 intakes and 34 miles north of Clifton Court Forebay**
 - > Each rated at 3,000 CFS
- **Main Tunnels**
 - > Two tunnels, 40-foot diameter and 30-miles in length
 - > Up to 150 feet below ground surface
- **Schedule**
 - > Construction – 13 years
 - > Operational by mid-2030s





California WaterFix Benefits

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- **Dual conveyance**
 - > Provides operational flexibility
 - > Allows for operations in a dynamic fishery environment
 - > Diversion of excess flood flows for dry-year storage & emergencies
- **Reduce risks for climate change**
 - > North intakes are at a higher elevation
- **Improved flow patterns in the Delta**
 - > Reduced diversion in the south Delta which lessens reverse flows
 - > Reduce risk of fish entrainment
- **Reduce seismic and subsidence risks**
 - > Tunnels are reinforced & below grade
- **Improved water quality**
 - > Lower total dissolved solids, salinity & bromide

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California Eco Restore

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- **Restore and protect +30,000 acre of Delta habitat by 2020**



CALIFORNIA
ECO RESTORE
A STRONGER DELTA ECOSYSTEM.

- > Restore floodplains, tidal habitat, and aquatic and riparian habitat

- **Work in progress:**

- > Restored 1,900 acres of habitat

- > 3,900 acres are under construction & 23,200 acres under permitting

- > Restored 1.2 miles of aquatic waterways & planning and permitting 5.5 miles

- **Planning & implementation cost \$300 million**

- > Funded primarily by CVP and SWP contractors



California WaterFix Cost

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- **Capital cost at \$16.7 billion (2017 dollars)**
 - > Contingency of 36% or \$3.7 billion
 - > \$401 million in capital mitigation
- **Operation, maintenance, and mitigation cost**
 - > \$64.4 million in 2033 (2017 dollars)
 - > Facilities operational by 2033
- **SWP contractors' cost share at 55%**
 - > Negotiating with CVP contractors on cost share
- **Metropolitan Water District ("MWD") is the largest SWP contractor with 45.8% rights**
 - > 5 of 29 SWP contractors will not benefit from California WaterFix
 - > MWD's cost share ~ 47.1%



California WaterFix Cost

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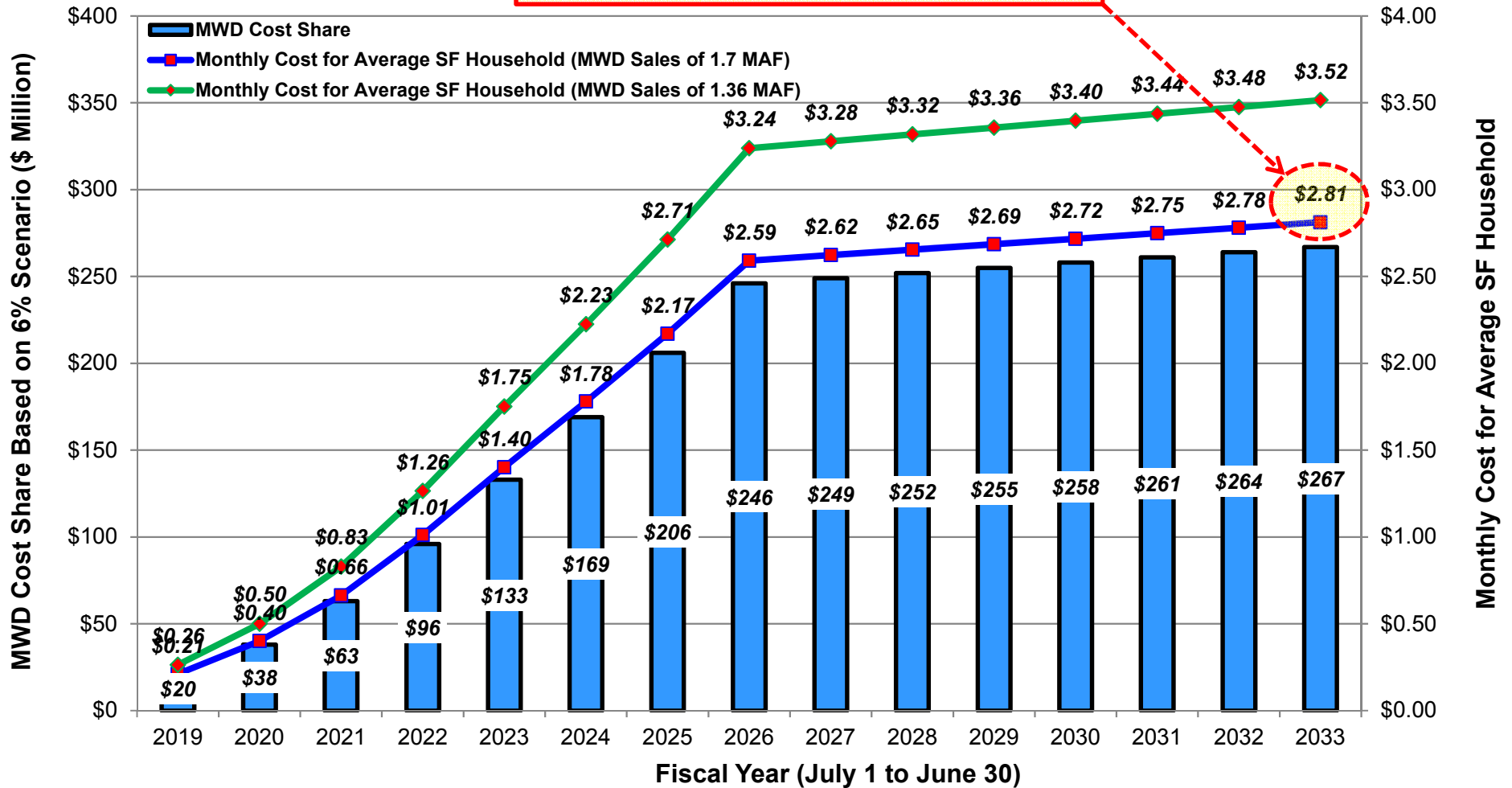
Costs are in 2017 Dollars	Interest Rate Scenario (Term 40 Years)		
	4%	6%	8%
Description			
Total Capital & Mitigation Costs	\$16.7 Billion	\$16.7 Billion	\$16.7 Billion
Total SWP Annual Financing and O&M Cost at 55% in 2033	\$438 Million	\$567 Million	\$709 Million
MWD Annual Cost Share at 47% in 2033	\$207 Million	\$268 Million	\$334 Million
MWD Annual Volumetric Sales (Million Acre-Feet)	1.7	1.7	1.7
MWD Unit Costs (\$/Acre-Foot)	\$122	\$157	\$196
Water Usage for an Average Pasadena Single Family Household (Billing Units)		13	



Cost for MWD & City's Average Single Family Household

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~ 5% Increase for an Average Household Bill



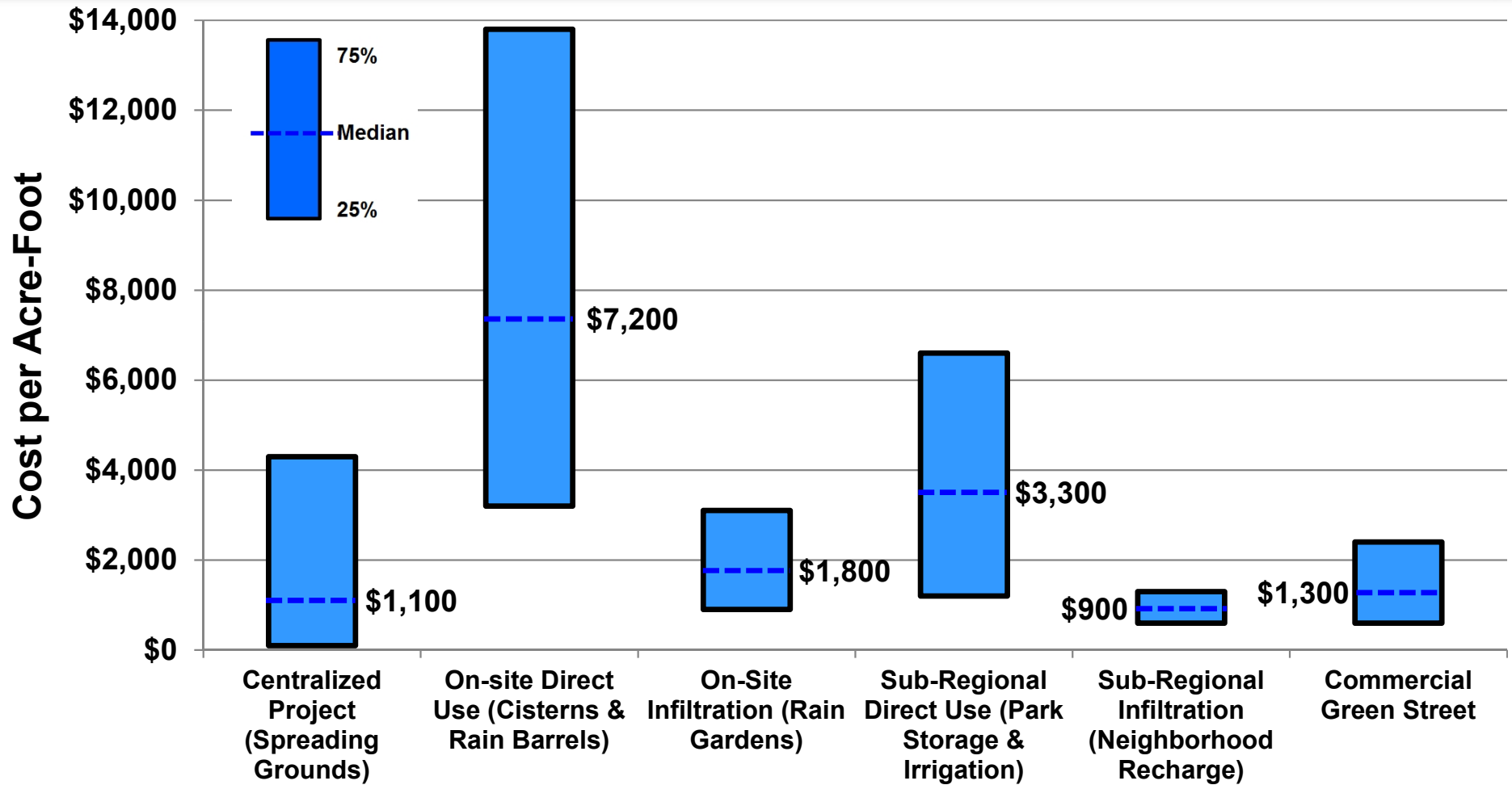
-- MWD's cost share of the California WaterFix does not include other water related increases.

-- Monthly costs for an average single family household are based on a 60% imported MWD water.



Alternative Resource Unit Costs

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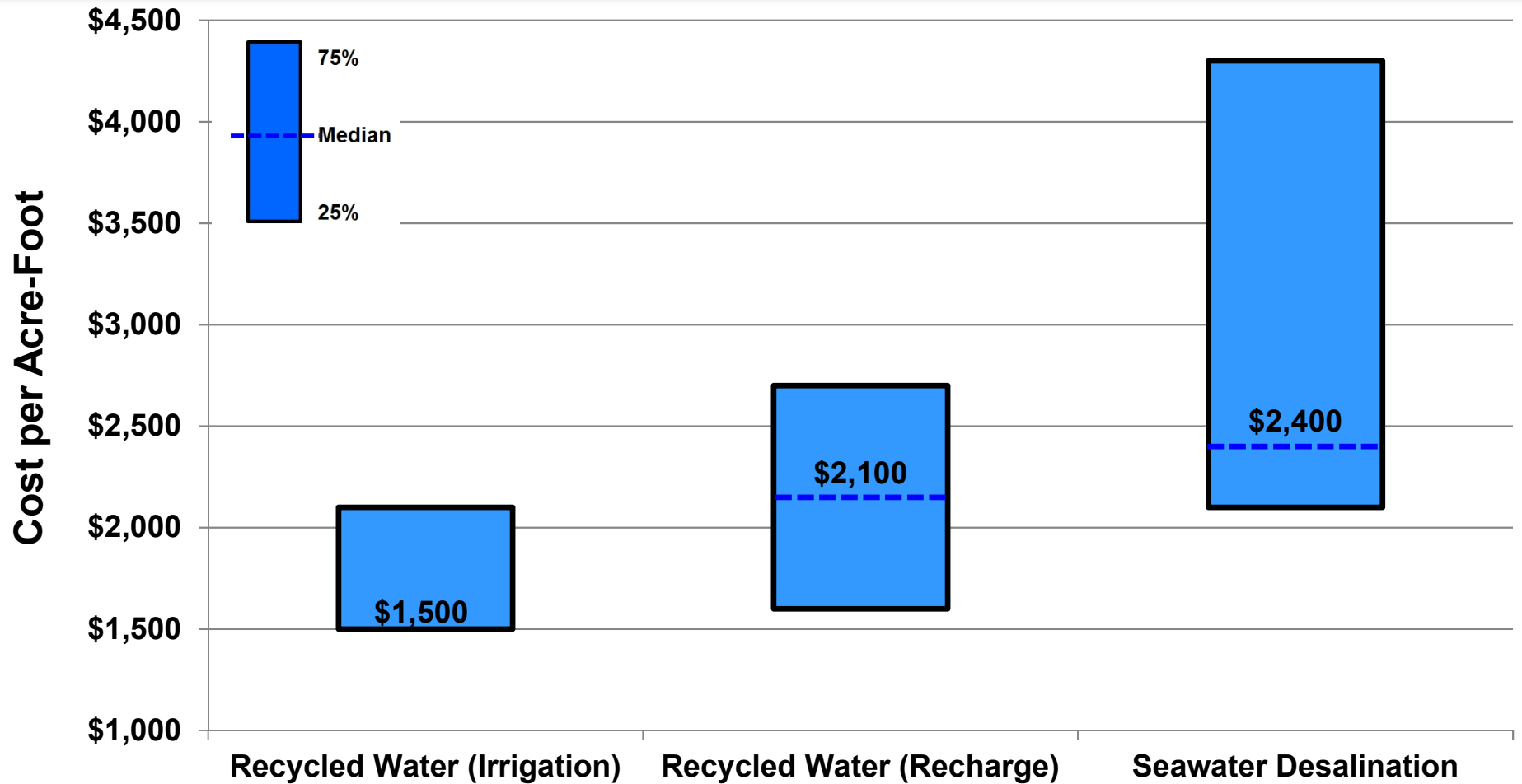


Stormwater Capture Alternatives



Alternative Resource Unit Costs

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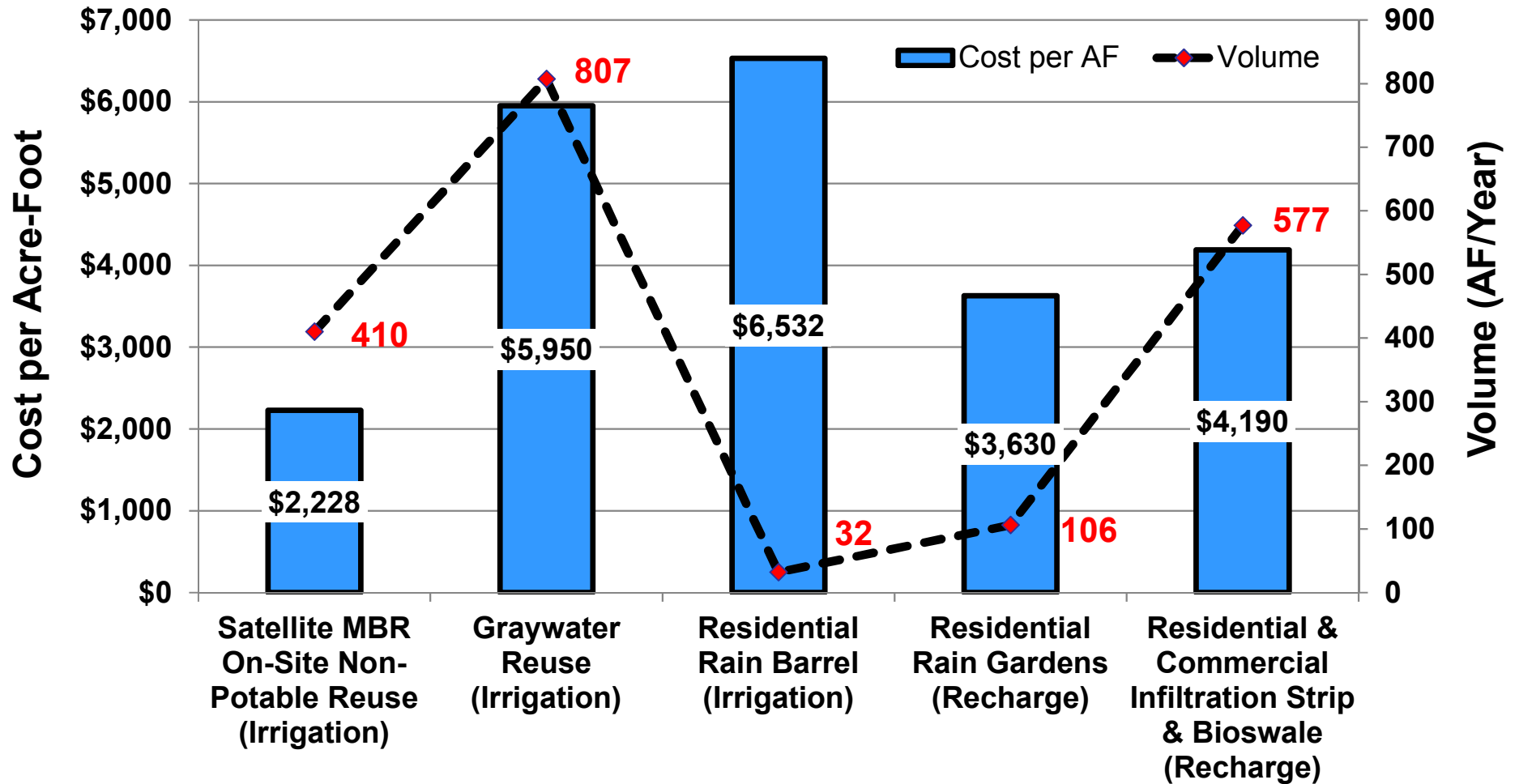


Recycled Water & Desalination Alternatives



2011 WIRP Alternative Local Resources

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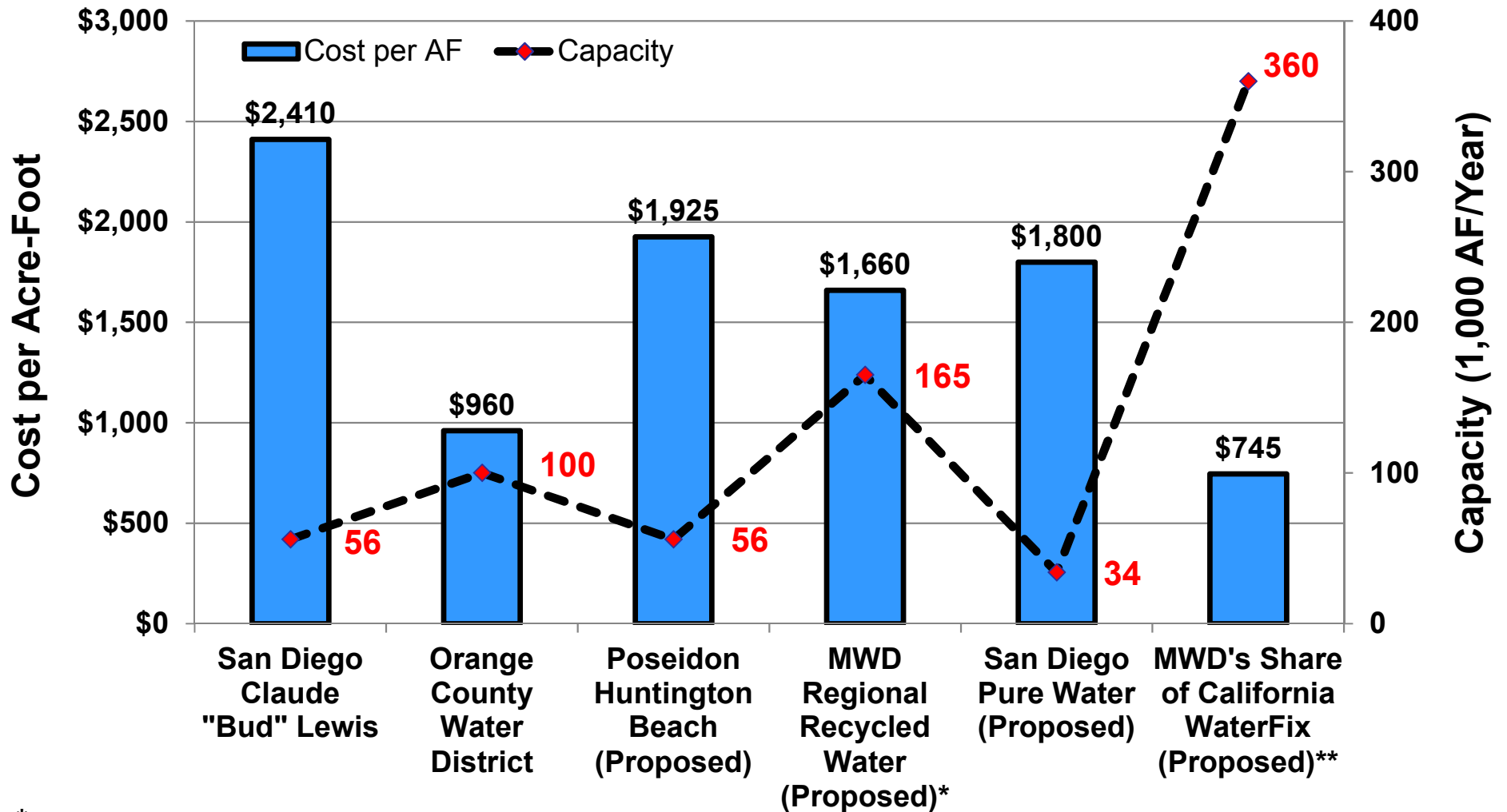


Alternative Local Resources (Based on 2010 Cost)



Large Scale Alternative Resources

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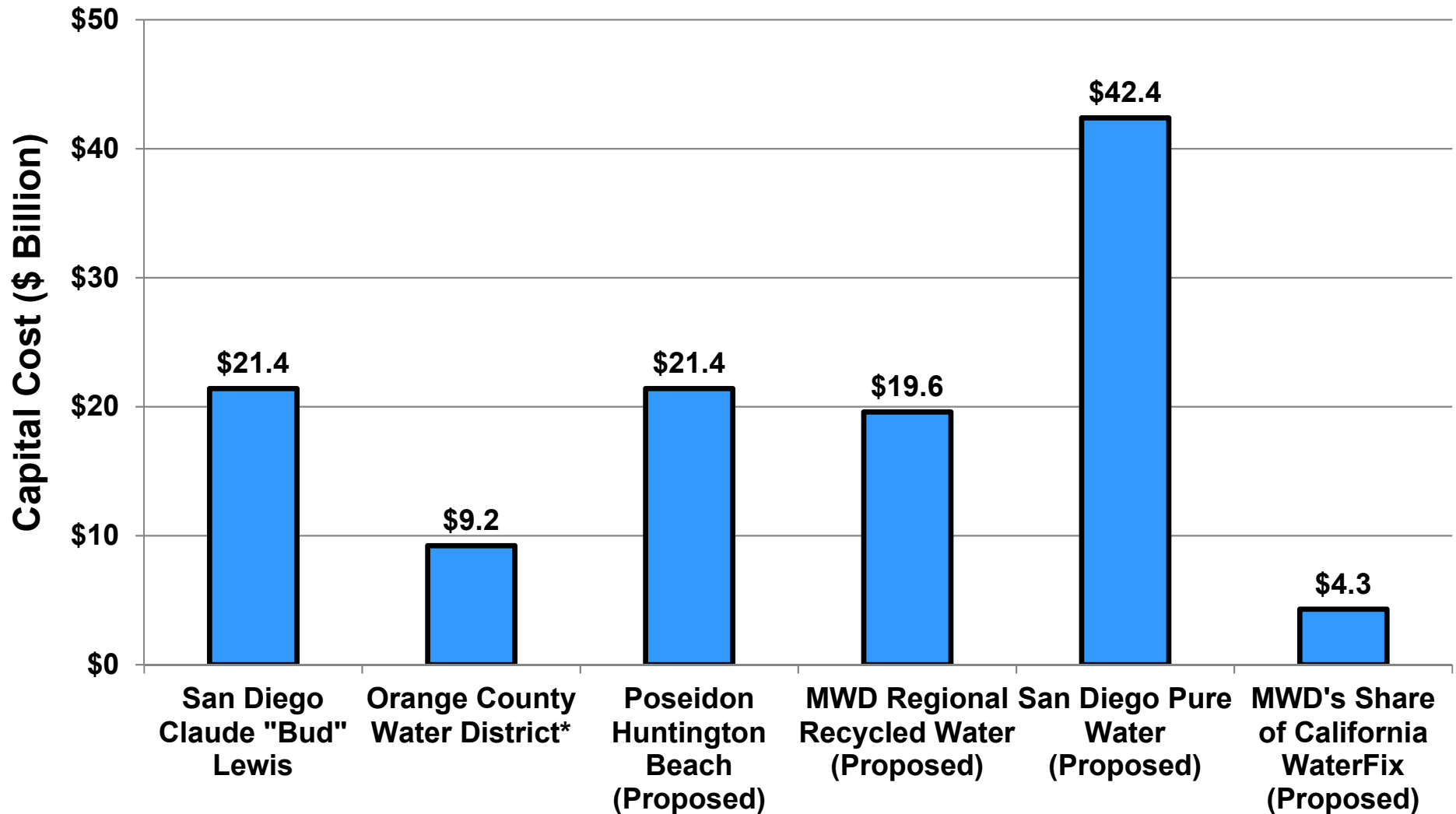
* Cost does not account for groundwater pumping.

**Cal WaterFix @ 6% Interest Scenario (\$268M ÷ 360 TAF)



Cost to Replace Full Delta Supply (MWD's Share of 1,200 TAF)

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* Cost includes upgrade from 100 MGD to 130 MGD capacity.



Risks of Not Moving Forward with California WaterFix

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- **Increasing regulatory constraints**
 - > Impacts to water operations result in reduced diversions
 - > In ability to capture storm flows for drought and emergency supplies
 - > Threatened fish species requiring higher outflows and decline in water supply
- **Threats from earthquakes and subsidence**
 - > Levee failures and flooding
 - > Introduce higher turbidity and chemicals
 - > Costly repairs
- **Climate change**
 - > Rising sea levels and introducing higher salinity into water supplies



Risks of California WaterFix

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- **Political Risks**

- > Strong opposition challenging the project
 - Taking of additional water
 - True cost of project & rate impacts
 - Alternatives (conservation, recycled water, desalination, storm water capture)
- > Potential litigation costs and project delays

- **Construction Overruns**

- > Very large and complex project

- **Rate Impacts**

- > MWD's cost allocation is volumetric based
- > PWP will always be dependent on MWD imported water



Local & Regional Water Supply

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- **Pasadena's water supply**
 - > Local groundwater & spreading credits ~ 40%
 - > Imports from MWD ~ 60%
- **MWD's imported water supply**
 - > SWP water provides ~ 60%
- **Preserving investments made in the SWP**
 - > City is 1.2% of MWD's sales
 - > MWD has 45.8% of rights to the SWP water
- **Water Integrated Resources Portfolio**
 - > Local resources (groundwater, conservation, recycled water, stormwater)
- **Southern California's water supply**
 - > SWP water ~ 30%



California WaterFix - Conclusion

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The threat to the water supply and reliability is greater if no action is taken. California WaterFix supports the 2009 Delta Reform Act co-equal goals of improving the State's water reliability while protecting, enhancing, and restoring the Delta ecosystem.



QUESTIONS?

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