



# STATE WATER PROJECT ADAPTATION STRATEGY

Reducing Vulnerabilities to Climate Change

## Safeguarding the State Water Project from Climate Threats

Climate change poses a major threat to California's water supply. Over the next 20 years, the state could lose up to 10% of its total water resources, with the State Water Project (SWP) potentially seeing delivery reductions of up to 25% under more extreme climate scenarios. In response, the California Department of Water Resources (DWR) has developed a comprehensive SWP Adaptation Strategy, as part of its Climate Action Plan, to safeguard water reliability and support statewide climate and water resilience goals.

## Adaptation Strategies: Building System Resilience

To protect the SWP from climate impacts such as drought, sea-level rise, and extreme weather, DWR is pursuing a mix of structural, operational, and nature-based strategies. The SWP is pursuing 17 strategies, 5 have been highlighted as most impactful.

- **Delta Conveyance Project (DCP)**  
Modernizes infrastructure to move water during short, intense storms and protect supplies from earthquakes and levee failures. On its own, the DCP is the most impactful single adaptation action and boosts the effectiveness of other strategies.
- **Maintain and Restore Infrastructure**  
Continued investment in core infrastructure, particularly resolving subsidence issues, is the foundation for all future water reliability.
- **Forecast-Informed Reservoir Operations (FIRO)**  
Uses advanced weather forecasting to manage water storage more flexibly. Enhances flood protection and drought resilience.
- **South-of-Delta Storage (SODS)**  
Adds above- or below-ground water storage south of the Delta. Provides major improvements in drought resilience, especially when paired with the DCP.
- **Nature-Based and Operational Approaches**  
Includes Feather River watershed management, improved forecasting, and environmental restoration. These efforts support long-term flexibility and ecosystem health.

## Adaptation Portfolios: Testing Future Scenarios

DWR modeled adaptation portfolios to evaluate how different strategies perform alone and in combination through 2085.

- **Deteriorating System (No Action)**  
Illustrates the risks of underinvestment, detailing reduced delivery capacity by 2043 and complete loss of delivery south of Fresno County by 2085.
- **Maintain System (Baseline)**  
Subsidence in the San Joaquin Valley is fixed, but no new adaptation strategies are pursued.
- **Individual Portfolios: DCP, FIRO, and SOD**  
When evaluated individually and fixing subsidence, all show measurable gains in delivery and drought resilience under future climate stress.
- **Combination Portfolio (DCP + FIRO + SOD)**  
Identified as the most effective path forward. By 2043, average annual SWP deliveries would be over 500,000 acre-feet greater per year, over a no adaptation path. Even under 2085 conditions, these improvements remain consistent.



## Key Findings

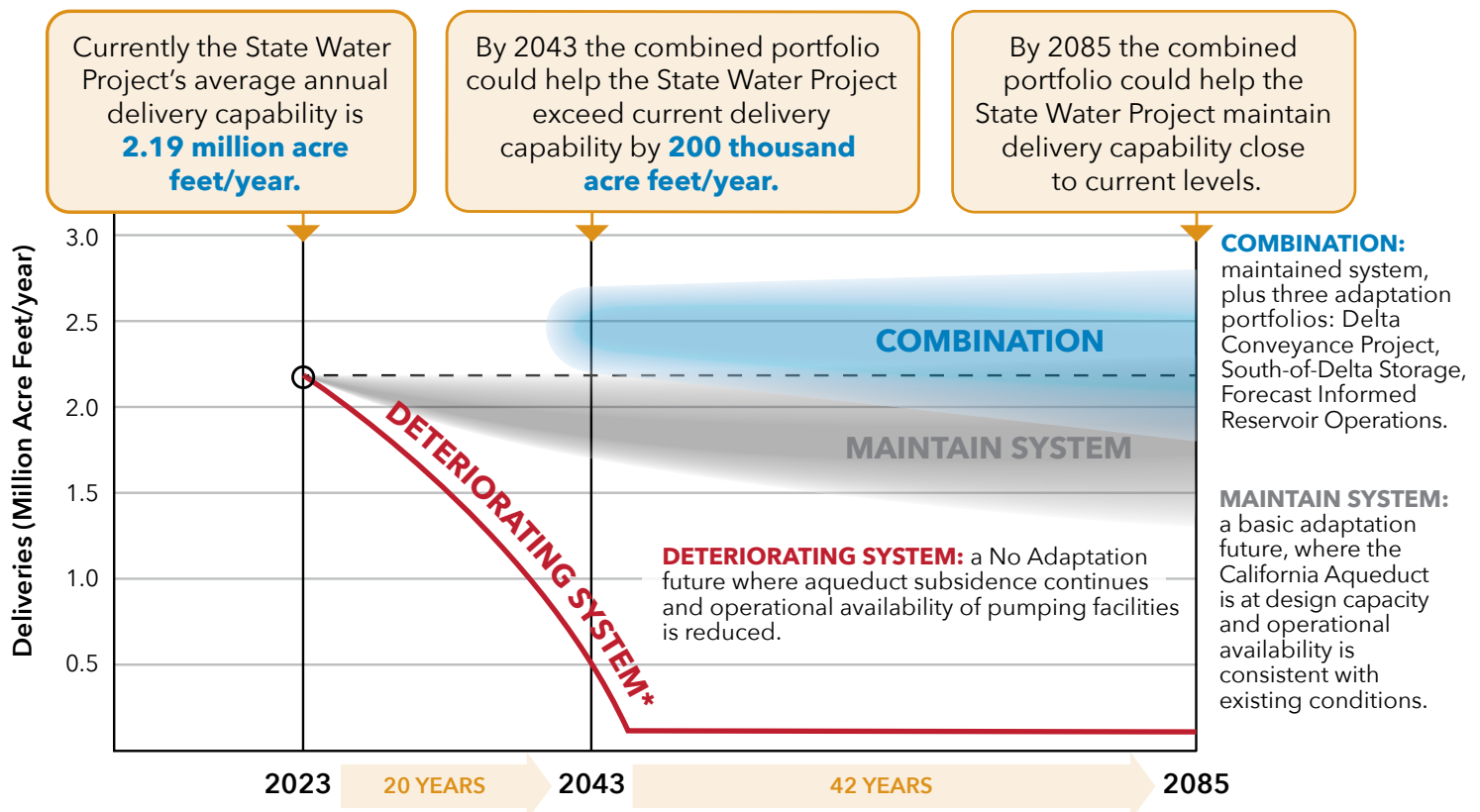
- By implementing the DCP Portfolio, annual average Table A deliveries improve by 12-14% (206-255 TAF per year), and total SWP exports (including Article 21) increase by 18-21% (349-425 TAF per year).
- Under 2085 conditions, implementing the FIRO Portfolio increases the number of years in which SWP meets its carryover storage target for drought resilience by 9-13%.
- SOD Storage Portfolio improves drought resilience in a six-year drought by 24-41%. In a two-year drought by 13-35%.
- With the Combination Portfolio, Table A deliveries improve by about 25% (500 TAF per year).
- The Combination Portfolio maintains Table A deliveries at or above current levels in all but the most extreme end-of-century conditions.

- The improvement in Table A deliveries with the Combination Portfolio is better than the sum of its parts, showing that these projects are exceptionally complementary.
- The Combination Portfolio is particularly effective because it addresses the different ways that climate change challenges the system.
- With the Combination Portfolio, decreases in Delta Outflow are relatively small (3-4%), concentrated in wetter periods, and only affect surplus flows.

## Conclusion

As part of an ongoing effort to mitigate the effects of climate change already impacting California statewide, the SWP Adaptation Strategy provides a clear path to protect and modernize critical infrastructure, enhance water reliability, and support long-term sustainability.

## State Water Project Deliveries



\*In this scenario, the system becomes so constrained by capacity limitations that hydrology and climate change are no longer a factor and delivery capability is essentially the same under all conditions.

## Where to get more detailed information:

The [Department of Water Resources website](#).

Final report, appendices, and modeling data can be found on the [SWP Adaptation Strategy page](#).