CALIFORNIA WATER SERVICE GROUP
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Water Supply Reliability in an Era of Drought, Climate Change, and Water Supply Challenges

Ken Jenkins, Vice President, Water Resources Planning & Sustainability

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WATER SERVICE GROUP
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Largest regulated water supplier in the West, 3rd largest in U.S.

- 7,900 miles of main
- 1,135 wells
- 681 storage tanks
- 155,000+ valves
- 50,000+ hydrants
- 2,010+ sampling stations
- 6 surface water treatment plants
- 12 wastewater treatment plants

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- Antelope Valley
- Bakersfield
- Bayshore
- Bear Gulch
- Chico
- Dixon
- East Los Angeles
- Kern River Valley
- King City
- Livermore
- Los Altos
- Marysville
- Oroville
- Rancho Dominguez
- Redwood Valley
- Salinas
- Selma
- Stockton
- Travis AFB
- Visalia
- Westlake
- Willows

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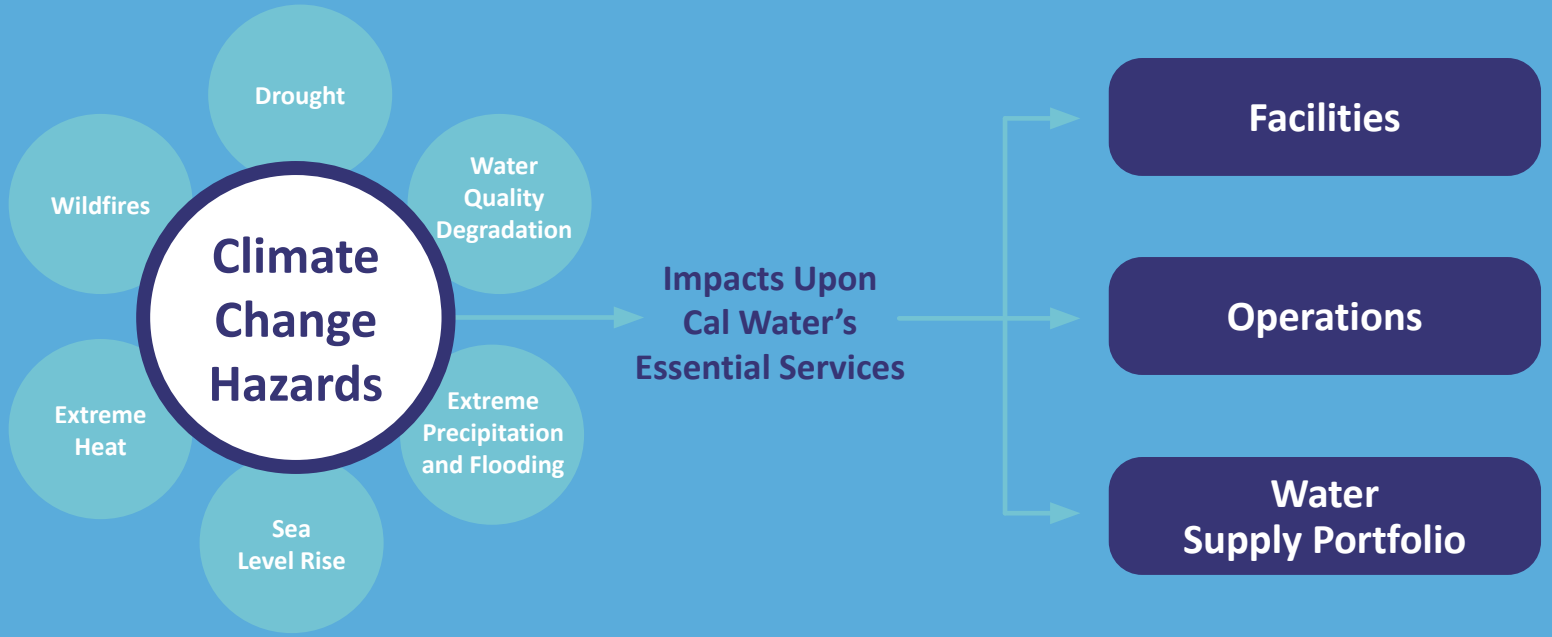
On the Front Lines of Climate Change

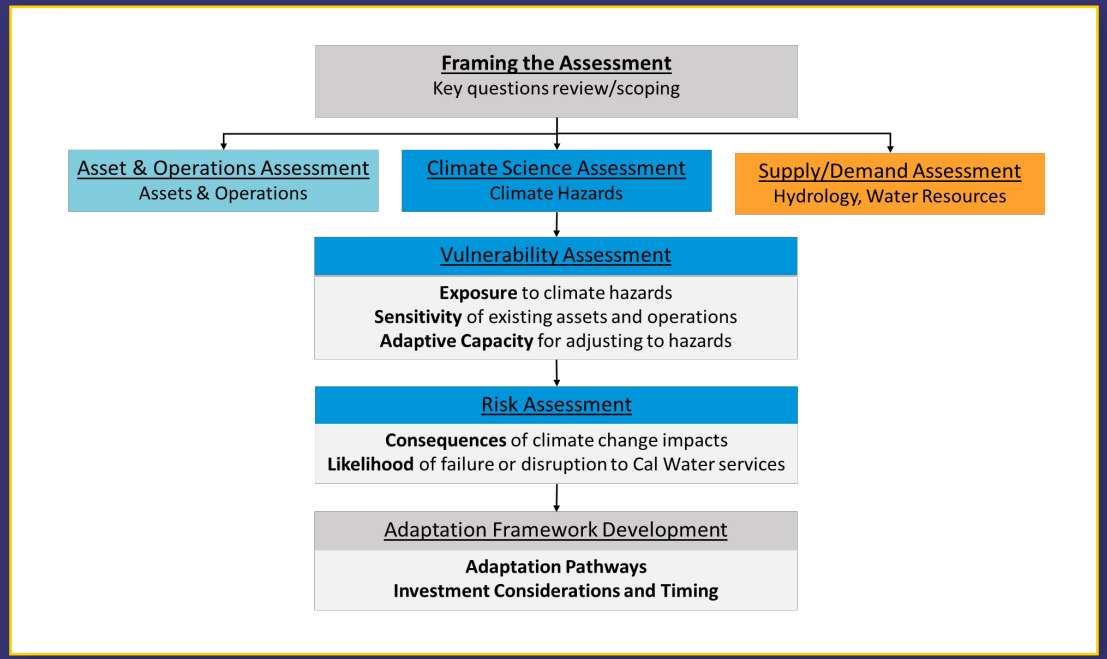
Climate Change

Building Blocks of the Plan



Climate Change

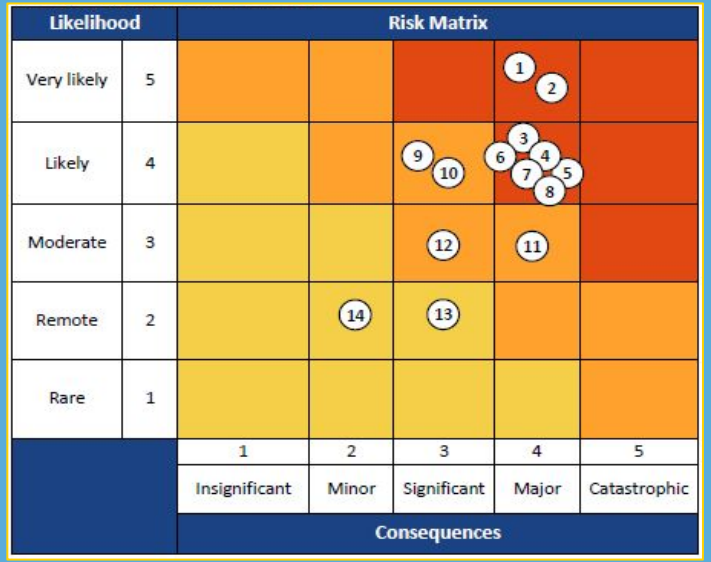
What We Analyzed



Climate Change

Impacts will be Felt Across System

1. More hot days without precipitation
2. Increased wildfire risk and more extreme weather
3. Decreased SWP deliveries
4. Decreased groundwater recharge
5. Longer, more intense, and more frequent droughts
6. Increased burn areas due to wildfires
7. Increased riverine and urban flooding



Climate Change

Impacts will be Felt Across System

8. Increased and more intense wildfires
9. Higher demand due to increased ET
10. Declining snowpack
11. Threat of sea level rise
12. Rising groundwater due to sea level rise
13. Uneven sinking ground levels
14. Impact of more frequent high temperatures on safety

District	Risk Statement														Total Number of Top Risks
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Antelope Valley	■		■	■	■	■	■	■	■	■				■	10
Bear Gulch	■	■			■	■	■	■	■	■				■	9
Bakersfield	■	■			■	■	■	■	■	■			■	■	10
Chico-Hamilton				■		■	■	■	■	■				■	7
Dixon						■	■	■	■	■				■	6
Dominguez	■		■		■	■	■	■	■	■		■		■	10
East Lost Angeles	■		■		■	■	■	■	■	■				■	9
Hermosa Redondo	■		■		■	■	■	■	■	■	■	■		■	11
King City				■		■	■	■	■					■	6
Kern River Valley	■	■			■	■	■	■	■	■				■	9
Los Altos	■	■	■	■	■	■	■	■	■	■				■	11
Livermore	■	■	■	■	■	■	■	■	■	■				■	11
Mid-Peninsula	■	■			■	■	■	■	■	■	■			■	10
Marysville		■	■			■	■	■	■	■				■	7
Oroville	■	■			■	■	■	■	■	■				■	9
Palos Verdes	■		■		■	■	■	■	■	■				■	9
Redwood Valley	■	■		■	■	■	■	■	■		■	■		■	11

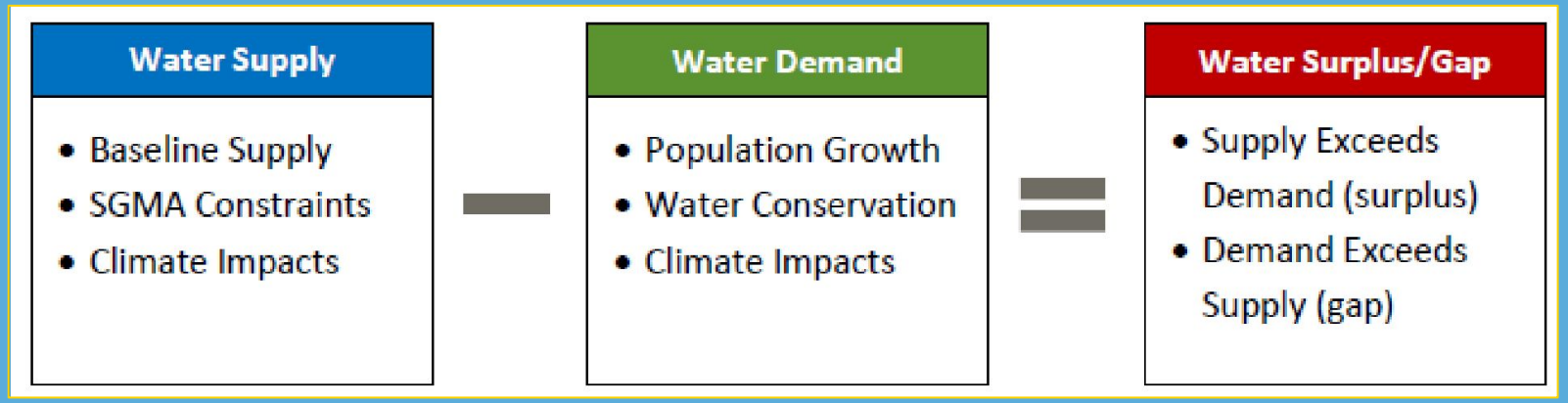
Water Supply Reliability

Scenario Planning

Factor	Scenario 1 – Baseline	Scenario 2 – Low to Moderate Stress	Scenario 3 – Moderate to High Stress	Scenario 4 – Extreme Stress
Climate Change / BDP Amendment	• SWP allocations based on 2021 DCR with climate change hydrology centered around 2040 plus 1.5 ft Sea Level Rise	• SWP allocations from Scenario 1 adjusted to reflect BDP Amendment VAs	• SWP allocations from Scenario 1 adjusted to reflect BDP Amendment VAs	• SWP allocations using 2070 Extreme Dry Climate Change hydrology
Wholesaler Action	• "Best Buy" Portfolio – Zone 7 will meet LOS goals by 2045	• "Best Buy" Portfolio – Zone 7 will meet LOS goals by 2045	• "Sites + LVE" Portfolio – Zone 7 invests in Sites Reservoir plus LVE	• "Sites + LVE" Portfolio – Zone 7 invests in Sites Reservoir plus LVE
SGMA and Groundwater	Current GPQ			
Water Quality	• Wells currently active will continue to operate into the future	• Assume wells currently impacted by PFAS will remain offline. Wells having arsenic detections associated with declining groundwater elevations will be taken offline		
Water Demand	• WUE Objective and RHNA adjusted demands under normal year conditions	• WUE Objective and RHNA adjusted demands under dry year conditions	• WUE Objective and RHNA adjusted demands under dry year conditions	• WUE Objective and RHNA adjusted demands under multiple dry year conditions

Water Supply Reliability

Gap Analysis



Climate Change
Multi-Criteria Decision Analysis

Evaluation Criteria	Metric	Metric Scoring
Estimated Cost	Unit Cost	Lower unit cost is more favorable
Reliability	Source Variability	3 = Drought proof 2 = Normal Hydrologic Variation 1 = Intermittent or not available during drought years
Implementation	Regulatory Complexity	3 = Low degree of complexity 2 = Medium degree of complexity 1 = High degree of complexity
	Institutional Complexity	3 = No partnerships or agreements required 2 = One to three partnerships or agreements required 1 = Four or more

Takeaways

- Water systems face unique challenges
- Water supply challenges are multi-faceted
- Adaptive management is critical to success

Ken Jenkins

Vice President, Water Resources Planning & Sustainability

kjenkins@calwater.com

calwatergroup.com/sustainability