

Climate Update

Item 4



Office of Research, Planning, and Performance

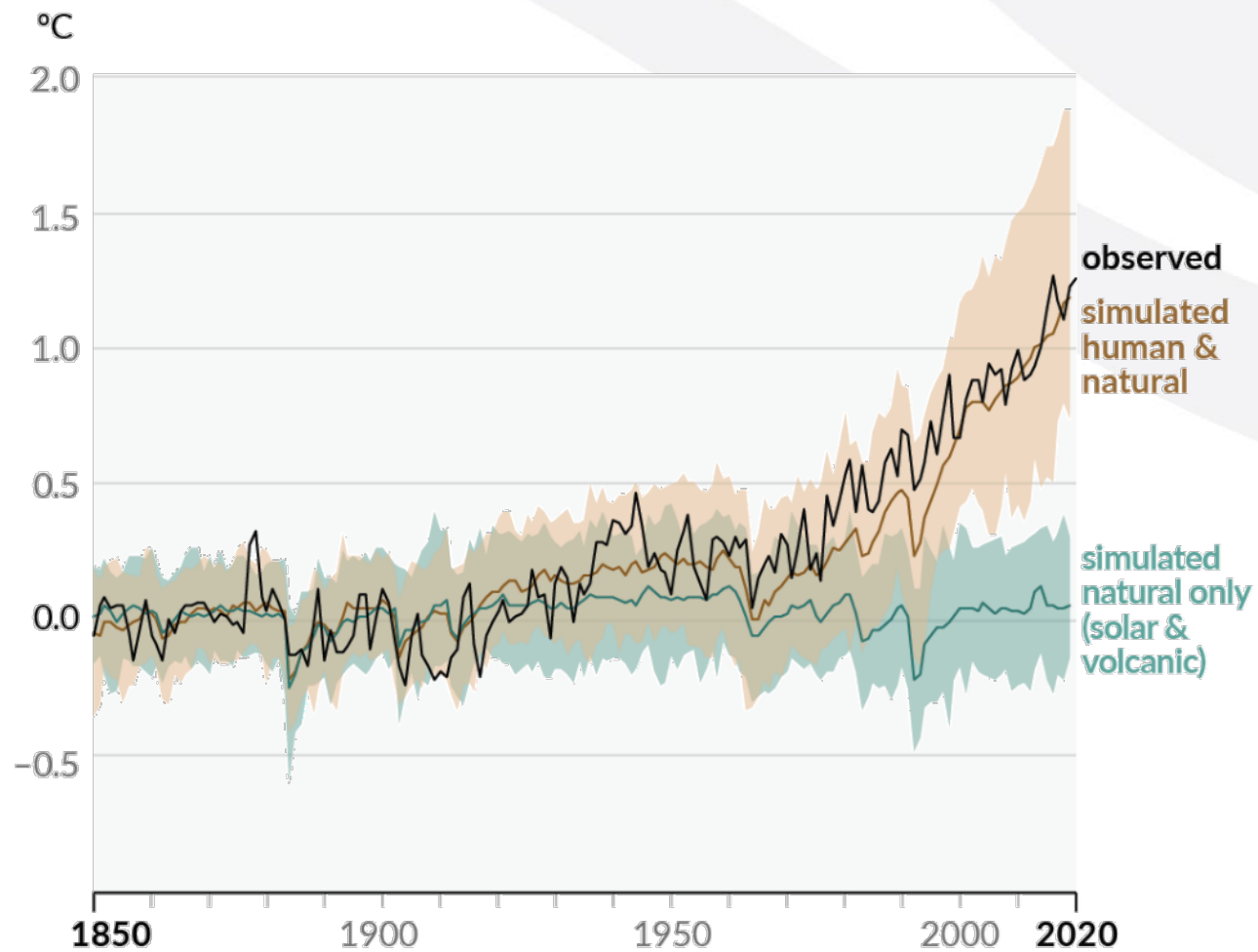
Agenda

1. **Overview:** Climate and water
2. **Review:** State Water Board Climate Resolution 2017
3. **Next Steps:** Seeking input on planned process to develop a new climate resolution

Bob Wick



Overview: Climate & water

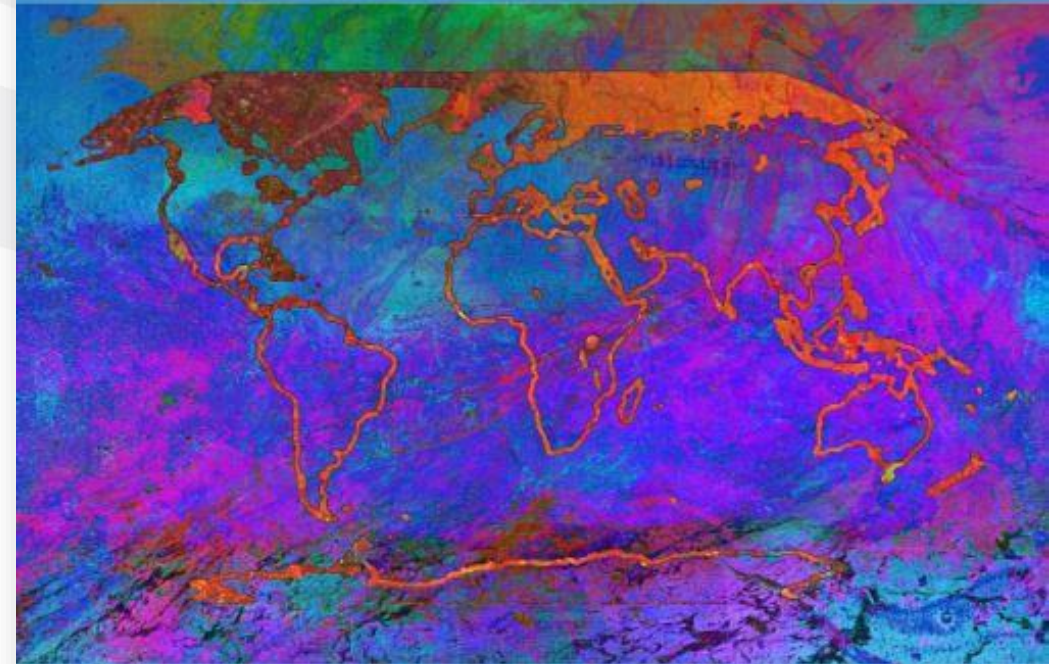


ipcc

INTERGOVERNMENTAL PANEL ON climate change

Climate Change 2021

The Physical Science Basis



WGI

Working Group I contribution to the
Sixth Assessment Report of the
Intergovernmental Panel on Climate Change



Climate Stressors → Hazards → Impacts



SOURCE: LAO

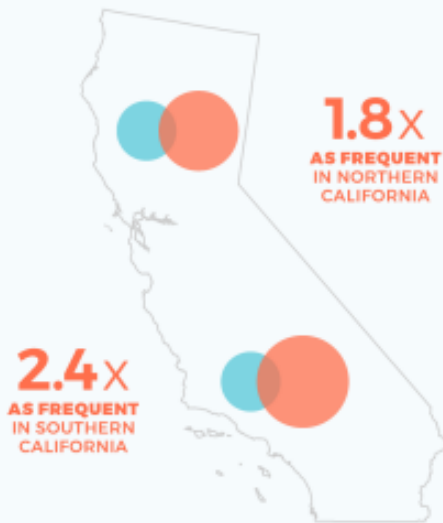
Weather whiplash: extreme dry and wet swings

Extreme Dry Years

Low November–March precipitation totals for these years resemble 2013–14 or 1976–77, the driest year in modern California history.

FREQUENCY 1895–2017 **1/100** YEARS

FUTURE RISK BY 2100



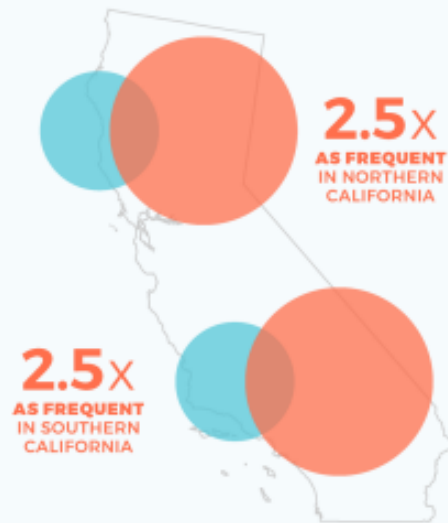
KEY IMPACT WATER SCARCITY

Extreme Wet Years

In these years, the November–March period is as wet as in 2016–17, when statewide precipitation was 54% greater than average.

FREQUENCY 1895–2017 **4/100** YEARS

FUTURE RISK BY 2100



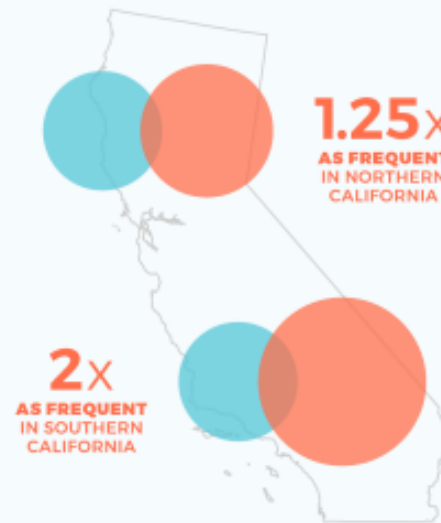
KEY IMPACT INFRASTRUCTURE STRESS

Dry-to-Wet Whiplash

This scenario represents the transition from a very dry year to a very wet one, as occurred between 2015–16 and 2016–17.

FREQUENCY 1895–2017 **4/100** YEARS

FUTURE RISK BY 2100



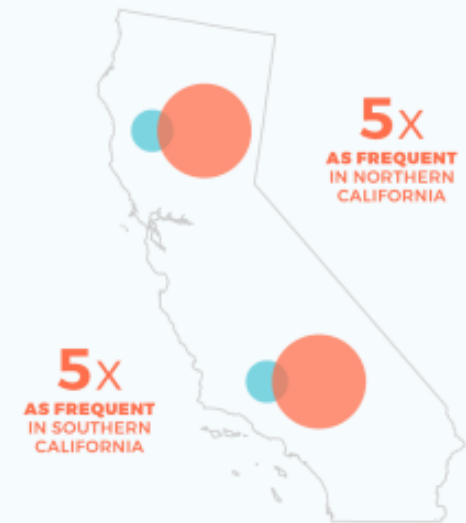
KEY IMPACT MUDSLIDES

Severe Storm Sequence

In this scenario, 40-day precipitation totals are similar to those during California's "Great Flood of 1862."

FREQUENCY 1895–2017 **1/200** YEARS

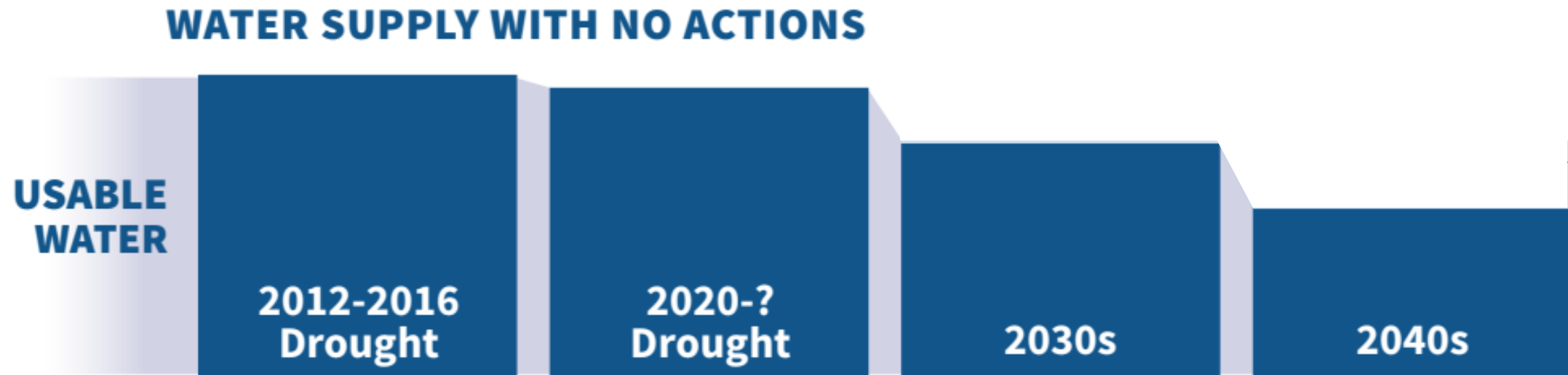
FUTURE RISK BY 2100



KEY IMPACT CATASTROPHIC FLOODING

SOURCE: UCLA/SWAIN

California could lose 10% of its water supplies over the next 20 years



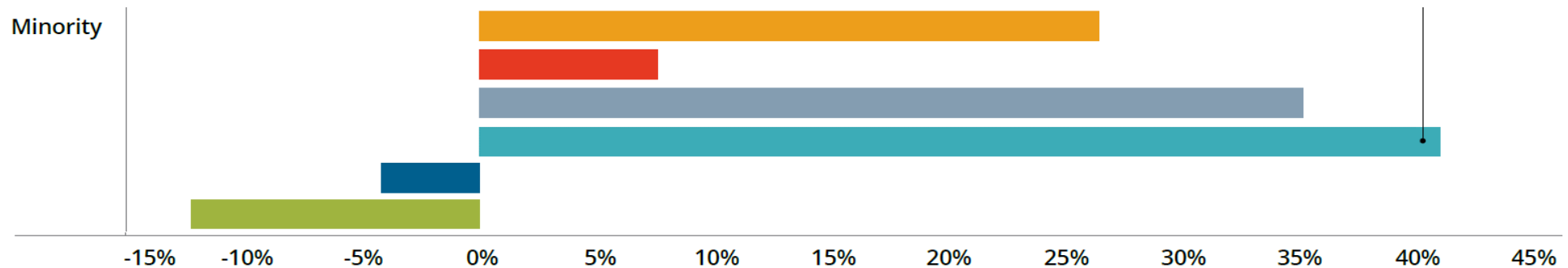
SOURCE: California Water Supply Strategy

Disproportionate climate risks in the US

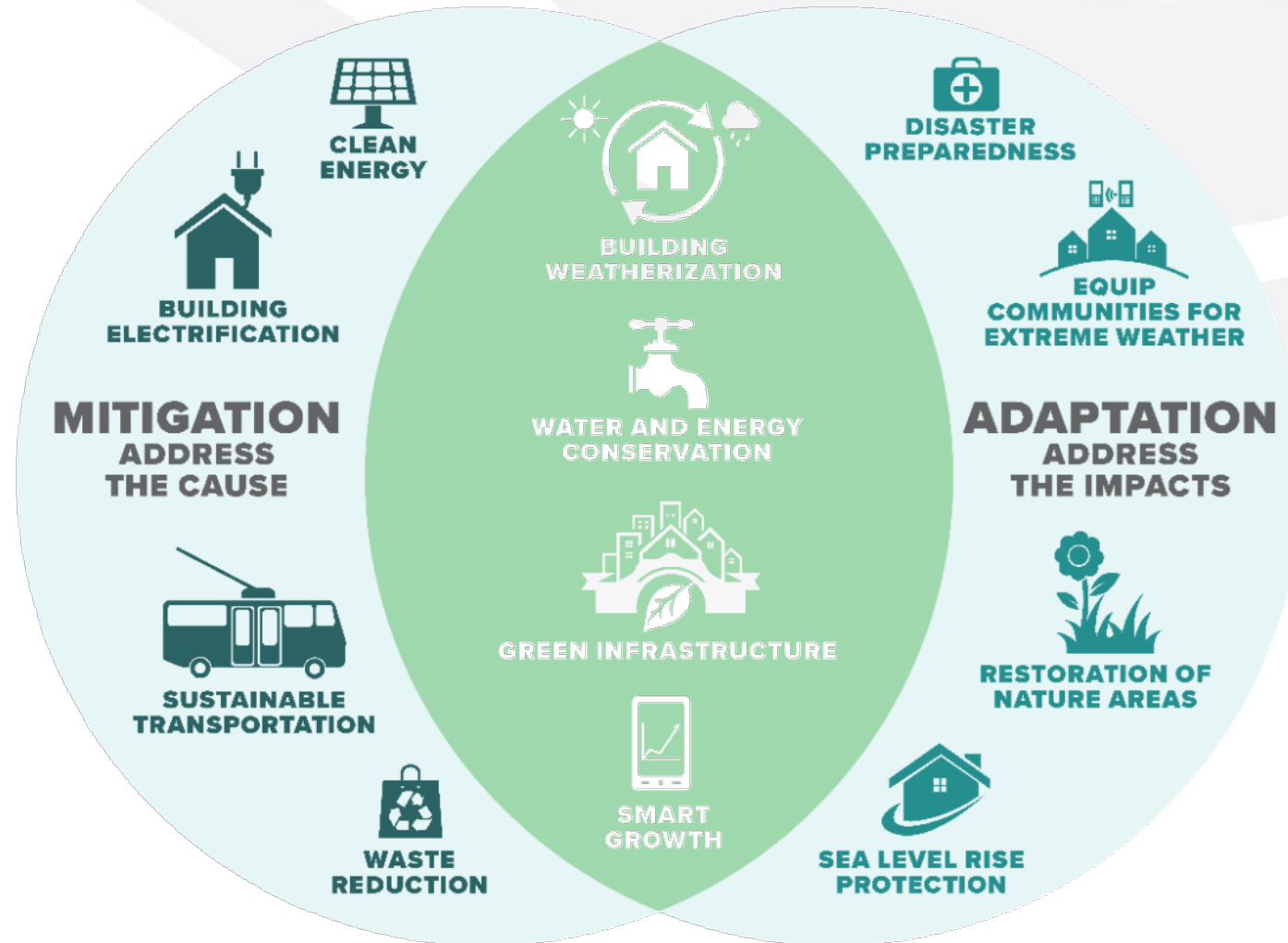
	<p>AIR QUALITY AND HEALTH* New asthma diagnoses in children due to particulate air pollution.</p>		<p>COASTAL FLOODING AND TRAFFIC Traffic delays from high-tide flooding.</p>
	<p>EXTREME TEMPERATURE AND HEALTH Deaths due to extreme temperatures.</p>		<p>COASTAL FLOODING AND PROPERTY Property inundation due to sea level rise.</p>
	<p>EXTREME TEMPERATURE AND LABOR Lost labor hours for weather-exposed workers.</p>		<p>INLAND FLOODING AND PROPERTY Property damage or loss due to inland flooding.</p>



Difference in Risks Relative to Reference Populations with 2°C of Global Warming or 50 cm of Sea Level Rise



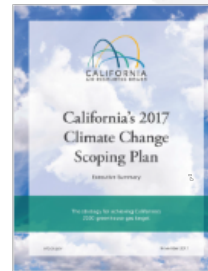
Climate action → mitigation & adaptation



SOURCE: LOS ALTOS

Mitigation: Scoping Plan sets state greenhouse gas reduction goals

2022 SCOPING PLAN FOR ACHIEVING
CARBON NEUTRALITY
NOVEMBER 16, 2022



2017 Scoping Plan Update
Achieving California's 2030
Greenhouse Gas Target

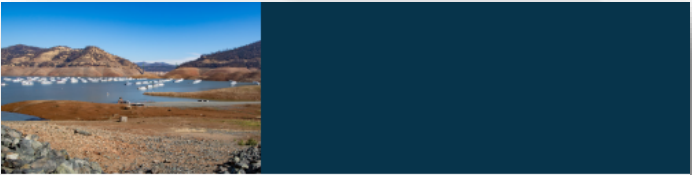


2013 Scoping Plan Update
Building on the Framework

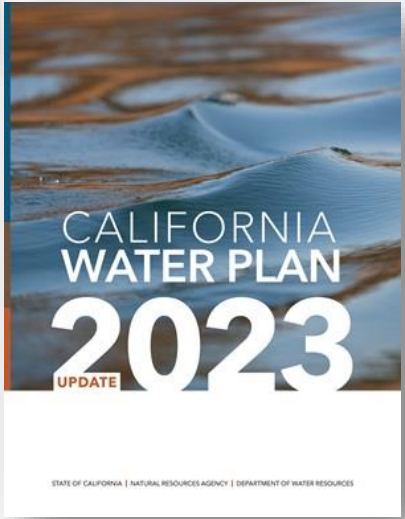
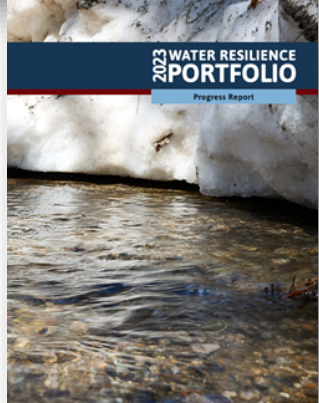
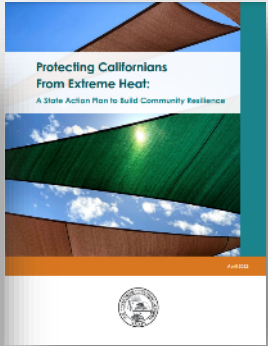
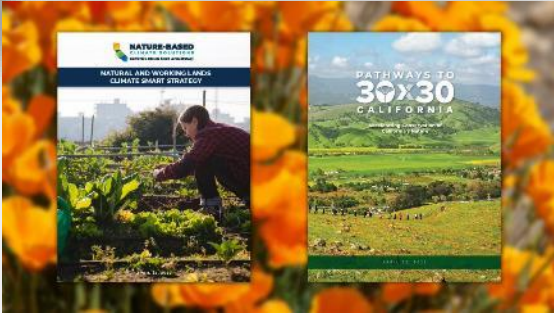
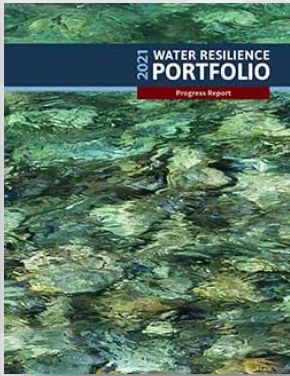
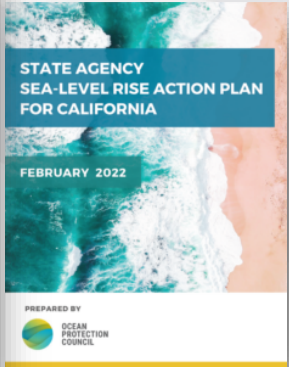
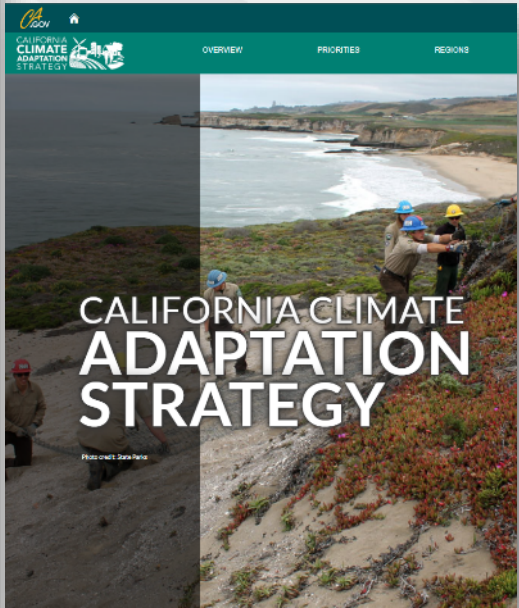


2008 Scoping Plan
A Framework for Change

Adaptation: State strategies address climate impacts



AUG 2022 CALIFORNIA'S WATER SUPPLY STRATEGY
Adapting to a Hotter, Drier Future



Regional Water Boards resolutions and plans

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
May 10, 2018
Resolution No. R18-004

A Resolution to Prioritize Actions to Adapt to and Mitigate the Impacts of Climate Change on the Los Angeles Region's Water Resources and Associated Beneficial Uses

WHEREAS, the California Regional Water Quality Control Board, Los Angeles Region (Los Angeles Water Board), finds that:

- The mission of the Los Angeles Water Board is to preserve and enhance water quality in the Los Angeles Region for the benefit of present and future generations. Pursuant to the federal Clean Water Act and the California Porter-Cologne Water Quality Control Act, the Board determines beneficial uses of the Region's surface and ground waters and establishes water quality objectives for the reasonable protection of those uses. Significant uses are the uses of water necessary for the survival or well-being of humans, plants, and wildlife. In the face of climate change, the Board's success in achieving its mission requires a clear understanding of the foreseeable impacts to our water resources and associated beneficial uses and implementation of strategies to adapt to and mitigate such impacts.
- Human activities over the past century have resulted in the release of large quantities of carbon dioxide and other greenhouse gases (GHGs) into the atmosphere, leading to the onset of significant changes in the earth's climate that will have substantial impacts on water resources and water quality.
- As discussed in detail in Part 1 of the Los Angeles Region Framework for Climate Change Adaptation and Mitigation, Current State of Knowledge, a major climate change impact, discussed below, the predicted increase in temperature, heightened frequency of extreme weather conditions including extreme precipitation events and drought and resultant increase in the occurrence of flooding and wildfires, along with sea level rise could substantially alter hydrologic and ecosystem processes in our region. Potential impacts include decreases in stream flow levels, together with potential for increased stream bank erosion, increases in flow velocities and water temperatures, and changes to aquatic habitat. Increases in surface water temperatures, increases in sedimentation (resulting from flooding and wildfires followed by post-fire rain and mudslides), pollutant levels (resulting from increased sedimentation and sediment-bound pollutants), decreased streamflow, potential

Los Angeles Region
Framework for Climate
Change Adaptation and
Mitigation

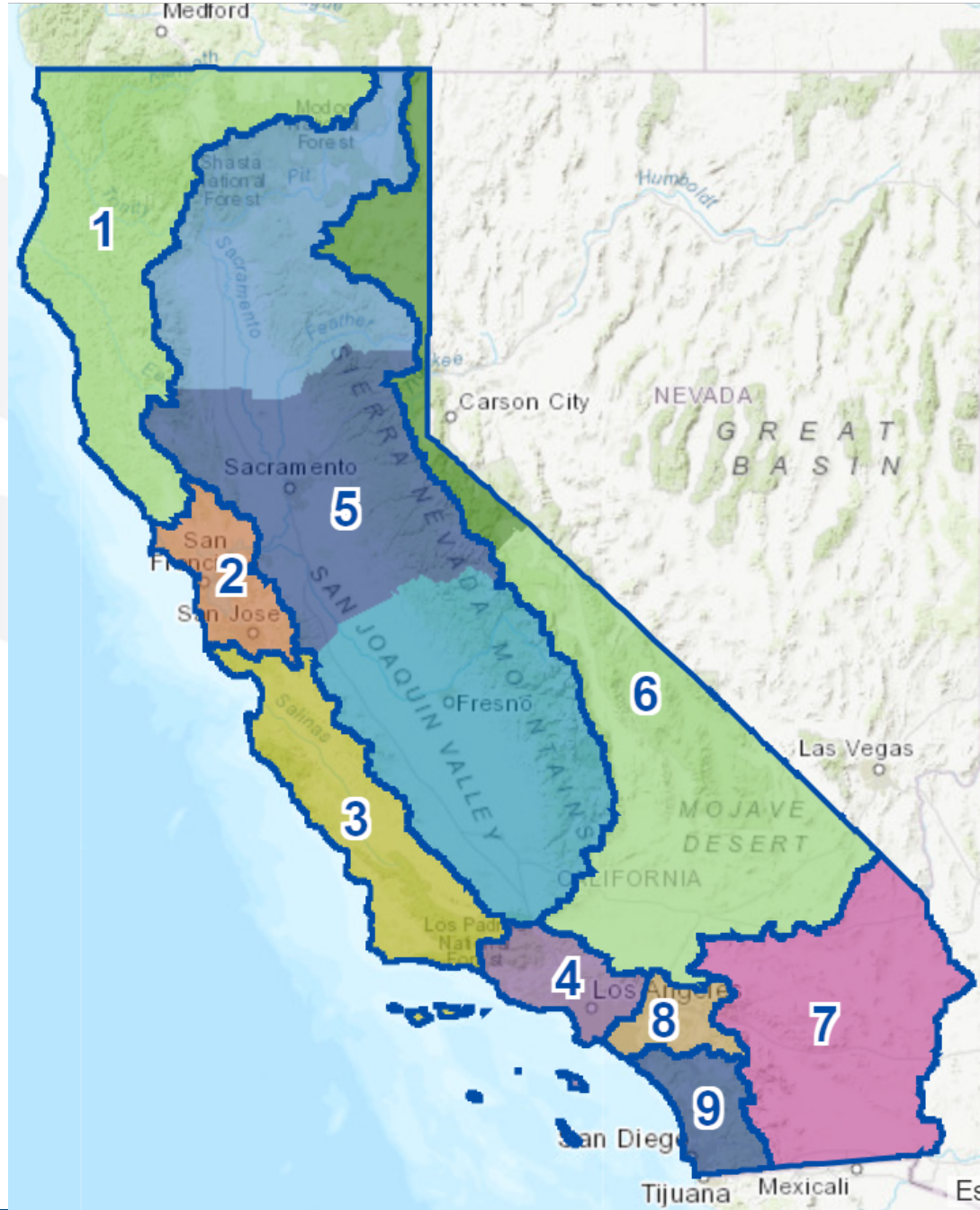
Potential Regulatory
Adaptation and Mitigation
Measures

Los Angeles Regional Water Quality Control Board

California
Water Boards
Resolving California's Water

CLIMATE CHANGE MITIGATION AND ADAPTATION ACTION PLAN
FOR THE LAHONTAN REGION
March 2021

Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION
RESOLUTION NO. R18-001
CLIMATE CHANGE
MITIGATION AND ADAPTATION STRATEGY

WHEREAS, the California Regional Water Quality Control Board, Lahontan Region (Lahontan Water Board), finds that:

1. There is a need to address the potential impacts of climate change on the water resources of the Lahontan Region. The Board is committed to protecting and enhancing water quality in the Lahontan Region for the benefit of present and future generations. Pursuant to the federal Clean Water Act and the California Porter-Cologne Water Quality Control Act, the Board determines beneficial uses of the Region's surface and ground waters and establishes water quality objectives for the reasonable protection of those uses. Significant uses are the uses of water necessary for the survival or well-being of humans, plants, and wildlife. In the face of climate change, the Board's success in achieving its mission requires a clear understanding of the foreseeable impacts to our water resources and associated beneficial uses and implementation of strategies to adapt to and mitigate such impacts.
2. Human activities over the past century have resulted in the release of large quantities of carbon dioxide and other greenhouse gases (GHGs) into the atmosphere, leading to the onset of significant changes in the earth's climate that will have substantial impacts on water resources and water quality.
3. The Board is committed to protecting and enhancing water quality in the Lahontan Region for the benefit of present and future generations. Pursuant to the federal Clean Water Act and the California Porter-Cologne Water Quality Control Act, the Board determines beneficial uses of the Region's surface and ground waters and establishes water quality objectives for the reasonable protection of those uses. Significant uses are the uses of water necessary for the survival or well-being of humans, plants, and wildlife. In the face of climate change, the Board's success in achieving its mission requires a clear understanding of the foreseeable impacts to our water resources and associated beneficial uses and implementation of strategies to adapt to and mitigate such impacts.
4. Human activities over the past century have resulted in the release of large quantities of carbon dioxide and other greenhouse gases (GHGs) into the atmosphere, leading to the onset of significant changes in the earth's climate that will have substantial impacts on water resources and water quality.
5. The Board is committed to protecting and enhancing water quality in the Lahontan Region for the benefit of present and future generations. Pursuant to the federal Clean Water Act and the California Porter-Cologne Water Quality Control Act, the Board determines beneficial uses of the Region's surface and ground waters and establishes water quality objectives for the reasonable protection of those uses. Significant uses are the uses of water necessary for the survival or well-being of humans, plants, and wildlife. In the face of climate change, the Board's success in achieving its mission requires a clear understanding of the foreseeable impacts to our water resources and associated beneficial uses and implementation of strategies to adapt to and mitigate such impacts.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION
RESOLUTION NO. R18-001-001
ADDRESSES THREATS TO BENEFICIAL USES FROM CLIMATE CHANGE

WHEREAS:

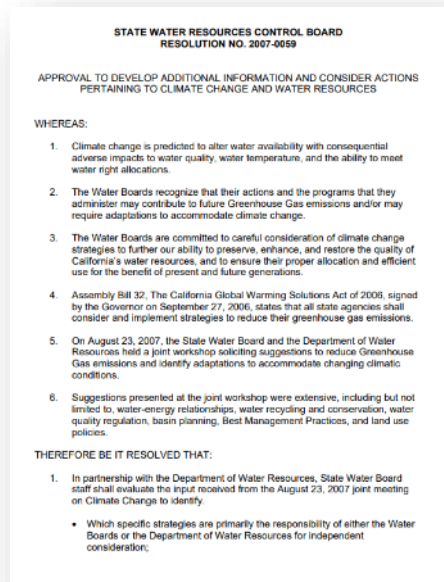
1. The Board is committed to protecting and enhancing water quality in the San Diego Region for the benefit of present and future generations. Pursuant to the federal Clean Water Act and the California Porter-Cologne Water Quality Control Act, the Board determines beneficial uses of the Region's surface and ground waters and establishes water quality objectives for the reasonable protection of those uses. Significant uses are the uses of water necessary for the survival or well-being of humans, plants, and wildlife. In the face of climate change, the Board's success in achieving its mission requires a clear understanding of the foreseeable impacts to our water resources and associated beneficial uses and implementation of strategies to adapt to and mitigate such impacts.
2. Human activities over the past century have resulted in the release of large quantities of carbon dioxide and other greenhouse gases (GHGs) into the atmosphere, leading to the onset of significant changes in the earth's climate that will have substantial impacts on water resources and water quality.
3. Although climate change is a global phenomenon in nature and scale, it is a regional issue that is affecting the San Diego Region. Climate change is expected to have significant impacts on the San Diego Region's water resources and associated beneficial uses. The Board is committed to protecting and enhancing water quality in the San Diego Region for the benefit of present and future generations. Pursuant to the federal Clean Water Act and the California Porter-Cologne Water Quality Control Act, the Board determines beneficial uses of the Region's surface and ground waters and establishes water quality objectives for the reasonable protection of those uses. Significant uses are the uses of water necessary for the survival or well-being of humans, plants, and wildlife. In the face of climate change, the Board's success in achieving its mission requires a clear understanding of the foreseeable impacts to our water resources and associated beneficial uses and implementation of strategies to adapt to and mitigate such impacts.
4. The Board is committed to protecting and enhancing water quality in the San Diego Region for the benefit of present and future generations. Pursuant to the federal Clean Water Act and the California Porter-Cologne Water Quality Control Act, the Board determines beneficial uses of the Region's surface and ground waters and establishes water quality objectives for the reasonable protection of those uses. Significant uses are the uses of water necessary for the survival or well-being of humans, plants, and wildlife. In the face of climate change, the Board's success in achieving its mission requires a clear understanding of the foreseeable impacts to our water resources and associated beneficial uses and implementation of strategies to adapt to and mitigate such impacts.

California Regional Water Quality Control Board
San Francisco Bay Region
Proposed Basin Plan Amendment:
Climate Change and Aquatic Habitat Protection,
Maintenance, and Restoration

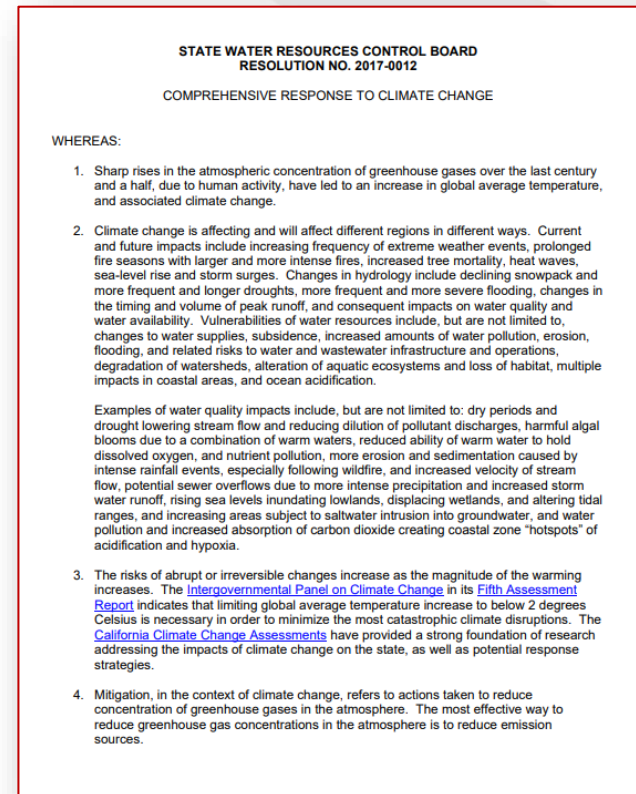
March 22, 2018

State Water Board climate commitments

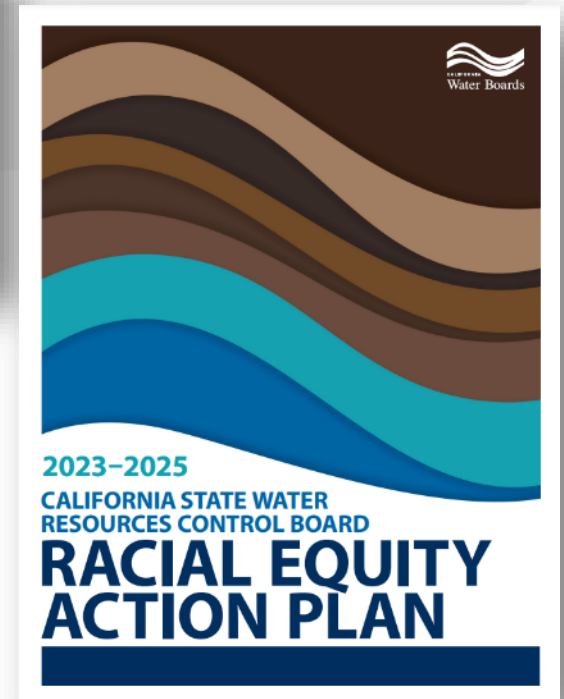
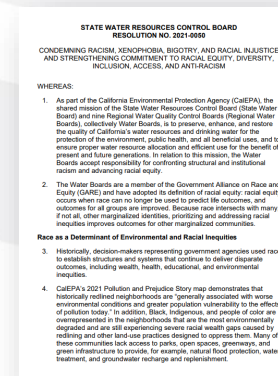
Climate Resolution 2007



Climate Resolution 2017

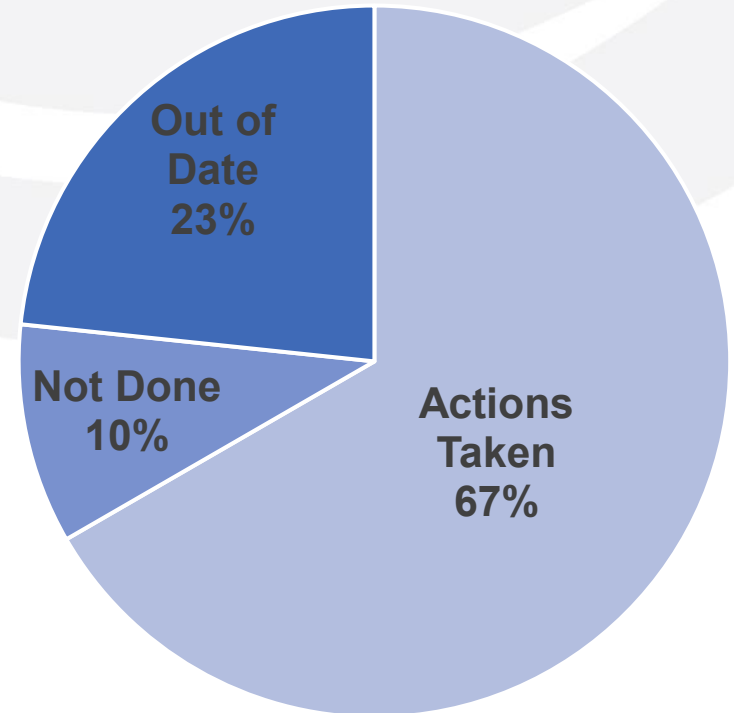


Racial Equity Resolution 2021 Racial Equity Action Plan 2023-25



Review: Climate Resolution 2017

- March 2017
 - Climate Resolution adopted
 - 30 committed actions
- March 2024
 - Preliminary review by State Water Board Climate Team
 - Feedback from State Water Board divisions & offices



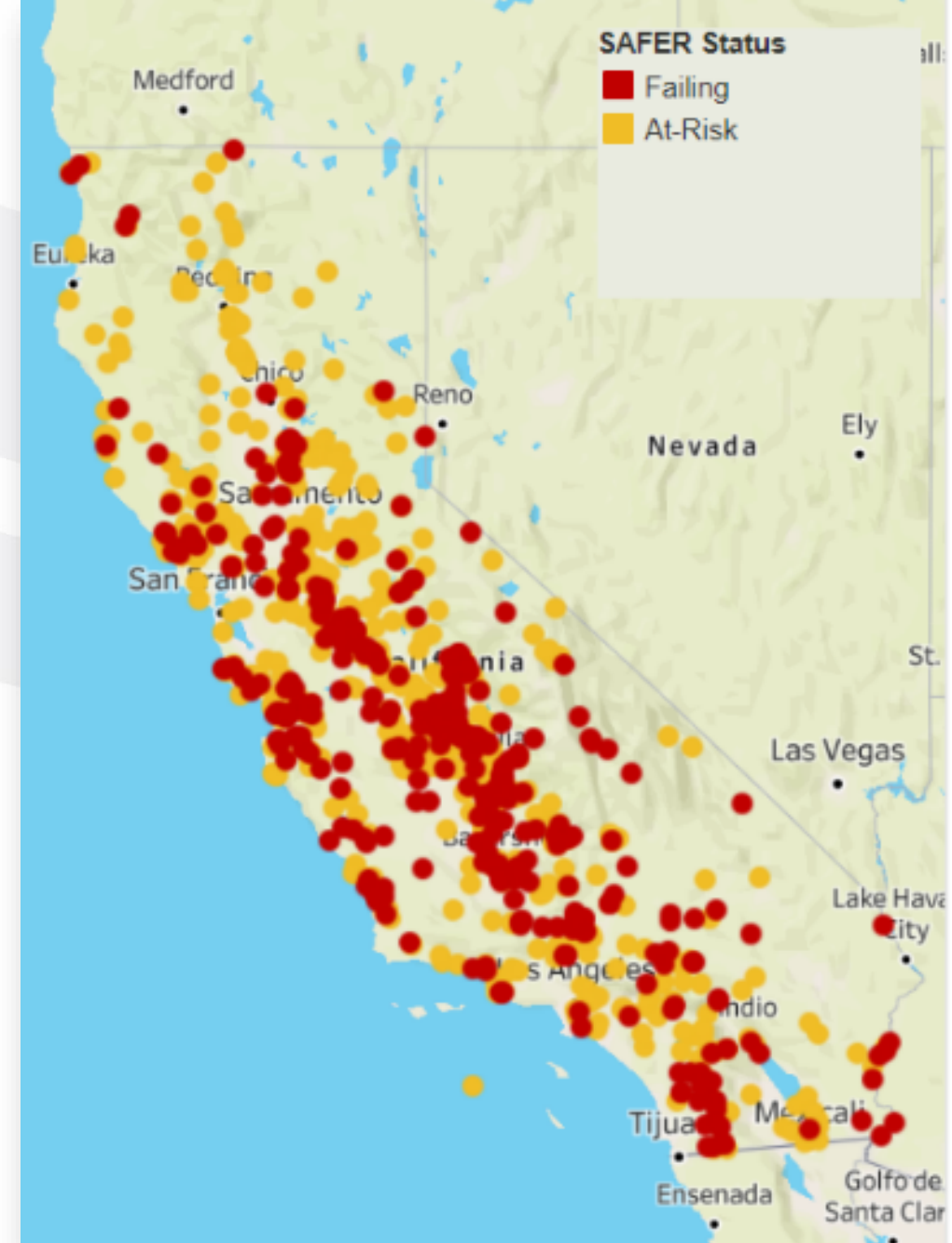
Key Climate Resolution 2017 Accomplishments

- Building resilience for **drinking water** systems
- Annual reporting of **recycled water data** since 2019
- **Water Rights Response to Climate Change** report released 2021
- **Water quality permitting** processes and plans include climate
- Expand **water resources**
- Climate planning included in **State Revolving Fund** applications
- **Urban water efficiency** regulations and data collection
- Drinking water **climate vulnerability surveying** since 2018
- Ongoing **Bay-Delta** consultation
- Internal Water Boards **Climate Roundtable** continues

Drinking Water

Resolution 2017: Provide assistance to protect drinking water systems

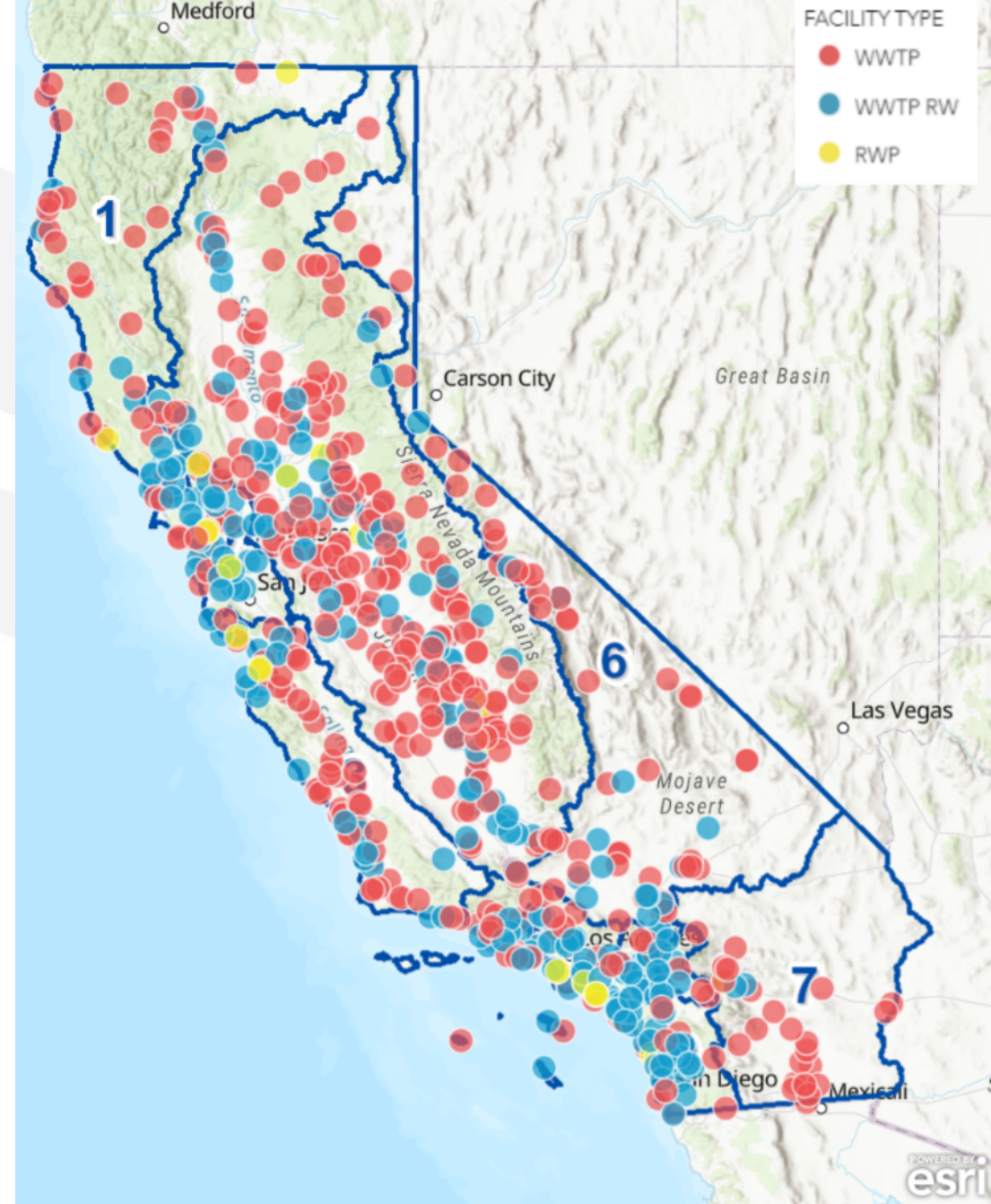
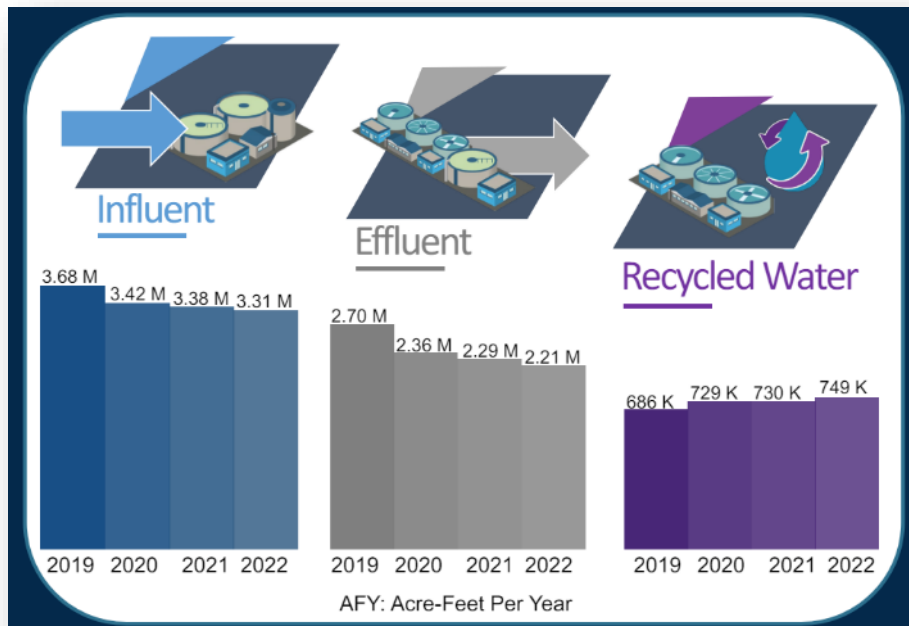
- SAFER: Safe and Affordable Funding for Equity & Resilience
- Drinking Water Needs Assessment



Water Recycling

Resolution 2017: Summarize annual volume of recycled water

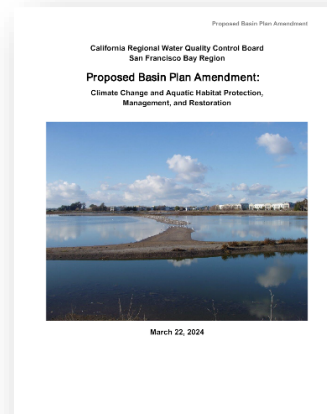
- Annual summary since 2019



Water Quality Planning & Permitting

Resolution 2017: Consider need to modify permits and other regulatory requirements

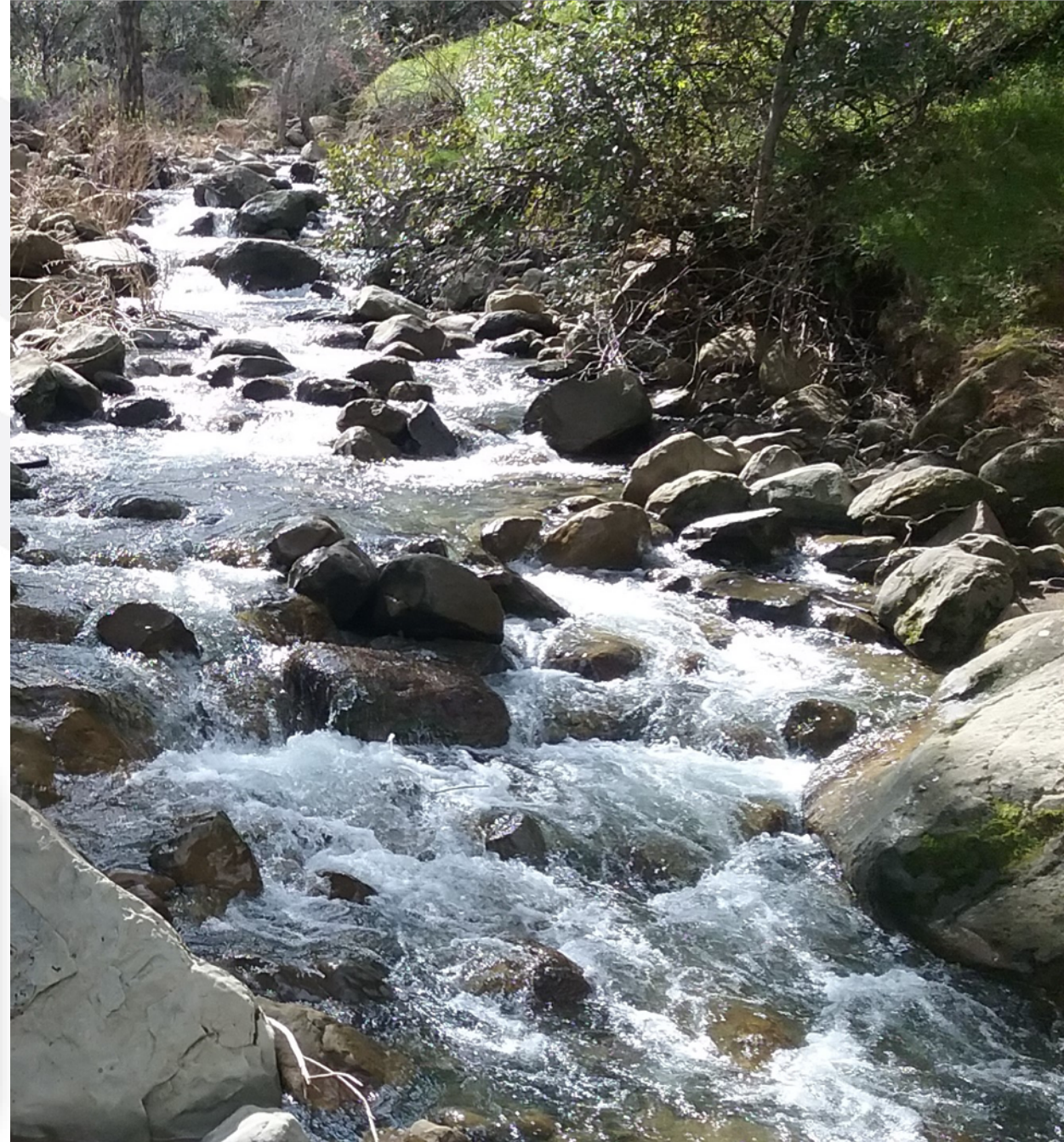
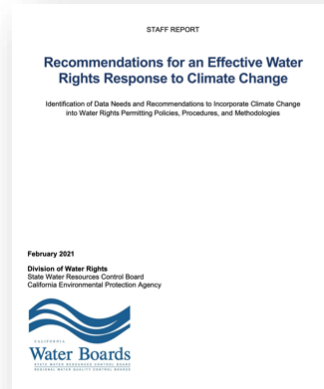
- All Regions have included climate change considerations in resolutions, planning, and/or permitting



Water Rights Recommendations

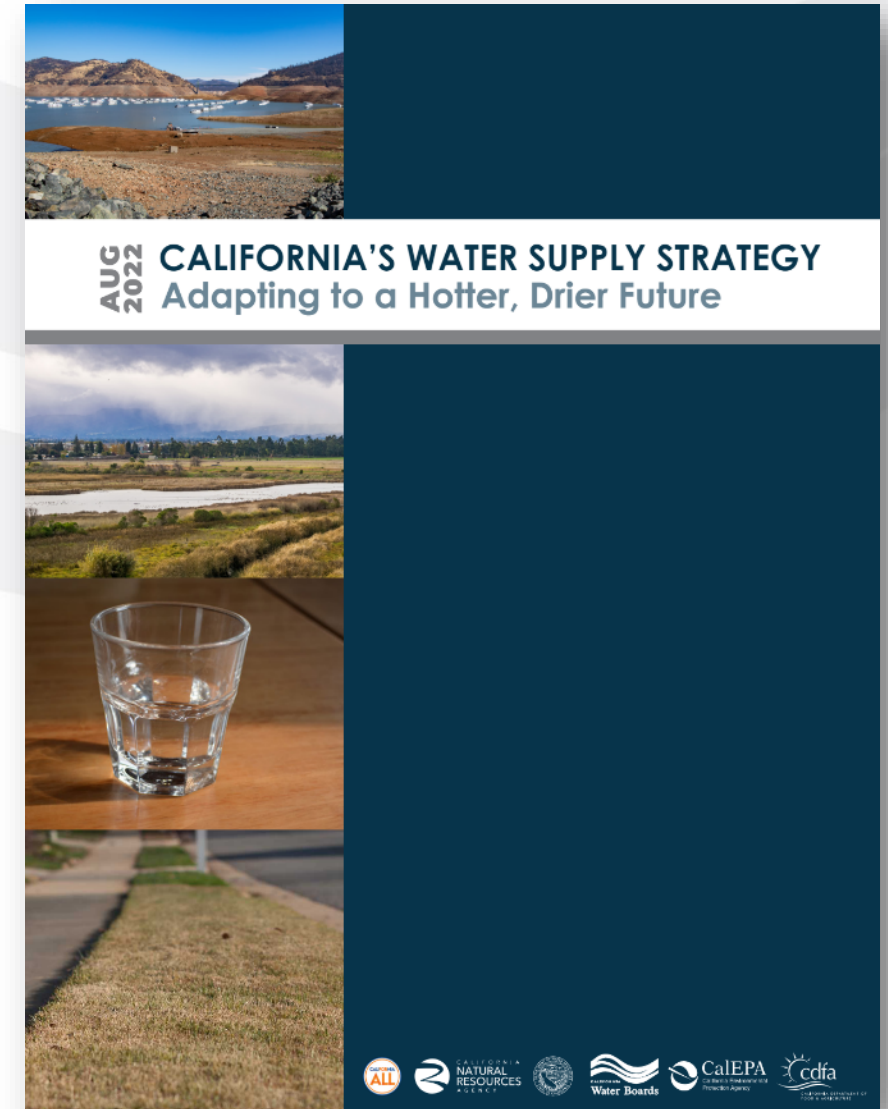
Resolution 2017: Make recommendations regarding the use of models to account for projected impacts of climate change

- Report: recommendations to incorporate climate change analysis into permitting new water rights



Water Resources

- Resolution: identify and recommend actions the Water Boards could take for effective permitting of projects to develop new and underutilized water resources
- Water Supply Strategy 2022
 - Identify recycled water projects
 - Assist with recycled water permitting & funding
 - Review groundwater basins impaired by salts and nutrients
 - Develop siting criteria for desalination



Lessons Learned

Climate Resolution 2017 was an action plan

- Complete, in process, outdated

Need of long-term guidance for climate action

- Not a revision
- Guideposts: principles and processes
- Shared framework

Opportunity for a new climate resolution

- Divisions, Offices, Regional Water Boards
- Co-produced with interested parties



The lawn goodbye landscape gallery | EBMUD

Content a new climate resolution may include

1. Purpose statement

2. Principles

Examples: Prioritize...

- Natural and green infrastructure
- Equity and most vulnerable
- Mult-benefit: mitigation + adaptation
- Avoid maladaptation

3. Process

Examples: how to track actions, how to align actions across strategies, how to develop new actions

4. Actions

New or revised actions



Why purpose, principles & processes?

- Specific **actions** are important but can quickly become outdated
- **Purpose** and **principles** provide long-term guidance to staff
- **Processes**
 - ensure we are going the right direction
 - identify resources and management to track and follow that direction
 - assess the need to revise our commitments



Approach to develop new climate resolution

- Participatory approach
- Drafting team
- Internal management and executive feedback
- Public engagement
- Resolution tracking tool

