

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION**

**MEETING OF JUNE 12, 2019
BARSTOW**

ITEM 8
CLIMATE CHANGE MITIGATION AND ADAPTATION STRATEGY

CHRONOLOGY	
Date	Action
Nov. 2014	Staff hosted the first Climate Change Adaptation Public Workshop in Barstow, California. Climate change experts presented the latest research regarding anticipated climate change effects in the Lahontan Region to over 100 attendees. Attendees provided ideas regarding potential adaptations/responses (regulatory, policy, coordination with stakeholders, education, etc.) to climate change.
Jan. 2015	Staff hosted second Climate Change Adaptation Public Workshop in South Lake Tahoe, California, which was similar in attendance, content, and format to Nov. 2014 workshop.
May 2015	Staff presented summary of public ideas generated from the Nov. 2014 and Jan. 2015 public workshops to the Water Board. The Water Board directed staff to prepare a Climate Change Mitigation and Adaptation Strategy (Strategy) to guide our adaptation efforts throughout the Lahontan Region and at the local level.
Jul. 2015	Staff presented Climate Change Conceptual Model and Adaptation Strategy. Water Board provided direction.
Dec. 2015	Three internal Climate Change Working Groups formed and began meeting: Infrastructure, Storm Water and Low Impact Development, and Wetlands and Floodplains.
Aug. 2016	Staff widely distributed Climate Change Survey to Email Subscription Lists and other interested persons. Survey is posted on the Climate Change page of the Water Board's web site.
Aug. – Oct. 2016	Staff attended outreach meetings with a variety of stakeholder groups to encourage stakeholder participation with survey, and to solicit input.
Nov. 2016	Staff discussed Staff's online Climate Change Survey, prioritizing potential climate change-related actions, and next steps in developing a climate change mitigation and adaptation strategy. Water Board provided direction.
Jan. 2017	Staff provided preliminary observations regarding the Climate Change Survey results and proposed revised schedule for developing a climate change mitigation and adaptation strategy. Water Board established a Climate Change Subcommittee and provided direction.
May 2017	Staff presented a Climate Change Staff Report, which presented information on the input received from outreach workshops in 2014 and from an online survey in August 2016. Water Board supported staff's plan to hold outreach meetings throughout the region to solicit public input on various options the Water Board should pursue to adapt to climate change.
Sept. 28 – Oct. 10, 2017	Staff conducted three public outreach meetings (Truckee, Apple Valley, Bishop) to gather input on various options the Water Board could prioritize for adapting to climate change.
Nov. 2017	Staff presented the key messages learned from the three public workshops that were held throughout the Lahontan Region.

CHRONOLOGY

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Apr. 2018	Water Board's Executive Officer presented its progress toward developing its Strategy to State Board members at its April 3, 2018 State Board Hearing.
May 2018	Staff provided an update about existing, completed, and planned future climate change response actions. Three critical areas: (1) infrastructure protection, (2) protection and enhancement of wetlands, floodplains, and headwaters, and (3) protection of groundwater and critical recharge areas were presented as areas the Water Board could prioritize its climate change response efforts. Staff also provided information on how tasks proposed in the Strategy align with the State Water Board's Comprehensive Response to Climate Change as resolved in State Water Board Resolution 2017-0012.
Sept. 2018	Staff posted relevant regional climate information on its Climate Adaptation webpage. Information includes California's Fourth Climate Change Assessment released (Aug 2018) and region-specific reports that include climate science, impacts, and adaptation information pertaining to communities and land areas with the Water Board's regional boundary. Findings of the regional reports are used to inform the sensitive ecosystems and vulnerable sectors that the Water Board will direct its climate change efforts.

BACKGROUND

Summary. The Water Board began in 2014 to take steps toward formalizing a process for the agency to become better prepared for extreme climate related events and potential water quality issues. The development process started with two science and brainstorming public workshops. The following objectives of those workshops were achieved: (1) participants became more aware of the new reality that faces us with our changing climate, and (2) the public provided initial input for the Water Board to consider in defining its role in addressing climate change.

Following the initial workshops, staff presented an overview of the ideas gathered from the science/brainstorming public workshops to the Water Board members. At that meeting, the Water Board and staff acknowledged progress toward adapting to climate change through the use of existing regulatory tools and policies within our authority. The Water Board directed Staff to prepare a Climate Change Mitigation and Adaptation Strategy (Strategy) to provide more specific guidance and expand our climate change adaptation efforts throughout the Lahontan Region.

Through a web-based survey and a series of three public outreach meetings, staff received over 400 ideas from the public and stakeholders that were distilled into three primary focus areas: (1) protection of infrastructure and critical recharge areas, (2) protection and restoration of wetlands, floodplains, and headwaters, and (3) increasing stormwater capture and infiltration and low-impact development.

The initial focus areas were presented to the Water Board and the public in May of 2018. Based on additional direction provided by the Water Board, new state-level rules (Executive Order SB-52-18 - Forest Carbon Plan), and requirements to implement components of vegetation management and wildfire prevention and recovery as prescribed in Senate Bill 901 (Chapter 626, Statutes of 2018), the initial focus areas were augmented to provide emphasis in building more resilient and reliable forested landscapes.

As the Strategy process developed, staff realized our contribution toward mitigating and adapting to potential water quality related impacts from climate change would be most effective if our work focused on protecting and improving four vulnerable environmental areas. (Refer to Policy Statements section in Discussion below.)

DISCUSSION

Elements of the Strategy. To better define the Water Board's role in protecting water quality and beneficial uses of water within the context of California's climate change efforts, and to identify specific actions the Water Board can take to adapt to and mitigate the effects of climate change, the Strategy document is comprised of two distinct and interrelated parts: (1) Policy Statements and (2) Action Plan. The Policy Statements and implementation framework (Action Plan) will form the foundation of the final Strategy that staff will prepare for the Water Board's consideration in November 2019.

Policy Statements provide overarching guidance to the Water Board's efforts in four critical environmental areas, which are particularly susceptible to climate change impacts under future climate and weather scenarios. These critical environmental areas include (1) protection of wetlands, floodplains, and headwaters, (2) infrastructure protection, (3) protection of groundwater quality and supply, and (4) protection of headwater forests and promoting fire resilient landscapes.

Action Plan will prescribe a set of select actions that may be implemented within the critical environmental sectors identified in the Policy Statements. Actions will include a combination of (1) Water Board efforts that are already existing, planned, or underway, (2) select actions proposed for development and implementation, and (3) opportunities to partner with existing, key regional efforts being developed by others to build their adaptation plans.

Schedule for Strategy Updates. The Strategy will be a living document, available on the Water Board's webpage, and will be updated as climate change impacts on water quality, and actions to address those impacts evolve. Also, new laws or Executive Orders may influence Strategy contents. It is anticipated that, at a minimum, the Strategy will be updated every five years. The Action Plan may require more frequent updating, since developing and implementing the actions prescribed in the Action Plan may require re-examining and replacing existing priorities, shifting resources, and obtaining future funding to build the capacity needed to effectively respond. As such, it is anticipated that the Action Plan will be re-examined annually and necessary updates to the Action Plan will be proposed through the preparation and presentation of an update to the Water Board at a public meeting.

Given that current resources and future funding dedicated to climate change response are limited, the Water Board recognizes that successful implementation of the Strategy and the activities identified in the Action Plan will rely largely on (1) supporting existing partnerships, (2) leveraging the efforts of stakeholders, and (3) prioritizing which select actions within the Water Board's authority can be effectively implemented with the limited resources we have. Productive partnerships and collaboration will continue to be the cornerstone of our process as we refine and implement the Strategy for the Lahontan Region.

PUBLIC OUTREACH/INPUT

Water Board staff maintains and updates its climate change web page and distributes agenda items and other documents/activities and funding opportunity to the Water Board's Climate Change Electronic Subscription List. Staff continues to participate in quarterly conference calls attended by State and Regional Board Staff who share updates on each region's progress toward developing and implementing climate change actions. Staff presented the Lahontan Region's efforts toward Climate Change Adaptation to the State Water Board at the State Water Board's April 3, 2018 Board Meeting in Sacramento.

On April 30, 2019, staff released a draft Staff Report for a 30-day public comment period that ends May 29, 2019 (see Enclosure 1). As of May 28, 2019, no comments have been received. Staff will inform the Water Board with a late addition of any comments received.

KEY QUESTIONS

This is an informational item and no formal action is requested; however, staff request that the Water Board consider the following key questions regarding the Strategy and provide direction on potential modifications or changes that could be made to improve the Strategy's structure and content. Input received will be evaluated as staff work to prepare a Resolution for the Water Board to consider for adoption at the November 2019 Board Meeting.

1. Are the four draft policy statements on the right track for Source Water, Infrastructure, Groundwater, and Forests?
2. Is the implementation framework appropriate with an Action Plan updated yearly and the overall Strategy updated every 5 years?

ENCLOSURE	ITEM	BATES NUMBER
1	Draft Staff Report on Climate Change Mitigation and Adaptation Strategy for the Lahontan Region	8 - 5
2	Water Board staff presentation	8 - 37
3	Comments Received	Submitted Under Separate Cover

ENCLOSURE 1

Lahontan Regional Water Quality Control Board

April 30, 2019

TO ALL INTERESTED PERSONS AND AGENCIES:

Opportunity to Comment on the Water Board's Climate Change Mitigation and Adaptation Strategy Draft Staff Report

Lahontan Regional Water Quality Control Board (Lahontan Water Board) staff has prepared a Draft Staff Report to present the Water Board's Climate Change Mitigation and Adaptation Strategy (Strategy), which includes two separate but related documents: (1) Policy Statements, and (2) Action Plan. Elements of the Strategy will be presented as an informational item in a workshop held during the Lahontan Water Board's regularly scheduled board meeting on June 12-13, 2019 in Barstow, CA. This is an informational item and no action will be asked of the Board though Board members may provide input and direction.

Staff recognizes that the impacts of climate change in the Lahontan Region will continue to be wide and varied, cutting across political boundaries, socio-economic boundaries, and watershed and ecosystem boundaries, which will increase the complexity of responding to climate change and need for balancing competing interests. As such, collaboration, partnerships, and stakeholder involvement are key to developing and implementing an integrated and effective response to climate change, and we welcome your feedback on the elements of our draft Strategy.

The Water Board requests you review the enclosed documents and provide us with your written comments no later than **May 29, 2019**. Please provide us with your written comments via e-mail to Lahontan@waterboards.ca.gov. Comments received after that date may not be given full consideration in preparation of the workshop pertaining to this item. If there are extensive comments we may delay the item, so the comments may be properly addressed.

Staff plan to present the final Strategy to the Water Board for its adoption at a later board hearing expected by the Fall of 2019. Once the final documents are prepared, they will be circulated to all parties that commented on the draft documents and all persons subscribed to the Lahontan Water Board's Climate Change Lyris List. If you wish to receive future correspondences pertaining to the Water Board's progress toward climate change response, please sign up for the Lyris List on the Internet at:

https://www.waterboards.ca.gov/resources/email_subscriptions/reg6_subscribe.html.

PETER C. PUMPHREY, CHAIR | PATTY Z. KOUYOUMDJIAN, EXECUTIVE OFFICER

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Approximately 10 to 15 days prior to each meeting, the Water Board publishes its meeting agenda on the Internet at: <http://www.waterboards.ca.gov/lahontan>. If you have any questions regarding this matter, please contact me at (530) 542-5425.

A handwritten signature in black ink that reads "Mary Fiore-Wagner". The signature is written in a cursive, flowing style.

Mary Fiore-Wagner
Senior Environmental Scientist - Specialist

Enclosure: Draft Staff Report on Lahontan Water Board's Climate Change Adaptation and Mitigation Strategy



**DRAFT STAFF REPORT ON
CLIMATE CHANGE MITIGATION AND ADAPTATION STRATEGY
FOR THE LAHONTAN REGION**

June 2019

**Report to the Lahontan Regional Water Quality Control Board
Patty Z. Kouyoumdjian
Executive Officer**



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Gavin Newsom, Governor

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

Jared Blumenfeld, Secretary

STATE WATER RESOURCES CONTROL BOARD

E. Joaquin Esquivel, Chair

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD,
LAHONTAN REGION**

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Kimberly Cox, Member

Keith Dyas, Member

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Table of Contents

1.	EXECUTIVE SUMMARY.....	1
2.	INTRODUCTION	3
3.	LAHONTAN WATER BOARD’S STRATEGY DEVELOPMENT PROCESS.....	3
4.	CHRONOLOGY OF THE STRATEGY DEVELOPMENT PROCESS	5
5.	STAKEHOLDER INVOLVEMENT IN DEVELOPING THE STRATEGY	6
6.	SUMMARY OF ELEMENTS OF THE STRATEGY	7
7.	PURPOSE AND INTENT OF POLICY STATEMENTS AND ACTION PLAN.....	9
8.	REGIONAL CLIMATE CHANGE IMPACTS	10
9.	POLICY STATEMENTS	12
10.	ACTION PLAN – DRAFT FRAMEWORK.....	16
11.	ALIGNMENT OF STRATEGY WITH EXISTING STATEWIDE INITIATIVES, POLICIES, AND LAWS	18
12.	CONCLUDING REMARKS AND RECOMMENDATIONS	23

List of Figures

Figure 1: Stakeholder Involvement the Cornerstone of Our Process	6
Figure 2: Lahontan Water Board’s Path Toward Climate Change Response.....	9
Figure 3: Lahontan Water Board’s Policy Statements	12
Figure 4: Framework of Lahontan Water Board’s Action Plan.....	18

List of Tables

Table 1: Chronology of Lahontan Water Board’s Strategy Development Activities	5
Table 2: Implementation Guidelines	8

List of Appendices

1. [Lahontan Water Board's Draft Staff Report on Developing a Climate Change Mitigation and Adaptation Strategy](#) (May 2017). Includes the following appendices:
 - A. First Update to the Climate Change Scoping Plan, Executive Summary
 - B. Executive Order B-30-15
 - C. Short-Lived Climate Pollutant Reduction Strategy, Executive Summary
 - D. Executive Order S-13-08
 - E. State Water Resources Control Board Resolution No. 2007-0059
 - F. State Water Resources Control Board Resolution No. 2017-0012
 - G. Lahontan Water Board Climate Change Adaptation Survey Results)
2. [Sierra Meadows Strategy](#)
3. [Safeguarding California Plan: 2018 Update](#)
4. [California 2030 Natural and Working Lands Draft Climate change Implementation Plan](#) (January 2019)
5. [Short-Lived Climate Pollutant Reduction Strategy](#) (California Air Resources Board, March 2017)
6. [Senate Bill No. 605](#): Lara. Short-lived pollutants (Chapter 395, Statutes of 2014)
7. [Recommendations Developed by the Dairy and Livestock Sector Workgroup](#) (November 2018)
8. [Senate Bill No. 1383](#) Lara. Short-lived climate pollutants: methane emissions: dairy and livestock: organic waste: landfills. (Chapter 395, Statutes of 2016)
9. [Executive Order B-52-18](#): Forests (May 2018)
10. [Report of the Climate-Safe Infrastructure Working Group to the California State Legislature and the Strategic Growth Council](#) (September 2018)
11. [Assembly Bill 2800](#), as amended, Quirk. Climate change: infrastructure planning (Chapter 580, Statutes of 2016)
12. [Executive Order B-37-16](#) : Making Water Conservation a California Way of Life (May 2016)
13. [Sustainable Groundwater Management Act](#)
14. [State Board's Recycled Water Use Policy](#) (as amended December 2018)
15. [State Board's Strategy to Optimize Resource Management for Stormwater – Enhancing Stormwater Capture and Use](#) (April 2018)
16. [California Carbon Forest Plan](#) (May 2018)
17. [Senate Bill 901 – Implementation for Wildfire Prevention and Recovery](#)

(Chapter 626, Statutes of 2018)

18. [California's 2017 Climate Change Scoping Plan](#)
19. [Assembly Bill 616, Patterson. California Forest Carbon Plan: report \(Chapter 8, Statutes of 2019\)](#)

1. Executive Summary

In response to both statewide laws, policies, and on its own initiative, the Lahontan Regional Water Quality Control Board (Lahontan Water Board) has made climate change mitigation and adaptation one of its top priorities. To fulfill its role in meeting the State's long-term climate goals, the Lahontan Water Board will emphasize preparing and adapting to climate change impacts as a high priority in its water quality programs and policies. Our approach toward this end, will be formalized in a Resolution adopting the Lahontan Water Board's Climate Change Mitigation and Adaption Strategy (Strategy), which is comprised of two separate but related guidance and planning documents: (1) Climate Change Response Policy Statements (Policy Statements), and (2) Climate Change Mitigation and Adaptation Action Plan (Action Plan). The purpose of this Staff Report is to provide the Lahontan Water Board with an overview of the Strategy, outlining the specific approach that Lahontan Water Board staff (staff) propose that the agency take to fully address climate change, and provide the Lahontan Water Board with specific recommendations for their consideration.

The Policy Statements set overarching, high-level direction to provide guidance and consistency in the agency's efforts and commitments to climate change adaptation and mitigation. The Policy Statements are divided into four critical environmental areas where the staff has determined that the agency can be most effective in directing climate change response efforts to help facilitate increasing the pace and scale of activities to protect and restore sensitive habitats and build more resilient and reliable infrastructure, groundwater supplies, and forested landscapes.

Recommendation 1: Staff recommends the Lahontan Water Board support the critical environmental areas that are the focus of the Policy Statements or provide direction on other key areas where Staff should focus its climate response actions.

Closely linked with the Policy Statements are a series of implementation guidelines that provide a more detailed list of commitments to climate change response planning, reporting, and actions to help solidify the Lahontan Water Board's commitment to protecting water quality and beneficial uses as part of its role in a comprehensive, state-wide response to climate change.

Recommendation 2: Staff recommends the Lahontan Water Board support the commitments, milestones, and schedules proposed in the Implementation Guidelines.

The Action Plan defines the specific work priorities, efforts, and actions that will be integrated into our regulatory and planning efforts to facilitate tangible climate mitigation and adaptation outcomes. The Action Plan will identify key efforts being implemented by others for which the Lahontan Water Board will support and work collaboratively on, as well as, other actions that can be taken by the staff through improved permitting and policy development. Collaborative efforts and staff lead actions will target improving conditions of wetlands, infrastructure, groundwater, and forests on the watershed, landscape, and regional scales.

To facilitate the implementation of our Strategy, the Lahontan Water Board recognizes the importance of collaboration and partnerships, which along with stakeholder involvement will remain the cornerstone of our approach as we implement and continually improve our Strategy.

Recommendation 3: Staff recommends the Lahontan Water Board support the elements of the proposed Action Plan, which will include: (1) internal actions (new permit, policies) proposed within our regulatory purview, (2) external efforts by partner agencies and stakeholders, and (3) public input and transparency.

At a minimum the Strategy will be updated every five years. Staff anticipates the Action Plan may require more frequent updating, since developing and implementing the actions prescribed in the Action Plan may require re-examining and replacing existing priorities, shifting resources, and obtaining future funding to build the capacity needed to effectively respond. As such the Action Plan will be re-examined annually and necessary updates to the Action Plan will be proposed through the preparation and presentation of an update to the Lahontan Water Board at a public meeting. During the update process, the Lahontan Water Board and the public will have an opportunity to comment and provide direction in setting priorities and new targets for the next fiscal year.

Recommendation 4: Staff recommends that the Lahontan Water Board accept the proposed Strategy as both a reasonable planning tool for our programs, permits, and policies, and an accountability tool for our agency to remain focused on how every action we undertake should be evaluated against the potential impacts of climate change.

Recommendation 5: Staff recommends the Lahontan Water Board concur with the proposed schedule to (1) update the Strategy every five years, or sooner as new, relevant climate science becomes available, and (2) re-examine and propose updates to the Action Plan annually.

To effectively respond to climate change, the Strategy will be a living document that will be updated and expanded every five years, or sooner as knowledge of climate change impacts on water quality, and actions to address these impacts evolve. Staff will either take a lead role to shepherd actions that fit under our regulatory programs or provide support to climate change adaptation activities being led by others. The Strategy will identify opportunities to maximize our efficiency in adapting to climate change by leveraging relevant tools and products being developed by others as they build their adaptation plans.

The Lahontan Water Board acknowledges that our path forward in responding to climate change will be influenced by our limited resources and those that may be forthcoming and dedicated specifically to support programmatic climate change actions within our planning and regulatory sphere.

2. Introduction

California has placed itself at the forefront of addressing climate change and its increasing impacts upon people and the environment. The signing of [the California Warming Solutions Act of 2006 \(Assembly Bill 32, Chapter 488, Statutes of 2006\)](#), clearly established California's global leadership role, and a pathway to reducing greenhouse gas (GHG) emissions in an effort to minimize adverse climate change impacts. California is also taking the lead in establishing and implementing strategies for adapting to climate change impacts. A combination of State laws and Executive Orders have identified the California Air Resources Board (ARB), Natural Resources Agency (Resources Agency), and California Environmental Protection Agency (CalEPA) as the lead state agencies for developing and implementing the State's climate change laws, policies, and strategies. Under CalEPA's umbrella, the State Water Resources Control Board (State Board) and its nine Regional Water Quality Control Boards (Regional Water Boards) have a role to play in California's extensive and comprehensive response to climate change with their primary responsibility being the protection of water quality and beneficial uses of California's precious water resources in the face of our warming climate. (The [Lahontan Water Board's May 2017 Staff Report on Developing a Climate Change Mitigation and Adaptation Strategy for the Lahontan Region](#) further details key state climate change laws and policies that have influenced our regional response to climate change.)

The State and Regional Water Board's initial actions to respond to climate change and support the implementation of the Act were established in the State Board's [Resolution No. 2007-0059](#). In 2017, the State Board built upon the 2007 resolution and adopted a [Comprehensive Response to Climate Change \(State Board Resolution No. 2017-0012\)](#), which presented a proactive approach to climate change in all State and Regional Water Board actions, with the intent to embed climate change consideration into all programs and activities.

Acknowledging that the Lahontan Water Board is part of a large structure of individuals and agencies responding to climate change, the Lahontan Water Board started actively planning for climate change late in 2014. The Lahontan Water Board initiated a process to develop a climate response strategy by engaging with interested stakeholders and others also preparing their own response plans to adapt to climate change. (See section below titled Stakeholder Involvement for further details about our robust stakeholder involvement process.)

3. Lahontan Water Board's Strategy Development Process

In 2014, after recognizing the reality of climate induced impacts occurring throughout the Lahontan Region (extended drought, less snow-pack, increased threat and occurrence of wildfires) the Lahontan Water Board began its process to adapt to our changing climate. The development process started with two Science and Brainstorming Public Workshops. Objectives of those workshops were achieved: (1) Participants realized the new reality that faces us with our changing climate, and (2) Public provided initial input to help shape and prioritize the Lahontan Water Board's role

in adapting to climate change. (Further information about the material presented at the Science and Brainstorming Workshops held in Barstow, CA and South Lake Tahoe, CA and notes from the small group break-out sessions at the Science and Brainstorming Public Workshops can be viewed on our Climate Change program page located here: https://www.waterboards.ca.gov/lahontan/water_issues/programs/climate_change_adaptation/.)

Following the initial workshops, staff presented an overview of the ideas gathered from the Science/Brainstorming public workshop to the Lahontan Water Board. At that meeting, the Lahontan Water Board and staff acknowledged that we are already making progress toward adapting to climate change with a rich body of regulatory tools and policies within our existing sphere of authority. The Lahontan Water Board also directed staff to prepare a Strategy to guide our adaptation efforts throughout the Lahontan Region and at the local level.

Staff identified existing regulatory tools and programs in place to formulate a [Conceptual Model](#) that identified strategies to adapt to climate change, and gaps that needed further attention. Through a web-based survey and a series of three public outreach meetings, staff received additional public and stakeholder feedback to further refine the strategy that the Lahontan Water Board could implement to respond to climate change. (Further information about the web-based survey is available on our Climate Change Program Page by viewing the [Survey Results](#) presented at the January 11-12, 2017 Lahontan Water Board Meeting in Apple Valley, CA and by viewing Appendix G of the [Lahontan Water Board's May 2017 Staff Report on Developing a Climate Change Mitigation and Adaptation Strategy for the Lahontan Region](#).)

Through the public participation process, together the staff distilled over 400 initial ideas to identify three overarching areas where we should focus our efforts: (1) protection of infrastructure and critical recharge areas, (2) protection and restoration of wetlands, floodplains, and headwaters, and (3) increasing stormwater capture and infiltration and low-impact development.

The initial focus areas were presented to the Lahontan Water Board and the public in May of 2018. Based on (1) direction from The Lahontan Water Board, and (2) newly released state issued rules (Executive Order SB-52-18 - Forest Carbon Plan) and requirements to implement components of regarding vegetation management and wildfire prevention and recovery as prescribed in Senate Bill 901(Chapter 626, Statutes of 2018) the initial focus areas were further refined into the four critical environmental areas included in the Strategy as it is presented today.

The Strategy will be effectively carried out by formalizing a framework with overarching, organizational level statements (Policy Statements). Further, implementation guidelines will direct our work toward these Policy Statements on a programmatic level and an action plan (Action Plan) that will prescribe the key work products and collaborative efforts needed to advance the Strategy.

4. Chronology of the Strategy Development Process

The Lahontan Water Board’s effort to develop its Strategy has been an inclusive and transparent effort, which is reflected in the activities listed, below. The following table contains a chronology of the events intended to gather and process information/ideas as part of the Lahontan Water Board’s effort to develop its climate change Strategy. Further details regarding all of the events, outreach meetings, board presentations, and reports mentioned below can be downloaded from the [Lahontan Water Board’s Climate Change Adaptation Program Page](#).

Table 1: Chronology of Lahontan Water Board’s Strategy Development Activities

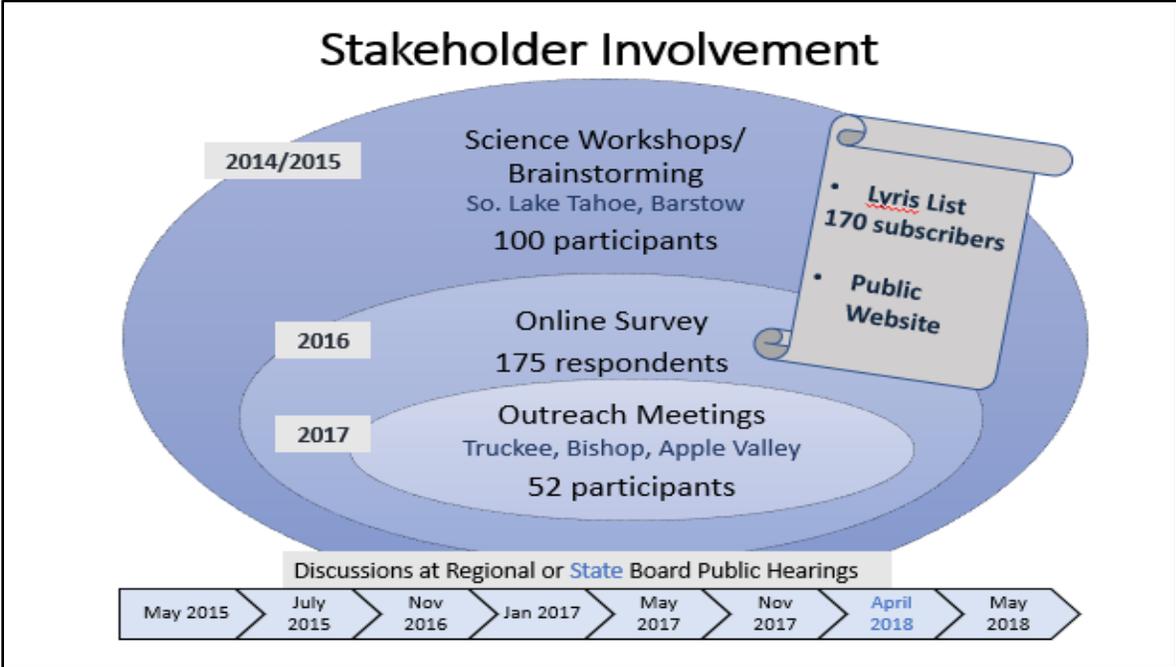
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5. Stakeholder Involvement in Developing the Strategy

Acknowledging that the Lahontan Water Board is part of a large network of individuals and agencies responding to climate change, stakeholder involvement was the cornerstone of the Strategy development process. The Lahontan Water Board first provided opportunities for public input at two public technical workshops and encouraged additional stakeholder input by circulating an online survey and hosting several outreach meetings throughout the region. This robust stakeholder involvement process is depicted in the figure below.

Figure 1: Stakeholder Involvement the Cornerstone of Our Process



Throughout every step of the process, staff synthesized the top priorities, messages, and ideas. This input guided staff to identify critical environmental areas that the Strategy should address and to develop key goals to guide successful implementation of the Strategy.

6. Summary of Elements of the Strategy

To better define the Lahontan Water Board's role in protecting water quality and beneficial uses of water within the context of California's climate change efforts, and to identify specific actions the Lahontan Water Board can take to adapt to and mitigate the effects of climate change, the Strategy document is comprised of two distinct and interrelated parts: (1) Policy Statements and (2) Action Plan.

The Policy Statements will help provide overarching guidance in the Lahontan Water Board's efforts in four critical environmental areas, which according to regional climate change research and findings (summarized in Section 8 below), are areas of potential impact to water quality and beneficial uses that are particularly susceptible to climate change impacts under future climate and weather scenarios.

Implementation guidelines (Table 2) included in the Strategy will help ensure consistency and accountability as we integrate climate change into our work planning and decision making as we implement activities identified in the Action Plan to address the at-risk areas identified in the Policy Statements. Implementation guidelines will direct the Lahontan Water Board's climate change response planning and reporting commitments and ensure the Lahontan Water Board remains on track and accountable as it implements actions intended to respond to climate change.

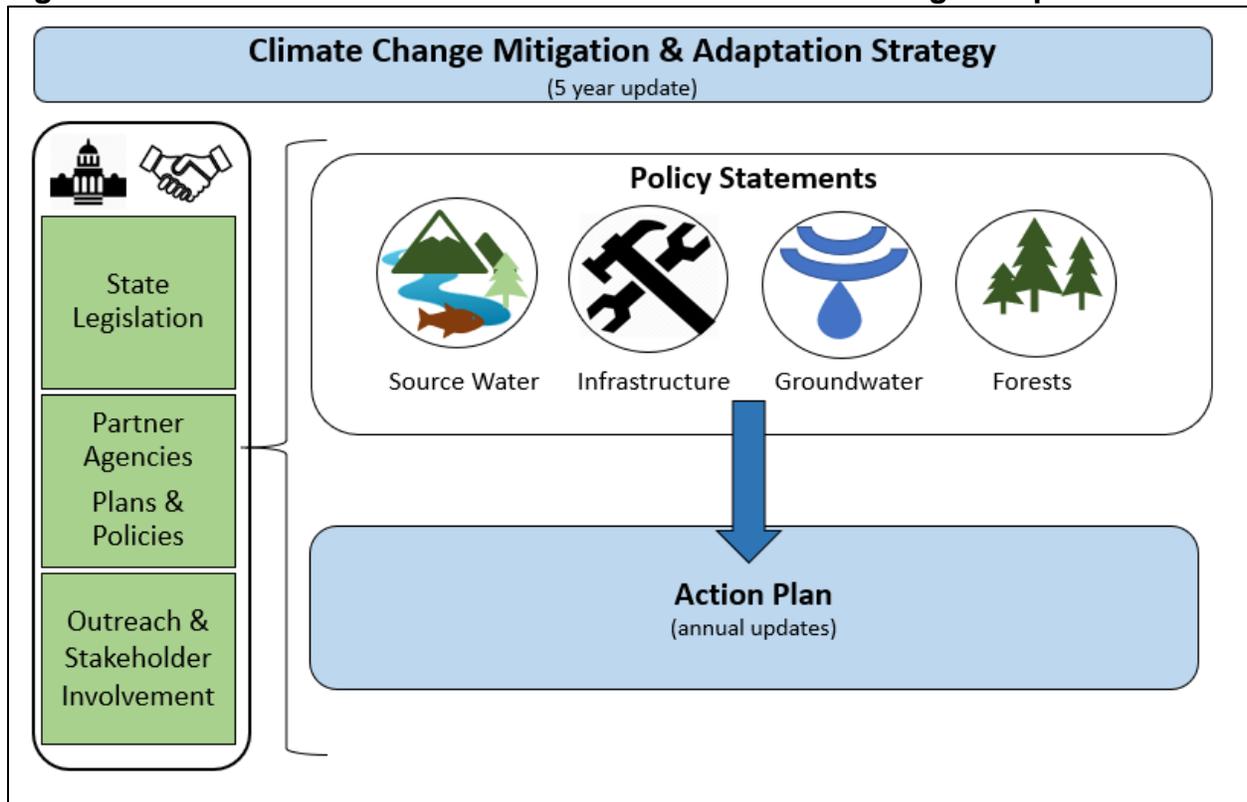
Table 2: Implementation Guidelines

1.	Consider potential impacts from climate change in all Lahontan Water Board programs.
2.	Prioritize implementation of actions (technical support, funding opportunities) identified in the Action Plan to ensure that disadvantaged communities have the tools needed to prepare for natural disasters and build resiliency to climate change impacts.
3.	Prioritize climate change adaptation actions (permit and policy changes) during triennial reviews and shift annual resources/workplans to support building climate change adaptation activities into water quality programs.
4.	Enhance role in emergency preparedness and shift resources to efficiently respond to and recover from extreme climate related emergencies.
5.	Collaborate with stakeholders and State Board to identify policies, regulations, and funding to address the impacts of climate change on water quality.
6.	Engage with the State Board and other relevant agencies to develop (1) water quality monitoring to detect trends in climate change impacts, and (2) reporting requirements to gauge effectiveness of response efforts using performance-based criteria.
7.	Rely on actions prescribed in the Action Plan to guide annual program work planning.
8.	Update the Strategy every five years, or sooner as needed.
9.	Present annually to the Lahontan Water Board the Action Plan, proposed updates to Action Plan, and future priorities and targets.
10.	Report annually to the Lahontan Water Board on the progress of implementing actions to restore and protect the four critical environmental areas identified in the Policy Statements.

To protect water quality and beneficial uses, the Action Plan will prescribe a set of select actions that may be implemented within the critical environmental sectors identified in the Policy Statements. The Action Plan will include partnership and collaborative efforts as well as actions led more directly by staff, which will be incorporated into our various regulatory programs (401 water quality certification, non-point source, waste discharge requirements).

Figure 2 below, illustrates how the Policy Statements and Action Plan interrelate within the Strategy, and how these parts of the Strategy have been influenced and align with external factors and efforts such as State level legislation or parallel climate change efforts by partnering agencies. The Action Plan, presented in more detail later in this document, further describes how the direction and guidance provided by the Policy Statements translates into specific actions the Lahontan Water Board will undertake in its response to potential water quality related impacts from climate change.

Figure 2: Lahontan Water Board’s Path Toward Climate Change Response



7. Purpose and Intent of Policy Statements and Action Plan

The Lahontan Water Board’s Policy Statements solidify our agency’s commitment to respond to water quality related impacts from climate change through improvement of select policies, programs, and permits. The purpose of the Action Plan is to provide a more detailed list and timeline for specific changes, modifications, and new tasks to be implemented by staff with the context of yearly or bi-yearly work planning efforts.

The Policy Statements¹ describe areas the Lahontan Water Board will make progress over the long-term (decadal time scale) to promote greater levels of water quality protection and water resource resiliency to climate change; however, it is not assumed that the dynamic and unpredictable weather patterns from a changing climate will remain static and it is intended that the Policy Statements would be updated more frequently if impacts of climate change accelerate at a rate that is greater than what is currently being documented by the latest climate science.

To emphasize the potential actions and directions within the purview and authority of the Lahontan Water Board to adapt and mitigate water quality issues created or

¹ Under the provisions of California Water Code section 13224, the Lahontan Water Board is authorized to issue a Policy Statement related to any water quality matter within its jurisdiction. A Policy Statement can encourage certain actions, give general direction to staff, or make other non-regulatory statements.

exacerbated by climate change, the Policy Statements identify critical environmental areas that will be the target of efficient and effective strategic actions to build agency level resilience to a changing climate. Prioritizing our climate change response efforts toward these areas is sensible, since regional climate science (summarized in Section 8 below) indicates the Lahontan Region will experience climate related changes that will impact sensitive ecosystems, vulnerable infrastructure, groundwater resources, and increase wildfire risk.

The Action Plan is linked directly to the Lahontan Water Board's work planning efforts. The specific work efforts and key actions included in the Action Plan will be aimed at improving conditions within the four critical environmental areas identified in the Policy Statements. During annual work planning exercises, program managers will integrate the priority climate change response actions identified in the Action Plan to ensure that our work remains steady toward protecting critical habitats, and enhancing the reliability and resilience of vital infrastructure, water resources, and natural lands.

8. Regional Climate Change Impacts

The latest climate science and research throughout the Lahontan Region indicates that our changing climate has the ability to adversely affect the quality and quantity of water within the Lahontan Region, and these climatic changes must be considered to effectively protect water quality and the beneficial uses of water. The findings presented below validate and emphasize our decision to concentrate our initial climate change response efforts toward protecting select sensitive ecosystems and vulnerable sectors.

During regional workshops held in 2014 and 2015, climate researcher, Dan Cayan, PhD and hydrology researcher Michael Dettinger, PhD, both with Scripps Institute of Oceanography and the United States Geological Survey presented scientific and technical information indicating the Lahontan Region could expect warmer air and water temperatures, more severe flood events, and a decreasing snowpack in the Sierra Nevada mountains. The Sierra Nevada Region Report² prepared as part of 2018 California's Fourth Climate Change Assessment (2018 CA Fourth Assessment) presented the latest climate science relevant to ten of the twelve counties within the Lahontan Water Board's jurisdiction. With Dettinger as lead coordinating author and Cayan as a contributing author, the [Sierra Nevada Region Report](#) contains the same findings presented during the regional workshops and further indicates:

- (1) Mountain meadows provide important habitat, hydrological, and carbon storage functions, and intact wet meadows are important groundwater-dependent ecosystems (Protection of Wetlands, Floodplains, and Headwaters).

² Dettinger, Michael, Holly Alpert, John Battles, Jonathan Kusel, Hugh Safford, Dorian Fougères, Clarke Knight, Lauren Miller, Sarah Sawyer. 2018. *Sierra Nevada Summary Report*. California's Fourth Climate Change Assessment. Publication number: SUM-CCCA4-2018-004.

- (2) Water infrastructure throughout the region will be stressed by extreme heat and precipitation events, especially those that cause flooding (Infrastructure Protection).
- (3) Groundwater in the Sierra Nevada region is vulnerable to changes in groundwater pumping as local surface supplies deteriorate, as recharge patterns and rates change, and due to the generally smaller scale of so many of the region's aquifers (Protection of Groundwater Quality and Supply).
- (4) Incidence of wildfire and drought stress will increase and carbon storage will decrease in the Sierra Nevada in the face of the projected climate forecast (Protection of Headwater Forests and Promoting Fire Resilient Landscapes).

The [Inland Deserts Region Report](#)³, also prepared as part of the 2018 CA Fourth Assessment, finds similar climate-induced impacts to water quality for the southern portion of the Lahontan Region (eastern San Bernardino County) as follows:

- (1) Wetland and riparian ecosystems have been impacted by lowering of groundwater levels, and impacts will continue with warming temperatures and prolonged dry periods (Protection of Wetlands, Floodplains, and Headwaters).
- (2) Infrastructure for distribution and storage of energy will be vulnerable to climate change as warming temperatures damage lines and cause capacity losses. Transportation and water delivery infrastructure are possibly at risk due to impacts from extreme temperature and precipitation events including wildfire, flash floods, debris and mud flows (Infrastructure Protection).
- (3) Dependence on groundwater for communities in the Mojave River watershed in the South Lahontan hydrologic region is expected to increase as surface water supplies become limited due to recent and projected severe droughts (Protection of Groundwater Quality and Supply).
- (4) Wildfires may increase in the Inland Desert region, an area already prone to rapid spread of fire due to high-winds and the presence of non-native grasses, as extreme heat and extended drought promote development of threatening fuel

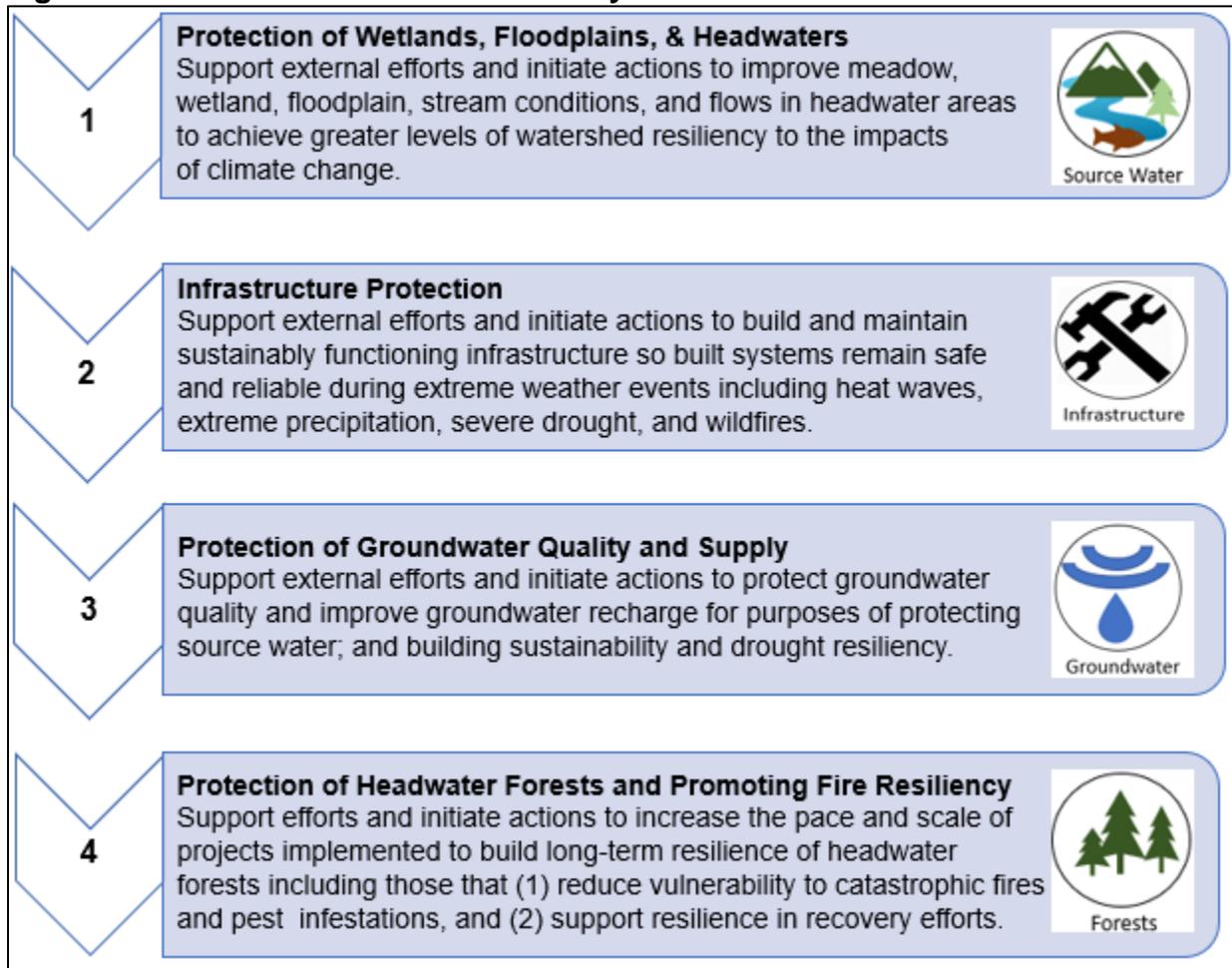
³ Hopkins, Francesca. (University of California, Riverside). 2018. *Inland Deserts Summary Report*. California's Fourth Climate Change Assessment. Publication number: SUM-CCCA4-2018-008.

beds (Protection of Headwater Forests and Promoting Fire Resilient Landscapes).

10. Policy Statements

The Policy Statements described here identifies that the Lahontan Water Board will target its climate change response efforts on four critical environmental areas, which according to regional climate science, are susceptible to degradation under future climate conditions. The Lahontan Water Board believes our role in water quality and beneficial use protection in the face of climate change will be most effective by supporting both *external* climate change adaptation and mitigation efforts undertaken by other agencies and organizations; and direct *internal* Lahontan Water Board resources toward efforts and actions that improve conditions in the environmental areas identified in Figure 3 below.

Figure 3: Lahontan Water Board’s Policy Statements



The benefits provided by healthy and intact environmental areas identified in the Policy Statements are detailed further in the below paragraphs. Realizing the value of these

benefits further validates the Lahontan Water Board's commitment to protection of these vulnerable sectors.

1

Protection of Wetlands, Floodplains, & Headwaters
Support external efforts and initiate actions to improve meadow, wetland, floodplain, stream conditions, and flows in headwater areas to achieve greater levels of watershed resiliency to the impacts of climate change.



Source Water

Healthy headwaters streams and meadows supply water to the State as a whole, support abundant biodiversity and aquatic life, manage storm flows, and meter water releases. Riparian and meadow landscapes with diverse plant communities and deep rooting systems also help retain carbon.

The Lahontan Water Board itself does not implement restoration projects; however, it issues permits (401 Water Quality Certifications and Construction Storm Water) and Basin Plan prohibition exemptions to entities conducting restoration work. The Lahontan Water Board will concentrate on actions that will help increase the pace and scale of restoration work implemented to protect these natural landscapes that are critical in building resiliency to our warming climate.

Additionally, as water demand for all uses continues to grow throughout California, the Lahontan Water Board recognizes the importance of instream flows for aquatic life and stream health. Adequate stream flows are necessary to ensure: (1) fish passage for migration; (2) stream connectivity, including sufficient water for side channels, backwater areas, and/or floodplains to support feeding and rearing habitats; (3) aquatic benthic macroinvertebrate production as food for salmonids; (4) good water quality and temperature, both of which are influenced by the quantity of flow; and (5) the maintenance of aquatic ecosystem processes (e.g., nutrient and sediment cycling).

The Lahontan Water Board will support statewide efforts to develop biologically-relevant instream flow recommendations, and play a role in setting instream flow criteria to protect beneficial uses. Further, instream flows in areas affected by cannabis cultivation will be maintained as the Lahontan Water Board issues permits for cannabis cultivation, which establish water quality and instream flow requirements for growing activities that may have the potential to substantially affect instream flows.

2

Infrastructure Protection
Support external efforts and initiate actions to build and maintain sustainably functioning infrastructure so built systems remain safe and reliable during extreme weather events including heat waves, extreme precipitation, severe drought, and wildfires.



Infrastructure

As the climate warms, California will need to design and maintain infrastructure (water, roads, drainage) to withstand increasingly severe impacts. Unless the drinking water, stormwater, and wastewater infrastructure systems are designed to withstand extreme weather events, water quality and human health have the potential to be degraded by pollutant discharges brought about by spills or other failures related to severe erosion, flooding, and wildfires.

Through the Lahontan Water Board's planning and regulatory programs, we will facilitate better location, design, and construction of water, stormwater, and waste water infrastructure. Bolstering the integrity of existing and new infrastructure so it withstands severe weather events will in turn better protect water quality by reducing the number and severity of sewage spills and water line breaks that typically increase with flooding events. (During the initial implementation phase of our Action Plan, the Lahontan Water Board will concentrate on actions that improve the resiliency of water and waste water infrastructure; however, adaptation efforts for other infrastructure sectors (power and transportation) may also be included and benefit from permitting and programmatic changes to this end.) Permitting efficiency may streamline projects implemented to address inefficiencies and damage to energy and transportation infrastructure related to climate change impacts.

The Lahontan Water Board has not required risk assessments of existing permitted facilities and has not required associated upgrades or planning for upgraded new infrastructure. Where communities, utilities, and water agencies have already completed risk assessments, the Lahontan Water Board will support increasing the pace and scale of infrastructure upgrades and improvements related to building more resilient systems. Resiliency plans should include risk abatement programs that include emergency response plans and debris cleanup and rebuilding plans.

3	<p>Protection of Groundwater Quality and Supply Support external efforts and initiate actions to protect groundwater quality and improve groundwater recharge for purposes of protecting source water; and building sustainability and drought resiliency.</p>	
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The recent multi-year, severe drought underscores the need to sustainably manage groundwater resources throughout California and within the Lahontan Region.

Sustainable groundwater management, which includes protecting groundwater quality and supply, is increasingly critical within the Lahontan Region, given demand, impacts, population growth, and changing conditions that lay ahead. Climate induced impacts projected for the Lahontan Region including hotter temperatures, severe droughts, and diminishing Sierra snowpack, affect the quality and quantity of groundwater.

Actions that protect groundwater quality and improve groundwater recharge rates will be key elements of adaptation in a hotter and drier climate. Such actions will be especially important in portions of our region that fall within the South Lahontan hydrologic region

within the Mojave River watershed, which according to the Inland Desert Regional Report prepared for California’s Fourth Assessment on Climate, is one of the most populated areas of the South Lahontan hydrologic region, with 66% of its water supplied by groundwater.

The Lahontan Water Board will continue to protect groundwater resources through its Site Cleanup Program, which focuses on investigation and cleanup of pollutants (other than petroleum releases associated with underground tanks) released to soils, groundwater, surface waters, and sediments. The Lahontan Water Board will also achieve protection of groundwater quality by continuing to issue waste discharge and disposal permits to control discharges to land. Further protection of groundwater quality will be accomplished by issuing enforcement actions requiring cleanup and abatement of chemicals (e.g., nitrate, tetrachloroethylene [PCE]) impacting private and/or municipal groundwater supply wells such as the [Cleanup and Abatement Order for Lake Tahoe Laundry Works](#) and by overseeing site cleanup (see [PG&E Hinkley Chromium Cleanup webpage](#)).

To increase the sustainability of groundwater supplies our programs and policies must support sustainable groundwater management efforts (e.g., recycled water use) being implemented by others to ensure resiliency to climate change impacts. Where recycled water use is already underway or planned, the Lahontan Water Board will exercise its permitting and enforcement authority to ensure the use is safe and protective of human health and the environment. Within the Lahontan Region, sustainable groundwater management can effectively be achieved through multiple efforts that support: Groundwater Protection (e.g. Salt and Nutrient Management Plans, Integrated Water Regional Management Plans), Stormwater Capture and Infiltration, and Water Conservation and Recycling. Additionally, the Lahontan Water Board will consider the need to develop a Riparian Protection Policy to prevent/minimize/mitigate the impacts of hydromodification upon both groundwater and surface water supplies.

The Lahontan Water Board will focus on and support actions to help diversify supply, protect groundwater quality, and use water wisely; all principals that align with the intent of higher-level statewide policies and plans.

4	<p>Protection of Headwater Forests and Promoting Fire Resiliency Support efforts and initiate actions to increase the pace and scale of projects implemented to build long-term resilience of headwater forests including those that (1) reduce vulnerability to catastrophic fires and pest infestations, and (2) support resilience in recovery efforts.</p>	
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Issued in May 2018, the Governor of California’s Executive Order B-52-18 aims to systematically improve forest management and increase the ability of our forests to capture carbon. The multiple ecosystem service and benefits provided by forests are presented in the following excerpt of Executive Order B-52-18:

California's 33 million acres of forestland and 1,256 square miles of urban forest canopy capture and clean our water supply, provide rich biodiversity, support local economies, provide recreational and educational opportunities, and serve as spiritual and cultural centers for indigenous and local communities across the state.

Forested lands are the largest land-based carbon sink in California with trees and shrubs drawing carbon from the atmosphere and storing it in their cellulosic structure and in forest soil.

To realize these benefits, forest landscapes must be protected and remain healthy and intact. Under future climate scenarios, however, extreme heat, extended drought periods, and diminishing snowpack create conditions for extreme, high-intensity wildfires that threaten forests.

Catastrophic wildfires, including those in 2017 and 2018 that were the largest and most destructive in California history, have degraded watershed health, devastated communities and impacted the state's efforts to mitigate greenhouse gas emissions.

Though California faces wildfire threat, the state understands the vulnerability of its forests in the face of a warming climate and it has taken strong steps toward increasing its preparedness for future wildfires. To protect headwater forests and promote fire resilient landscapes the Lahontan Water Board will strive to create an efficient approach to permitting that will support the increasing pace and scale of forest improvement and fire prevention projects while ensuring protection of water quality and beneficial uses in compliance with Porter-Cologne and the Lahontan Basin Plan.

10. Action Plan – Draft Framework

On an annual schedule, staff will use the tasks identified in the Action Plan to inform programmatic and individual workplans that outline priority work for the coming fiscal year. The Lahontan Water Board and the public will be updated on the progress of program specific, climate change response related actions from the previous year. The Lahontan Water Board and the public will also have an opportunity to provide input and direction to staff for future goals and priority setting during an annual presentation by the Lahontan Water Board's Executive Officer, which will present proposed updates on the Action Plan, including priority key efforts, regulatory actions, and policy initiatives planned for the following year. It is anticipated that the Action Plan will have the following elements:

- Actions Completed
- Actions Underway
- Potential New Requirements
- Potential New Policies
- Partnerships
- Long-term Projects
- Adaptive Management of the Climate Change Action Plan

Specific work efforts and actions by the Lahontan Water Board will be derived from the four critical environmental areas that are identified in the Policy Statements and directed through the development and implementation of the Action Plan. The Action Plan will provide program managers and staff level guidance for actions that may be integrated into work planning efforts to accelerate projects being implemented by others to restore critical habitats, and enhance the reliability and resilience of vital infrastructure, water resources, and natural lands.

As defined in State Board Resolution 2017-0012, *“Mitigation, in the context of climate change, refers to actions taken to reduce concentration of greenhouse gases in the atmosphere.”* Reducing emission sources (i.e., fossil fuel burning energy) is the most effective way to reduce greenhouse gas concentrations in the atmosphere. The ability of healthy ecosystems to provide long-term carbon capture and storage, however, is also realized as providing vital mitigation, and the Lahontan Water Board’s strategies to mitigate climate change impacts will include actions and projects to ensure that meadow, headwater, and forested landscapes remain intact and functional.

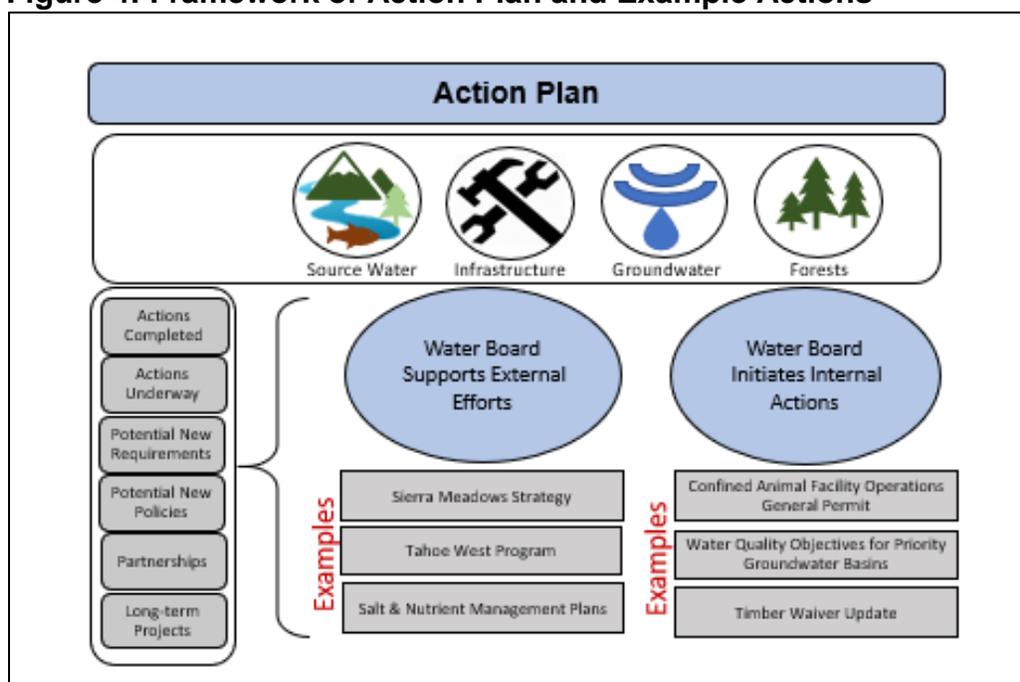
As defined in the State Board’s Comprehensive Response to Climate Change, *“Adaptation, in the context of climate change, refers to actions taken to build resilience, and to adjust to the impacts of climate change on society and the environment.”*

Actions to adapt to climate change impacts included in the Action Plan will be aimed toward increasing the resiliency and reliability of floodplains, wetlands, infrastructure, groundwater supplies, and forested landscapes. Adaptation efforts will also include measures to work collaboratively to develop and implement emergency preparedness and response for climate induced catastrophes including wildfire and extreme flooding.

The Action Plan will identify areas where we will (1) support external efforts underway and planned by other agencies and organizations (Groundwater Sustainability Management Plans, Salt and Nutrient Management Plans), and (2) initiate internal actions directly under Lahontan Water Board authority (e.g., permitting, Basin Plan amendments to expand prohibitions, establish water quality objectives).

Figure 4 below depicts the proposed framework of the Action Plan and includes examples of types of internal actions and external efforts that may be included in the plan.

Figure 4: Framework of Action Plan and Example Actions



Given that current resources and future funding dedicated to climate change response are limited, the Lahontan Water Board recognizes that successful implementation of the Strategy and the activities identified in the Action Plan will rely largely on (1) supporting existing partnerships, (2) leveraging the efforts of stakeholders, and (3) prioritizing which select actions within the Lahontan Water Board’s authority can be effectively implemented with the limited resources we have. As we move forward to protect water quality and beneficial uses in the face of climate change, the Lahontan Water Board realizes staff will only implement the actions identified in the Action Plan to the extent that available funds allow and/or we are able to redirect resources to priority work and acquire addition allocations to support work toward climate change response.

11. Alignment of Strategy with Existing Statewide Initiatives, Policies, and Laws

Future actions and work derived either in part or wholly from the Policy Statements and Action Plan will make every effort to align with statewide initiatives, directives, strategy documents, executive orders, and resolutions related to climate change mitigation and adaptation. The development of the Policy Statements and Action Plan will align with, and address, the directives provided in the [State Board’s Resolution No 2017-0012](#) which was established to comprehensively respond to climate change by (1) acknowledging the climate change impacts to water resources across the state, (2) directing certain actions of State Board staff, and (3) encouraging certain actions of Regional Water Boards. Resolution No. 2017-0012 encourages Regional Water Boards to update plans, permits, and policies, and coordinate with other agencies to enhance ecosystem resilience to the impacts of climate change, including but not limited to

actions that protect headwaters, facilitate restoration, enhance carbon sequestration, build and enhance healthy soils, and reduce vulnerability to and impacts from fires.

The Policy Statements and Action Plan will effectively and efficiently move climate change mitigation and adaptation forward in the Lahontan Region by helping to coordinate and collaborate with other agencies and organizations who are also making strategic planning efforts to adapt to climate change impacts. Collaboration will be key, since the impacts of climate change in the Lahontan Region will continue to be wide and varied, cutting across political boundaries, socio-economic boundaries, and watershed and ecosystem boundaries, which will increase the complexity of responding to climate change and need for balancing competing interests.

Below are examples of significant statewide legislation, initiatives, plans, and policies that our Policy Statements and Action Plan will align with.

(1)  **Protection of Wetlands, Floodplains, and Headwaters**

- State Board Resolution 2017-0012, resolve #6 to improve ecosystem resilience by updating plans, permits and policies, and coordinate with other agencies to enhance ecosystem resilience to the impacts of climate change, including but not limited to actions that protect headwaters, facilitate restoration, enhance carbon sequestration, build and enhance healthy soils, and reduce vulnerability to and impacts from fires.
- [Sierra Meadows Strategy](#) and Memorandum of Understanding between the USDS, Forest Service Pacific Southwest Region and CalTrout that formalizes a collaborative, “all-lands” approach to increase the pace and scale of meadow restoration in the Sierra Nevada to protect and restore the many functions and ecosystem services that meadows provide.
- [Safeguarding California Plan: 2018 Update \(Safeguarding California Plan\)](#) acknowledges meadow restoration as a key strategy to build resilience to the threat of a hotter and drier climate and recommends state government, including the Regional Boards, advance its protection of aquatic and terrestrial ecosystem resilience, in part, by protecting and enhancing source watersheds in the Sierra Nevada. Safeguarding California also identifies that as part of on-going efforts, State and Regional Water Boards should provide ongoing support for aquatic ecosystem restoration through funding, permits, monitoring, and technical assistance on case-by-case basis.
- [California 2030 Natural and Working Lands Draft Climate Change Implementation Plan \(January 2019\)](#) objectives as follows: (1) *integrate land conservation restoration, and management programs;* (2) *increase and improve conservation, restoration, and management of California’s natural and working lands, through State programs and other means, to enhance their resilience to worsening climate impacts, sequester carbon, and reduce GHGs;* (3) *Identify next steps for taking a more comprehensive approach to addressing the policy*

challenges facing our natural and working lands, including their contributions to achieving carbon-neutrality and meeting our long-term climate objectives. Where applicable the Lahontan Water Board will support the ongoing actions identified in the Plan to protect and restore important ecosystems will help streamline restoration and enhancement projects.

- Strategies identified in [California's 2017 Climate Change Scoping Plan](#) to enhance carbon sequestration and reduce greenhouse gas emissions that include managing forested headwaters and preserving the ability for mountain meadows in the Sierra Nevada to protect water quality and boost water storage and availability.
- Directives and actions set forth in [CARB's March 2017 Short-Lived Climate Pollutant Reduction Strategy](#) required to comply with [Senate Bill No. 605](#) that target reductions in methane emissions from dairy and livestock, organic waste, and landfills.
- [Recommendations developed by the Dairy and Livestock Sector Workgroup](#) to comply with requirements of [Senate Bill No. 1383](#) – Short-lived climate pollutants that advance methane reduction on California dairies and livestock operations

(2) Infrastructure Protection

- Principles of the state's adaptation strategy document, [Safeguarding California Plan: 2018 Update](#), which as a long-term outcome for all California communities, strives to provide existing and built infrastructure able to withstand the projected impacts of climate change while continuing to provide essential public service.
- [Climate-Safe Infrastructure Recommendations](#) provided by the Natural Resources Agency's Climate-Safe Infrastructure Working Group established under the requirements of [Assembly Bill 2800](#) to ensure that existing infrastructure is readied for future climate change impacts and investment in new infrastructure accounts for climate change from the outset.
- Directive in the [State Board's Resolution 2017-0012](#) that requires Regional Water Board to work with the Division of Water Quality to evaluate and make recommendations to the State Board on the need to modify permits and other regulatory requirements to reduce vulnerability of water and wastewater infrastructure to flooding, storm surge, and sea level rise (resolved #15). Proposed recommendations in response to resolved #15 that could be incorporated into the Lahontan Water Board's response efforts in this area include (1) modifying the statewide NPDES permit template to include example climate change-related language that the Lahontan Water Boards may include in

adopted permits, (2) adopting new, re-issued and amended permits that specifically identify proposed requirements to reduce the vulnerability of utility infrastructure and maximize the state's water supply, which could be implemented, in part, by site-specific or project-specific discharger plans (i.e., Storm Water Management Plans, Storm Water Pollution Prevention Plan and Sanitary Sewer Management Plans, and storm water capture projects) and (3) developing permitting guidance tools (Administrative Procedures Manuals) to provide guidance for addressing infrastructure vulnerability and climate change-impacts on regulated facilities.

(3)  **Protection of Groundwater Quality and Supply**

- [State Board's Resolution 2017-0012 resolved # 13:](#)

Lahontan Water Board will coordinate with State Board staff and relevant agencies to identify and recommend actions the Regional Water Boards could take for effective permitting of projects to develop new and underutilized water resources, expand surface water and groundwater storage where appropriate, and add operational flexibility to build and enhance resilience to impacts of climate change.

and

resolved #3: Staff will coordinate with Division of Water Quality to make annual reporting of recycled water data a requirement of waste discharge permits and water reclamation requirements where applicable.

- [Executive Order B-37-16 titled "Making Water Conservation a California Way of Life"](#)

Lahontan Water Board will support projects and activities that increase local drought resilience by incorporating practices to use water more wisely, eliminate water waste, and reuse water for multiple purposes where possible.

- [Sustainable Groundwater Management Act \(SGMA\)](#)

Lahontan Water Board will assume the responsibility to manage groundwater, which will be triggered when the deadlines of SGMA are not met locally, or DWR determines a local plan is inadequate and/or local implementation of the plan is unsuccessful. (If required, this responsibility would not come into effect until 2022, when the high and medium priority groundwater basins are required to submit Groundwater Sustainability Management Plans.)

- [State Board's Recycled Water Use Policy](#) (as amended December 2018)

Through its permit review and issuance process the Lahontan Water Board will support the statewide goals and mandates for recycled water use and the

development of underutilized water resources (e.g. stormwater reuse and capture) to address the effects of climate change, drought, and water supply uncertainty while protecting water quality, human health, and the environment.

Key requirements of the State Board's Recycled Water Policy involve identifying ground water basins where salt and/or nutrients are a threat to water quality and developing salt and nutrient management plans for these basins to achieve water quality objectives in the long-term. For ground water basins identified as threatened by salt and nutrient discharges, the Lahontan Water Board will continue its responsibility to work with stakeholders (water and waste-water districts, integrated regional water management groups, regional salt and nutrient dischargers) on their development of an effective, locally driven and controlled, salt and nutrient management plan that will achieve basin-wide management of salts and nutrients.

- [State Board's - Division of Water Quality Strategy to Optimize Resource Management for Stormwater - April 2018](#) (STORMS, or Storm Water Strategy)

The STORMS Strategy identifies actions needed for the State and Regional Boards to improve the regulation, management and utilization of storm water to promote its use as a resource that when managed properly can provide multiple benefits including pollutant control and improved water quality, increased water supply, and healthier ecosystems. The Lahontan Water Board will emphasize storm water capture and use, low impact development (LID), and local and regional water management through permit requirements (e.g., post-construction requirements), policy development (LID guidance), and continued and expanded coordination with healthy watershed stakeholder groups including Integrated Regional Water Management Groups.



(4) **Protection of Headwater Forests and Promoting Fire Resilient Landscapes**

- [State Board's Resolution 2017-0012 resolved # 14](#) which encourages Regional Water Boards to work with California Department of Forestry and Fire Protection, federal land management and other relevant agencies to restore and maintain healthy watersheds, reduce vulnerability to catastrophic fires, and support resilience in recovery efforts.
- Orders prescribed in [Executive Order B-52-18](#) and its accompanying Forest Carbon Plan including those to double the total statewide rate of forest treatments (thinning, controlled fires, reforestation) within five years to at least 500,000 acres per year, implement the forest practices outlined in the Carbon Forest Plan, and provide regulatory relief for timber harvesting projects by synchronizing and expediting the regulatory review of permits.

- Opportunities identified in the May 2018 [Carbon Forest Plan](#) for multi-agency and stakeholder collaboration to establish healthy and climate-change resilient forests that serve as reliable long-term carbon sinks, rather than greenhouse gas and black carbon emission sources.
- Efforts underway by the Office of Emergency Services' Emergency Response Technical Working Group (ERTWG) to improve communication and coordination of multi-agency roles and responsibilities to improve preparedness and efficacy of emergency response and post-fire recovery.
- Obligations of [Senate Bill 901 – Implementation for Wildfire Prevention and Recovery](#) including permit development and outreach for utility corridor vegetation and wildfire management; inspections and report reviews for forestland and utility corridor projects, revision or development of new regional permits to facilitate timber harvesting under Forest Practice Rule exemptions while ensuring water quality impacts are mitigated; inspections, data gathering and reporting of exemption use and efficacy in coordination with California's Department of Forestry and Fire Protection (CAL FIRE).
- Strategies identified in [California's 2017 Climate Change Scoping Plan](#) to enhance carbon sequestration and reduce greenhouse gas emissions.
- Goals established for wildland fire prevention described in the 2019 [Assembly Bill 616 \(California Forest Carbon Plan Report\)](#).

12. Concluding Remarks and Recommendations

The Lahontan Water Board's fundamental mission is to protect water quality. We acknowledge this primary responsibility will become more challenging as water resources are exposed to the anticipated changes brought about by our warming climate and extreme weather events. The Lahontan Water Board recognizes that protection of water quality and beneficial uses will only be successful if we embed climate change considerations into our regulatory programs and policies. Together, our overall Strategy, and the Policy Statements and Action Plan within, certify our commitment to an approach toward climate change mitigation and adaptation. The Policy Statements describe key goals for our agency and the overarching areas where we will focus our mitigation and adaptation efforts. Actions to move forward to protect water quality and beneficial uses and build resiliency in these critical environmental sectors are presented in our Action Plan. The Action Plan proposes specific actions within the Lahontan Water Board's regulatory authority that we can implement to advance progress toward climate change mitigation and adaptation. The Strategy will be a living document that will be updated as we learn from new scientific discovery and the evolution of knowledge about climate change impacts on water quality, and the efficacy of actions to address these impacts.

Staff asks the Lahontan Water Board to consider and accept the following recommendations regarding the Strategy and/or provide direction on modifications that should be made to improve the Strategy's structure and enhance its overall success.

Recommendations

1. Staff recommends the Lahontan Water Board support the critical environmental areas that are the focus of the Policy Statements or provide direction on other key areas where staff should focus its climate response actions.
2. Staff recommends the Lahontan Water Board support with the commitments, milestones, and schedules proposed in the Implementation Guidelines.
3. Staff recommends the Lahontan Water Board support the proposed elements of the Action Plan, which will include: (1) internal actions (new permit, policies) proposed within our regulatory purview, (2) external efforts by partner agencies and stakeholders, and (3) public input and transparency.
4. Staff recommends that the Lahontan Water Board accept the proposed Strategy as both a reasonable planning tool for our programs, permits, and policies, and an accountability tool for our agency to remain focused on how every action we undertake should be evaluated against the potential impacts of climate change.
5. Staff recommends the Lahontan Water Board concur with the proposed schedule to (1) update the Strategy every five years, or sooner as new, relevant climate science becomes available, and (2) re-examine and propose updates to the Action Plan annually.

ENCLOSURE 2

Item No. 8

Climate Change Mitigation & Adaptation Strategy

Lahontan Water Board Meeting
Barstow, CA
June 12, 2019

Mary Fiore-Wagner
Sr. Environmental Scientist - Specialist
Lahontan Regional Water Quality Control Board

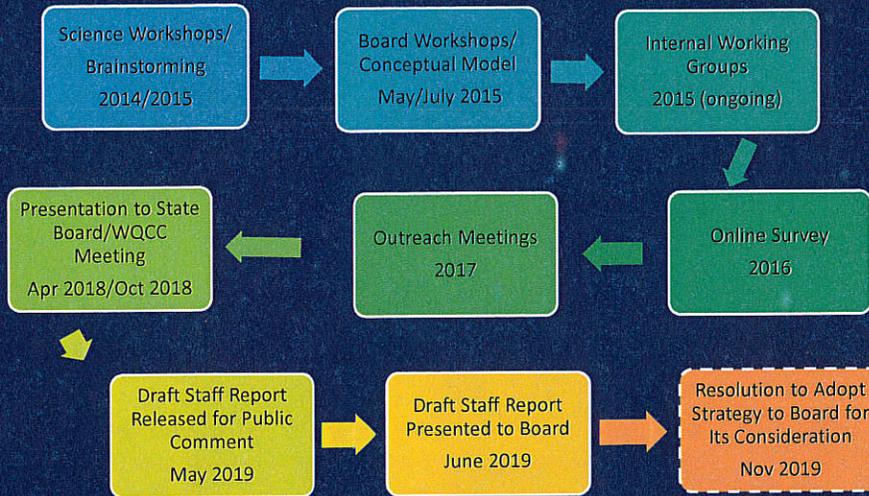


Presentation Purpose

- Summarize public comments received on the draft staff report
- Obtain feedback on draft key policy statements and implementation framework for proposed action in November 2019



Climate Change Mitigation & Adaptation Development Process



Item No. 8

Climate Change Mitigation & Adaptation Strategy

3

Policy Statements

- 1 Protection of Wetlands, Floodplains, & Headwaters**
Support external efforts and initiate actions to improve meadow, wetland, floodplain, stream conditions, and flows in headwater areas to achieve greater levels of watershed resiliency to the impacts of climate change.


- 2 Infrastructure Protection**
Support external efforts and initiate actions to build and maintain sustainably functioning infrastructure so built systems remain safe and reliable during extreme weather events including heat waves, extreme precipitation, severe drought, and wildfires.


- 3 Protection of Groundwater Quality and Supply**
Support external efforts and initiate actions to protect groundwater quality and improve groundwater recharge for purposes of protecting source water, and building sustainability and drought resiliency.

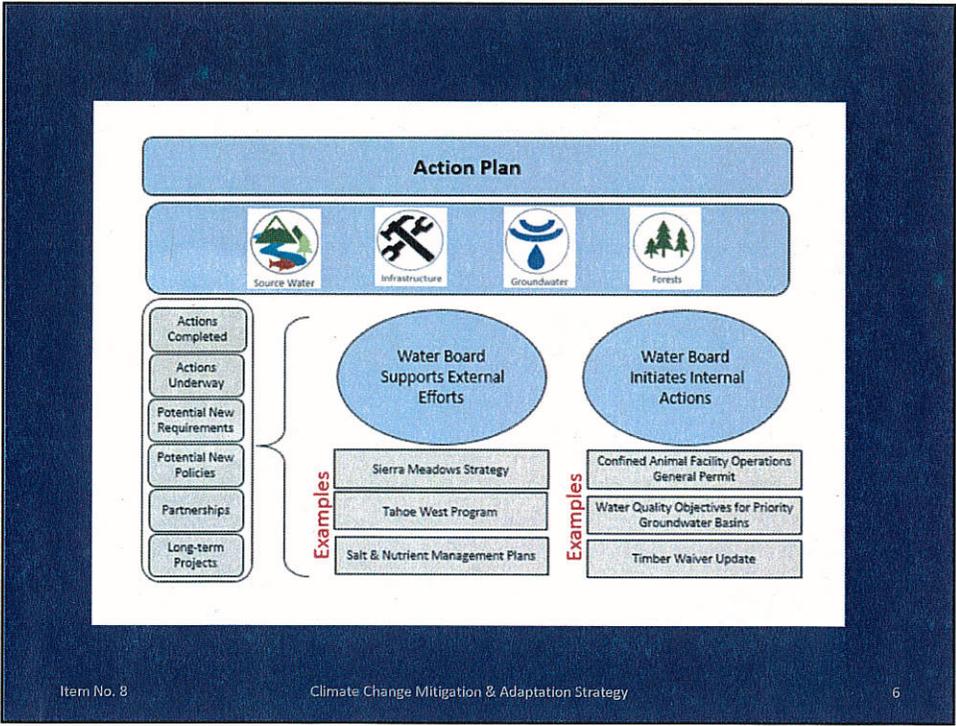
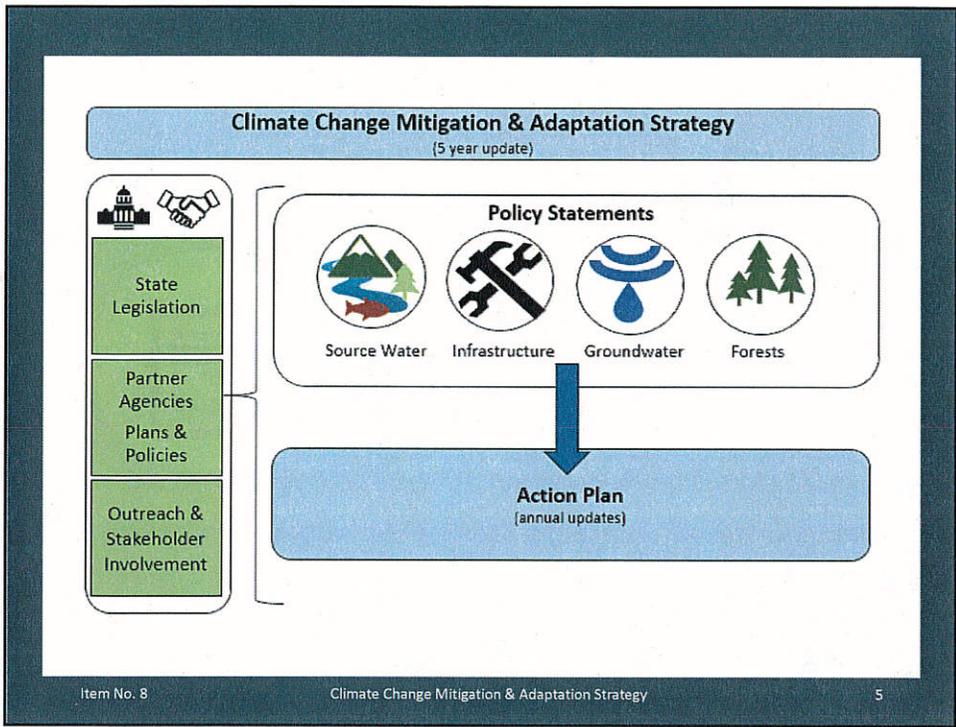

- 4 Protection of Headwater Forests and Promoting Fire Resiliency**
Support efforts and initiate actions to increase the pace and scale of projects implemented to build long-term resilience of headwater forests including those that (1) reduce vulnerability to catastrophic fires and pest infestations, and (2) support resilience in recovery efforts.



Item No. 8

Climate Change Mitigation & Adaptation Strategy

4



Comments Received



Key Questions

1. Are the four draft policy statements on the right track for Source Water, Infrastructure, Groundwater, and Forests?
2. Is the Implementation Framework appropriate with an Action Plan updated yearly and the overall Strategy updated every 5 years?



