Results for: Climate Change Adaptation for Water Resources

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Climate Change Adaptation for Water Resources

Thank you for taking about ten minutes of your time to complete this survey. The Lahontan Water Board is interested in partnering with other organizations and agencies to adapt and prepare for climate change.

The survey questions are divided into three main sections:

1. Who are you and what are you doing or planning for climate change?
2. What challenges do you face?
3. What is your opinion about actions and priorities the Water Board is considering?

Highlight of Climate Change Effects

Climate change is having, and will continue to have, widespread impacts on California's diverse population, natural resources and economy. Because the Lahontan Water Board region spans nearly 600 miles along the eastern side of the state, the region will experience differing effects from climate change. The northern part of the region is expected to receive more precipitation as rain and less snow, while the southern part will be hotter and drier. Flood events will likely become more severe throughout the region. Addressing the impacts brought about or exacerbated by climate change will require a fundamental shift in water resource management and water quality protection as the amount, timing and form of precipitation changes.

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Who are you?

1)

Name and Title (optional)	Agency/Organization (optional)	Email Address (optional)	Contact Number (optional)

(Responses to this question were redacted to protect personal information.)

*2) What type of agency/organization is your employer?

	Response (%)	Responses
Federal	6.37	10
State	19.11	30
County	12.74	20
Local	15.29	24
NGO/Non-Profit	13.38	21
Other:	33.12	52
	Answered Question	157
	Skipped Question	0

(Responses to this question were redacted to protect personal information.)

*3) In what county is your agency/organization? Note: counties are listed from north to south.

	Response (%)	Responses
Modoc	1.21	2
Lassen	4.24	7
Plumas	0.61	1
Sierra	0.00	0
Nevada	3.64	6
Placer	1.82	3
El Dorado	10.30	17
Alpine	2.42	4
Mono	4.85	8
Inyo	5.45	9
Kern	3.03	5
San Bernardino	20.61	34
Los Angeles	4.85	8
Other:	36.97	61
	Answered Question	156
	Skipped Question	1

(Responses to this question were redacted to protect personal information.)

4) In what city is your agency/organization?

(Responses to this question were redacted to protect personal information.)

*5) Please indicate strategies/programs/plans that your agency/organization is currently implementing to adapt to climate change. Check all that apply.

	Response (%)	Responses
Updating floodplain maps	3.56	18
Monitoring groundwater elevations	8.12	41
Low Impact Development plans or requirements for construction projects	5.54	28
Ordinances for climate change adaptation	2.57	13
Education and Outreach	13.86	70
Water conservation	14.85	75
Rate changes	3.37	17
Incentives/Disincentives	2.77	14
Policies/plans/ordinances/strategies toward an aquatic habitat protection program	7.13	36
Risk assessment conducted for infrastructure	5.35	27
Implementation/Approval of multiple benefit projects such as flood control, drought and climate change preparedness, water supply augmentation, groundwater recharge, etc.	5.94	30
Participation in a Local Hazard Mitigation Plan	3.96	20
Inventory and Assessment of facilities vulnerable to potential hazards	6.14	31
Identification of the level of useful life for facilities	1.98	10
Plans to retrofit facilities to protect against hazards	2.77	14
Increased enforcement	2.38	12
Other strategies/programs/plans	9.70	49
	Answered Question	130
	Skipped Question	27

Please provide additional explanation here:
I am retired on a disability. However I stay active in the world of water.
trying to interject common sense into regulations and decisions made by local, state, and federal government
We have no resources to focus on this area so our efforts are largely in coordination with the integrated regional water management plan. Water conservation is creating a bigger financial issue for us rather than the direct impact of climate change on our infrastructure.
Capture and Infiltrate Storm Water into subsurface.
Forest vegetation management that reduces density and reduces percentage of white fir
As required by CARB/USEPA
CEQA significance thresholds for GHG
Really?
We are having soils maps prepared by Natural Resources Conservation Service for the entirety of Mojave National Preserve. We already install water conservation devices in employee residences and administrative facilities.
SIAD is monitoring GW elevations, LID plans, water conservation, habitat protection, risk assessments, implementation of drought prepardness, increased enforcements. The Depot is designated as a "net zero" installation by the Department of Defense, which means we are decreasing energy/water use.
Conducting baseline investigations including completing a baseline of all springs within the Mojave Desert within the Needles, Barstow and Ridgecrest Districts of the Bureau of Land Management.
Implementation of water saving measures and data base development.
A very limited amount of attention is being given these things.
Long term water supply and quality planning
Finishing up our agency's vulnerability assessment of facilities and staff, which will then lead into an adaptation plan. Have already completed and are implementing a GHG emissions reduction plan.
Ditch Your Lawn workshops help landowners convert to drought tolerant natural plants versus lawns.
reconnecting floodplains with streams for drought resiliency. Partnering with fire protection districts for tree mortality outreach and restoration of entrenched creeks.

Question 5 Continued

Our firm has been working with public agencies designing LID stormwater infrastructure projects, water supply facilities, waste water treatment plants and other water and transportation infrastructure projects within CA and around the Country. We are actively working on using the Institute for Sustainable Infrastructure's (ISI) Envision Sustainability Rating System tools as a framework to plan and design sustainable and resilient infrastructure. I assisted Placer County with preparation of an Envision Sustainability Rating System application for one of their projects which received the first Platinum Rating. Stefan Schuster and I have presented this project at numerous conferences around the country to educate people about how this framework is useful for planning sustainable projects. A component of the Envision Rating System focuses on Climate Change and Resiliency.
We are not a regulatory entity, however we incorporate climate change in project planning, design and implementation.
hello
Rate changes may or may not happen but they are currently under review. My answers reflect actions taken to my knowledge by the team that I personally manage and may not reflect changes underway by our main department administrative or engineering staff.
As a management agency of public lands, implement programs and projects to assess climate change impacts and impacts of management actions in improving ecosystem resiliency to climate change, restore ecological function to a wide variety of degraded lands, and implement actions for sustainable operations and management of public lands, infrastructure, and resources.
Sustainability has a very strong academic background all over the world, but the United States still wants to rely on outdated thinking to accomplish "sisyphean" tasks. . . There are only a few scientific principles involved that transcend all of what Man does, but is continually countermanded to all of our detriment. . .learning these principles will adjust thinking to a needed level of comprehension across a wider spectrum of understanding, to avoid unintended consequences (of others' mis-managements)
Drinking water quality and supply protection
Research on the effects of climate change and drought on streams in the Sierra Nevada. Investigating how flow and temperature and habitat conditions affect ecosystem health and values related to ecosystem services. Research is intended to help guide management regarding where and what kinds of problems are developing for the biological integrity of mountain streams. Hope to continue to provide this kind of information to LRWQCB as I've done in the past under contract to the State to develop biological indicators of water and habitat quality.
We irrigate 2 large ranches in the Eastern Sierras. We therefore have concerns over climate change. The environmental concern is significant but our greatest concern is overreaction from regulatory agencies.
Proceeding with implementation of a Water Supply Improvement Project to add system redundancy. Participating in the formation of the Indian Wells Valley Groundwater Authority to comply with the Sustainable Groundwater Management Act. As a medium priority basin in critical overdraft, once formed, the GSA with develop the plan to bring the basin into a sustainable condition within 20 years.
Please see EPA web-site: "Addressing Climate Change in the Water Sector" (https://www.epa.gov/climate-change-water-sector), especially "Resources" tab. Although it may not be accurate to state that enforcement related to climate change adaptation is increasing, EPA provides guidance on e.g. Consent Decrees that Include Green Infrastructure Provisions at: https://www.epa.gov/sites/production/files/2015-10/documents/epa-green-infrastructure-supplement-1-061212-pj.pdf.
Vegetation management in the forest.
Evaluating risks for upland and wetland/riparian habitats in the face of climate change
None of the above
I am not in the water division and do not know what they do to adapt to climate change.
Healthy soils policies
We have made presentations to many local cvic organizations. Our next step is to convene a working group of local stakeholders to build support for concerted action. We intend to change the culture of awareness and inspire action through education. We are inspired by Totnes, England. See http://www.transitiontowntotnes.org/ We have tentatively planned to start by documenting ROI and emission reduction for mitigation strategies like changing out lights, that have been initiated already and keep a running total on the City of SLT website. We hope to show that group action has a large impact. So far, we have the City of South Lake, TRPA, EWWE (from the Sustainability Collaborative) and STPUD on board with this idea (in concept). We would hope to engage Lahontan, too.
Participation in related governmental agency regulatory hearings, to ensure businesses do their fair share.
level 3 water restrictions remain in place
Myself as a trustee along with other NGOs are also involved in protecting watersheds and native forest areas in an attempt to slow the warming trends
I am a volunteer member of the A-Team for the AV IRWMP, advocating for the small/rural communities in the Antelope Valley. I have been involved in the development and update of the Plan and the prioritization of projects that support the Plan.
1. Prepare, review, check, and interpret sanitary engineering plans, estimates, and specifications. 2. Interpret laws, rules, and regulations pertaining to public health engineering and water pollution control in California. 3. Establish and maintain cooperative relations with those contacted in the course of work. 4. Communicate effectively. 5. Analyze situations accurately and adopt an effective course of action.
With our agency Master Plan scheduled to be updated in the next two years, we will be integrating the importance of climate change into future considerations for the agency.
Updating service offerings to help cities, counties, states, government, and industry plan for and adapt to climate change

Question 5 Continued

FEMA provides floodplain maps. Mojave Water Agency monitors groundwater elevations. Rates are based on supply and demand. The City participates in the IRWMP process, which considers climate change.
meadow restoration
Invasive plant management to help mitigate watershed effects of non-native species. Research into alternative crops or agricultural commodity diversification potential.
Stormwater monitoring, boat inspections for aquatic invasive species, landscape consultations to assist homeowners with water conservation, educating homeonwers on defensible space.
Working on Emergency Preparedness in case of more floods or fires.
We have been monitoring the climate and rainfall here in Spalding over the past 5+ years. We have the data available.
We included an evaluation on the potential effects of Climate Change in our recently completed IRWM Plan. We have also been working with the US Army Corps of Engineers and Bureau of Reclamation to better understand the effects of Climate Change and existing large flood control facilities (dams).
- implementation of AB 691 - participation in Forest Climate Action Team - participation in CA 4th Climate Assessment - participation w/ TRPA Shoreline Plan, low water adaptation planning
Economic revitalization through public/private, Tahoe-wide collaborative initiatives including infrastructure upgrades and rebuilding to achieve triple bottom-line benefits for all sectors and communities of the Lake Tahoe Basin. Current program examples include broadband (Connect Tahoe), early wildfire detection (Alert Tahoe), and strategies for clean transportation, energy, and water system operations.
Superfund projects, dependent on water recharge conditions
We are working with ag producers, Resource Conservation Districts, Land Trusts and others across CA to promote carbon farm planning and carbon farming as a means to engage agricultural lands and producers as a significant part of the climate change solution and to build resilience to climate change within farming/ranching systems across the state.
The Colorado River Indian Tribes Environmental Protection Office monitors water quality and Non-Point Source Pollution. As part of the NPS tasks, habitat restoration projects and invasive species management are undertaken. CRIT Tribal Council has agreed to fallow over 1,500 acres to conserve water, and is considering other water conservation strategies.
We work with multiple water agencies, jurisdictions, and other groups to support their efforts towards programs, projects, and policies that will help adapt to climate change. We also develop our own activities aimed at climate change information development and education.
participation in state government level planning policy papers such as Safeguarding California, increased outreach and education to stakeholders, international info sharing (see CDFAs climate smart agriculture webpage), funding of research, providing incentives to farmers for soil health, water conservation, ghg emission reduction, dairy manure management, renewable energy (see CDFA's Office of Environmental Farming and Innovation webpage).
We are focused on the native California plants in our garden, many of which are not from our immediate area. We will be re-examining our collection policy in terms of which may no longer be feasibly grown in our area.
Climate Action Planning Advocacy
Providing services for checked items
We are a science agency. We are involved with all of these topics through research projects that evaluate the possible benefits provided by various mitigation strategies. We are also involved in basic science that studies how climate change impacts our nations resources.

What are the barriers?

*6) What impediments or barriers to climate change adaptation (e.g., improvements to storm water collection and use, infrastructure, and/or wetlands and floodplain management) does your agency face? Check all that apply.

	Response (%)	Responses
Water rights	11.14	45
Groundwater basin adjudication	7.92	32
Land uses and zoning	9.65	39
Regulatory permits	9.41	38
Economic/cost	17.57	71
Lack of governance and/or community support	8.91	36
Federal regulations or laws	7.67	31
State regulations or laws	10.89	44
Regional regulations or laws	5.45	22
Local regulations or laws	4.95	20
Other barriers	6.44	26
Answered Question		122
Skipped Question		35

Please provide additional explanation here:
I spent a helluva lot of time trying to get a relatively simple meadow restoration project approved on 20 acres. The Lahontan inspector (who is now retired)was overly concerned with erosion potential on a relatively flat piece of ground and failed to see the overall benefits
The City of Los Angeles Department of Water and Power (DWP) owns most property in the Owens Valley as the main source of water for that city. DWP actions and policies in the valley overwhelm measures the City of Bishop takes.
We are still in the Dark Ages!
Lack of tinfoil hats.
Limited right-of-way and continuous growth in demand of new highways as requested by local agencies.
Lack of knowledge
The biggest concern is the dollars required to achieve what we really need to do. We have a great regulatory crew with teh Lahontan Boards and SWRCB. However-we could always use a little more leeway on regulatory mandates.
not applicable
Water quality laws predate climate change, do not consider or incorporate climate change to any substantial degree or direct any actions, or provide funding support to do much of anything.
The environmental process takes a bit of time and money, not only in the planning stage but also in the implementation, maintenance, and monitoring phases thereafter.
No incentives exist to reconnect rivers with floodplains in the Tahoe basin - mostly disincentives. Funding is increasingly hard to obtain due to this.
hi again
There is a need for continued efficiencies in the regulatory process, so that actions needed to improve climate change resiliency can be implemented more cost effectively and at a greater pace and scale. Examples include: landscape level forest heath and forest fuels reduction work to get ahead of drought driven bark beetle mortality. And concurrently increase pace and scale of needed meadow/riparian area restoration within those landscapes. Need to increase capacity and efficiency for SNYLF surveys and consultation, so that critical restoration work in potential habitat can occur. Need to continue to grow and expand technical proficiency across multiple agencies, based on scientific study and assessment of completed work, in developing appropriate restoration approaches.
The inclination to change without knowing what to change "to" impedes an "all-hands-on-deck" approach, as we as a culture are more worried about our own economics & political persuasions (opinions) more than we currently care for life-processes, and the role they play in life survival.
All the above are potential problems. My agency (Univ Calif) has no jurisdiction over any of these adaptive responses. We have a research, education mission. One huge impediment to doing any of these things is that the information we collect is not getting to decision-makers, not getting sufficient funding to carry out, and not being used to inform the public about problems. State Water Board is also not effectively communicating ecological risks, only those that pertain to human uses of water.
At times of shortage or controversy parties but especially agencies tend to overreact and jump to extremes like challenging water rights or over regulating. Each are presently at play in the region

Question 6 Continued

Cost considerations are addressed at this EPA website: https://www.epa.gov/green-infrastructure/green-infrastructure-cost-benefit-resources. In general EPA's barriers to CC adaptation are likely to closely resemble/mirror SWRCB's... A great example may be federal programs that provide for post-natural disaster reconstruction in similar fashion to pre-disaster conditions, rather than incentivizing logical climate (e.g. flood- or drought-related) adaptations at that time.
Too much government intervention. Stop making new regulations.
Too much focus on climate change
Because this is a grassroots initiative, we need the support of community leadership to bring other leadership on board. We will need access to expertise and other resources from constituent groups.
Continuing urban sprawl.
Lack of financial resources to adequately highlight the climate change impacts from various development plans that include, vegetation removal, paving important areas preventing groundwater replenishment and increasing runoff, damage to wetland and important high Alpine meadow areas, road building and other actions that impede native system survival as the changes in climate become more warmer.
Many residents are resentful of what they perceive as the AV being treated as the "dumping ground" for urban Los Angeles problems. This carried over into strong NIMBY reactions to the renewable energy installations here. I am trying to learn everything I can about the nexus of Climate, Energy, Water, and Food, so I can better communicate the challenges.
◦embed consideration of climate change in their risk management practices ◦ensure there is sufficient flexibility in regulatory and policy settings to allow households, businesses and communities to manage the risks of climate change. ◦reducing perverse incentives in tax, transfer and regulatory arrangements that impede the mobility of labour and capital ◦increasing the quality and availability of natural hazard mapping ◦clarifying the roles, responsibilities and legal liability of local governments, and improving their capacity to manage climate risks
Value. Government and industry are still trying to get thier hands around long-term investment. Particularly for organizations where office terms and positions are 3-4 years, its difficult to "do the right thing"
The City has no funding source to address climate change. Unknown whether there are regulatory barriers involved.
Our town is surrounded by USFS lands. The USFS is unyielding in making changes to permit language that is questionable, difficult to communicate with, and not supportive of projects that could augment the community's water supply.
Water right laws are not being enforced. Too many impounds
From the Mojave Basin Area Judgment: "Injunction Against Diverting Storm Flows. No Party may undertake or cause the construction of any project that will directly reduce the amount of Storm Flow that would otherwise go through the naturally occurring hydrologic regime to a downstream Subarea or that will reduce the surface area over which Storm Flow currently occurs by alteration to the bed of the Mojave River. This paragraph shall not prevent any flood control agency or municipality from taking such emergency action as may be necessary to protect the physical safety of its residents and its structures from flooding. Any such action shall be done in a manner that will minimize any reduction in the quantity of Storm Flows."
- jurisdictional authority is limited to the legal ownership boundary (e.g. ordinary water mark) - existing infrastructure may impede implementation of adaptation strategy
- jurisdictional authority is limited to the legal ownership boundary (e.g. ordinary water mark) - existing infrastructure may impede implementation of adaptation strategy
For the Tahoe Basin and surrounding region, overlapping regulations and policy priorities of federal, state, regional and local governmental jurisdictions.
Donald Trump
A lack of education for, or understanding of the implications by the public. The rate of conscious change is too slow.
The real costs of implementing whole farm carbon plans are not currently recognized within existing state programs (such as the CDFA Healthy Soils Initiative); the current market value of carbon dioxide per tonne is ridiculously low, and does not reflect the true value of carbon or the true cost of providing offsets in the terrestrial sequestration sector. The Air Resources Board has not accepted the enormous sequestration capacity of the state's soils, and is consequently dragging its feet on engaging this potent GHG mitigation and climate resilience strategy. Yet, as noted by the French Minister of Agriculture, increasing soil carbon globally by 0.4% per year would completely offset all annual global emissions.
No political will to help homeowners vs industrial water users...ie water bottlers.
CDFA sees many of these (above) as barriers to adaptation throughout the state, but they are not experienced by CDFA specifically.
Development
Our agency does not implement adaption strategies.

Relevant Climate-Related Events

7) Which were or are the most relevant climate-related events that have affected or are affecting your agency/organization in the last decade? If none, what are anticipated future climate-related events that may affect your agency/organization? Please explain.

Responses (89)
Decline in forest and watershed health Wildfire and wildfire risk Changing water supply and timing due to changes in precipitation patterns Flood risk
The drought effects us all. Our wells here in Hinkley are replenished by the Mojave River. There has been no replenishment in several years and groundwater levels continue to drop. On a state wide view of the effects of the California drought the lack of action by State of California in regards to water conservation incentives is leading to a water shortage catastrophe. Californians flush an estimated BILLION gallons of clean drinking water down toilets every day. That's 365 Billion gallons a year of clean water that could be saved by going to once used water systems to flush toilets. Water from laundry and from showers should be re-utilized for flushing toilets. The systems are available for purchase yet there are no state incentives or campaigns to make this move toward saving 365 billion gallons annually. Shower water is perfect for recovering and being used in a drip line to water landscape and shrubbery. The small amounts of soaps in the water serve as insect deterrent and reduce insecticide usage. A program that moves agriculture back to small production farming by small local farmers will reduce water usage. Small farms are easier to work with in regards to water conservation techniques. The large industrial type of farming by companies that use huge amounts of water to grow and export goods use way too much water. Programs that limit farming to growers who live on their land and sell in California could have great results.
Dropping gw levels in upper aquifers with need to drill deeper wells for ag, domestic, and industrial uses. Little if no recharge due to periodic drought conditions which seem to be more frequent now than in the past. Emphasis should remain on conservation and preparing for lengthy drought conditions throughout the Region.
drought and flooding
Increased risk of extreme weather (lower lake levels during drought, risk for higher intensity storms and flooding during winter) Impacts to tourism and local economy (lower lake levels hurt boating in summer, less snow impacts winter visitation) Lake Tahoe TMDL source identification and linkage analysis establishing regulatory certainty for pollutant load reduction activities for lake clarity could be impacted. Public and private stormwater investments may not yield expected benefits if climate change results in large-scale changes to lake mixing and nutrient release.
Erosion control and silt remediation, Invasive aquatic vegetation, and Public education/awareness/support.
Entry into a long term draught.
flood from intense precipitation
Decreasing rainfall. Increasing population. Water reservoir contamination by corporation operation ie., illegal dumping of waste chemicals, etc.
Drought.
Trees dying in overstocked stands, especially white fir
Climate change has resulted in drought impacts to public water systems. Impacts include shortage of water supply or water outages. Some water systems lost supply due to curtailment of water rights of a surface water source, others lost supply from groundwater sources from declining aquifer. In both cases the State Board DDW has had to coordinate with emergency response activities and referral to State Board DFA for grants for well replacement or reconstruction projects, and/or interim water supply via hauled or bottled water. Elsewhere in the state, we have been working with several public water systems to develop new water resources which are less vulnerable to climate change and more drought resistant, such as groundwater recharge with advanced treated wastewater (recycled water) or ocean desalination.
State-imposed water conservation requirements and DWP management of surface water during the drought.
none, nothing unknown in 2006
N/A
None to date; no statutory authority over climate
None - None. There is no substantiated, peer reviewed, scientific evidence that man-made climate change exists. Furthermore, with any degree of accuracy, what the weather is going to be like tomorrow can't be predicted - much less 10 years from now. It was predicted that snow would not exist in California by the year 2015... I remembered that 'scientific fact' as I was watching record snowfall in 2015. There are vastly more important events occurring in the world right now that we should be preparing for that nonsensical climate change (previously labeled "global warming" - but the world isn't 'warming' - so they had to change the name... and of course - the climate is always changing. It's called "Seasons."
Anticipated climate-related events are increased variability in an already highly variable natural/local water supply.
Highway bridges washout and nuisance stormwater discharge (erosion and sediment) from properties adjacent to the highways.
Drought El Nino and La Nina cycles Warming trends shift reproductive cycles for wildlife and plant life cycles for their habitat
Water, adjudicated water rights. Outdated/Failing infrastructure. The need to do more, but confined budget.
As a consultant my clients will see effects to their lands and ability to utilize water rights
Changes in hydrological cycle such as drought and decreased snowpack resulting in changing lake levels at Lake Tahoe and the desire for increased dredging to maintain boating access. Who cares! Climate change will affect the resources the agency manages but there is nothing the agency is really doing or can do about that, other than respond to applications by others to do things. The agency really has no authority to do anything other than to regulate dredge and fill activities in wetlands, and regulate pollutant discharges in storm water. However, the agency ability to implement these regulatory programs is severely constrained by the desire of the US Congress to limit funding, and CA legislature to cap staffing levels in these fee-based polluter-pays permitting programs. The state is VERY slow to get on the climate change issue from a water perspective, conspiring to go slow even. There is no "crisis" that it can not wait for additional state action by my agency. Lacking true leadership, we await our fate and leave the future to others; as it has ever been.
Drought conditions. Falling water table.
Any regulatory constraints regarding the ability to import water into the region as well as trading water around the state.
sea level rise

Question 7 Continued

Drought, coupled with declining snowpack, for managing water supplies and maintaining and restoring habitats. Also, severe rain events that cause flooding, particularly in areas where fires have occurred. Other is the increase in heat days for staff working in the field.
AIS Management at Tahoe, potential use of chemical herbicides for controls
Our facilities having to treat higher flows due to more intense wet weather events.
less frequent and higher intensity storms. potential for more precip in form of rain Conveyance of flood flows
Drought
drought, tree mortality, and a warming lake tahoe.
Sea level rise, changes in precipitation amounts and types, increased fire hazard.
Nothing directly, however, our planning, permitting and design efforts are keyed up to address things like sea-level rise, increases in flooding risk including duration and inundation levels. These are important considerations for any coastal/Delta wetland restoration project. For restoration projects in the Tahoe Basin or eastern Sierra, we anticipate precipitation amount will decrease, and more will be in the form of rain than snow. Water temperature regimes will likely shift to shorter cold periods and summers will be warmer. This creates opportunities for invasive species to become established or spread to new areas.
Increased temperature and lack of precip with the drought
hi
I don't have any duties that relate specifically to climate change issues and our basins are relatively healthy with no anticipated shortfall in water supply due to drought.
Dramatic increase in tree mortality, due to drought and bark beetle infestation, and subsequently risk of catastrophic wildfire. Increases in stream temperatures during late summer flows. Increases in both terrestrial and aquatic invasive plants.
To the extent that the recent and ongoing drought has had negative effects on agriculture (lack of water for irrigation), tourism (lack of snow for winter recreation and negatively affected fishing opportunities), and wildfire.
Anecdotally, I use the following: "If I told you there were THREE ice sheets in the world, one of which was the Arctic, the second being the Antarctic - what would be the 3rd one (?) Most somewhat informed people would go to 'Greenland' as their answer...but they would be wrong, as Greenland is considered to be in the Arctic Circle... The answer is the Tibetan Plateau, which ramps up to the Himalayas - the Himalayas provide about a third of the globe's population with fresh water; the Tibetan Plateau used to have 40,000 glaciers (all mostly fresh water), and they now have half of that: 20,000...recently confirmed by the Dali Lama, as he said in a press conference: (paraphrased) "I want the world to know that global warming is happening here 3 X'x the rate of either Pole..." This notice is vitally relevant to all of us now, as ignoring it mimics the American attitude exhibited years ago by the situation in the Amazon rain forests: "That doesn't concern me, as it is on the other side of the world" We continue to ignore the peril as it continually grows larger & larger. . .
Draught
AGAIN, NOT MY ORGANIZATION THAT IS BEING AFFECTED. BUT - THE RESOURCES THAT WE ARE TRYING TO DOCUMENT NEED FOR PROTECTION ARE MOST IMPACTED BY DROUGHT (=MOUNTAIN STREAMS) AND IT IS ESSENTIAL TO RECOGNIZE THAT DROUGHT IS PART AND PARCEL OF CLIMATE CHANGE. THE EVENT OF THE RECENT PROLONGED DROUGHT IS BY FAR THE IMPACT TO STREAM RESOURCES INCLUDING WATER AVAILABILITY AND QUALITY FOR THE PUBLIC AS WELL AS ECOSYSTEMS. FUTURE EVENTS THAT CAN BE ANTICIPATED TO CARRY AN IMPACT ARE WINTER-SPRING FLOODS AS RAIN-ON-SNOW EVENTS, CONVERSION OF PERENNIAL STREAMS TO INTERMITTENT STREAMS, DEGRADATION OF WATER QUALITY (INCLUDING WARMING), IMPEDANCE OF THE PROGRESS OF RESTORATION WORK IN STREAMS AND WETLANDS THAT REQUIRE SUFFICIENT FLOW, UNPREDICTABILITY OF WHICH WATER SOURCES ARE MOST AT RISK AND MOST RESILIENT TO CHANGES DUE TO CLIMATE.
Challenges to water rights on the Walker system and new policies of LADWP to drag more water south in the Mammoth area
The ongoing drought without a doubt has had the most significant impact since our basin is completely dependent on groundwater and there has been very little recharge to the basin while demand on the aquifer has increased significantly with the recent expansion of agriculture.
Despite the still un-resolved linkage between California's current drought and climate change (though the drought's severity is undoubtedly exacerbated by record-high temperatures), the drought has been a large focus of EPA activity, see: "Drought Resilience and Water Conservation" (https://www.epa.gov/water-research/drought-resilience-and-water-conservation). EPA's climate adaptation focus has been prompted by numerous existing or anticipated weather events, see e.g: "Extreme weather events, sea level rise, shifting precipitation patterns, and temperature variability, all intensified by climate change, have significant impacts for ... utilities." (https://www.epa.gov/climate-change-water-sector/epa-programs-and-initiatives-addressing-climate-change-water-sector#green-infrastructure)
Sea level rise
Forest Fires that due to fire suppression and restrictions on vegetation management have made them hotter and bigger.
Last time the Mojave River was above ground in Hinkley, Ca. was winter/spring of 2010 & 2011. At 5 years into this storm 1 season, drought 4 seasons, but the ground is powdery as if the drought is twice that age.
None, Climate change focus is overblown. This is not a joke. I'm serious.
I am not sure
Compost/Land application issues; healthy soils initiatives; Dairy issues
It is my opinion that certainly one of the climate-related events that has recently impacted the Department is having to providing and issuing emergency contracts to remove existing trees within the Sierra Mountains that have the potential to fall and damage our State Highway Facility. This issue of course is due to a combination of trees in the Sierra Mountains dying to due to drought and the bark beetle problem.
None
I speak as a citizen of South Lake Tahoe. In recent years, we have not had sufficient snow to support the best winter recreation activities for local and visitors. Likewise, our summer recreation is impacted by lake water quality which is undermined by algae and low water levels. Stressed trees are a frightening fire risk. I feel a morally bound to protect our environment. These are all reasons why I am spurred to take action.
Draught in California's Central resulting in increased draw down of ground water, air pollution due to dry dust, and increased use diesel fired water pumps.
last 4 out of 5 years of drought and a 93% of normal from last year but 58% of normal below 8500' wells not rebounding as quickly as had been hoped snow pack above us no way to hold water in reserve
Agency is reliant on winter snow pack. Rising temperatures could raise the snow levels, reducing snow pack.

Question 7 Continued

Major ski area developments, road building and widening projects, paving projects, residential developments and high impact recreational developments.
I am concerned that the multi-year drought and associated brush fires, and the projections of more warming and fire risks have and will seriously impact our flood potential and reduce our ability to recharge out aquifer. A subgroup of our IRWMP Team has been projecting that an unintended consequence of the Safe Yield adjudication decision for the AV aquifer will result in formerly farmed land being left fallow and subject to wind erosion and blowing dust. They anticipate a resultant rise in Valley Fever cases. The potential for increasing brief, but intense, weather events, such as our October 2015 "Thousand-Year Storm" is also aggravated by off-road vehicle use in areas not designated for ORV activity, since they dig ruts on steep slopes, which then turn into major gullies with intense rain.
Long-term drought, flood, fire
As a stand alone Waste Water Agency(Sewage conveyance and Wastewater Treatment), significant drought years have impacted our agency. With decreased well water availability, a shortage in supply water created water conservation measures, which in turn have increased the concentrations in Mg/L of the sewage entering our Water Treatment Plants, and potentially changing how we meet our State Imposed Monitoring and Discharge Requirements, increased costs for chemicals needed to enhance treatment...etc
In California, for example, prolonged droughts affect ecosystems and agricultural production,decrease hydropower generation, increase wildfire risks, degrade air quality, and cause major economic losses. Extreme weather-related events must be used to integrate and coordinate research approaches and investigate the best options to prepare California for and recover from these events.
In the last decade, we have seen: flooding/stormwater damage; drought and drought impacts (e.g., wells going dry, reduced streamflow, changes to water quality); changes to snowpack - both increased and decreased. In the future, we expect more of the same along with more intense storm events and earlier snowmelt and peak streamflow. I would also expect as-of-yet unknown changes to groundwater - perhaps both quantity and quality.
Governmental response to the recent California drought has caused several layers of new regulation. Episodic flood events have caused damage and significant cost to the City. Unknown if this drought or the more recent floods can be attributed to anthropogenic global warming as may be suggested by climate change models.
Increased wildfire/flooding/drought causing economic damage and reduced crop yields. New invasive plant colonization that threatens agricultural production and/or the environment. Exotic insect colonization and native insect population fluctuations that threaten agricultural commodities.
Lack of rain. The drying out of the desert.
The current drought has had a significant impact on local water supplies and hotter than normal conditions increase irrigation demand. MCWD's surface water supply was negligible in 2015 causing MCWD to rely heavily on groundwater pumping. Wells are recovering after improved snowpack conditions during the 2015-2016 winter, but many customers are reluctant to continue the strict conservation measures implemented in 2015 that continue into 2016.
Ground Water Levels – Since ground water levels or future levels are not guaranteed, TCPUD is augmenting its ground water by investing in updating lake intakes and surface water treatment plant(s) to ensure long term water availability. Wildfire – Wildfire is always a significant threat in the Lake Tahoe area. Climate change has increased that threat. TCPUD continues to invest in fire suppression infrastructure, fire resilient pump stations and water tanks, etc. TCPUD will continue to invest in fire protection.
Legal battle between Apple Valley Township and Liberty Water Company Lack of concern by Home Park Residents of critical water situation A presentation by representative of Lahontan at quarterly membership meeting of HOA residents might be valuable.
drought! We have lost all of our recreation activity now for over three years due to very low lake levels at Eagle Lake
The effects of climate change are being continuously monitored and studied by the State and the Department of Water Resources provides regular updates in their annual reliability report for the State Water Project. The ongoing drought has necessitated more diligent local management and the following considerations are from our 2014 IRWM Plan: WATER DEMAND • Changes to hydrology in the Region as a result of climate change could lead to changes in water demand, both in quantities and patterns. WATER SUPPLY • Potential impacts on SWP water availability resulting from climate change directly affect the amount of imported water supply delivered to the Region. • Changes in local hydrology could affect natural recharge to the local groundwater aquifers and the quantity of groundwater that could be pumped sustainably over the long-term in the Region. Decreased inflow from more flashy or more intense runoff, increased evaporative losses, warmer and shorter winter seasons can alter natural recharge of groundwater. • Although future projections suggest that small changes in total annual precipitation over the Region will not change much, there may be changes in timing with reductions in the spring and more intense rainfall in the winter. FLOODING • Climate change projections are not sensitive enough to assess short-term extreme events such as flooding, but the general expectation is that more intense storms would occur thereby leading to more frequent flooding and increasing the risk of direct flood impacts in the Region.
- Sea-level rise -Flooding and extreme storm events - Burn areas and run-off effects - Drought - Water quality impairments - Habitat loss and degradation/alteration - Land use development - Shoreline protection strategies - Loss of public access and recreation along coastal shorelines
Drought, wildfire, higher frequency intense storm events.
The most relevant event was the 2012-2015 drought and its effect on the Tahoe Basin seasonally dependent economies that rely on winter and summer water-related recreation. Rebuilding and improving our water/wastewater, transportation, communications, community housing, and energy infrastructures with provisions for climate change will be critical to the long-term health of our communities, environment, and Lake Tahoe itself.
sniggle fritz
The prolonged drought and the lack of snowfall in the Sierra.
Lengthy drought, in combination with excessive groundwater pumping, has reduced groundwater elevations and resulted in additional capital expense to replace monitoring wells.
Changes in snow pack and stream flow at Leviathan Mine Superfund Site near Markleeville, Alpine County
Rapidly increasing atmospheric CO2 and the worsening drought in CA precipitated the initial Marin Carbon Project (MCP) research that led ultimately to the formation of the Carbon Cycle Institute (CCI). MCP research results strongly support the significant role of agriculture and working lands in mitigating greenhouse gases through terrestrial sequestration and the role of terrestrial carbon enhancement in mitigating the negative impacts of climate change on terrestrial ecosystems.

Question 7 Continued

Drought from 2011-2015. Lack of snow....and increase in snow levels.
Hydromodification and Habitat modification: reduction in the amount of water flowing in the Colorado River, and the fluctuations in flow designated to conserve water. The reductions in flow, especially during night hours, affect the shelter available for aquatic organisms from insects to fish, and affect birds and mammals that depend on flowing water for protection (for instance, birds do not roost on the river, but travel upstream to lakes), beavers den openings are exposed to air and predators during low flow hours. The effects are most significant for wetlands (over 41,000 acres of wetland/riparian land occurs within CRIT exterior boundaries). Without stable water levels wetlands cannot perform their functions. Dried out soils differ from previous soils. Hotter temperatures and changes in rain patterns including drought affected many trees in natural areas this summer (2016).
Drought has been a major factor in the past few years, resulting in changes in streamflow and changes to groundwater levels. Flooding has also been an issue. Wildfire is another major concern, largely resulting from drought and overgrown vegetation.
drought, AB 32, SB32 (resulting in increased regulations and planning requirements),
None
DROUGHT: five years of drought in CA have stressed our garden. Apparent reduction in incidence and duration of marine layer.
Drought, fire frequency.
Drought & wildfire have been the most recent. In the past atmospheric river events leading to flooding have been an issue. We anticipate that drought and wildfire will continue to be a periodic serious threat, as will rising show levels from high temperatures, reduced soil moisture, diminished groundwater resources, and changes in species range and composition.
Increased work associated with sourcing waters to evaluate impacts to sensitive receptors such as springs and their associated source areas, groundwater impacts to water quality and quantity and effect of climate change on those impacts.
water supply extreme weather events

Question 8 Continued

Climate Adaptation Options

Through its 2014 and 2015 Climate Change Workshops held in collaboration with stakeholders, the Lahontan Water Board received numerous ideas for climate adaptation. These ideas were grouped into the three main themes with climate adaptation options identified for each theme.

The themes are:

- Protecting Resources and Providing Resiliency
- Improving Water Supply and Water Quality
- Communicating, Collaborating, and Streamlining Processes

The following section of our survey asks questions about these themes.

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Range of Options

*8) PROTECTING RESOURCES AND PROVIDING RESILIENCY - RANGE OF OPTIONS The Lahontan Water Board is considering the following options to protect water resources from the impacts of climate change. Please indicate your level of support for each option listed below.

	Strongly Support	Support	Neutral	Oppose	Strongly Oppose	Responses	Total
1. Adopt policies to protect critical groundwater recharge areas	**54**	**27**	**15**	**2**	**1**	**99**	**50%**
2. Expand monitoring and evaluation activities to continuously assess the effectiveness of water quality programs in building resiliency to extreme events and changing temperature and precipitation	**41**	**30**	**18**	**8**	**2**	**99**	**50%**

Comments:
Begin with quarterly monitoring in the most critical areas. Put in place policies to protect gw resources.
Please see my comments in the previous section. I cannot either support or oppose programs that I have not had the opportunity to review.
Depends on how onerous these are.
It is not clear how Lahontan policies on groundwater recharge would relate to the Groundwater Management Act.
Outside the jurisdiction of the District.
Build desalination plants.
It should become a regulation that no project shall reduce the amount of annual ground recharge volume. Calculations should be submitted and approved for that effect. There shall also be no increase in peak flow for 2 through 100 year storm events (to encourage detain, attenuate, and recharge stormwater onsite).
I am a firm believer in water conservation. However-there are too many people that think and feel water is an endless supply. We need ways to change that thinking.Water quality and protecting the water is as important as having water.
I hate the catchall politically correct terms such as "Climate change" and "resiliency" because it does not full capture the issues in hand. California and the west as a whole suffer from a booming population and secondly one of the worlds largest producers of agricultural goods in the world. These issues not climate change are what is that stretches the water supply of the area to its limits.
Questionable how much monitoring and evaluation is needed to build more effective programs as stated.
It's important to establish a baseline and understand the water problems for a particular area.
There are differing opinions about monitoring and evaluation effectiveness. This needs input from many experts in the field. Funding is always in issue for obtaining quality monitoring expertise.
hello
These 'strongly support' choices are made with the reservation that neither 'adaptation' nor 'resilience' will suffice if not imbued w/ 'global sustainability principles' as identified by the Nobel Science Committee over a quarter-century ago as "useful anywhere on the planet"
THIS SECOND OPTION IS OF CRITICAL IMPORTANCE. OUR GROUP AT SNARL, UNIV CALIF IN MAMMOTH LAKES IS CONDUCTING THE ONLY CONCERTED EFFORT TO DO LONG-TERM MONITORING AND EVALUATION OF WATER QUALITY, HABITAT CHANGES, ECOLOGICAL INTEGRITY OF WATER RESOURCES IN THE SIERRA. WE HAVE NO FUNDING TO DO SO BUT HAVE STILL BEEN CARRYING OUT THE WORK. WHY NOT HELP US TO DO THIS KIND OF WORK IN CONJUNCTION WITH LAHONTAN AS WE'VE DONE IN THE PAST TO DEVELOP CRITERIA FOR EVALUATING AND PROTECTING WATER RESOURCES? WE'VE BEEN DOING THIS FOR THE PAST 7 YEARS, AND CANNOT CONTINUE W/O SUPPORT. WEBSITE: HERSTLAB.MSI.UCSB.EDU HAS MORE INFORMATION ON WHAT WE'VE DONE AND WILL BE UPDATED SOON

Question 8 Continued

Many useful climate adaptation recommendations, including some related specifically to monitoring and evaluating program effectiveness, are contained in: "Tahoe Basin Climate Change Planning Framework," a report of the US ACE Climate Change Project, Date: 07/06/2010. The Tahoe "Sustainability Action Plan" (http://laketahoesustainablecommunitiesprogram.org/sustainability-action-plan/) also includes a chapter on Climate Change Readiness (Ch. 5) with many helpful water-resource-related actions, see esp. pp. 5-16 - 5-19.
Have you people solved the aquifer overdraft problems or even come up with a workable solution? No? Didn't think so, and now you propose to tackle the earths climate like it's an agenda item? Please find an achievable goal to look busy at. Kudos for pushing the recycled water projects.
It is a good idea to protect water resources ASAP.
For disadvantaged communities, funding is limited.
The City does not oppose proactive groundwater management. However, the question does not provide enough information to make a meaningful support/oppose analysis. In addition, groundwater is already being carefully managed and is subject to recent drought-related regulations designed to provide sustainability--which includes climate change concerns. Question 2 is particularly problematic. It is too general to understand the real implementation tasks, the management endpoint is too general, and such activities would require new funding. So we cannot support the option as presented.
We already do monitoring. More would be too costly
1. Any new policy should be vetted through stakeholder process to first determine need. 2. Coordinate with existing monitoring programs to maximize and leverage existing datasets and efforts by others.
The scope and focus of item No. 2 above is not clear.
Groundwater recharge must be made a top priority.
Increasing the capacity of soils to hold water through enhanced soil organic carbon content offers an important strategy to both reduce atmospheric GHG and build resilience in watersheds and working landscapes. The role of uplands in recharge and wetland dynamics should not be forgotten.
Regulations monitoring and limiting industrial water extraction in Watershed areas is crucial!
The bottom line is we cannot create water for recharge, if it does not exist. Lack of rain upstream cannot be replaced. As the temperature and rain patterns change (maybe for decades) I'm not sure whether there are any programs that can build resiliency at the needed level.

*9) PROTECTING RESOURCES AND PROVIDING RESILIENCY - RANGE OF OPTIONS The Lahontan Water Board is considering taking actions to increase protection and restoration of floodplains and wetlands. Having well-functioning wetlands, wet meadows, and floodplains will increase resiliency against severe flood events, improve water storage, increase water infiltration, and improve water quality. Please indicate your level of support for each option listed below.

	Strongly Support	Support	Neutral	Oppose	Strongly Oppose	Responses	Total
1. Increase protection and restoration of floodplains and wetlands	**52**	**26**	**14**	**6**	**1**	**99**	**17%**
2. Evaluate expanding wetland and floodplain protection programs, such as those in the Lake Tahoe and Truckee River basins that restrict many types of development within floodplains and wetlands	**45**	**21**	**24**	**8**	**1**	**99**	**17%**
3. Increase the required impact mitigation ratios (1.5:1) for wetland disturbance	**34**	**15**	**36**	**11**	**3**	**99**	**17%**
4. Enhance protection and restoration of floodplains and wetlands by increasing enforcement of existing regulations.	**41**	**25**	**22**	**9**	**2**	**99**	**17%**
5. Increase protection of headwaters and adjacent areas	**46**	**22**	**23**	**6**	**2**	**99**	**17%**
6. Update regulation and protection for Waters of the State that are not subject to Federal Clean Water Act regulations	**32**	**26**	**26**	**9**	**6**	**99**	**17%**

Comments:
You will get pushback fron the ag and bottled water industries, but try to convince all stakeholders that protection of water is in the best interest of the State and its people.
Again, Policies can contain actions that are not expressed in their titles. Regulatory acts are very often misleading. I cannot have an opinion on something that I have not had the opportunity to review in full.
#6 is too broad, does this include all blue lines and how much more restrictive do we need to be? the rules are already tight but just not enforced by the state effectively. the biggest issue is unregulated groundwater pumping and the lack of adjudicated watersheds in California.
The devil is in the details. State regulations seem more than adequate to me at present. Would be opposed to more regulations, especially for timber harvesting and forest restoration.
Outside the jurisdiction of the District.
Wetlands protection should be everywhere-regardless of the size or location. All wetlands protect and serve our natural resources as well as providing breeding grounds for wildlife.
Number 6 I oppose the new EPA regulations from the federal clean water act because I believe the state has a better grasp in what needs to be regulated and how.
Without additional funding and staff these things will not happen until too late. Many policies are poorly coordinated and will result in a host of foreseeable and unforeseeable adverse effects, or unintended consequences. Example: the effects of catching storm water in uplands for upland uses will necessarily deprive natural wetlands of the water needed to sustain them. We'll think about that later, when they are all dried up; need to capture storm water now.
It's critical to determine what authorities exist to allow you to provide the full protection needed before creating new regulations and identify the appropriate procedures to move forward. The Porter-Cologne Act provides quite a bit of authority for the Waterboards. It's when management doesn't fully support staff recommendations that we sometimes see a degradation of the environment.
regarding item 1.. I am adimantely opposed to the high impact restoration that has been completed on Sunset Reach 5 and could happen on Reach 6. There is virtually no protection for aquatic species including the western pearlshell mussel which is a keystone native species and only exists in this reach. There is no water quality data to support reducing fine sediment concentrations. The data to support improving groundwater supply and reducing stream temperature is not support by data and therefore cannot be effectively measured. I have been heard from implementing agencies that these high impact restoration projects are completed partly due to regulatory processes not providing a reasonable and efficient means to complete IN CHANNEL improvements. It is easier to permit the construction of a new channel than it is to permit work within the active channel. This needs to change ASAP to allow realistic and less intrusive high impact restoration techniques. There are easier means to flood meadow systems and that the current regulatory structure does not support. Last, all agencies need to be held to the same standard and there should be continuous annual water quality data required to ensure that discharges not only DO NOT happen during the construction window but during the PEAK RUNOFF which is when most the heavy loading discharge will be occurring. Continuous water quality data should be required on all these projects YEAR ROUND for a minimum of 5 years past the construction window.
Provide more incentives for wetland and floodplain restoration - incentives could include less stringent regulations during construction of these project if there are significant cost savings that allow the project to occur.
2. I think Lake Tahoe wetlands and floodplains are already sufficiently protected with current programs. Truckee needs some more restrictions. 3. I thought mitigation ratio was already 1.5:1 for wetland disturbance. 6. I think this is already happening state-wide under Section 401 to get all the RWQCBs on board with the same policy.
Item 3. What's the basis for increasing the ratio? Why 1.5? Item 6. This statement should be more specific. What specifically is the issue in question here?
hello
5 - If by 'headwaters', we can utilize a concept of "upstream" as it pertains to improving water for those 'downstream', who in sheer numbers will be more reliant than ever on adequate sourcing. Those 'downstream' still don't pay enough for the use of the water coming from the 'upstream', so this suggestion may include increased influence on political decision-makers.

Question 9 Continued

HEADWATERS OF SIERRA WATERSHEDS WE HAVE RECENTLY DOCUMENTED TO BE THE MOST SENSITIVE HABITATS AND IN NEED OF PROTECTION. SOME ARE MORE RESILIENT THAN OTHERS DEPENDING ON GROUNDWATER AVAILABILITY, MEADOWS, ASPECT (SOUTH MORE VULNERABLE). MEADOW RESTORATION WORK NOT MENTIONED HERE, BUT THIS IS ANOTHER IMPORTANT STRATEGY FOR CLIMATE ADAPTATION. SO IS RIPARIAN RESTORATION, AND MINIMIZING DISTURBANCE SUCH AS ROAD EROSION AND SEDIMENTATION FROM LAND DEVELOPMENT. MINIMIZE OTHER PROBLEMS SO THAT CLIMATE ADAPTATION CAN WORK.
Not familiar with Lake Tahoe area.
Related to increasing floodplain restoration (and the climate change-related benefits thereof)in the Tahoe Basin, see the memorandum: "Climate Change Stream Restoration Policy Recommendation Memo" (by Environmental Incentives and 2NDNATURE to Climate Change Working Group, dated February 11, 2011; available upon request.
Expect strong negative reactions in the rural communities. I recently attended a public meeting in Lake Hughes where the Santa Clara River Watershed TDML for the (currently dry) Elizabeth and Hughes lakes was discussed. A potential multi-million dollar effort to remove contaminants from the lakebeds, upgrade the Lake Hughes WW Treatment Plant, and potential to require septic system owners in Elizabeth Lake to spend $20,000 to $50,000 each, all possibly at homeowner's expense, provoked intense reactions.
The City does not oppose protection and restoration of wetlands. However, the question does not provide enough information to make a meaningful support/oppose analysis. The High Desert has unique hydrology and much different terrain than northern Lahontan areas (no one size fits all). There is already significant protection for these resources, and regulations are already in place (404, 401, 1600s, Streambed Alteration Regs, WDRs). More such protections will work against protection and maintenance of infrastructure. Any of these options would require a funding source.
We need to keep waters flowing into creeks and rivers so as to maintain waters in related lakes. Once lakes are filled, we can focus on improving wetlands as well.
1. Other agencies/entities already exist to provide guidance and regulate. 2. Other agencies/entities already exist to provide guidance and regulate. 3. Other agencies/entities already exist to provide guidance and regulate. 4. Other agencies/entities and local adjudications already exist to provide guidance and regulate. 5. Unclear, more information needed.
Concerning item No. 3, there is already a disincentive for economic redevelopment due to regulatory et al. risks. Measures need to be established to incentivize instead of penalize redevelopment investments. Item No. 5 is unclear with respect to "adjacent areas".
The carbon farm planning framework offers a voluntary approach to assist producers and land managers in building water holding capacity, through increased ecosystem carbon, in working landscapes. We strongly believe a voluntary, incentive and education-based approach to improving working land condition and resilience is more more effective and far reaching than a regulatory approach. Engaging producer creativity and collaboration is essential, and regulation is an ineffective means to that end.
We must protect what is left.

*10) PROTECTING RESOURCES AND PROVIDING RESILIENCY - RANGE OF OPTIONS The Lahontan Water Board is considering actions to identify, assess, and prevent water quality impacts from infrastructure failure due to climate related events. Please indicate your level of support for each option listed below.

	Strongly Support	Support	Neutral	Oppose	Strongly Oppose	Responses	Total
1. Improve and protect water and waste water infrastructure from failure	**44**	**35**	**18**	**2**	0	**99**	**20%**
2. Provide incentives to improve protections for aging or vulnerable water and waste water infrastructure	**46**	**36**	**15**	**2**	0	**99**	**20%**
3. Require owners of infrastructure to map areas that are vulnerable to failure from floods and erosion	**30**	**32**	**28**	**7**	**2**	**99**	**20%**
4. Require sewage collection systems to have backup systems to prevent spills	**31**	**30**	**31**	**5**	**2**	**99**	**20%**
5. Work with utility districts to assess the vulnerability of infrastructure within the 500-year floodplain	**33**	**34**	**23**	**6**	**3**	**99**	**20%**

Comments:
Why are we concentrating efforts in these areas when we are still sending good clean water to water lawns and flush toilets. The importance of end user reduction is critical. Why must clean water go through distribution. Why can't the cleaning be done on a point of usage basis and raw water be used for all things other than drinking,cooking and bathing? Are there any monies being spent to research wastewater reduction by alternative types of toilets and by flushing toilets with once used water ????
I don't think the SWRCB understands its existing regulatory authority when it comes to interceptor systems. There are meaningful ways that the regional boards could act but they are not staffed nor are they knowledgeable enough to know what they are looking at. The requirement for SSMP's is very good the SWRCB just needs to hold themselves and the document accountable.
Outside the jurisdiction of the District.
Water protection starts with the first drop or trickle. Failing infrastucture is a major concern.
The dike systems with the state of California is in a miserable state. Failure of the dike system in inevitable unless something is done about it.
Let's wait. There is too much other stuff to keep us busy already at my agency, stuff that has funding.
Coordination with DWR is essential since they are the state's FEMA lead for NFIP, and land/water use is being mapped by that agency.
Also assist with the identification of potential funding sources for operations and maintenance of existing infrastructure.
Hopefully, some funding sources will be identified for all of these options.
Item 3. The owners would need some guidance from the regulators about what features are at risk and from what threat. Item 4. I agree with the statement, but the reality is that it's not always possible. Even when there is a backup system it can fail or is filled before the problem can be solved.
hello
I'm currently working with the Institute for Sustainable infrastructure (ISI) to encourage a higher (& better) standard in the realm of Civil Engineering. The simple premise I'm working with is that mechanical engineers have had benefit from increased participation by equipment suppliers, etc. on the green building front, but civil engineering has not had the same benefit...Tahoe's 'upstream' position would benefit greatly from looking at ISI work, as those downstream will be needing a stronger facilitation.
THESE ALL WOULD PROVIDE MINIMIZATION OF OTHER SOURCES OF DISTURBANCE OR POLLUTION TO WATER. SO THIS FITS WITH KEEPING SUCH PROBLEMS FROM EXACERBATING CLIMATE IMPACTS. PROTECTING MINIMUM STREAM FLOWS IS ALSO CRITICAL. WATER RIGHTS FOR INSTREAM ECOSYSTEMS SHOULD GO HAND IN HAND WITH WATER RIGHTS FOR MUNICIPAL OR AGRICULTURAL USES.
See: "EPA Programs and Initiatives Addressing Climate Change in the Water Sector" (https://www.epa.gov/climate-change-water-sector/epa-programs-and-initiatives-addressing-climate-change-water-sector#green-infrastructure).
Keep It Simple Stupid Gimme a kiss
The City supports the concept of proactive infrastructure management, but again, the options lack sufficient information to make an informed support/oppose determination. Successful implementation of the suggested programs would require significant additional dedicated funding. Infrastructure maintenance and upgrade will trigger permit requirements from several regulatory agencies. These requirements (including several suggested in the previous question) are a significant barrier to infrastructure management. A 500-yr event will be very destructive in spite of the best planning efforts.
1. Other agencies/entities already exist to provide guidance and regulate. 2. Unclear, more information needed. 3. Existing regulations/permitting already in place. 4. This should be addressed during design of the facility. 5. Other agencies/entities already exist to provide guidance and regulate.
There is a very strong relationship between water and energy system operations, with over 20 percent of CA's energy dedicated to raw water conveyance, potable water treatment, delivery, heating, and treatment of wastewater. To help offset GHG emission production that is associated with water infrastructure operations, clean energy production needs to be made a part of the regional infrastructure redesign and redevelopment.
A collaborative, incentive-based approach is essential to success in this arena.
I believe that many regulations are already in place. Where they are, there is no need to duplicate them.

Range of Options

*11) IMPROVING WATER SUPPLY & WATER QUALITY - RANGE OF OPTIONS The Lahontan Water Board is considering the following options to protect water resources from the impacts of climate change. Please indicate your level of support for each option listed below.

	Strongly Support	Support	Neutral	Oppose	Strongly Oppose	Responses	Total
1. Increase requirements to collect and infiltrate storm water	**40**	**27**	**19**	**7**	**6**	**99**	**14%**
2. Increase water recycling	**48**	**34**	**12**	**2**	**3**	**99**	**14%**
3. Provide incentives to conserve water and capture/use storm water	**47**	**37**	**10**	**3**	**2**	**99**	**14%**
4. Prioritize recharge over groundwater extraction	**44**	**30**	**17**	**5**	**3**	**99**	**14%**
5. Require implementation of Low-Impact Development (LID) principles	**39**	**32**	**19**	**6**	**3**	**99**	**14%**
6. Encourage using BMPs to collect and infiltrate storm water, such as pervious pavement	**36**	**36**	**21**	**4**	**2**	**99**	**14%**
7. Allow dual plumbing that uses grey water for irrigation and infiltration	**43**	**36**	**13**	**4**	**3**	**99**	**14%**

Comments:
All NEW housing/office space should be built with infrastructure to reuse grey water. Should become effective immediately by order of the State.
Again, Once used water to flush toilets and point of use treatment/filtration . WHERE are the incentives ??
Isn't 5 and 6 essentially the same? Isn't using BMPs (including pervious pavement) also implementation of LID principles?
its about time!
Outside the jurisdiction of the District.
You can encourage government to do these things in government owned areas. But to 'require' private business and citizens to do these things is unacceptable. Soon there will be few to no private enterprise left in the state. Then who will pay for all your requirements? But then, there will be no one left here to care. Perhaps that's the plan?
In general I strongly support water recycling, however, in the MWA region "recycling water" generally means taking it from riparian areas and putting it onto golf courses and parks (VVWRA discharge near Oro Grande). That is why I marked question #2 as "oppose."
Stormwater can create many opportunities...if we get rain.
There is more potential to expand water recycling in areas where WWTPs are located. It's more evident in the South Coast, but not necessarily in other parts of the state, including Lahontan Region.
The Tahoe TMDL already has us on this path for item 1.
YES on grey water for irrigation!
1. Isn't this already required?
hello
One of the most significant changes would be to increase enforcement staff to ensure sensitive areas are not stripped of vegetation, prevention of compaction and limiting paving and roadways and compliance with wetland, vernal pool and water quality protection rules.
The City supports water resource protection, but the options lack sufficient detail to evaluate their merit. Numbers 1,5 and 6 are redundant. LID is already required by the City's MS4 Permit. The City already requires retention and infiltration of flood control volumes from development projects, and is a partner in a major recycled water project. Recent regulations already push agencies to increase recycling and minimize impacts to groundwater. What would conserve/capture incentives look like? They are already required in permits. What prerequisites and obligations would be involved? The City opposes these options as presented because they are already required. We need more info on grey water systems to support adoption of any dual plumbing approaches.
Additional comments regarding the items above: 1. Increasing these types of requirements may conflict with existing regulations/policies/requirements. For example, from the Mojave Basin Area Judgment: "Injunction Against Diverting Storm Flows. No Party may undertake or cause the construction of any project that will directly reduce the amount of Storm Flow that would otherwise go through the naturally occurring hydrologic regime to a downstream Subarea or that will reduce the surface area over which Storm Flow currently occurs by alteration to the bed of the Mojave River. This paragraph shall not prevent any flood control agency or municipality from taking such emergency action as may be necessary to protect the physical safety of its residents and its structures from flooding. Any such action shall be done in a manner that will minimize any reduction in the quantity of Storm Flows." 4. Other agencies/entities and local adjudications already exist to provide guidance and regulate. 5. Other agencies/entities already exist to provide guidance and regulate.
Conservation and innovation have been proven strategies to lower water use. California could optimize its shoreline with the Pacific Ocean by developing Desalination procedures and facilities that would lessen the stress on ground and surface water.

Question 11 Continued

Again, # 5: Tahoe's use of LID standards is now questionable, as there are higher standards that don't cost any more $$ - (obsolete thinking on a part of development) & pay 'lip-service' in sacrificing a more substantial position in the communities they 'profit' from. . .
WHY WOULDN'T ANYONE FAMILIAR WITH THE ISSUES NOT SELECT STRONGLY SUPPORT FOR ALL THESE OPTIONS? OF COURSE THESE ARE GOOD AND COMPLEMENTARY STRATEGIES BUT KNOWING WHERE AND HOW THESE WILL PROTECT WATER RESOURCES AT THEIR SOURCES (HEADWATERS) IS IMPORTANT TO GUIDING HOW AND WHERE THEY WILL BE MOST EFFECTIVE.
Once again, this website references much helpful EPA guidance and other resources: "EPA Programs and Initiatives Addressing Climate Change in the Water Sector" (https://www.epa.gov/climate-change-water-sector/epa-programs-and-initiatives-addressing-climate-change-water-sector#green-infrastructure).
We already have very clean water and rules to maintain it. So how about this stop making new regulations. All you are going to do at this point is punish people by making the cost of living very expensive.

Range of Options

*12) COMMUNICATING, COLLABORATING, AND STREAMLINING PROCESSES - RANGE OF OPTIONS The Lahontan Water Board is considering the following options to protect water resources from the impacts of climate change. Please indicate your level of support for each option listed below.

	Strongly Support	Support	Neutral	Oppose	Strongly Oppose	Responses	Total
1. Present more public workshops to reach out and inform stakeholders about actions that private citizens and public agencies can implement for climate change adaptation	**31**	**43**	**17**	**5**	**3**	**99**	**17%**
2. Ensure disadvantaged communities are invited and represented in discussions	**41**	**35**	**19**	**2**	**2**	**99**	**17%**
3. Coordinate with all responsible agencies and foster collaboration, including maximizing efficiencies in using monitoring budgets	**35**	**40**	**19**	**3**	**2**	**99**	**17%**
4. Promote and prioritize grant funding for projects adapting to climate change	**40**	**35**	**13**	**6**	**5**	**99**	**17%**
5. Reduce permit requirements to essential information and streamline processing	**41**	**30**	**22**	**4**	**2**	**99**	**17%**
6. Work with the Division of Drinking Water to evaluate water quality in public water supplies, including investigating sources of pollution	**36**	**32**	**25**	**4**	**2**	**99**	**17%**

Comments:

Differing definitions of Disadvantaged Communities across state and federal programs is a problem. Some system for creating more specificity about the definition of 'disadvantage' and adjusting the definitions based on local conditions, including measuring disadvantage at community scale, is necessary.

Share monitoring data between agencies, give grants to CA colleges to conduct research, monitoring, and modeling. Reduce monitoring that is too frequent and increase monitoring in areas where there are data gaps. The various agencies should work together as a team, not as competing agencied as is often the case.

I support actions that move more toward point of use filtration and monitoring. I have to get a smog certification bi-annually so why can't my in home filtration system be monitored for water quality instead of bringing mega amounts of water to drinking water standards and then sending it out to flush toilets, wash cars, water yards, etc. ??

if #4 refers to recycled water than I would strongly support. #6 isn't this what the regional Boards are for?

Outside the jurisdiction of the District.

Build more reservoirs and create a plan to start building desalination plants along the coast.

#6. I would hope that the regional board is ALREADY working collaboratively with the Division of Drinking water...

The nexus between protecting water resources and reducing permit requirements and processing time is unclear.

They are all important. Collaborate with DWR since they have an established climate change program. Provide citizens with information on actions they can undertake. Use the information already identified in the CA Water Plan Update 2013 and in the individual IRWMPs that address climate change impacts, mitigation, and adaptation strategies. Connect with the Landscape Conservation Cooperatives that overlap in the region.

The Envision framework addresses all of these options.

Item 3. Change to read "...optimizing efficiencies..."

hello

3 - 'Maximizing' efficiencies can easily be "optimized" via upgrading the intellectual skills learned in college or university over the decades - a 'penny saved is a penny earned' is even older than most projects utilize in their practices. . .Coordinating with 'all responsible agencies' foster collaboration but not yet at a level that reaches higher standards - 'compromise' merely means taking less than what a project deserves [siloes: 'go along to get along'] # 5 - Incentivize the highest standards with the fastest approval, which has the effect of getting the best "bang for the buck", whether for taxpayers or a 'for-profit' development. . .any savings need not be "left-on-the-table", but used for ever-better projects.

DRINKING WATER ISN'T THE ONLY ISSUE. SO IS ENVIRONMENTAL QUALITY THAT SUPPORTS RECREATION USE AND ECOSYSTEM SERVICES THAT PROVIDE FOR GOOD QUALITY WATER AND HABITAT. PROMOTING GRANT FUNDING FOR "PROJECTS" USUALLY MEANS SHOVELS IN THE GROUND AND DOING THINGS THAT WE THINK ADAPT TO CLIMATE CHANGE. BUT DO WE REALLY KNOW? DO WE MONITOR THESE ENOUGH TO SHOW THAT THEY HAVE BENEFITS? OR IS IT JUST TAKING ACTION TO SATISFY THAT WE ARE DOING SOMETHING, ANYTHING, TO ADDRESS THE PROBLEM. I'D SAY THIS CAN BE A PRETTY BLIND PROCESS WITHOUT THE INFORMATION FROM RESEARCH AND MONITORING THAT TELLS US WHAT WORKS AND WHERE. THAT TELLS US WHERE AND WHAT PROBLEMS EXIST. DON'T WE NEED THAT BEFORE WE CAN DECIDE WHAT MIGHT WORK? AND WHEN WE THINK WE HAVE AN ANSWER, WE OUGHT TO BE SURE WE COLLECT THE DATA THAT TELLS US IF SPECIFIC GOALS WE SET ARE REALLY ACHIEVED. SO PROMOTE GRANT FUNDING FOR RESEARCH AND MONITORING TO IDENTIFY THE PROBLEMS SO WE CAN MORE JUSTIFIABLY DETERMINE POSSIBLE SOLUTIONS.

Question 12 Continued

Once again you are over reaching. Please stay in your area, let the Division of Drinking Water do their job.
I am an educator, not a scientist, so I have responded "neutral" on most strategies proposed. However, I would like to make the point that agencies tend to act in a vacuum doing what they do best and mainly it appears to me, in isolation and do not allocate sufficient monies for education or "marketing". Without public engagement, all efforts will be less effective. We need huge public support if this is to be a dramatic and speedy response. This is what I am working on. People need to see the leadership and have guidance on what to do. If there is insufficient money for education to employ someone, then you must build robust working relationships with volunteer educators like me by providing access to your resources.
The City supports collaborative efforts. There is no clear outcome for Options 1 and 2, and how funded. For Option 3 we are concerned that the Regional Board will unduly influence monitoring program outcomes and increase costs. Option 4. Climate change should be only one aspect of project prioritization. 5. Reduced permit requirements for infrastructure work would be an incentive. Unclear what else this question might mean. 6. These tasks are already being done, and is unclear how the suggested evaluation addresses the impacts of climate change.
Dont we already do #6?
Additional comments regarding the items above: 1. Education and collaboration are always a good thing. 4. High priority local projects vetted through a stakeholder process shouldn't be overlooked if they don't have a clear climate change nexus. 6. Collaboration is a good thing, this just seems to suggest overlap and possible duplication of efforts.

Further Involvement

Further Involvement

*13) The Water Board is planning to engage stakeholders in a process to develop collaborative strategies, plans, and policies to further climate change adaptation in our region and purview. Would your agency/organization be interested in participating in this process?

	Response (%)	Responses
Yes	57.73	56
No	42.27	41
	Answered Question	97
	Skipped Question	60

(Responses to this question were redacted to protect personal information.)

*14) Would you like us to add you to our climate adaptation email distribution list (aka LYRIS list)

	Response (%)	Responses
Yes	61.86	60
No	38.14	37
	Answered Question	97
	Skipped Question	60

(Responses to this question were redacted to protect personal information.)

Please click the "Finish Survey" button to submit your responses.

Thank you for taking the time to complete our survey.

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