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CALIFORNIA REGIONAL CLIMATE ADAPTATION INITIATIVE

Understanding Climate Change in
the Sierra Nevada; What Your
Organization Can Do About It



By taking action today, Sierra Nevada can move towards a healthier, more prosperous and sustainable future.

Why address climate change? What's the threat?

Changes in global and local temperatures depend on the accumulation of carbon dioxide and other heat-trapping gases emitted from human activities into the atmosphere. The accumulation of greenhouse gases (GHGs) could be high (harming human health) or low (which reduces risk). The direction of climate impacts depends on the success of both international and local efforts to reduce GHG emissions.

How will Sierra Nevada be impacted by climate change?

THE SIERRA NEVADA REGION IS WARMING. By end of century (2100) the Sierra Nevada region will likely experience an increase of 6°F to 10°F of warming above historic climatic temperatures.^[1]

OUR HEALTH IS IN THE BALANCE. Longer and more frequent high-heat days will increase the number of heat-related illnesses, such as heat stroke, heat cramps, heat exhaustion, and dehydration, as well as other illnesses and premature deaths. Mortality risk for those 65 or older could increase ten-fold by the 2090s.

AIR QUALITY WILL LIKELY WORSEN. Climate change could lead to air stagnation conditions, which would increase pollutant concentrations and worsen air quality in the region. Hotter future temperatures will also act to increase surface ozone concentrations.

AT TIMES THERE WILL BE MORE RAIN, BUT ALWAYS LESS SNOW. Precipitation is not expected to change significantly, but will likely be delivered in more intense storms and within a shorter wet season, making it more difficult to capture runoff.

THE SIERRA NEVADA WILL SEE SIGNIFICANT LOSS OF SNOWPACK. As a result of warming, snowpack will be largely eliminated below 6000 feet elevation and will be reduced by more than 60% across all the range.

FLOODING WILL BE A BIGGER PROBLEM. The projected increase in precipitation extremes, alone and in combination with the projected increase in wildfires, creates increased potential for floods, mudslides, and debris flows.

¹ All citations are from Dettinger, Michael, Holly Alpert, John Battles, Jonathan Kusel, Hugh Saford, 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.



PRECIPITATION WILL MOVE TO EXTREMES WITH DROUGHT OR DELUGE. Projections agree that the region will see more dry days punctuated with more extreme precipitation events when they happen.

CLIMATE CHANGES WILL LEAD TO MORE DRY SOIL. Moisture will dip between 15%-40% of the historical norm depending on elevation and lead to changing rivers and lakes additionally creating challenges for local flora and fauna.

WE ANTICIPATE MORE DESTRUCTIVE WILDFIRES. Projections indicate that wildfire may increase over Sierra Nevada overall burned area is projected to increase between 70% and 241%.

CLIMATE CHANGE WILL AFFECT LOCAL WILDLIFE. The predicted changes can affect physiological processes and wildlife ranges.



WAIT — THERE'S GOOD NEWS. Sierra Nevada residents have already begun the work of advancing resilience to climate change.

The regional climate collaborative, Sierra CAMP, hosted by the Sierra Business Council, pulls together dozens of municipalities to promote effective climate policies and programs. One example is Sierra CAMP's energy efficiency peer learning series, which instructs on such topics as citing renewable energy projects to creating effective energy efficiency policies.

Another organization, the California Tahoe Conservancy, is restoring natural resources, thereby enhancing resilience to flooding and drought.

The Plumas County Fire Safe Council guides households and entire communities on ways to build defensible space, preparing for fire, and other wildfire safety strategies.

Agencies have also made great progress on their climate plans. These include the Lake Tahoe Climate Adaptation Action Plan, the update to the Mammoth Lakes General Plan and Safety Element, Sierra Nevada Watershed Improvement Plan, and the Tahoe Central Sierra Initiative.

ACTION(S) TAKEN

Although the Sierra Nevada region will be impacted by our changing climate, the region already has specific plans in place to address those impacts with innovative solutions that will create a more livable city for everyone. There are two pieces of legislation and one executive order that drive climate action in California.

- **Senate Bill 32 (2016)** requires California Air Resources Board (CARB) to reduce greenhouse gas emissions to 40% below 1990 levels by 2030.
- **Senate Bill 100 (2018)** commits California to achieving 100% renewable energy by 2045.
- **Executive Order B-55-18** commits California to achieving carbon neutrality in every sector by 2045.

On the regional level, cities and counties have identified actions and set targets to reduce GHG emissions and address climate change impacts. Highlighted actions include:

- **Sierra Nevada Alliance's Climate Resiliency Program** sets regional goals for adaptation planning and resilience. They assist member groups with plans to meet greenhouse gas emissions and meet targets set by SB 32 and SB 375.
- **Mammoth Lakes General Plan and Safety Element** included a comprehensive review of how climate change impacts will affect the town in the coming years. The plan identifies 122 adaptation actions to improve resilience within the community, local environment and economy.
- **The Alliance for Regional Collaboratives for Climate Adaptation's "From Mountains to Cities"** report identifies opportunities for developing and deepening regional collaborations between urban and rural stakeholders to strengthen local ecosystem resilience. The report looks at the myriad of statewide benefits obtained from local ecosystems in the Sierra Nevada and the importance of investing in and collaborating with the rural communities that shepherd our natural resources.
- **Sierra CAMP's** report "Green Infrastructure and the Oroville Dam" analyzes the region's capability to manage flood risks and the co-benefits for urban and rural communities that come from green updates to our current infrastructure. The report advocates for the restoration of the meadows in rural areas and utilizing green infrastructure in urban areas to build resilience against the increasingly heavy storms and improving the quality of life for local residents.
- **Nevada County's Climate Action Now Strategic Plan** identifies goals and initiatives for climate change education, advocacy and social action, and includes a renewable energy plan. It seeks to keep the community informed so residents continue to actively advocate and lobby local and state representatives for climate action. Its renewable energy plan sets a goal of reaching 100% renewable electricity by 2030 and 100% energy by 2050.

- **The Town of Truckee's Climate Adaptation Plan** provides a climate vulnerability assessment for the community and sets out steps to build community resilience and solutions across five sectors including built, natural, cultural, economic and human. It seeks to provide a holistic approach to addressing climate impacts in local communities.
- **The Yosemite National Park Action Plan** establishes goals and objectives to reduce greenhouse gas emissions and provide climate change education. It prioritizes public transportation, reducing waste in the park, increasing renewable energy use within the park, and climate impact education for park visitors.

DEFEND CLIMATE PROGRESS. These climate action policies often come under attack from fossil fuel and other corporate interests. Above all else, the State's existing climate policies need to be defended.

NEXT STEPS. Here are some actions that you can take right now to prepare for the impact of climate change in the Los Angeles region.

- **THE MAIN PROBLEM IS TRANSPORTATION EMISSIONS.** The leading source of greenhouse gas emissions derives from the transportation sector. How to reduce those emissions? One important climate strategy is to deploy electric cars and trucks. Hydrogen-fueled vehicles could also be supported throughout the region.
- **STAY COOLER LONGER.** Plant more trees in your home — trees provide shade, cool the city, clean the air you breathe, and when planted at home can reduce utility bills.
- **WATER IS LIFE.** Take advantage of free water conservation initiatives provided by water utilities — these products not only lower water bills, they also save greenhouse gas emissions and build resilient communities.
- **THIS AIN'T MARYLAND.** Replace grass lawns with California friendly landscaping to conserve water and save money on utility bills. Your local water utility may offer a turf conversion program.

There are many cost effective strategies that Californians can adopt around the home that can improve their quality of life and help with climate change.

- **APPLY SMARTS TO APPLIANCES.** Homeowners can make sure their air-conditioners and heaters are working efficiently — local utilities have programs; large appliances can be the biggest energy users in a household. Taking care of these appliances can save residents money, energy, and ensure comfort on days with extreme weather.
- **EFFICIENCY PAYS DIVIDENDS.** Energy efficient light bulbs and appliances may be eligible for rebates. They lower utility bills and a household's carbon footprint.

- **ENERGY EFFICIENT HOMES.** Make use of local utility programs that can help assess energy savings opportunities for your home. PG&E, Southern California Edison and municipal utilities may offer consumer assistance programs that provide essential actions homeowners and renters can take to make homes more efficient.
- **SMART SHOPPING.** The PG&E and Southern California Edison marketplaces can show you the best and most efficient products for your home. From air purifiers to pool pumps, find appliances that will help lower your carbon footprint and save you money.
- **MAKE USE OF REBATES.** Agencies like the Pacific Gas & Electric and Southern California Edison will provide rebates to go electric. Water heaters, heat pumps, and electric vehicle chargers can help you lower your carbon footprint.

In the face of pandemics and other threats, climate solutions can also foster greater social connection and community resilience at-large.

- **ORGANIZE THE NEIGHBORHOOD.** Climate action starts when community members organize, educate their neighbors, and unite around common principles. Neighbors learn about each other's needs and priorities, about where their resources come from, about how their local economies are run. They learn the power of their collective voice and the importance of knowing their neighborhood and their neighbors.
- **GROW A CIVIC CULTURE.** Engage with people who may at first show uninterest, especially disenfranchised people. Give them the tools to engage with the political process through the lens of climate action and sustainability.
- **RESILIENCE CENTERS.** Establish resilience centers in established spaces such as libraries, senior centers, and rec centers — designate them to assist the public in times of need.
- **PROTECT NATURE.** Finally, the Sierra Nevada region is justly famous for its natural beauty, which is accessible to families, outdoor enthusiasts, or anyone who wants a breath of fresh air amongst the forests or along the mountains. Protecting our region is incredibly valuable for its own sake, let alone from a climate resilience or mitigation perspective.



More about CCEDA and Climate Resolve -

CCEDA is comprised of organizations actively engaged in revitalizing California's neighborhoods and its members produce results through a full range of community building strategies including real estate development-housing, retail and commercial-business assistance and lending, social services, and job training and creation. Additionally, CCEDA provides its members a clearinghouse for information and action that advances the field of community economic development.

Climate Resolve builds collaborations to champion equitable climate solutions. We connect communities, organizations and policymakers to address a global problem with local action. We inclusively develop practical initiatives that reduce climate pollution and prepare for climate impacts. Our purpose is a just and resilient future.



For more information on climate leadership in your community contact the California Community Economic Development Association:

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