CALIFORNIA'S FOURTH
CLIMATE CHANGE
ASSESSMENT

CLIMATE **THREATS**

and What They Mean for California

California's Fourth Climate Change Assessment is a series of reports that provide new science and planning tools to ready the state for climate change. Forty-four technical reports and 13 summary reports detail the effects of climate change now and in the future so communities can prepare for more severe wildfires, more frequent and longer droughts, rising sea levels, increased flooding, and more extreme weather events.

KEY FINDINGS:

Wildfire

Climate change will make forests more susceptible to extreme wildfires. By the year 2100, if greenhouse gas emissions continue to rise, one study found that the average area burned by wildfires would increase 77 percent and the frequency of extreme wildfires burning more than 25,000 acres would increase by nearly 50 percent. In the areas that have the highest fire risk, the cost of wildfire insurance is estimated to rise by 18 percent by 2055. Additionally, the percentage of property insured in California would decrease.

Scientific review supported by the Fourth Assessment found that reducing tree density and restoring beneficial fire can improve long-term resilience to California's forests. Simulations in Sierra Nevada forests show substantially reduced increases in burned area. Additionally, improving forest health by removing fuels can reduce rising wildfire insurance costs.

Sea-level Rise

Under mid to high sea-level rise scenarios, up to 67 percent of Southern California beaches may completely erode by 2100 without large-scale human interventions. Statewide damages could reach nearly $17.9 billion from inundation of residential and commercial buildings if sea-level rise reaches 20 inches, which is within range of mid-century projections. A 100-year coastal flood, on top of this level of sea-level rise, would almost double the cost of damages.

A study prepared for the Fourth Assessment provides guidance for designing and implementing natural infrastructure, such as vegetated dunes, marsh sills, and native oyster reefs, to adapt coastal communities to sea-level rise.

An enhanced Hazardous Exposure Reporting and Analytics (HERA) tool developed for the Fourth Assessment uses a shoreline evolution model and population information to estimate the number of people potentially affected by sea-level rise, likely changes to property values, and other information for different sea-level rise scenarios. Local planners can use this new tool to analyze local vulnerabilities.

Energy

Higher temperatures will increase annual electricity demand for homes, driven mainly by the increased use of air conditioning units. High demand is projected in inland regions and Southern California. More moderate increases are projected in cooler coastal areas. The increased annual residential energy demand for electricity, however, is expected to be offset by reduced use of natural gas for heating. Significantly, increases in peak hourly demand during the hot months of the year could be more pronounced. This is a critical finding for California's electric system, because generating capacity must match peak electricity demand.

Studies found that "flexible adaptation pathways" that allow for the use of adaptation actions over time allow utilities to protect services to customers. The California Public Utilities Commission (CPUC) will use Fourth Assessment findings to consider strategies and guidance for climate adaptation for electric and natural gas utilities.

Extreme Heat Events and Impacts on Public Health

Climate change poses direct and indirect risks to public health. Nineteen heat-related events occurred between 1999 and 2009 that had significant impacts on human health, resulting in about 11,000 excess hospitalizations. With climate change, heat-related illnesses and deaths will worsen drastically throughout the state. By mid-century, the Central Valley is projected to experience extreme heat events that average two weeks longer than today, and the hot spells could occur four to 10 times more often in the Northern Sierra region.

Fourth Assessment research led to the development of a prototype warning system known as the California Heat Assessment Tool (CHAT). If implemented, the tool could support public health departments as they take action to reduce heat-related deaths and illnesses. CHAT is designed to provide information about heat events most likely to result in adverse health outcomes.

More Information

For the first time in California's climate change assessment process, reports detail the unique and disproportionate climate threats to vulnerable communities and tribal communities, with a focus on working collaboratively with these communities on research and solutions for resilience.

To access the technical reports, summary reports, online tools, climate projects and data, and other resources and information developed as part of California's Fourth Climate Change Assessment, please visit **www.ClimateAssessment.ca.gov**.