Conference Overview

The Governor's Conference on Climate Risks and California's Future brings together state leaders to confront the risks of unpredictable and extreme weather events driven by climate change.

In November, the United Nations' Intergovernmental Panel on Climate Change (IPCC) issued a report validating the connection between climate change and extreme events worldwide. The Governor's Conference brings this issue home to California.

The Conference will provide all Californians a real-life view on how climate change is impacting our lives, what we can do about it, and how we can strengthen our economy in the process.

Californians have experienced extreme weather and natural disasters for generations. Wildfires, floods, droughts, mudslides, crop failures have threatened California communities since the state's inception. Each year these events take lives, destroy property, and cost residents and businesses billions of dollars.

Unfortunately, as the Los Angeles Times recently put it, extreme weather "may be the new normal" thanks to climate change. Strong scientific consensus makes clear that climate change will cause more frequent and extreme weather events in California. These events put residents, communities and our economy at risk.

Taking action now against climate-driven threats will protect California residents and the economy. By working together, government, local communities, businesses and residents can decrease the negative impacts of natural disasters and extreme weather events.

Taking action will also ensure that California businesses and industries can continue to grow, and even creates new jobs in areas such as forestry, electrical grid upgrading and flood management. By taking action today, we will ensure a safer, more prosperous future for California.

Frequently Asked Questions

Why has the Governor called for this conference?

California must be prepared to tackle the reality of a changing climate. Our state leads the world in actions to combat climate change by reducing greenhouse gas pollution, but we also need to prepare for the impacts of climate change that we cannot avoid. Scientists have clearly established links between climate change and more frequent and severe weather events such as larger storms, increased flooding, more and increasingly intense wildfires, longer droughts and sustained water shortages. We need to utilize this science to anticipate changes to the climate and adapt to these changes.

Are we certain that the earth's climate is changing?

Clear, independent scientific evidence demonstrate that the planet's climate is changing and warming. Scientific evidence showing warming of the atmosphere is unequivocal, and other changes such as decline in sea ice and mountain glaciers, a rise in sea level, changes in rainfall patterns and animal and plant behavior are consistent with this warming. The changes we have been observing are due to both natural factors – such as changes in the Sun or the Earth's orbit – and human activity. Over the last three to four decades, the human "fingerprint" has become dominant. In particular, burning of fossil fuels such as coal, oil and natural gas releases carbon dioxide, and other industrial activities release methane and other greenhouse gases into the air. These greenhouse gases act like an invisible blanket, allowing the sun's radiation in but then trapping increasing amounts of heat in the Earth's atmosphere. This is why the temperature at the Earth's surface is going up.

What does climate change have to do with extreme weather events?

Climate-related extreme events – such as heavy rains, heat extremes, droughts and storms – all come down to one underlying driving factors: temperature. Changes in temperature affect how much moisture there is in the air, any differences in air pressure, and thus the circulation patterns in the atmosphere at broad and small scales.

A warmer atmosphere holds more water, and generally speeds up the water cycle, which produces heavier rain- and snowfall in already humid areas. Researchers are already reporting increases in heavy rainfall in some areas of the world. Climate change will also alter the broad-scale circulation of air currents, such as the jet stream, which changes traditional regional weather patterns. As temperatures rise, the chances for more frequent and more intense heat waves increase substantially. As the air warms, so do the oceans. Ocean waters warm up and expand, making the volume of the oceans increase. In addition, warming also leads to the melting of glaciers on land and of ice caps, thus adding more water to the ocean basins.

For more explanation of the science of climate change, see these websites:

- Climate Communication at http://climatecommunication.org/
- The Pew Climate Center at http://www.pewclimate.org/
- United Nations Intergovernmental Panel on Climate Change at http://ipcc-wg2.gov/SREX/.

How does all of this impact California?

All of these changes to the climate mean we should expect changing weather here in California. Scientific research on climate change in California has indicated a number of changes to our state's weather:

Greater flood risk: Since a warmer atmosphere holds more water, humid areas like central and northern California will likely experience periods of heavier rain and snowfall. In the Sierra Nevada mountains, warmer temperatures also cause the snowline to move higher, resulting in more precipitation falling as rain instead of snow. More rain and less snow increases the volume of water that runs off in short periods of time and can cause floods in California rivers.

Water shortages: Reduced snow also means less certainty for water supplies throughout the year. The Sierra Nevada snowpack accounts for approximately 60% of the water supply for Southern California. Since 1930, the Sierra's snowpack has been melting earlier each decade. Some projections suggest that the snowpack could be reduced by as much as 25 to 40% by 2050. This means potentially less water for California agriculture and the state's growing population.

Wildfires: Climate change also makes California forests more vulnerable to fires by hotter and drier conditions in these forests. Already, the frequency of large wildfires is increasing in the Western United States, including California. Today's fire season in the western United States already lasts for 78 days, 64% longer than it did during the 1970's and 1980's. Large wildfires that were once a week in duration are now much more frequent and burn for up to five weeks. Projections suggest that the frequency and size of forest fires is expected to increase, perhaps several fold, by the end of the century. The average annual cost associated with homes lost to wildfire could easily be in the billions of dollars by 2050.

Heat waves: As temperatures rise, the chances for more frequent and more intense summer heat waves in several areas of California increase substantially. In July 2006, California experienced a heat wave that led to more than 140 deaths. Intense heat waves like the 2006 event that have been rare historically are much more likely to become annual events by the end of this century. In the Central Valley and other regions that experience high summer heat, the hottest days of the year will become even hotter. Hotter temperatures also lead to more smog, and worsen already poor air quality in certain areas of the state.

Agriculture: Climate change-driven weather, including increased heat waves and floods, and increasing saltwater intrusion in agricultural regions like the San Francisco Bay Delta, poses threats to California's agriculture industry, which generates tens of billions in economic impact each year. While some crops, like melons and sweet potatoes, do better in warmer temperatures, fruits, vegetables, and grains are likely to suffer. Climate change appears to have detrimental impacts on California's specialty crops, such as apricots, almonds, artichokes, figs, kiwis, olives and walnuts.

Energy cost and availability: California's peak energy demand tends to occur on hot summer afternoons, and an increase in heat waves will exacerbate this growth in peak demand. Adding peak generating capability necessary to supply this increased demand is expensive and could result in electricity cost increases. Very hot weather also can stress California's energy grid that delivers electricity to consumers and increase vulnerability to power outages. Projections also suggest that climate change will drive up demand for air-conditioning, leading to increases in electricity use of 55% by 2100 and costs of $35 billion.

Harm to wildlife: Studies have shown that warming will increase so rapidly that plant and animal species may not have the capacity to migrate fast enough to areas with the climate conditions that would allow their survival. One study suggests that 50% of California species could be threatened by extinction by the end of the century. This is a particularly disturbing finding that has some ecologists discussing drastic measures such as "assisted relocation."

Sea-level rise: The sea level along California's coasts has risen nearly 8 inches in the past century. Estimates suggest that by 2050, sea levels could rise 16 inches higher; and by 2100, up to almost five feet higher. A 4.6 foot sea-level rise could put 480,000 people at risk of flooding & threaten $100 billion in property and infrastructure. Building seawalls and levees to protect this infrastructure would cost at least $14 billion. Additionally, saltwater contamination of the Sacramento/San Joaquin Delta will threaten the source of drinking water for 20 million Californians.

What do these impacts mean to California's economy?

Wildfires, floods, storms and other natural disasters that occur annually in California cause billions of dollars in property damage and economic losses. In fact, California has experienced dozens of events in the last decade that have each individually generated tens of millions of dollars in economic losses. More frequent and severe extreme weather threaten even more economic damages—including destroyed homes, damaged roadways and other public infrastructure, and interrupted business operations.

Aside from damages caused by extreme weather events, other climate-driven environmental changes have their own economic cost. For example, earlier snowmelt in Sierras threatens winter tourism. Electrical blackouts from storms and extreme heat interrupt power to millions of homes and businesses. Droughts mean less water for California's important agriculture industry, killing crops, costing jobs and likely increasing food prices.

One study conducted at the University of California-Berkeley in 2008 estimated that economic costs to the state from climate change could total from $7 to $46 billion each year. The study suggested that all sectors will suffer losses: water resources ($5 billion), energy ($2.7 billion to $6.3 billion), tourism & recreation ($98 billion), real estate ($300 million to $3.9 billion), agriculture, forests, & fisheries ($300 million to $4.3 billion), transportation ($500 billion), and public health ($3.8 billion to $24 billion). Of the state's $4 trillion in real estate assets, $2.5 trillion would be at risk from extreme weather events.

If climate change and extreme weather are happening across the planet, how can we make a difference in California?

The impacts of these weather events are determined not just by the size and power of the extreme weather, but also by how vulnerable our citizens, communities and businesses are to these events. The more we anticipate and prepare for the climate-driven changes, the more we can protect ourselves and our communities. For example, homes in areas of high fire risk that have adequate setback from trees and shrubs are less vulnerable to climate-driven wildfires than homes that fail to take these precautions.

In California, we know that we cannot stop climate change on our own. However, we can do our part to reduce greenhouse gas pollution while reducing the vulnerability of our residents, communities and economy to extreme weather events by smart planning and concerted action.

Why tackle this issue now?

Climate change is advancing. The decade 2000-2010 was the warmest decade on record globally. The amount of arctic sea ice this July was the lowest ever recorded for that month throughout the entire satellite record. 2011 was hottest summer in 75 years for U.S, and second hottest on record. Only the Dust Bowl of 1936 was higher. One-third of the US was in a drought earlier this year. These changes to our climate compel us to pay attention and take action.

Around the world, 2011 has been the most costly year for natural disasters in history—many likely driven by climate change. The United States alone experienced 12 separate weather related disasters the each caused over $1 billion in damages and together resulted in over 600 deaths. These disasters included a crippling drought through southern states; tornadoes from Oklahoma to Alabama; deadly flooding of the Mississippi River and a freak October snowstorm in the Northeast that knocked out power for millions of Americans. While 2011 has been a relatively quiet year in California for extreme weather disasters, we must prepare for our share of these climate threats in the coming years.

This conference brings leaders across the state together to plan and prepare for climate driven weather impacts and redouble our efforts to combat climate change. Smart, decisive action today will reduce costs, damages and human harm later.

What can we do to minimize the impacts of climate change?

Businesses, local communities, governments and individuals can take clear, positive action to minimize climate threats.

First and foremost, we must continue to combat climate change by reducing greenhouse gas pollution in California. While changes to our climate are already happening, reducing pollution in California and around the world will help us avoid the worst of climate impacts in the future. Our state's ongoing implementation of AB32 and clean energy policies shows that we can successfully reduce pollution while growing the economy and creating jobs. Reducing greenhouse gas emissions also results in cleaner air in our communities.

We also need to take action to adapt to changes in our climate such as extreme weather events. State government is already leading the way by supporting cutting edge research to better understand local impacts of climate change and provide adaptation options. The state is also helping local governments create community plans and creating new web-based tools for residents to take personal action. If you're an individual, a local business or a community leader, a great way to start taking action is by visiting the CAL-ADAPT website , which allows anyone in the state to type in their address and understand what climate impacts they should prepare for (www.cal-adapt.org).

Also, please visit the state's centralized climate website at www.climatechange.ca.gov. Here you'll find the tools to take action against climate change—whether you're an individual, business or governmental leader.