Union of Concerned Scientists

FACT SHEET

# Confronting Climate Change in Oregon

## *Current Impacts and Future Risks*

**HIGHLIGHTS**

*Climate change is being felt in the Beaver State as record-breaking wildfires destroy communities and forests, declining snowpack and earlier snowmelt in the mountains jeopardize summer water supplies, and shellfish hatcheries fail because of an acidifying ocean.*

*Climate models project temperatures in the Pacific Northwest to increase between 3°F and 9°F by the end of this century, with the range depending on whether we reduce or continue to raise our global heat-trapping emissions.*

*Global warming represents a severe challenge to Oregon's way of life. But this challenge can be met if residents, businesses, and policy makers act swiftly.*

From its windswept Pacific coastline to its sprawling high desert, Oregon is a landscape of powerful rivers, abundant waterfalls, dense evergreen forests, and rugged mountains. The state's natural resources are critical to Oregon's economy—supporting timber production, agriculture, and commercial fisheries, and a vibrant tourism industry that contributes nearly $10 billion annually to the state's economy (Oregon Tourism Commission 2015). This rich ecology and thriving economy is also vulnerable to the impacts of global warming.

Oregon residents, like people across the country, are seeing impacts from global warming resulting from the buildup of heat-trapping emissions in the atmosphere. With the Pacific Northwest having warmed by at least 1.3°F since 1895, climate change is already being felt in the Beaver State (Dalton, Mote, and Snover 2013). Shellfish hatcheries are failing because of an acidifying ocean, record-breaking wildfires are destroying forests and communities, and declining snowpack and earlier snowmelt in the mountains are jeopardizing summer water supplies.

Unless we make deep and swift cuts in heat-trapping emissions, future changes to our climate could be dramatic. Compared with the end of the twentieth century, climate models project Pacific Northwest temperatures to increase between 3°F and 9°F by the end of this century (Mote et al. 2014). The actual warming will depend on whether we reduce or continue to increase our global emissions of carbon dioxide, methane, and other heat-trapping gases.



*Scientific evidence shows that climate change is producing hotter, drier conditions that contribute to worsening risks of wildfires in the American West.*

BOX 1.

## Wildfires Harm Rogue River Tourism

The smoke from wildfires in the summer of 2013 caused a two-week closure of Oregon's popular wild-and-scenic section of the Rogue River, one of Oregon's top whitewater destinations. Rafting outfitters, lodges, and other businesses reported that the closure cost them hundreds of thousands of dollars at the height of the summer tourist season. Health officials were also concerned about air quality and the impact on people with respiratory ailments.

### Greater Risk of Wildfires and Forest Damage

Nearly half the state is forestland made up primarily of Douglas fir and ponderosa pine, and these forests are critical to the state's economy. The forest sector employs about 76,000 people and contributes about $12.7 billion to Oregon's economy, as well as bringing in millions of tourism dollars each year (OFRI 2012).

Climate change is already altering Northwest forests by increasing outbreaks of insect pests and the incidence of tree diseases. For example, higher temperatures and drought stress are contributing to outbreaks of mountain pine beetles that can cause widespread forest mortality. With ongoing atmospheric warming these increases in pest and disease problems are projected to continue (Mote et al. 2014).

Wildfires are also becoming more frequent and intense, and the costs to fight them are growing. In 2014, wildfires burned 870,000 acres covering an area more than nine times the size of Portland. The total cost to fight the fires was $280 million (NWCC 2015), and some of these funds could be in jeopardy. Over the past two years, Oregon's private insurance policy covering wildfire costs paid out the maximum of $50 million in claims, threatening the future of the 41-year-old policy.

The cost to residents of Oregon wildfires is also increasing, as real estate development proceeds in or near high-risk areas. Currently, 107,000 homes—8 percent of total residential properties—valued at $12.7 billion are at high risk of damage from wildfire (Botts et al. 2013).

Wildfires plaguing Oregon are likely to become increasingly destructive. Due to warmer and drier summer conditions, the typical annual area burned by fire in the Northwest is projected to double by the 2040s and quadruple by the 2080s relative to the past century (Littell et al. 2010).

### Diminishing and Uncertain Water Supplies

Higher temperatures and changes in precipitation are already having significant impacts on water resources in the Northwest. Since 1950, the average snowpack on April 1 in the Cascade Mountains has decreased by about 20 percent (Mote 2006). Winter snow accumulation in the mountains is a natural water storage system on which Oregon relies during its drier summer months, most critically for agriculture. Snowpack decline is projected to continue as more winter precipitation falls as rain rather than snow throughout much of the Pacific Northwest.

Snow is already melting as many as 30 days earlier than in the mid-twentieth century, reducing summer stream flows in many Northwest snow-fed rivers. This means less water is available during the hotter months when water demand tends to be highest (Fritze, Stewart, and Pebesma 2011). At the same time, earlier snowmelt and increased precipitation in the form of rain can pose flooding risks in the late winter and early spring.

BOX 2.

## Mt. Ashland Ski Area Forced to Close from Lack of Snow

During the winter of 2014, a lack of snow forced Mt. Ashland—southern Oregon's only ski area—to close for the first time in its 50-year history as the 7,500-foot peak had less than a foot of snow at its base. The ski area had to lay off 130 full-time workers and turn away up to 80,000 visitors who would have spent money in the Medford-Ashland area's hotels, restaurants, and stores.

As snowpack continues to decline in the next few decades, ski resorts, in addition to opening later and closing earlier in the season, are projected to rely more heavily on snowmaking—a combination that would call into question the economic viability of this important industry (Mote et al. 2007).

A change in the timing of water supplies will reduce opportunities for electricity generation from hydroelectric dams—responsible for 45 percent of the state's electricity—in the late spring and summer when stream flows are reduced (Mote et al. 2014). These changes can also complicate reservoir and irrigation management and stress freshwater fish, particularly salmon and trout (Dalton, Mote, and Snover 2013; Mantua, Tohver, and Hamlet 2010). Finally, changes to water supply could interfere with recreational activities such as fishing, rafting, and kayaking.

## Ocean Acidification

Oregon's rugged coast is home to productive ecosystems that support diverse marine life, and the state's commercial fisheries annually contribute more than $500 million in personal income to Oregon residents (ODFW 2013). However, climate-driven changes in sea level and ocean acidity pose major threats to the area's habitat and infrastructure.

Rising seas, warmer ocean temperatures, and changes in the timing of freshwater flows from rivers may contribute to significant changes in Washington's estuaries, an important habitat for salmon (Bottom et al. 2005).

The increasing acidity of ocean surface waters is also adversely affecting marine life. The ocean absorbs much of the carbon dioxide released into the atmosphere as a result of the burning of fossil fuels, and about one-quarter of the human-produced carbon dioxide released to the atmosphere over the last 250 years is now dissolved in the ocean (Canadell et al. 2007).

> ***Ocean acidification is decreasing the abundance of shell-forming species, which in turn threatens other significant marine species such as Pacific salmon.***

Altered ocean chemistry has been definitively linked to declines in hatchery production at oyster farms near Oregon's Netart's Bay, due to the softening of oyster shells, and could pose risks to the industry (OSU 2012). Increased ocean acidification is projected to continue altering the marine food web by decreasing the abundance of shell-forming species, which in turn threatens other culturally and commercially significant marine species such as Pacific salmon (Mote et al. 2014).



*Ocean acidification, driven by absorption of carbon dioxide from the burning of fossil fuels, is responsible for declines in the production of Oregon's oyster farms.*



*Oregon's natural resources support timber production, agriculture, and commercial fisheries, and a vibrant tourism industry that contributes nearly $10 billion annually to the state's economy. Global warming represents a severe challenge to Oregon's way of life. But this challenge can be met if residents, businesses, and policy makers act swiftly.*

## Climate Solutions in Oregon

Global warming represents a severe challenge to Oregon's way of life, but the challenge can be addressed if policy makers, businesses, and residents take swift action and work together—both in reducing emissions and responding to the changes already occurring.

Efforts by Oregon state and local governments are under way to identify actions to help communities adapt to a changing climate by becoming more resilient. At the same time, the emissions choices made today—in Oregon and throughout the world—will shape the climate our children and grandchildren inherit. Other states and regions have pioneered successful strategies for reducing emissions as their economies grow and new industries are created. Oregon has made a start, but must do more to meet this important challenge.

The state has set goals of reducing heat-trapping emissions to 10 percent below 1990 levels by 2020 and to at least 75 percent below 1990 levels by 2050. To achieve those goals and avoid the worst consequences of climate change, the state should:

- Establish a price on carbon pollution for the companies responsible for a majority of the state's emissions.
- Increase the use of clean fuels, such as biofuels and electricity, to reduce oil use and the carbon emissions associated with transportation fuels.
- Expand the market for electric vehicles by establishing a consumer purchase incentive and policies to expand charging infrastructure.
- Improve energy efficiency in commercial and residential buildings, agriculture, and industry.
- Increase the use of renewable sources of electricity and reduce reliance on polluting sources such as coal and natural gas.

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