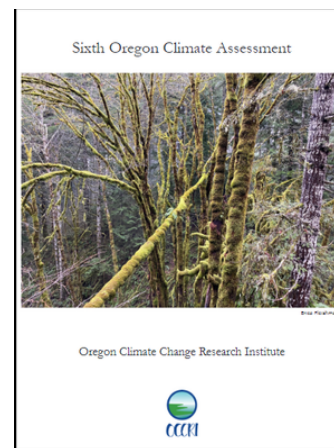


OCCRI'S SIXTH CLIMATE ASSESSMENT OUTLINES CLIMATE CHANGE EFFECTS ON OREGON

On January 4, 2023 the Oregon Climate Change Research Institute released the **Sixth Oregon Climate Assessment**, a biennial evaluation of recent scientific findings relating to the impacts and risks of climate change in Oregon. The Sixth Climate Assessment describes how climate change is affecting Oregon's environment and natural systems, economy, and communities, and presents projections of future impacts under varying emissions scenarios.

The Assessment presents some staggering information about the negative effects of climate change on our state and region. Learn about how the Oregon Department of Energy is working to fight the effects of climate change, and how energy can be both a cause and a potential solution to climate change.

ODOE Senior Clean Energy Policy Analyst Amy Schlusser summarizes below some of the key findings from the best available science on climate impacts and risks in Oregon and the greater Pacific Northwest.



January 11,
2023

SIXTH OREGON CLIMATE ASSESSMENT – ODOE SUMMARY

ENVIRONMENT

Multiple scientific studies have found that climate change is already contributing to extreme heat waves, widespread drought conditions, severe wildfires, coastal erosion, and other erratic weather conditions in Oregon. Unless emissions decline considerably, these impacts will intensify over the coming decades.

On a statewide level, Oregon is becoming warmer and drier. Oregon's annual average temperature has increased by around 2.2°F over the past century. Without significant reductions in greenhouse gas emissions, Oregon's annual temperature is projected to increase by 5°F by mid-century and by 8.2°F by the 2080s. Temperature increases will be most pronounced in the summer, when temperatures are projected to increase by 6.3°F by mid-century and 10.2°F by the 2080s. This level of warming is expected to exacerbate impacts to the natural and human environments that have already started to manifest in the state.

Extreme heat presents a growing threat to Oregon's communities and its natural environment. Over the past seventy years, the number of extremely warm days increased significantly across Oregon. In June 2021, a record-shattering heat wave caused an estimated 116 deaths in Oregon. The summer of 2021 was the hottest in Oregon's recorded history, but similar heat conditions are expected to be more common in the second half of this century. Climate change is projected to increase the intensity and frequency of extreme heat events in the state. If greenhouse gas concentrations do not decrease, the frequency of extreme heat events like the 2021 heat dome are expected to increase from once in 1,000 to 100,000 years to once every six years by the end of the century.

Rising temperatures are causing shifts in precipitation patterns in the Northwest. Oregon's precipitation was below average for 17 of the past 23 years. As a result, **drought conditions** have become more frequent, widespread, and severe across the state. Nearly all of Oregon is in a multi-year drought, and southern and eastern parts of the state are experiencing a megadrought that may be the most severe in 1,400 years. Under current emissions trends, seasonal droughts are projected to last 11 to 33 percent longer and be at least 40 percent more severe by the end of the century.

Many parts of Oregon depend on seasonal meltwater, and climate change is causing **declines in snowpack and glacial ice** that threatens local water supplies. In some recent years, Oregon has experienced below-average snowpack due to above-average temperatures or below-average winter precipitation. The state has also lost eight glaciers due to climate change. While winter precipitation is expected to increase slightly by 2100, warmer temperatures may cause more of this precipitation to fall as rain rather than snow. Annual snowpack across Oregon is projected to decline by 25 percent by 2050, and could decline by more than 60 percent by mid-century if emissions continue to rise. Snowpack and glacial declines will likely reduce irrigation water supplies in parts of the state. Reductions in snowpack also contributes to declines in soil moisture, which can exacerbate wildfire risk.

The total area of land burned by **wildfire** each year has increased in Oregon over the past 35 years, and wildfires have grown larger and have spread into higher elevations during this period. In the Pacific Northwest and California, the number of days with extreme wildfire danger have more than doubled since

1979. Drought, increased aridity, and reductions in relative humidity contribute to increased fire risk in Oregon. As global temperatures increase, wildfires are expected to become larger and fire seasons increasingly extreme in Oregon and across the West. If greenhouse gas emissions do not decrease, particulate matter pollution from wildfire smoke could double or triple by the end of the century.

ECONOMY

Oregon's economy has already been affected by climate change, and multiple sectors, industries, and communities across the state are highly vulnerable to future climate risk. In the **agriculture** sector, for example, climate change has the potential to substantially reduce yields and quality of specialty fruit crops by decreasing irrigation water supplies, reducing late spring and early fall precipitation, exposing crops to higher temperatures, and contributing to the spread of disease and insect infestations. Wildfires can contaminate or affect the flavor of crops that are exposed to smoke. Climate change may significantly affect the availability and use of irrigation water, particularly in areas of the state at higher risk of extreme drought and/or are reliant on snowmelt.

Climate change presents a threat to **forests and timber production** in Oregon. In addition to increasing the size and intensity of wildfires, warmer and drier conditions may already be altering the composition of Oregon's forests and reducing productivity of Douglas fir, which is currently the most valuable tree species in the state. Private timberland in Western Oregon and Washington could potentially lose 39 percent of its value by 2050 due to climate change.

Oregon's **fisheries** are highly vulnerable to climate change. Marine species like Dungeness crab, the state's most valuable commercial fishery, and Pacific oysters are susceptible to algal blooms caused by rising temperatures and ocean acidification caused by increased absorption of CO₂. Climate change also threatens the survival of multiple salmon species in Oregon, which are vulnerable to rising water temperatures and reduced stream flows.

The **recreation** sector in Oregon is also affected by climate change, though effects will likely vary between activities. Snowpack declines will affect winter recreation activities and could reduce ski industry revenues by \$19 million per year by mid-century. Recreational fishing and other outdoor activities could be affected by heat waves and shifts in precipitation patterns, and wildfires will reduce recreation opportunities on public lands. In September 2022, wildfires forced the closures of 150 trails and 86 recreational sites, including 28 campgrounds, in the Central Oregon Cascades. As of January 2023, many trails, forest roads, and recreation sites have yet to reopen following the 2020 Labor Day fires.

PUBLIC HEALTH AND COMMUNITY

Climate change presents a serious threat to **public health**, and lower-income communities, communities of color, tribal communities, and individuals who work outdoors face disproportionate risks. Extreme heat is the leading cause of weather-related death in the United States. In addition to contributing to fatalities from heart attacks and strokes and increasing hospitalizations for heat-related illnesses, heat waves increase air pollution that causes or exacerbates respiratory illnesses and other health risks.

Wildfire smoke also presents a serious threat to public health and increases strains on **local health care systems**. Exposure to particulate matter pollution from wildfire smoke increases risk of premature death and has a detrimental impact on physical and mental health. Communities affected by wildfire smoke experience surges in hospitalizations when air quality deteriorates. As wildfires become more severe in Oregon, smoke exposure will likely cause seasonal surges in respiratory hospitalizations and medical demands that increase strain on Oregon's health care systems.

Exposure to **wildfire smoke** also influences human behaviors and perceptions around climate change. Following the unprecedented 2020 Labor Day fires, Oregonians reported increased concern over climate change and growing support for greenhouse gas emissions regulations and other policies to reduce the risk and impact from extreme climate events in the future. Support for climate action will likely continue to grow as Oregonians experience the intensifying impacts of climate change.