ATMOSPHERIC ENERGY IMBALANCE: THREATS TO OREGON FROM PLANETARY HEATING

The past four years have been the hottest on planet Earth in recorded history. Ocean temperatures in 2017 were even warmer than the previous record set in 2015. The average acidity of ocean waters has increased by 25% over the past two centuries due to absorption of carbon dioxide, and the ability of oceans to support future marine life is uncertain. Oregon, now caught in the midst of this growing planetary chaos like every other jurisdiction on Earth, faces devastating effects to its natural resources, economy, and communities, as fossil fuel combustion continues to emit carbon dioxide. The Oregon State Legislature is positioned during a special legislative session to transition the state to renewable energy and thereby contribute to a global solution while creating local jobs.

Humanity faces a "different, practically uninhabitable planet," unless it slashes carbon emissions. Dr. James Hansen, former U.S. chief climate scientist, NASA

COSTS OF CLIMATE DISRUPTION ACROSS THE STATE OF OREGON

Climate disruption increasingly brings to Oregon severe drought, wildfires, floods, crop losses, ocean acidification, loss of salmon, reduced snow pack, and more extreme weather events. These harms will worsen without rapid efforts to control carbon emissions, both in Oregon and elsewhere.

Drought & Agriculture

Oregon's agriculture, food, and fiber industries have a combined economic footprint of over $52 billion. But prolonged drought has gripped Oregon's agricultural communities, particularly those in eastern Oregon. Some Oregon farmers have experienced up to a 50 percent drop in projected revenues during intense drought conditions. Some Oregon ranchers lack enough water to irrigate fields and water their cattle in these conditions. In 2015, 13 Oregon counties – more than half of the state -- needed emergency federal assistance. Oregon's snowpack, which naturally stores water and supplies streams used by farmers for irrigating crops during the summer growing season, reached the lowest level in recorded history in 2015, and this winter's snowpack is about 50% below normal.

"I've got to know that I've got water next year to get through. . . ." Scott Seus, third-generation farmer in the Tule Lake basin, KQED News

Oregon Forests

Oregon's forest products sector is valued at $12.7 billion, and forests also bring recreation dollars to the state's economy. In 2017, multiple regions of the state (including Southern Oregon, the Coast, the Gorge, and Central Oregon Cascades) simultaneously experienced catastrophic wildfires and forced evacuations. The Chetco Bar wildfire alone destroyed over 175,000 acres across Southern Oregon. Business sales dropped 30-60% in areas affected by the Gorge's Eagle Creek fire. Thick smoke descended into the Willamette Valley and elsewhere in the state, causing broad-based health effects and keeping Oregonians inside. More than 600 jobs were lost in the leisure and hospitality sectors alone due to road closures and low air quality caused by the 2017 fires.

"I think residents in the Gorge are going to begin to measure time in pre-Eagle Creek and post-Eagle Creek, because it was such a traumatic event for our region. . . . " Mark Johnson, Oregon Business & Industry, OPB

"[T]here are always limits to adaptation. We can only engineer so much. . . . Ultimately we need to remove the primary causes of ocean acidification if we value shellfish for their economic and ecological roles." Oregon State University researcher George Waldbusser

Fishing

Oregon's on-shore commercial fishing industry was valued at $144 million in 2016. Oregonians and visitors annually spend $2.5 billion on fish and wildlife activities and equipment. But Oregon's once stable fishing industry faces potential resource collapse from climate stressors. Abnormally warm water temperatures were to blame for the loss of an estimated 250,000 adult sockeye salmon in 2015. River managers anticipate less than 12,000 Chinook

Salmon returning to the Klamath River in 2017. Oregon's fishing industry faces another threat resulting from ocean acidification. Marine waters literally erode the shells of baby oysters, preventing successful propagation – costing the Pacific Northwest's oyster industry nearly $110 million to date, and jeopardizing about 3,200 jobs.

Recreation

Oregon's unparalleled outdoor recreation accounted for $12.8 billion in consumer spending in 2012. Carbon emissions that accelerate snow melt jeopardize Oregon's renowned winter sport amenities including ski resorts. During some recent winters, areas that historically had abundant snow were nearly barren of snow. During the 2013-2014 ski season, there was so little snow that Mt. Ashland ski area never opened and suffered a $1.8 million loss. Presently, Mt. Ashland ski area is closed, awaiting snow, and Willamette Pass still has not opened for the 2017-18 season, its website reporting on February 16, 2018: "At this time Willamette Pass is experiencing record warmth, and our snowpack has diminished to a low level." These closures also harm the large secondary business sector that depends on open lifts – businesses such as ski shops, local restaurants, and hotels in destination areas.

"It seems like every time we get some snow this year it's followed up by a pineapple express coming in with some rain, or really warm temperatures, or a combination of both." Kim Clark, General Manager, Mount Ashland Ski Area, Register Guard

THE PLANETARY CARBON SYSTEM AND CONSEQUENCES OF INACTION

The Earth has warmed approximately 2.4 degrees Fahrenheit since the Industrial Revolution. Energy infrastructure and global transportation systems have relied on fossil fuels that, when combusted, release vast amounts of carbon dioxide into the air. Atmospheric concentrations of carbon dioxide have steadily increased, soaring past 350 parts per million, the highest safe level according to leading scientists. These gases cause planetary heating and energy imbalance, because they trap solar radiation, essentially acting as a thickening blanket across the Earth. Levels are now beyond 400 parts per million -- higher than any levels experienced in the last 800,000 years -- and they are rising fast.

"It is, I promise, worse than you think. If your anxiety about global warming is dominated by fears of sea-level rise, you are barely scratching the surface of what terrors are possible, even within the lifetime of a teenager today." David Wallace-Wells, New York Magazine

The climate crisis differs from other matters before the Oregon State Legislature not only because of its universally grave impacts, but also because it imposes deadlines arising out of irreversible feedback processes created by nature itself. Among many alarming "tipping points," the permafrost located in the northern polar region holds some of the planet's largest stores of carbon in a frozen state. As temperatures warm, permafrost thaws and releases the stored carbon and methane into the atmosphere, which in turn accelerates planetary heating. Scientists warn that, if this and other positive feedbacks are triggered, they could flood the atmosphere with greenhouse gases and trigger runaway heating from which there is no feasible return.

"[W]e have to . . . wake up to the reality and answer the question what are we going to do. . . . We've actually run out of time." Christina Figueres, former UN climate chief.

"If we fail to act now, it is scientifically irrefutable that there will be catastrophic and irreversible consequences for humanity and our planet." 2009 Open Letter to Congress and President Obama signed by Donald Trump and business leaders in paid New York Times advertisement

This crisis has been building for decades, and now time has all but run out due to proximate tipping points. Former UN climate chief Christiana Figueres and leading scientists across the world declared in June, 2017 that global emissions must begin to fall sharply by 2020. The world must sustain cuts to achieve full de-carbonization by mid-century. The necessary transition to a clean renewable energy economy is spurring massive growth in new jobs and will create economic opportunities in those states that take the lead.

Sometimes doing your best is not good enough. Sometimes you must do what is required.

--Winston Churchill