

Economic Cost of Climate Change and Strong Support for HB 2020

Oregon Legislators: Protect What You LOVE!

Supplemental Testimony by Ron Schaaf, Deb Evans and Hair on Fire Oregon

March 7, 2019

Chairs Dembrow and Power, members of the Joint Committee on Carbon Reduction,

We are writing this supplemental testimony on behalf of ourselves and Hair on Fire Oregon—a determined group of friends and concerned citizens we helped found—to express our strong support for HB 2020. Four years ago, in 2015, we presented information to various committees at the Oregon Legislative Assembly asking that you move forward HB3470, a similar bill to set binding limits on Greenhouse Gas (GHG) emissions in our home state of Oregon. At that time, here in southern Oregon and across the state, we were facing one of the worst droughts following the winter of 2014–2015 producing virtually no snow pack. Fast forward 4 years, and we continue facing drought conditions with 22% of the state experiencing drought currently and 60% more in abnormally dry.¹ Here in our Greensprings Community, 16 miles east of Ashland, the snowpack has been decreasing. The longer hotter, drier accumulated conditions which we have been experiencing, have further compromised our timber assets which are experiencing insect infestations and drought-stress die off at unprecedented levels.

Over the past seven months, we have watched the incredible work of legislative leaders putting their heads together and diligently working with stakeholders for thousands of hours to hone the language of HB 2020. As the session started, we also have taken note of the many letters of support and opposition as well as public statements, op-eds and letters to the editor from citizens and legislative leaders of this state. For those of us who, similar to the U.S. Department of Defense, believe that climate change is the biggest threat we face simply because of the sheer magnitude of who and what will be affected and the increasingly costly damage and threat it poses to livelihoods, health and security, **there is no more important piece of legislation before you and there is nothing that will have a more devastating affect on those that come after us than inaction to address this crisis.** We thank you for the leadership this committee has shown thus far and for taking the time to host hearings around the state.

As we watched the predecessors of this bill struggle and heard the pleas in 2018 of businesses and industries worried how a cap and invest type bill will affect their bottom line and many of them asking for the bills' rejections. But this sentiment is shortsighted in light of the much larger chaos that a runaway climate will wreak on vast numbers of Oregonians, many of whom are already feeling the consequences. What we should be doing is figuring out collectively what is good for the whole, and HB 2020 does just that with careful thought and consideration having gone into the costs of inaction versus the cost of action.

In order to bring this point home, we would like to share with you some of the economic cost research we have conducted which recognizes that the brunt of climate change costs fall on ordinary citizens. Energy intensive industries, advocating against this bill, do not want to pay for the externalities that they incur daily, but the fact is, we—the citizens of Oregon—already are paying for those costs and the price tag will continue to go up. To say, 'let us keep doing what we are doing' and pollute using fossil fuel-sourced energy at ever increasing rates, is both irresponsible and a denial of the facts that we face.

¹ <https://www.drought.gov/drought/states/oregon> - as of March 5, 2019

In the historic 2015 Paris Climate Agreement², countries agreed to work together to reduce greenhouse gas emissions to hold the increase in global average temperatures to well below 2 degrees Celsius (C) as well as pursue efforts to keep temperatures below 1.5 degrees Celsius (C) above pre-industrial levels to significantly reduce the risks and impacts of climate change. More recent reports from the IPCC have been clear. We must act now or risk going over an irreversible tipping point. Current science says that to have a 50% chance of reaching the 1.5-degree C goal we must strive for zero emissions by 2050. In light of this, both current GHG emitters and public interest determinations for any new, large fossil fuel infrastructure projects at the local, state and federal levels must consider the negative impacts and costs to society associated with adding GHG emissions for the predicted life of these projects.

A flurry of reports released in late 2017 paint a sobering picture of the increased impacts and economic costs attributed to greenhouse gas emission-caused climate change. The Governmental Accounting Office reported that more than \$350 billion dollars were spent by the United States Government over the past decade in response to extreme weather and fire events. These costs are estimated to rise far higher if global emission rates do not go down.³

A separate study found that “[e]conomic losses from weather events influenced by human-induced climate change and health damages due to air pollution caused by fossil fuel energy production are currently causing an average of \$240 billion a year—or about 40% of the current economic growth of the United States economy.”⁴ These costs are predicted to rise to \$360 billion in the next 10 years and are largely born by individuals, not Government or the private sector.

Data collected in the United States show a steady climb in extreme weather events triggering \$1 billion dollars or more of damage rising from **21** events in the 1980s, **38** in the 1990s to **92** this past decade (2007-2016).

During 2017, the U.S. experienced a historic year of weather and climate disasters. In total, the U.S. was impacted by 16 separate billion-dollar disaster events tying 2011 for the record number of billion-dollar disasters for an entire calendar year. In fact, 2017 arguably has more events than 2011 given that our analysis traditionally counts all U.S. billion-dollar wildfires, as regional-scale, seasonal events, not as multiple isolated events.

More notable than the high frequency of these events is the cumulative cost, which **exceeds \$300 billion in 2017 — a new U.S. annual record**. The cumulative damage of these 16 U.S. events during 2017 is \$306.2 billion, which shatters the previous U.S. annual record cost of \$214.8 billion (CPI-adjusted), established in 2005 due to the impacts of Hurricanes Dennis, Katrina, Rita and Wilma.⁵

Overall, the 16 disaster events in 2017 claimed the lives of 362 people. Table 1 below shows the number of billion-dollar or greater disasters from 1980 through 2017. The annual average over the entire time span is 5.8 events (CPI-adjusted) and the annual average for 2013-2017 is 11.6 events (CPI-adjusted).

² Text of Paris Climate agreement 2015 -

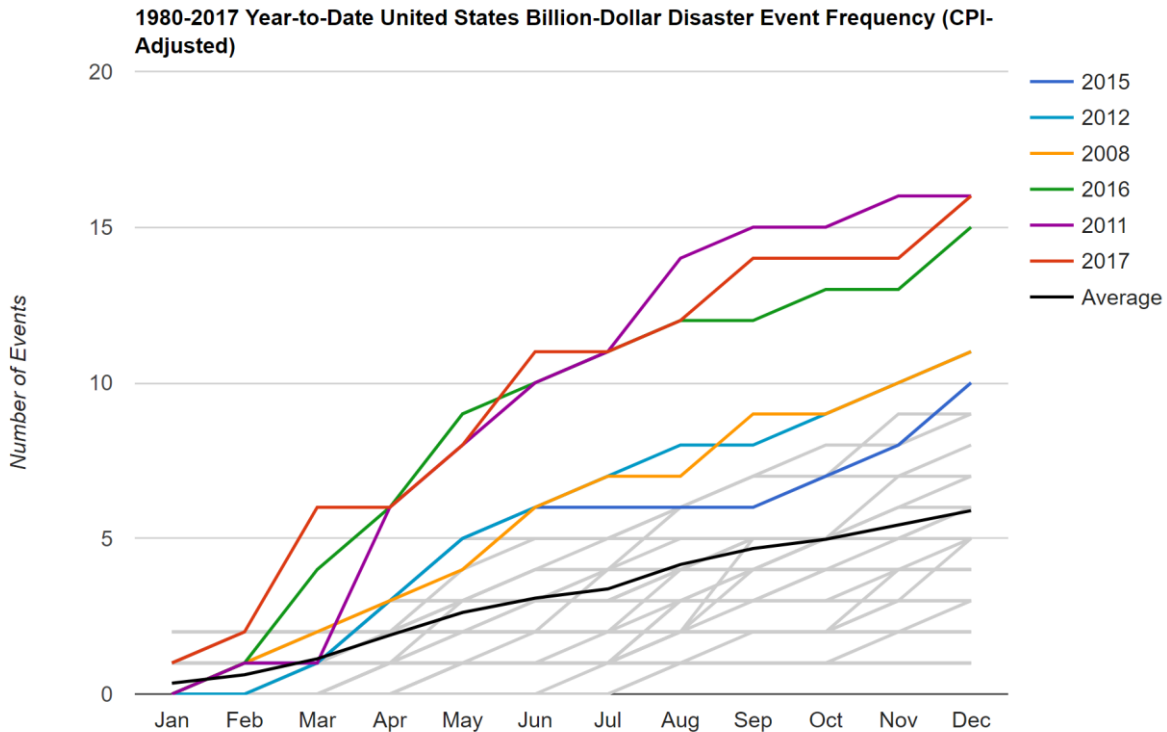
https://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf

³ Information on Potential Economic Effects Could Help Guide Federal Efforts to Reduce Fiscal Exposure GAO-17-720: Published: Sep 28, 2017. Publicly Released: Oct 24, 2017. <https://www.gao.gov/products/GAO-17-720>

⁴ The Economic Case for Climate Action in the United States. Robert Watson, James McCarthy, Liliana Hisas. Sept 2017. <https://feu-us.org/case-for-climate-action-us/>

⁵ NOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters (2017). <https://www.ncdc.noaa.gov/billions/>

Table 1 – 1980-2017 Year-to-Date United States Billion-Dollar Disaster Event Frequency⁶



Event statistics are added according to the date on which they ended.

Oregon did not escape unscathed. The state was challenged with its own climate-related disasters in 2017 with over 2000 wildfires burning a total of 665,000 acres and costing \$454 million dollars—triple the 2010-2015 average annual cost of \$146 million for Oregon wildfires.⁷ And then our 2018 fire season topped that record costing the state \$514 million dollars.⁸ Here in southern Oregon, our businesses, especially those that rely on tourism, lost a significant amount of revenue to the point of some, like Ashland Outdoor Store closing their doors for good⁹ and others forced to let go of employees.¹⁰ The bottom line is that greenhouse gas emissions world-wide are increasing and that increase is influencing costly extreme weather events – like drought and wildfire-related economic losses experienced in Oregon.

In a presentation given to Oregon legislators on November 13, 2017¹¹, Oregon DEQ director Richard Whitman presented data based on modeling of two scenarios: a steady increase in GHG emissions through 2100 and a

⁶ NOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters (2017). <https://www.ncdc.noaa.gov/billions/>

⁷ <https://www.opb.org/news/article/oregon-2017-wildfire-costs/>

⁸ Oregon wildfire costs hit record high of \$514 million in 2018. Statesman Journal. Oct 10, 2018.

<https://www.statesmanjournal.com/story/news/2018/10/10/oregon-wildfire-costs-hit-record-high-2018/1581132002/>

⁹ *Where there was smoke, there's now a fire sale.* John Darling. Ashland Daily Tidings. December 05, 2018.

<http://dailytidings.com/news/top-stories/where-there-was-smoke-theres-now-a-fire-sale>

¹⁰ *Fire and Smoke: Our reputation is at stake.* Greg Stiles. Mail Tribune. Oct. 6. 2018. <http://mailtribune.com/news/top-stories/fire-and-smoke-a-reputation-is-at-stake>

¹¹ Richard Whitman, DEQ director Presentation before the Oregon Senate Interim Energy and Natural Resources Committee and the Oregon House Interim Energy and Environment Committee Meeting. Nov. 13 2017.

http://oregon.granicus.com/MediaPlayer.php?clip_id=24257

more successful peak and then lowering of emissions on a global scale by 2040.¹² Increased temperatures along with increased rain in the winter and decreased rain in the summer will be the drivers for impacts in Oregon resulting in far less snowpack and water shortages negatively impacting forestry, agriculture and fisheries, increased acidification threatening shellfish, and a significant change in Oregon vegetation. Models show shifts away from Douglas Fir, the softwood dominated lumber that Oregon leads the nation in producing, to a mixed conifer and hardwood forest the length of the coastal range similar to California which is much less productive. Douglas fir is projected to shift North and inland which will have a significant effect on Oregon’s economy.

These changes in Oregon’s natural resources will have negative consequences on public health (smoke, heat and disease), private and public property damage (fires and floods); economic implications of less productive and more fire-prone forests, particularly for rural communities; economic implications of less productive shellfish and crab industries; significant reduction in water supplies during the summer and early fall – economic implications for agriculture; deteriorating water quality and aquatic habitat (warmer streams, algal blooms); and impacts to resources will affect rural communities disproportionately and lead to intergenerational inequality.

Whether GHG emissions come from transportation, industrial, fossil fuel-powered utilities or other sectors that generated 62 million metric tons (MMT) of CO2 equivalent (CO2e) emissions in Oregon in 2016 and 64.3 MMT in 2017, there is an economic cost associated with those GHG emissions. An estimate of these costs, shown in Table 2 and often referred to as the Social Cost of Carbon (SCC), was developed by a federally mandated Interagency Working Group in 2013 and amended in 2016.¹³

Table 2 – Social Cost of CO2, 2015-2050

Social Cost of CO₂, 2015-2050 ^a (in 2007 dollars per metric ton CO₂)
 Source: [Technical Support Document](#): Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866 (May 2013, Revised August 2016)

Year	Discount Rate and Statistic			
	5% Average	3% Average	2.5% Average	High Impact (95th pct at 3%)
2015	\$11	\$36	\$56	\$105
2020	\$12	\$42	\$62	\$123
2025	\$14	\$46	\$68	\$138
2030	\$16	\$50	\$73	\$152
2035	\$18	\$55	\$78	\$168
2040	\$21	\$60	\$84	\$183
2045	\$23	\$64	\$89	\$197
2050	\$26	\$69	\$95	\$212

^aThe SC-CO₂ values are dollar-year and emissions-year specific.

Using the 3% discounted rate for 2020 shown in Table 2, the cost per metric ton of greenhouse gas emissions is \$42. For Oregon, the cost to all of us for the reported 64.3 MMTs of 2017 GHG emissions that comes in the form of health, extreme weather events, ocean acidification, wildfires, etc. is **\$2.7 billion dollars**. These are the

¹² Wuebbles, D.J., D.W. Fahey, K.A. Hibbard, B. DeAngelo, S. Doherty, K. Hayhoe, R. Horton, J.P. Kossin, P.C. Taylor, A.M. Waple, and C.P. Weaver, 2017: Executive summary. In: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 12-34, doi: 10.7930/J0DJ5CTG.

¹³ https://19january2017snapshot.epa.gov/climatechange/social-cost-carbon_.html

“externality costs” we citizens of Oregon are ALREADY paying—both individually and as taxpayers whose tax dollars go toward government assistance programs like FEMA and others to mitigate climate related damage.

However, passage of HB2020 would change the dynamic and signal to Oregon emitters that we will transition away from the business-as-usual practices we have been undertaking since the industrial revolution and move to sustainable, clean energy—**at a decreased overall cost to society**. This not only makes sense for the collective, it is increasingly looking like it will be the only thing we can do to avert losing all that we love. We would do well to heed the adage: a stitch in time saves nine. We can pay now the upfront costs of what many say will be 1% GDP to convert to clean energy technologies or we can pay what some predict will be 20% of GDP indefinitely later to mitigate climate change impacts going forward if we continue to increase human-generated GHG emissions.

When you hear businesses say, ‘this is not the way’, ‘this will be impossible’, ‘passage of this bill will damage Oregon’, this is exactly opposite of the truth. To do nothing, to delay putting real limits on GHG reduction in a responsible cap and market-based mechanism that allows business to trade for the lowest cost path to transition, **IS** the best for industry and it is the best way forward for citizens whose health, livelihoods and state’s prosperity will depend on it. We all, including businesses, have to face the truth of what our actions are doing and be willing to use current technologies to solve this problem as a collective, not as individual entities wanting to avert the short-term costs and serve only our own interests.

One key factor is that renewable energy in the form of commercial wind and solar is now CHEAPER than fossil energy.¹⁴ As these renewable energy prices continue to drop and requires only the capturing of abundant and free solar or wind energy versus expensive extraction and transportation of fossil fuels coupled with their associated costs of GHG pollution, renewable energy quickly becomes the obvious choice for the lowest energy saving Oregonians millions of dollars and creating long-term economic advantage for our citizens and businesses.

For the 5th time in 5 years, we ask you, regardless of your political persuasion, to think about ALL of the citizens of Oregon, recognize the very real threat we face as well as the real solutions for clean energy jobs this carefully crafted bill will provide. Most of all, we call on your help, courage and leadership to **protect what you love and pass a strong HB 2020 for Oregon**.

Sincerely,

Deb Evans and Ron Schaaf
Hair on Fire Oregon

¹⁴ Lazard’s Levelized Cost of Energy Analysis—Version 12.0. Nov 2018. <https://www.lazard.com/media/450784/lazards-levelized-cost-of-energy-version-120-vfinal.pdf>