

Southern Oregon Climate Action Now

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Confronting Climate Change

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Confronting Climate Change: A win-win approach

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We Love Our Home:

Many Oregonians love where they live and consider it the best place on the planet to make a home. Many folks across the country and the world probably think the same about where they live – some because that’s where they were born, and home is always where the heart is; others because they chose the place to live. Many folks, however, are not that lucky and find themselves, because of job requirements, in a location more out of convenience or necessity than choice. For me, Southern Oregon is a place of choice, a place that I have come to love more the longer I have lived here. Whether I’m thinking of the sparkling waters, the snow-capped mountains, the stunning forests, the gorgeous coast, the wonderful wines, or (as the sign proudly hanging over Grants Pass proclaims) ‘It’s The Climate,’ Southern Oregon offers daily delights and a feast of year-round pleasure.

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So, What’s the Problem?

Our home is under threat. Stories about increased fire risk, a shortage of snow and water, unparalleled drought, heat waves and the like, are born out when we look at the data. Indeed, as the chart of the Medford annual temperature trend to 2015 (Figure 1) reveals, the city has been warming at the rate of 0.0225degrees F per year and thus over 2 degrees F per century, a pattern typical of the county and region as a whole

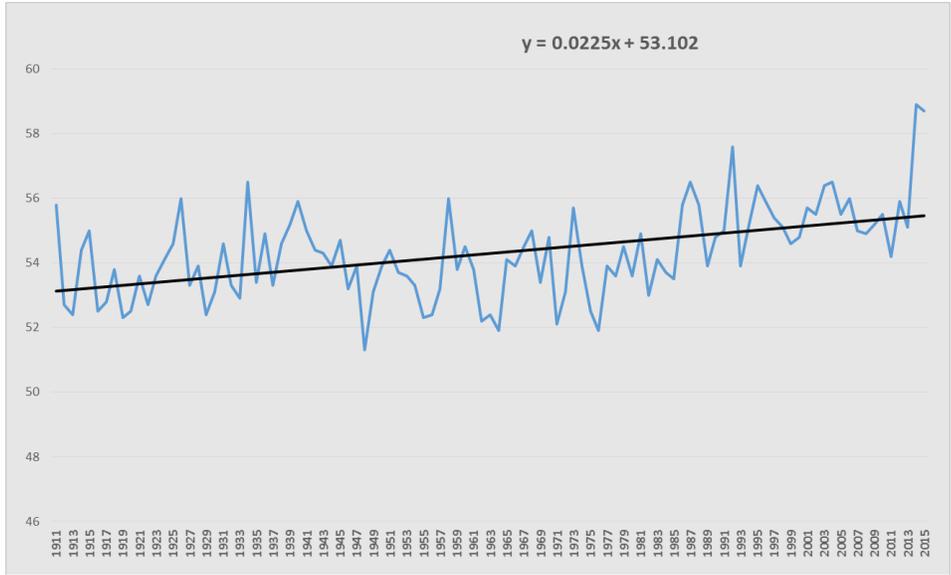


Figure 1. Medford City average annual temperature 1911- 2015. Data from NCDC-NOAA and National Weather Service, Medford.

Of course, average temperature is not the only factor that is undergoing a dramatic adjustment. Amid much variability, we are also seeing an increase in the number of days over 100 degrees F (Figure 2) from around 7 to about 11 now.

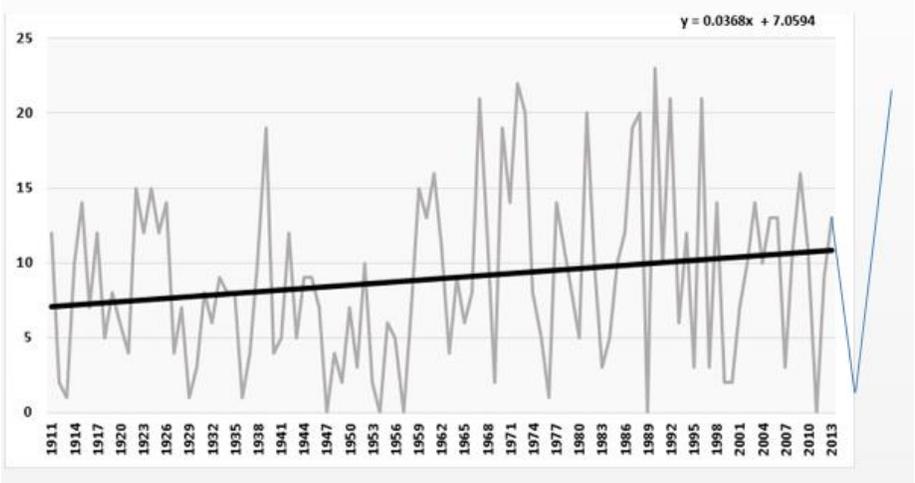


Figure 2. Medford City average annual days over 100 Degrees F 1911- 2015. Data from NCDC-NOAA and National Weather Service, Medford.

The average annual precipitation has remained relatively constant (Figure 3), though with increasing temperatures, especially during summer months, soil moisture has been dropping. This reduction poses problems for agriculture, forestry, and home gardeners.

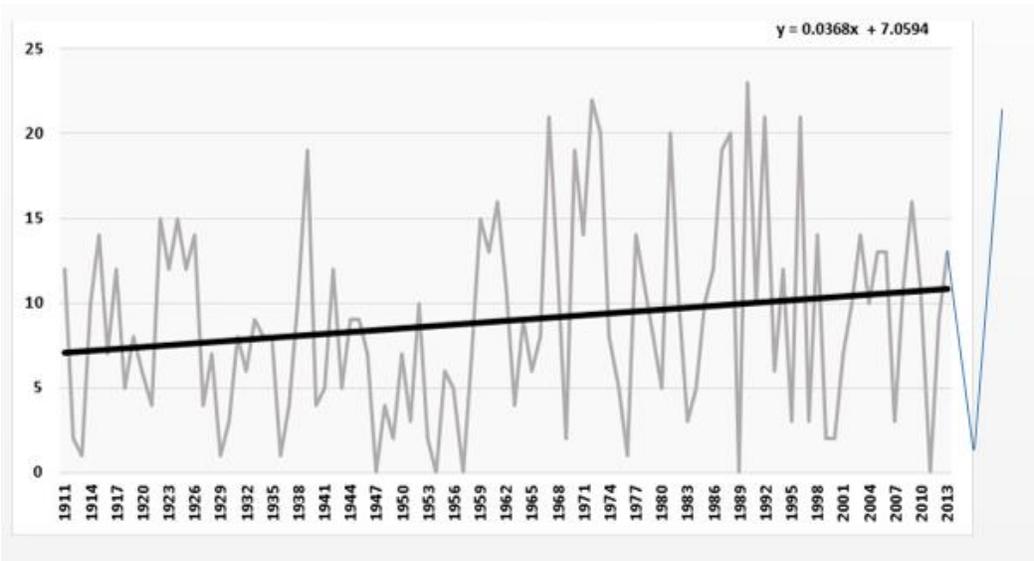


Figure 3. Medford City average annual days over 100 Degrees F 1911- 2015. Data from NCDC-NOAA.

Meanwhile reduction in snowpack – more critically, the snow water equivalent that is contained in the snow – has been evident (Figure 4).

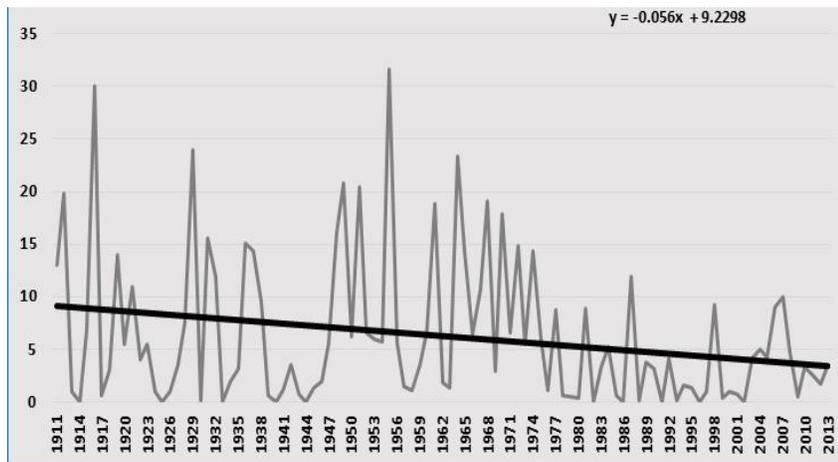


Figure 4. Medford City average annual snowfall (inches) 1911-2013. Data from National Weather Service, Medford.

While this compromises the winter recreation industry and winter enjoyment of residents, when occurring at high elevation in the Cascades and Siskiyou (Figure 5), it also threatens our rivers and iconic aquatic species (with recreation and tourism implications). It also, more directly, impacts our drinking and irrigation water since, historically, high elevation snowpack has served as the reservoir of the Pacific Northwest providing water through summer snowmelt. Three additionally notable consequences of the general precipitation trend are:

- i) A shift from high elevation winter snowfall to lower elevation rainfall,
- ii) An increase in winter precipitation and decreasing summer precipitation.
- iii) Rain falling in heavier flood, erosion, and landslide-inducing bouts as opposed to milder soil moisture replenishing showers.

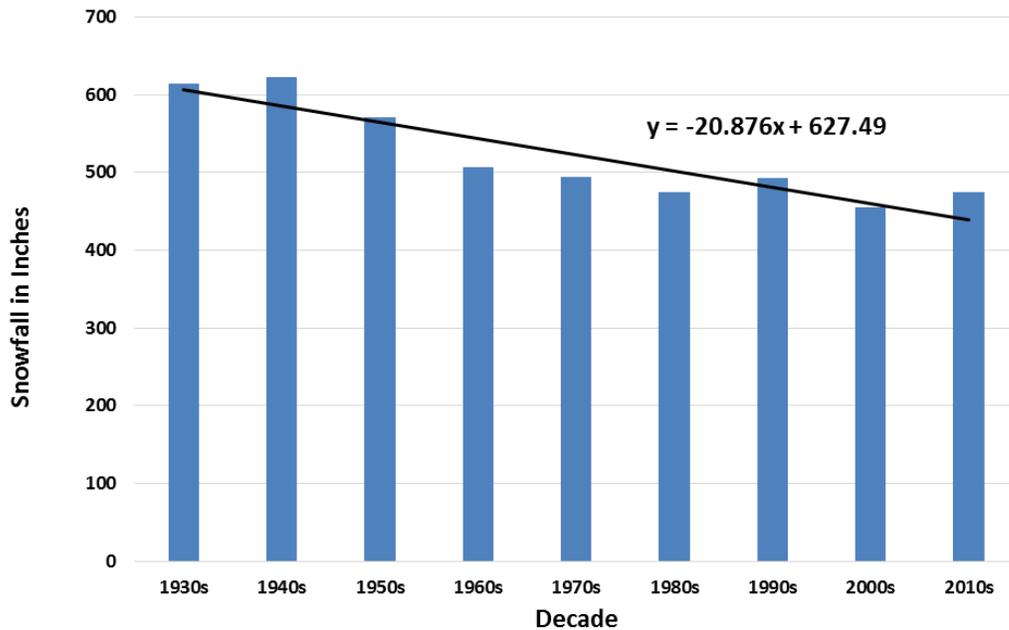


Figure 5. Crater Lake annual snowpack by decade (inches) 1911- 2013. Data from National Weather Service, Medford.

The combined effects of increasing temperature with decreasing high elevation snow water equivalent and early snowmelt even further reduce soil moisture storage throughout the region, especially in late summer and fall.

While this decreasing soil moisture clearly has substantial agricultural and forestry implications, it also has profound wildfire implications. Forestry research tells us that the factors driving high versus low wildfire years are increasing season temperature (currently increasing) and early snowmelt (currently advancing). Of some concern should be the evidence that despite recent trends towards an increasing area burned and increasing numbers of large wildfires, it is suggested (Marlon *et al.* 2012) that recent climate changes mean we are currently experiencing a profound wildfire deficit meaning current and future climatic conditions will likely induce increased wildfire losses – so continued climate change could make our future bleak indeed.

The combined effects of increasing temperature with decreasing high elevation snow water equivalent and early snowmelt even further reduce soil moisture storage throughout the region, especially in late summer and fall.

It is of interest that the trends we are experiencing in Southern Oregon are typical of the state as whole. We do not live in an isolated bubble of compromising climate, the entire state is being compromised by these trends

What Does the Future Hold?

Predicting the future is always difficult, but fortunately we are amply supplied by a large number of climate scientists who have developed a consensus understanding about the trends we are experiencing and their cause. They have developed projections of what the future holds to the end of this century, based on the array of possible human responses.

There is little doubt within the climate science community about the cause of the trends we are experiencing. Indeed, we are as near certainty regarding understanding of the causes of these trends as science ever achieves. Furthermore, we are fortunate that the cause of these trends is human activity since this provides us with an opportunity to address and reverse them. But we can only do this if we exhibit collective wisdom and the will to act.

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Among the scenarios offered by climate scientists for producing projections through the century and beyond, the most reasonable projection to consider is the 'business as usual' scenario. This assumes that we continue our current behavioral trajectory. The result is an ever increasing use of fossil fuels accompanied by a similarly accelerating emissions of greenhouse gases.

While the models developed from the scenarios are large scale and global in nature, recent refinements have allowed considerable downscaling such that we now have county-by-county projections of major climatic variables for the contiguous 48 states. It is upon those projections that I will largely rely as I consider what the future holds for Southern Oregon – and the state as a whole.

In terms of temperature (Fig 6) the Jackson County projections tell us that the Business as Usual (bau) scenario indicates a warming of 9.4 degrees F by the end of the Century compared to the average during the latter half of the last century. Projections also suggest that July will likely have an average high of nearly 95 degrees F, while the number of days with highs over 95 and 100 degrees F will dramatically increase.

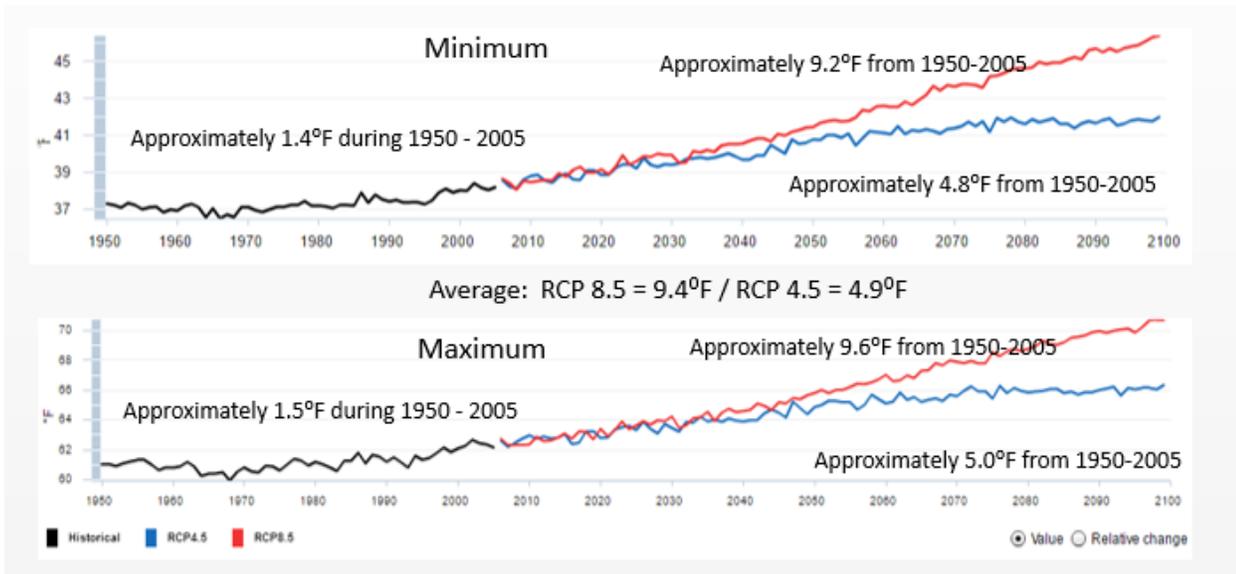


Figure 6. Projected Jackson County temperature through the Century (red represents the bau scenario while blue represents a less rapid fossil fuel trajectory)

https://www2.usgs.gov/climate_landuse/clu_rd/nccv/viewer.asp

Projections for precipitation suggest no change in the annual average, but increasing variability with dryer dry years and wetter wet years. Meanwhile, the trend towards reducing snowpack will continue until, by the end of the century, the snowfall may be non-existent (Figure 7). Meanwhile, the trends towards precipitation falling at lower elevation as rain rather than higher as snow, towards heavier rain and more in winter with less in summer will probably continue.

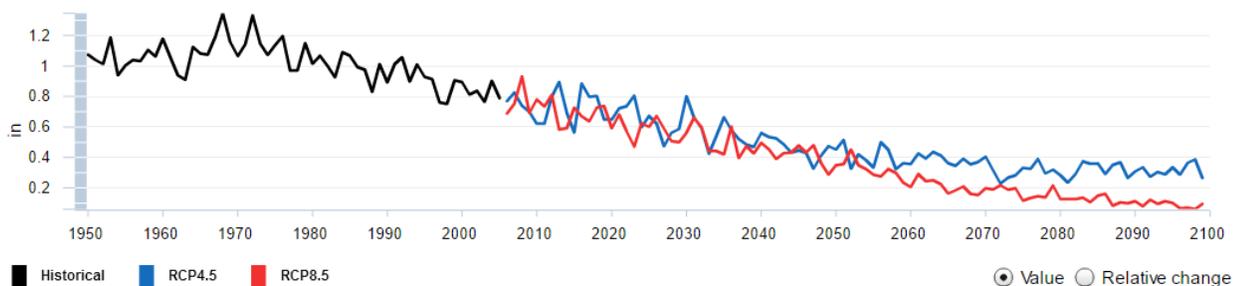


Figure 7. Projected Jackson County snow water equivalent accumulation through the Century (red represents the bau scenario while blue represents a less rapidly accelerating fossil fuel trajectory)

https://www2.usgs.gov/climate_landuse/clu_rd/nccv/viewer.asp

Like the combination of trends, this combination of projections serves as a dramatic warning for our region and all that we love about it. In addition to the concerns identified previously, studies on the future climatic conditions in relation to conditions that critical tree species require suggests substantial decreases in viability of several critical species (e.g. Douglas fir, Ponderosa pine) may occur. Meanwhile, by century's end, Oregon may be outside the range of one commercially important species: the Lodgepole pine.

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It is worth noting that the two factors determining the distribution across our planet, and local landscape, of natural systems (forests, grassland, shrublands, deserts etc.) are temperature and precipitation. It is quite likely that the conditions we will experience by the century's end, if we fail to stem this global warming tide, are likely to compromise if not destroy most of our Southern Oregon natural systems. Since our agriculture and forestry are controlled by the same two climatic variables, the same threat is posed by global warming to these two critical human endeavors. Again, we must remember that Southern Oregon is not a bubble; the projections and the consequences we face here can be generalized across the state.

What our beautiful state needs is national and global agreement to engage in a collaborative effort to alter our current trajectory and avert the disaster it would probably impose if we fail. If we wish to leave our children and grandchildren a livable state, nation, and planet, we have no option but to address this problem. There is no higher moral imperative! Furthermore, if we wish to see national, global, and international collaboration, we must become part of the solution; we cannot afford to continue contributing to the problem. Unless Oregon joins those states, provinces, and nations addressing this problem by reducing our climate pollution, we will have no moral authority to urge others to act.

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What is the Oregon Solution?

Although Oregon is, admittedly, a relatively small contributor to the national and global stream of climate pollution, we can become leaders in reducing climate pollution. Furthermore, when working in consort with other jurisdictions on the west coast and across the nation and globe, we can put a dent in this pollution stream and alter our global trajectory – to the benefit of all Oregonians, and all peoples.

For several years, a consortium of concerned Oregonians has been encouraging the Oregon Legislature to take this issue seriously and enact legislation that moves the state to the forefront in global efforts to arrest global warming. That there has long been broad concern about this issue among Oregonians is reflected in the fact that Oregon enacted meaningful greenhouse gas emissions reduction goals in 2007. These goals were, and remain, purely voluntary. Though they are worthwhile, regrettably, the state is not on a trajectory to achieve them. Since sufficient steps to reduce emission substantially have NOT been undertaken the inference drawn is that voluntary goals are not enough to stimulate sufficient concern across the emissions sectors of the state for them to take action.

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Over the last several months, conversations involving representatives from the climate concerned community, labor, as well as the social justice and equity communities have occurred. The outcome of these discussions is a set of mutually agreed principles that guide our efforts to address climate pollution in Oregon.

In brief, the principles developed during these conversations are:

- To limit or cap climate pollution in the state based on what the best available science indicates is necessary,
- To require all sectors that pollute to pay their fair share,
- To reinvest proceeds into communities that need most help as we transition from a fossil fuel to a renewable energy economy and prepare for the climate change that is inevitable,
- To provide a just transition mechanism that leaves no workers dislocated by the shift to renewable energy,
- To establish a program administration that is effective and accountable.

As a result of these conversations and an evaluation of the proposals to address climate pollution that have been submitted, we endorse SB557 as the proposal which best conforms to our principles. However, we endorse SB557 with the following caveats.

- There currently seems no satisfactory mechanism whereby the program would be updated to maintain consistency with best available science should that change. The only possible route would seem to be through the ‘Greenhouse Gas Cap and Investment Program Oversight Committee’ making recommendations to various entities for improvement. However, this committee only contains one person with relevant expertise in Climate Science. Thus, if this responsibility were assigned to the Oversight Committee, the number of climate scientists should be increased substantially (to 3 or 4). Alternatively, a mechanism akin to

that contained in SB2468 could be employed: where DEQ conducts five year reviews from 2019 onwards and can then adjust limits according to best available science.

- The goals of the program, though consistent with the 2007 voluntary trajectory, are not adequate to meet our needs, or the goals established by the Paris Agreement in 2015. The goals of HB2468 seem more appropriate: 10% below the 1990 level by 2020, 68% below the 1990 level by 2035, and 91% below 1990 level by 2050, though even better would be a zero emissions goal by 2050 since the science tells us this is what we need.
- In order to enhance emissions reductions in Oregon, it seems appropriate that any offsets included in the program should be limited to in-state activities. Such a requirement, could bring into the program carbon sequestration efforts in forest management and agriculture and thereby increase the range of sectors involved.
- The Section dealing with renaming the Oregon Global Warming Commission offers no justification that this suggestion is necessary. More importantly, the text includes a definition of Climate Change that is both wrong and suggests the author has confused climate change with global warming. To clarify, below is the correct relationship among climate pollution –global warming and climate change:
 - Increased atmospheric greenhouse gas concentration leads to global warming (the heating of the planet’s oceans, land, ice, and atmosphere).
 - This Global warming then leads to the array of climate change phenomena we see (floods/droughts, heat waves etc.).
- The following definition (Section 24:1) is false and **MUST** be removed or corrected: “Climate change means an increase in the average temperature of the earth’s atmosphere that is associated with the release of greenhouse gases.” This definition is false for two reasons:
 - (1) the terms ‘global warming’ and ‘climate change’ do not mean the same thing, and
 - (2) even as a definition of global warming, this omits all the other components of our planet that are warming. Since oceans actually absorb over 90% of the heat energy trapped, the statement is appalling in its error. The process is called ‘global warming’ (not climate change which has a different meaning as indicated below) precisely because it refers to the heating of our entire global system.

Maybe change to: “Climate Change refers to the array of climatic anomalies that result from global warming.”

This misunderstanding is reflected also in the repeated use of the format: “[*Global warming*] Climate change” implying that the terms are equivalent.

For these reasons we offer this testimony in the hope that the Senate Environment and Natural Resources Committee support SB557 with a 'Do Pass' recommendation.

Among the benefits of SB557 are that

- it places a meaningful cap on all Greenhouse Gas emissions (subject to the caveats above) rather than just carbon dioxide,
- it includes the provision that full life cycle emissions will be incorporated when that becomes feasible,
- all revenues are allocated to activities that serve the purpose of the bill in reducing climate pollution,
- revenues will be used to promote renewable energy development in disadvantaged (especially. including rural) communities,
- through allocation of funds it acknowledges that dislocated workers should receive appropriate transition support,
- it recognizes through revenue allocation that some communities are unjustly disadvantaged by the impacts of climate change and can similarly be disadvantaged by proposed solutions.

For these reasons we offer this testimony in the hope that the Senate Committee on Environment and Natural Resources and the House Committee on Energy and Environment will support SB557 and its House equivalent, HB2135 with a 'Do Pass' recommendation.

On the other hand, we do not support LC1242 for the following reasons:

a) The bill text describes it as: "Relating to entities that contribute to greenhouse gas emissions" and Section 1 indicates: "the purposes of sections 1 to 14 of this 2017 Act are to reduce greenhouse gas emissions consistent with the greenhouse gas emissions reduction goals established under ORS 468A.205 and to promote adaptation and resilience by this state's communities and economy in the face of climate change. Unfortunately, however, when the actual bill mechanism is presented (Section2) it states unequivocally: "Carbon-based fuel" means coal, natural gas, petroleum products and any other product used for fuel that contains carbon and emits carbon dioxide when combusted." Although the term greenhouse gas(es) is used frequently in the text, there is nowhere any suggestion that the target is really greenhouse gases. The target is confined to carbon from combustion. This is inadequate and unacceptable.

b) The bill specifically excludes from taxation: "Any fuel supplier or utility that is administered by a federal agency" and "Any carbon-based fuel or carbon-generated electricity that is transported through this state but not consumed in this state." This language suggests that the bill promotes natural gas extraction and fossil fuel transport through the state and is profoundly not written to reduce greenhouse gas emissions.

d) The \$60 limit to the Carbon tax is insufficient to achieve the goals established for the bill

e) The transportation tax is limited such that the total tax on fuel cannot exceed 6% of its market value.

f) The bill makes no effort to capture full life cycle emissions assessment

g) The bill makes no effort to keep current with best science.

These comments are submitted both as personal testimony and on behalf of the over 1,000 Southern Oregonians who are Southern Oregon Climate Action Now. Because SB557 Offers the prospect of curtailing Oregon's climate pollution and providing funds to assist disadvantaged and rural communities, we suggest it offers a win-win policy.

Reference Cited:

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