Version 7 21 November 2018

This submission is addressed to the Joint Interim Committee on Carbon Reduction convening December 13, 2018 to support the Committee's interest in latest climate science calling for early and substantial decarbonization to avoid existential risks (submittal link jccr.exhibits@oregonlegislature.gov)

We tried to stand back and take a larger view, because CEJ is only part of the solution, and will be slow to becoming effective. And the UN is announcing an emergency in timing, so we felt it necessary to point out that the world is in a bind, and Oregon has to change to be appropriately aggressive. As a result of these efforts to cover the needed ground, some will hear what we are saying as pointed criticism. Our filing is meant to be candid to make some right directions clear. It is not intended to be offensive.

Except in the case of the Big Oil and Gas industry, which knows how bad the problem is, and is trying hard to make it even worse. Thanks to green energy becoming really inexpensive at production volume, we can afford a solution to the problem – but will need to put many people to work on it quickly. Big Oil and Gas will feel pain – but they brought it on with decades of their behavior. Much effort will be needed to make a good and smooth transition, but funding for projects to allow the right help in the right place will ease the task

We don't claim to be completely right. We do claim to be close enough that our narrative deserves serious thought. With this in mind we sped our efforts and filed relatively early in the hope of influencing the Committee before the draft carbon reduction measure is released. In every sub category there are experts that are probably better engineers than we are. Good teams of experts with divergent backgrounds should come together to have lively discussions. They should be appropriately public so that stumbles get quickly caught. There is little time remaining for many do-overs.

As preparations for the last scheduled Committee meeting are being made, it is our privilege to file our best and final analysis of the perceived needs of the Committee and our response. The willingness of the Legislature and the Committee to accept our initiative, though unsolicited, is acknowledged with great gratitude.

Submitted for Engineers Guard the Planet / Action Committee:

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PS This filing differs from that of Engineers for A Sustainable Future.

Engineers Guard the Planet

SUBMITTAL TO JOINT INTERIM COMMITTEE ON CARBON REDUCTION

Necessary Components for the Pending Oregon Carbon Reduction Measure

EXECUTIVE SUMMARY

Events unfolding since Oregon decarbonization goals were seriously reviewed by the Joint Interim Committee on Carbon Reduction (the "Committee") (22 May 2018) have changed the Committee circumstances profoundly.

Due to assessments of a worsening climate future plus ongoing climate damage in Oregon, we find that the content of the earlier Clean Energy Jobs Bill is no longer adequate, will not meet current carbon reduction goals. It never saw the need for addressing the emerging 1.5 deg C goals advised by the UN IPCC.

RECENT DEVELOPMENTS

Summer 2018 has been greeted with unexpectedly urgent news from science and economics.	
• UN IPCC Global Warming 1.5 Deg C • US National Academy of Sciences, Trajectories of the Earth System • Paying for Oregon's Future	Curtail carbon emissions 50% of 2010 by 2030 Tipping points can be reached while reducing carbon Oregon climate cost is $6B in 2020, increasing thereafter

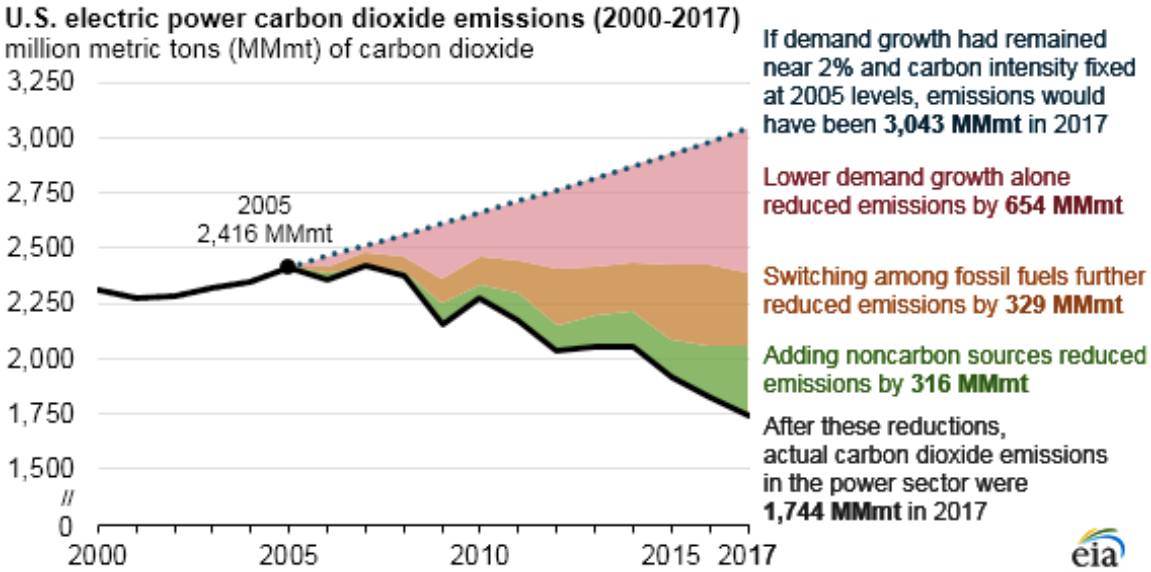
Oregon's intent must be to join with others to set a leading example of "doing our share" for Climate Recovery. This should be our mission and an Oregon Climate Action Plan should clearly ensure attainment of urgent new goals.

Note that the Children's Trust Suit simply brings it's own short list of demands to Oregon's attention.
By addressing these demands, which we list and expand upon here, we believe Oregon would be ready to work with The Children's Trust to produce a resolution for generations facing a questionable future. Their petition stated essential elements of such a plan.

An authoritative Oregon Climate Action Plan, if developed soon, could identify and organize additional legislation needed to supplement the pending carbon reduction legislation in responding to worsening physical circumstances already evident all across Oregon.

What context are we operating within?

The news is not all bad. Carbon dioxide emissions from the US power sector have declined 28% since 2005.



This graphic describes the end result of many energy decisions that take free-market advantage of the new, cheaper green energy choices. Much of what Oregon carbon reduction legislation should consider is to encourage this trend already underway.

Since these trends are neither adequate nor predictable in achieving emerging goals legislation must plot a success path. Informed Oregonians can take supportive actions without waiting for enactment of new bills.

Version 7 21 November 2018

THE WORK TO BE DONE

The Oregon Climate Action Plan Must Encompass the Full Scope of Oregon's Share of World Climate Recovery.

When current evidence tells us that legislated objectives are not being attained, the deficiencies can be resolved with the help of the-comprehensive Oregon Climate Action Plan taken from Best Available Science. This plan must be informed by testimony assessing cause-effect relationships for known shortfalls. To date, Greenhouse Gas (GHG) data has not been assessed for root cause(s).

Guidance is available to legislators.

Once root causes are identified, the James Hansen scientific prescription for climate recovery as published in Environmental Law describes new goals for fast decarbonization and large-scale drawdown. Like Oregon legislation it can be adapted to avoiding a 1.5 deg C limit. After science abandoned the 2 deg C limit as much too dangerous, this gives a strong signal that climate policy resilience must be matched by nimble and rapid re-planning. This is of course made possible by having a baseline plan in place that answers root causes, while circumventing the current reliance on ad-hoc strategies grounded in political expediencies, expediencies that due to very recent developments now seem decoupled from science-determined conditions.

The Hansen Prescription

This guidance appears in Environmental Law, 14 May 2015, and emphasizes decarbonization and drawdown.

http://www.law.uh.edu/faculty/thester/courses/Natural%20Resource%20Damage%20Law%20and%20Liability%202016/Atmospheric%20Recovery%20Litigation%20by%20Wood.pdf

From page 269 (footnotes omitted here but accessible in the original),

> "The scientific prescription has two parts which are inextricably tied to one another. The first part calls for dramatic slash of global carbon emissions." **DECARBONIZATION**:
>
> [This] "… climate prescription describes a "glidepath" that requires a 6% global annual reduction of CO2, starting in 2013." However, the prescription notes, "It will become exceedingly difficult to keep warming below a target smaller than 2ºC, if high emissions continue much longer." While still considered feasible if it begins immediately, the trajectory becomes steeper with delay and ultimately becomes too steep to salvage a habitable planet. The Hansen team estimates that, had concerted action started in 2005, emissions reduction of just 3.5% a year could have restored equilibrium by the end of the century. In just eight years, that figure has climbed to 6% a year. In other words, society's

> delay has already delivered a huge penalty, and one that increases with every day that passes. Scientists project that, **if emissions reduction is delayed until 2020, society would need to reduce emissions by 15% a year.** [emphasis added] At some point, the cuts would be too big for global society to feasibly accomplish. The team emphasizes, "it is urgent that large, long-term emissions reductions begin soon."

The second part calls for drawing down 100 GT of existing atmospheric carbon through natural processes. **DRAWDOWN:**

> While scientists broadly pronounce an ultimate goal of zero emissions— effectively decarbonizing society—emissions reduction is not adequate in and of itself to restore climate equilibrium. About 40% of emissions will persist in the atmosphere for over a thousand years at present removal rates. The second part of any climate rescue effort must focus on removing much of the CO2 that has already accumulated in the atmosphere. Scientists predict that, by restoring Earth's natural ability to remove carbon, overall atmospheric levels can drop. As Professor Moomaw explains, "We must not only turn off the faucet that is filling the atmosphere with heat trapping gases, but also unclog the drain that is removing them." This "drawdown" of carbon can be accomplished through **massive reforestation**—because trees naturally absorb CO2—**and improved agricultural measures**—because soil also absorbs CO2. Professor Moomaw calls this sort of effort "Restorative Development." Notably, the effort invokes natural processes—the biosphere's inherent capabilities—in stark contrast to a spate of "geo-engineering" proposals increasingly offered to thwart catastrophe.

Once these two concepts are understood at a global level, it is necessary to lay out plans for cuts in current emissions, and identify new and practical strategies for permanent carbon capture.

The Clean Energy Jobs (CEJ) bills from the early 2018 session were positioned to help drive the Decarbonization cited in the Hansen plan. This decarbonization needs to be sorted into areas that can be controlled units. For example, moving the electric grid from dirty to clean for clean transportation is largely controlled by electric utilities under the guidance of the OPUC and with the help of various bills such as Coal-to-Clean, plus the upcoming carbon reduction measure, plus the upcoming laws to enable the PUC to include the risks and costs of climate change in their analysis and "acknowledgment" of Integrated Resource Plans (IRPs).

The generation of credit projects under Cap-and-Trade will also be able to sponsor Drawdown projects such as major reforestation alluded to above. However, the full accomplishment of the required drawdown will be a major project lasting over many decades, and should be become a new major effort of the Land Conservation and Development Commission, assisted by serious university research programs.

Dealing With Risks Inherent in Offsets and Allowances

Projects that produce sequestration are rewarded with credits this year while the sequestration is accomplished in out-years, say over 30 years. In the case of forest sequestration, the emission allowances add to total carbon release now, while no sequestration is possible if the forest burns the following year, or in any of the 30 years going forward. There is no benefit in this scenario: carbon emissions increase while sequestration is still at risk. Is anyone guarding the planet?

In generalizing this concern, we should not be marketing allowances if there is a risk of failed benefit. Other sequestration concepts are less developed and less well understood than forestry. Carbon offset trading must be proven to cut GHG and cut risk of unattained assumptions, otherwise we are looking at State sponsorship of a failure-prone market, like an annuity with problematic payout.

Imagine that we built in an insurance function into the trading process. This function would be required to assign risk of failure to projects that earn allowances. The insurance carrier takes on the expected probability of failure for payment of a project premium. Over the pool of such risks, the expected climate relief would be attained by claims awards buying down available credits, keeping carbon reductions on track. The cost of the insurance would be a part of the purchase of the original credit.

An example of the content for an Oregon Climate Action or Restoration Plan might be summarized as follows, facilitating an evolution from climate tactics to a coordinated climate strategy.

Basic elements of the Oregon Climate Action Plan (OCAP) encompass Oregon Energy users.[1]

		Jurisdiction	**Existing Energy %**	**C&T**	**Other**
1	Green Electric Grid/Energy Storage	PUC	10	Yes	+PUC Leg
2	Transportation Switched to Green Grid	(TBD)	40	Yes	
3	Industrial Sector	PUC	20	Yes	+PUC Leg
	Energy Supply			---	OCAP
	Energy Efficiency			---	OCAP, ORSC
4	Multi-unit and single housing	(TBD)	30	Yes	OCAP, ORSC
5	Ag – Forest, Farm, Ranch	LCDC	?	Yes	OCAP

LCDC – Oregon Land Conservation and Development Commission

ORSC - Oregon Residential Specialty Code

Oregon Land Conservation and Development Commission Infrastructure Planning

1 This table is not expected to be fully accurate without significant work, but quickly illustrates the framework needed to scope carbon reduction efforts.

At a critical time when climate-disturbed weather makes farm and ranch planning more risky, its unfortunate that critical information is funneled through Farm Bureau offices that favor pesticides, herbicides, and fertilizers sourced from the Bureau's fossil-fuel funded advisors. This might bias the recommended tools and methods the Bureau communicates.

To accelerate the transition to carbon-cutting sustainable farm and ranch planning strategies, the build-out of rural Internet infrastructure is critical. Oregon grants and incentives for extending rural communications must be part of any OLCDC climate relief planning that reduces ecological footprint, increases productivity, and secures investment return.

The importance of Natural Climate Solutions (NCS) is not expected to be surprising. This scope and rate of NCS sequestration is significant and much needed. **The upper bound potential for NCS is 21% of US emissions by 2025. Oregon has its share and OLCDC must quantify it and issue planning to make sure Oregon succeeds with its allocation.**

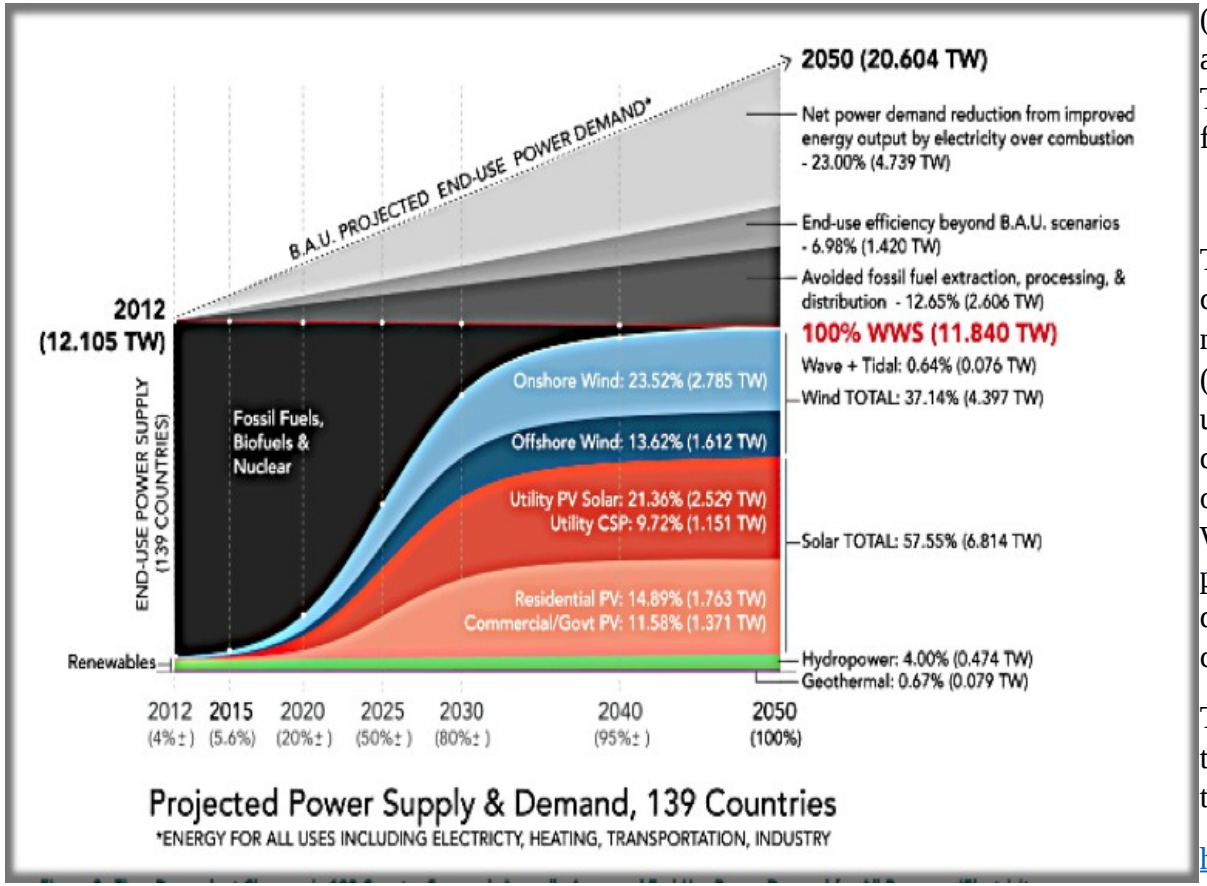
http://advances.sciencemag.org/content/4/11/eaat1869

But realize it is only 1/5 of our current emissions rate, meaning that for every year we do business as usual, we need 5 years without emissions to balance with NCS sequestration at that rate. As with any successful climate solution, it's a profound mistake to then conclude it provides a good excuse for continuing to burn more carbon fuels.

Version 7 21 November 2018

Future Energy Demand Reduced by Avoiding Inefficient Carbon Combustion

A full year ahead of the UN IPCC call for staying under the 1.5 deg C limit a Stanford researcher set out 139 separate plans for 139 nations embracing this goal. Each plan was tailored to each nation's unique energy profile. Mark Jacobson and team developed roadmaps to transform the all-purpose energy infrastructures (electricity, transportation, heating/cooling, industry, agriculture/forestry/ fishing) of these 139 countries to ones powered by wind, water, and sunlight (WWS). The roadmaps envision 80% conversion by 2030 and 100% by 2050. WWS not only replaces business-as-usual (BAU) power, but also reduces it about 42.5% because the work-to-energy ratio of WWS electricity exceeds that of combustion (23.0%), WWS requires no mining, transporting, or processing of fuels (12.6%), and WWS end-use efficiency is assumed to exceed that of BAU (6.9%). The visionary timeline is depicted in the following graphic.



Total power demand decreases upon converting to WWS. The percentages next to each WWS source are the final (2050) estimated percent supply of end-use power by the source. The 100% demarcation in 2050 indicates that 100% of all-purpose power is provided by WWS technologies by 2050, and the power demand by that time has decreased. In the WWS scenario, 80% conversion occurs by 2030.

This extensive Jacobson report including the energy transition graphic is found at the following link.

https://web.stanford.edu/group/efmh/jacobson/Articles/I/CountriesWWS.pdf

Jacobson's realistically possible future relies on a stable physical environment supporting stable economic conditions within a safe climate range supporting this 35 year scenario. The insurance provided by effective climate action plus legislation for no-second-chances decarbonization and carbon drawdown must be set in place to allow such a free market transition.

Jacobsen also took the trouble to calculate a vision for the mix of wind, water, and solar that would comfortably get Oregon to 100% Green. http://www.thesolutionsproject.org/why-clean-energy/#/map/states/location/OR

CONTENT OF NEW LEGISLATION

To accomplish broad objectives definable under a putative Oregon Climate Action Plan we recommend the following additions or modifications to the 2019 Carbon Reduction Measure:

1. **Organize a Climate Action Plan Under Law.**
   Oregon Climate Action Plan to provide top-level impetus for supporting strategies.

   Part of enabling the Climate Action Plan is to engage best available science in planning. This needs a careful definition, and an organizing body that will take the responsibility for understanding and directing changes of direction when there is a consensus on new scientific determinations.

   a. **Decarbonization – State Carbon Budget.** This seems to be what CEJ bills have always taken on. An annual state carbon budget must be developed which targets the IPCC SR15 upper limit of 1.5 deg C with best available science. Oregon reduction goals were set in 2007. While goals have been somewhat updated, they must be further revised to reflect the latest scientific findings for a fair share of an overall global 1.5 deg C budget.

      i. Time taken for converting CEJ or other legislation to Administrative Rules must not stand in the way of urgent progress. Decarbonization targets must require landing on a stated 2022 target.

      ii. **Greening the Grid as a major separable element of Decarbonization**. A plan should be developed for greening the grid, or a demand for greening the grid should be cited in the in-progress PUC charter extension via 2017 SB 978. The OPUC should be free to recognize that Green Energy is cost-saving, both for simple cost of energy, and also for cost of carbon damage. IRPs should be chosen based on this advantage.

b. **Drawdown – State Drawdown Budget**. An annual state carbon budget must be developed which targets IPCC SR15 plus best available science. Because the lack of a knowledge base for this activity and corresponding success rates prevent good prediction, major evolutionary plan adjustments can certainly be expected.

   Targets for this activity should include information about the abundant opportunities Oregon has to increase soil carbon through better land management. A state with Oregon's abundant fertile capacity can conceivably make up some share for the mountainous Idahos and sandy Saharas of the world.

   This seems to belong as promising well-thought out new responsibilities for land use planning.

c. **Enforceable Targets.** Enforceable targets must be set to ensure that defined budgets are followed. Climate recovery must always be assured by adjusting to discoveries and errors encountered.

   i. **Allowance Sales.** Each project funded from allowance sales must make a measurable, verifiable contribution to carbon reduction goals.

d. Budget Requirements. Budget allocations for mitigation, decarbonization, drawdown or sequestration requirements must be driven by UN IPCC and best available science.

e. Measurements and Factors. Measurements of the various pollutants, their global warming factors, and changes to greenhouse gas inventories must be accurately maintained and refined. The 100-yr factors have been overcome by recent events. Oregon cannot and dare not plan for carbon reduction with obsolescent factors that distort current reality.

f. The Department of Land Conservation & Development must amend its statewide planning goals to implement accurate standards for adaptation, mitigation and sequestration. **Enable land use planning to assist farmers and ranchers to sequester carbon, not emit it.**

2. We cannot look to the Farm Bureau for the answer. We know from our testimony filed with the Committee on 8 November 2018 that the Farm Bureau lobby acts to promote demand for Big Oil 'n Gas (BONG) carbon-laden investments. This in no way reduces the carbon pollutants attributable to farming and ranching.

https://olis.leg.state.or.us/liz/2017I1/Downloads/CommitteeMeetingDocument/152687

3. Ranches and farms deserve the same allowances as other carbon consumers dominated by carbon-fuel dependency as we find a way to transition to a sustainable free economy that is carbon-free.

    a. **Mitigation.** Because full recovery may take a century, we will need to learn how to deal with the world as it is, in the meantime. An example is that because of the loss of snow as a storage mechanism for over-summering supply of water to much of Oregon, we should investigate alternative ways of providing high-altitude storage of water that can simulate snow storage and summer melt.

        i. Establish eco-districts and climate smart planning strategies for them

        ii. Integrate emissions reduction targets into the land use planning process

        iii. Tie transportation objectives to measurable CO2e reductions

    b. Adaptation.

        i. Coordinate climate impact requirements of other agencies

        ii. Articulate and update Hazard response planning and objectives

        iii. Add rolling easement planning to address sea level rise

        iv. Provide a 50 year planning horizon for movement of shorelands

        v. Recognize a moving elevation line for Oregon's beaches

        vi. Address acidification, oxygen depletion and habitat change in the 3 mile zone

    c. **Carbon Capture and Sequestration**:

        i. Establish a forest sequestration requirement

ii. Provide incentives for climate friendly farming practices

iii. Identify basalt formations for sequestration

4. **Mission In A Hurry**

   It takes years to propose legislation, and more years to enact whatever legislation is proposed and passed. These are the most precious years for action against existential threats. What is the Committee interim plan of action while waiting and waiting?

5. The CEJ budget for carbon reduction should not turn 2019, 2020, and 2021 into a BONG holiday. As soon as a new carbon reduction becomes law, it should embrace actions that compensate for the omitted emission reductions that should have been happening during the interim years.

6. **While the CEJ follow-on bill is coming of age, other measures should be just going forward – the PUC enablement is one such. One should be simple enough to enact and reduce carbon in less than 6 months. Also, research and planning for other pieces could happen before the next session again.**

7. **Rethinking old plans**
   a. **Make Oregon Rules agree with Known Climate Needs**
      There is a real possibility that Oregon goals are not supported by Oregon rules. We were surprised and appalled to find that the Oregon Department of Energy has issued operating certificates to methane handling facilities without any consideration of methane leaks, or methane emissions, or requirements for methane curtailment, or even citing the existence of methane pollution in rules. This deficit is not recognized nor accounted for in Oregon GHG accounting or goal planning.

   b. **Carbon Fuels need to be disappearing, and spending extra energy on their details should not be as important as getting them to go away. Recognize that Decarbonization can only be done by eliminating carbon fuels. All rules on carbon fuels are headed toward rapid obsolescence. True Decarbonization should always take precedence over shaving points on carbon intensity.**

i. **The BONG Standard** rings a bell every time Oregon blesses overuse of carbon fuels when it shouldn't. To the delight the BONG lobby Oregon has a Low Carbon Fuel Standard. To understand the source of their joy, drop the word "Low". Decarbonization means **stop** institutionalizing carbon fuels in State Law. Decarbonization means stop using ALL carbon-based fuels. Coming up with creative names for carbon fuels as having reduced "carbon intensity," or being "renewable" is too much green-wash and must not be allowed to interpose barriers to urgent decarbonization.

ii. **SB 1547 Coal to Clean.** This bill passed in 2016 calls for Oregon utilities to cease acquiring coal-generated electricity by 2030. In the meantime, coal power adds to Oregon's GHG inventory every year. Considering the urgent warnings of Summer 2018, continuation of demand for coal until 2030 now seems like a too-leisure delay. Utilities should bill their suppliers for Oregon climate damage in the interim. The science is conclusive. Oregon must negotiate for an earlier transition to renewable energy.

iii. **Annual Emissions less than 25,000 metric Tons.** Emitters of pollution in Oregon are exempted from declaring their annual emissions if below 25,000 tons of CO2e. Whatever the justification for ignoring this amount of pollution, it causes a misunderstanding of what it means to "do our share". A serious decarbonization policy will not overlook such a substantial accounting error, and a much lower reporting threshold set.

iv. **Oregon's Renewable Portfolio Standards.** We find no justification for allowing any carbon fuel to qualify as Renewable Energy, namely "Renewable" natural gas. This means no RECs, and no qualifying anaerobic installations for RPS compliance. Incentives for capturing anaerobic methane and employing it exclusively for on-site turbine-generated electric energy are extremely desirable and deserve ample decarbonization credits.

c. **Report Requirements.** Under the early 2018 version of the Carbon Reduction Measure (Senate), an emitter of more than 25,000 tons CO2e annually (such as Intel) is given a by-name exemption from any cost of carbon due to concern about "leakage" of state jobs and tax revenue by relocation of industry out of state. Dealing with high GWP exhaust gases, this could be a substantial source of emissions. The species and amounts of these gases must be known to the public and state carbon auditors. The Carbon Reduction Measure must include requirements for regular reports on the

emissions. Allowances must be purchased or equivalent investments made in CO2 sequestration.

d. **Methane Leakage Containment.** Our Oregon PUC already regulates natural gas pipeline and facility infrastructure to limit risk posed by explosive natural gas hazards. Methane is also clearly a climate safety hazard. It is currently not measured by industry and the only published data is collected by third parties. The third-party data is conclusive. Amounts of methane leaks and releases in Oregon under normal and abnormal conditions must be located, quantified, monitored and contained like any other material posing a hazard to public safety.

We are still waiting for testimony that assesses why the current easy Oregon GHG reduction goals are not being met. In the absence of such testimony, and noting that time is very short, and that more accurate information about climate risk shows it going off the charts, a shortfall assessment seems overdue.

APPENDIX

Why An Oregon Climate Action Plan?

1. Executive Summary

   i. Because of ongoing climate damage Oregonians are already paying a price for carbon overuse. This is a default tax imposed through environmental degradation recognized by carbon fuel producers who are not paying for their pollution. This has created an incentive to pollute for economic eons.

   ii. An Oregon Climate Action Plan allows us to be prepared for the following slew of known problems as well as unknowns.

2. Climate Action – is needed immediately if we are to save the environment.

   i. We know that carbon fuel business as usual is not sustainable, and we only recently discovered the few years remaining to take action. Oregon elected and civic leaders along with business leaders call for Oregon to take its share of the prescribed 1.5 deg C budget and reduce emissions to 50% by 2030.

3. Hostile Actors – we must prepare for them.

   i. Lessons Learned

   We know from campaign narratives in other states that when considering a tax on pollution, in terms of levying a price on carbon, the carbon fuel producers assume they can pass on their fair and proportional tax to their customer base while cunningly criticizing legislators taking this action. Such customers include ranchers and farmers in addition to those providing logistics to deliver commodities to retail food suppliers interfacing with the public. This means that rather than absorb the economic impact of carbon cost they opt to undermine food security for all other taxpayers and voters. In some states this ploy has been accepted, and carbon pricing has been rejected, while the default costs of climate damage continue year on year.

   ii. **Campaigns of Record**

   a) Campaign spending to promote BONG interests during the 2018 mid-term election cycle has been cost-effective for BONG, not for Oregon. These campaigns were conducted in Colorado, Arizona, Nevada, and Washington,

amounting to approximately $20M - $30M in each state. The messaging in Washington State defeated an initiative that would have levied a carbon fee on carbon fuels:

"I-1631 will damage the economy by increasing the cost of doing business."

b) The statement that fees on carbon will damage the economy is true - if you mindlessly accept its unstated presumptions:

BONG suppliers can and will attack their customer base by simply "passing-on" the fee for a fair and proportionate cost of climate damage their manufactured products clearly cause. As if they posses taxing authority themselves. It's not a popular thing to tax without representation. Misrepresentation has become their preferred alternative.

With farmers and ranchers believing they are dependent on BONG economics, this threat is aimed at food suppliers and market logistical infrastructure. It is a false threat, as better sources of energy and better resource management can make green energy an economic win for forest and agriculture producers.

i. We recommend Oregon legislators answer these BONG lobbyists by reminding them that mid-term results are in, food security is a big deal in Oregon on both sides of the Cascades, and to pass-on their own BONG cost penalties to other Oregon tax payers is their (bad) business decision. Instead of broadsiding elected officials BONG lobbyists should recognize that green energy trends will stimulate low-cost providers.

With LCDC and university extension division help, the food stream can become free of payments for carbon fuel, and make better food and profits in the bargain.

4. Slow Actors / Fast Actors – recognize when we need parallel paths

i. Informed consumers wish, and some have found the ways, to do their share without legislation. This is fortuitous because of the delays posed by legislative processes:
   a) **Oregon:** Following passage, enactment of a Committee bill is only possible after 3 years from the day it's passed.
   b) **US Congress**: Planning for a possible Green New Deal includes 3 years of developing legislative concepts, caucus debates, consensus negotiation, while assuming a favorable general election.

ii. Such delays erode the 12 years left to meet inescapable climate recovery goals.

5. Nimble Beneficial Actors – take advantage of opportunities

   i. The Oregon Climate Action Plan can include options that household taxpayers and voters can adopt without relying on legislated decisions. These Pre-Implemented plans, urgently needed for the early 3 years, reduce

      a) the financial impact on households when the carbon levy takes effect,

      b) the carbon pricing needed to reach the State goals.

6. Revisited Legislation – discover where old legislation can bow to new, no worries

   i. Previous legislation set commitments in place to reduce carbon, assuming previous action dates that no longer answer revised carbon curtailment needs. With relatively little delay SB 1547 can be revised for an earlier end to imported coal-generated power. This relieves the amount of 1.5 deg C budgeting that must be met by levied carbon pricing.

   ii. RPS and Low Carbon Fuels legislation are simply dabbling with how much carbon is in a given carbon fuel. Since it needs to be gone in less than 3 decades, plan the eliminating carbon fuels, not making them into a multitude of ad-hoc special cases.

7. Revised Rules – use legislative and legal expertise to administer laws effectively and efficiently

   i. Its too much to expect citizen activists to know how to identify rules that can be revised to cut carbon overuse, avoiding the 3 year delay that can undermine the effectiveness of crisis democracy.

8. New Legislation – because a wide range of climate recovery strategies must be developed, more bills will be needed.

   i. There's an urgent need for legislation that can be enacted without inordinate delay.

   ii. There is a need to get a carbon reduction bill in place to do it's work of Decarbonization, Clean Energy Job Generation, and Climate Equity Funding.

   iii. Oregon needs to demonstrate how American democracy, can actually save the place.
   Without a plan, considering circumstances, this will not happen.

9. Allocated Sector Cuts – relying on Mark Z. Jacobson's leverage insight, find the opportunities to move to green energy

   i. Sector categories are defined to conform to existing datasets

   ii. Each sector follows a narrative that leads to the allocated cuts needed to attain net zero emissions in 2050. To employ the Precautionary Principle, cuts are aggressive, allowing the 2050 goal to be reached regardless of unknowns and errors. Can you save the planet too much?

   iii. Sector Carbon Cut Management includes:

      a) Sector GHG inventory

      b) Root cause(s) of missed goals

      c) Corrective actions identified – we should already know this

      d) Estimated carbon reduction from citizen pre-implemented carbon-cut actions [need a campaign to max this]

      e) Carbon sequestration accomplished in this sector [be very worried with no entry here]

      f) Carbon cut budget allocated to this sector

      g) The decarbonization trajectory graphic driving to zero net carbon in 2050

      h) Sector Legislation and Rules Captain

      i) Responsible Carbon Action Planner

      j) Responsible Carbon Action Agent – report carbon price change needed to stay on track