

# **Carbon Reduction and Capture – A Public Interest Analysis**

## **With 12/5/2018 Proposal 3 additions in response to Governor Brown's Turning Point Budget and Oregon Climate Agenda**

To: Carbon Reduction Joint Committee  
Oregon Legislative Assembly  
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As most agree, CO<sub>2</sub>e emissions must be reduced and some already in the atmosphere must be removed in order to minimize the existential threat posed by anthropomorphic climate change. The alarm was sounded again by the US Government's Fourth Climate Assessment released last week. Yet our Federal Government is withdrawing from the Paris Climate Agreement, the EPA clean power plan is being junked, and Congress is unable to reach agreement on how to mitigate the horrendous climate change impacts already evidenced. Thus it is necessary for states and provinces, cities and urban areas, all to take actions for CO<sub>2</sub>e reduction and sequestration. The clean energy bills introduced in the 2018 legislature posited a reduction goal for Oregon of 80% below 1990 levels of CO<sub>2</sub>e by 2050. The Carbon Reduction Joint Committee should offer a new bill should adopting this goal.

**50 MMT/yr mitigation by 2050.** Oregon's Global Warming Commission (OGWC) reports that Oregon CO<sub>2</sub>e emissions in 1990 were 56.4 million metric tons (MMT). An 80% reduction from the 56.4 MMT leaves a residual amount of yearly emissions at 11.8 MMT (say 12 MMT), as all the CO<sub>2</sub>e that could be emitted in Oregon by 2050. ODEQ's required CO<sub>2</sub>e reporting for 2016 reveals that Oregonians in 2016 had emissions of 62 MMT. Thus, assuming 2016 levels would apply, Oregon would need to obtain about 50 MMT of CO<sub>2</sub>e reductions by 2050 to meet the goal.

**43.5 MMT/yr from cap-and trade by 2050.** Using ODEQ's 2016 numbers (as generated for SB 1070 (2017)), if a new clean energy cap-and-trade bill: **(1)** covers all natural gas emissions other than those resulting from natural gas burning by large facilities (13.7 MMT less 7.8 MMT), **(2)** makes as covered entities all large facilities which meet or exceed 25,000 MT/yr of CO<sub>2</sub>e emissions (12 MMT), and **(3)** covers all purveyors of imported fuel other than natural gas.(25.6 MMT), **then**, based on ODEQ's 2016 reporting in connection with earlier proposals, the total possible regulated CO<sub>2</sub>e at 2016 levels would be 43.5 MMT. Even if one assumes that CO<sub>2</sub>e emission allowances for the covered entities under cap-and-trade are reduced to zero by 2050 (highly unlikely), there would remain (using the 2016 numbers) 6.5 MMT/yr. (say 7 MMT) of reductions that must be found to meet the 2050 reduction Goal.

**7 MMT/yr from Natural and Working Lands.** The 2018 legislation had a niche for CO<sub>2</sub>e emissions reductions from “Natural and Working Lands.” For agriculture additional carbon reduction and capture can be accomplished thru avoiding grassland conversion, planting cover crops and use of biochar and other agricultural techniques. Changes in Forest Practices can result in reduction of CO<sub>2</sub>e and its sequestration. Further, better urban design thru use of alternatives to gas and diesel burning vehicles, more self-sufficient neighborhoods, better subdivision design and restructuring to enhance walking and biking, enhanced use of standards for zero net ready buildings, community wind and solar, to name a few, could have profound effects on meeting the additional reductions and the sequestration needed.

**250 MMT total for sequestration.** In addition to the foregoing reductions, Our Children’s Trust estimates that 100 gigatons of CO<sub>2</sub>e must be removed from the world’s atmospheric “sink.” **If** the United States is roughly responsible for 25% of the CO<sub>2</sub>e retained in the present atmosphere, **then** Oregon’s share is roughly 1%, based on population, geography, and gross state product. This would calculate out to an Oregon share for CO<sub>2</sub>e removal from the atmosphere of 250 MMT. The Carbon Reduction Committee should instruct the Oregon Climate Change Research Institute to review and verify this number or provide a more accurate number for Oregon’s fair share of required sequestration and carbon capture. The OGWC has been working with the Oregon Department of Forestry to determine whether “negative emissions” can be determined in a reasonably reliable manner from Oregon’s 30 million acres of forest land soil, growing trees and other related storage “sinks.” Legislation should provide a process for establishing a forestry sequestration goal and methodology for obtaining the goal.

**How to attain an additional 7 MMT of reductions and 250 MMT of CO<sub>2</sub>e sequestration -- Amend Statewide Planning Goals.** Oregon’s Forestry and Agriculture and Urban design areas and uses can be planned and implemented to increase CO<sub>2</sub>e reduction and track removal of CO<sub>2</sub>e from the atmosphere. Cities, Counties and Metropolitan Planning Organizations in Oregon are already focusing on the need for CO<sub>2</sub>e changes. The proper tool available to the Legislature for marshalling local government and state agency responses is use of the State’s land use process. A clean energy bill needs to mandate Oregon’s Land Conservation and Development Commission to amend Oregon’s Statewide Planning Goals to set standards for adaptation, mitigation and sequestration of CO<sub>2</sub>e to obtain an allocated share of Oregon’s 2050 goal and a fair share of needed sequestration. Proposal 1, attached to this letter, is a one page summary of possible changes LCDC should consider in amending the goals. It is based on a law review article published in June of 2018, the link to which is found in the Proposal.

**Clean Energy Jobs Bill.** Proposal 2 is a list of the essential bill sections to be covered in any new bill under consideration by the Joint Committee.. While there are other needed provisions, the focus of these essential bill sections is on carbon reduction and sequestration. In the public interest the Carbon Reduction Joint Committee should include these essentials in any draft bill.

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# **Proposal 1**

## **Change Planning In Oregon To Address Climate Change**

Proposal: Add a provision to the carbon reduction bill requiring LCDC to review the Statewide Planning Goals and amend them as necessary to meet the mitigation, adaptation, and sequestration-carbon capture challenges of climate change.

Giant fires, bark beetle damage, sea level rise-storm surge, and rapid snowpack runoff, all result from climate change, and together they pose an existential threat to Oregon as we know it. Proper land use can be a significant response to this threat. Further, currently Oregonians are adding CO<sub>2</sub>e from land uses, rather than causing them to decline. The Statewide Planning Goals can and should provide major guidance and enforceable standards for Oregon to address land uses, but they are now more than 45 years old, and they have not been updated to address the climate change threat. The current goal amendment process provides an excellent way for Oregonians to meet the threat and decide what more should be done. A recently published law review article\* provides opening suggestions as to how the Goals can be changed to address the three aspects of the climate change threat and what process amendments will advance Oregon's response.

To address mitigation:

1. Establish eco-districts and climate smart planning strategies for them (Goals 9 and 10)
2. Integrate emissions reduction targets into the land use planning process (Goal 13)
3. Tie transportation objectives to measurable CO<sub>2</sub>e reductions (Goal 12)
4. Address impacts from climate refugees (Goal 14)

To address adaptation:

1. Coordinate climate impact requirements of other agencies (Goal 6)
2. Articulate and update Hazard response planning and objectives (Goal 7)
3. Add rolling easement planning to address sea level rise (Goals 16, 17, 18)
4. Provide a 50 year planning horizon for movement of shorelands lines (Goal 17)
5. Recognize a moving elevation line for Oregon's beaches (Goal 18)
6. Address acidification, oxygen depletion and habitat change in the 3 mile zone (Goal 19)
7. Plan for more rapid runoff in the Willamette River (Goal 15) and elsewhere (Goal 5)

To address sequestration-carbon capture:

1. Establish a measurable forest sequestration requirement (Goal 4)
2. Provide incentives for climate friendly farming practices (Goal 3)
3. Identify basalt formations and other critical areas for sequestration (Goal 5)

Oregon can use its current institutions, if their responsibilities are clear and they are adequately funded. The proposal here made would express that responsibility.

\*<https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/23295/Schell%20--%20final.pdf?sequence=1&isAllowed=y>

## **Proposal 2**

### **What Needs To Be In The Committee's Carbon Reduction Bill**

1. **Cap-and-Trade.** Use the Cap-and-Trade model as the most assured and effective way to reduce the CO<sub>2</sub>e emissions from large facilities and fuel importers..
2. **Goal:** Adopt 80% reduction below 1990 levels of Oregon CO<sub>2</sub>e by 2050 with interim goals to be established.
3. **Allowances-Auction system:** Require allowance for rights to use the commons air space for CO<sub>2</sub>e pollutants. Establish a process for auctioned purchase by large CO<sub>2</sub>e importers and emitters of allowances for CO<sub>2</sub>e emissions by or from the products of such entities.. Require reductions in allowances to major emitters and fuel importers over the period to 2050 to assure compliance with goal. Establish a competitive auction for allowances.
4. **Linkage:** Assure linkage and compatibility with California (CARB offsets, Clean Fuels, and Renewable Portfolio Standards)
5. **Offsets:** Allow use of proper offsets in place of allowances and assure compatibility with California-Quebec-Alberta. Regulate aggregators. Make sure offsets are in conformity with shared standards, certified by both the creator and the aggregator as to amount, time and legality, independently verified by a recognized entity, and recorded as part of a CC&R.
6. **Goal for Sequestration-Carbon Capture:** Set a Goal of sequestration of 250 million tons of CO<sub>2</sub>e by 2050 to include but not be limited to targets for negative emissions from Oregon's forests. (E.g., If 100 gigatonnes of CO<sub>2</sub>e must be removed from Earth's atmosphere, and the USA has contributed, on average, 25% thereof, and Oregon's contribution (as a USA entity considering population, state gross domestic product, and area) is 1%, then the goal for Oregon shall be a net reduction from the atmosphere by 2050 of 250 million tons
7. **Obtaining Sequestration and mitigation:** Require DLCD to adopt Natural and Working Lands and other land use amendments to the Statewide Planning Goals in order to attain not less than 7 MMT of reductions and 250 MMT of sequestration by 2050.. Assure that every discretionary land use decision is evaluated to assure in the aggregate that the sequestration-carbon capture and reduction goals are met. Require DSL, ODOT, ODOF and ODA in their regulations and permits to comply with statewide goals for sequestration and mitigation.

8. **Forestry.** Require Oregon Department of Forestry working with the U.S. Forest Service and the U.S. Bureau of Land Management to establish a sequestration goal commensurate with Oregon's share of all commercial forests in the United States and change forest practices rules to meet the sequestration goal. Require ODF and DLCD to establish and implement a plan to reduce the potential for catastrophic forest fires in Oregon, to the maximum extent practicable, working with large timber owners, USFS, BLM and County land use planners.
9. **Leakage:** Assure that energy imported from outside Oregon is not generated or created with facilities that create additional CO<sub>2</sub>e unless allowances and reductions thereof are included in any legislation
10. **Additionality.** No moneys obtained thru the sale of allowances shall be used for any project or facility that fails to show a quantitative reduction in CO<sub>2</sub>e satisfactory under rules to be adopted by DEQ.
11. **RPS and Clean Fuels.** Retain both the RPS requirements (for continuing to cause facilities to be replaced by renewable generation) and the Clean Fuels standards (to continue encouraging moving away from combustible sources to renewable sources of energy) Direct the PUC and encourage BPA and the cooperative utilities to assure that rate payers are not being billed for inappropriate capital costs associated with RPS and cap-and-trade.
12. **Oregon exporters:** DEQ shall draft rules to minimize sudden impacts on large CO<sub>2</sub>e emitting entities in Oregon that are producing products for markets outside Oregon, but such rules will assure that the ultimate goals established in this act shall be met.
13. **Transporters.** Rules shall be adopted assuring that airlines and other transportation providers will reduce their CO<sub>2</sub>e emissions in Oregon or provide offsets sufficient to meet the goals set in this legislation.
14. **Complementary Programs.** Oregon's Clean Fuels and Renewable Portfolio Standards programs should be continued, but with the caveat that they should be operated in such a manner as to accomplish CO<sub>2</sub>e reductions in the most practicable ways and with minimal agency overlaps.
15. **Local acts.** Require DLCD to determine the amounts of intended 2050 CO<sub>2</sub>e reduction and sequestration in metric tons of all already adopted climate change actions by Cities, Counties, Metropolitan Planning Organizations, State Agencies, the Energy Trust of Oregon and the Oregon Climate Trust, including, without limitation, comprehensive planning, zoning, subdivision approvals, conditional use permitting, and building code changes, and the estimated probability of meeting the objectives for each program, and report results to the 2021 legislature.

**Proposal 3**  
**Working Lands And Oregon Climate Authority**

12/5/2018

1. Governor Brown's Climate Change Policy, announced as part of her budget, is an important and worthwhile set of proposals for consideration by the Carbon Reduction Joint Committee. In addition to my earlier Public Interest Analysis and, except as to the following, I believe the Joint Committee could use as a model for the bill, SB 4001 from the 2018 regular session of the Legislative Assembly.
2. Declarations and Findings: to recognize the significance of the pending Federal *Juliana* case, Oregon should declare, recognize and knowledges that the air shed over the state is owned by the State and is held in a public trust for the citizens of the state and has been so for time beyond memory. Anthropogenic use of the air shed has contributed to climate change that is threatening the people and property in the State. In order to reduce the consequences of over-use from the pollutants making up CO<sub>2</sub>e it has the right and the obligation to regulate the use of the air shed.
3. The current 2050 emissions reduction goal should be increased to 80% reduction below the CO<sub>2</sub>e emissions in 1990.
4. Cap and Trade with its declining allowances should be required
5. The Governor's idea of a permanent Oregon Climate Authority is fitting. It should be a permanent agency in state government, with the following attributes:
  - a. Establish its scope of authority,
    - i. Review a 2050 sequestration goal by 7/1/20 and develop and implement a program to meet the goal for action in the 2020 Session
    - ii. Absorb and fulfill functions of ODOE and climate functions of ODEQ and the functions of OGWC (and terminate ODOE and OGWC)
    - iii. Adopt and implement a program of declining allowances for large CO<sub>2</sub>e emitting facilities.

- iv. Establish and conduct a yearly auctions for excess allowances and offsets
  - v. Monitor all trust funds established under Invest and Trade to assure that each of the expenditures will have a specific mitigation and/or sequestration target, and that ongoing expenditures and audits assure the targets are being met.
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- b. For the Authority, use Oregon's commission model from the Progressive Era, namely, a commission with 7 members: all of whom are not representing any particular group, but who are sworn to seek out and uphold the public interest; each nominated by the Governor; each subject to State Senate Advice and Consent; both initially and, should the Governor so choose, one re-nomination; with staggered terms; with commission members removable for cause by the Governor; and with authority to appoint and remove the executive director.
  - c. Transfer EFSC to PUC for staffing.
  - d. Move Emergency response and hazard planning from DLCD to the Authority
  - d. Require receipt from LCDC a draft of state agency and local government coordinated changes in the Statewide Planning Goals to enhance adaptation, mitigation, and sequestration, with proposed target caps for contributions toward the CO<sub>2</sub>e Goal of reductions 80% below 1990 standards by 2050, with the responsibility to accept, reject or modify the draft target caps, and to authorize LCDC to go forward with goal amendment hearings on the draft goals, as modified, with LCDC authority to adopt amendments to the Statewide Planning Goals as the LCDC finds to be in the public interest.
  - e. Establish a method of financing thru fees and statutorily mandated agency contributions that will enable the necessary administrative costs to be met.

## References for Proposals

Updated 12/5/2018

- a. Oregon Global Warming Commission Biennial Report 2017
- b. “Pathway to Climate Recovery,” Our Children’s Trust
- c. List of Potentially Regulated Entities Under SB 1070 (2017) ODEQ (based on reporting for 2016)<https://www.oregon.gov/deq/FilterDocs/ghgPotentialRegEntities.pdf>
- d. “GHG Cap-and-Trade: Implications for Effective and Efficient Climate Policy in Oregon” Stavins and Schatzki,, Analysis Group Nov. 2018
- e. Carbon Policy and Working Lands in Oregon, Pinchot Institute. June 12, 2018
- f. Sequestration and Adaptation: An Overview of Natural and Working Lands Strategies, Macdonald, The Nature Conservancy 2018
- g. Forest Carbon Sequestration PowerPoint, Daugherty, State Forester ODOF, 2018
- h. Considerations for designing a Cap-and-Trade Program in Oregon, Oregon DEQ. 2017
- i. Carbon Pricing and Low-Carbon Fuel Programs, Union of Concerned Scientists 2017
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- k. Natural Climate Solutions for the United States, Joseph E. Fargione, et al,\*, *Science Advances* 14 Nov 2018; Vol. 4, no. 11, eaat1869 DOI: 10.1126/sciadv.aat1869
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- m. The Role of Carbon Pricing in a Low Carbon Transition, DelphiGroup 2018
- n. Oregon Cap-and-Trade – An Analysis of the Economic Impacts of SB 1574 (2016) by Ditzel, Nystrom, and Klein, FTI 2017
- o. Fourth national Climate Assessment (Nov. 23, 2018)  
<https://nca2018.globalchange.gov/>
- p. “Turning Point – An Agenda for Oregon’s Future,” Governor Kate Brown’s Recommended 2019-2021 Budget and Policy Agenda.
- q. *Juliana et al v United States of America et al* (US District Court Judge Ann Aiken’s Opinion and Order, November 10, 2016)  
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