



State of Oregon Department of Environmental Quality

Comments to Oregon DEQ's GHG Market Study

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FEEDBACK TO DEQ REGARDING DRAFT: CONSIDERATIONS FOR DESIGNING A CAP-AND-TRADE
PROGRAM IN OREGON

Colin:

Here is some feedback on the pages I've read so far (pages 1-17): On page 6, "The principle underpinning cap-and-trade programs is *[the word is should be the word in]* this form of policy..."

On page 8: "Perhaps the most significant benefit is that the expanded market provides businesses with more options and choices from *[the word from should be deleted]* for cost effective..."

On page 10: "This restriction, combined with the allocation findings above, indicate that the majority of revenue *[the word from should be added]* auctioned Oregon allowances..."

On page 12: "Sections IV *[it should be 4 to be consistent with the format used previously]* and V *[it should be 5 to be consistent with the format used previously]* contain..."

On page 13: In discussing the scope I think the importance of out-of-boundary emissions, such as the fugitive methane emissions from fracking for natural gas, should be mentioned. I also think there should be mention of the short-term reduction in forest cover due to clear-cutting, since forestry has been reported to be the second largest source of emissions in Oregon. According to "The Sky's Limit" (http://priceofoil.org/content/uploads/2016/09/OCI_the_skys_limit_2016_FINAL_2.pdf) at current rates of GHG emissions we will burn thru our entire carbon budget by 2037, so we do not have time for the clear-cut forests to re-grow. Although neither California or Quebec have yet covered forestry in establishing allowances, AB 32 does include forestry, so I think stating, "these sources of emissions are not covered by any GHG cap-and-trade programs currently implemented..." is misleading. I think there should be mention of the mandate AB 32 gives for developing the capacity to include forestry.

On pages 14 and 15: Table 4.1 should include Forestry, not just Agriculture. Not including out-of-boundary fugitive methane emissions distorts the importance of emissions from natural gas, as does using a 100 year period for calculating the CO2 equivalency for methane. This is also relevant for the section on Stringency.

On page 17: "The rate of decline may not necessarily affect how the program aligns with Oregon's GHG goals so long *[as]* the cap..." "Using California's updated proposal as *[a or the]* model..." The phrase, "First, the cap within a given planning period should arrive at a point at least on a straight-line path" is not clear because it is not clear what "at least" means in this context. The example given helps to clarify the meaning, however, I suggest changing the phrase, "at least on a" to *[no higher than the]*. In discussing the rate of decline of the cap it should be mentioned that the early reductions are likely to be easier to achieve than the later reductions, which would support a more aggressive "front loaded" trajectory. The urgency of the need for reductions also suggests more aggressive "front loading" is better.

From: Alan Smith
Sent: Sunday, November 27, 2016 5:33 PM
To: MCCONNAHA Colin
Subject: FEEDBACK TO DEQ REGARDING DRAFT

Colin:

Here are some additional corrections I think should be made to the DRAFT: Considerations for designing a cap-and-trade program in Oregon:

On page 26: "Oregon would need to use CITSS to *[replace to with for]* allowance tracking..."

On page 29: "Another *[replace Another with One]* study estimated that..."

On page 37: "The EJTF's Best Practices Handbook discussions *[replace discussions with discusses]* a definition of Environmental Justice..."

On page 41: "DEQ already has a *[eliminate the word a]* several long-standing programs..."

On page 45: "Oregon's stated policy goals and how such as *[replace as with a]* system..."

On page 48: "attributed to Oregon' *[replace Oregon' with Oregon's]* electricity sector..."

I have some questions about DEQ, Oregon and climate change that I hope you can answer. If you can't answer them, please tell me how you recommend I obtain the answers.

- 1) Do Oregon's goals for GHG reductions include both in-boundary and out-of-boundary emissions?
- 2) Does DEQ use a 20 year or a 100 year period for calculating the CO2 equivalent of methane?
- 3) Has DEQ updated it's estimate of fugitive methane emissions to match the 27% increase in these emissions, over the previous 2013 estimate, that the EPA announced in February?
- 4) Does DEQ include in its inventory super emitters and other sources of fugitive methane emissions in the oil and gas industry not included in the EPA's inventory?
- 5) Does DEQ include in its inventory the uncounted, overlooked, and misallocated livestock-related GHG emissions listed in the report by Robert Goodland and Jeff Anhang called "Livestock and Climate Change" (<http://worldwatch.org/files/pdf/Livestock%20and%20Climate%20Change.pdf>)?
- 6) Does DEQ consider clear-cutting in the forest industry to be carbon neutral based on the idea that the trees that get cut will be replaced eventually?
- 7) If DEQ considers the forest industry to be carbon neutral, how does it evaluate the impact of the forest industry on climate change when looking at the risk of crossing tipping points?

Please keep me informed about future opportunities to be involved in DEQ's work related to climate change.

Alan Smith

From: Allan Peterson
Sent: Wednesday, December 21, 2016 9:01 PM
To: MCCONNAHA Colin
Subject: Comments on DEQ's Draft Study of a Market Approach to Reducing Greenhouse Gas Emissions

Oregon Department of Environmental Quality
700 NE Multnomah St.
Suite 600
Portland, OR 97232

Attention: Colin McConnaha

Re: DEQ's Draft Study of a Market Approach to Reducing Greenhouse Gas Emissions

Dear Mr. McConnaha :

Every step we take to limit Greenhouse Gasses is to the advantage of the state and the global situation, which is critical, but for Oregon to consider Cap & Trade as in the Draft Study, is a strategy that sounds appealing until you look at the facts, particularly the failures of other such attempts - the EU, New Zealand, others. I'm sure you know the details.

Cap & Trade has not resulted in the target reductions required, the system is prone to manipulation, is overpriced, and still ties us to dirty and toxic fossil fuel pollution, the elimination of which is the point. Further, there is the problem of oversight to monitor and prevent speculation and profiteering. There is seldom robust enforcement where such large amounts of money will be at stake. The trade in trades in Europe a few years ago, even resulted in a secondary carbon market. We've seen the result of such disastrous derivative speculation.

Oregon should learn from the failed experiments of others and consider the advantages of a direct carbon tax that sidesteps some of the problems noted above. It could have transparency, encourage alternative energies, and be less subject to diversion. The right choice could be of great benefit to Oregonians: Cap & Trade has already shown its risks and pitfalls.

Thank you for considering my comments.

Allan Peterson

From: Anne Nesse
Sent: Monday, December 19, 2016 7:34 AM
To: MCCONNAHA Colin
Cc: annenese@gmail.com
Subject: Public comments on draft legislation for carbon tax versus sales tax on gasoline use

I cannot make it to your meeting this afternoon, Dec. 19, 2016, so here is my printed public comment. Please let me know that you received this public comment.

Public Comment by Anne Nesse, www.SustainableEconomiesNorthWest.com

We need to legislate a sales tax on gasoline use this legislative session. We cannot wait for a carbon cap and trade agreement that is more complicated to legislate. We can do that later.

The following is list of reasons why a small sales tax on gasoline in Oregon would be useful this legislative session:

- 1) An added (small) sales tax on gasoline would constitutionally help to pay for some of our overdue costs on road maintenance. This would leave more money in the general fund for paying our current deficits, helping with all educational costs, and other worthwhile costs.
- 2) Any small tax on fossil fuel use sends a strong message to the public. A direct sales tax on gas sends the message to the people that you can be rewarded in real time for carpooling, using mass transit, and purchasing renewable energy powered cars. In any state it is the people of all economic levels that need to get this message of decreased fossil fuel use loud and clear.
- 3) A small increase in gas tax is a regressive tax on lower incomes. However this sends a good message that using mass transit is rewarded. We might even be able to transfer some of the benefit from the general funds of the state to vouchers for transit use for low income families.
- 4) A small increase in gas tax encourages to all incomes the advantages of shopping more locally in Oregon, since the transport of goods and services requires less fossil fuel use.
- 5) A sales tax on gas sends the message to the public that this is a valuable product of which there is limited supplies on earth. It is an education process that needs to happen clearly for every individual and we could easily start this education process this legislative session. There is less administrative cost to a simple sales tax on gas. The taxpayers can and will understand that this is a necessary process of education that we must face. The longer we avoid this education process the more difficult it will be for our state to meet the challenges of the 21st century.

Anne Nesse,

Sent from my iPad



December 22, 2016



Mr. Colin McConnaha
Department of Environmental Quality
700 NE Multnomah St., Suite 600
Portland, OR 97232

Submitted via Email: mcconnaha.colin@deq.state.or.us

Subject: *AOI and OBA Comments on DEQ's Partial Draft Study of a Market Approach to Reducing Greenhouse Gas Emissions.*

Dear Mr. McConnaha:

Thank you for the opportunity for Associated Oregon Industries (AOI) and Oregon Business Association (OBA) to submit comments on the Oregon Department of Environmental Quality's partial draft study of a market approach to reducing greenhouse gas emissions.

Associated Oregon Industries and the Oregon Business Association (collectively the "associations") represent approximately 1,700 businesses that employ nearly 240,000 people. The associations' businesses and employees are located in communities across this state. And like most Oregonians, the associations' members and their employees value both the environment and economic prosperity.

As a threshold matter, however, it is important to share what Oregon businesses have done and are doing to reduce Greenhouse Gas emissions (GHG) in Oregon. Since 1990, Oregon industry has reduced GHG's emissions by roughly 2.5 MMTCO₂e, including 23% reduction in industrial electricity use and 13.9% reduction in process emissions. At the same time, Gross Domestic Product (GDP) from Oregon industry has increased by 246%. A reduction in both GHG emissions and an increase in GDP demonstrate Oregon businesses are making significant progress in helping the world meet its GHG reduction goals without strict GHG regulation like cap-and-trade. But Oregon, and its business, cannot do it alone.

With that in mind, the associations are keenly interested in the analysis and outcome of the market mechanism study (the "study") conducted by the Oregon Department of Environmental Quality (DEQ). After reviewing the initial draft report, the associations and its members have identified several areas that deserve additional attention, analysis, and explanation to ensure the public receives an objective, straightforward analysis of such a complex set of regulatory policies.

To better understand the costs and benefits of a cap-and-trade program to Oregon businesses and employees, the associations are interested in learning more about the following:

- **Each footnote citation needs to be precise.** The draft study does not provide page numbers in its footnotes and so readers are unable to check or understand the authorities cited. Any final study must include precise citations, with page numbers, so the public can ensure the authority is appropriately cited.
- **The study should carefully analyze the macroeconomic impacts to all economic regions of Oregon as a result of implementing a cap-and-trade regulatory program.** Urban and rural Oregon economies differ. Please analyze separately, the impacts a cap-and-trade program will have on rural businesses, urban businesses, impacts by different utility service territories, and impacts on employees' cost of living in each economic region.
- **The treatment of Energy Intensive, Trade Exposed businesses (EITE) in Oregon under this program needs to be thoroughly analyzed.** The study should explore the impacts to Oregon's energy and/or emissions intensive and trade exposed businesses from a cap-and-trade program. In addition, DEQ should explain: how it defines EITE businesses; whether these businesses should be included in a cap-and-trade program; and indicate whether, as part of the Western Climate Initiative (WCI), EITE businesses will be included/excluded administratively or whether statutory exemptions are allowed. While on page 20, the study does suggest that other jurisdictions allocate allowances differently to EITE businesses administratively, it is less clear if there are allocation requirements or if these businesses must be part of a program all together. In fact, DEQ states that California and Quebec undertook considerable effort to develop formulae to specify precise allocation of free and consigned allowances, but there is no detailed discussion/analysis of that formulae or its applicability to Oregon.
- **Emissions leakage should continue to be a component of the DEQ study.** DEQ acknowledges that subjecting trade exposed businesses to regulatory costs that exceed costs incurred by competing businesses in other jurisdictions may not only create a competitive disadvantage for Oregon business, but also shift production outside a jurisdiction and result in increased GHG emissions. Increasing global GHG emissions should not be an acceptable outcome of an Oregon climate policy. DEQ should further explain emissions leakage that may result from cap-and-trade regulation, including increased production that will occur outside of Oregon, absent proper exemptions for EITE's and other impacted businesses.
- **Linking the State of Oregon and its economy with other jurisdictions needs further analysis and/or explanation.** Starting on page 25, the study provides some helpful information on the administrative functions of a cap-and-trade program and what Oregon will need to consider if it were to link with WCI. However, there are a number of issues that require further explanation of the administrative functions of the WCI and the influence of those functions on Oregonians, including:

- What is the cost of reporting/compliance obligations on regulated entities, both in terms of allowance costs and administrative fees? Also explain other costs not captured by allowance and programmatic/administrative fees, if any.
 - If allowances are transferable across jurisdictions, are all allowances open for purchase across jurisdictions during an auction? For example, would California and Oregon business compete for the same available allowances? Similarly, would the administrative costs and administrative obligations be the same? Please indicate your macroeconomic assumptions on this issue.
 - In developing an enforcement mechanism, would WCI or DEQ (or other state entity) be responsible for enforcement of any rule under a cap-and-trade program?
 - The study indicates that the WCI provides some flexibility to allowance distribution decisions for participating jurisdictions. It does not mention, however, what allowance distribution decisions are not allowed. Please indicate what, if any, allowance distribution or revenue distribution decisions are not allowed as part of the WCI program.
 - What role would WCI Board of Directors have on policies that influence Oregon GHG emissions? More specifically, what specific policy decisions will Oregon abdicate to the WCI?
- **DEQ Budget impacts need to be more clearly defined.** The study does not identify or explore potential budget impacts if Oregon were to adopt a cap-and-trade program. Because of the current budget crisis, it is important for the public to understand what (if any) the fiscal impact will be on the agency, what program functions will reside outside the agency, and whether the program is expected to be self-funded. And if self-funded, then it is important for fee payers – Oregonians – to understand what they would be asked to pay for and how much.
 - **The study should include (attach) the list of regulated entities.** On page 33, footnote 64, the report cites to an Appendix I identifying 50 businesses that would likely be regulated under a cap-and-trade program linked to WCI. Previous estimates of regulated entities far exceeded 50 businesses. This draft study should include a list of regulated entities, complete with a full explanation in how the agency arrived at the list of regulated entities, assumptions used to develop the list, and include any businesses that exceed the 25,000 MtCO₂e, but are not regulated in the economic modeling.
 - **DEQ should explore other allowance distribution options for a cap-and-trade program.** Other than cursory overviews, the current draft study only analyzes allowance distribution as it is done in WCI jurisdictions. However, this may not be the most efficient allowance distribution design for business and government compared to other allowance distribution options. For instance, allowances could be simply auctioned off for purchase one time. Then, over the course of implementing the cap-and-trade program, the State of Oregon could administratively retire or purchase (and retire) available allowances from regulated entities at a market price. DEQ should

analyze and explain in detail whether this would be a more efficient system for businesses to comply with the program.

- **The study should focus on the costs to Oregonians if a cap-and-trade program and only demonstrate the direct climate change outcomes of an Oregon program.** Oregon is a very small emitter of GHG emissions. As a result, GHG reductions in Oregon may provide very limited environmental outcomes for Oregonians. DEQ should be clear in its discussions and analysis of both the macroeconomic impacts to Oregon's economy and the direct climate change outcomes as a result of implementing a program.
- **The final report should include more information about the need to grow Oregon's manufacturing base as an important role in reducing global GHG emissions.** Oregon's carbon intensity of the economy is significantly lower than nearly every other state in the U.S. and substantially lower than many countries that compete with Oregon manufacturers. The final study should include an analysis of whether a cap on GHG emissions, as explained in the draft study, would allow for new GHG emitters in Oregon even if the new emissions would reduce global GHG emissions. For instance, if a manufacturer wants to relocate to Oregon, build new state-of-the-art facilities, shift production to Oregon and away from jurisdictions with much higher carbon intensity values, and thereby reduce global emissions, will the cap-and-trade market attract those businesses under the current design or will adding emitters to the market raise the cost of allowances?
- **The report fails to analyze the costs of other Oregon policies on Oregon businesses and employees.** DEQ outlines a number of policies that will help reduce carbon emissions. Those policy choices have costs associated with them – costs that are borne by Oregon businesses and employees. Those costs must be included in the total cost of carbon reduction. In the final report, please identify the cost to Oregonians, businesses and business sectors as a result of each individual policy identified in the report (starting on page 45).
- **Revenue distribution in the macroeconomic analysis needs further explanation.** The associations presume compliance costs alone required to meet the hard GHG emissions cap will result in increased costs to businesses and have a net negative effect on Oregon's economy, especially for certain business sectors like manufacturing. The associations also presume the economic benefits will be calculated through both the social cost of carbon calculation (which we comment on above) and through revenue distribution. The current draft study only provides a cursory overview of how the revenues can be allocated under WCI and in Oregon. However, it does not specify how the economic analysis will allocate revenues and thereby, determine economic benefits. The associations are very interested to understand how the agency and economist allocates revenues (and consignment benefits) in its final analysis and determines economic benefits as a result of implementing the cap-and-trade program.

Mr. Colin McConnaha

Department of Environmental Quality

Subject: AOI and OBA Comments on DEQ's Partial Draft Study - Market Approach to Reducing GHG

December 22, 2016

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- **The report fails to analyze the impact to Oregon if the state does not meet its GHG goals, but instead continues to reduce emissions under the business as usual projections.** In order to fully understand the costs and benefits of employing a cap-and-trade program, DEQ should include an analysis of the impacts to Oregon's economy and environment if a cap-and-trade program is not implemented.
- **DEQ should fully explain ALL assumptions it uses in its final macroeconomic analysis.**

The associations look forward to again reviewing a draft report complete with an economic analysis and providing substantive feedback on the analysis and program design. If you have any questions with the comments, please do not hesitate to contact us.

Sincerely,



Mike Freese
Vice President
Associated Oregon Industries



Joel Fischer
Senior Policy Analyst
Oregon Business Association

TO: Colin McConnaha (via email)

December 22, 2016

Chelan County Public Utility District's Comments on "Considerations for Designing a Cap-and-Trade Program in Oregon"

Chelan PUD is a consumer-owned utility in Washington that owns and operates two large hydroelectric facilities on the Columbia River. Chelan PUD is an active participant in western wholesale power markets and takes an interest in policies that affect the wholesale markets, including greenhouse gas policies.

Chelan PUD's Carbon Principles

Chelan PUD has identified three principles that guide our decisions on greenhouse gas policies. First, greenhouse gas policies should achieve the least-cost, most efficient greenhouse gas emission reductions. Second, greenhouse gas regulation of all generating resources (both zero-emitting and emitting) should be consistent and based solely on the amount of greenhouse gas emissions associated with generation. Third, greenhouse gas regulatory approaches should be harmonized across western states. Adhering to these principles ensures that greenhouse gas regulation achieves its intended purpose—to reduce greenhouse gas emissions—in a way that minimizes costs to consumers.

Accordingly, Chelan PUD supports Oregon's efforts to explore a multi-sector cap-and-trade program with the ability to link to California's existing program. As detailed in your study, a multi-sector cap-and-trade program provides opportunities to reduce emissions at lower cost to consumers. Additionally, linkage between Oregon and California would improve liquidity in the market for carbon allowances, resulting in a better functioning market. Chelan PUD appreciates Oregon's willingness to explore this subject in detail and offers the following thoughts for your consideration.

Electricity Imports Point of Regulation

The study notes that the point of regulation for electricity imports is an open question. Chelan PUD recommends using a "first jurisdictional deliverer" approach. This approach would be consistent with California's approach, helping to streamline linkage. This approach is also less disruptive to wholesale trading. An entity that chooses to import power will do so knowing what its carbon liability will be, and downstream entities will not have to worry about compliance obligations that cannot be identified until the scheduling process is complete. Parties will be able to trade imported power and Oregon-generated power interchangeably, which is good for liquidity and market efficiency.

Considerations for Further Analysis

As you continue your investigation of a cap-and-trade program, Chelan PUD suggests two additional items for analysis. First, regarding allowances, you may need to consider the potential impact of Washington's Clean Air Rule (Chapter 173-442 WAC). Section 170 of that rule allows entities in Washington to meet a portion of their carbon compliance obligation with out-of-state allowances like

those that would be issued under Oregon's program. This may affect the demand for those allowances, and may merit further study.

Second, two Oregon utilities are participating in, or preparing to participate in, the CAISO's organized markets. PacifiCorp is in the Energy Imbalance Market and exploring full membership in an expanded, regional ISO, and PGE will become an EIM Entity in 2017. The CAISO is currently investigating how best to account for generating resources that participate in its organized markets but are not always dispatched into California. As your study continues, it should consider how expansion of the CAISO markets would influence a decision to link Oregon's and California's cap-and-trade programs.

Comments from the Climate Law & Policy Project on OR DEQ'S Partial Draft Study on Considerations for Designing a Cap-and-Trade Program in Oregon

Climate Law & Policy Project (CLPP) is a non-profit organization established in 2007 to help formulate and advocate environmentally, socially, and scientifically sound policies to slow, stop, and ultimately reverse the buildup of greenhouse gases in the atmosphere and ensure that vulnerable communities are protected from climate impacts that cannot be avoided.

In light of the results of the 2016 elections, the focus of climate progress in the United States will turn even more to the states. Oregon's leadership with regard to emissions reductions and climate policy will now be more important than ever. Accordingly, CLPP appreciates the opportunity to offer the following comments regarding DEQ's Partial Draft Study on Considerations for Designing a Cap-and-Trade Program in Oregon. Our comments are directed mainly at revenue (pp. 20-22), cost containment (pp. 22-23), and offsets (pp. 23-25).

Revenue

Considering the seriousness of the threat posed by climate change, it is our view that revenue should only be used for climate-related purposes. This includes:

- Taking additional cost-effective actions to reduce emissions;
- Taking actions to enhance resilience and adapt to impacts of climate change; and
- Mitigating the economic impacts of climate policies, particularly on disadvantaged communities.

Without in any way denigrating the importance of the second and third uses listed above, we have focused our comments on the first of these uses. In particular, CLPP recommends that DEQ boost the power of the auction revenues to achieve additional reductions – thereby accelerating the trajectory towards the state's 2050 goal – by distributing at least some of the funds through a cost-effective price-and-subsidize (P&S) system.

Basics of a P&S System

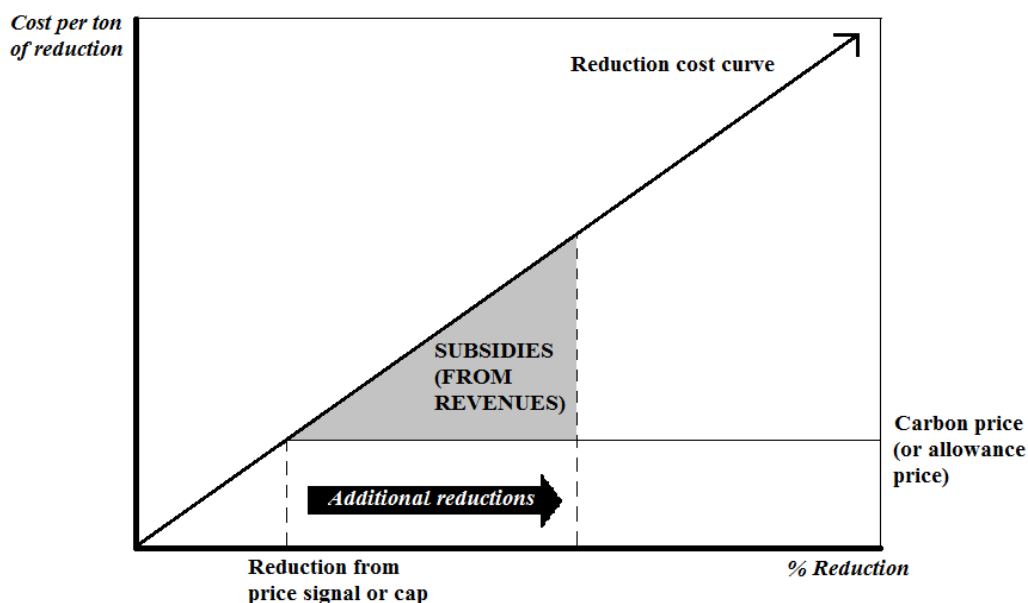
Revenue can be used to achieve cost-effective reductions that are additional to the cap – a purpose not included in the list of “broad purposes” mentioned on page 21. Given the dire threat posed by climate change, CLPP believes this is the most important purpose to which revenue can be put. We recommend a P&S system to ensure that reductions are achieved cost effectively and are additional to the cap. P&S is a type of “cap-and-invest” system, acknowledged in note 7 of DEQ's Partial Draft Study.

A P&S system uses revenue from a carbon price instrument, such as a carbon tax or cap-and-trade system that auctions allowances, to cost-effectively subsidize reductions additional to those that the price instrument alone would achieve.

A P&S approach includes the following key elements to ensure cost-effectiveness and the achievement of additional reductions:

- *Reverse auctions:* Reverse auctions have achieved cost savings in purchasing renewable energy, energy efficiency, and other emission reductions.
- *Delta subsidies:* To ensure that subsidies enhance rather than duplicate the effects of the carbon price or cap in driving reductions, they should cover only the difference (the delta) between the abatement cost and the carbon price.
- *Allowance withdrawal:* Under a cap, for each subsidized reduction achieved, an allowance should be retired or withheld from sale to ensure reductions are additional to the cap.
- *Subsidy leverage:* To maximize early reductions, as little as possible should be spent to get as many projects as possible started as early as possible. Subsidies, ideally, should be paid as reductions are achieved, and lump-sum, upfront payments should be avoided.

As shown in the simplified figure below (e.g., with a linear marginal abatement cost curve), a P&S system could achieve substantially more reductions than a carbon price instrument alone, at the same cost to emitters and consumers as a conventional approach.



Based on this simplified figure, the table below shows, in theory, how substantially reductions could be increased if all carbon price revenues were directed towards cost-effective subsidies for additional reductions.

Reduction with Conventional Price Instrument	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%
Reduction with P&S Approach	31%	44%	53%	60%	71%	80%	87%	92%	95%	98%	99%

Draft Study Revenue Purpose #1

The Partial Draft Study suggests that spending revenues on projects that reduce emissions from capped sources would improve the efficiency of the program, by achieving the same amount of reductions for less cost. CLPP would question whether this is always the case.

The Partial Draft Study draws extensively from California’s experiences with its cap-and-trade system and investment of revenues. CLPP wishes to call DEQ’s attention to a January 2016 report by the California Legislative Analyst’s Office (LAO), which identifies some key issues regarding spending of auction revenues.¹ The report notes that spending auction revenues on reductions within the cap results in extra allowances that can be used by others under the cap – which means not only that subsidies do not yield additional reductions, but also that such revenue spending actually *increases* costs of meeting the cap by freeing up allowances that can be sold for less than the auction price. The LAO report concludes that, as more expensive reductions are achieved due to subsidies, less expensive reductions fail to get made due to the use of cheaper extra allowances freed up by the subsidies. A P&S system would remedy this problem by removing allowances from the system as subsidized reductions are achieved.

Applied to Oregon’s cap-and-trade system, a cost-effective P&S cap would involve putting some auction revenues (presumably those not derived from transportation fuels) into a fund and holding a reverse auction that offers subsidies – equal to the difference between the allowance price and the per-ton abatement cost – to any emitter that wants to submit a bid for achieving more reductions, until the funds are fully committed. The subsidies would go first to the cheapest reductions beyond the price signal, with constraints to ensure that subsidized reductions do not lock in technologies or infrastructure incompatible with deep decarbonization pathways.

To ensure reductions made within the cap are additional, the fund administrator could buy back (at the auction price) and retire an allowance for each subsidized reduction achieved by a capped source. This ensures the subsidies do not simply free up an allowance to be used by someone else. The allowance budget for future auctions would also need to be reduced by the number of subsidized reductions already achieved.

Program efficiency can also mean achieving more reductions at equal cost. By cost-effectively subsidizing additional reductions, a P&S system could help Oregon accelerate its reduction trajectory towards its 2050 target, at no additional cost to emitters and consumers. Emitters spend the same amount they would under a conventional cap-and-trade approach, but under a P&S system, those expenditures are directed towards cost-effectively achieving reductions.

Draft Study Revenue Purpose #2

CLPP agrees with the second purpose listed on page 21, “[b]roadening the scope of the program,” which would result in additional reductions. Removing allowances as subsidized

¹ California Legislative Analyst’s Office. (2016). *Cap-and-Trade Revenues: Strategies to Promote Legislative Priorities*. <http://www.lao.ca.gov/Publications/Report/3328>

reductions within the cap are achieved is simply another method for achieving reductions beyond the level set by the cap.

While subsidized reductions from uncapped sources *would* be additional to the cap, they would no longer be if those reductions are used as offsets within the cap. To ensure reductions achieved outside the cap by means of revenue expenditures are additional, DEQ should pursue one of two options: either such reductions should be prohibited from being used as offsets, or an allowance also has to be withdrawn for each subsidized out-of-cap reduction used as an offset.

Draft Study Revenue Purpose #3

As noted earlier, CLPP fully supports using some of the revenues raised to mitigate the distributional impacts of a carbon pricing policy.

Draft Study Revenue Purpose #4

Revenue should *not* be used to finance government activities unrelated to climate change. Climate change poses a dire present danger that must be addressed with a strong focused effort. The cap-and-trade program, if adopted, will be Oregon's principal policy tool for combatting climate change, and as such, every element of the policy should be directed towards combatting climate change and mitigating its impacts. Thus, revenue expenditures should be limited to actions to reduce emissions, increase Oregon's ability to adapt to impacts of climate change (e.g., making infrastructure more resilient), and mitigate the economic impacts of the cap-and-trade program itself and other climate policies, particularly on disadvantaged communities.

Draft Study Revenue Purpose #5

Similarly, revenue should not be used to reduce other taxes or fees. Revenue from cap-and-trade allowance auctions can be uncertain, as experience with auctions in California and the RGGI states has shown. Furthermore, revenues can be expected to rise early in the cap-and-trade program, but as the program matures and emissions decline, revenues reach a peak and then decline along with emissions. This can create a tension between the objective of the program – to reduce emissions – and the ongoing need for revenues, potentially creating political pressure to keep the cap from declining, in order to keep the revenue stream intact.

Cost and Emission Containment

CLPP recognizes that a cap-and-trade program can potentially produce some short-term price volatility. Since the objective of a P&S system is to achieve reductions that are additional to the cap, it will lead to a pool of withdrawn allowances, some of which could theoretically be made available for an Allowance Price Containment Reserve (APCR), should Oregon adopt one.

CLPP also recommends an emissions containment reserve (ECR), such as the one proposed for the Regional Greenhouse Gas Initiative.² Just as an APCR would operate as a “soft” ceiling, an ECR would operate as a soft floor. If auction prices drop below a certain level, an ECR would withdraw allowances from auctioning. In addition to an ECR, CLPP recommends a hard floor for allowance prices, which is also in keeping with the RGGI approach, as well as other states in the WCI.

Offsets

CLPP suggests a cautious approach to offsets. As noted above, revenue from allowance auctions can be used to reduce emissions from sources that may not be easily capped. Reductions achieved this way should be additional to the cap and should not be used for offsets.

CLPP would, however, distinguish between reductions from uncapped sources achieved with revenue expenditures and such reductions made without any allowance revenue. CLPP agrees that, with careful evaluation, measurement, and verification (EM&V), limited use of offsets can help broaden the scope of a cap-and-trade program.

Again, CLPP appreciates this opportunity to provide feedback on DEQ’s Partial Draft Study on Considerations for Designing a Cap-and-Trade Program in Oregon and urges Oregon to provide even stronger climate leadership in the years ahead.

² https://www.rggi.org/docs/ProgramReview/2016/11-21-16/2016_Nov_21_ECR_Presentation.pdf



Colin McConnaha
Oregon Department of Environmental Quality
700 NE Multnomah St., Suite 600
Portland, OR 97232

December 22, 2016

Dear Mr. McConnaha:

Climate Solutions is a regional non-profit working to accelerate practical and profitable solutions to global warming. Accounting for the cost of climate pollution is a top priority for Climate Solutions. Oregon Environmental Council (OEC) is a nonprofit, non-partisan, membership-based organization. OEC protects the health of every Oregonian and the place we call home by working for clean air and water, a healthy climate, an unpolluted landscape and sustainable food and farms. The Sierra Club is the world's oldest and largest grassroots environmental organization, and the Oregon Chapter works to empower Oregonians and influence public policy through community activism, public education, outreach, and litigation. Our organizations have been actively engaged and supportive of the development a carefully designed system to cap and price greenhouse gas (GhG) emissions in Oregon.

We commend the Department of Environmental Quality (DEQ) team on preparing a detailed and thoughtful draft study of the structure and implications of a GhG market program for Oregon. As this study lays out, a meaningful program will significantly reduce emissions in Oregon, put a price on climate pollution, and reinvest proceeds in activities that further reduce emissions and support impacted communities. We encourage DEQ to improve the final study in the following ways:

1. Delineating Benefits of Cap and Pricing Emissions: The study's finding that the macroeconomic effects of the cap and trade program in Oregon would be minimal is encouraging. However, the current analyses focus too heavily on near-term compliance costs without providing the full context of costs and benefits. Without immediate, concerted effort, climate impacts will further harm the systems that provide clean water, food, and healthy air for Oregonians. It is important that the study also delineate clearly the 1) Costs of inaction (i.e., not capping and pricing GhG emissions). According to a recently released report by E2, climate change threatens Oregon's multi-billion dollar agriculture, forestry, fishery, and recreational industries.¹ In addition, extreme weather events harm infrastructure and require more costly resiliency investments; 2) The short- and long-term climate and other environmental, public health, and economic benefits of the program; and 3) Reinvestment opportunities created by the program.

2. Economy-wide Scope of Program: We agree that a cap and trade program should be broad in scope and cap GhG emissions beyond just carbon dioxide. This broad scope will drive the most emissions reductions, helping Oregon to meet its GhG emission reduction goals. It will also be fair, successful and cost-effective, and enable linking with other jurisdictions. As the study highlights, the cap and trade program must cover both in-state and imported sources of electricity, natural gas and transportation fuels in order to avoid leakage.

The study should explicitly reference that the program would be economy-wide and cover all sources of emissions over 25,000 metric tons CO₂e based on total emissions. Alternatively, sources identified in the study as infeasible to cover (forestry, agriculture, landfills and wastewater treatment plants), should only be exempted if tailored complementary policies are created to effectively reduce emissions of these sources. In setting the cap, DEQ should

¹ Environmental Entrepreneurs, "Oregon: Changing Climate, Economic Impacts, & Policies for Our Future," June 2016: http://www.e2.org/wp-content/uploads/2016/07/Oregon_Business_Climate_Report.pdf

assess responsibilities for capped sectors based on their proportionate share of emissions. The market-based mechanisms provide an incentive for facilities that can go beyond those levels to do so and earn an economic reward.

3. Stringency of Cap: The study should recognize additional benefits to front loading the trajectory of the cap's decline. A front loaded trajectory rewards early action by covered sources, sends strong market signals to encourage smart long-term investment in low-carbon technologies, and reflects the needed urgency of action to decarbonize Oregon's economy. We agree that a back loaded trajectory could lead to early investments in higher carbon technologies that make the later aggressive reductions less feasible.

4. Real, Scientifically-Based Emission Reduction Targets: The study recognizes that Oregon needs to achieve its existing legislated GhG goals through 2050 – at a minimum – and therefore the program's cap should be aligned to those long-term reduction targets and authorized through 2050 (with enforceable interim targets). Given the urgency of climate change and its disproportionate impact on disadvantaged and rural communities, we encourage the program to maintain flexibility to tighten those targets in response to evolving technology and best available science.

5. Reinvestment of Proceeds to Support Disproportionately Impacted Communities: We agree that reinvestment of the cap and trade program's proceeds should further address solving climate change, mitigate the regressive nature of a price on GhG emissions and provide benefits to impacted communities (including low-income, people of color and economically distressed rural communities). As the study recognizes, the program should designate significant proceeds toward reinvestment opportunities that benefit under-represented communities (both rural and environmental justice), as well as just transition programs such as worker re-trainings.

Climate change and the fossil fuel economy has hit the most vulnerable among us first and worst. As the study touches on, an equitable cap and trade policy will not exacerbate existing inequalities (such as pollution hotspots), but will address regressivity, dedicate resources to these communities, create opportunities for women, minority-owned, and rural small businesses to compete for public projects, and ensure that impacted communities have meaningful and sustained representation and oversight in program design and implementation. We support DEQ's coordination with Oregon's Environmental Justice Task Force as well as community groups to identify opportunities to bring impacted communities into the process from the outset.

A market-based GhG program in Oregon should also provide for a just transition for workers in affected industries. This includes: access to job training, job placement, and income maintenance assistance. Investments of allowance revenues should also prioritize job creation in rural and underserved communities and adhere to high roads standards and benefits.

6. Allowance Price Floor: California's cap and trade program did not set meaningful allowance price floor in its initial program design. The study should examine what the relevant price floor should be in Oregon. Relatedly, Oregon needs to ensure sufficient liquidity in its market to be successful, especially in the early years of the program.

7. Offsets: We agree that the program should not exceed WCI offset limits for compliance and support further limits if there are in areas with pollution hotspots. The program should not limit offset opportunities geographically to Oregon only, but we do support exploring opportunities for additional Oregon-based offsets.

8. Interaction with Complementary Programs: The study rightly recognizes that Oregon can meet its emissions reductions goals more efficiently through a portfolio of programs. Many other policies drive emissions reductions and market transformation, while an emissions cap/price acts as a backstop. We agree that strong complementary policies including Oregon's Renewable Portfolio Standard, Clean Fuels Program, Zero Emission Vehicles Mandate and Clean Power Plan can reduce climate pollution to help industries achieve compliance with the overall cap program in addition to reducing GhG emissions.

9. Economic Leakage: We support the concept of preventing economic and pollution leakage. But while we appreciate the attempt to assess economic leakage risk in this report, that determination should be based on a more rigorous assessment and through a transparent process. There needs to be stakeholder engagement in helping to define designations and determining any special treatment. Any special treatment should be evaluated periodically within the program, especially as greenhouse gas-reducing technology changes. If special treatment is given to industries, the agency should specify the impacts of lost environmental, public health, and reinvestment opportunities. Overall, however, it is much better to provide special treatment than exempt industries from the program.

Businesses choose locations based on many factors, including workforce, availability of clean water for manufacturing, quality of life for employees, access to feedstocks, as well as state and local regulations. The report should acknowledge that there is a broad array of factors and that no single element “pushes” businesses. To the contrary, in California’s experience, their cap and trade program has stimulated significant economic development within the state. California has continued to attract \$48 billion in clean economic investments and created 500,000 jobs in the last 10 years. In 2016, Bloomberg named California the #1 state in which to do business. These economic benefits could also occur in Oregon through a market-based carbon pricing program.

Sincerely,

David Van’t Hof
Acting Oregon Director
Climate Solutions

Jana Gastellum
Program Director, Climate
Oregon Environmental Council

Meredith Connolly
Oregon Policy Manager
Climate Solutions

Rhett Lawrence
Conservation Director
Oregon Chapter, Sierra Club

December 22, 2016

Colin McConnaha
Senior Climate Change Policy Analyst
Oregon Department of Environmental Quality
Colin.mcconnaha@state.or.us

Subject: *Comments on DEQ's Cap and Trade Study*

Dear Colin,

Thank you for the opportunity to provide comments on DEQ's study on Cap and Trade as a policy mechanism for reducing Oregon's Greenhouse Gas emissions. The report does an excellent job laying out the different design aspects of cap and trade and important issues to consider such as compliance costs, impacts on disadvantaged communities, and how cap and trade can complement other policies that reduce greenhouse gas emissions.

The report is notable for pointing out that cap and trade provides emission reduction certainty. This is an important point that cannot be understated enough because cap and trade can act as an elastic band and achieve remaining emission reductions necessary to meet a given target. In other words, cap and trade stands alone from other policy scenarios such as carbon tax or command and control in that it can mitigate the emissions reduction uncertainty associated with complementary policies such as SB 1547, a Renewable Portfolio Standard, and a Clean Fuels Program.

The report is comprehensive and The Climate Trust does not have suggestions for additional areas for DEQ to cover. Rather our comments focus on additional context around cap and trade, based on our 19-year experience as an offset provider and a market participant in California's cap and trade market.

- Page 6-7- The Climate Trust does not follow the report's logic regarding carbon taxes. The first bullet notes that a tax can be adjusted to exert greater influence on emissions levels, while noting it is also administratively easier. It is hard to understand how a tax that has to be constantly adjusted in response to emissions levels is "administratively simpler." Rather, it sounds more complex than cap and trade, as it requires constant economic forecasts to determine the required price adjustments.*
- Page 7- The report should be clearer on what stakeholder(s) benefit from "a more price stable price signal." A fixed price may be desirable for the regulator, but we question whether this is better for regulated businesses. The entities with compliance targets have to deal with adjustable prices in their core businesses and price fluctuations in a cap and trade market would be no different. It should be noted that there have been no issues with businesses dealing with price fluctuations in any of the cap and trade markets.*
- Page 24- It is not true that WCI jurisdictions generally need to agree on offset protocols for offsets to be fungible across jurisdictions. For example, California's cap and trade regulation currently recognizes any and all offsets issued by other WCI jurisdictions. Therefore, an offset issued by Quebec from a landfill gas and destruction project could be used by an entity in California to meet its compliance obligation in the state.*



- Page 24- The Climate Trust disagrees with the National Research Council assertion on page 24 of the report that evaluating offsets requires an examination of the financial motivation and regulatory context of each project. This not only impractical but also unnecessary. The regulatory context can be addressed by requiring all projects meet the regulatory surplus additionality standard. This is a long standing criterion used in voluntary and compliance carbon markets that simply states the project has to be voluntarily motivated and not required by some other regulation where a secondary benefit is the reduction of GHG emissions. Financial realities of projects change over time. The Climate Trust has seen the need for offset revenues grow over time in a project's life because other revenue streams such as energy revenues have declined. The Climate Trust recommends the California approach which uses a performance standard that requires projects to prove they are voluntarily undertaken and meet a common practice threshold. For example, dairy digester projects meet both criterion because jurisdictions don't generally require manure management systems that would also prevent methane emissions and the use of digesters as a methane preventing technology meets a common practice standard as less than 1% of the dairies in the country use this technology to manage their manure.
- Page 32-33- The report does a good job of noting design options for dealing with trade-exposed industries under a cap and trade program. The Climate Trust suggests the report note that cap and trade can address emissions leakage from such sectors whereas a weakness of a command control or carbon tax approach is that they cannot has effectively deal with leakage.



- *Section 6 - It is worth noting that using offsets under a cap and trade program can benefit disadvantaged communities beyond mitigating compliance costs. Rural areas, in particular have an abundance of opportunities to generate offsets as greenhouse gas sinks and sectors outside the cap. There are two notable projects in rural Oregon that are producing offsets for California's cap and trade market.*

1. **TMF Biofuels project, Boardman, Oregon-** *The TMF Biofuels project is a digester installed in 2013 at the Three Mile Canyon dairy to produce electricity. Boardman has a poverty rate of 34.5% compared to the state average of 22%.¹ One of the benefits of digesters is that they eliminate ammonia emissions associated with manure management. Digesters also eliminate pathogens in manure, which is then spread on the fields surrounding the dairies. Digesters therefore improve respiratory conditions, water quality, and human health as elevated levels of ammonia and pathogens in water cause hypertrophy and can inhibit fetal development.*
2. **Warm Springs Forestry project, Warm Springs Reservation-** *This project is located on 24,640 acres owned by the Warm Springs Tribe. Warm Springs has a poverty rate almost twice that of the state average.² This project demonstrates to disadvantaged communities that opportunities exist to generate revenues, while conserving natural resources for cultural and environmental benefits.*

¹ <http://www.city-data.com/poverty/poverty-Boardman-Oregon.html>

² <http://www.city-data.com/poverty/poverty-Warm-Springs-Oregon.html>



- Page 47- The Climate Trust recommends DEQ mention China is launching a market in 2017 covering 45% of its emissions, as it is important for those who will read this report to note that cap and trade extends beyond developed nations and is being ambitiously adopted by a major developing country.
- Page 51- The Climate Trust recommends the report clarify how cap and trade and other programs such as RPS, and SB 1547 would result in paying for emission reductions twice. The extent to which electricity producers would need to use carbon allowances and offsets would depend on the gap between their compliance target and the extent to which renewable energy in their portfolio is dispatched to the grid. Therefore, it isn't clear where double paying would occur and this could lead to incorrect conclusions and about how these policies interact with one another.
- Page 60- We suggest striking the text "on behalf of the applicant" for the Oregon CO2 Standard section. Applicant currently complies with the Standard by making the monetary payment to The Climate Trust. They not only have no ongoing compliance obligation, but it could not revert back to them. The Climate Trust's obligation to buy offsets is a separate requirement imposed solely on us by the Standard as a Qualified Organization.

Once again thank you for the opportunity to provide comments to inform DEQ's study. The Climate Trust is happy to assist DEQ in any way it can as it embarks on reviewing one of the most important tools available for mitigating greenhouse gas emissions.



Sincerely,

*Sheldon Zakreski
Director of Carbon Compliance
The Climate Trust*

Maggie Tallmadge, Environmental Justice Manager

Maggie@coalitioncommunitiescolor.org

Coalition of Communities of Color

12/22/16 Comments on DEQ DRAFT: Considerations for Designing a Cap-and-Trade Program in Oregon

Pg 6

- Paragraph 3: Confirm legal connotation of “disparate” vs “disproportionate”
- Par. 4: How much research supports existence/ extent of economic leakage due to similarly structured taxes/fees?

Pg 7

- Bullitt 1: Be clear a tax or fee can be coupled with a cap. These are not mutually exclusive policy mechanisms.
- Bullitt 3: “cap and trade can produce emission reduction at lower cost”—be explicit who the cost is lowest to—businesses, consumer, climate, etc.
- Bullitt 5: Mention tax exemptions and freely allocated allowances can contribute to regressivity, particularly if they are allocated to industries that do not see adequate incentive to leave the state.

Pg 8

- Par. 1: “Perhaps the most....emissions reductions.” Remove either “options” or “choices,” which seem redundant. Delete “from” following word “choices.”

Pg 9

- Bullit 1: Read <http://www.foodandwaterwatch.org/insight/british-columbia-carbon-tax-failed-experiment-market-based-solutions-climate-change>

Pg 10

- #5 CCC is looking into whether these transportation related proceeds can be directed to tribes for non-transportation projects (each tribe would have to enter a tax compact with the state and eligible proceeds would likely be restricted to those tribal jurisdictions)
- #10 Are these comments in order of priority? If so, reinvestment in impacted communities should be moved to the top.

Pg 12

- Equity must be a key, explicit factor in the design of the program

Pg 15

- Par 1 Good- mention of keeping jobs local.

Pg 21

- #5 See Food and Water Watch report
- Update percentage/geographic dedication to DACs per 2016 CA AB 1550
 - https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB1550
 - Existing law requires the investment plan to allocate a minimum of 25% of the available moneys in the fund to projects that provide benefits to disadvantaged communities, as defined, and a minimum of 10% to projects located in those disadvantaged communities. Existing law authorizes the allocation of 10% for projects located in disadvantaged communities to be used for projects included in the minimum allocation of 25% for projects that provide benefits to disadvantaged communities.

Maggie Tallmadge, Environmental Justice Manager

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Coalition of Communities of Color

12/22/16 Comments on DEQ DRAFT: Considerations for Designing a Cap-and-Trade Program in Oregon

- This bill would instead require the investment plan to allocate (1) a minimum of 25% of the available moneys in the fund to projects located within, and benefiting individuals living in, disadvantaged communities, (2) an additional minimum of 5% to projects that benefit low-income households or to projects located within, and benefiting individuals living in, low-income communities located anywhere in the state, and (3) an additional minimum of 5% either to projects that benefit low-income households that are outside of, but within a 1/2 mile of, disadvantaged communities, or to projects located within the boundaries of, and benefiting individuals living in, low-income communities that are outside of, but within a 1/2 mile of, disadvantaged communities.
- **Update additional recommendations for use of funds per CA 2016 AB 2722 (for development of Climate Action Plans, etc.)**
 - https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB2722
 - Existing law establishes the Strategic Growth Council, which consists of the heads of various state agencies and certain other members, and requires the council to identify and review activities and funding programs that may be coordinated to improve air and water quality, improve natural resource protection, increase the availability of affordable housing, improve transportation, meet the goals of the California Global Warming Solutions Act of 2006, encourage sustainable land use planning, and revitalize urban and community centers in a sustainable manner.
 - This bill would create the Transformative Climate Communities Program, to be administered by the council. The bill would require the council to award competitive grants to specified eligible entities for the development and implementation of neighborhood-level transformative climate community plans that include greenhouse gas emissions reduction projects that provide local economic, environmental, and health benefits to disadvantaged communities, as defined. The bill would require the council to develop guidelines and selection criteria for the implementation of the program. The bill would require the California Environmental Protection Agency to provide assistance in performing outreach to disadvantaged communities and assessing the environmental justice benefits of project awards.

Pg 22

- See comment and needed research re: tribe-state tax compacts and use of HTF revenue.

Pg 23

- Is it programmatically/scientifically necessary to have a price ceiling? Required when linking to CA program?

Pg 24

- Shouldn't we cover refrigerants and other super pollutants under the cap? Or are these too difficult to account for at this point?
- Urban tree planting—how successful has this offset protocol been in CA?
- Are there protections in the CA program to prevent expansion to international offset markets? If not, and OR does link with the CA program, can OR add an additional protective provision to prevent use of international offsets?

Pg 25

- Reach out to Jason Barbose at Union of Concerned Scientists. I was under the impression 8% offsets for any given entity adds up to much more in aggregate after accounting for exemptions.

Maggie Tallmadge, Environmental Justice Manager

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Coalition of Communities of Color

12/22/16 Comments on DEQ DRAFT: Considerations for Designing a Cap-and-Trade Program in Oregon

Pg 28

- Bullitt 3: Creates a negative economic stimulus effect... unless coupled with positive stimulus (preferably from the C&T program) and increased demand and jobs in renewable sector?

Pg 29

- Bullitt 3: Studies show greater and more permanent job creation from renewable sector than fossil fuel sector—this should be emphasized in addition to local investment.
- Par. 2: National level revenue proposals that hold the most weight focus on corporate tax credits. Food and Water Watch's analysis is that even though B.C.'s tax provided tax credits to corporations, all the costs of the program were still passed through to consumers. Be explicit about regressivity in DEQ's analysis.
- Re PSU study—did the analysis show a small economic impact regardless of where proceeds are targeted (i.e. corporations, renewables, household dividends, etc.)?

Pg 33

- Completely inappropriate to write "feelings of inequity." Inequity is not a feeling—it's a tangible outcome of systemic processes. Change to "will exacerbate inequity of policy and disparities experienced by impacted communities."

Pg 34-35

- Add summary sentence on the numerical range of entities actually covered under the program.

Pg 36

- Change "neutralize" to "mitigate negative effects... maximize benefits.." Environment policy needs to move past "prevent harm" as a marker of success. If I only "prevented harm" to my member organizations, I would lose my job.

Pg 37

- Delete "discussions a definition of...EJ..following way..." and replace with "defines EJ as:"
- Would 30,000 be considered a suburb rather than a city?

Pg 39

- Par 1, line 5: Delete "are often" and replace with "are disproportionately." Add mobile sources—not just stationary.
- Read and add research from Manuel Pastor, <http://dornsife.usc.edu/PERE/enviro-equity-CA-cap-trade>

Pg 40

- Reach out to California groups, ex. Parin Shah from APEN, regarding impact of utility rebates. CA customers other than low-income consumers could see little to no impact of utility rebate (which was equally, rather than equitably distributed). Focus these rebates on Oregon's low-income and low-middle income households.
- Important to call out healthcare as a climate resilience strategy. Good job!
- Last paragraph:
 - Add preserving health care for Oregonians as a beneficial program outside of cap-and-trade.
 - Add footnote or explanation re: rural households disproportionately benefiting from policies as it's not clear to the reader.

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Coalition of Communities of Color

12/22/16 Comments on DEQ DRAFT: Considerations for Designing a Cap-and-Trade Program in Oregon

- Removed “if desired.” Language like this throughout this DEQ study seems to purposefully weaken any priority placed on equity. Address accordingly throughout the study.

Pg 41

- Emphasize CA communities were right that cap and trade concentrated heavily localized sources of GHG emissions and pollution in EJ communities. See Manuel Pastor study.
- Update SB 535 fund distribution per 2016 AB 1550
- State other mapping tools exist such as EPA EJ Screen, Southern California Public Health Association’s mapping tool based on social determinants of health, etc.

Pg 42

- Par 1: CA EJAC plaintiffs won the lawsuit. That should be clear to serve as a lesson learned for OR.
- Par 2: Multi-year stakeholder process was also used to develop investment priorities. Much of this work was carried out by community based organizations.
- Par 2: AB 197 also made CARB data publically accessible, correct?
- Par 4: Delete “some” before accountability. This is another example of weakening language related to equity.
- Par 4: Add “historical underinvestment and less access to decision making” to what the programs and policies should address.

Pg 43

- Par 2: Change “or” to “and” in “mitigating any negative impacts or brining net benefits”
- Par 3: Add footnote to what just distribution means? i.e. Redress/reparation for previous underinvestment and injustice

Pg 44

- Last two sentences seem to contrast investment in DACs/rural communities with GHG reductions. Reword so these do not appear as mutually exclusive investments—we want to achieve both.

Via e-Mail to mcconnaha.colin@deq.state.or.us

December 22, 2016

Oregon Department of Environmental Quality
Attention: Colin McConnaha
700 NE Multnomah St., Suite 600
Portland, OR 97232

Re: Draft Study of a Market Approach to Reducing Greenhouse Gas Emissions

Dear Mr. McConnaha:

Thank you for the opportunity to comment on DEQ's Draft Study of a Market Approach to Reducing Greenhouse Gas Emissions. We fully support DEQ's efforts to help reduce GHG emissions in the state to help mitigate the impacts of climate change. We are proud to be part of efforts already underway in the state to reduce GHG emissions from the management of solid waste. Covanta operates the energy-from-waste (EfW) facility located in Brooks, OR which process municipal solid waste (MSW) from Marion County. EfW is an internationally recognized means of reducing GHG emissions from waste management.

We support the Study's consideration of the potential for emissions leakage. A goal of strong cap and trade program design is to reduce leakage to the extent possible. Leakage is often driven by geopolitical boundaries. Trade across those boundaries can lead to the flight of emissions from a regulated jurisdiction to one that is not regulated, nullifying, and potentially increasing, overall GHG emissions, even though emissions in the regulated sector may decrease.

However, leakage can also occur *within* programs and geographic boundaries, to the extent that sources within a single sector are treated differently under the cap. We are concerned that the draft Study appears to contemplate excluding landfills from the cap on the basis that they are difficult to accurately measure and verify. Our concern is not with the possible exclusion itself, but with the potential scenario where landfills are outside of the cap while EfW facilities are included in the cap. Such a disparity of treatment would impose a direct cost on EfW, but not landfills, putting EfW facilities at a competitive disadvantage. This additional cost applied only to EfW could result in leakage within Oregon's program from a capped source to an uncapped source, if the economic costs resulted in MSW diverted from EfW to landfilling.

This is especially problematic as EfW is a less GHG intensive means of managing MSW than landfilling. EfW facilities are internationally recognized as a source of GHG emissions mitigation. Numerous international governments, NGOs, and researches recognize the climate benefits of EfW, including the U.S. EPA;^{1,2} U.S. EPA scientists;³ the Intergovernmental Panel on Climate Change (“IPCC”);⁴ the World Economic Forum;⁵ the European Union;^{6,7} CalRecycle;⁸ California Air Resources Board;⁹ the Center for American Progress; Third Way; the Joint Institute for Strategic Energy Analysis (NREL);¹⁰ the Berkeley Law Center for Law, Energy, and the Environment;¹¹ and other researchers.^{12,13} EfW facilities generates carbon offsets credits under both the Clean Development Mechanism (CDM) of the Kyoto Protocol and voluntary carbon offset markets.^{14,15} Under CDM, more than 40 EfW projects have been registered, with a combined annual GHG reduction of 5 million metric tons of CO₂e per year.¹⁶ To date, three EfW expansions have been validated as carbon offset projects in North America. The Lee and Hillsborough County facilities, operated on behalf of municipal owners in Florida, have been selling carbon credits into the voluntary market for several years.

The basis for this widespread recognition is the lower GHG footprint of EfW relative to landfilling. On average, the U.S. EPA has determined that EfW facilities reduce GHG emissions by one ton of CO₂ equivalents (CO₂e) for every ton of MSW diverted from landfill and processed. EfW facilities reduce GHG emissions, even after consideration of stack emissions from combustion, by:

1. Generating steam and/or electricity that would otherwise would likely be generated by fossil-fueled facilities;
2. Diverting solid waste from landfills where it would have emitted methane even with consideration of landfill gas collection systems in place; and
3. Recovering metals for recycling, thereby saving the GHGs and energy associated with the production of products and materials from virgin inputs.

By reducing emissions that would have otherwise occurred, EfW is the only major source of electricity that actually reduces GHG emissions.

The important advantages of EfW have been recognized around the world in policies aimed at reducing GHG emissions. For example, EfW is not capped in the Regional Greenhouse Gas Initiative (RGGI), the European Union Emission Trading Scheme (EU-ETS), the U.S. EPA’s Clean Power Plan, or the Québec cap and trade program. Furthermore, EfW is eligible to generate carbon offset credits under the Kyoto Protocol’s Clean Development Mechanism (CDM) and the Verified Carbon Standard (VCS) and is eligible to generate emission rate credits (ERC’s) under the U.S. EPA’s Clean Power Plan.

We do not mean to imply that the waste sector should not be considered as a source of GHG reductions. In fact, quite the contrary. There is additional significant opportunity for GHG reductions to be found in a sustainable waste management strategy in Ontario. A 2009 peer reviewed paper entitled, “Integrated waste management as a climate change stabilization

wedge”, found that a worldwide integrated municipal solid waste (MSW) management system based on the European Union's waste management hierarchy would save 1 Gt C per year by 2054.¹⁷ The European Union has already achieved significant reductions in GHG emissions through a focus on more sustainable waste management: increased recycling, composting, and energy recovery, and far less landfilling. The EU's proactive waste policies have achieved the largest relative reduction of GHG emissions (34%) of any sector in the EU.¹⁸

Many other jurisdictions around the world have concluded that sustainable waste management - incorporating recycling, composting and for what remains, EfW - can play an important role in reducing greenhouse gas emissions. However, we are concerned that Oregon may inadvertently jeopardize EfW's role in those reductions. Such a potential scenario, where EfW is part of the cap and landfills are not, has unfortunately already played out in other programs. When first promulgated, the cap and trade regulation in California included EfW facilities under the cap, yet excluded landfills. Following a study by the state's lead solid waste regulator, CalRecycle, that found that California's EfW facilities result in net GHG reductions relative to landfilling, California's EfW facilities have been issued and continue to hold multiple “after the fact” exemptions from that state's cap and trade program. In a similar fashion, Ontario has effectively exempted EfW facilities from compliance obligations through 2020.

By considering the potential impacts of leakage within the waste management sector in the early stages of the program's development, we believe DEQ can avoid these missteps, and ensure that an integrated approach including recycling, anaerobic digestion, composting, and energy recovery can achieve significant GHG emissions reductions for the state. We look forward to working with DEQ on a solution that can maximize these reductions.

Sincerely,



Michael E. Van Brunt, P.E.

¹ U.S. EPA Webpage, Energy Recovery from the Combustion of Municipal Solid Waste (MSW), accessed September 19, 2016. <https://www.epa.gov/smm/energy-recovery-combustion-municipal-solid-waste-msw>

² U.S. EPA Archived Webpage, Air Emissions from MSW Combustion Facilities, accessed September 19, 2016. <https://archive.epa.gov/epawaste/nonhaz/municipal/web/html/airem.html>

³ Kaplan, P.O, J. DeCarolis, and S. Thorneloe, 2009, Is it better to burn or bury waste for clean electricity generation? *Environ. Sci. Technology* 43 (6) pp1711-1717. Available at: <http://pubs.acs.org/doi/abs/10.1021/es802395e>

⁴ EfW identified as a “key mitigation measure” in IPCC, “Climate Change 2007: Synthesis Report. Contribution of Work Groups I, II, and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change” [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp. Available at: http://www.ipcc.ch/publications_and_data/publications/ipcc_fourth_assessment_report_synthesis_report.htm

⁵ EfW identified as a key technology for a future low carbon energy system in World Economic Forum. *Green Investing: Towards a Clean Energy Infrastructure*. January 2009. Available at: <http://www.weforum.org/pdf/climate/Green.pdf>

⁶ EU policies promoting EfW as part of an integrated waste management strategy have been an overwhelming success, reducing GHG emissions over 72 million metric tonnes per year, see European Environment Agency, *Greenhouse gas emission trends and projections in Europe 2009: Tracking progress towards Kyoto targets* http://www.eea.europa.eu/publications/eea_report_2009_9

⁷ European Environmental Agency (2008) Better management of municipal waste will reduce greenhouse gas emissions. Available at: http://www.eea.europa.eu/publications/briefing_2008_1/EN_Briefing_01-2008.pdf

⁸ CalRecycle. 2012. CalRecycle Review of Waste-to-Energy and Avoided Landfill Methane Emissions. Available at: <http://www.calrecycle.ca.gov/Actions/PublicNoticeDetail.aspx?id=735&aiid=689>

⁹ See Table 5 of California Air Resources Board (2014) *Proposed First Update to the Climate Change Scoping Plan: Building on the Framework, Appendix C – Focus Group Working Papers, Municipal Solid Waste Thermal Technologies*

¹⁰ Joint Institute for Strategic Energy Analysis (2013) *Waste Not, Want Not: Analyzing the Economic and Environmental Viability of Waste-to-Energy (WTE) Technology for Site-Specific Optimization of Renewable Energy Options*. <http://www.nrel.gov/docs/fy13osti/52829.pdf>

¹¹ Berkeley Law Center for Law, Energy & the Environment (2016) *Wasting Opportunities: How to Secure Environmental & Clean Energy Benefits from Municipal Solid Waste Energy Recovery*. <https://www.law.berkeley.edu/research/clee/research/climate/waste-to-energy/>

¹² Weitz, K., Thorneloe, S., Nishtala, S., Yarkosky, S., and Zannes, M. (2002). “The impact of municipal solid waste management on greenhouse gas emissions in the United States.” *J. Air Waste Manage.Assoc.*, 52, 1000–1011.

¹³ Thorneloe, S., Weitz, K., and Janbeck, J. (2005). “Moving from solid waste disposal to materials management in the United States.” *10th Int. Waste Management and Landfill Symp., International Waste Working Group, Padova, Italy*.

¹⁴ Clean Development Mechanism Executive Board: “Approved baseline and monitoring methodology AM0025: Avoided emissions from organic waste through alternative waste treatment processes.” Available at: <http://www.cdm.unfccc.int/methodologies/DB/3STKBX3UY84WXOQWIO9W7J1B40FMD>

¹⁵ Verified Carbon Standard Project Database, <http://www.vcsprojectdatabase.org/> See Project ID 290, Lee County Waste to Energy Facility 2007 Capital Expansion Project VCU, and Project ID 1036 Hillsborough County Waste to Energy (WtE) Facility 2009 Capital Expansion Unit 4.

¹⁶ CDM Project Database, project methodologies AM0025, ACM0022, accessed 6/9/2015, <https://cdm.unfccc.int/Projects/projsearch.html>

¹⁷ Bahor, B., M. Van Brunt, J. Stovall, K. Blue. “Integrated waste management as a climate change stabilization wedge” *Waste Management & Research*. 2009: 27: 839-849.

¹⁸ European Environment Agency, *Greenhouse gas emission trends and projections in Europe 2009: Tracking progress towards Kyoto targets* http://www.eea.europa.eu/publications/eea_report_2009_9

From: Dana Furgerson
Sent: Thursday, December 01, 2016 9:32 PM
To: MCCONNAHA Colin
Subject: Draft: Considerations for Designing a Cap and Trade in Oregon

Members of DEQ:

I have read the draft for Designing a Cap and Trade Program in Oregon and was impressed with the depth and scope of the report. I hope Oregon pursues adaptation of a cap and trade program with a broad spectrum scope of emissions. This would help our state achieve 2020 and 2050 greenhouse gas emission goals.

A broad spectrum cap and trade program would provide certainty about our future emission reductions. It would encourage more use of renewal energy and low carbon fuels as well as the price on carbon causing a downward pressure on the price of renewal energy. California can serve as a reference for what has worked and what has not worked. I was impressed that the use of offsets had been so successful in California and that only a very small percentage had been found to not be functioning as they had claimed. Limiting the use of offsets and compliance verification also seemed wise. Identifying and dealing with possible emission leakage industries would garner support in the business sector.

The use of strategies to mitigate the effects of the cap and trade program on poor communities would be a necessity. The draft offered a number of ways to do that, as in assisting in energy bill payment. Using program funds to invest in local jobs and energy saving infrastructure were great suggestions.

I hope Oregon takes the lead in addressing climate change and the need to address our greenhouse gas emissions. A broad spectrum cap and trade program is a necessary part of meeting our climate goals.

Sincerely,
Dana Furgerson



**DEPARTMENT OF THE AIR FORCE
REGIONAL ENVIRONMENTAL COORDINATOR, REGION 10
510 Hickam Avenue; Building 250, Bay A
Travis AFB CA 94535**

22 December 2016

Oregon Department of Environmental Quality
700 NE Multnomah Street
Suite 600
Portland, OR 97232
Attn: Colin McConnaha

Subject: DoD Comments on the State of Oregon Department of Environmental Quality Draft Report on Considerations for Designing a Cap-and-Trade Program in Oregon

Dear Mr. McConnaha:

I am the Department of Defense (DoD) Regional Environmental Coordinator (REC) for EPA Region 10 and represent the military interests of the Armed Services and installations on environmental matters within Oregon, Washington, Idaho, and Alaska. I also coordinate with our other Regional Environmental Coordinators throughout all of the EPA regions. I am responsible for coordinating responses to various environmental policies and regulatory matters of interest on behalf of DoD in the state of Oregon. The DoD appreciates the opportunity to provide comments on the Draft Report on Considerations for Designing a Cap-and-Trade Program in Oregon.

In DEQ's draft market approach to reducing GHG emissions, one of the four areas listed is "study and evaluate how existing market-based programs in other jurisdictions control leakage and how those methods might be adapted to align with Oregon's economy and business sectors." In the draft document, DEQ "focused on a 'cap-and-trade' program that would be compatible with the Western Climate Initiative's (WCI) multi-jurisdiction carbon market." We are pleased to inform you that DoD actively participated in developing California's current cap-and-trade program. Through extensive engagement and collaboration, the state of California and DoD agreed that DoD should be excluded from California's cap-and-trade regulation. The California Air Resources Board (ARB) ultimately determined, "participation in the Cap-and-Trade Program is not the most efficient vehicle for obtaining GHG reductions from the military sector. We concur that other mechanisms already in place have the potential to achieve equivalent reductions through a broad-based approach that encompasses sources that are below applicability thresholds for both the Mandatory Reporting Regulation and the Cap-and-Trade Program."

DoD's unique global and national security missions demand flexibility in order for us to fluidly respond to national defense, crisis response and humanitarian assistance demands. We deeply appreciate California's adoption of our position after several meetings and extensive exchange of data. We welcome such a dialog in Oregon. We also submit to Oregon that if Oregon were to choose to regulate DoD through its cap-and-trade program, it would be building in an inconsistency that would be incompatible with existing WCI practices.

Further, we assure you an exemption from Oregon's potential cap-and-trade program would not exempt DoD from our existing robust federal GHG emission reduction programs. Compliance with federal mandates such as the 2005 Energy Policy Act, 2007 Energy Independence and Security Act, archived Executive Order 13514, and current Executive Order

13693, *Planning for Federal Sustainability in the Next Decade* have resulted in a reduction of energy intensity and an increase in the use of renewable energy. DoD has ambitious goals to reduce GHG emissions nationwide with its future acquisitions and current operations.

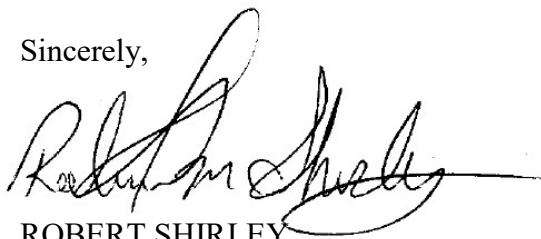
Most likely none of the military installations in Oregon will trigger the lowest emission limit threshold that Oregon ultimately adopts as a program design element; for example, the Portland Air National Guard (ANG), the largest Air Force emitter in Oregon, has reported GHG emissions less than 2,600 metric tons CO₂e since 2009. However, an exemption from the program is appropriate as EO 13693 provides for the exemption of military tactical vehicles, aircraft, vessels and equipment used in combat, combat support, combat service support, tactical or relief operations, or training for such operations when they are owned or operated by the Armed Forces of the United States. Additionally, the military may have an unforeseen requirement for increased operations such as a beddown of future missions, and/or training of our soldiers to meet the directives of the national command authority in a global environment that is constantly changing. One of the challenges with our mission is that it is difficult to predict where future strategic locations may be. DoD may find itself in a position in the future where Oregon and the nation are in need of increased DoD presence in Oregon. Exemption from Oregon's program would ensure rapid mobility and reduced potential for regulatory conflict.

We appreciate your consideration of the best practices and lessons learned from the implementation of the cap-and-trade program in California as you develop and implement a market based program in Oregon. For example, Section 4 of the study identifies seven key elements to the design of a cap-and-trade program, and how those elements would directly influence the program's ability to link with WCI jurisdictions, which appears to be a desirable part of program administration; maintaining similar elements would provide the ability for an Oregon cap-and-trade program to connect with the already linked WCI programs in California and Quebec. The scope of the program design is an important element as it identifies the sectors, sources, and types of emissions to be covered by the cap; maintaining consistency with sectors covered in California would help with compatibility with WCI. Our recommendation is that the military sector be exempt from any market based program to reduce GHG emissions, and that an exemption for military operations under any adopted program design element in Oregon would be consistent with the exemption California provided for the military from its cap-and-trade regulation [17 CCR §95852.2(c)(1)].

Therefore, we request that a section of the Market Based Study and ultimately the final rule, incorporate a military exclusion, NAICS Code 92811, which would be consistent with the exclusion in California. Lastly, please understand we are not seeking an exemption from Oregon Administrative Rule, Division 215, Greenhouse Gas Reporting Requirements.

Thank you again for this opportunity to provide comments on DEQ's Study of a Market Approach to Reducing Greenhouse Gas Emissions. If you have any questions or would like to discuss our comments in more detail, please contact Scott Dickinson at (707) 424-8294 or by email at bradley.dickinson@us.af.mil; and/or myself at (707) 424-8290 or by email at robert.shirley.2@us.af.mil.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert Shirley", with a long, sweeping horizontal line extending to the right.

ROBERT SHIRLEY
DoD Regional Environmental Coordinator
Region 10



**Good for the Economy.
Good for the Environment.**

December 22, 2016

Attention: Colin McConnaha
700 NE Multnomah St.
Suite 600
Portland, OR 97232

Dear Mr. McConnaha,

We appreciate DEQ's release of the Market Approach Study to Reducing Greenhouse Gas Emissions and the opportunity to provide written comment. Our members of the private sector believe that in general, a carbon program is a crucial step toward establishing a sustainable economy that will continue to thrive. As an "early adopter" of a carbon program, Oregon would position itself strongly to continue to attract new clean technologies and jobs that are the fastest growing sector of our economy.

We offer the following observations:

- E2 is officially agnostic on a cap and trade versus a carbon tax, as we see benefits to businesses from either approach: a cap and trade program provides lower costs of compliance, while a carbon tax provides known costs. The market certainty of both programs will help businesses better plan for and mitigate against carbon risk.

However, we acknowledge that Oregon does not need to reinvent the wheel while framing this program: California's cap and trade program is functioning beyond expectations. Carbon is being mitigated at lower costs than forecasted, and the state's flourishing economy has experienced a huge cleantech boom since its inception.

- A price on carbon forces the market to internalize the environmental, social and economic impacts of excess atmospheric carbon. Any comprehensive approach to emissions reduction should include the full cost of carbon and incent consumers and businesses to reduce emissions to lower costs. Carbon pricing also puts renewable energy sources on a level playing field with fossil fuels.
- E2 supports a comprehensive approach to reducing emissions using both the strength of market mechanisms embedded within cap and trade along with existing sector-specific climate regulations, such as the Clean Fuels Program and Renewable Portfolio Standard. Markets and price signals are insufficient on their own.

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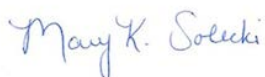
- E2 and alternative fuel partners have commissioned a forthcoming study from ICF International. The report, which will be released in January 2017, shows that California's Low Carbon Fuel Standard not only supports the emission reduction goals of the state's Cap-and-Trade program, but also lowers the cost of compliance for Cap-and-Trade. Sector-specific emission reductions are more difficult, particularly in the transportation sector. Since Oregon has a Clean Fuels Program and RPS already in place, an overarching carbon program will provide more cost effective, economy-wide emission reductions.
- The state of Oregon is not on track to meet our 2020 emissions reduction goals, hence a more comprehensive program will speed the transition and correct our emissions trajectory. Cap and trade generates revenue to continue the investment into business solutions that will decrease GHGs, create jobs, and accelerate the necessary transition away from a fossil fuel-based economy.
- As noted in E2's recent report, *Oregon, Changing Climate, Economic Impacts and Policies for our Future*, the economic impacts of insufficient action on climate are likely to be significant.
 - It is estimated that hotter summers will increase cooling costs in Oregon by \$37 million by 2040 and \$92 million by 2080.
 - Oregon snow-based recreation losses are projected to be \$124 million in 2040.
 - There is a region-wide seasonal hydropower reduction of 18-21% projected by the 2080s.

These costs and others highlighted in E2's report should be taken into consideration when evaluating climate action and compliances costs borne by business, citizens and the environment, against the risk associated with insufficient action.

- We support addressing leakage and its impacts on the exposed industries along with rural and low status communities. While not all exposed industries can be made whole, taking these steps are the right thing to do and broadens the coalition of support.

Thank you for considering our feedback. We look forward to continuing to engage with DEQ and others to craft, adopt and implement an effective emissions cap and carbon pricing mechanism in support of a thriving Oregon.

Sincerely,



Mary Solecki
E2, Western States Advocate

From: John Volkman
Sent: Tuesday, November 29, 2016 2:25 PM
To: 'MCCONNAHA Colin'
Cc: Fred Gordon; Debbie Goldberg Menashe
Subject: FW: Oregon DEQ releases draft study on market mechanism to reduce greenhouse gases

Colin, as discussed . . .

John M. Volkman
Senior Counsel

Energy Trust of Oregon
421 SW Oak St., Suite 300
Portland, OR 97204

From: Fred Gordon
Sent: Monday, November 28, 2016 5:10 PM
To: John Volkman; Debbie Goldberg Menashe; Hannah Cruz; Spencer Moersfelder
Subject: RE: Oregon DEQ releases draft study on market mechanism to reduce greenhouse gases

I liked and learned from this report but I had a few qualms, largely about the framing and tone. This is a report about a possible cap and trade system. However, it seems to be selling a bit hard in places, justifying that choice and then emphasizing the positives. It's good to size up the limitations, both because they are good to know, and to frame that discussion, should it occur, constructively.

P 7. The assignment was to analyze cap and trade, but the authors seem also to be trying to justify that decision. Maybe they should skip justifying and move on to analyzing, or be a bit more careful. Not sure the comparison of tax vs. cap and trade is entirely balanced. E.G., says it's easier to harmonize a cap and trade system. If this is just saying "California already picked and is implementing cap and trade so it's easier to coordinate among states" that should be said outright. Taxes can also be harmonized, and harmonizing either is difficult.

P 13. Theme: carbon sources that C&T don't handle well should be acknowledged as residual issues that must be dealt with by some other means or left as gaps. Sizing up the share of approximate emissions from these is one assessment of whether C&T is a great idea.

Exclude ag and forestry from cap and trade. These are large sources. This is an area where C&T may not be ideal. There are ways of regulating imprecise sources, but they have to employ more judgment and less quantification. You can't tax carbon if you can't measure it, and you can't put it in a market. But you can tax carbon-creating activities. So, it seems that the report should say "exclude these from direct engagement in cap and trade" but these are important sources, and may be influencable by other means.

Putting small refrigeration off the table also leaves a significant gap. Two weeks ago I thought the feds had that covered through international treaties, but who knows now? Again, this isn't just an exclusion, may point to a residual need that C&T leaves.

P 24 seems to say, if something is difficult to measure, one can allow offsets instead of allowances, still have to quantify them, but somehow it works out better because we have lots of detailed rules and procedures? This seems a bit circular. Maybe more straight up say that if these things are difficult to measure, it is good to limit the amount in a cap and trade system. Then cite the Cali and Quebec systems as systems that have done so. And maybe then discuss the limited potential impact of C&T on these sectors if so limited- indicating that other complementary approaches might be valuable.

P31. The section on distributional effects and the next section are excellent at discussing different effects- geographic, business sector, economically weak areas, electric intensive businesses. But is silent on whether efforts to address all effects might amount to enough exceptions or reallocations to significantly impact the effectiveness of the system in reducing carbon. Also, at what threshold is revenue redistribution a policy problem that might threaten the perceived fairness of the system? Or make it difficult to make it revenue neutral for utility customers? The frequent use of the language "freely allocate" seems to raise this question.

These are thorny issues. While one can hope that a balance can be struck, this is a big risk to the overall system. Seems worth a bit of discussion.

From: John Volkman

Sent: Monday, November 21, 2016 11:24 AM

To: Debbie Goldberg Menashe; Fred Gordon; Hannah Cruz

Subject: Fwd: Oregon DEQ releases draft study on market mechanism to reduce greenhouse gases

Sent from my iPhone

Begin forwarded message:

From: "DEQ Online Subscriptions" <ordeq@public.govdelivery.com>

Date: November 21, 2016 at 11:22:06 AM PST

To: John Volkman

Subject: Oregon DEQ releases draft study on market mechanism to reduce greenhouse gases

Reply-To: ordeq@public.govdelivery.com

Oregon Department of Environmental Quality (DEQ) has released a partial draft of a study on how a market-based approach to reducing greenhouse gas emissions would work in Oregon. This study focuses on a market-based policy commonly known as "cap-and-trade", and was conducted at the request of Oregon Legislature.

For more information about this study, to download the partial draft of the study, and to learn how to submit comments to DEQ, visit our webpage:

www.deq.state.or.us/aq/climate/GHGmarket.htm

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This email was sent to John Volkman using GovDelivery, on behalf of the Oregon Department of Environmental Quality (DEQ) · 700 NE Multnomah St., Suite #600, Portland, OR 97232 · 503-229-5696



Comments on Oregon DEQ DRAFT: Considerations for Designing a Cap-and-Trade Program in Oregon

Eric Strid

Dec. 22, 2016

Thank you for this opportunity to comment on the draft study. I believe that climate change is the most pressing issue of our time and should be the highest long-term priority of state government. My comments are attributable only to my independent studies and analyses, augmented by a few experts to which I've spoken. I have no agenda except maximizing emission reductions.

Summary: To one who has researched cap-and-trade (C&T) systems, this study is fundamentally confusing. Presumably the overall objective is to reduce greenhouse gas (GHG) emissions, but experiences of the EU, RGGI, and California C&T systems and the BC carbon tax uniformly and strongly suggest that politically practical price levels are way too low to reduce emissions by themselves. C&T and tax systems also raise significant revenue for various purposes, but a tax is clearly far simpler and cheaper for raising revenue than running a C&T system. Some systems apply revenues toward emission-reduction projects, but the efficiencies of most of those projects are not even tracked. The efficiencies of Oregon's existing emission programs are also not tracked, enabling no yardstick for comparing or governing expenditures.

My comments will detail these weaknesses, ask about alternatives, and then opine on broader governance issues related to a comprehensive emissions policy for Oregon.

I. Deficiencies of systems that price current emissions

A. Price signal too low.

The study does not address the general inability of C&T or "carbon" tax systems to achieve an economy-wide emissions price that is high enough to affect behavior changes in energy usage or investments in new infrastructure. Many economists and climate advocates assert the obvious policy solution of putting a price on current GHG emissions, but [real-world practicalities](#) get in the way.

A price signal large enough to affect purchasing behaviors is well over \$150/ton. In 2014 US gasoline prices effectively tested a \$150/ton tax on driving vs. today's fuel costs, yet vehicle miles traveled have barely changed. The continuing long-term macroeconomic [decline in energy costs of all types](#) will further exacerbate the gap between prices paid for fossil fuels and their total costs to society.

Clean-tech entrepreneurs are dismissive of pricing emissions because the price signal would be lost in fuel cost volatility, and would accelerate cost crossovers by only a year or two. [Carbon taxes in British Columbia have not demonstrated](#) a reduction in greenhouse gas emissions or fuel consumption. As one would expect, working and middle-class families have no alternative

but to drive or use their existing dirty infrastructure. For either a tax or capped system, the price is limited by politically acceptable costs and by increasing leakages. Practical price signals are just too low, and the higher the price, the more the middle class suffers. The BC case is instructive, in that emissions are rising in spite of the carbon tax as well as [other BC emission policies](#).

The Regional Greenhouse Gas Initiative (RGGI) cap-and-trade system is often credited with large emission reductions in those states, but this is arguably a gross confusion of correlation with causation. During the years of C&T operation, the largest recession in 80 years hit the economy hard, reducing energy demand; natural gas prices dropped, enabling the retirement of many coal plants; and other emission policies forced emission reductions. The \$3 per ton C&T price wasn't much of an incentive when the [marginal abatement costs](#) of the covered power plants was over \$50 per ton. In 2016 the [Congressional Research Service study on RGGI](#) characterized the direct effects of RGGI as "arguably negligible".

Causation confusion is also common in opinions of the California C&T system. A [Berkeley Lab model](#) essentially shows that California's sectoral policies are yielding the emissions reductions, bringing into question [whether a cap-and-trade or any emission pricing system is necessary at all](#).

The world's largest C&T system is the [European Union Emission Trading System](#), which has struggled to be effective since trading began in 2005. It has been criticized for over-allocation, windfall profits, price volatility, and not meeting GHG reduction goals. A recent survey of German companies found that a majority do not expect the EU ETS to be effective at reducing GHG emissions, even in the long run.

One of the reasons that emissions pricing doesn't affect consumer buying behaviors is that consumers consider only two or three years of operating expense, while the operating lifetime of the product is more like 5 to 20 years. This results in numerous market failures with energy-efficient products.

B. Leakages

Even at \$12 per ton, there is a [major leakage concern](#) from California's electric utilities classifying coal electricity as "unspecified sources" when buying electricity from out of state; this is an implementation problem that could have been addressed, but illustrates the complexities of regulating any price on current emissions.

Hypothetical [import/export price adjustments](#) for higher prices per ton would require an unprecedentedly complex system to track embodied emissions throughout supply chains worldwide.

C. Adverse policy interactions

Cap-and-trade (C&T) systems fundamentally complicate emissions policies by introducing [adverse policy interactions](#) whenever mandates change the available emissions supply in the emissions market. And “...economic cycles have an exceptionally strong impact on allowance prices, which therefore are inherently volatile.” Each such policy interaction can theoretically be addressed with changes or exceptions, as in Section 7 of the report, but the advantages over a fixed-price tax are questionable.

D. Punishing trapped users

Most people and businesses are trapped by the need to fuel their current infrastructure. It is counterproductive to punish users of dirty infrastructure with a price on their current emissions when they can't afford to change it with more efficient cars or buildings, green power, etc. In British Columbia, [“Carbon taxes have not been demonstrated to reduce GHG emissions or gasoline consumption; working and middle-class families have no alternative but to drive.”](#)

[Environmental justice groups report](#) that some sectors covered by California's C&T are simply buying offsets to enable higher emissions near disadvantaged communities.

E. Practical price levels are far below the actual social costs of emissions.

Practical price levels have been constrained by politics, whereas the real social costs of fossil fuels are estimated to range from \$12/ton to over \$480/ton.

- In 2013 the [federal government](#) estimated the social cost of carbon (SCC), counting effects of GHG emissions only, to be \$12 to \$129/MTCO₂e, depending upon the discount rate used.
- Using a different economic model in 2015, [Moore and Diaz](#) estimated SCC at \$220/MTCO₂e.
- In 2015 the [International Monetary Fund estimated](#) the global social costs of fossil fuels at \$5.3 trillion annually, much higher due to the [social costs of toxic emissions](#). That total corresponds to an average of about \$110/MTCO₂e if all the emissions were costed as a CO₂ equivalent; but for example, coal emissions are much more expensive than just CO₂ emissions.
- In 2015, [Shindell estimated](#) the social cost of atmospheric releases of various combustion emissions, conservatively estimating damages from gasoline at about \$3.80 per gallon and diesel at about \$4.80 per gallon.

These costs compare with Oregon's gas tax at \$0.30 per gallon, approximately equivalent in pricing impact to a \$30/MTCO₂e carbon tax. \$0.30 per gallon doesn't affect travel behaviors, but an extra \$3.80 per gallon price signal most likely would.

F. This report should consider alternatives to pricing current emissions

Use mandate policies: By design, the reductions from California's AB32 are primarily from other policies besides the C&T system. Note that any comprehensive emissions-reduction system will need to be managed because energy demand, accelerating climate changes, and rapidly

evolving technologies are so dynamic; thus the professed self-adjusting advantages of C&T have not happened, and a governance body is necessary in any case to adjust incentives to the demands of the times.

Price future emissions: What Oregon needs is zero-emission vehicles, buildings, and industrial processes. Such infrastructure is regularly upgraded, and the key decision points are when *purchasing* new cars, buildings, or factories. *Buyers* are responsible for locking in emissions for the useful lifetime of the infrastructure—and that is when a policy could charge the lifetime social cost of toxic and greenhouse gas emissions. A social cost for burning gasoline of \$3.80 per gallon implies a fee of about \$19,000 for a new 30 mpg vehicle driven for 150,000 miles, clearly high enough to steer emissions decisions.

Of course, there are practical problems with a \$19,000 fee on a car, especially when the buyer has no options. But as zero-emission options become available within vehicle categories, we could be ramping up such fees. And if the Oregon constitution stipulates that the fees all go to highway infrastructure, then that should ease other tax burdens while seriously incentivizing zero-emission vehicles. For buildings, lifetime emission fees on building permits could be charged by any jurisdiction. This approach is far simpler than managing a C&T system; it doesn't punish users of existing infrastructure; it is specific enough to also charge for toxic emissions; and it sets a clear and high enough price signal to weed out emitters over time, while helping clean-tech entrepreneurs. A price on future emissions may be useful for funding [revenue-neutral rebates](#), which is claimed to be very successful in France.

II. Use of revenues

A politically acceptable price on current emissions, whether a C&T system or a tax, appears to be too low to create an effective price signal to consumers, and too low to pay the social costs of atmospheric release. But either can raise significant revenues for various policy purposes, for which a tax is clearly far simpler and cheaper for raising revenue than running a C&T system.

A. Emission-reduction projects

Some systems apply the revenue toward emission-reduction projects. The [RGGI states have chosen](#) to invest proceeds in clean energy and other consumer benefit programs including energy efficiency, renewable energy, direct bill assistance and greenhouse gas abatement programs. [Some would argue](#) that RGGI's greatest impact, particularly under the original emission cap, was to provide a relatively reliable funding source for such efforts. The [investment of RGGI proceeds](#) in emission reductions through 2013 was about \$860 million, which is projected to return more than \$2.9 billion in lifetime energy bill savings to more than 3.7 million participating households and 17,800 businesses, a savings:investment ratio of about 3.4. That compares to the activities of the Energy Trust of Oregon ([ETO](#)), which has achieved \$5.6 billion of lifetime savings on utility bills from investing \$1.3 billion on similar projects since 2002, a ratio of 4.3. Thus repatriating Oregon revenues through energy efficiency projects

would be similar to ETO funding. A fixed carbon tax on utility emissions would generate stable revenues, similar to the public purpose charge that began operating in 2002.

California's C&T policy requires most of the revenue to be spent on projects that will reduce emissions, but the emissions results have not been tracked. So the price of allowances in California is too low to significantly affect emissions, and the efficacies of the funded projects aren't being tracked.

A metric addressing the cost of GHG abatement is more relevant to emission reductions. RGGI invested about \$91 million on GHG abatement projects through 2013, avoiding 310,000 short tons of CO₂; thus the average cost of abatement was about \$325 per MTCO₂e for those projects. Marginal costs of abatements generally range from negative to over \$1000 per MTCO₂e, due to the [specifics of the emissions](#), the maturity of [clean-tech solutions](#), and the [financing assumptions](#); regardless, comparable and objective metrics must be developed to optimize progress.

ETO's charter is energy efficiency, arguably increasingly misaligned with emission reductions as the electric grid gets cleaner. The cost of GHG abatements is not tracked by state agencies. It makes no difference whether funding is sourced from C&T or a tax or utility contributions or anywhere else, but state agencies have been negligent in not tracking the emissions results of its clean-energy programs. The first step of any quality-improvement program is quantifying a baseline of current reality, so that improvements can be objectively measured.

Should the revenues fund a green bank that finances emission-reduction projects, at stages from R&D through deployment?

B. Offset other taxes

Some systems apply the revenue toward reducing other taxes, as is done with the BC tax. Any emission reduction effect of such distribution is questionable.

C. Dividend the revenue

Some propose to [refund the revenue to citizens equally](#), but refunding the fees through dividends dilutes the pricing incentive. [“If everyone was given back the exact amount of carbon tax they paid there would be no incentive to use less fuel and reduce emissions.”](#) If everyone received an equal dividend, then consumers with lower-than-average emissions would effectively enjoy a lower fuel price.

Dividending a portion of the revenue to disadvantaged communities also dilutes the pricing incentive, but some policy is necessary to reduce the regressive nature of the fee. Instead of distributing money to pay the higher bills, the revenue could be better used to reduce energy bills, such as the ETO and RGGI cases above.

III. A comprehensive emissions plan for Oregon

Oregon lacks a plan for reducing greenhouse gas (GHG) and toxic fossil-fuel emissions. In the absence of a comprehensive plan, policy creation has been piecemeal and uncoordinated, resulting in policy gaps, inefficient planning, inefficient spending, and insufficient guidance for public or private investments.

A. C&T is not a comprehensive plan

Some will promote C&T as a simple and comprehensive system for emissions reductions by virtue of the broad scope of emitters covered, but existing C&T or carbon tax systems have not demonstrated the basic ability to significantly reduce emissions. By contrast, multiple states have mandated 50% renewables or more in their electricity generation, and there is little reason to suspect that such targets will not be achieved. Revenues from transportation emissions (Oregon's largest GHG and toxic emissions today) are not available for emission-reduction programs, so such programs need to be funded by policies other than emissions revenues. Private investors do not trust that C&T programs will be around and provide stable and significant incentives for long-term clean-energy investments. Policy planners lack a framework and long-term goals that facilitate policy designs and compatibilities.

B. Oregon's emissions goal for 2050 lags the global consensus.

The lack of state or global progress on GHG emission reductions implies a more aggressive target for 2050 than the target adopted by the legislature in 2007. [Oregon's aspirational goal](#) of 75% GHG reduction by 2050 aims to lose the race to cheaper and healthier infrastructure, which is increasingly seen as a [race to the top](#) instead of a free-rider game. The [IPCC](#) now says 100% renewables by 2050 is the target necessary for a medium chance to hit 1.5 C of warming, or by 2065 for a likely chance of 2 C warming.

A 100% renewable-energy goal is clearer than a partial-reduction goal, since it leaves no sector the option to hide behind another sector to help them out. It implies that all power derives from clean electricity or clean carbon-neutral biofuels, and implies a certainty date for stranded fossil-fuel assets. While this may seem like a science-fiction goal, the types of technology we now routinely enjoy were also unimaginable 30 years ago.

C. State agencies lack effective emissions governance

[Agencies lack charters and authorities](#) to implement and enforce the state's emissions goals. The Oregon Global Warming Commission is all volunteers. Energy spending is spread among agencies gets little oversight. The recent proposal to create a Climate and Energy Board are a strong step in the right direction, but more is needed.

A governance body is needed to create and periodically update a comprehensive plan. Some of the elements of a sufficient planning process include:

- Addressing the constraints and interactions within and between the layers of the climate change problem: the science of GHG and toxic emissions and their physical and economic effects; the new technologies necessary to rebuild emitting infrastructure, their maturity levels and cost trajectories; the economic options and impacts of various new infrastructure scenarios; and the policies and governance necessary to efficiently steer new infrastructure.
- Metrics and quantified targets by sector and by agency, such as baseline and target emissions and costs to permanently cut emissions. It can't be improved if it's not measured.
- Analyzing policies for theoretical and empirical evidence of efficacy, potential adverse policy interactions, and ability to reach the overall long-term goals.
- Policy analyses that anticipate the full range of potential climate change scenarios, cost evolutions in clean technologies, and economic issues.

The governance body must oversee the implementation of effective and efficient policies.

Effective energy governance must:

- Be future- and outcome-oriented
- Be comprehensive and strategic
- Create clear policies that promote certainty, but adapt
- Promote stakeholder involvement, but not as the ultimate outcome
- Rely on data, analysis, and transparency
- Value and use expertise
- Prevent unnecessary investments while promoting desired ones
- Create an ongoing data collection, analysis, and public information process
- Routinely evaluate progress and adjust policies as necessary.

IV. Recommendations

- This topic is very complex and detailed. Recommend simplifying the discussion as much as possible and use tables, charts, infographics, whatever.
- The report should at least include references to the numerous studies that question the basic efficacies of C&T systems and carbon tax systems. Omitting these perpetuates the illusion that emissions pricing is simple or effective.
- Like a company plagued with deep and pervasive quality problems for whatever reasons, I think the state's governance, policies, goals, objectives, metrics, training, and performance in emission reductions all need work. That's a problem but also an opportunity, because it's hard and few places do it well. Oregon could and should be a showcase for world-class emissions policy and execution.

Respectfully submitted,

Eric Strid

cofounder and retired CEO, Cascade Microtech, Inc.

From: Fergus Mclean
Sent: Tuesday, December 27, 2016 4:01 PM
To: MCCONNAHA Colin
Cc: Rep Helm
Subject: Cap and Trade report comment

To: Colin McConnaha

Re: DEQ Draft Cap and Trade report

From: Fergus Mclean

Colin,

I'm sending these comments in hopes that you might find them useful despite missing last Thursday's deadline. They're focused on the advantages of including consideration of forestry carbon offsets in any 2017 carbon reduction legislation. The carbon offset market created under California's cap and trade system now provides a growing market for certified forest offsets. Oregon is uniquely positioned to take advantage of for carbon credits which have successfully achieved certification under CA offset market rules. Forest carbon offsets sold into the California offset market have the potential of becoming an important driver of our economy whether or not Oregon proceeds with creating our own cap and trade system.

Oregon is the Saudi Arabia of forest carbon. Oregon contains the largest stores and is the largest producer of forest carbon in the US, providing 11% of all US forest carbon sequestration. At 69 MMtCO₂e, Oregon's forests sequester more carbon than the state's entire carbon footprint. Nearly half of this sequestration occurs on state lands and private forest lands regulated by the state. So forest carbon is an extremely big deal in Oregon- especially on the moist and fertile west side. Our state has a competitive advantage in the forest sequestration of carbon and it is to our advantage to include consideration of it in any carbon reduction or capture strategy.

The forest-dependent counties of Oregon have been hard hit by deterioration of lumber employment. To the extent that carbon credits can revitalize rural timber communities, they will *benefit economically disadvantaged rural communities* such as Curry County whose governmental functions are on life support. Monetizing forest carbon offsets will thus have

positive distributional and stimulus effects where they are most needed, in suffering timber counties.

California has *stringent rules governing forest carbon offset certification* which Oregon must meet if we're to gain access to their offset market. Achieving that certification will enable us to competently manage carbon in our huge forestry sector. Under HB 3543 (2007) Oregon's Global Warming Commission is mandated to monitor logging-related carbon emissions and to investigate alternative forest management practices which reduce carbon emissions, so this is something we need to do, but funding to do so is lacking. *With the potential for sequestration of a significant portion of our entire state's carbon footprint through improved forest management practices*, forest carbon credits are a logical priority for Oregon's economy as well as our air quality. We can move ahead on achieving certification in the CA offset market as a free-standing interim step towards reducing carbon pollution and revitalizing timber-dependent economies, and the benefits of doing so are compelling. California's economy is 11 times the size of Oregon's, and the challenge of creating a cap and trade system from scratch is a heavy lift for our smaller economy. Taking the steps necessary to sell forest carbon credits will move us towards our carbon reduction goal no matter what other mechanisms are eventually put in place, and we can start in on it immediately and at relatively little cost.

Monitoring forest carbon is a scientific work in progress and California's standards are stringent. We are fortunate to have at Oregon State University forest carbon scientists whose work is read and highly regarded around the world. Because we can produce more carbon in our forests than anyone else, it is to our advantage to develop the most *stringent carbon accounting capabilities*. Monitoring carbon could itself become an Oregon industry as we train experts in the field who can provide services outside of Oregon. In addition, *stringent monitoring* of carbon will create a whole new employment sector of on the ground forestry technicians to do the ground truthing necessary to verify carbon modeling. As state universities develop and hone carbon monitoring capacity the state will be able to *assist rural landowners* to bundle and market their own forest carbon credits- a *small scale rural market* unlikely to develop if selling carbon credits is left- as at present- to only the best-funded large enterprises.

Monetizing carbon can be seen as monetizing forest health, thus *benefiting and revitalizing rural economies* while preserving and nurturing the wild natural systems which underly Oregon's recreation industries. As other jurisdictions move forward with their own strategies, achieving carbon reductions will become increasingly difficult and expensive. Market-leading, *stringently verified* forest carbon offsets will only become more and more valuable over time. Canada has already announced a \$50/ton price for carbon by 2020, a fourfold increase from today's California offset price.

The Elliott State Forest provides a unique opportunity for the state to pursue marketing carbon credits. It's just the right size to produce the 250,000 ton size carbon units fitted to the California market- and its southern coast range location place it among the very most productive forests anywhere. A *carbon research and demonstration program* based in the Elliott could attract the revenue needed to conduct the carbon certification and also the forestry monitoring we need to do to capture leadership in the very quickly developing global markets for forest carbon. Early indications for the sale of forest carbon credits are positive, it's well grounded in Oregon policy, and could transform our rural economies while preserving our most precious natural heritage.

From: Frances Dunham
Sent: Wednesday, December 21, 2016 5:25 PM
To: MCCONNAHA Colin
Subject: Comments on DEQ's Draft Study of a Market Approach to Reducing Greenhouse Gas Emissions

Oregon Department of Environmental Quality

700 NE Multnomah St.
Suite 600
Portland, OR 97232

Attention: Colin McConnaha

Re: DEQ's Draft Study of a Market Approach to Reducing Greenhouse Gas Emissions

Dear Mr. McConnaha :

The Oregon Legislature is to be commended for supporting a study of mechanisms intended to limit and reduce greenhouse gas emissions (GHG).

Unfortunately, the Oregon Department of Environmental Quality has precipitously excluded every approach other than "cap and trade", a system whose popularity is based on its political appeal rather than its practical efficacy.

Cap and Trade

While true GHG emissions reductions might indeed be achieved by setting a rigorous and scientifically appropriate "cap" with significant decreases over time, the use of "trade" is a very different matter. Depending on what is clearly a commodities market to realize the changes on which the viability of life on our planet depends is a tragic mistake.

History demonstrates how easily markets can be manipulated to the advantage of speculators. The European Union's Emissions Trading System has been a miserable failure, undercut by intense corporate lobbying and loopholes protecting emissions as usual.

The growth of markets such as the Western Climate Initiative, linking ever larger numbers of jurisdictions, is certain to make the process more resistant to regulation and more subject to manipulation. Nowhere in the draft plan is proof of ODEQ's claims that " (C)ap and trade can produce emission reductions at lower cost."

Like the market for trading sulphur dioxide permits in the U.S., Europe's Emissions Trading System for CO2 has seen wild fluctuations in the value of carbon permits. This is highly profitable for financial speculators, but it destabilizes the investments in conservation and clean energy on which real progress depends.

Allocation weaknesses

Appallingly, DEQ favors free allocation of carbon allowances to large industrial emitters such as electric and natural gas utilities in order to spare ratepayers. There are other legislative and regulatory means for avoiding “leakage” rather than this blatant giveaway; see the British Columbia Carbon Tax.

Offsets

Offsets present another opportunity for gaming the system and/or a requirement for creating a vast verification, monitoring and enforcement bureaucracy. Offsets also lead away from emission reduction goals. Rather than depend on complex schemes to establish equivalency, a better choice would be to cap or tax methane and deforestation directly.

Other models

Although Washington State and British Columbia efforts are mentioned in passing, they are ignored in the discussions that follow, as if only the California and Quebec programs under the Western Climate Initiative are worth consideration.

The British Columbia Carbon Tax is an excellent example of a simpler, less vulnerable system, although it is not clear that the price per metric ton is high enough to reach the intended targets. This tax does have the great advantage of eliminating the regressive burden of carbon reductions on energy consumers, especially low income consumers.

Washington State’s cap on emissions from its largest sources focuses on each entity’s emissions history and mandates a gradual decline. The cap is subject to offsets within the state. Its most obvious flaws are the ability to transfer credits and obtain reduction credits.

Revenue and GHGs

Cap and trade would be a revenue generator of huge proportions, but not for the State of Oregon or its residents. A carbon or GHG tax would be a revenue generator of huge proportions, benefitting Oregon and Oregonians. The tax could be transparent, resistant to speculation, and a sure incentive for reducing carbon. I hope the DEQ will produce a second draft in which it is given serious consideration.

Thank you for the opportunity to comment for the record.

Frances Dunham

DEQ's Study of a Market Approach to Reducing Greenhouse Gas Emissions

22 December 2016

Comments of Fred Heutte
Portland, Oregon

Thank you for the opportunity to respond to the public review draft of the report, Considerations for Designing a Cap-and-Trade Program in Oregon, issued November 21, 2016. This supplements the testimony I provided at the public meeting on December 19.

1. The ultimate measure of climate action is “what the atmosphere sees”

The complexity and reach of any worthwhile greenhouse gas pricing program will require consideration of many elements and a balance among multiple program goals. However, ultimately climate policy is a matter of effects and responses to changes in the climate system over short and long time horizons. The common phrase “what the atmosphere sees” is intended to capture this (although the climate system generally speaking consists of the atmosphere, oceans, lands and cryosphere).

The nature of climate change is such that causes and effects are not linearly related and are separated by considerable lengths of time, and impacts vary by geography despite the relative uniformity of “well-mixed greenhouse gases” in the atmosphere.

Two additional observations are important. At a broad level, the underlying science consists of two major perspectives: organic chemistry (the carbon cycle), and fluid dynamics (atmosphere, rivers, oceans, cryosphere). As a result the magnitude of climate impacts in a broad sense is fairly well understood, and only the timing has significant uncertainty.

Considering that climate change impacts have high probability at scale, the question becomes one of decision-making under uncertainty. A useful perspective is adaptive management, which is a learning process to assess in continuous fashion not only unfolding climate impacts, but measuring and assessing the effectiveness of climate response policies and measures, and making ongoing adjustments as appropriate.

This is, in my opinion, the proper broad framework for considering policies such as greenhouse gas pricing programs like cap-and-trade.

2. The Draft is Comprehensive, Well-Grounded and Lays Out Clear Policy Choices

The public review draft is generally well written, provides a reasonable breadth of analysis, and shows where understanding of program purposes and elements continues to evolve based on experience.

It should be further refined and accepted as the starting point for specific program design.

3. Cap-and-Trade Must Be Part of a Climate Action Toolkit

As the draft notes, there are relevant lessons to be learned from program and policy efforts globally. However, the most important lesson is provided by California's AB 32 program. The original statute is about 16 pages long, a model of directional high-level policy with clear goals, processes and accountability, avoiding the tendency toward overly prescriptive legislative enactments.

At its core, AB 32 provides:

- A binding and declining GHG emissions cap
- A GHG pricing program (not specifically identified)
- "Complementary policies"

Of course there are hundreds of pages of implementing rules, but the core of the AB 32 approach combines the binding and declining cap with a toolbox approach to reducing emissions, providing revenues for relevant purposes, and maintaining sound GHG accounting.

This most important point is often lost in the debates over cap-and-trade vs. carbon price, the role of other policies, etc.

In particular, the nature and extent of complementary policies such as the Renewable Portfolio Standard (RPS), Low Carbon Fuel Standard (LCFS) and many more is misunderstood.

First, it was always expected that policies and other supporting regulations would provide the large majority of GHG reductions in the California system for at least the next two decades.

Second, also overlooked is the essential connection between the "carbon price" and the complementary measures. Each mutually reinforces the other and helps reduce the cost and improve the performance of the overall AB 32 program.

Oregon should not copy-and-paste the AB 32 system, and there are many aspects where California is continuing to make adjustments. This is why the adaptive management perspective is so important: evolving the overall approach is necessary to achieve program goals over time.

4. A Cap-and-Trade System Must Be Carefully Designed and Allowed to Evolve

The AB 32 cap-and-trade market and many others have provided examples for the public review draft of elements that must be clearly defined and carefully balanced: pricing floors and ceilings, allowance banking and reserves, and many more.

In the broad view, however, the key element needed is to maintain a good and dynamic relationship between supply/demand of allowances and other tradable instruments. At intervals, supply and demand have gotten out of phase in the EU Emissions Trading Scheme, Regional Greenhouse Gas Initiative and AB 32 cap-and-trade programs. The responses have been instructive: the EU ETS tightened the cap and market rules too slowly and too minimally, whereas RGGI acted in quick and effective fashion. Recent AB 32 auctions resulted in lower

prices from an imbalance of the cap and available allowances, and it remains to be seen how California will respond.

The broad issue to focus on is that the market construct for cap-and-trade will always need adjustments because economic forecasting does not have perfect foresight. Flexibility for resetting basic supply and demand factors for an Oregon cap-and-trade program will be essential.

5. Accounting is a Key Practice for any GHG Pricing Program

The question of leakage often comes up in GHG accounting, but there are other distortions that can undercut program results. Leakage cannot be eliminated but should be strongly diminished, since it undercuts program integrity directly in terms of “what the atmosphere sees.”

The concern about offsets is actually embedded within the accounting construct. If offsets are available as a program tool, they should undergo a slow evolutionary approach, as California is taking. It is very difficult to effectively measure additionality and baselines, especially for forest and agricultural offsets.

6. Multiple Revenue Streams

I strongly prefer revenue generating to so-called revenue neutral program design. Because climate change is a problem defined by quantity and time, it is important to achieve results rather than simply expecting a GHG price to work its way through the pure supply-demand response process.

A properly structured cap-and-trade program will have at least two revenue streams: one for policies and measures to directly “address the problem,” and also for climate impacts that help adjust for the increasing and varying local effects of climate change.

7. Equity and Effectiveness

Considerable attention has been paid to improving the effectiveness of climate response and insuring that, locally to globally, we follow an emissions pathway that minimizes climate impacts and risk within the constraints of our modern economy.

The perspective is generally “how far we are going” in reducing emissions, but this must be accompanied by “how do we get there.”

The importance of equity and effectiveness is synergistic: each works better with the other. An effective climate program will help those who least contributed to emissions and often face the largest impacts. Likewise, “to change everything we need everyone” – the interests, perspectives and talents of all people in all places will be fully needed to address climate effectively.

Thank you again for the opportunity to respond. I am confident Oregon will move forward to give strong consideration to a greenhouse gas cap-and-trade program that will contribute significantly to Oregon's economic fairness and stability, reduce environmental impacts from activities that also create greenhouse emissions, and do our part for the global effort to address climate risk through equitable and effective action.

Fred Heutte, climate policy experience and background (partial listing, organizational affiliations for information only)

1989: Board member, Solar Energy Association of Oregon (now Solar Oregon). Co-wrote initial draft and promoted passage of SB 576, which included a climate planning component in the State Energy Plan and declared a goal of 20% greenhouse gas emissions reduction by 2005 compared to 1990 levels. The bill passed with one dissent in the Oregon Senate and unanimously in the House. The language was removed from statute in 1995 as part of an arrangement that also created the Energy Facilities Siting Council's carbon dioxide standard.

2005-present: Volunteer co-lead, Sierra Club Federal & International Climate Campaign

- Head of Sierra Club delegation at most annual UN climate conferences, including Copenhagen and Paris. Edited ECO, the daily newsletter of Climate Action Network-International, 2009-2014
- Participated in Western Climate Initiative public process 2007-2009
- Provided assessment and shaped response to American Clean Energy Act (Waxman-Markey) and related legislation, 2007-2010



December 22, 2016

Colin McConnaha
Oregon Department of Environmental Quality
700 NE Multnomah St.
Suite 600
Portland, OR 97232

Re: Comments on DEQ's Partial Draft Study of a Market Approach to Reducing Greenhouse Gases in Oregon

Dear Mr. McConnaha:

The Green Energy Institute at Lewis & Clark Law School (GEI) respectfully submits these comments regarding DEQ's partial draft study of a market approach to reducing greenhouse gases in Oregon (referred to in these comments as the "partial draft"). The final study produced by DEQ could have a profound influence on Oregon climate change policymaking. The study also provides DEQ with the opportunity and responsibility to conduct a thorough review of the actual performance of other cap-and-trade programs for greenhouse gases and other pollutants. While the partial draft includes some important information regarding cap-and-trade policy options and theory as detailed in academic literature, the draft would offer more value to the Oregon Legislature and public if it included more empirical and practical discussion and analysis of existing cap-and-trade systems.

In particular, while the draft frequently uses California's emissions trading program to illustrate potential cap-and-trade design elements, the draft does not fully examine how those particular design elements have worked in practice. At this moment in time, we have several greenhouse gas emissions trading programs in operation throughout the world, including those in California and Quebec, the Kyoto Protocol's flexibility mechanisms, the European Emissions Trading System (EU ETS), and the Northeast's Regional Greenhouse Gas Initiative (RGGI). In addition, the United States has used emissions trading programs to reduce emissions of acid rain-forming pollutants through the Clean Air Act's Acid Rain program and California's NO_x emissions trading program. Each of these programs has performed in unanticipated ways. Common problems with the emissions trading programs have included initial over-allocation of emissions allowances that weaken the intended economic incentives underlying the theoretical value of emissions trading theory; the use of offsets that flood the emissions trading market with emissions allowances and thereby create additional over-allocation problems; price fluctuations for emissions credits that undermine revenue projections and budgeting; undervalued pollution credits that fail to represent the true social costs of pollution and weaken investment in technology and stifle innovation; enforcement challenges that often fail to prevent fraudulent behavior and lead to invalid emissions credits in the market; unanticipated administrative complications associated with designing, implementing, and enforcing the emissions trading

program; and exacerbation of environmental justice problems associated with increased emissions enabled by emissions trading. To provide Oregon policymakers with a clearer understanding of the potential risks and benefits of emissions trading and to ensure that any emissions trading used in Oregon avoids design problems in other programs, DEQ should make fuller use of literature and reports that question the underlying theories of emissions trading and the actual performance of operative programs.

In addition, DEQ should place emissions trading in the proper context of a broader comprehensive strategy to reduce Oregon's greenhouse gas emissions and transition away from fossil fuels. Because Oregon lacks a comprehensive strategy, we believe that consideration of an emissions trading program is premature. We therefore urge DEQ to recommend that Oregon first develop a more comprehensive strategy to address climate change before enacting another complicated and potentially ineffective emissions reduction strategy.

With these overarching ideas in mind, GEI has identified several points that merit particular consideration in terms of cap-and-trade theory versus cap-and-trade in practice. We have attached to these comments a number of studies and analyses that provide additional perspectives on emissions trading programs. Since DEQ titled this release a "partial" draft, we hope that DEQ plans to include more detailed information in its final report so that Oregon lawmakers have a fuller understanding of the importance of careful design of emissions trading programs. In addition, we hope that DEQ will offer another opportunity for public comment when DEQ has completed a full draft analysis that includes the use of more empirical information and the economic study referenced in the partial draft.

I. DEQ Should Make Emissions Reductions the Dominant Consideration in its Assessment of Emissions Trading in Oregon

Throughout the partial draft, DEQ identifies a number of objectives emissions trading could achieve. This conveys the idea that emissions trading can provide multiple, complementary benefits, including absolute emissions reductions over a set period of time; revenue generation; market signals that may spur innovation and accelerate a transition away from fossil fuels; and providing a low-cost means for companies to reduce emissions. Achieving each of these different goals, however, is usually not possible. Indeed, to date, no emissions trading program has achieved all of the objectives promised under market theories. DEQ should therefore make it clear that emissions trading's primary goal must be actual emissions reductions. DEQ should then assess all policy design elements against that goal. Otherwise, the report may convey the false impression that design elements do not undercut emissions reductions when they actually often do.

In the partial draft, DEQ identifies most of the objectives listed above, but it does not explain how all of them can be achieved—perhaps because some of the objectives are incompatible. For example, the partial draft describes emissions trading as a tool to correct market failures associated with externalized costs of pollution, but it then recommends allocation of emissions allowances for free to mitigate the impacts of an emissions cap on regulated industries. Free allowances act contrary to the goals of internalizing costs, and they also undermine attendant goals of increasing innovation and investment in technology and creating revenue for the state. The final report should clearly explain the tradeoffs involved in emissions

trading program design so that Oregon policymakers understand the implications of any emissions trading structure.

More importantly, DEQ should articulate a set of priorities that emissions trading must achieve. In explaining how emissions trading works, the final report should gauge every design element against the dominant goal of emissions reductions. The report should state clearly when design elements could undermine the emissions reductions goal. This would provide policymakers a clearer understanding of the complexity of emissions trading programs. Otherwise, Oregon risks enacting an administratively burdensome, yet ineffective, climate policy.

II. The Report Should Analyze Whether and How Cap-and-Trade Systems Actually Reduce Emissions

This report should ask whether an Oregon cap-and-trade program will actually reduce greenhouse gas emissions in Oregon under specific design parameters. While it may appear obvious that emissions trading caps lower emissions, actual practice to date has indicated that factors other than emissions caps have typically produced lower emissions. Thus, the report should carefully analyze which policy design elements are essential for making cap-and-trade an effective policy to reduce emissions in Oregon. The starting point for this report should be how to reduce emissions, not how to design a cap-and-trade program for a cap-and-trade program's sake. Currently, the report relies on academic theory to conclude without empirical evidence that cap-and-trade reduces emissions. However, other academic theory and empirical analyses challenge this assumption. DEQ should make sure the legislature has a complete understanding of cap-and-trade so that Oregon lawmakers can make an informed decision about cap-and-trade's efficacy.

A. The Report Should Look to Existing Cap-and-Trade Programs to Determine Whether they Achieve Certain Emission Reductions.

Although it may seem obvious that cap-and-trade programs offer the certainty of emissions reductions, design elements of a cap-and-trade program can actually weaken the cap and thus enable emissions increases. Although academic literature states that an emissions cap provides greater certainty than a carbon tax, actual experience has revealed how emissions caps may be undermined. Oregon's legislature should understand the implications of specific design elements that make an emissions cap permeable. To provide more information, DEQ's report should examine other jurisdictions' cap-and-trade programs to determine whether they have worked in practice.

1. Emission Reductions In California Are Not Clearly Attributable to Cap-and-Trade

Since the draft report uses many of the design elements from California's cap-and-trade program as a model, that state is a good place to start. It is true that California's greenhouse gas emissions have decreased since the enactment of AB 32, but attribution of those decreases to cap-and-trade is questionable. In fact, recent models suggest that California is on track to meet its 2020 emission reduction target and may be on track to meet its 2040 target due to other

sectoral programs separate from California's cap-and-trade program.¹ In addition, the inclusion of offsets² and concerns about "leakage" of emissions into other states may undermine some of the goals of California's cap-and-trade program.³ California policymakers are working to address the potential ways in which its various greenhouse gas programs intersect, and Oregon's legislature should have greater information about how California's program has performed.

2. Overly High Caps Under Other Cap-and-Trade Programs Have Had Long-Term Impacts on Carbon Prices and Incentives

Outside of California, other emissions trading programs have often faced challenges due to the lack of a stringent cap. For example, under the Kyoto Protocol's flexibility mechanisms (which included a general emissions trading program and two project-specific emissions trading programs), the emissions "cap" was set so high that the program was irrelevant due to three primary dynamics: first, when governments initially set the emissions cap for the Kyoto Protocol's regulated countries, they used historical emissions as the baseline. Countries that had been part of the Soviet Union received emissions allowances based on Soviet-era emissions, despite an abundance of evidence showing these countries would not reach those historical levels during the Kyoto Protocol's first commitment period (which ran from 2008-2012). The resulting over-allocation of emissions allowances, called "hot air," eclipsed the actual required emissions reductions of other regulated countries.⁴ Second, the project-based emissions program between countries that had emissions caps (called Joint Implementation) resulted in an extremely large amount of emissions credits obtained from projects designed to eliminate fugitive emissions releases from natural gas and oil infrastructure.⁵ Third, the Clean Development Mechanism, the project-based emissions program between regulated parties and developing countries that did not have emissions caps, allowed for a massive influx of emissions credits into the program, which effectively increased the overall emissions cap.⁶ In short, during the commitment period, the actual emissions cap was much higher than the legal one. Program design could have mitigated some of these problems. By failing to anticipate at the outset how the different Kyoto Protocol's flexibility mechanisms would operate, however, the parties ended up with a relatively ineffective program.

The EU ETS illustrates how another emissions cap became irrelevant during its early stages.⁷ Under the EU ETS, European countries agreed to reduce their emissions by 20% below 1990 levels by 2020. When the EU ETS first launched, emissions prices averaged around 30 Euros per ton. However, the global financial crisis in 2008 led to a deep drop in manufacturing and construction, which resulted in plunging credit values (below 1 Euro per ton), as the emissions cap became far too high based on actual emissions. The EU ETS illustrates how

¹ JEFFERY B. GREENBLATT, MODELING CALIFORNIA POLICY IMPACTS ON GREENHOUSE GAS EMISSIONS 23 (2015), available at <https://eetd.lbl.gov/sites/all/files/lbnl-7008e.pdf>.

² See *infra*, section III.

³ Danny Cullenward, *How California's Carbon Market Actually Works*, 70(5) BULL. ATOMIC SCIENTISTS 35 (2014).

⁴ See, e.g., *Russian Hot Air Threatens Climate Deal*, WWW.EURACTIV.COM (Oct. 22, 2009), <https://www.euractiv.com/section/development-policy/news/russian-hot-air-threatens-un-climate-deal>.

⁵ CHRIS WOLD, DAVID HUNTER & MELISSA POWERS, CLIMATE CHANGE AND THE LAW 255-257 (2d ed. 2013).

⁶ *Id.* at 257-259.

⁷ *Id.* at 398-405.

factors other than program design—in this case, the global economy—can render an emissions cap meaningless.

Finally, the RGGI underwent its own market problems when its cap ended up too high in comparison to the actual emissions from the participating states.⁸ As with the EU ETS, the overly high cap was partially a result of the global financial crisis and subsequent recession, and, as with California, the overly high cap was partially a result of other programs that lowered overall emissions due to, for example, increased renewable energy consumption.

While it may not seem problematic for a cap to be too high—after all, it could be seen as a positive sign that emissions are lower than expected—overly high caps distort the market by lowering the prices of allowances. Even if a program includes a price floor for allowances, regulated entities can take advantage of cheap allowance prices by purchasing surplus credits when their prices are low and banking them for future use when allowance prices rise. These dynamics can result in unexpected floods of historic carbon allowances into the market, so that even when the cap becomes lower, market signals get distorted. Depending on how many credits are banked, the stringency of the lower cap, and the actual emissions from the covered entities, it can take a long time for the banked credits to be fully used. While program design elements that limit the use of banked credits, set price floors (but not ceilings), and regularly adjust the caps can mitigate some of these dynamics, it is nonetheless important to identify ways in which markets, technological innovations, and other dynamics can render a cap ineffective.

In sum, the emissions caps under other jurisdictions' programs have been much higher in effect than they appeared on paper. DEQ should provide a deeper discussion of how these existing programs have operated to paint a fuller picture of the risks inherent in emissions trading programs. GEI therefore recommends that the final report provide more information about the certainty and uncertainty a cap may offer.

B. The Report Should Explain that an Effective Emissions Trading Program Requires a Stringent Cap That Can Be Quickly Adjusted Downward

Although, as noted above, emissions caps can be weakened through various mechanisms, proper design can mitigate some of these risks. The section of the partial draft explaining the stringency of the cap currently focuses on how Oregon's aspirational greenhouse gas emission reduction targets could be turned into a cap. The revised draft would better serve Oregon interests if it explained how the cap could be designed to have greater effectiveness. Simply translating Oregon's greenhouse gas goals into a cap will likely not create a meaningful limit on emissions. Rather, Oregon should develop an emissions cap based on a forecast of projected future emissions that takes into account likely emissions reductions caused by other climate and environmental policies, technological innovations, and other market and non-market factors that will reduce Oregon's actual greenhouse gas emissions in the future. Oregon should then ensure the cap will be progressively lowered under that forecast.⁹ Otherwise, policymakers may set an emissions cap based on political compromise rather than analytical data, emissions forecasts, and

⁸ *Id.* at 414-415.

⁹ Michael Wara, *Instrument Choice, Carbon Emissions, and Information*, 4 MICH. J. ENVTL. & ADMIN. L. 261 (2015).

economics.¹⁰ This would undermine the potential for an emissions trading program to drive market changes and innovation.

The report should acknowledge the importance of ensuring that the cap reflects realistic future emissions projections, and should recommend that policymakers include a mechanism that allows the administering agency to quickly adjust the cap downward in response to external forces that threaten to weaken the carbon market. For example, uncertainty due to unexpected emissions reductions, unsold carbon credits, economic downturns, differences in weather patterns, and major policy shifts can all affect the demand for allowances on the carbon market. This uncertainty can lower the price of carbon credits, and the revenues the state will earn from them, thereby increasing overall economic uncertainty. Market uncertainty can also inadvertently lead to increased emissions in the future, because market participants may take advantage of low prices to buy excess carbon credits today to offset future emissions. While the report briefly acknowledges some of these issues, a more complete analysis which includes a discussion of practical examples would help to determine whether cap-and-trade systems work as intended.

For example, California has recently experienced significant volatility in its carbon market. Auctions this past summer sold only 10% and 35% of available allowances respectively. Although the more recent auction was more successful (88% of available allowances were sold), the recent fluctuations show volatility at the very least. As noted above, this volatility is common in other emissions trading systems as well. In California, the volatility resulted in part from other California regulatory policies that have lowered greenhouse gas emissions and thus have impacted the carbon market.¹¹ While lower emissions are of course a positive outcome, the carbon market itself would have greater stability had California considered other emissions reductions policies when it set the initial emissions cap.

For a cap to function correctly and provide accurate price signals, it must account for reductions that will already occur under existing policies, as well as anticipate or adjust for emission reductions from policies enacted in the future. The recent volatility in California is a good illustration of what happens when a cap-and-trade system does not do that effectively. To avoid the kind of volatility that has occurred in California, the draft should explain that Oregon must be able to quickly adjust its cap downward based on changing circumstances. Such adjustments are necessary to maintain demand for carbon credits, keep revenue flowing, and hopefully drive technological innovations necessary to ensure reductions in greenhouse gas emissions.

This analysis is particularly important because Oregon would likely rely on allowance auction proceeds to invest in new infrastructure and to alleviate some of the regressive effects of cap-and-trade on low-income communities who spend a higher portion of their income on energy. Based on the volatility in California and Quebec's joint auction (which DEQ suggests Oregon should join), the state will not be able to rely on these funds if it does not address ways to ensure that the cap both accurately reflects forecasted emissions and is able to quickly adjust downward when that projection changes. In California, for example, the drop in revenue from

¹⁰ See, e.g. *id* at 266-267; David M. Driesen, *The Limits of Pricing Carbon*, 4 CLIMATE L. 107, 112 (2014).

¹¹ California Legislative Analyst's Office, *August Cap-and-Trade Auction Results*, CA.GOV (Aug. 2016), <http://www.lao.ca.gov/LAOEconTax/Article/Detail/200>.

auctions threatened funding for California's planned high-speed rail project.¹² Even though auction sales increased later in the year, the project faced months of funding uncertainty, which persists through today. Price volatility will affect projects and investments in Oregon as well.

III. The Report Should Examine How Offset Programs Work in Practice

Offset policies exist to lower the cost of compliance for regulated entities under a cap-and-trade program, but they can have the unfortunate effect of undermining the goal of cap-and-trade to reduce emissions. First, to the extent that a state policy exists to reduce *in-state* emissions, offset policies provide a way for in-state emitters to continue to emit while paying for out-of-state emission reduction projects that do not help the state meet its emission reduction targets. Second, offset policies tend to produce a lot of forestry offset projects that are extremely complex to account for and verify and that have significant permanence issues. Finally, offset policies fail to help disadvantaged communities, because they allow facilities disproportionately located in low-income areas to continue to emit greenhouse gases and local pollutants emitted along with them.

A. The Report Should Recognize that Offsets May Undermine Oregon's Emission Reduction Targets

Just as it should for the cap-and-trade program more broadly, the report should answer the specific question of whether and how an offset program will affect Oregon's greenhouse gas emission reduction targets. In most emissions trading programs, offset projects tend to take place out of state, meaning that the emission reductions that do occur lower emissions in other states, at the expense of the purchasing state and its consumers. For example, about three-quarters of the offset projects under California's cap-and-trade program occur out-of-state,¹³ meaning they do nothing to reduce emissions in California. Indeed, under Oregon's own small offset program for new natural gas plants under the state's CO₂ emission standard, the majority of emission reductions occur out-of-state.¹⁴ Offset programs are designed to achieve the most reductions at the lowest cost, regardless of where the reductions occur. While these offsets may lower compliance costs for regulated entities, they also shift the benefits of Oregon-funded emissions reductions out-of-state and do not help meet in-state emission reduction targets.

The instinctive response to addressing this out-of-state dynamic might be to impose geographical limitations on the use of such offsets. The report should therefore analyze whether Oregon has the ability to impose such limits, although we believe Oregon likely does not. Specifically, under the Dormant Commerce Clause doctrine, any geographical limitation on the use of offsets could be challenged as unconstitutional economic protectionism. If so, Oregon

¹² See Ralph Vartarbedian, *State Cap-and-Trade Auction Falls Far Short, Hurting Bullet Train*, L.A. TIMES (May 25, 2016, (9:43 PM)), <http://www.latimes.com/local/california/la-me-cap-trade-20160525-snap-story.html>.

¹³ Lara J. Cushing, Madeline Wander, Rachel Morello-Frosch, Manuel Pastor, Allen Zhu & James Sadd, A PRELIMINARY ENVIRONMENTAL EQUITY ASSESSMENT OF CALIFORNIA'S CAP & TRADE PROGRAM 8 (Sept 2016), available at

http://dornsife.usc.edu/assets/sites/242/docs/Climate_Equity_Brief_CA_Cap_and_Trade_Sept2016_FINAL2.pdf.

¹⁴ THE CLIMATE TRUST, *PLOWING NEW PATHWAYS: DEVELOPING QUALITY OFFSETS IN A MATURING MARKET*, THE CLIMATE TRUST'S FIVE-YEAR REPORT TO THE OREGON ENERGY FACILITY SITING COUNCIL App. 1 (Oct 2014), available at <https://www.climatetrust.org/wp-content/uploads/2014/11/2014-Oregon-5-Year-Report-EMAIL-141117-CAM-FNL.pdf>.

would likely be better served by restricting the use of offsets entirely, rather than by attempting to create potentially illegal geographical restrictions. Identifying these issues for the Oregon legislature should be an essential component of the final study.

Because the legislature has made it clear that it wants to analyze the ability of a cap-and-trade program to reduce Oregon greenhouse gas emissions, the report should specifically assess the impacts of using offsets as a design element. The tendency of offset projects to take place outside the state could undermine the state's emission reduction strategy, and the report should address that dynamic. Finally, while offsets may seem attractive options for lowering compliance costs, they can also result in an overabundance in carbon credits that will suppress price signals designed to incentivize emissions reductions and technological innovation in Oregon. The full range of offset impacts should be a part of this analysis for the legislature and other policymakers.

B. The Report Should Explore Some of the Practical Problems with Forest Offsets

Because implementing an offset program will likely result in a large number of forestry-related offset projects, DEQ's report should explain some of the pitfalls of relying on forest offset projects to meet emission targets. Both Oregon's carbon dioxide standard offset program administered by the Climate Trust and California's offset program under AB 32 have resulted in more forestry projects than any other type of offset project. Seventy-nine percent of emission reductions from active Climate Trust offset projects¹⁵ and 70 percent of offset credits for California cap-and-trade compliance come from forestry projects.¹⁶ Forestry-related offsets are considered appealing because they are a relatively low-cost and common-sense way to reduce emissions. However, as the partial draft points out in its recommendation to exclude the forestry sector from regulation under the larger Oregon cap-and-trade program, emissions from this sector are difficult to accurately measure.¹⁷ The report should consider that very same concern when it comes to forest offsets. Indeed, it would be particularly disruptive to the emissions market as a whole if Oregon were to eschew regulating the forestry sector under the emissions cap and then nonetheless allow other regulated entities to offset emissions reduction requirements with credits from forestry projects. Given the dominance of forestry in offset policies, the report should specifically look at the many complications, including verification and permanence issues, that apply to forestry offsets.

The report mentions the importance of verification for offset policies in the abstract, but the report should inform the legislature of the particular verification challenges for forestry projects. Because of the complexity of forest systems, it is immensely difficult to measure and verify emission reductions that occur as a result of efforts to build and maintain forest resources. For one thing, particular stands within a forest may serve as carbon sinks (absorbing atmospheric carbon), reservoirs (storing atmospheric carbon), and/or sources (releasing some carbon), depending on the stand's maturity and other ecosystem dynamics. Moreover, all stands within a

¹⁵ *Id.*

¹⁶ California Air Resources Board, *Compliance Offset Program*, CA.GOV, <https://www.arb.ca.gov/cc/capandtrade/offsets/offsets.htm>.

¹⁷ OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY, DRAFT: CONSIDERATIONS FOR DESIGNING A CAP-AND-TRADE PROGRAM IN OREGON 13 (Nov 2016).

forest do not behave the same way, so some stands may be carbon sinks and reservoirs, while others within the same forest may act as sources. Further complicating efforts to measure emission reductions from forest management is the extreme variability in the ability of forest soils to store carbon; soils store different amounts of carbon depending on weather and soil chemistry. In short, measurement and verification of emission reductions occurring from forest projects require careful consideration of a wide array of complex factors and are nonetheless subject to significant uncertainty.

Even with an ideal method to verify the amount of emissions reductions from forestry offsets, forest projects can lack permanence. That is, forests are susceptible to fire, disease, pest outbreaks, and other natural disasters that can quickly undo the emission reductions projects are meant to achieve. In fact, as the climate changes, these kinds of natural disasters become more likely.¹⁸ Many forest offset programs have built-in mechanisms to try to address these problems, including requiring “buffers” of additional forest offsets to compensate in case of project loss.¹⁹ However, while these kinds of safeguards are better than nothing, they do not guarantee the permanence of forestry projects; if a natural disaster occurred on a large enough scale, millions of supposedly offset emissions could be released into the atmosphere.

Indeed, a multidisciplinary task force recently concluded that the forest carbon offset market is likely not producing all of its promised emission reductions.²⁰ Specifically, the task force concluded that forest projects often fail to account for natural disturbances, leakage (where protection of a particular forested area simply leads to deforestation elsewhere), and the fact that buffer pools of forest projects are also susceptible to the same permanence issues they are meant to protect against.²¹ DEQ’s final report should explain to the legislature the difficulty of ensuring that emission reductions actually occur via forest offsets and that those reductions remain permanent. This information may ensure that any emissions trading program adopted by the Oregon legislature does not blithely authorize forestry offsets.

C. The Report Should Consider the Effects of Offset Programs on Disadvantaged Communities

Offset policies also pose significant concerns for disadvantaged communities. Given the legislature’s specific directive that the report assess the effect of cap-and-trade on disadvantaged communities, the report should identify the concerns as they relate to offsets. Although the partial draft discusses many concerns related to disadvantaged communities, a greater discussion of offsets will provide more complete information. Offset policies disproportionately affect disadvantaged communities for three reasons: first, greenhouse gas emitting facilities tend to also emit locally harmful pollutants, including particulate matter and air toxics. Second, these

¹⁸ Christopher S. Galik & Robert B. Jackson, *Risks to Forest Carbon Offset Projects in a Changing Climate*, 257 FOREST ECOLOGY & MGMT. 2209 (2009), available at <https://nicholasinstitute.duke.edu/sites/default/files/publications/risks-to-forest-carbon-offset-projects-in-a-changing-climate-paper.pdf>.

¹⁹ CALIFORNIA AIR RESOURCES BOARD, COMPLIANCE OFFSET PROTOCOL: U.S. FOREST PROJECTS 59-60 (2014), <https://www.arb.ca.gov/regact/2014/capandtrade14/ctusforestprojectsprotocol.pdf>.

²⁰ U.S.D.A. FOREST SERVICE PACIFIC NORTHWEST RESEARCH STATION, DO CARBON OFFSETS WORK? THE ROLE OF FOREST MANAGEMENT IN GREENHOUSE GAS MITIGATION (Aug 2013), available at <https://www.fs.fed.us/pnw/science/scifi155.pdf>.

²¹ *Id.* at 203.

facilities are disproportionately located in historically disadvantaged communities. And third, offset programs allow these facilities to continue emitting by simply paying for off-site and even out-of-state mitigation that does not help the local communities affected by the emissions.²²

The concern of disadvantaged communities about offset policies is more than just theoretical; even with California's offset limits that many consider stringent, a recent study shows the effects of the policy on historically disadvantaged communities. That study found that neighborhoods with an emitting facility within 2.5 miles "have a 22 percent higher proportion of residents of color and 21 percent higher proportion of residents living in poverty than neighborhoods that are not within 2.5 miles of such a facility."²³ And, even though emissions in California have decreased overall, the offset mechanism in that state's cap-and-trade program has actually allowed emissions from some industries to increase.²⁴ Thus environmental justice advocates' fears about the potential for offsets to allow local emitters to avoid decreasing emissions appear to have come true in California.

DEQ's report should therefore inform the legislature about the potential effects of offset policies on disadvantaged communities, explaining how the system in California has allowed emissions to continue unabated in the state's most vulnerable communities. In the current draft, the "tools to neutralize potentially negative effects" is focused solely on counteracting the regressive tendencies of cap-and-trade by using revenue generated by the program to assist disadvantaged communities. However, the health concerns raised by the ability of local emitters to pay for out-of-state emission reductions cannot be abated by simply providing disadvantaged communities with some of the cap-and-trade program revenue. Concerns about the regressive nature of cap-and-trade and concerns about the local health impacts of allowing offsets are separate problems with separate solutions. Based on the legislature's specific concern about environmental justice issues, the final report should respond to the specific issue of offsets and environmental justice.

IV. The Report Should Contain an Empirical Analysis of the Administrative Costs of an Emissions Trading Program in Oregon

DEQ's final report should provide a more detailed analysis of the costs and resources required to administer a greenhouse gas cap-and-trade program in Oregon. The partial draft mentions that a cap-and-trade system is more expensive to implement than a carbon tax, but it does not provide any specific analysis regarding how much more expensive it is. Similarly, the "program administration" section of the report lists the administrative functions that would need to be fulfilled under an Oregon cap-and-trade system, but does not provide any empirical analysis or explanation of the likely time and cost it would take to perform each function, nor does it discuss whether any of Oregon's agencies possess the staff and expertise necessary to carry out those functions. Based on previously proposed cap-and-trade bills in Oregon, and on the legislature's tasking DEQ with this study, DEQ will likely be the implementing agency for any cap-and-trade bill the legislature passes. Therefore, this report should provide the legislature with an estimate of the likely costs of cap-and-trade implementation, including additional

²²Cushing et al., *supra* note 13 at 8.

²³*Id.* at 4.

²⁴*Id.* at 6.

staffing needs. To conduct this analysis, DEQ should consider its own existing staffing and funding realities and look to other jurisdictions to determine the likely costs of cap-and-trade implementation.

A. The Report Should Look to AB 32 Implementation in California to Assess the Administrative Burden of a Similar Program in Oregon

Since many of the design elements the partial draft proposes use California's program as a model, the draft should contain some detail on the administrative burdens of that state's cap-and-trade program. The California Air Resources Board (CARB), which implements the program there, has a staff of 1,300 people, 136 of whom are focused exclusively on CARB's climate change responsibilities.²⁵ In addition, California's budget for implementation of AB 32 is \$52 million for 2016-2017.²⁶ The regulations to design the program are themselves an enormous undertaking; CARB's regulations for post-2020 exceed 300 pages.²⁷ These listed costs, regulations, and staff in California are current, meaning that the burden of administering AB 32 in California is still significant ten years after the bill's original enactment and nine years after the formation of the WCI market. Costs are likely to be higher in early years as DEQ (or whichever agency the legislature designates) designs Oregon's program.

In projecting the likely administrative costs of a cap-and-trade program in Oregon, the report should consider a couple of other factors that make Oregon different than California. First, it should certainly acknowledge that Oregon has a smaller economy with fewer entities to regulate, and therefore costs may be lower than in California. At the same time, the report should explain to the legislature that California is a bit of an outlier in terms of state air regulatory agencies, because CARB possesses an unusual amount of experience, expertise, and capacity because of its history regulating air pollution. Because of California's long struggle with air pollution, CARB has been implementing air pollution control measures since 1968, and Congress even granted it special authority to set its own mobile source emission control standards based in part on its unique experience and expertise.²⁸ In fact, at least one prominent cap-and-trade scholar has suggested that based on CARB's unique role and California's particular willingness to provide resources to that agency, California may be alone in its ability to effectively implement cap-and-trade.²⁹ Even with CARB's resources, it has in the past faced considerable challenges overseeing, monitoring, and enforcing other emissions trading programs.³⁰ DEQ should take the lessons from California and carefully apply them to Oregon so the Oregon Legislature gets an accurate sense of the burden associated with designing and administering emissions trading.

²⁵ California Department of Finance, *California Governor's 2015-2016 Proposed Budget, Air Resources Board*, CA.gov, <http://www.ebudget.ca.gov/2015-16/StateAgencyBudgets/3890/3900/department.html>.

²⁶ California Air Resources Board, *AB 32 Implementation Expenses*, CA.gov, <https://www.arb.ca.gov/cc/adminfee/revenue.htm>.

²⁷ CALIFORNIA AIR RESOURCES BOARD, PUBLIC HEARING TO CONSIDER THE PROPOSED AMENDMENTS TO THE CALIFORNIA CAP ON GREENHOUSE GAS EMISSIONS AND THE MARKET-BASED COMPLIANCE MECHANISMS STAFF REPORT (Aug 2016), available at <https://www.arb.ca.gov/regact/2016/capandtrade16/isor.pdf>.

²⁸ U.S.C. 42 § 7541(b).

²⁹ Michael Wara, *California's Energy and Climate Policy: A Full Plate, But Perhaps Not a Model Policy*, 70(5) BULL. ATOMIC SCIENTISTS 26, 31 (2014).

³⁰ Lesley K. McAllister, *Beyond Playing Banker: The Role of the Regulatory Agency in Emissions Trading*, 59 ADMIN. L. REV. 269 (2007).

In comparison to California, Oregon does not seem well positioned to take on another major environmental program at this moment, particularly not under existing staffing and resource constraints. DEQ has limited staff and resources dedicated specifically to climate change policy and a much smaller air resources staff than many other states. The recent controversies surrounding air toxics emissions in Oregon and the ongoing Cleaner Air Oregon process—which is aimed only at industrial air toxics—have occupied a great deal of the agency’s air program staff time and focus (as well as DEQ management time and focus), and the longstanding funding shortfalls for DEQ have not placed DEQ in a position to adequately take on developing a program as complex and large as economy-wide emissions trading. Moreover, unlike in California, where a team of people within the governor’s office initially helped develop and design AB 32 and where a team of staff within the legislature and governor’s office remain actively engaged, DEQ would likely be doing most of the work on its own, during a time of transition for the agency. DEQ should identify these distinctions to the Oregon legislature so policymakers and the public understand what is at stake in developing, implementing, and enforcing such a program.

B. The Report Should Examine Other Jurisdictions’ Implementation Costs

Because California is in some ways an outlier, the report should also include some of the implementation costs of other cap-and-trade programs, both existing and proposed. For example, the report could look to the costs of the Regional Greenhouse Gas Initiative (RGGI) in Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island and Vermont. RGGI implementation cost \$1.9 million in 2015,³¹ and had a \$2.3 million budget for 2016.³² These costs are significant considering the limited scope of the RGGI program; it only regulates carbon dioxide emissions (not other greenhouse gases) from power plants. By contrast, DEQ’s far broader proposal in the draft report would include regulation of several greenhouse gases emitted from large industrial sources, transportation fuels, and natural gas facilities.

In addition, the report could use the proposed national program as a point of comparison. When Congress proposed a national cap-and-trade program in 2007, a Congressional Budget Office report projected the program’s implementation would cost \$3.7 billion over a ten-year period, or \$370 million per year.³³ The costs would have covered an estimated 400 new employees necessary to implement the program, develop rules, and monitor compliance.³⁴ Again, the report should acknowledge the difference in scale between Oregon’s economy and the national economy, but the statistics are still relevant because they represent practical projected costs of a program similar in scope if not in scale. DEQ should use this data, adjusting for size, to

³¹ REGIONAL GREENHOUSE GAS INITIATIVE, INC., FINANCIAL STATEMENTS FOR THE YEAR ENDED DECEMBER 31, 2015 (2016), *available at* https://www.rggi.org/docs/RGGIinc/Docs/FinState/2015_Year-End_Audited_Financial_Statement.pdf.

³² REGIONAL GREENHOUSE GAS INITIATIVE, INC., 2016 OPERATING BUDGET, https://www.rggi.org/docs/RGGIinc/Docs/FinState/RGGI_2016_Budget_Website.pdf.

³³ CONGRESSIONAL BUDGET OFFICE, COST ESTIMATE: S. 2191 AMERICA’S CLIMATE SECURITY ACT OF 2007 1 (2008), *available at* <https://www.cbo.gov/sites/default/files/110th-congress-2007-2008/costestimate/s21910.pdf>.

³⁴ *Id.* at 16.

project the costs and staffing needs in order to implement the kind of program the report recommends.

The legislature needs budget estimates for cap-and-trade implementation in order to make an informed decision about the value of a cap-and-trade program, which agency to assign it to, and how to fund the program. The cost estimate should include the costs of designing the program, promulgating regulations, creating an emissions tracking system, monitoring compliance, overseeing and verifying offsets, enforcing violations, collecting and releasing to the public emissions data, regular evaluations of the program, and regular revisions to program rules and the emissions cap where required. These cost estimates could help Oregon design a program that would ensure recovery of the full incremental administrative costs associated with the emissions trading program. This information is a critically missing component of the partial draft report, and it should be included in the DEQ's final report to the legislature.

V. The Report Should Recommend Against Enacting a Cap & Trade Program in the Absence of a Comprehensive Strategic Plan to Reduce Oregon's Emissions

As the Green Energy Institute has pointed out in our *Countdown to 2050* report,³⁵ Oregon has long lacked a strategic plan to address greenhouse gas emissions in the state, preferring instead to enact piecemeal policies. Cap-and-trade is poised to be another of these piecemeal policies enacted without a clear understanding of how all of Oregon's climate policies and implementing agencies will work together to achieve Oregon's greenhouse gas emission reduction targets. As we have discussed above, if cap-and-trade works, it works only as a backstop to other regulatory policies. Because of the complex interaction between other regulatory policies and cap-and-trade, the report should recommend against adopting cap-and-trade in the absence of a clear plan and structure for reducing emissions in Oregon.

In particular, the report should point out that California's cap-and-trade program was only put in place as part of a broader plan to reduce emissions. Unlike some of the proposed cap-and-trade bills in Oregon, California's AB 32 did not simply prescribe a cap-and-trade program. Rather, it set mandatory statewide emission targets and then directed CARB to prepare a plan to achieve those targets, including coordination across sectors and across agencies.³⁶ CARB's original "scoping plan" was a 152-page document that detailed the range of policies California would use to reach its greenhouse gas emission targets, including energy efficiency programs, a renewable portfolio standard, a low carbon fuel standard, cap-and-trade, and a range of other mandatory and incentive-based programs.³⁷ Importantly, cap-and-trade in California was only one component of a larger framework, and the scoping plan clearly explained how these policies would work together to achieve California's climate goals.

³⁵ GREEN ENERGY INSTITUTE, COUNTDOWN TO 2050: SHARPENING OREGON'S CLIMATE ACTION TOOLS (Nov 2015), available at <https://law.lclark.edu/live/files/20713-countdown-to-2050-sharpening-oregons-climate>.

³⁶ Cal. Health & Safety Code § 38561(a).

³⁷ CALIFORNIA AIR RESOURCES BOARD, CLIMATE CHANGE SCOPING PLAN (Dec 2008), available at https://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf.

California's scoping plan component also required CARB to update the plan at least every five years,³⁸ so it was not simply a one-time aspirational document. CARB has had to adjust its scoping plan for greenhouse gas emission reduction strategies as the legislature has enacted new policies, ensuring that the strategic framework changes as needed, and assesses how the framework has worked over time.

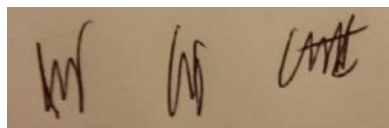
In its request for this report, the Oregon legislature clearly expressed its concern about how a cap-and-trade program would interact with Oregon's other climate policies. Although the partial draft identifies how some policies would interact with emissions trading, and although DEQ references the scoping plan, DEQ's partial draft does not mention strategic planning overall or the role that scoping has played in California. Moreover, DEQ acknowledges that the interaction between various Oregon policies and an emissions trading program is difficult to measure, in part because the actual impacts of many of Oregon's policies are themselves difficult to measure. Oregon's legislature, agencies, local governments, regulated entities, advocacy organizations, and citizens would benefit greatly from a long-term, comprehensive strategy to address climate change and eliminate fossil fuels. In light of the challenges associated with assessing how emissions trading would interact with a handful of other Oregon policies, it would be appropriate for DEQ to explore in its report some of the benefits of a comprehensive long-term strategic approach to reducing emissions. By noting some of the differences between Oregon's past proposed cap-and-trade bills and the one enacted in California, DEQ should help the legislature understand the difference between using cap-and-trade as a backstop to a larger strategic vision, and enacting cap-and-trade in a planning void.

V. CONCLUSION

DEQ has endeavored to provide a comprehensive assessment of how emissions trading could work in Oregon, and its partial draft provides a great deal of useful information and analysis. However, likely due to the limited time and resources DEQ had to complete the study, many questions remain about how emissions trading would work in Oregon. We hope that DEQ will seek additional resources and time to perform additional analysis of the best ways for Oregon to reduce greenhouse gas emissions in the state and to transition away from fossil fuels. Without a comprehensive strategy in place, we do not believe emissions trading offers Oregon a viable pathway forward, particularly not if DEQ does not have the resources it needs to design an effective program.

We look forward to more discussion with DEQ and would be happy to provide additional information if it will help you with your analysis. Thank you for considering these comments.

Sincerely,

A rectangular box containing a handwritten signature in dark ink. The signature appears to be "Mark R. Warner" written in a cursive, stylized script.

³⁸ Cal. Health & Safety Code § 38561(a).

Andrea Lang Clifford
Policy Analyst
Green Energy Institute

Melissa Powers
Jeffrey Bain Faculty Scholar and Professor of Law
Director, Green Energy Institute



Industrial Energy Consumers of America

The Voice of the Industrial Energy Consumers

December 22, 2016

Attention: Colin McConnaha
700 NE Multnomah St.
Suite 600
Portland, OR 97232
mcconnaha.colin@deq.state.or.us

Re: Comments on Considerations for Designing a Cap-and-Trade Program in Oregon

Dear Mr. McConnaha:

The Industrial Energy Consumers of America (IECA) provides the following comments on “Considerations for Designing a Cap-and-Trade Program in Oregon.” IECA members are energy-intensive trade-exposed (EITE) companies from every sector and IECA has several member companies in Oregon. IECA supports cost-effective actions to reduce GHG emissions that do not negatively impact our competitiveness.

I. INDUSTRIAL ENERGY CONSUMERS OF AMERICA

IECA is a nonpartisan association of leading manufacturing companies with \$1.0 trillion in annual sales, and with more than 1.6 million employees worldwide. It is an organization created to promote the interests of manufacturing companies through advocacy and collaboration for which the availability, use and cost of energy, power or feedstock play a significant role in their ability to compete in domestic and world markets. IECA membership represents a diverse set of industries including: chemical, plastics, steel, iron ore, aluminum, paper, food processing, fertilizer, insulation, glass, industrial gases, pharmaceutical, building products, automotive, brewing, independent oil refining, and cement.

II. EXECUTIVE SUMMARY

Sound GHG public policy must ensure that EITE industries have a level-playing field. Oregon manufacturers have substantially reduced GHG emissions by more than any other sector of the state economy (see Figure 1). Imposing additional reduction requirements on Oregon’s manufacturers will put them at a competitive disadvantage. Industrial GHG leakage will occur, driving high paying jobs and the GHG emissions offshore or to other states, accomplishing nothing environmentally.

There have been six countries, regions, or states that have organized, or tried to organize, cap and trade programs. They are the EU ETS, California’s AB 32, Australia’s carbon pollution reduction scheme, Canada, China, the U.S. American Clean Energy and Security Act of 2009 (H.R.

2454)¹, and Washington’s Clean Air Rule. While each differ, they all have one thing in common – they recognize that GHG leakage from manufacturing industries is not economically or environmentally desirable, and could significantly undermine efforts to reduce global CO₂ emissions.

In making your decision to choose any carbon mitigation program, a cost/benefit analysis must be undertaken. In California, where cap and trade has been in place since 2013 there is an ongoing debate about the effectiveness of the leakage mitigation incorporated in AB32 and there are clearly flaws in the design that will lead to leakage. In addition, we urge the Oregon Department of Environmental Quality (DEQ) to not use the social cost of carbon (SCC) to calculate costs and benefits. The current SCC was reviewed by National Academy of Science² who said they believe EPA should revisit the cost because there are a lot of questions on the validity of the calculations. No other country in the world imposes global costs on its manufacturing sector and doing so in the U.S. will lead to GHG leakage.

It is for these reasons, we urge Oregon to **exempt** EITE industries from the cap-and-trade program. EITE industries are listed below. In the event the state moves forward and does not exempt EITE industries, we urge you to implement an industrial GHG leakage mitigation policy that would provide a level-playing field.

Finally, imported products must be held to the same environmental standards as Oregon manufacturers to ensure a level playing field. To address the threat of climate change and GHG emissions, the DEQ must recognize and account for the significant GHG emissions that are being imported in manufactured goods, whether they are from other states or from offshore competitors. Product carbon-intensity can vary greatly. For example, the average carbon-intensity of Chinese manufactured goods is over four times higher than that of Oregon manufacturers (see Figure 5).

NAICS Codes	Description
311411	Frozen fruit, juice, and vegetable manufacturing
311423	Dried and dehydrated food manufacturing
311611	Animal (except poultry) slaughtering
322110	Pulp mills
322121	Paper (except newsprint) mills
322122	Newsprint mills
322130	Paperboard mills
324110	Petroleum refineries
325188	All other basic inorganic chemical manufacturing
325199	All other basic organic chemical manufacturing
325311	Nitrogenous fertilizer manufacturing

¹ “Climate Change Trade Measures: Considerations for U.S. Policy Makers,” U.S. Government Accountability Office, July 8, 2009, <http://www.gao.gov/new.items/d09724r.pdf>

2. National Academy of Science, “Assessment of Approaches to Updating the Social Cost of Carbon: Phase 1 Report on a Near-Term Update” <https://www.nap.edu/read/21898/chapter/1>

NAICS Codes	Description
327211	Flat glass manufacturing
327213	Glass container manufacturing
327310	Cement manufacturing
327410	Lime manufacturing
327420	Gypsum product manufacturing
327992	Ultra high purity silicon manufacturing
331111	Iron and steel mills
331312	Primary aluminum production
331315	Aluminum sheet, plate, and foil manufacturing
331419	Primary smelting and refining of nonferrous metal (except copper/aluminum)
334413	Semiconductor and related device manufacturing
336411	Aircraft manufacturing
336413	Other aircraft parts and auxiliary equipment manufacturing

III. KEY POINTS

a. EITE industries require a level-playing field. Otherwise, GHG leakage will occur and Oregon will not achieve its climate goals.

When it comes to regulating GHGs, EITE industries must be treated differently than other sectors of the economy. EITE industries compete globally on the basis of price. Competition is severe. For EITE industries, relatively small increases in energy-related costs can determine whether companies succeed or fail, directly impacting decisions to operate a facility or shut it down. Cost factors directly determine when and where capital is invested, where facilities are located and what products are produced. High paying jobs are impacted by these decisions. If costs increase to the extent they can no longer compete, production facilities are moved offshore or to other states. For these reasons, GHG policy must ensure that Oregon EITE industries have a level-playing field with non-Oregon competitors, wherever they are located.

That being said, cap and trade regimes, placed upon EITE industries will directly and negatively impact our ability to compete with imported products from foreign countries and non-regulated states that do not have the same costs of compliance and regulatory uncertainty. Without appropriate and effective leakage mitigation provisions, cap and trade will result in the loss of high paying manufacturing jobs, capital investment, and economic growth for the state of Oregon.

This unintended outcome is called industrial “GHG leakage,” a term created by H.R. 2454, the Waxman-Markey cap and trade legislation, and certainly an outcome we must avoid. We urge you to **exempt** EITE industries from cap and trade regulatory regimes or provide free allowances to offset all direct and indirect costs borne by the EITE consumer, unless and until all producers are held to the same standards.

If Oregon is serious about reducing global GHG emissions, the low-cost method to do so is to support the manufacturing sector and produce more products in Oregon using Oregon’s green fuel mix.

- b. Oregon’s industrial sector has already reduced GHG emissions 27.3 percent since 2000, more than any other sector, which clearly demonstrates that it does not need a cap-and-trade program to reduce GHG emissions. The industrial sector should be exempted from a cap-and-trade program.**

Because the industrial sector competes globally, and because energy, especially for EITE industries is a significant cost, reducing consumption of energy through energy conservation initiatives and demand reduction projects is a priority. In order to be competitive (and stay in business) with other domestic and global competitors, we have every incentive to reduce energy use. Because of this, the industrial sector is very unique and should be exempt from a cap-and-trade program. The industrial sector has reduced more GHG emissions than any other sector as illustrated in Figure 1 and has demonstrated that it does not require regulations to reduce GHG emissions.

**FIGURE 1: OREGON CARBON DIOXIDE EMISSIONS FROM FOSSIL FUEL CONSUMPTION
(Million Metric Tons of CO₂)**

Year	Residential	Commercial	Industrial	Transportation	Electric Power
2000	2.7	2.1	6.6	22.5	7.4
2001	2.7	2.2	5.6	21.5	8.6
2002	2.7	2.1	6.0	21.9	6.5
2003	2.6	1.8	5.3	21.9	8.2
2004	2.5	1.7	5.7	22.7	8.1
2005	2.6	1.9	5.3	23.2	8.1
2006	2.7	1.9	5.7	23.7	6.4
2007	2.7	1.9	5.4	24.2	9.6
2008	2.9	2.0	5.4	22.4	10.1
2009	2.9	2.0	4.7	22.4	8.8
2010	2.5	1.9	4.5	22.0	9.8
2011	2.9	2.0	5.0	21.0	6.4
2012	2.6	1.8	4.9	20.7	6.9
2013	2.8	1.8	4.7	20.7	9.0
2014	2.5	1.8	4.8	20.9	7.9
% '00-'14	-7.4%	-14.3%	-27.3%	-7.1%	+6.8%

Source: EIA, Oregon Carbon Dioxide Emissions from Fossil Fuel Consumption

Figure 1 illustrates that the industrial sector CO₂e emissions have decreased by 27.3 percent since 2000, surpassing the CO₂ reduction performance of other sectors. Furthermore, Figure 2 shows how the industrial sector has substantially contributed to GDP, increasing from \$22.0 billion in 2000 to \$49.7 billion in 2015, a 125.7 percent increase. This is a remarkable performance in decreasing large quantities of CO₂e, while increasing economic growth. This is further justification as to why the industrial sector should be exempt from a cap-and-trade program.

**FIGURE 2: OREGON GDP
(Million Dollars)**

Year	Manufacturing
2000	22,039
2001	19,017
2002	20,647

Year	Manufacturing
2003	22,410
2004	30,944
2005	29,495
2006	36,307
2007	37,019
2008	44,368
2009	47,522
2010	56,318
2011	61,048
2012	51,637
2013	47,885
2014	46,433
2015	49,734
% '00-'15	+125.7%

Source: BEA, Gross Domestic Product by State

- c. **The industrial sector has reduced electricity consumption by 20.8 percent and natural gas consumption by 28.0 percent. Further evidence that the industrial sector should be exempt from a cap-and-trade program.**

Consistent with comments referenced above, the industrial sector consistently strives to reduce energy consumption. Figures 3 and 4 illustrate that the industrial sector is performing well and is not responsible for increased Oregon GHG emissions. The combination of industrial energy efficiency and plant closures in Oregon has decreased both purchases of electricity and natural gas, which in turn has lowered GHG emissions for this sector.

**FIGURE 3: OREGON ELECTRICITY CONSUMPTION
(Megawatthours)**

Year	Residential	Commercial	Industrial	Transportation
2000	18,211,761	15,289,497	16,353,314	N/A
2001	17,502,996	14,816,355	13,084,361	N/A
2002	17,553,984	14,901,886	12,295,887	N/A
2003	17,735,560	15,483,362	11,960,528	15,280
2004	18,000,708	15,666,621	11,953,569	15,550
2005	18,338,815	15,379,662	12,683,813	16,955
2006	18,977,579	16,082,634	12,990,969	18,083
2007	19,374,458	16,186,580	13,117,448	18,479
2008	19,909,844	16,313,369	12,945,224	19,040
2009	19,804,315	15,977,598	11,761,280	23,704
2010	18,838,666	15,453,588	11,708,420	25,271
2011	19,429,175	15,754,249	11,963,131	24,891
2012	18,854,659	15,803,814	12,005,579	24,804
2013	19,328,558	16,080,354	12,209,593	22,473
2014	18,617,613	16,039,418	12,654,475	23,447
2015	18,269,007	16,021,066	12,949,776	24,125
% '00-'15	+0.3%	+4.8%	-20.8%	+57.9% ('03-'15)

Source: EIA, Electricity Sales to Ultimate Consumers

FIGURE 4: OREGON NATURAL GAS CONSUMPTION
(Million Cubic Feet)

Year	Residential	Commercial	Industrial	Transportation	Electric Power
2000	38,698	28,589	76,273	52	69,451
2001	38,271	27,884	69,866	69	82,542
2002	38,858	27,714	70,510	70	55,854
2003	37,300	26,110	67,519	86	74,400
2004	38,532	26,214	71,687	96	88,734
2005	39,806	27,631	69,645	198	87,998
2006	41,045	27,844	70,091	180	75,186
2007	42,880	29,007	68,813	168	101,503
2008	45,053	30,444	68,785	185	116,637
2009	44,819	29,744	57,318	179	108,705
2010	40,821	27,246	55,822	183	108,827
2011	46,604	30,359	56,977	144	60,252
2012	43,333	28,805	57,506	144	81,444
2013	46,254	30,566	57,372	154	101,930
2014	41,185	28,377	56,522	165	90,098
2015	37,257	25,797	54,931	184	113,988
% '00-'15	-3.7%	-9.8%	-28.0%	+253.8%	+64.1%

Source: EIA, Natural Gas Volumes Delivered to Consumers

d. The industrial sector should receive “GHG credits” for its reductions of electricity consumption and for combined heat and power (CHP).

Figure 3 illustrates that the industrial sector has substantially reduced its consumption of electricity by 20.8 percent. This is not by accident. IECA energy efficiency surveys have consistently shown that industrials invest in energy efficiency projects to reduce electricity use more often than reducing natural gas. It is the industrial companies that are investing their own capital in energy efficiency projects to reduce electricity consumption and they should be awarded the “avoided” CO₂ emissions. Electric generators should not be given GHG credit for electricity reductions by the industrial sector.

Industrials also invest in CHP facilities that avoid GHG emissions. CHP facilities can produce electricity with energy efficiency rates up to 80 percent versus conventional power generation at 35 percent. In this case, industrials should be awarded GHG credits for the difference between the CO₂e emissions per megawatthour versus the regional generation average. This should be done regardless of when the CHP was installed, as it is fundamentally unfair to treat new versus existing CHP facilities differently.

e. The most cost-effective way to reduce global GHG emissions is to produce more manufacturing products in Oregon.

If Oregon is serious about reducing global GHG emissions, the low-cost method to do so is to implement policy that supports the environment and the local economy by encouraging production of manufacturing products in Oregon. U.S. Census Bureau data suggests that imported manufactured goods are about one-third that of Oregon produced products.

Figure 5 illustrates this point by comparing the carbon intensity of manufactured products of the U.S. versus China. In this case, Chinese imported products emit four times more CO₂e emissions versus products manufactured in the U.S. These figures do not include CO₂e related to overseas transportation that in their own right, are significant. The point is that in many cases increasing production of U.S. products reduces global CO₂ emissions. Cap-and-trade programs often completely miss this vital point.

FIGURE 5: U.S. VS CHINA MANUFACTURING CO2 EMISSIONS – 2013

Country	Manufacturing – Value Added (\$Billions)	Manufacturing Industries and Construction (Million tonnes of CO ₂)	Million Tonnes of CO ₂ /Manufacturing Value Added
U.S.	1,943.8	422.1	0.22
China	2,856.9	2,813.1	0.98

Source: International Energy Agency (IEA), The World Bank, <http://data.worldbank.org/indicator/NV.IND.MANF.CD>

f. EITE electricity cost-shifting impacts to the Oregon economy has not been considered.

EITE industries typically operate 24/7, providing critically important base load electricity demand. If EITE industries are forced to reduce production or move their facilities out of state or to a foreign country because of cap-and-trade, the fixed electricity costs that they are paying will be shifted to the remaining retail consumers of electricity, thereby increasing their electricity costs. This cost shifting factor has not been considered in any of the costs and is a significant additive public policy issue that should be accounted for in cap-and-trade policymaking.

g. A cap-and-trade program should not use the social cost of carbon (SCC) to calculate costs and benefits.

The social cost of carbon places an extremely high and indefensible cost on U.S. manufacturing, placing them at a distinct disadvantage.

The U.S. Government Accountability Office (GAO) report entitled, “Development of Social Cost of Carbon Estimates”³ highlights that the SCC cost estimates have great economic and scientific uncertainty. To the extent to which the SCC is inaccurate it imposes an unjustified carbon cost on “domestic” manufacturer further impairing industry’s ability to compete with foreign competitors, despite in some cases having a much smaller carbon footprint. This really is a lose-lose for the environment and the economy and must be avoided.

U.S. Government Accountability Office report highlights severe uncertainties in SCC values.

On page 12 it states, “The Technical Support Document (TSD) states that reported domestic effects should be calculated using a range of values from 7 to 23 percent of the global measure of the social cost of carbon, although it cautions that these values are approximate, provisional, and highly speculative due to limited evidence.” The quote illustrates that when applying the SCC on domestic manufacturers, 77-93 percent of the estimated climate benefits will flow to

³ U.S. Government Accountability Office, Development of the Social Cost of Carbon Estimates, July, 2014, <http://www.gao.gov/products/GAO-14-663>

entities outside of the U.S.! In other words, the TSD guarantees that domestic application of the SCC will harm the U.S. economy, to the benefit of others around the world. Taking such action is clearly inconsistent with the purpose of the U.S. government and every federal agency. The TSD inappropriately ignores longstanding guidance from OMB to analyze only domestic cost-benefits. If Oregon wishes to continue applying the SCC, it must revise downward the range of benefits by 77-93 percent.

The social cost of carbon value is unrealistically high.

The SCC for 2016 is \$36 per metric ton (in \$2007), while other carbon trading prices are far lower. Some of those include: RGGI's auction clearing price is \$3.55 per metric ton (on December 7); California's cap and trade price is \$12.95 per metric ton (on September 16); and the EU ETS price is \$4.08 per metric ton (on September 2). And, throughout the overwhelming majority of the world, the price is even lower. These stated real-time carbon market prices raise serious questions about the validity and appropriateness of the SCC. As manufacturers who compete globally, the unrealistic SCC price puts the domestic economy at a competitive disadvantage, which encourages companies to produce products offshore, in other countries that do not impose these unrealistic costs.

If Oregon moves forward with a cap-and-trade program, the state must prevent industrial GHG leakage, either through exemption or through carefully designed and effective leakage mitigation measures. Leakage from manufacturing industries is not economically or environmentally advantageous. Certainly, any cost/benefit analysis cannot use the SCC, a highly questionable cost, not used in any market worldwide. We urge the DEQ to not negatively impact our competitiveness. If leakage mitigation, not exemption, is Oregon's selected path, we highly encourage a robust stakeholder process to ensure Oregon's mitigation measures do not have the same oversights that render Ontario and California's leakage mitigation approach less than adequate.

Respectfully,

Paul N. Cicio
President

The Industrial Energy Consumers of America is a nonpartisan association of leading manufacturing companies with \$1.0 trillion in annual sales, over 2,300 facilities nationwide, and with more than 1.6 million employees worldwide. It is an organization created to promote the interests of manufacturing companies through advocacy and collaboration for which the availability, use and cost of energy, power or feedstock play a significant role in their ability to compete in domestic and world markets. IECA membership represents a diverse set of industries including: chemical, plastics, steel, iron ore, aluminum, paper, food processing, fertilizer, insulation, glass, industrial gases, pharmaceutical, building products, automotive, brewing, independent oil refining, and cement.

From: Jim Edelson
Sent: Monday, November 28, 2016 7:29 PM
To: MCCONNAHA Colin
Subject: cap and trade study

Dear Sirs

There is a serious mistake on page 25 of the draft study in this paragraph:

"Another concern about offsets is that entities covered by the cap can avoid investing in changes to reduce their emissions by purchase of these credits. Offset projects essentially offer an alternative source of emission reduction into the program, thereby relieving some pressure on covered entities to reduce their own emissions. California and Quebec address this concern, at least to some degree, by limiting the use of offset credits to 8% of any single entity's compliance obligation. This is far more stringent than the 49% limit recommended in the original WCI Program Design.⁴⁴ Oregon may need to adopt a similarly stringent limitation on the use of offset credits to link with WCI jurisdictions."

From Section 9.2 of the referenced WCI document, it says (emphasis added):

The WCI Partner jurisdictions will limit the use of all offsets, and allowances from other GHG emission trading systems that are recognized by the WCI Partner jurisdictions, to no more than **49% of the total emission reductions** from 2012-2020 in order to ensure that a majority of emission reductions occur at WCI covered entities and facilities. Each WCI Partner jurisdiction will have the discretion to set a lower percentage limit. All offsets and non-WCI allowances must meet the rigorous criteria established by the WCI Partner jurisdictions.

The distinction that your report misses is that "49%" is a percentage of emissions REDUCTIONS for an entity. The "8%" in the CA/Ontario trading system is a percentage of the TOTAL emissions of an entity. Not only did your Report get the conclusion wrong, it is actually opposite of the correct conclusion. As a consultant to the WCI process at that time, I can inform you that 49% of the emissions reductions was approximately equal to 4% of the total emissions. In the end, the CA Legislature and Gov Schwarzenegger decided to double that limit of offsets to 8%.

8% of total emissions is approximately half as stringent as 49% of emissions reductions. So, please correct the Report to reflect the correct accounting of offset limits.

jim

Sincerely
Jim Edelson

From: Megan Kemple
Sent: Thursday, November 24, 2016 12:06 PM
To: MCCONNAHA Colin
Subject: comments on Cap and Trade study

Colin,
Thank you for your excellent work on DEQ's Study of a Market Approach to Reducing Greenhouse Gas Emissions.

I have just a couple of comments:

- 1) Related to: "Broadening the scope of the program: Alternatively, funding projects that reduce emissions from sources not covered by the cap will extend the reach of the program to these uncapped sources". (Page 21).

Please mention the option of creating a fund for economic incentives for agricultural stakeholders implementing climate-friendly agricultural practices. Agriculture is a sector which would likely not be regulated under the cap, but contributes a significant amount of emissions.

- 2) Related to: "Offset credits represent emission reductions from sources not covered by the cap." (Page 23)

Please mention the option of inclusion of offsets for the agriculture sector including methane digesters *and* other climate-friendly agricultural practices, while ensuring that the offsets provide the reductions they represent.

Thank you for your consideration of this feedback and for including my comments in the record.

Megan Kemple

From: Zach Mulholland
Sent: Wednesday, December 21, 2016 5:01 PM
To: MCCONNAHA Colin
Subject: Market Mechanism Draft Study Comments
Attachments: MCJ-MarketMechanismDraftStudyComments.doc; GHG-ReductionGoalsForOregon.pdf

Hello,

Attached are some comments on the Draft Study looking at what a market based mechanism for reducing GHG's could look like in Oregon.

Here also is a link with some of the latest research suggesting reaching net-negative emissions will be necessary to avoid some of the worst impacts of global warming (suggesting that a faster reduction path than Oregon's currently adopted goals may be wise).

<http://csas.ei.columbia.edu/2016/10/04/young-peoples-burden/>

From my previous submission prior to the studies drafting, here again are some supporting docs relating to stronger emission reduction goals.

Article from James Hansen on necessary reductions:

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0081648>

The second attachment is additional information on what alternative reduction paths could like (probably more detailed than necessary for the Study, but it is important to note that stronger reduction pathways than Oregon's current targets may be recommended to avoid the worst impacts of global warming and the possibility of runaway warming).

Thank you,

Zach Mulholland
Millennials for Climate Justice

Millennials for Climate Justice comments on DEQ draft report on market mechanisms for reducing GHG's

1. (pg 4 and throughout report) The report does not acknowledge that the State's current GHG reduction goals may need to be strengthened in order to avoid some of the worst effects of global warming, such as if the State wanted to update emission targets to be associated with 1 C or 1.5 C instead of 2 C or in light of the most recent data on what's necessary to stay below 2 C.
2. (pg 17) The report suggests there is no compelling reason to front-load emission reductions. However, there are climate impacts associated with a slower reduction path that should be taken into account and would justify front loading emission reductions or, at a minimum, not back-loading them.

O, 1, or 2 C? Science Based Greenhouse Gas Reductions for Oregon

Introduction

This is presented as a preliminary framework for GHG reduction policy development in Oregon using science based targets. The report is broken up as follows:

Differences between 0, 1, and 2 C
Carbon Budgets to reach 0, 1, and 2 C
How do previous policies compare
Comprehensive Approaches to Policy Development
Conclusion
Background Information on Carbon Budgets
Supplemental Resources (Bibliography)

Differences between 0, 1, and 2 C

Impacts of 2 C (and 1.5 C)

A recent report by Schleussner highlighted the expected impacts of 1.5 and 2 C temperature increase with potential highly dangerous results at both 1.5 C and 2 C. Their findings are shown below.

		1.5 °C	2 °C	
Heat wave (warm spell) duration [month]				
	Global	1.1 [1;1.3]	1.5 [1.4;1.8]	Tropical regions up to 2 months at 1.5 °C or up to 3 months at 2 °C
Reduction in annual water availability [%]				
	Mediterranean	9 [5;16]	17 [8;28]	Other dry subtropical regions like Central America and South Africa also at risk
Increase in heavy precipitation intensity [%]				
	Global	5 [4;6]	7 [5;7]	Global increase in intensity due to warming; high latitudes (>45 °N) and monsoon regions affected most.
	South Asia	7 [4;8]	10 [7;14]	
Global sea-level rise				
	in 2100 [cm]	40 [30;55]	50 [35;65]	1.5 °C end-of-century rate about 30 % lower than for 2 °C reducing long-term SLR commitment.
2081–2100 rate [mm/yr]		4 [3;5.5]	5.5 [4;8]	
Fraction of global coral reefs at risk of annual bleaching [Constant case, %]				
	2050	90 [50;99]	98 [86;100]	Only limiting warming to 1.5 °C may leave window open for some ecosystem adaptation.
	2100	70 [14;98]	99 [85;100]	
Changes in local crop yields over global and tropical present day agricultural areas including the effects of CO ₂ -fertilization [%]				
Wheat	Global Tropics	2 [-6;17] -9 [-25;12]	0 [-8;21] -16 [-42;14]	Projected yield reductions are largest for tropical regions, while high-latitude regions may see an increase. Projections not including highly uncertain positive effects of CO ₂ -fertilization project reductions for all crop types of about 10 % globally already at 1.5 °C and further reductions at 2 °C.
Maize	Global Tropics	-1 [-26;8] -3 [-16;2]	-6 [-38;2] -6 [-19;2]	
Soy	Global Tropics	7 [-3;28] 6 [-3;23]	1 [-12;34] 7 [-5;27]	
Rice	Global Tropics	7 [-17;24] 6 [0;20]	7 [-14;27] 6 [0;24]	

<http://www.earth-syst-dynam.net/7/327/2016/esd-7-327-2016.pdf>

Impacts of 1 C

Highlighting some of the dangers associated with 2 C, many have called for emission reductions associated with lower levels of temperature increase. In their paper “Assessing 'Dangerous Climate Change': Required Reduction of Carbon Emissions to Protect Young People, Future Generations and Nature,” James Hansen and others call for targets associated with 1 C temperature increase, stating levels of CO₂ associated with 2 C would “spur 'slow' feedbacks and eventual warming of 3–4°C with disastrous consequences.”

Sheussler, given the likely harsh impacts of 1.5 and 2 C, has suggested more information on the impacts of lower levels of global warming is needed in case lower levels of warming are also unsafe.

0 C

Some have gone so far as to state that arguing over 1 and 2 C are bad both in terms of impacts, both terrible, and their ability to sway the public, as they are too wonky. They argue that we can and should demand something better, a return to zero degree average global temperature increase.

Carbon Budgets for 0, 1 and 2 C

A carbon budget is a tool for setting GHG reduction goals in line with an associated temperature goal. You take the total amount of GHG's still left to burn to stay below a particular temperature, and set a reduction pathway that keeps you from burning more than that amount.

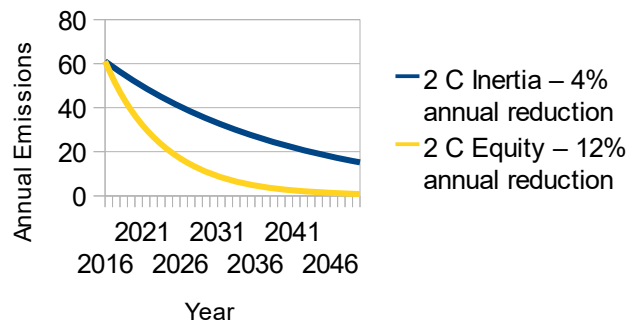
The following are Carbon (or GHG) budgets for Oregon to reach each of the above stated temperature goals of 0, 1, or 2 C. Each Budget states the Total Carbon Budget for Oregon and the yearly reductions required to meet it under 2 scenarios. The Equity scenario divides the remaining World Carbon Budget between everyone on a per capita basis and the Inertia scenario has everyone reducing equally on a percentage basis. The Equity scenarios may be not be possible for some large emitters while the Inertia scenario is unfair as it locks in current energy disparities. These scenarios are suggested by the Global Carbon Budget Project as possible sideboards for a range of “fair” climate policies.

The 1 C and 0 C scenarios also contain “Sequestration Budgets,” where the state would have to sequester already emitted GHG's through reforestation or some other means to help bring the planet's temperature back down. The Sequestration Budgets are also offered with 2 possible sideboards, “World,” where the world sequestration budget is divided on a global per capita basis, and “American,” where Americans would sequester a portion of the global sequestration budget equivalent to their 26% share of historic emissions. For simplicity sake, for 0 C I used the same reduction path as for 1 C and only add to the sequestration budget to attain the climate goal. Sequestration budget could be extended beyond 2050 to provide lower cost or make up for an inability to meet CO₂ budgets in early years, though this runs a risk of running out of land on which to sequester carbon, already a potential problem under the 0 and 1 C scenarios.

(For more information on carbon budgets and how the following Carbon Budgets were made, see the Background Section and the links to the Eugene White Paper and Global Carbon Website at the end of this document.)

2 C Carbon Budget

2 C Carbon Budget Pathways



Atmospheric CO₂ goal, 420 ppm

World Carbon Budget: 903 GT CO₂

Oregon Carbon Budget - Inertia : 1161 Million Metric Tons

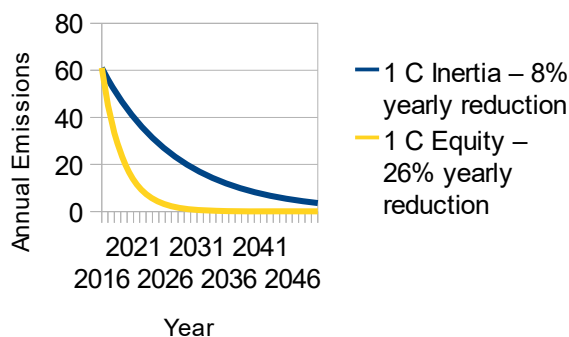
Oregon Carbon Budget - Equity: 507 Million Metric Tons

Yearly reduction required to meet goal starting in 2017 - Inertia: 4%

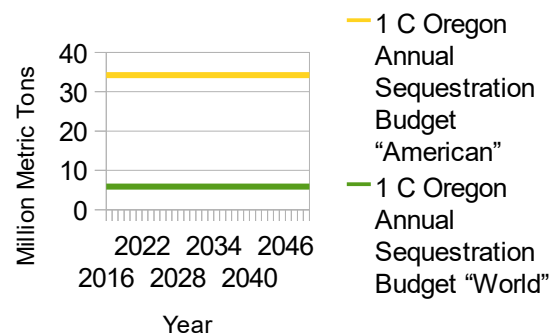
Yearly reduction required to meet goal starting in 2017 - Equity: 12%

Carbon Budget for 1 C

1 C Carbon Budget Pathways



1 C Oregon Sequestration Budget



Atmospheric CO₂ goal, 350 ppm

World Carbon Budget: 419 GT CO₂

Total Carbon Budget Inertia: 721 Million Metric Tons

Total Carbon Budget Equity: 235 Million Metric Tons

Yearly reduction required to meet goal starting in 2017 Inertia: 8%

Yearly reduction required to meet goal starting in 2017 Equity: 26%

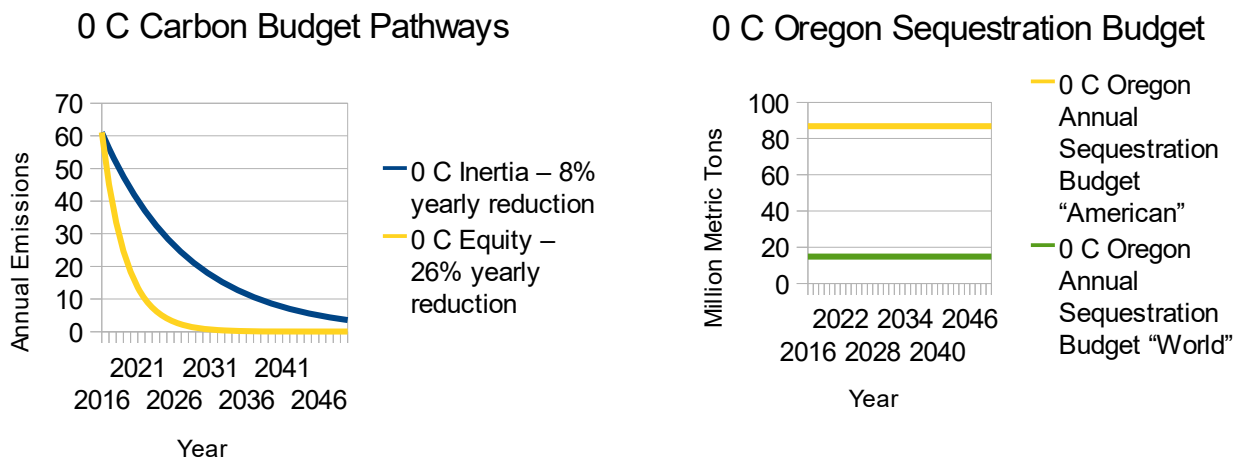
World Sequestration Budget:

Total Sequestration Budget – World Scenario: 51 Metric Tons per person, 205 Million Metric tons Oregon

Total Sequestration Budget – American: 299 Metric tons per person, 1197 Million Metric tons Oregon
Oregon Yearly Sequestration required to meet sequestration goal by 2050 – World: 1.5 tons per person per year, 5.9 million metric tons statewide per year

Oregon Yearly Sequestration required to meet sequestration goal by 2050 – American: 8.8 tons per person per year, 34.2 metric tons statewide per year

Carbon budget for 0 C



Atmospheric CO₂ goal, 280 ppm

World Carbon Budget: 419 GT CO₂

Total Carbon Budget Inertia: 721 Million Metric Tons

Total Carbon Budget Equity: 235 Million Metric Tons

Yearly reduction required to meet goal starting in 2017 Inertia: 8%

Yearly reduction required to meet goal starting in 2017 Equity: 26%

Total Sequestration Budget World: 130 Metric Tons per person, 521 Million Metric tons Oregon

Total Sequestration Budget Americans: 760 Metric Tons per person, 3039 Million Metric tons Oregon

Oregon Yearly Sequestration required to meet sequestration goal by 2050 – World: 3.7 tons per person per year, 14.9 million metric tons statewide per year

Oregon Yearly Sequestration required to meet sequestration goal by 2050 – American: 21.7 tons per person per year, 86.8 million metric tons statewide per year

*For comparison, Oregon currently emits approximately 60 million metric tons per year in state, plus an additional 40 million metric tons per year associated with the production and transportation of imports. The calculations listed above and shown on the next page only include the in state emissions.

How do previously proposed policies and goals compare?

Below are targets and policies that have previously been proposed or passed in the state of Oregon for climate policy. This is not meant to be a comprehensive list. I have also added business as usual for comparison.

You can see how these targets relate to each other and the carbon budgets for 0, 1, and 2 C in the graphs on the following pages.

Business As Usual (BAU)

Under business as usual (without Coal to Clean/RPS), Oregon would have continued to emit GHG's at around 60 million metric tons per year.

Cumulative Emissions through 2050 without Reductions: 2 Billion Metric Tons

2007 Oregon Adopted Targets

Called for 10% reduction below 1990 levels by 2020 and 75% below by 2050.

Under 2 MOU (Adopted at the Paris Climate talks)

Calls for nations to reduce emissions by 80-95% from 1990 levels by 2050 or to reach less than 2 Metric tons of emissions per person per year by 2050

Healthy Climate Act

Sought to get the state in line with its 2007 adopted targets by 2025, as the state does not appear set to reach its 2020 goal.

Coal to Clean/RPS

Recently approved legislation that would have the states largest utilities reduce emissions in line with the State's 2007 adopted goals.

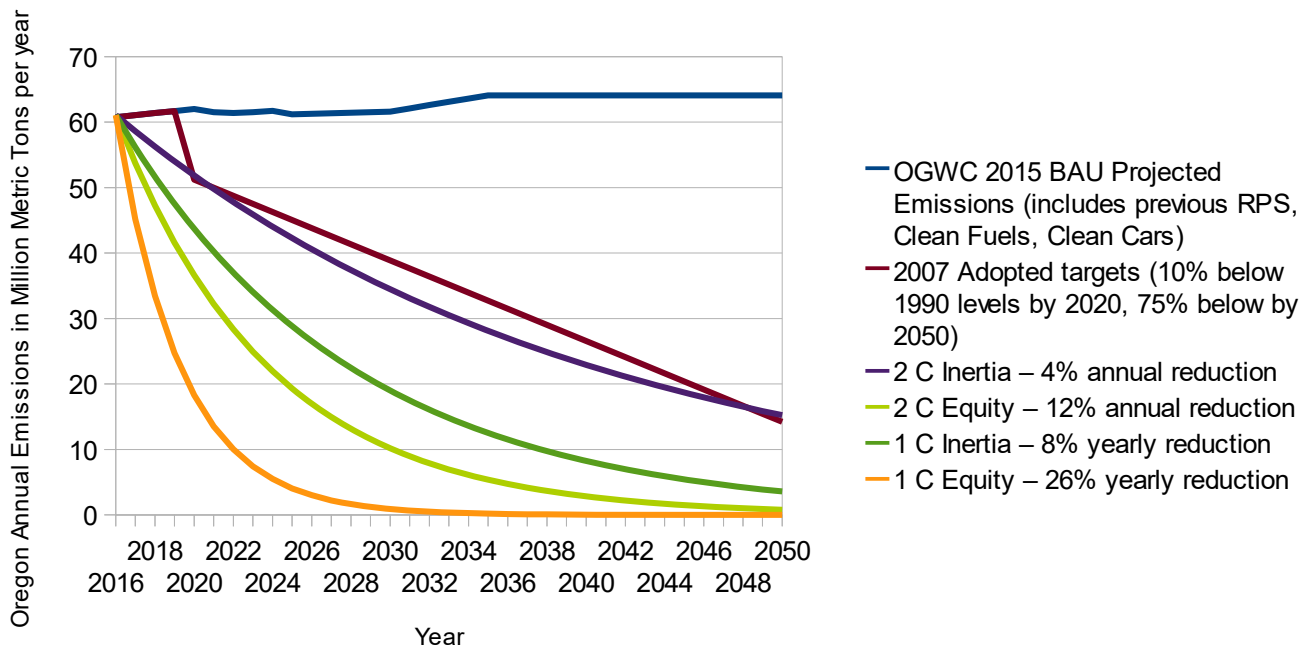
Clean Fuels

Calls for 10% reduction in Carbon Content of vehicle fuels by 2025

No Long term projections for use in graph

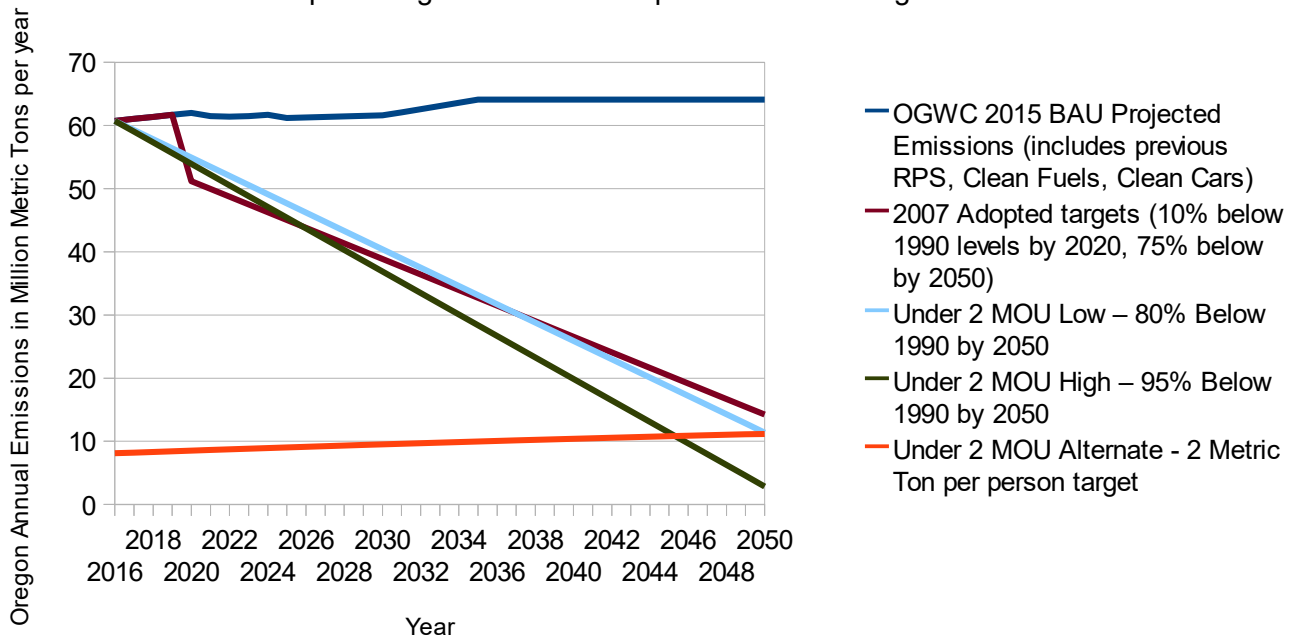
Potential Climate Target Graphics

Science Based Goals vs. 2007 Adopted Targets and BAU

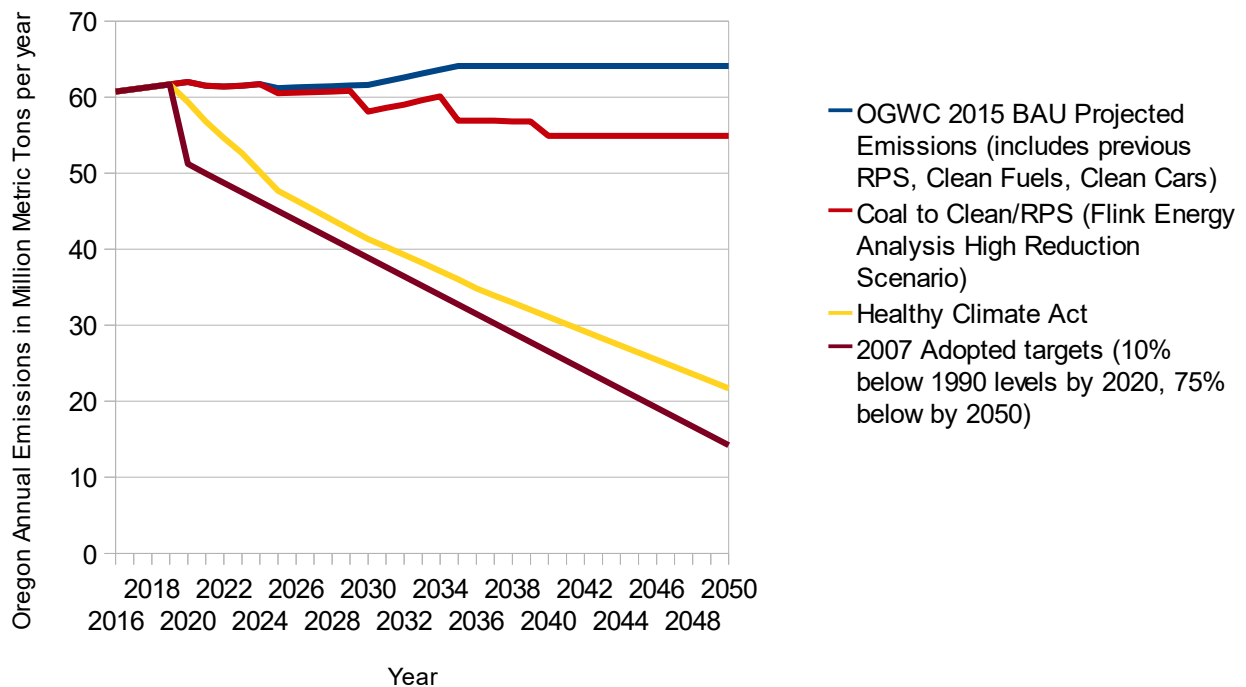


Under 2 MOU vs. 2007 targets and BAU

2007 Adopted Targets vs. Other Proposed Climate Targets and BAU

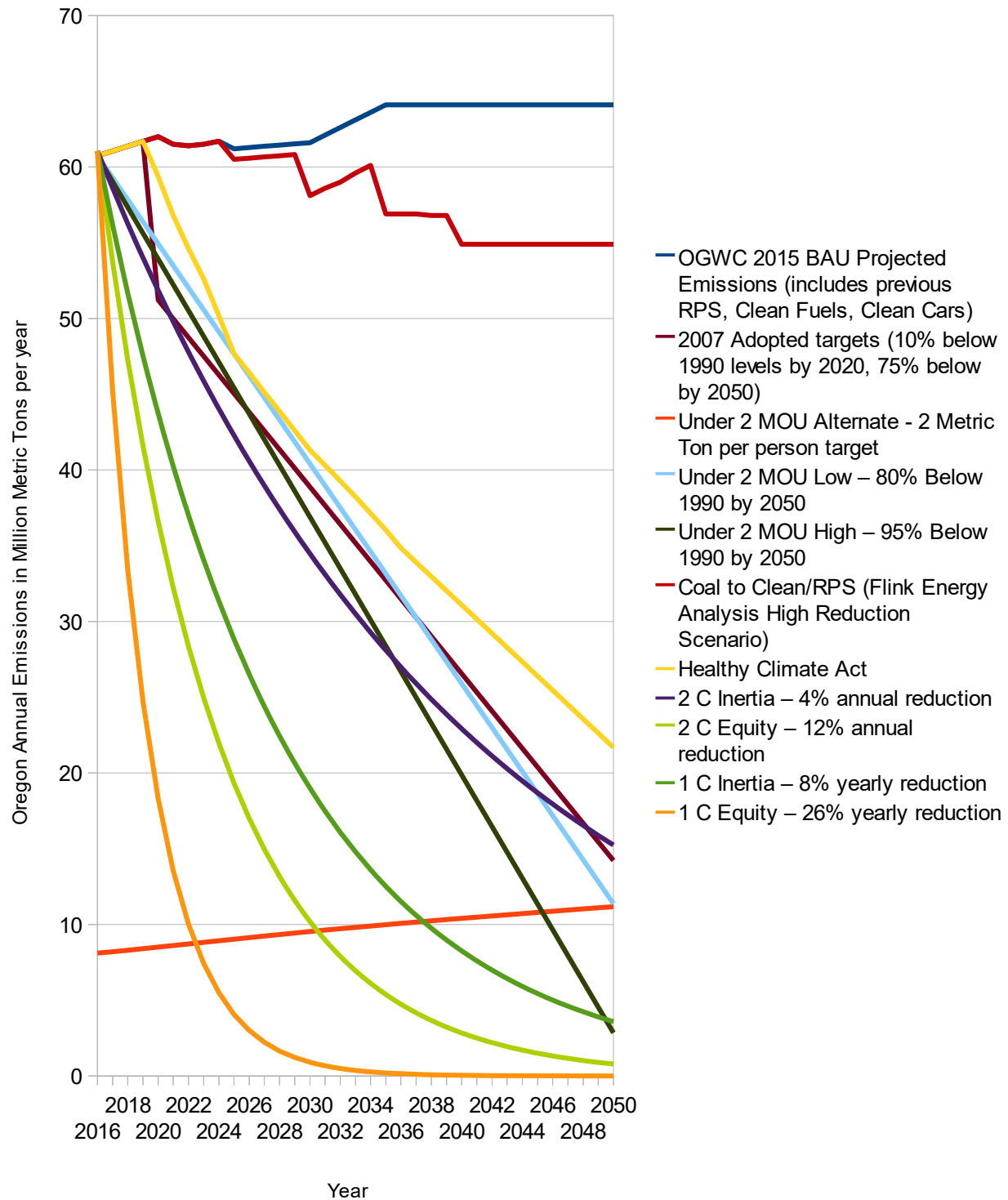


Previously Proposed Legislation vs. 2007 Adopted Targets and BAU



All of the graphs together

Potential Climate Goals and Policy vs. 2007 Adopted Goals and BAU (all options)



Comprehensive Approaches to Policy Development

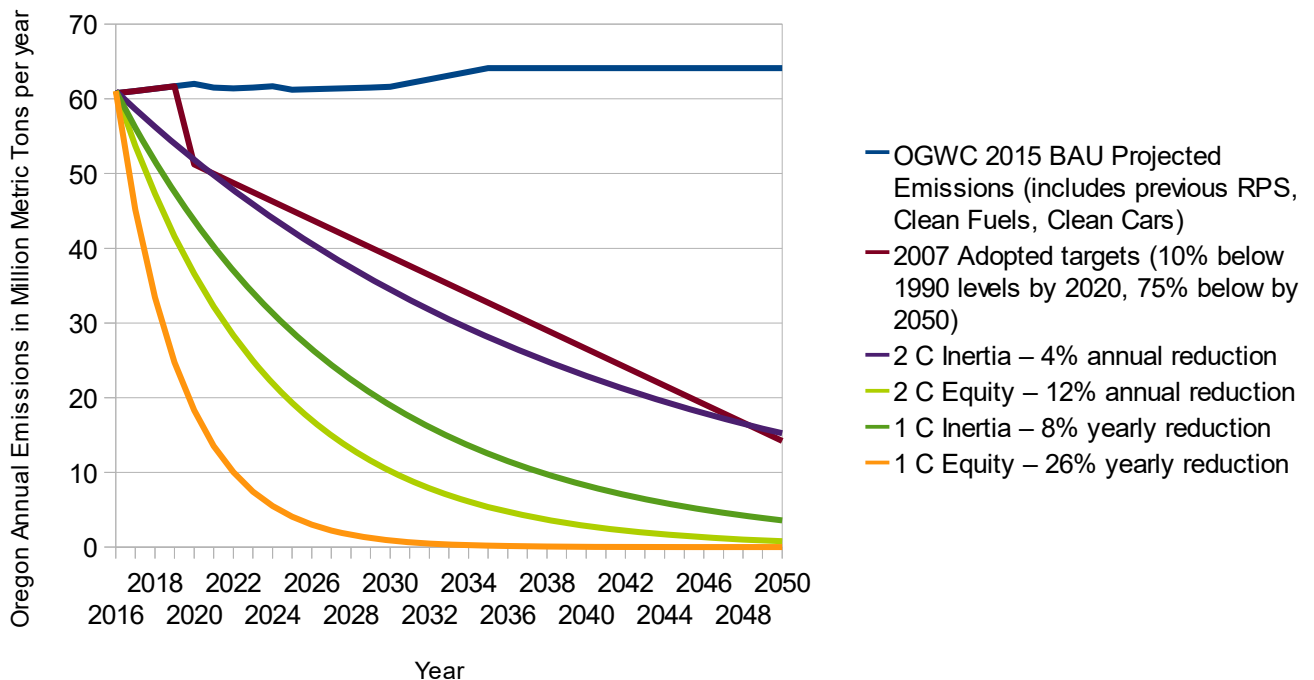
There are two main ways to address GHG emissions in a comprehensive way. The first is to design a single policy, such as a Cap or a Price, that can apply to all major GHG emitters equally. The second is through a Wedge approach in which a policy is designed for each major emitting sector to achieve emission reductions in each that add up to the overarching goal. Additional options are to use a combination of these approaches or to delegate authority to an agency to develop policies to get us to our climate goal. Any of these approaches can be used to develop a comprehensive GHG program in line with particular climate targets.

The Cap or Price Approach

GHG Cap

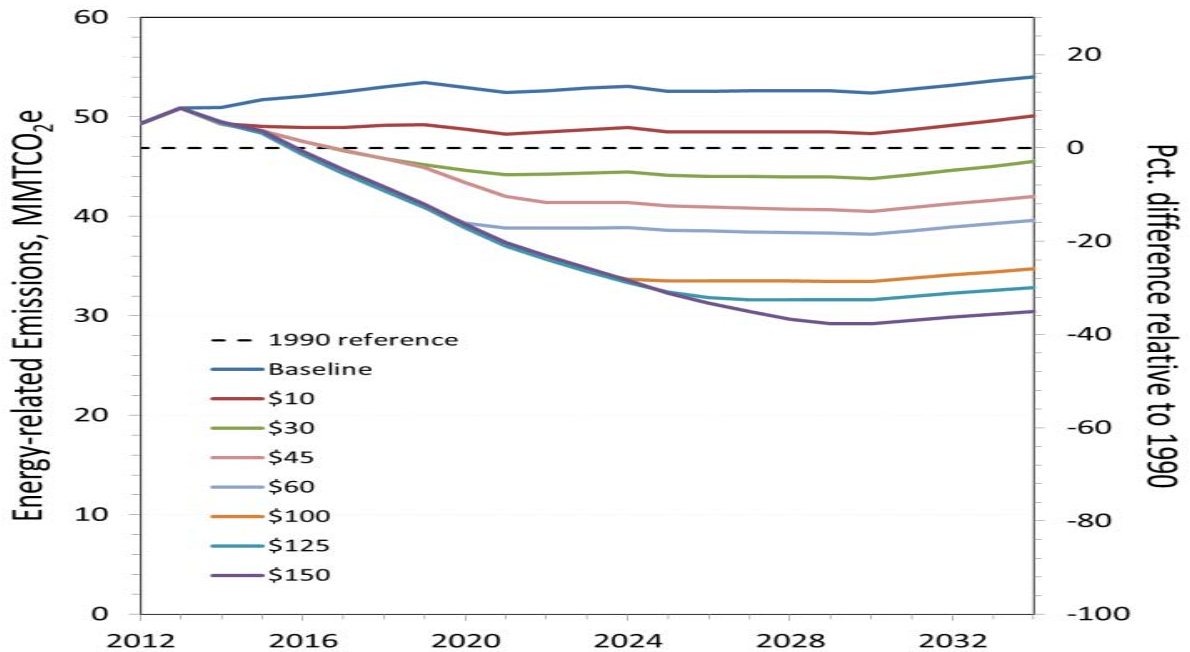
The GHG Cap approach puts an overarching Cap or Price on emissions to deter further emissions and can be set at levels, high or low, to reach various climate goals. To see what a cap could look like at various levels, here are the potential science based GHG reduction paths again for reference. Each of the potential goals in the previous graphs (under 2 MOU, Healthy Climate) could also be potential reduction paths a Cap could follow. The 1 C targets (and 0 C targets from before) also call for large amounts of sequestration, in addition to these steep emission cuts, and this should be incorporated into a program to reach these goals. If these reduction pathways are considered unreachable, sequestration through reforestation or another means is one option for meeting the net GHG reduction goals (in addition to other sequestration that may be needed for 0 or 1 C).

Science Based Goals vs. 2007 Adopted Targets and BAU



GHG Tax or Fee

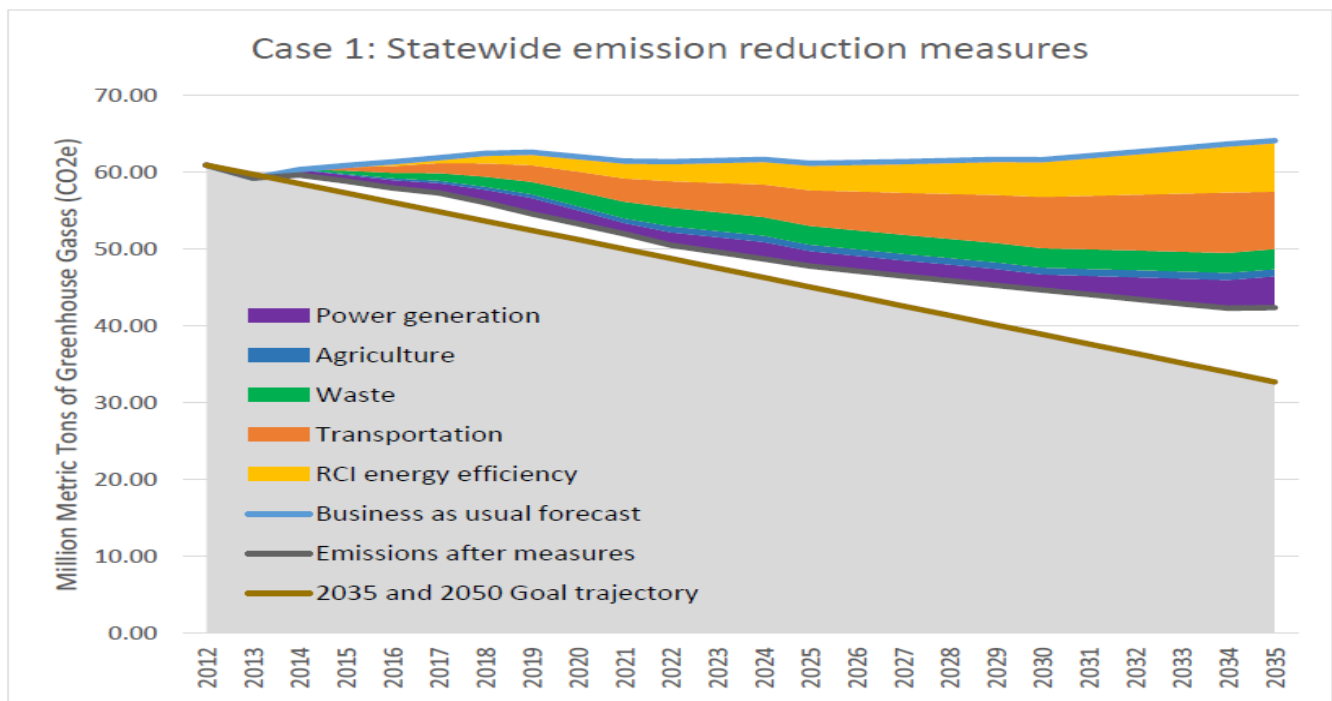
The Northwest Economic Research Center's 2014 study on the potential impacts of a carbon tax did a good job showing how a GHG tax could be set at different levels to try achieve different outcomes (see graph below). These numbers didn't include potential additional emission reductions possible from reinvesting the funds raised into renewable energy and energy efficiency projects, assuming all emission reductions would come from the price increase, so there may be additional and lower cost emission reductions available under a carbon tax with smart program design.



<https://www.oregonlegislature.gov/lro/Documents/RR%204-14%20SB%20306%20Clean%20Air.pdf>

Wedge

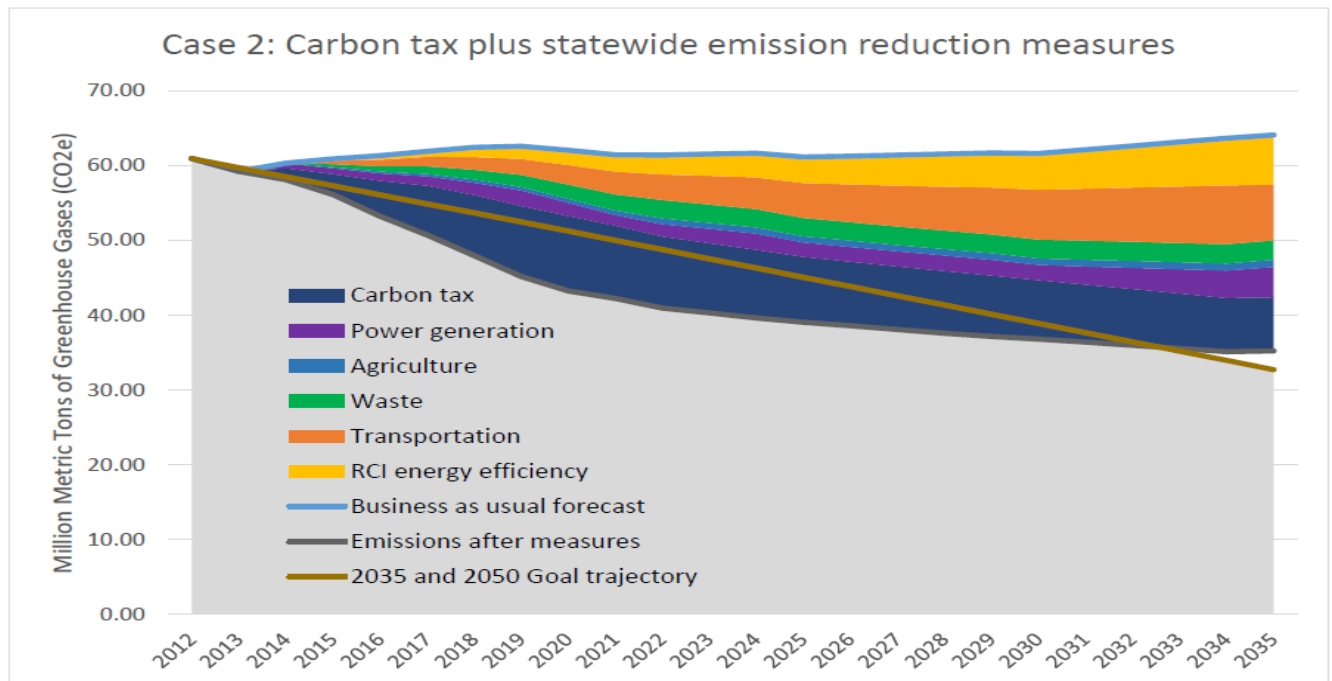
The Wedge approach creates a set of GHG reduction policies, each designed to reduce emissions from a particular source of emissions (such as from vehicles or electricity), that add up to a desired overarching reduction goal. This approach can be seen in the Oregon Global Warming Commission's 2015 recommendations to the Oregon Legislature for hitting the state's 2007 adopted targets (picture below). Each of the policies is designed to reduce emissions from one of the major emitting sector to get to the overarching goal.



http://www.keeporegoncool.org/sites/default/files/ogwc-standard-documents/OGWC_Rpt_Leg_2015_final.pdf

Combination

It is also possible to combine the Cap/Price and Wedge approach. This is what the OGWC goes on to suggest later in their report in order to fully meet the State's 2007 adopted goals.



http://www.keeporegoncool.org/sites/default/files/ogwc-standard-documents/OGWC_Rpt_Leg_2015_final.pdf

Give the Executive Branch Power to Decide

The last option is to give a State Agency the overarching GHG reduction goal and delegate rule making authority to this agency to allow them to figure out the programs and program rules for reaching the desired goal. This can be limited by the legislature to determining the rules for a limited number of programs, such as just Cap and Trade, or it can grant authority to start programs as necessary to reach the goal, as California did with the passage of AB 32. Under AB 32, the California Air Resource Board has set up a large number of policies, including a Cap and Trade program, to reach the State's desired GHG reduction goals.

Conclusion

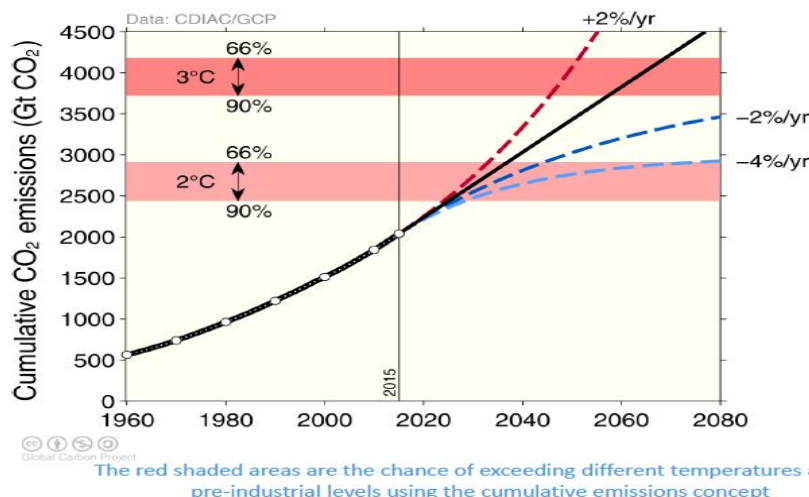
It is possible to set a GHG reduction goal in line with best science and to construct a GHG reduction policy or policies to achieve this goal. With consequences as dire as they currently are we need to get to net zero GHG emissions (and ideally net negative) as soon as possible. A good place to start is with science based emission reduction targets so we know what we are asking of ourselves in relation to others.

To achieve results consistent with best science, we will need to be diligent in reducing emissions as much as possible and, if the emission reduction pathways are unable to be reached in the short term, sequestering the rest through reforestation or other means to get back to the net goal (ideally making the polluter pay).

Additional Background on Carbon Budgets

In recent years, much work has been done to quantify how total GHG emissions over time are associated with different likely levels of temperature increase and how much more GHG's can be emitted before reaching catastrophic levels of climate change. This can be seen in the graph below, where the world would have to reduce annual emissions by approximately 4% every year (light blue line) to keep the cumulative total low enough that we'd have a 66% chance of avoiding 2 C average world temperature increase. If the world keeps emitting at the same rate (black line) or yearly emissions grow (red line) then we could see 3 C or more temperature increase.

Cumulative global CO₂ emissions from fossil fuels, industry, and land use change and four simplified future pathways compared to probability of exceeding different temperatures (red)

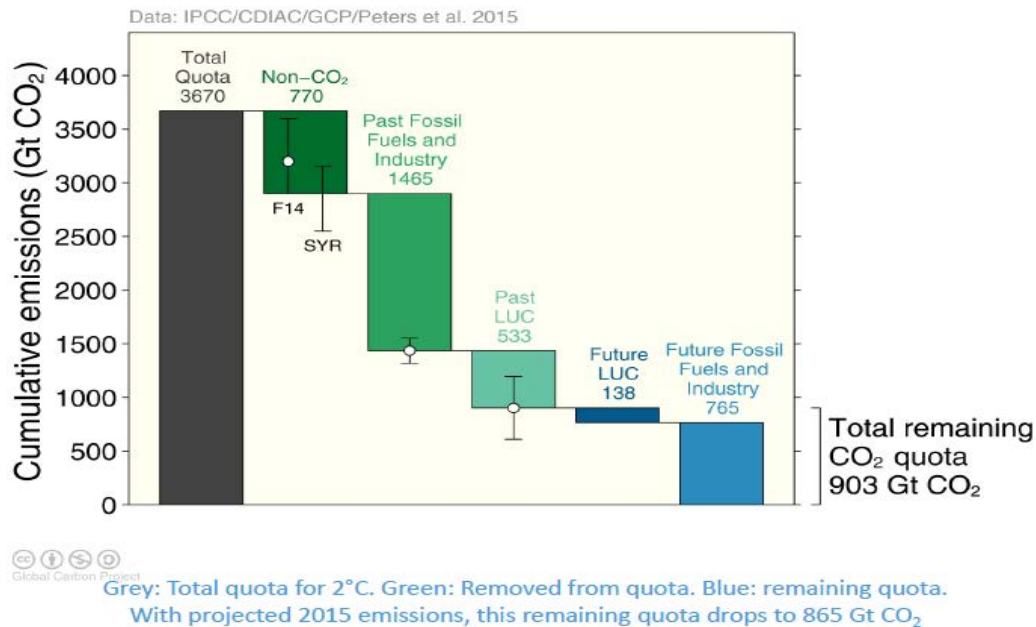


(http://www.globalcarbonproject.org/carbonbudget/15/files/GCP_budget_2015_v1.02.pdf)

This information can be used to construct a World “Carbon Budget” for the total amount of GHG's that can be emitted without exceeding these limits. The following total world budget was constructed to show the limited amount of GHG's that could still be emitted to have a 66% chance of staying below 2 C.

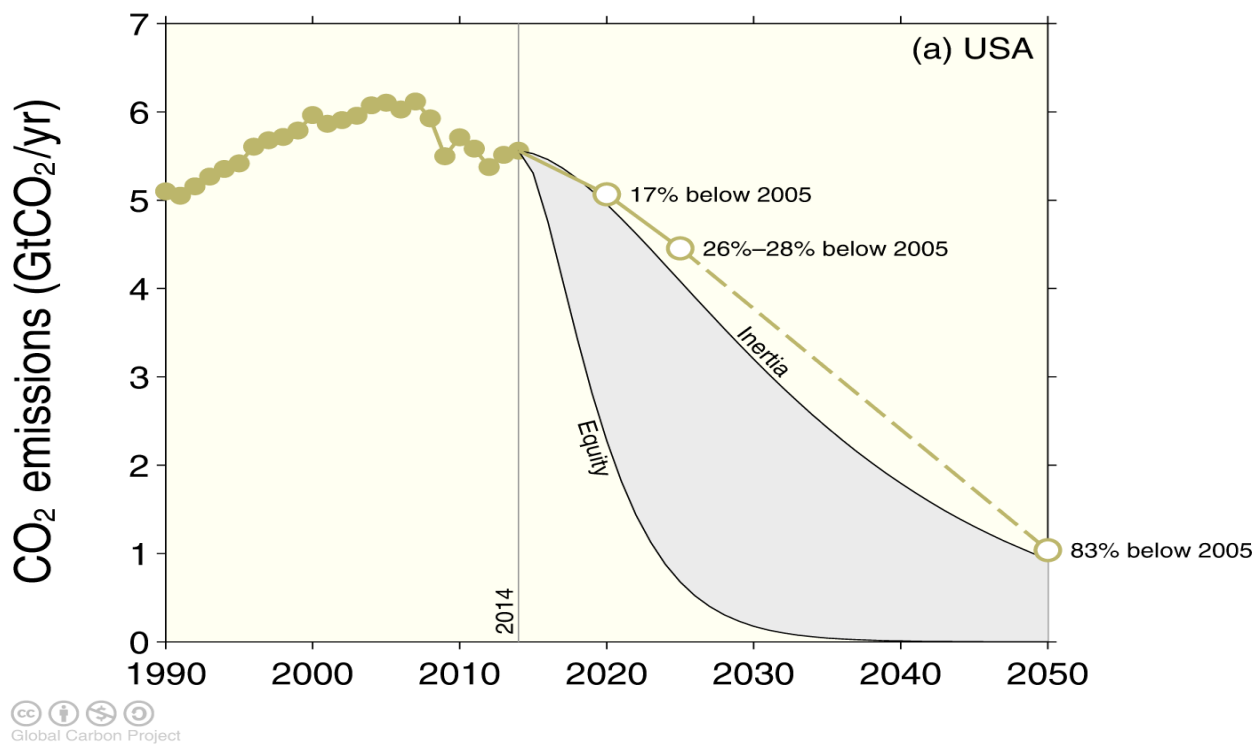
Total Remaining Carbon Quota for 66% chance below 2 C

The total remaining emissions from 2014 to keep global average temperature below 2°C (900GtCO₂) will be used in around 20 years at current emission rates

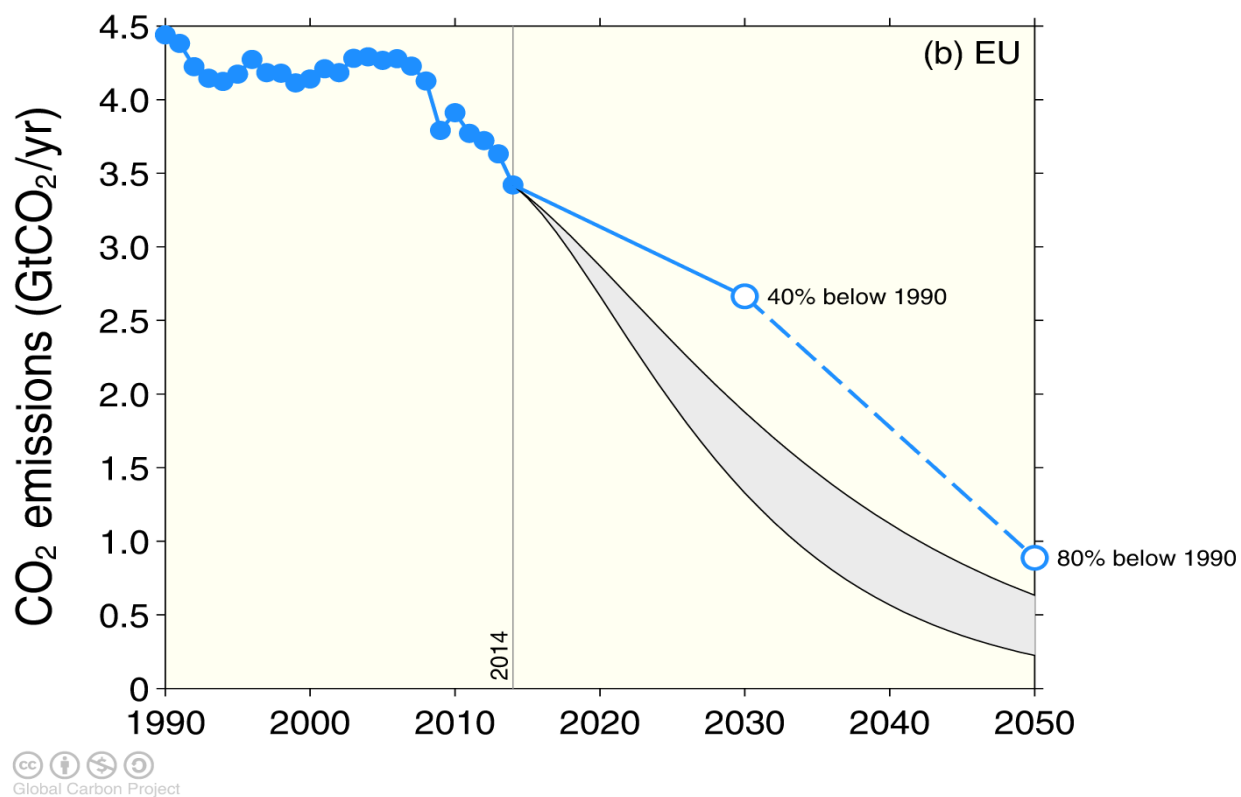


This remaining total “Carbon Budget” can then be translated into yearly emission reduction goals for each nation. The following graphs provide one possible range of targets for each nation based on two sideboards for choosing emission reduction goals and the 2 C target. These sideboards are, dividing the total remaining emissions equally among nations on a per capita basis, which results in reduction targets some think unattainable for large emitters (Equity), or with all nations reducing emissions at the same rate and thereby locking in current disparities in emission levels, which many low emitting nations that would like to grow their energy use find unfair (Inertia). The graph's also include the Country's commitments from the Paris Agreement for comparison.

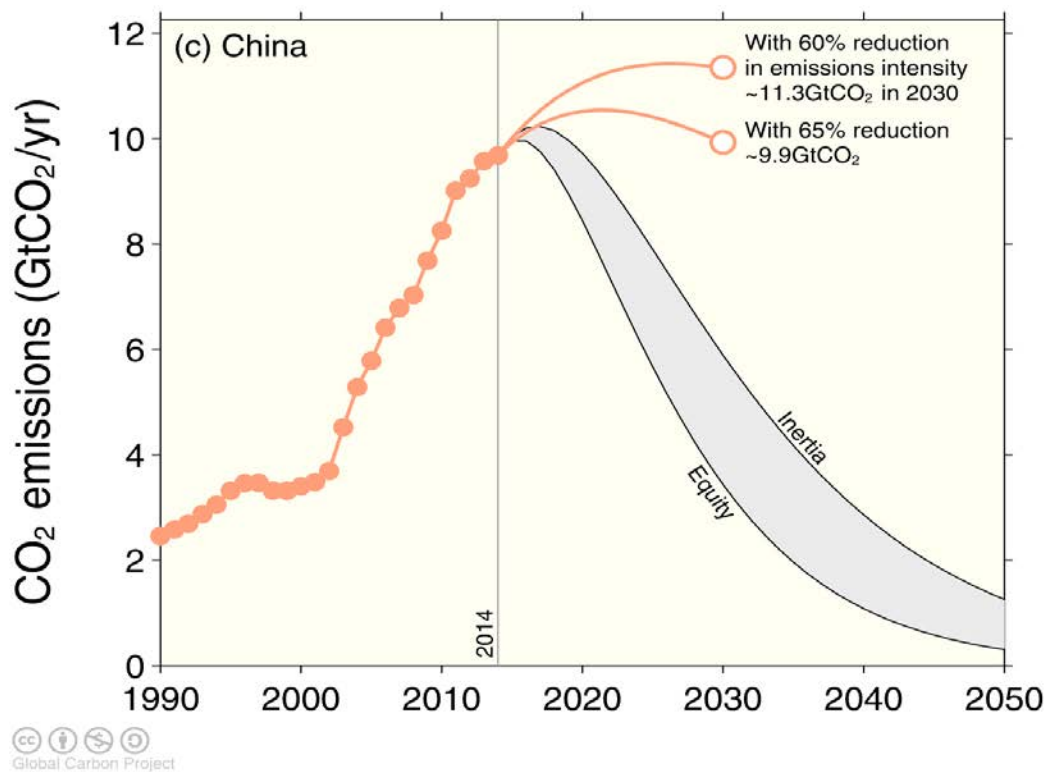
USA



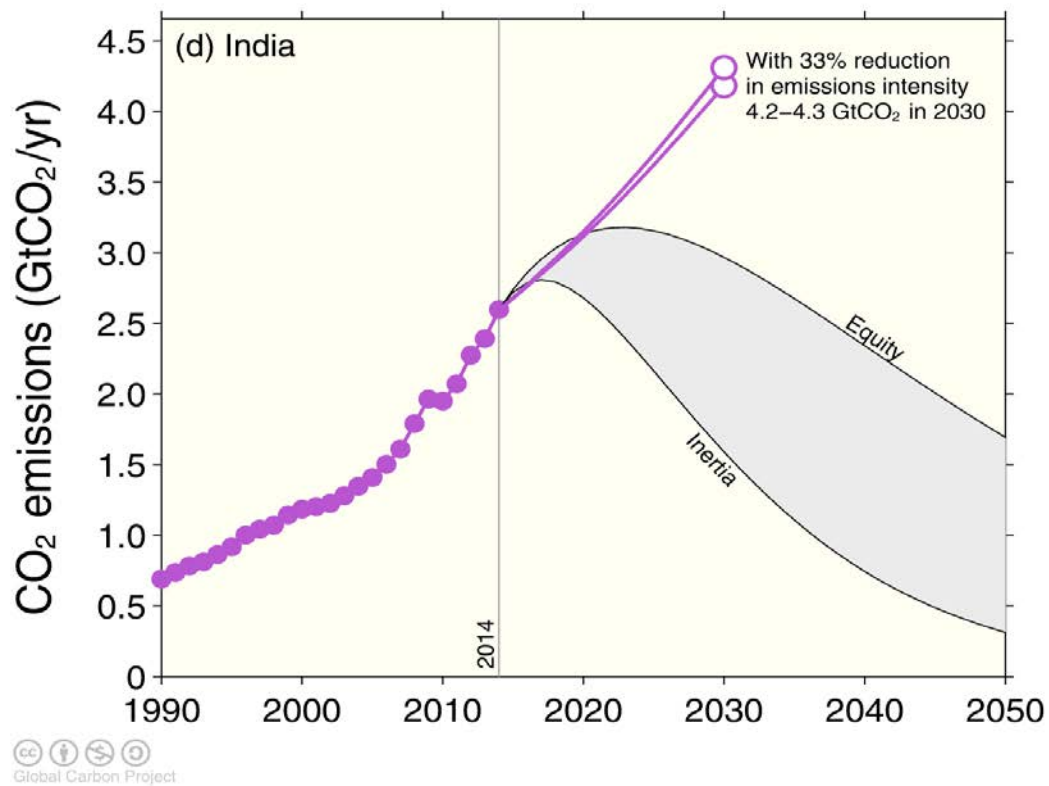
EU



China



India



Supporting Documents

Flink Energy Analysis Coal to Clean/RPS review

<http://www.rnp.org/sites/default/files/pdfs/Coal%20Transition%20Plan%20Rate%20Impacts%20Report%20Redln%20rev%2027Feb2016.pdf>

Hansen “Assessing Dangerous Climate Change”

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0081648>

Eugene White Paper on Carbon Budgets

<http://www.eugene-or.gov/DocumentCenter/View/26229>

Global Carbon Budgets Presentation

<http://www.globalcarbonproject.org/carbonbudget/15/presentation.htm>

Oregon Global Warming Commission 2015 Report

http://www.keeporegoncool.org/sites/default/files/ogwc-standard-documents/OGWC_Rpt_Leg_2015_final.pdf

Sheussler, 1.5 vs 2 C Impacts

<http://www.earth-syst-dynam.net/7/327/2016/esd-7-327-2016.pdf>

NERC Study on Carbon Taxes in Oregon

<https://www.oregonlegislature.gov/lro/Documents/RR%204-14%20SB%20306%20Clean%20Air.pdf>

For additional information on the data and figures contained in this document, contact Zach Mulholland with Millennials for Climate Justice at zacharyfmulholland@gmail.com.

December 22, 2016

Colin McConnaha, Senior Climate Change Policy Advisor
Oregon Department of Environmental Quality

Re: DRAFT: Considerations for Designing a Cap-and-Trade Program in Oregon

In 2015, Multnomah County adopted an updated Climate Action Plan, reaffirming its commitment to reducing community-wide greenhouse emissions 40% below 1990 levels by 2030, and 80% below 1990 levels by 2050. The Climate Action Plan identifies the need for the State of Oregon to put a price on carbon as a critical strategy to reach Multnomah County's greenhouse gas emissions goals, as well as the emissions goals established for Oregon by state law and the Oregon Global Warming Commission. However, Multnomah County also recognizes that climate change is major threat to public health and is a clear environmental justice (EJ) issue, as climate change disproportionately impacts vulnerable populations, including communities of color, tribal communities, the elderly, unsheltered, and low income individuals and families. Therefore, any carbon pricing program in Oregon, including cap & trade, must prioritize addressing existing community health and socioeconomic inequities, and any disproportionate impacts that result from the policy.

Multnomah County applauds the thoughtful, well executed draft report. The conclusions are sound, and the draft will provide a helpful guidance for the state of Oregon to consider the adoption of a cap and trade program. Multnomah County especially appreciates the attention given to addressing issues of environmental justice in the report, including the recognition of the need for ongoing authentic collaboration with EJ communities in the implementation of a cap & trade program.

However, the report could be strengthened by addressing the recommendations outlined below. For readability, the recommendations have been broken out into two sections: critical concerns; and suggested edits/clarifications. Also, some of these concerns Multnomah County raised in our June 24, 2016 letter regarding the study approach (attached for reference), which we encourage you to revisit.

Critical Concerns:

Multnomah County appreciates the discussion of co-pollutants from point sources, a priority issue for public health and environmental justice concerns. However, as the Department of Environmental Quality (DEQ) is the entity tasked with the development of this study as well as the regulatory body for current and future emissions permitting in the state, a more thorough analysis of how a cap & trade program will work with health based emissions regulations to reduce health impacts, particularly in EJ communities, is warranted. In addition, toxics exposure

from transportation related emissions sources far outweighs exposure from point sources, and therefore a similar analysis of how transportation related toxics emissions will be reduced as part of a cap & trade policy is also necessary. Related to this, a more definitive legal analysis of the restrictions on the use of transportation revenues associated with a cap & trade program, as well as how to most effectively address these restrictions to maximize public health and environmental justice co-benefits, is essential to informing the development of a cap & trade policy.

Multnomah County looks forward to reviewing the economic analysis that will be added to the draft report in January 2017. However, we are concerned that this analysis will not be completed until after the close of public comments for this draft and therefore will not allow any discussion or modification prior to being submitted to the Oregon Legislature. In particular, we are concerned that the potential public health and socioeconomic co-benefits of a cap & trade policy may be understated in the analysis, and that the risks of losing energy intensive trade exposed entities (EITE) could potentially be overstated. A well designed cap & trade program could be a significant benefit to the State of Oregon through reduced healthcare costs, increased economic efficiencies, and increased local spending resulting from fewer energy related dollars leaving the state. We ask that DEQ staff, absent a public review of the economic analysis, ensure that the health and social benefits of a cap & trade program are considered as carefully as the potential costs of such a program. We also ask that the analysis of EITE's looks broadly at the rationale for those entities to continue operating in Oregon, of which a cap & trade program may play only a minor part.

Finally, Multnomah County encourages that DEQ staff work to make this document as accessible as possible to decision makers. Recognizing that this is a challenge with a highly complex topic, prioritize areas of critical understanding such as Section 7 regarding policy interactions.

Suggested Edits/Clarifications

Page 32 - Language used about "feelings of inequity among those affected communities" fails to recognize the well documented disproportionate burden "fenceline" communities continue to experience. An equitable policy framework acknowledges this reality and prioritizes investment in addressing these historical and potential future burdens.

Page 42 - Similarly, language used about needing "some accountability to those communities" grossly understates the need for an authentic and empowering model of collaboration and decision making with disproportionately impacted communities, and especially environmental justice communities.

Page 44 - We encourage DEQ to fully develop a legal and policy analysis that outlines options to prioritize EJ and other disadvantaged communities within restricted transportation related revenue. As mentioned earlier, the restrictions on the use of transportation related cap & trade revenue is a significant barrier to implementing an equitable policy.

Section 7. Interaction with other Oregon Policies - We applaud the thorough analysis of how a cap & trade program would interact with other existing and proposed policies. However, what is missing is a high level look at how each of the policies collectively impact Oregon's total greenhouse gas emissions over time, and specifically the gap in projected emissions reductions through existing policy compliance and the State's greenhouse gas reduction goals that a cap & trade program would need to address. This analysis should also look at the compliance costs from existing policies that have already been "baked in" into industry forecasting, and ensure that those costs are not included in cost estimates for cap & trade compliance, provided they are complimentary.

Once again, Multnomah County appreciates the work that has gone into the draft study. We look forward to working with you to successfully complete the study development process, and to leverage the work of the study in the development of future climate policy in Oregon.

Sincerely,

A handwritten signature in black ink, reading "John Wasiutynski". The signature is fluid and cursive, with a long horizontal stroke at the end.

John Wasiutynski, MPA
Director, Office of Sustainability

A handwritten signature in blue ink, reading "Jae P. Douglas". The signature is fluid and cursive, with a long horizontal stroke at the end.

Jae P. Douglas, Ph.D., MSW
Director, Environmental Health Services
Health Department

June 24, 2016

Colin McConnaha, Senior Climate Change Policy Advisor
Oregon Department of Environmental Quality

Re: Study of a Market Approach to Reducing Greenhouse Gas Emissions

In 2015, Multnomah County adopted an updated Climate Action Plan, reaffirming its commitment to reducing community-wide greenhouse emissions 40% below 1990 levels by 2030, and 80% below 1990 levels by 2050. The Climate Action Plan identifies the need for the State of Oregon to put a price on carbon as a critical strategy to reach Multnomah County's greenhouse gas emissions goals, as well as the targets established for Oregon by state law and the Oregon Global Warming Commission. However, Multnomah County also recognizes that climate change is an environmental justice (EJ) issue because climate change disproportionately impacts vulnerable populations, including communities of color, tribal communities, the elderly, unsheltered, and low income individuals and families. Investments made to reduce carbon emissions are an opportunity to address community health and socioeconomic inequities. These comments primarily focus on impacts to EJ communities¹ as defined by Oregon's Environmental Justice Task Force (OEJTF). DEQ is required to consider EJ in determining "whether and how to act"² and has an obligation to consult with the OEJTF and impacted EJ communities when scoping and drafting this report.

Specifically, we ask that DEQ address our comments below:

1. Under IV. in the draft outline, in addition to economic effects, this area should include in its analysis co-benefits, such as improved public health/reduced public health costs in the state, reducing money spent on imported fossil fuels, etc.
2. Under V.d., where it says "minimizing", we suggest this be replaced with "eliminating". Any market based emissions reductions program must not place EJ communities under any additional burden, economic, environmental, or otherwise. Ideally, negative impacts must first be avoided through practicable alternative policy design and implementation. Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts which remain after all appropriate and practicable minimization has been required.
3. Under VI., or elsewhere, we would like DEQ to address how a market based mechanism will interact with current and anticipated air quality regulations, and more generally how a market-based mechanism ensures co-pollutants associated with greenhouse gas emitting activities are reduced to achieve health based standards across the state. We ask that DEQ detail mechanisms of a market-based approach that can eliminate disparate impacts from greenhouse gas emissions and their co-pollutants in vulnerable communities. DEQ should also address the risk of perpetuating or increasing existing disparities, for

¹ "Environmental justice communities" include minority and low-income communities, tribal communities, and other communities traditionally underrepresented in public processes

² Oregon Revised Statute 182.545(1).

example, by inadvertently establishing a system that makes it inexpensive to emit in locations that expose EJ communities.

4. Under VII.d., we ask that DEQ explore sectors and their relationship to EJ communities. Specifically, which greenhouse gas-emitting sectors in Oregon are correlated with EJ communities? And to what degree?
5. Under VII.k., DEQ should require that an EJ lens be applied to all uses of auction revenue. Additionally, DEQ should detail: (1) an option for use of auction revenue that supports workforce training in low/zero emission, climate mitigation, and climate adaptation industries focused on and informed by EJ communities; and (2) an option for use of auction revenue to reduce health impacts caused by climate change (e.g., heat stress).
6. Black carbon and other short term climate forcers contribute to climate change and adversely impact the health of Oregonians, especially communities of color³. In Oregon, particulate matter from diesel engines and wood smoke are the major sources of black carbon emissions. DEQ should detail how black carbon emissions will be included within a cap and trade program and prioritize investments in strategies to reduce black carbon, such as wood stove replacements and diesel engine retrofits, by fully valuing the public health co-benefits of these strategies. Public health co-benefits should be prioritized across mitigation efforts.
7. Oregon's EJ communities are not clearly identified by census data. DEQ should identify geographical or other approaches to delineate EJ communities and households. A clear approach to identifying EJ communities and households will be critical towards implementation of any market mechanism for greenhouse gas reductions.
8. An inclusive decision making process and administrative structure that reflects the diversity of EJ communities in the state is an essential part of an equitable cap and trade program, and a recommendation for implementing such a structure should be included in the study.

Oregon has an unparalleled opportunity to address climate change in ways that improve public health, create jobs, and benefit all residents. Reducing greenhouse gases is not only critical for the residents of Multnomah County, but also our state, the nation, and the global community. Multnomah County greatly appreciates that DEQ and the legislature have committed energy and resources to this important work.

Sincerely,



John Wasiutynski, Director
Office of Sustainability

³ Oregon Department of Environmental Quality. Portland Air Toxics Solutions Committee Report and Recommendations, Section 8. April 2012. Portland, Oregon

Relevant Environmental Justice Focused Cap & Trade Resources:

Pastor, Manuel; Morello-Frosch, Rachel; Sadd, James; and Scoggins, Justin. "Minding the Climate Gap: What's at Stake if California's Climate Law isn't Done Right and Right Away" Study funded by the William and Flora Hewlett Foundation. Found here: <https://dornsife.usc.edu/assets/sites/242/docs/mindingthegap.pdf>

Lam, Joseph. "Coupling Environmental Justice with Carbon Trading." Sustainable Development Law & Policy 12, no. 2 (2012): 40-44, 68. Found here:

<http://digitalcommons.wcl.american.edu/cgi/viewcontent.cgi?article=1516&context=sdlp>

Boyce K., James and Pastor, Manuel. "Cooling the Planet, Clearing the Air: Climate Policy, Carbon Pricing, and Co-Benefits" Joint publication of Economics for Equity and the Environment Network (E3), and Political Economy Research Institute at the University of Massachusetts, and the Program for Environmental and Regional Equity at the University of Southern California, and the Joint Center for Political and Economic Studies (2012). Found here: http://e3network.org/wp-content/uploads/2015/04/Cooling_the_Planet_Sept2012.pdf

Boyce K., James and Pastor, Manuel. "Clearing the air: incorporating air quality and environmental justice into climate policy." Climactic Change, Vol. 120 (2013): 801-814. Found here:

http://www.peri.umass.edu/fileadmin/pdf/other_publication_types/magazine__journal_articles/Boyce_Pastor_-_Climatic_Change_2013.pdf



NATURAL RESOURCES DEFENSE COUNCIL

December 21, 2016

RE: Comments on "Draft Considerations for Designing a Cap-and-Trade Program in Carbon", Draft Date November 21, 2016

Mr. Colin McConnaha
Oregon Department of Environmental Quality
700 NE Multnomah St, Suite 600
Portland, OR 97232

Dear Mr. McConnaha:

NRDC has reviewed with interest the draft ODEQ Report. Generally we find it admirably describes the choices and consequences of different carbon containment strategies, and of different design choices, making it unnecessary for us to discuss each such element separately.

We are happy to offer the following comments:

Overall: The report ably discusses the specific outcomes of different design choices, including comparing a cap to a tax. There is a broader rationale for deploying either such carbon containment tool: that it signals to carbon-intensive entities the need to adjust their usage in conformance with the ramping in of a carbon penalty. Perhaps more important still, it signals to the technical and entrepreneurial communities the emerging business opportunities that will reside in finding carbon-light options to support future economic activities. In short, there will be money made by those who can accelerate the transition to a low-carbon economic future.

Economic Effects: The report ably describes both general effects on the State's economy (modest) and some of the greater distributional effects, especially regressivity of costs to low-income households and disproportionate effects on certain trade-exposed industries for which energy consumption is a significant factor in their cost-of-goods. It also satisfactorily discusses the remedies that have been identified and deployed by other jurisdictions. It

correctly notes the advantages of a cap for certainty of containment, flexibility and cost efficiency, and the drawback of relative complexity (which is mitigated by integration with an existing larger system such as California's).

Liquidity: The report would benefit from more extensive discussion of liquidity issues in deploying a cap-and-trade system in a small economy such as Oregon's, with few entities of substantial size (e.g., the electric utilities) to engage in trading. This issue is also addressed by linking to a larger market such as California's.

Appropriateness of a Cap-and-Trade for Containing Carbon: The report draws helpful distinctions among carbon cap, carbon tax, and more targeted regulatory tools for containing carbon (e.g., a Renewable Portfolio Standard; a Clean Fuels Standard; building codes). It explains how each tool best addresses a specific market failure, and thus how a well-designed cap can complement the targeted tools. This section of the report would be strengthened by a further discussion of non-regulatory tools (e.g., incentives and programmatic measures such as tax credits; Energy Trust of Oregon programs; community carbon planning) that in turn complement the targeted and economy-wide regulations. A table that allocated the different roles and relationships would be helpful.

General Design: The report usefully describes issues arising from choices on scope, stringency, allocation, use of revenues, leakage, and cost containment. The particular issues that arise from use of offsets are appropriately delineated, both advantages (flexibility) and risks (integrity; avoidance of meaningful direct reductions).

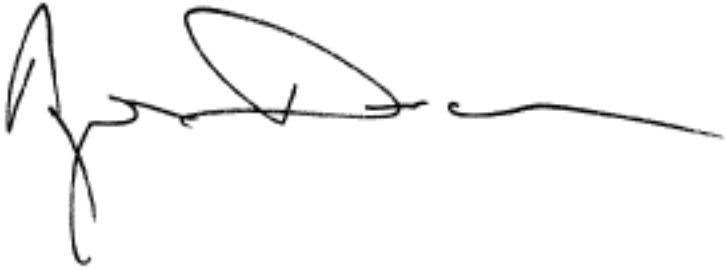
Consignment: The report discusses the option, elected by the California cap-and-trade mechanism, of consigning allowances to regulated utilities for resale at auction, with proceeds allocated to utility-overseen carbon reduction projects and particularly to measures that will also benefit low-income households. Carbon reduction tools often have regressive effects associated with putting a price on carbon emissions, and these may have disproportionately adverse effects on such households. The UCLA Luskin Center analyzed the effects of California's program on the energy bills of these households, and concluded that with the low-income benefits derived from sale of consigned allowances, these households would see a cumulative benefit through 2020 of an average \$200 to \$250 per household. Energy consumption would be reduced, as would emissions, while the households would benefit financially rather than carrying disproportionate costs. NRDC urges DEQ to carefully consider the advantages of this approach in its cap-and-trade design.

Specific Scope Issues: The report too easily dismisses agriculture and forestry as best excluded from a cap. While the transactional costs (to both the State and the subject) of including small farm and forest enterprises is high and warrants such exclusion, there are larger holdings that look greatly like industrial point sources and that should be considered for inclusion. Large, centralized dairy operations may contain tens of thousands of cows and produce large quantities of methane. They should be required to reduce emissions just as a power plant must, and not instead be enabled to profit by selling offsets from minimal containment measures. Likewise large private holdings of timber are operated as an industrial

enterprise that may have either positive or negative emissions characteristics. If power plants are required to reduce emissions, why shouldn't a privately-owned forest be required to sequester greater quantities of GHG's as it produces product? Each contributes to the goal of lower atmospheric concentrations of GHG's according to its structure and function.

NRDC thanks DEQ for the report, and hopes that the Oregon legislature relies on it to build a successful program.

Sincerely,

A handwritten signature in black ink, appearing to read 'Angus Duncan', with a long horizontal flourish extending to the right.

Angus Duncan

NRDC/PNW Consultant

22 December, 2016

To: Colin McConnaha, Oregon Department of Environmental Quality

Thank you for the opportunity to comment on the draft report: Considerations for Designing a Cap-and-Trade Program in Oregon (the “draft Report”). Climate change is the defining public policy challenge of our generation and Oregon has consistently been a leader in implementing effective policies to reduce emissions of carbon pollution. Oregon’s Renewable Portfolio Standard (RPS), Clean Fuel Program, Zero Emission Vehicle policies and commitment to low-carbon urban mobility have begun shifting the state’s economy towards a sustainable model for future Oregonians to enjoy.

Adopting a carbon pricing policy, such as a cap-and-trade mechanism, is the single biggest step Oregon could take to deepen its commitment to climate sustainability. Carbon prices use market-based mechanisms to incentivize low-emitting behavior. Oregon is examining the two basic models of carbon pricing - carbon taxes and tradable permits (often called cap-and-trade). Carbon prices do not, by themselves, solve the problem of carbon pollution but they dramatically shift market behavior in a constructive fashion and can provide funding for additional pollution-reducing programs; they make the problem of carbon pollution substantially more tractable. NextGen Climate America **strongly supports adoption of an economy-wide carbon price**, under which prices structurally increase over time and which includes protections for low-income and disadvantaged communities, policies to limit leakage of emissions to non-priced jurisdictions, sector-specific complementary policies and strong sustainability criteria. Given the choice between carbon taxes and tradable permits, NextGen Climate America would **recommend a cap-and-trade system** based on tradeable permits, similar to the one adopted in California. The key features of this system include auctioning the majority of emission permits with a minimum price that steadily increases over time, using the revenue to fund carbon-reducing projects and assist disadvantaged communities, a cost containment mechanism to minimize the harmful effect of sudden price spikes, robust and transparent verification of emissions and credits, minimal use of offsets and regular review to align the program with the best available science.

The report recently released by D.E.Q. does an excellent job of outlining many of the key considerations involved in designing and implementing a carbon pricing plan. For the most part, we agree with the preliminary conclusions of this report. There are a few issues of particular interest we would like to highlight as important to the discussion of carbon pricing in Oregon.

Cap-and-trade systems can be designed to provide price stability

At the most basic level, a cap-and-trade system provides certainty regarding maximum emissions and allows the market to determine price, while a carbon tax provides certainty on carbon price and allows the market to determine the amount of emissions. This highlights

several significant advantages cap-and-trade systems have over carbon taxes. For one, there is better scientific understanding about the total carbon emissions which humans can emit into the atmosphere without causing catastrophic climate change than there is about what carbon price would yield this optimal level of emissions. So, if a jurisdiction's goal is to reduce emissions to a sustainable level, a cap-and-trade system can be based on much more certain science.

Conversely, one of the carbon tax's main advantages is price stability which reduces market volatility and provides a stable revenue stream to the implementing jurisdiction. This characteristic is valuable, however by implementing an escalating floor price and meaningful protections against price volatility (through transparent market data, emissions credit banking, credit reserves, emergency use of offsets, etc.) the credit market can mitigate price volatility and maintain a predictable stream of funding. This means that a well-designed cap-and-trade market can achieve much of the same price certainty as a tax. It is more difficult, on the other hand, to impose a hard cap to total emissions under a carbon tax. It is ultimately simpler and more feasible to design a system which enjoys most of the benefits of both carbon taxes and cap-and-trade on the basis of tradeable permits than it is on carbon taxes.

Good climate policy addresses, but does not over-react to emissions leakage

Leakage, as it applies to carbon policy, occurs when production within a capped jurisdiction declines while equivalent production outside of the capped jurisdiction increases. This could be through relocation of production capacity from within the capped jurisdiction to outside, or through coincident but independent reduction of capacity under the cap and increase elsewhere. The body of scholarship on policy leakage is rapidly expanding, though still highly uncertain. We recommend that Oregon ensure that industries particularly vulnerable to leakage - those that are energy or emissions intensive and work in sectors which are amenable to cross-border trade¹ - are not incentivized to shift emissions out of state. Doing so not only preserves jobs and economic activity within Oregon but also helps ensure that these industries make progress towards emission reduction rather than moving to completely uncontrolled jurisdictions.

The draft Report references three studies commissioned by the California Air Resources Board and released in May, 2016. These studies, particularly the ones focused on domestic leakage and leakage within the food processing industry, contained multiple methodological flaws, most of which would lead the reports to over-estimate the leakage from California due to its cap-and-trade mechanism. We are attaching our comment letter to the Air Resources Board to this letter in order to provide a more detailed explanation of these flaws. Most critically, these studies assume no cost effects from climate policy in any jurisdiction other than California, and no costs from inaction on climate. Additionally, they overstate the costs of compliance by assuming that emissions permit costs are equal to compliance costs, when in truth they are the

¹ Often referred to as Energy-Intensive, Trade-Exposed or EITE entities.

maximum limit on compliance costs and many producers would find cheaper options to improve efficiency internally.

We encourage D.E.Q. to carefully consider protection against leakage, including transitional free permit allocation to EITEs and using program revenue to fund efficiency improvements. We also encourage D.E.Q. to take action to prevent leakage through electricity generation resource shuffling by out-of-state electricity producers; we are attaching a comment submitted to the EPA regarding inter-state emission leakage under the Clean Power Plan to this letter. While the Clean Power Plan faces an uncertain future, the measures suggested in this letter are still relevant to the basic problem of limiting leakage in the power sector.

Environmental Justice concerns can be addressed through cap-and-trade program design

Various stakeholders within the California the Environmental Justice community have, as noted in the draft Report, expressed a preference for carbon taxes compared to the existing cap-and-trade system. Their primary objection is that cap-and-trade allows large-scale criteria pollutant emitters in disadvantaged communities to continue their historical emissions trends by purchasing credits or offsets. The use of offsets, however, is not an essential element of a cap-and-trade program design and proposed revisions to the cap-and-trade program offer approaches that will significantly reduce emissions of these pollutants through direct regulation.

A carbon tax, on the other hand, offers less control over major-source emitters in disadvantaged communities because these emitters can simply pass the cost of a carbon tax through to consumers and continue emitting at historical levels.

We strongly support the recommendations of Oregon's Environmental Justice Task Force, "1) *"fair treatment and equal protection, meaning a just distribution of the benefits and burdens of decisions,"* and 2) *"meaningful involvement, meaning all stakeholders must have an opportunity for meaningful involvement in all decisions that may affect their immediate lives."* Environmental justice must be a foundational principle in the design of a cap-and-trade system for Oregon. A cap-and-trade system provides a better opportunity than carbon taxes to reduce environmental burdens on disadvantaged communities while ensuring equitable distribution of economic benefits.

Cap and trade can extend Oregon's environmental leadership

The draft Report represents a strong first step towards designing an economy-wide carbon policy which significantly reduces Oregon's emissions while yielding broad economic benefits. We applaud D.E.Q. for entering into this process with a thorough consideration of the key factors which would affect such a policy. We support the adoption of a strong cap-and-trade

program as a key part of a robust climate policy portfolio in Oregon, to complement existing policy.

We look forward to working with stakeholders as this process develops and would be happy to provide any additional information.

Sincerely,

Colin Murphy Ph.D.
Climate Policy Advocate
NextGen Climate America

3 June, 2016

Dear Chair Nichols,

Thank you for the opportunity to participate in the May 18th workshop and comment on the three studies on emissions leakage from the cap-and-trade program. Climate change is a critical threat facing the world and California's leadership is critical to addressing this problem. The California Air Resources Board has established policies to minimize regulatory costs and ensure that there are incentives for progress on emissions reduction that more than offset these costs to business and consumers. The studies being discussed are intended to help develop the next iteration of policies to minimize the risk of production and emissions leakage from California businesses. We applaud the Board for advancing the state of research into this subject, and the authors of these studies for their contributions to a highly relevant area of policy.

The studies each evaluate a different scale of potential leakage: international, domestic and within the food processing industry. Each highlights different and valuable considerations when evaluating the effects of climate change policy, however there are several findings common to each. We will present some comments that apply to all three studies, then comments specific to each study in turn.

It is important to note, however, that all of these studies are by their own admission, limited quantitative examinations of one variable - production leakage - in a large and complex system. To isolate this variable, they use statistical methodology to exclude the effects of many factors which would clearly affect the system under study, including the policies explicitly enacted to prevent such leakage. They are not estimates of actual leakage under the cap-and-trade program and should not be presented as such. This fact should be made clear in forthcoming reports and communication on this subject. Decisions about the future of California's climate policy must be based on the total suite of benefits and costs, over a broad geographic and temporal scale.

The critical policy question these studies address is how much leakage would occur under a hypothetical scenario in which California's climate action was, globally, the only policy force acting on energy prices and there were no policies to prevent leakage. In many ways, this represents a worst-case-scenario from a leakage standpoint. Many of the assumptions and fundamental methodological choices employed by the authors lead the results to error on the side of overestimation of potential leakage effects. Overestimation may be a desired outcome, in order to provide a margin of error in future policy making, however it is important that the quantitative estimates developed under these research assumptions be clearly identified as intentional overestimates, out of healthy caution, not actual estimates of real-world effect.

While caution is a reasonable motivation when making policy, we feel that accurate reflection of real-world conditions is equally, if not more important when developing quantitative estimates of policy effect and would offer some suggestions about this work.

Comments in Response to All Studies

The exclusive focus on leakage of productivity and jobs, absent the broader context of global climate policy, can lead to misleading and poorly-supported conclusions. It is important to consider several critical issues of broader context when interpreting the results of the three studies being discussed here.

The most glaring flaw, shared by all three studies is that they assume California's climate policy acts in a vacuum and that the rest of the world maintains the *status quo* of uncontrolled emissions, stable energy prices and no impact on economic activity from climate change. These assumptions to some degree reflect the inherent limitations of econometric modeling: one approach to establishing a causal relationship between a factor and an outcome (e.g. energy prices and production loss) is to hold all other variable fixed and examine only the effects of variation in the variable of interest.

Unfortunately, this approach necessarily divorces itself from reality. There is no conceivable future of the world in which California's emissions control programs occur in the context of a stable world. This is particularly troubling in the context of regression analysis since many of these effects would also correlate with energy prices, the primary explanatory variable in these studies. This correlation opens these studies to errors from omitted variable bias, and in the context of these studies, would generally bias the results toward an overestimation of the effect from California's policy actions. Specifically:

The Studies Overlook Similar Policy Actions Outside of California

In particular, there are climate change and renewable energy policies either in place, or in development in almost every possible jurisdiction that California production could leak to. Within the U.S., the Clean Power Plan will transform the U.S. energy generation fleet, pushing out coal power and dramatically increasing the prevalence of renewable sources. Many states are considering a market-based emissions permit trading system, very similar to California's cap-and-trade system, as their compliance mechanism for the Clean Power Plan and states that comprise the Regional Greenhouse Gas Initiative (RGGI) already have such a program in place. Additionally, 28 states *besides California* have Renewable Portfolio Standards, which require electricity grids to increase the fraction of energy from renewable sources. Internationally, 177 countries agreed to the Paris climate accords and submitted Individually-Determined National Contributions, which pledge these states towards reducing their GHG emissions. All of these measures may impose policy-related costs on the energy supply system similar to those in California. The presence of sustainable energy policy could correlate with increased energy prices in other jurisdictions, leading to omitted variable bias.

The Studies Assume Zero Cost From Climate Change

All three studies compare a jurisdiction assumed to have a policy-driven cost on energy supply - California - against jurisdictions without such cost. This overlooks the fact that in absence of effective climate policy - of which, California's leadership is crucial - climate change will impose devastating costs. California is particularly vulnerable to climate change because of our long coastline, substantial agricultural sector, outdoor tourism industry and stressed water supply. The authors assume that not having a climate policy leads to business as usual over the foreseeable future, and essentially zero costs to industry. There is an extensive body of literature which indicates substantial economic risk to California industries from climate change^{1,2,3,4}, this is especially true in relation to the food-processing industries discussed in the sector-specific study. In reality, inaction on climate would subject the businesses discussed in this report to billions of dollars in additional costs and could easily reduce production by far more than the relatively small increments discussed in this paper.

The Studies Ignore the Economic Benefits of Renewable Energy and Climate Investments

The studies evaluate the loss of production and jobs from leakage, but separating the revenue-generating element of California's cap and trade program - the permit price - from the benefits gained from spending the revenue is an arbitrary distinction which does not illuminate the broader impacts of the plan.

Sustainability policies in general, and the cap-and-trade program in particular, have prompted the development of a massive new clean energy industry in California. From 2010-2014, state policy incentives led to over \$20 billion in renewable energy, energy efficiency and clean transportation projects in-state. The revenue from the cap-and-trade program, coupled with the policy incentives created by the broader suite of AB-32 authorized policies, will inject billions of dollars of state funding, which will leverage billions more in private investment, into sustainable energy investments, which create good-paying jobs and expand the economy.

Insofar as the studies attempt to predict corporate behavior by examining response to prices, omitting the benefits of renewable energy investments paints an incomplete picture and again limits the accuracy of quantitative estimates of leakage effects. The models assume that the permit and energy prices borne by industries is the only price signal they receive from sustainable energy policies, however the investments made can function as a countervailing price signal, which the study does not consider. This again, tends to bias the studies towards overestimation of leakage effects.

¹ <http://www.energy.ca.gov/2012publications/CEC-500-2012-031/CEC-500-2012-031.pdf>

² <http://link.springer.com/article/10.1007/s10584-011-0322-3>

³ <http://link.springer.com/article/10.1007/s10584-011-0314-3>

⁴ <http://riskybusiness.org/site/assets/uploads/2015/09/California-Report-WEB-3-30-15.pdf>

The Studies Generally Assume That Compliance Costs Are Equal to Permit Costs

Permit costs represent an upper bound on compliance costs, with many industries choosing to find lower-cost compliance options through internal efficiencies. Better insulation of heated vessels, cogeneration and energy recovery from waste biomass are technically feasible and cost effective ways to reduce emissions within the food processing sector. GGRF funding can, and has, been used to help facilitate these efficiency improvements in industry. With actual compliance costs potentially lower than those assumed by the study, the resulting leakage estimates are biased towards over-estimation.

The Studies Do Not Sufficiently Examine Alternative Causes For Changes in Production

Least-squares regression functions by drawing the line of best fit through a group of points and determining how well it matches the given data. This is one of the most fundamental, and well-studied econometric tools, however it is limited by the data available and assumptions about the nature of the system under study. In particular, when only one explanatory variable is considered in studies of complex systems - and the economic behavior of modern economies certainly qualifies as complex -there is a risk that the model will over-ascribe causality for the observed behavior to the explanatory variable included in the study. That is to say, if you only include one possible cause of an effect in your least-squares regression study, the model will err on the side of finding more causality than there actually is.

The studies under discussion do not consider alternative causes for geographic shifts in production, such as broader market behavior, weather, trade disruptions, labor price, consumer trends, etc. Several of these effects could correlate with energy prices and therefore lead to omitted variable bias.

The Assumption of Full Cost Pass-Through is Incorrect

The studies all base their estimates of the price effect on manufacturers on the price of emission permits and the price increase in energy to reflect utilities' need to obtain permits. They assume that these costs from utilities are fully passed through. Recent research has indicated that within the manufacturing sector, this is not the case⁵. This implies that for the industries affected, the impact of cap-and-trade related price effects on competition cannot be modeled so simply as is done in these studies.

⁵ <http://faculty.haas.berkeley.edu/rwalker/research/GanapatiShapiroWalker-PassThrough.pdf>

Specific Comments on the Food Processing Industry Study (Hamilton, et al. 2016)

- The study is based on a fairly simple elasticity-based modeling rather than equilibrium modelling or other econometric techniques. Elasticity based modeling assumes linear response to changes in conditions, which is seldom true at scales considered by this study. For some of the industries under study, there is also very little data on which to base these conclusions. There are four sugar processors in the state and four wet corn processors, of which one wet corn processor controls almost three-quarters of the market. Trying to extrapolate generalized predictions about responses to conditions never before seen in California's economic history from four data points is highly uncertain at best.
- The paper attempts a regression analysis with a very limited data set, in some places as little as two years of California production. The data is largely confidential and therefore not available for review. As the authors note, in many cases, the industry has consolidated to a relatively small number of producers. This means that confounding factors which affect one producer are likely to affect many of them and thereby impart systematic bias. There are also potential problems with collinearity and heteroskedasticity which may not be apparent with such a limited dataset. Ultimately, without a larger and more diverse data set, and the ability to review it for alternative explanations for the observed behavior, the conclusions offered by this report are not well-supported by the data.
- The paper makes the claim, with little evidence to support, that producers using natural gas in-state will shift out-of-state and start using coal. Market and regulatory forces outside California, including the Clean Power Plan, air quality regulation (e.g. the Mercury and Air Toxics rule) and the cascading bankruptcy of the coal industry has dramatically limited the prospects of industries choosing to build new coal-powered facilities.

The study's own numbers bear this out. They report a nearly equal fraction of production which relocates outside of the state will be powered by electricity as by coal or fuel oil. Electricity is likely to be an environmentally superior option to natural gas, due to the rapid decarbonization of the U.S. power grid and the dispatchability of demand from industrial sources. So, by the most straightforward interpretation of data provided in this paper, as much production will be moving to less-emitting sources of power as will be moving to more.

- The actual production decreases reported in this study are extremely small and difficult to translate to actual production numbers. They rely on the completely linear behavior

of elasticity-based economic models whereas real production decisions and responses to changing economic conditions are often highly non-linear.

For example, the paper predicts a 0.75% marginal cost increase in sugar mills leads to a 1% loss in production. Given that there are 4 sugar mills in operation, what does that mean in real terms? Is there any evidence that production at California sugar mills is so incrementally flexible that you would see a 1% change in production and/or employment? Or are production values set by long term contract, which would imply that a .75% cost increase would be simply absorbed into overhead and either passed on to buyers or reflected in lower profit?

- The wet corn industry in California, by the authors' own admission, is dominated by one producer which represents 72% of total production. The authors first make an error by assuming that the relationship between energy price and output is the same at the smaller facilities as it is at the one several times their size; the large facility is likely to enjoy economies of scale not available to the smaller ones. Second, similar to the questions about sugar production discussed above, interpreting a 2% production cut in a small sector in light of production contracts is problematic. It is almost certain that the actual behavior is non-linear. Third, within California excess corn could easily be shifted to the dairy, beef and poultry industries, which would preserve the market for the agricultural product and could potentially offset production and job losses.
- The methods state that they do not have detailed information about manufacturing processes for out-of-state producers, so they assume identical efficiencies as in California. This assumption may not hold true however. Californian farmers are typically more efficient than those in other areas because of high rates of technological adoption, the relatively higher cost of land and labor, water scarcity and most California industries have higher energy efficiency than competitors in other states due to years of state policy action. So the conclusion that marginal increases in cost will lead to production flight rests on an unsupported assumption.
- The authors use 2010-2012 production and industry survey data, but acknowledge that for the first several compliance periods, the industry will receive all, or a majority of emission permits allocated for free. This means that the data which populate their model do not include a carbon price price, nor the benefits provided from GGRF spending. These conditions do not represent those likely to affect the industry at the times when cap-and-trade will be in effect, nor do they consider the revenue generated in early years of the program from the large allocations of free permits these industries will receive, which could be invested in production improvements or emissions-reducing technology.

Specific Comments on the Domestic Leakage Study (Gray, et al. 2016)

- Natural gas cost shares are based off a 1991 survey of manufacturing energy costs. Industrial energy use has massively changed over the last 25 years, with substantial increases in energy efficiency, which would dramatically shift the cost share of natural gas in a finished product.

When asked at the workshop, the authors said that the natural gas cost shares effectively cancel themselves out, however given that they are one of the factors used in the basic model form to determine the elasticity of response to energy prices, it seems likely that the bias from the out-of-date natural gas cost share would be reflected in the elasticity values estimated from the regression, if not in the final aggregate job, productivity and value added loss values. Given that the elasticity values will be used to develop future CARB policy regarding protection for leakage-prone industries, this seems to be a significant flaw⁶.

- The study finds that the most significant impacts are predominantly in the short run and in Energy-Intensive Trade-Exposed (EITE) industries. California's cap-and-trade program has several provisions which reduce short-run costs to EITEs, including free allocation of emissions permits to both utilities and EITEs. Entities receiving a free allocation of permits can either use them to substantially reduce compliance costs, possibly to near zero, or sell them to raise revenue, which could be used to fund emission-reducing process enhancements or other business expansion. If a business has any emissions reducing projects with a GHG abatement cost less than the permit price, this leads to a net profit in the short run, which can be reinvested in reducing future emissions.

The authors explore these effects through rebates of part of the compliance cost, which is reported in Table A-1, which shows that rebating the cost of compliance to these industries dramatically lowers the reduction in value added within each industrial group. The authors did not report similar results for output or employment.

This brief treatment does not adequately evaluate the effects of free permit allocation on affected industries. By treating free permits as a partial cost rebate, it overlooks two potential outcomes which would ultimately reduce compliance costs even further.

⁶ The methodology surrounding this point was unclear and Dr. Morgenstern did not respond to an email asking for further clarification.

- Industries investing revenue from near-term emission permit sales in projects to reduce GHG emission over the long run, which would reduce compliance costs further below those predicted by the model.
- Industries with above-average emissions efficiency choosing to remain in California, or relocate here, to take advantage of the benefit that the free allocation of permits provides.
- The study also focuses exclusively on the effects of energy prices and does not attempt to control for, or explore the effects of, alternative causality. While this study does a better job of exploring several dimensions of correlation between energy prices and output indicators than the food processing one, it still does not adequately eliminate other potential causes to clearly establish causality or quantify the magnitude of a causal relationship. Without exploring other plausible causes, such as broader economic activity, changes in trade patterns, changes in input factor costs or availability or labor costs, the strongest claim the study can make is a correlation, not causality and certainly not an accurate quantification of the magnitude of the effect.
- Cap and trade compliance costs in the electricity sector were modeled by assuming a \$0.005525 per kWh charge, which was based on the compliance costs for natural gas generation. In 2014, California obtained 45-60% of its power from natural gas sources⁷, a figure that is certain to substantially decrease over time due to increases in the state's Renewable Portfolio Standard, as specified by SB 350 (2015, de Leon). Conversely, 34% of its power came from non-emitting sources such as wind, solar, hydro and nuclear, which would pay little or no emission-based GHG charges. The fraction of electricity which is not subject to carbon charges will, by law, increase significantly.. This means that the assessed carbon charge in this study, by applying the rate for natural gas generation to all power in the state, substantially over-estimated the effect of cap-and-trade; an error that would only increase over time.
- In common with the other studies, this paper erroneously assumes that states outside of California will not experience price increases from GHG reduction policies - "In contrast, for a plant located outside California, the energy prices it faces do not change, but the prices faced by its California competitors increase"⁸. As discussed earlier, other states and, in fact, almost every other nation has committed to significant GHG reduction policies, which would imply similar cost effects outside of California. Additionally, coal and natural gas, which predominantly comprise the fuel for electricity generation, are at historical low prices right now, so normal cyclic behavior would suggest that their price will go up. Together, this means that the assumption that energy prices outside the state will remain static is almost certain to be untrue.

⁷ http://energyalmanac.ca.gov/electricity/total_system_power.html

⁸ Page 4, paragraph 4

- The authors report that over the long run, the results are minimal for most industries, which implies that after the initial adjustment period to the new policy, in-state production will recover.
- Over the long run, the authors find that net output will increase with the carbon cap in place, while employment will slightly decrease. This reflects the broader trend observed in almost every industrialized economy: that output increases but labor requirements decrease due to the effects of automation and other productivity-increasing technology. Since the authors did not present an analysis of business conditions in absence of policy action - they only compared California against neighboring states with the carbon price in place - this study does not present sufficient evidence that the long term trends reflect anything other than normal industrial maturation.
- There is a lack of transparency about the cleanup techniques applied to the CMF and ASM datasets prior to analysis. We understand that in any large-scale dataset of this type, there will be a need to eliminate duplicate or erroneous values, however the authors did not report what fraction of the dataset was removed by these clean-up techniques or whether the removed values differed significantly from those that remained.
- The labor cost index includes only the pay per worker and does not take into account varying levels of labor productivity by state. California's labor productivity is significantly above the national average⁹, which would indicate that a simple pay-per-worker approach would not adequately consider the true costs and value of California labor relative to neighboring states.
- Their costs estimates of electricity supply include only utility-operated plants, not plants operated by the industrial user themselves. This ignores obvious opportunities for co-generation of power and heat at industrial facilities, as well as other opportunities for distributed renewable energy. This is especially problematic, considering the existence of the Self-Generation Incentive Program (SGIP), which has led to \$1.5 billion in industrial power generation projects which supplied a total of 1,046 GWh of power in 2013¹⁰.
- The authors use 2009 as the baseline year for their analysis, which was near the worst part of the recession. While their analysis does take the effect of the recession on other states into account, it does not account for the fact that California has recovered from the recession at a rate above that of the national trend. Since this recovery could also affect energy prices, there is a significant risk of omitted variable bias.

Specific Comments on the International Leakage Study (Fowlie, et al. 2016)

- The authors do a good job discussing the potential errors and uncertainty in their work. The authors themselves acknowledge that *“In those sectors where California producers comprise the vast majority of domestic market (e.g., tomato processing), our estimates are directly relevant to the California case. In other cases, our estimates likely overstate the impacts of a California Cap-and-Trade Program.”*¹¹

This is particularly important because there are very few industrial sectors that are simultaneously highly energy-intensive and also nationally dominated by Californian production. The EITEs identified by the three studies discussed in this letter are primarily manufacturing of chemical or consumer products, including fertilizer, industrial gases, glass, paper and metal products. While California has a robust presence in these, it hardly dominates national production. So, by the author’s own admission, their methodology “likely overstate[s]” the actual leakage. *“The imprecision of our estimates makes it difficult to estimate leakage potential for any particular industry with any degree of precision.”*¹²

- Similarly to the other studies, the authors do not consider the impact of international GHG reduction policies, such as the Intended Nationally-Determined Contributions (INDCs) agreed to by 177 nations. The effect of the INDCs will, in many cases, be to promote renewable energy policy similar to that of California, in the countries which would theoretically be competing against our industries for market share. As these policies take effect, the difference between in-state and international energy prices will decline significantly, thereby reducing the effect felt by CA industries. Since clean energy policies can affect energy prices, there is a risk of omitted variable bias.
- Similarly to the domestic leakage study, this study does not adequately model the impact of allowances distributed for free to EITEs. The effect of these free allocations would likely reduce costs to industries and long-run emissions intensity in a similar fashion to that described above:
 - Industries investing revenue from near-term emission permit sales in projects to reduce GHG emission over the long run, which would reduce compliance costs further below those predicted by the model.
 - Industries with above-average emissions efficiency choosing to remain in California, or relocate here, to take advantage of the benefit that the free allocation of permits provides.

¹¹ (Page 29, paragraph 5)

¹² Page 41, last paragraph.

Conclusion

We applaud the Air Resources Board for examining this issue in a thorough and quantitative way. We agree with the general principle that a rigorous, science-based approach is needed to fully understand the risks of leakage and design appropriate policies in response. The studies presented at the May 18th workshop are a valuable step toward sound policy design. They are not, however, accurate quantification of real-world leakage and should not be presented as such. Within their more narrow, and more appropriate scope, there are some methodological and problem-framing decisions which tend towards overstating the actual leakage risk. This tendency must be considered when developing policies to shield EITEs from potential leakage risk. We urge the Air Resources Board, the Legislature and all stakeholders to consider the costs imposed by the cap-and-trade program in the context of broader economic and policy benefits when modifying this vital and extremely successful policy..

We appreciate the opportunity to comment on these studies and will remain engaged in the process of improving and building upon the success of California's climate change policy. We are happy to offer any additional clarification or explanation on the matters contained in this letter.

Sincerely,

Colin Murphy Ph.D.

Climate Change Policy Advocate
NextGen Climate America



Potential Emission Leakage **Under the Clean Power Plan and a Proposed Solution**

**A Comment to the United States Environmental Protection Agency on the
Clean Power Plan Proposed Rule
Docket ID: EPA-HQ-OAR-2013-0602**

**NextGen Climate America
Daniel A. Lashof, David Weiskopf, and Devi Glick**

December 1, 2014

I. Summary

The Clean Power Plan is an essential step forward to end unlimited dumping of carbon pollution into our atmosphere from the largest source in the United States — existing power plants. EPA’s proposal (“Proposal”) establishes state-specific emission rate targets for each state based on a technical and economic assessment of the opportunities each state has to reduce emissions from the regulated sources covered by the standard. While there is considerable room for improvement in EPA’s assessment of each building block and the formula used to combine them, EPA’s basic approach — a bottom-up assessment leading to an individualized target for each state — is legally and technically sound.

The differences in emission rate targets among the states, however, could lead to higher overall emissions than anticipated (“emissions leakage”) if states with relatively low emission rate targets increase their electricity imports from states with relatively high targets. (In this context states that elect to implement an environmentally equivalent mass-based target can be treated as having an emission rate standard of 0 lbs/MWh because such a standard does not allow any increase in emissions associated with any increase in generation within such state beyond the level of growth already accounted for in the standard.) Potential differences in how states account for new fossil generation could further erode the projected emissions reductions.

Our analysis finds that these two factors, if left uncorrected in the final rule, could significantly reduce the effectiveness of the proposal. Technically, some states could rely entirely on leakage to demonstrate compliance with the proposal by shifting generation into states with higher rate standards or replacing existing generation with new sources that may emit at a higher rate. Under reasonable economic assumptions and transmission constraints, leakage could eliminate nearly 30% of the expected emissions reductions from the Clean Power Plan.

EPA's final rule should require state plans to prevent emissions leakage. This requirement is needed to ensure that state plans deliver environmental results equivalent to those anticipated by EPA based on achieving state targets without relying on an increase in unaccounted-for net electricity exports/imports.

As with other aspects of their plans, states would retain discretion to determine their own approach to preventing emissions leakage. This paper describes several approaches states could take to prevent leakage, including developing regional compliance plans and compensating for any increase in emissions associated with increases in net electricity exports. It also describes one way that electricity market administrators could adjust real-time market rules to eliminate implicit generation subsidies that could encourage emission leakage.

II. The Source of Potential Emission Leakage

Differences in state emission rate standards do not in themselves pose a fundamental problem for achieving cost-effective emission reductions under the Clean Power Plan. Each state can achieve significant emission reductions from its starting point by deploying additional clean resources within the state while improving the performance of existing resources and reducing reliance on the most emitting sources. EPA's proposal develops state emission rate standards by applying such in-state emission reduction building blocks to each state's 2012 starting point. The reductions achieved through this system of emissions reduction presume that net electricity exports/imports for each state remain constant at 2012 levels throughout the compliance period. If states comply, in part or in whole, by increasing imports of electricity from states with higher emission rates without making any correction to their emissions performance calculation to reflect the change, total emissions would be higher than under a scenario in which net imports don't change. The magnitude of this change could be sufficient to significantly reduce the effectiveness of EPA's proposal.

The basic mechanism by which emissions increase is straightforward. Consider first the situation if two states do not engage in trading of carbon credits or other compliance instruments but are participants in the same power market. We describe this situation as independent compliance. Assume total generation in the two states combined stays the same and that each state remains exactly in nominal compliance with its respective rate standard: If State A has an emission rate standard of 1000 lbs/MWh and State B has an emission rate standard of 1500 lbs/MWh, then shifting 1 MWh of generation from State A to State B will increase emissions in State B by 1500 pounds and decrease emissions in State A by 1000 pounds. The shift in generation results in a 500-pound net increase in total emissions.

Consider the following example, in which both State A and State B are assumed to maintain a constant level of energy consumption in all scenarios:

Independent Compliance with No Power Trades

State A generates 100 MWh at its standard of 1000 lbs/MWh, producing emissions of 100,000 lbs.

State B generates 100 MWh at its standard of 1500 lbs/MWh, producing emissions of 150,000 lbs.

Total power generation: 200 MWh. Total emissions: 250,000 lbs.

Independent Compliance within a Common Power Market:

Let us assume that the marginal generation cost in state A is greater than in state B because of its lower emissions rate, which causes 10 MWh of generation to shift from State A to State B.

State A generates 90 MWh at its standard of 1000 lbs/MWh, producing emissions of 90,000 lbs.

State B generates 110 MWh at its standard of 1500 lbs/MWh, producing emissions of 165,000 lbs.

Total power generation: 200 MWh. Total emissions: 255,000 lbs.

The net result is that both states remain in nominal compliance with their respective rate standards, while total emissions have increased by 5000 lbs.

Note that a mass-based emission standard is functionally equivalent to an emission rate standard of 0 lbs/MWh when it comes to leakage. If State A has an emission cap and State B has an emission rate standard of 1500 lbs/MWh, then shifting 1 MWh of generation from State A to State B results in a net emission increase of 1500 lbs because emissions do not change in State A (again, assuming the state maintains exact compliance with its emissions cap) while emissions in State B are allowed to increase by 1500 lbs of CO₂ as a result of the additional 1 MWh of generation.

Note further that emission leakage occurs strictly as a result of shifting generation from a state with a lower emission rate standard (or cap) to a state with a higher emission rate standard, independent of any agreement to allow trading of emission credits between states.¹

This point is illustrated by the following example of joint compliance using emissions trading.

Joint Compliance with Emissions Credit Trading:

Let's assume that State A over complies and sells emission credits to State B.

¹ In the Western Resource Advocates *Carbon Reduction Credit Program* Working Paper, Steven Michel and John Nielsen suggest that credit trading between states with different emission rate standards would result in leakage and suggest discounting such credits based on the difference in emission rates between the states. Their example, however, does not hold total generation in each state constant. Closer examination shows that the emission leakage attributed to credit trading by Michel and Nielsen is actually a result of shifting generation from the lower emission rate state to the higher emission rate state. Available at <http://www.westernresourceadvocates.org/energy/pdf/CRC%20Program%20-%20WRA%20working%20paper%208%2025%2014.pdf>



State A generates 100 MWhs with an average emission rate of 900 lbs/MWh, producing emissions of 90,000 lbs.

State B generates 100 MWhs with an average emission rate of 1600 lbs/MWh, resulting in total emissions of 160,000 lbs.

State A's allowed emissions were 100,000 lbs, so it would have 10,000 lbs of emission credits it could sell to State B, assuming State B entered into an agreement to accept credits from State A.

State B's excess emissions of 10,000 lbs would be compensated by the credits obtained from State A.

Total power generation: 200 MWh. Total emissions: 250,000 lbs.

In this example there has been no shift in electricity generation and no change in total emissions. The emission credit trade does not change total emissions even though the states involved in the trade have different emission rate standards.

III. Policy Recommendations to Reduce Leakage Potential

To reduce the technical potential for leakage that we have identified, EPA should adopt the following policy recommendations in its final rule.

1. All state plans must have provisions to prevent leakage:
 - a. Responsibility could be assigned to states that increase net exports or reduce net imports;
 - b. Alternatively, responsibility could be assigned to states that increase net imports or reduce net exports.
2. Set consistent rules for the treatment of all new fossil resources:
 - a. Allowing states to elect to include or exclude new sources results in high leakage potential;
 - b. If it is not feasible to require all states to account for new sources then all states should be required to exclude both new source emissions and generation from their compliance demonstrations.
3. Consistent with EPA's proposed methodologies for translating rate standards to mass standards, states that adopt a mass-based standard must either —
 - a. Exclude generation served by new sources from the load used to convert from a rate standard to a mass standard; or
 - b. Adopt a standard that is based on the inclusion of these megawatt-hours and count the emissions from new sources against the standard.
4. EPA should revise the methodology for treatment of Energy Efficiency as a component of BSER to credit states for 100% of reduced generation to support statewide sales, regardless of whether the state is a net importer or exporter (provided that EPA requires states to prevent leakage due to interstate electricity trades).

IV. Technical Leakage Potential in the Proposal

In order to determine the potential for leakage in the Clean Power Plan, NextGen Climate America examined several scenarios under which states could appear to maintain compliance with either a rate or mass standard while failing to achieve a level of environmental performance equivalent to or better than what would be achieved through the BSER. These scenarios assess the technical potential for leakage due to a failure to account for incremental interstate electricity trading above the 2012 baseline levels and due to an inconsistent or inadequate accounting for the affects of new NGCC generation.

Our analysis defines leakage as emissions that occur in excess of EPA's proposed mass targets for states that are inclusive of new generation (EPA's Method 2 or "Method 2"), as described in EPA's November 6, 2014 Technical Support Document.² ("Nov. 6 TSD") Nationwide performance by this metric is approximately equal to the projected emissions performance in EPA's Regulatory Impact Analysis.

Our assessment of technical leakage potential excludes the possibility for electricity trades among states that do not have significant transmissions connections. We assume that all states will use increased generation to serve in-state load before increasing net exports. Where states are supposed to decrease generation for the sake of meeting a mass standard in scenarios 4, 6, and 7, we presumed that covered 2012 sources are curtailed in order from most to least emissions-intensive. All states are assumed to comply exactly with the form of standard they are presumed to adopt in the scenario, whether the standard is rate- or mass-based. California and all states that participate in the Regional Greenhouse Gas Initiative are presumed to adopt mass standards in all scenarios.³

We modeled seven scenarios that examine two major categories of leakage potential: (A) Leakage that may occur purely as a result of incremental exports from states that adopt a rate standard without adding any new fossil generation, and (B) Leakage that results from the strategic siting or inadequate accounting for new NGCC generation. Significant leakage potential exists in all scenarios.

² Available at <http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule-notice-additional-information-regarding>.

³ Scenarios involving changes to interstate electricity trades also exclude leakage potential resulting from increased incremental exports to California. This conservative assumption is made in order to minimize complex interactions between California's "First Deliverer" rule under the state's Global Warming Solutions Act and any prospective Clean Power Plan compliance plan in the state.

(A) Leakage from rate states increasing exports with no new NGCC:

Scenario 1: Incremental Exports Available through Building Blocks

Scenario 1 examines leakage potential that exists where some states implement a rate standard by applying the building block components of BSER, but are able to generate more electricity from existing resources than the state is projected to require in order to meet load in 2029. These states are assumed to export this surplus electricity to states that are assumed to adopt a mass standard.

This scenario identifies the potential for significant leakage. For example, we found that Ohio alone could generate 18 million surplus MWh for export to New York, resulting in 12 million tons of excess emissions. Aggregate national leakage potential for this scenario is 88 million tons – 15% of total projected abatement in 2030.

Scenario 2: Incremental Exports Available if Existing and Under-Construction NGCC Operates at Increased Capacity Factor

Scenario 2 examines the potential for leakage that may occur under similar assumptions to Scenario 1, with the exception that existing NGCC is presumed to operate at a maximum capacity factor of 75% and under-construction NGCC is presumed to have a maximum capacity factor of 85%. Leakage potential in Scenario 2 is higher than in Scenario 1, as would be expected under these assumptions. For example, potential leakage that would result from incremental exports from Ohio to New York increases to 15 million tons in this scenario, compared to 12 million tons in Scenario 1. Aggregate national leakage potential for this scenario is 108 million tons – 18% of total projected abatement in 2030.

(B) Leakage from new NGCC emissions not accounted for correctly

Scenarios 3 & 4: Projected New NGCC Sited Strategically

Scenarios 3 and 4 adopt the findings of IPM modeling carried out by ICF on behalf of the Natural Resources Defense Council, which identified economic levels of new NGCC generation to be built in each of several regions of the country, based on implementation of EPA's Proposal. In each of these scenarios, we assume the new NGCC projected for a given region is sited strategically within that region rather than being sited in the state that seeks to buy the energy from each new unit.

Scenario 3 assumes all of the new NGCC generation for each region is sited within a state in that region that has a high rate standard and strong transmission connections to other states within the region. Generation above projected load for the state where the new sources are sited is exported to states that adopt a mass standard.

Scenario 3 shows high leakage potential because, sited in this manner, the new generation can serve to both artificially lessen the average emissions rate for the state where it is built and help the importing state meet its mass standard without reducing emissions from in-state generation that serves its load. For example Indiana can generate 18 million surplus MWh for export to Illinois, resulting in 14 million tons of leakage. In the West, Montana can increase net exports to Oregon by 5 million MWh, resulting in 4.5 million tons leakage, with leakage occurring at a rate of 0.9 tons per incremental MWh exported. Aggregate national leakage potential for this scenario is 177 million tons – 30% of total projected abatement in 2030.

Scenario 4 assumes the same facts, but examines leakage that results if surplus electricity is exported from a state with a higher rate standard to a state with a lower rate standard. This scenario results in lower levels of leakage, and is highly sensitive to the variation in rate standards among importing states. For example, Kentucky can generate 16 million surplus MWh for export to Mississippi, resulting in 8.5 million tons leakage (a leakage rate of just over .5 tons per MWh), while Montana can export 5 million MWh to Washington resulting in leakage of 4 million tons at a leakage rate of .8 tons per MWh.⁴ Aggregate national leakage potential for this scenario is 80 million tons – 13% of total projected abatement in 2030.

Scenarios 5 – 7: Building to Compliance

Scenarios 5 – 7 remove the constraints on the levels to new NGCC that is projected under scenarios 3 and 4. Instead, these scenarios presume states may build as much new NGCC as is needed to bring a state into compliance with its standard. These scenarios reflect more leakage potential than may be likely given economic considerations for replacing existing sources with new generation. Nevertheless, the technical potential and financial incentive for leakage that exists in these scenarios raises significant cause for concern.

Scenario 5 assumes states with high rate standards build enough new NGCC to reduce the statewide emissions rate enough to meet the standard. Surplus electricity is exported to states that adopt mass standards. This scenario identifies very high technical potential for leakage. Under this scenario many states could build their way to compliance while exporting surplus electricity to neighboring states. For example, Iowa alone could generate 29 million surplus MWh for export to neighboring states, resulting in 19 million tons leakage.

Scenario 6 examines the leakage potential that results from states adopting a mass standard using EPA's Method 1 based only on generation from 2012 affected

⁴ Because the leakage rate is based on the difference between the rate standards of the states involved in a transaction, the leakage rate (in terms of tons leakage per MWh transacted) between Montana and Washington is 60% higher than the leakage rate between Kentucky and Mississippi.

sources. Under this version of the mass standard, states are not currently required to account for emissions from new generation megawatt-hours that replace megawatt-hours from existing sources. In this scenario we presume that states reduce generation from existing sources until the standard is met, and supply all displaced and incremental electricity from new sources.

To the extent that combined emissions from new and existing sources exceed levels that would occur under EPA's Method 2, which establishes a standard based on both categories of sources, the standard does not achieve environmentally equivalent performance, and leakage occurs. This scenario also identifies very high technical leakage potential. For example, the technical leakage potential in Florida alone is 13 million tons.

Scenario 7 examines potential leakage that occurs if states that adopt rate standards are permitted to optionally include or exclude emissions from new NGCC when demonstrating compliance with a rate standard. In this scenario, states with rate standards lower than the average emissions rate of a new NGCC unit are presumed to exclude consideration of this generation and its associated emissions when making a demonstration of compliance. All other states are presumed to include consideration of these new sources.

In scenario 7, leakage occurs to the extent that emissions from a new NGCC unit exceed the state's rate standard. For example, New Jersey's rate standard is 537 lbs CO₂/MWh in 2029. If a new NGCC unit operates with an emissions rate of 866 lbs/MWh, New Jersey's leakage in scenario 7 occurs at a rate of 329 lbs CO₂ for each megawatt-hour that is not accounted for under the standard. New Jersey could generate 5 million tons of leakage by shifting 21 million MWh from existing generation to new generation and serving incremental load with new generation.

V. EPA has the Authority and Responsibility to Require State Plans to Address Leakage

EPA should require that state plans include sufficient measures to address the possibility for significant leakage to occur.

The principle that state-level implementation must meet or surpass the minimum standard set by the federal government lies at the heart of the Clean Air Act's cooperative federalism framework. But where state plans do not include measures to prevent and correct for potential leakage, our analysis shows that the environmental performance of the Clean Power Plan may be seriously compromised.

State plans must demonstrate that they will be enforced and will achieve a level of performance no less stringent than what can be achieved through EPA's best system of emissions reductions. It is incumbent upon EPA to require state plans to include measures to prevent leakage as part of this demonstration of equivalence and enforceability.

It is implicit in the EPA's authority to regulate greenhouse gases from the power sector that it must also have authority to enforce the level of stringency that is proposed in that policy. As the EPA notes repeatedly in its Legal Memorandum,⁵ the electric power sector is interconnected across many states and regions, which would make leakage transactions very likely in the absence of any prohibition or corrective policy. The requirement that states not rely on leakage to create the appearance of compliance while failing to produce a satisfactory level of environmental performance may therefore be implicit in the proposal. Nevertheless, EPA should explicitly clarify this requirement by directly addressing the need to account for emissions attributable to increases in net electricity exports during the compliance period.

EPA rightly recognizes the need for states to address the interstate effects as a State Plan Consideration, and the Proposal specifically seeks comment on how best to address these effects.⁶ Of particular concern to EPA is the possibility that, due to the

⁵ See Technical Support Document: "Legal Memorandum for Proposed Carbon Pollution Emission Guidelines for Existing Electric Utility Generating Units," available at <http://www2.epa.gov/sites/production/files/2014-06/documents/20140602-legal-memorandum.pdf>, at 43 *et seq.*, discussing the significance of the interconnected nature of the electricity system and of CO₂ as a global pollutant that is well-mixed in the atmosphere. This document mentions the "interconnected nature of the [grid/electric system]" at least 17 times.

⁶ Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units; Proposed Rule, *Preamble*, 79 Fed. Reg. 34,917 (June 18,

interconnected nature of the electricity system, individual states' demonstrations of equivalent or better performance may be impaired and that emissions reduction measures not be double-counted. While EPA provides examples of these effects that may be associated with energy efficiency programs on a shared electricity system and renewable energy imports and exports, our analysis shows that these concerns are special cases of the more general issue that exists for all states that engage in import and export transactions with other states.

Similarly, EPA recognizes that many states are likely to build new Natural Gas Combined Cycle (NGCC) generation, which may directly or indirectly affect the emissions performance of those states. EPA has requested comment on how best to account for the existence and affects of new NGCC in state plans. As we show in these comments, this new generation can have a significant impact on the environmental performance of both the state in which it is built and on any states with which it engages in electricity trade. For this reason, it is crucial that EPA require states to both account for new fossil generation in a consistent manner and account for incremental imports or exports in their demonstrations of performance.

In general, states must ensure that “any material component of a state requirement or program included in a state plan that could affect emission performance . . . must be accurately represented.”⁷ To fulfill this requirement, states must account for how both incremental electricity trades and new fossil generation affect the environmental performance of the state plan. Because both of these factors have the potential to seriously undermine the environmental performance of the plan, states should also be required to include measures to prevent leakage due to these factors as a component of their state plans.

Demonstration of Equivalent or Better Performance

For a state plan to be approvable, it must achieve a level of environmental performance no less stringent than could be achieved through implementation of EPA's best system of emissions reduction. The state must make this demonstration of equivalence regardless of the form of standard that a state adopts (whether mass- or intensity-based).

This level of performance is premised upon states achieving genuine emissions reductions by improving performance of existing resources and/or meeting in-state energy needs with cleaner resources. Neither of these criteria is satisfied if states that adopt a mass standard merely shift emissions to neighboring states to create the illusion of reductions in their power sector. Nor are these criteria satisfied by

2014) (to be codified at 40 C.F.R. pt. 60). See also Technical Support Document “State Plan Considerations,” 84–96

⁷ 79 Fed. Reg. 34,922.

states that adopt a plan that ignores the effects of new fossil generation on both in-state and interstate emissions performance.

Where a state increases overall generation and increases exports to a neighboring state that does not account for the emissions associated with that electricity, emissions may actually increase in both states. When two states either increase or maintain constant emissions, the emissions reductions required by EPA guidelines evaporate, compromising the environmental performance of individual state plans and of the rule as a whole. Therefore any demonstration of equivalence must account for the role incremental imports and exports play in affecting in-state power sector emissions.

Similarly, states may increase overall emissions by redispatching generation from existing sources to new fossil sources regulated under the new source performance standards in section 111(b) of the Clean Air Act. If mass standards are set under the assumption that the existing fleet generates a forecast number of megawatt-hours, but many of these megawatt-hours are generated instead by new NGCC sources without any adjustment to maintain the stringency of the original mass standard, overall emissions could increase significantly, again compromising the environmental performance of state plans and of the rule as a whole. A similar outcome may occur if states may elect whether or not to consider the generation and/or associated emissions from new fossil generation when establishing a standard of performance or demonstrating compliance with that standard.

EPA requests comment on matching real world emissions performance to compliance plan targets in the *Preamble*. EPA emphasizes the importance of this issue in its technical support document, *Projecting EGU Emission Performance*:

As discussed in the preamble, the EPA is striving to find a balance between providing state implementation flexibility and ensuring that the emission performance required by CAA section 111(d) is properly defined in state plans and that plan performance projections have technical integrity. The credibility of state plans under section 111(d) will depend in large part on ensuring credible and consistent emission performance projections in state plans.⁸

This request for comment indicates that the mere adoption of a numerical rate standard equal to the number contained in the proposal is not sufficient to demonstrate that a state plan will achieve the required level of performance.

For a state plan to demonstrate the required level of performance, it must adopt standards that are “equivalent to or better than the levels of the rate-based CO₂

⁸ Technical Support Document, *Projecting EGU Emission Performance*, 3. See also *Preamble* §VII(F)(7).

emission performance goals in Table 1 of this Subpart.”⁹ The levels reflected in Table 1 provide numerical emissions rate targets, but these *targets* should not be construed as being identical to the level of *stringency* a plan must achieve.

Rather, standards of performance must “*reflect the degree of emission limitation achievable* through the application of the “best system of emission reduction” that, taking into account the cost of achieving such reduction and any non-air quality health and environmental impacts and energy requirements, the Administrator determines has been adequately demonstrated (BSER).”¹⁰

As EPA indicates in the *Preamble*, the proposed state goals merely reflect the “stringency of application of the measures in each of the building blocks”¹¹ that make up the BSER. The degree of emission limitation reflected in EPA’s formulation of the BSER is based on a suite of measures that either improve the performance of existing sources or “reduce the unit’s CO₂ emission total *to the extent that generation can be shifted from higher-emitting fossil fuel-fired EGUs to lower- or zero-emitting options.*”¹² The BSER does not contemplate shifting generation out of state or to new resources that will not reduce pollution.

Among the measures that displace high-emitting resources, EPA considers increased dispatch of lower-emitting resources, new or retained zero-emitting resources, and demand-side efficiency measures that reduce the need to operate all supply-side resources. Any of these options will result in a net decrease in emissions compared to a business-as usual scenario. Increased reliance on out-of-state fossil generation will not achieve this result and is therefore not considered a component of BSER. For the same reason, states should not be permitted to treat incremental imports as a zero-carbon compliance tool.

EPA has requested comment on the ways to define appropriate state-level goals and demonstrations of compliance based on consideration of new fossil capacity. While EPA correctly indicates that, “Under a mass-based plan where an emission limit on affected EGUs would assure achievement of the required level of emission performance in the state plan, any emission reductions at affected EGUs resulting from substitution of new NGCC generation for higher-emitting generation by existing affected EGUs would automatically be reflected in mass emission reductions from affected EGUs.”¹³

⁹ Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units; Proposed Rule at §60.5740(3)(ii).

¹⁰ 79 Fed. Reg. 34,834 (June 18, 2014) (Emphasis added).

¹¹ *Id.* at 34,851.

¹² *Id.* at 34,835. (Emphasis added).

¹³ 79 Fed. Reg. 34,877, 34,924

The guidance EPA provides in the Nov. 6 TSD¹⁴ begins to address how the existence of this new NGCC generation should be accounted for to “assure achievement of the required level of emission performance in the state plan” by offering a rate to mass translation methodology that allows states to base a standard on anticipated generation from both new and existing sources. For the methodology that bases the mass translation only on 2012 affected sources, however, EPA contemplates the substitution of new NGCC for “higher-emitting generation,” but ignores the incentive states will have to substitute new NGCC even for low-emitting sources. To correct for this perverse incentive, this guidance should be supplemented with provisions for adjusting a Method 1 mass standard (which is based on 2012 affected sources only) to ensure the appropriate levels of stringency.¹⁵

BSER Treats 2012 as the Baseline Year for Electricity Imports

Each of the building block components of BSER measures emissions performance improvements compared to the 2012 baseline year, and accounts for these changes in calculating the states’ emissions rate targets. This calculation includes each state’s level of net electricity imports as a constant. Where import levels increase relative to this baseline, the stringency of the rate target or of a mass target that is based on it will also be affected. Just as states will account for changes in fossil generation, renewables, and efficiency throughout the compliance period, the demonstration of compliance should also account for changes in the level of imports.

Building Block Four of EPA’s BSER calculation assesses the potential for energy efficiency to contribute to emissions rate reductions. To determine the size of the contribution, EPA projects percentage savings figures for states throughout the compliance period. These megawatt-hours associated with these percentage savings levels are determined by multiplying a given year’s savings percentage by statewide sales in 2012, scaled up by a 7.51% correction factor to account for avoided transmission and distribution losses. For states with negative net imports, this number is then included in the denominator. For states with positive net imports, the megawatt-hour savings number is multiplied by state generation as a percentage of sales.

While the level of savings projected scales up throughout the compliance period, the net import percentage and the statewide sales figure that determine the efficiency megawatt-hour contribution to the emissions intensity denominator remain constant. In this manner, EPA’s methodology treats 2012’s import levels as a constant.

¹⁴ See fn. 2, *supra*.

¹⁵ An appropriate mechanism may adjust the mass standard to exclude megawatt-hours of generation from existing sources that have been replaced by new fossil generation. See *infra* at Preventing Leakage from New NGCC in Mass Standard States, pp. 28 *et seq.*

Because EPA's numerical rate standards reflect the level of stringency associated with the application of the building blocks in BSER within each state, states that purport to comply in part or whole by relying on changes in imports or exports (among other mechanisms that EPA has not contemplated as part of BSER), should be required to show that the change will not adversely affect the level of performance associated with the plan. It is highly likely that net imports will fluctuate from year to year even in the absence of concerted efforts to leak emissions, and that these changes can have significant leakage effects. Therefore all state plans should be specifically required to include a process for maintaining the required level of performance reflected in the original BSER if net import levels fluctuate by more than a *de minimis* amount.

Requiring States to Prevent Leakage does not Compromise State Flexibility

EPA has provided states with considerable flexibility with respect to how they implement the law, but that flexibility is predicated on the requirement that states achieve the level of performance articulated in EPA's proposal. The preamble to the proposed rule specifies that EPA seeks to provide flexibility "where permitted by statute, particularly with respect to the range of measures that a state could include in a plan," but not with respect to the overall emissions performance of the plan: "We view the proposed goals as providing rigor where required by the statute with respect to the amount of emission reductions."¹⁶

In the absence of a firm requirement that state plans achieve equivalent environmental performance to EPA's proposal, the cooperative federalism structure of the Clean Air Act would break down. The result would be a *de facto* devolution to a purely state-driven process, in which states determine not only how to implement the law, but also whether and to what extent to implement it.

EPA's BSER calculation is based on the projection that in-state fossil generation resources continue to operate at a constant level throughout the compliance period and that renewable resources and energy efficiency savings contribute additional zero-emission megawatt-hours to the compliance calculation over time. In EPA's October 28, 2014 Notice of Data Availability (Oct. 28 NODA), the agency requests comment on adopting a methodology that treats these zero-emission resources on par with existing NGCC as available tools for reducing the states' reliance on existing fossil resources.¹⁷ We recommend EPA adopt this adjustment to the BSER calculation.

But whether EPA adopts the adjustment to the BSER calculation or not, the BSER does not provide for treating incremental imported or exported electricity as a compliance tool. If EPA does not require states to account for incremental electricity

¹⁶ 79 Fed. Reg. 34,837.

¹⁷ 79 Fed. Reg. 64,543 (October 30, 2014).

trade, it is implicitly allowing electricity imports and exports to contribute towards compliance as if there were no emissions associated with these imports.

EPA should therefore clarify that states cannot sweep emissions associated with incremental electricity imports and exports under the rug. Instead, EPA should exercise its authority to require that states include emissions associated with these net trades in demonstrations of compliance. States should not be permitted to simply adopt a rate standard with no regard for how that standard is achieved or how that rate standard adopted will perform compared to the levels of carbon pollution reduction contemplated in EPA's proposal.

Therefore, for a state plan to be approvable, EPA should require that states not only adopt a numerical emissions rate standard (or an equivalent mass standard) that matches the standard proposed by EPA; states must also demonstrate that the application of this standard will achieve a level of performance equivalent to or better than the approach described by the EPA.

Accounting for and preventing potential leakage in no way impacts states' ability to take advantage of the full suite of available carbon reduction measures, develop a state plan that takes into account local circumstances, engage in multi-state plans, or otherwise take advantage of the flexibility EPA has provided. Indeed, states may determine that the optimal compliance path could involve significant changes in net imports. The requirement to address potential leakage in a state plan merely requires that such a compliance strategy compete on a level playing field with other strategies by accounting for the emissions associated with those net changes in interstate trades and correctly account for the effects of new fossil generation.

The Requirement that Credited Emissions Reductions be Non-Duplicative also Requires Addressing Leakage

Leakage transactions compromise the environmental performance of both a state that increases incremental imports and a state that increases generation to provide for this incremental imported energy. There is therefore a risk that the compliance benefit of some increased generation may be double-counted in the absence of a framework to account for and prevent leakage.

EPA's proposal requires that emissions standards and enforcing measures must be non-duplicative. A standard is non-duplicative "if it is not already incorporated as an emission standard in another state plan unless incorporated in multi-state plan."¹⁸ A simple example shows how leakage can lead to double-counting of benefits:

Suppose State A must achieve a rate standard of 1400 lbs/MWh and State B adopts a mass based standard. State B reduces output by 1 MWh from a

¹⁸ Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units; Proposed Rule at §60.574(d).

power plant that emits 1500 lbs CO₂/MWh. A power plant in State A with an emissions rate of 1000 lbs/MWh generates one incremental MWh for export to State B. A net reduction of 500 lbs has occurred, and in the absence of any double counting, the combined benefit to both states would equal 500 lbs only.

But by importing this megawatt-hour from State A, State B is able to report a 1500-lb reduction towards its mass standard. By operating the power plant, State A generates a 400-lb credit towards its rate standard for the one megawatt –hour generated. The combined credit claimed by the two states is 1900 lbs: nearly *quadruple* the actual emissions reduction, and both states claim credit for the same action.

EPA considers the risk of double counting associated with imported renewable energy,¹⁹ but as this example shows, renewable energy imports are only a particular case of all incremental electricity import transactions. EPA should adopt measures that address the proper accounting for all imports and exports of electricity, not merely the special cases of imports and exports associated with renewable energy and energy efficiency. The potential for double-counting exists for all such transactions. Accordingly, state plans should be required to include measures to correct for this misallocation of benefits in order to prevent double-counting of *all* kinds.

Where an entity in a state imports renewable energy that remains bundled with that energy's renewable attributes, EPA has requested comment on the suggestion that the importing state may include that renewable energy in its demonstration of compliance. As long as no other state can count either the generation or the renewable attributes of the renewable energy for the purposes of Clean Power Plan compliance, this approach will help to avoid double-counting of emissions rate reductions due to renewable energy that is traded across state lines by effectively treating this generation as occurring within the state that purchases it. Other commenters have suggested that this approach should be extended to inter-state energy efficiency investments.²⁰ This approach should be extended to all interstate electricity transactions between known parties and from known generation sources. As long as both the emissions and the energy output from the energy resources are allocated only to the state that imports the energy, these sources will not be double counted, and the technical potential for leakage is reduced.

¹⁹ See *Preamble*, 79 Fed. Reg. at 34,919-22. See also *Technical Support Document: State Plan Considerations*, 84-96, discussing Treatment of Interstate Emission Effects.

²⁰ See, e.g., Advanced Energy Economy, *Comments on the Clean Power Plan*, Nov. 5, 2014 at pp. 53 – 55.

In many cases, however, interstate electricity transactions do not occur through simple ownership agreements or bilateral contracts. In these cases, it may be impossible to directly trace the emissions and the generation to a single pair of importing and exporting states. The suggestions in the following section address the significant remaining leakage potential that occurs with this type of transaction.

VI. Proposed Solutions: Options for Addressing Leakage

A number of options exist for EPA and states to prevent leakage, but all successful options will contain two elements:

- (1) Leakage prevention and correction measures must eliminate performance distortions that may occur as a result of changes in electricity imports and exports from all sources on an interconnected system of states with a mix of various rate and/or mass standards.
- (2) Leakage prevention and correction measures must require all states to account for the existence of new fossil generation in a consistent manner that preserves the overall environmental performance of the Proposal.

Solutions that fully incorporate these two principles can effectively reduce or eliminate the technical leakage potential that we have identified in our analysis.

(1) ADDRESSING LEAKAGE ASSOCIATED WITH ELECTRICITY IMPORTS AND EXPORTS

One option to fulfill requirement (1) above would be for EPA to eliminate the option that states apply a rate standard at all, and instead provide each state with a mass standard that reflects the BSER. As another option, EPA could allow states to adopt a rate standard, but provide a mass-based backstop for states that adopt rate standards in order to ensure that no state increases emissions beyond a level environmentally equivalent to BSER. Additional flexibility may be provided within either of these options by allowing states to engage in emissions credit trading, although credit trading itself is not sufficient to prevent leakage. Either a pure mass standard or a rate standard with a mass backstop would be relatively administratively simple for states and would ensure that state plans achieve the required level of performance more certainly than the current proposal. However, both are significant departures from the existing proposal and may remove some of the state flexibility EPA has sought to provide.

EPA could also impose an average emissions rate standard for each grid region (or for the nation as a whole), again with or without the possibility that states may trade intensity-based compliance credits. These federally-driven options may also remove some amount of state flexibility, but the loss of flexibility may be somewhat offset by some increased administrative simplicity and certainty. While these changes to the form of standard would reduce leakage potential, EPA can also require states to implement leakage reduction measures without departing from the current forms of state-specific standards and options in the Proposal.

The first best state-driven solution to prevent leakage caused by incremental electricity imports/exports would be for states to join regional programs with a uniform emission rate standard within the power markets in which they participate.

Under this form of joint compliance the states are presumed to agree to a weighted average emissions rate target for the region (or all adopt mass standards, i.e., an effective emission rate standard of 0 lbs/MWh, as in RGGI).

Using a simple two-state example, suppose State A and State B each generates 100 MWh/year. State A has an emissions standard of 1000 lbs/MWh. State B has an emissions standard of 1500 lbs/MWh. The regional emission rate would be 1250 lbs/MWh = 1000 lbs/MWh in state A* (100 MWh/200 MWh) + 1500 lbs/MWh in state B* (100 MWh/200 MWh).

Adopting a uniform emission rate standard eliminates the risk of leakage; meanwhile, emission credit trading results in a uniform carbon price, ensuring efficient operation of the electricity market, with no incentive to shift generation from one state to another due to the carbon emission standards.

But some states in any given grid region may be uninterested in joining such an agreement, particularly if there is no requirement to explicitly address leakage in their state plans. By maintaining separate standards and shifting generation from State A to State B, as described in the leakage example above, State A has an opportunity to lower its compliance costs and State B has an opportunity to both lower its compliance costs and generate additional in-state economic activity.

EPA may not be able to compel states to join regional programs, but it can and should eliminate the disincentive to do so by requiring that all state plans include provisions to prevent leakage. To support such a regulatory requirement it will be important for EPA to show (in the preamble to the final rule) that states have a way to prevent leakage, even if they have to act independently without the cooperation of other states.

EPA may do this by providing a default rule that — unless a state includes a sufficiently stringent alternative leakage prevention measure — state plans must all include provisions that assign responsibility for incremental emissions associated with increased imports or exports. This default rule should apply uniformly either to importing states or to exporting states. Because states have clear authority to regulate the EGUs within their borders, these comments assume the default rule would apply to exporting states. EPA should also consider the possibility of applying the rule to importing states.

Note also that EPA's methodology under-credits the carbon pollution reduction potential of state energy efficiency programs in states that are net energy importers. Significant energy efficiency potential exists in states that import much of their electricity, but EPA has excluded these savings from the BSER calculation because the agency had not developed an effective framework for correctly attributing these emissions reductions to the state that makes the efficiency investments without double-counting the reductions.

Our proposal, whether applied to exporting or importing states, addresses this difficulty. EPA should therefore revise its BSER calculation to account for the full level of savings achievable in all states, including net importers, and allow states to claim credit for these investments accordingly, provided that states make a demonstration that the savings are not double-counted or that any double counting is corrected for through a mechanism like the one we propose here.

Exporter Responsibility:

One way to prevent emission leakage due to shifting generation from a state with a lower emission rate standard to a state with a higher emission rate standard is to retire credits based on the difference in the emissions rate standards multiplied by any increase in net exports relative to 2012.

The “export compensation obligation” (ECO) would be calculated at the state level as follows:

$$ECO = E_{B \rightarrow A} (R_B - R_A)$$

Where

$E_{B \rightarrow A}$ is the increase in net exports of electricity from State B into State A compared to net exports in 2012.

R_A is the emission rate standard in State A

R_B is the emission rate standard in State B

Net exports are observable at the state level, but for states that participate in regional markets it may not be possible to determine the destination of all exports. For the share of exports attributable to regional market purchases the average emission rate for the region would be substituted for R_A .

The ECO can be allocated to exporters to the extent they can be directly identified based on their control by out-of-state load serving entities or as a result of bilateral contracts. The ECO for the remaining net exports resulting from system sales could be allocated to generators in proportion to their share of state-wide generation.

Alternatively, the initial obligation could be assigned to states that increase net imports from states with a higher emission rate standard. The calculation is entirely parallel:

The “import compensation obligation” (ICO) would be calculated at the state level as follows:

$$ICO = I_{A \leftarrow B} (R_B - R_A)$$

Where

$I_{A<B}$ is the increase in net imports of electricity into State A from State B compared to net imports in 2012.

R_A is the emission rate standard in State A

R_B is the emission rate standard in State B

Net imports are observable at the state level, but for states that participate in regional markets it may not be possible to determine the source of all imports. For the share of imports attributable to regional market purchases the average emission rate for the region would be substituted for R_B .

The ICO can be allocated to importers to the extent they can be directly identified based on their control of out-of-state generating assets or as a result of bilateral contracts. The ICO for the remaining net imports resulting from system purchases could be allocated to load serving entities (LSEs) in proportion to their share of state-wide load, or to in-state generators if the state plan does not include regulation of LSEs.

Exporter Credit Endowment

To implement this requirement a state might decide to apply the ECO to ALL exports, but establish an Exporter Credit Endowment (ECE) equal to net exports in 2012 multiplied by the emission rate standard difference. That is:

$$ECE = E_{2012}(R_B - R_A)$$

This would insure there is a net compliance obligation only for the excess exports compared to 2012 levels without the need to try to distinguish between baseline and incremental exports.

This endowment could be distributed to exporters based on their share of 2012 exports, if known, or it could be distributed in proportion to compliance year exports or generation.

ECO/ICO Numerical Example

We can see how the ECO/ICO works in the following example.

No Imports:

State A generates 100 MWh at its standard of 1000 lbs/MWh, producing emissions of 100,000 lbs.

State B generates 100 MWh at its standard of 1500 lbs/MWh, producing emissions of 150,000 lbs.

Total generation: 200 MWh. Total emissions: 250,000 lbs.

Increased Imports into State A from State B:

State A generates 90 MWh at its standard of 1000 lbs/MWh, producing emissions of 90,000 lbs.

State B generates 110 MWh at its standard of 1500 lbs/MWh, producing emissions of 165,000 lbs.

Total generation: 200 MWh. Total emissions: 255,000 lbs

So without an ECO/ICO there is a net increase in emissions of 5000 lbs.

With an ECO in place State B would be required retire credits to compensate for its increase in net exports; alternatively, with an ICO in place State A would be required to retire credits to compensate for the increase in net imports:

$$\text{ECO/ICO} = 10 \text{ MWh} \times (1500 \text{ lbs/MWh} - 1000 \text{ lbs/MWh}) = 5000 \text{ lbs.}$$

This obligation will reduce emissions back to 250,000 pounds whether these credits are obtained from generators in State A or State B.

In the ECO case, this obligation could be assigned pro rata to all covered sources, which could be accomplished by reducing the applicable emission rate standard from 1500 lbs/MWh to 1455 lbs/MWh. This would reduce emissions in State B to 160,000 lbs and total emissions to 250,000 lbs.

In the ICO case incentives would be most effectively aligned if State A allocates the ICO to importers. If State A does not directly regulate LSEs as part of its plan, however, it could accomplish the required emission reduction by reducing the average emission rate of its in-state generation to 944 lbs/MWh, thereby reducing its emissions to 85,000 pounds, which would also return total emissions to 250,000 pounds. One drawback with this approach is that it further increases the emission rate difference between the two states, encouraging even more imports.

Implementing the Exporter/Importer Compensation Obligation

The proposed solution to leakage described above works to prevent emissions leakage by compensating for increases in electricity exports/imports with a Compensation Obligation that becomes part of a state's compliance demonstration process. There are several implementation questions that states will need to address in their plans to ensure that they remain in compliance after accounting for

their ECO/ICO. EPA does not have to prescribe answers to these questions in its guideline, but it is useful to illustrate solutions that states could adopt.

Who is responsible for compensating for a change in net imports/exports?

If exporting states are responsible for countering emission leakage it is relatively straightforward to implement the requirement by imposing the obligation on the responsible generators, if they can be identified through bilateral contracts, or pro rata on all generators.

If the obligation is imposed on importing states it would be desirable to hold the entities responsible for importing power responsible. If states implement the carbon standards by creating a Carbon Reduction Credit (CRC) system as proposed by Western Resource Advocates²¹ and regulators have authority over load-serving entities (LSEs) they can assign the ICO to electricity importers (or “first deliverers”) by requiring them to submit CRCs in proportion to their share of the state’s increase in net imports. As discussed above, this can be accomplished efficiently by distributing importer credit endowments based on 2012 imports and then requiring CRCs based on total imports during the compliance year.

In states that adopt implementation plans that only regulate covered fossil fuel generating units the ICO can be assigned to these sources in proportion to their share of covered generation in the state. Equivalently the state could adjust its emission rate target downward by the amount needed to satisfy its ICO as illustrated above.

How can real-time electricity markets be aligned with the ECO/ICO?

So far we have described the need for EPA to require state plans to prevent emission leakage and approaches states could take to account for leakage and compensate for it during the true-up period at the end of each compliance period. For states that participate in organized inter-state real-time electricity markets the market administrators may need to take an additional step to insure that dispatch decisions aren’t distorted by differences in state emission rate standards, which could create a real-time market incentive that conflicts with the leakage prevention policy.

The potential problem is closely related to the origin of the leakage problem. Consider two electricity generators with identical marginal generating costs and emission rates, but located in states with different emission rate standards. The bid prices of these generators will reflect the emission rate standards of their respective states, but won’t reflect the ECO/ICO, which depends on the annual statewide electricity generation/consumption balance:

²¹ See fn. 1, *supra*.

$$\text{Bid price in State A} = MC + P(R - R_A) = MC + PR - PR_A$$

$$\text{Bid price in State B} = MC + P(R - R_B) = MC + PR - PR_B$$

Where

MC is the marginal generator cost

P is the price of carbon credits or equivalently the shadow price of carbon emissions (assumed in this example to be the same in both states, which would occur if these states allow credit trading).

R is the emission rate of the generators

R_A , R_B are the respective state emission standards, as defined previously.

We can see that, everything else equal, the bid price will be lower for the generator in the state with the higher emission rate standard, creating an incentive for emission leakage.

The market administrator (e.g. RTO/ISO) can prevent this distortion by determining the dispatch merit order after adjusting each bid to counteract the difference in state emission rates. The administrator would do this by adding PR_A to the bid of the generator in State A and PR_B to the bid of the generator in State B:

$$\text{Merit price in State A} = \text{Bid price in State A} + PR_A = MC + PR$$

$$\text{Merit price in State B} = \text{Bid price in State B} + PR_B = MC + PR$$

We can see that this adjustment equalizes the “merit price” of the two generators, which is the appropriate result given that the generators are identical by assumption.

State carbon price differences

If the shadow price of carbon emissions differs between states (which is likely under the Clean Power Plan if states don’t join an interstate credit trading system) the economic incentive to shift generation will depend on the relative carbon prices as well as the relative emission rate standards, and may or may not promote leakage.

The bid price equations introduced above would be modified as follows:

$$\text{Bid price in State A} = MC + P_A(R - R_A) = MC + P_A R - P_A R_A$$

$$\text{Bid price in State B} = MC + P_B(R - R_B) = MC + P_B R - P_B R_B$$

Where P_A and P_B are the carbon credit prices in State A and State B respectively. It can be seen that the lowest bid will be determined by whether $P_A(R - R_A)$ is greater than $P_B(R - R_B)$, which depends on both the relative carbon prices and the relative rate standards.

Nonetheless, the market administrator could still eliminate the market distortion created by the differences in emission rate standards by adding $P_A R_A$ to bids from State A and $P_B R_B$ to bids from State B. The merit prices would then become:

$$\text{Merit price in State A} = \text{Bid price in State A} + P_A R_A = MC + P_A R$$

$$\text{Merit price in State B} = \text{Bid price in State B} + P_B R_B = MC + P_B R$$

In this case the lowest bid will depend only on the relative carbon prices in the two states, which is the same result that would obtain if both states were independently complying with identical carbon pollution standards.

Note that the real time electricity market could still result in an incentive for leakage which conflicts with the ECO/ICO if the carbon price is lower in the state with a higher emission rate standard. This may seem likely, but a higher emission rate standard does not necessarily mean a more lax standard measured by marginal compliance cost. For example, West Virginia and Wyoming have among the highest emission rate standards, but also have among the highest marginal compliance costs in the absence of regional cooperation according to EPA's analysis. Similarly, Washington has the lowest emission rate standard and among the lowest marginal compliance costs. Looking across all states there is no readily apparent relationship between a state's emission rate standard and its marginal compliance cost in the results of EPA's modeling of its proposal.²²

The only obvious solution to this issue is to encourage states to cooperate by, at a minimum, allowing interstate credit trading, which would equalize the carbon credit price among participating states. EPA could facilitate this by establishing a federal carbon credit exchange that states could opt into.

Role of market administrator

Under this approach to addressing market distortions from differences in state emission rate standards the market administrator adjusts the merit order based on the emission rate standard and carbon price identified by each state that participates in the market. The administrator does not actually collect or distribute a carbon fee. The electricity market price would be set by the original bid of the generator that clears the market based on its position in the adjusted merit order. All generators higher in the adjusted merit order would dispatch and receive the market-clearing price, regardless of their original bid.

²² See, Brattle Group, *EPA's Proposed Clean Power Plan*, Policy Brief, June 2014.

This is an appropriate role for market administrators to play given their mandate to ensure that the electricity market operates efficiently within externally imposed constraints, which will include each participating state's emission rate standards when the Clean Power Plan goes into effect in 2020.

(2) ADDRESSING LEAKAGE ASSOCIATED WITH NEW FOSSIL GENERATION

Many issues related to new build fossil generation are addressed with the ECO/ICO framework described above because the ECO/ICO is based on the rate standards of the trading partner states, not on the particular generation sources within the states. Nevertheless, significant potential remains for leakage due to shifting generation within a given state to new fossil plants if these plants are not accounted for correctly in state plans. This leakage potential exists for all states that adopt a mass standard and for many that may adopt a rate standard.

EPA addresses part of this issue as it pertains to states that adopt a mass standard in its Nov. 6 TSD providing guidance and requesting comment on methodologies for converting rate standards to mass-based equivalents. EPA should supplement this guidance with a requirement that states implementing a rate standard must all either (A) include New NGCC as a component of BSER in setting the rate standard and in demonstrations of compliance, or (B) exclude new NGCC from BSER both in setting the standard and in demonstrations of compliance. EPA should not allow states to elect to adopt one or the other of these options, because the resulting matrix of standards would result in significant opportunities for leakage, as we describe in Section B, below.

If EPA requires rate states to adopt option A, states adopting a mass standard should also be required to include new NGCC in the same manner. If EPA requires rate states to adopt option B, states adopting a mass standard may be provided the option of adopting either of EPA's proposed mass standard calculation methodologies without creating the potential for significant leakage.

(A) Preventing Leakage from New NGCC in Mass Standard States

In the Nov. 6 TSD, EPA proposes two methods for converting rate standards to an environmentally equivalent mass standard. Because both methods provide an internally consistent treatment of both generation and emissions from new NGCC units, either method provides an acceptable means of preventing leakage from inconsistent accounting for new NGCC in mass states. Note, however, that both methods presume imports and exports remain constant at 2012 levels, reinforcing the need for EPA to require states to address leakage regardless of what form of standard the state adopts.

The first method EPA proposes applies the emissions rate target to each state's 2012 affected megawatt-hours under the rule. ("Method 1") This method does not allow for emissions to increase from these affected sources as a result of load growth, with new fossil sources that come online subject only to the New Source Performance Standards under section 111b of the Clean Air Act.

The second method applies the emissions rate to the sum of the megawatt-hours from 2012 affected generation and projected incremental load growth. ("Method 2") This method includes both generation and emissions from new fossil sources in establishing the standard and in demonstrations of compliance.

EPA has indicated in the *Preamble* that "Under a mass-based plan *where an emission limit on affected EGUs would assure achievement of the required level of emission performance in the state plan*, any emission reductions at affected EGUs resulting from substitution of new NGCC generation for higher-emitting generation by existing affected EGUs would automatically be reflected in mass emission reductions from affected EGUs."²³ But unless EPA requires states that adopt a mass standard to correctly account for the existence of new NGCC generation, the emission limit may not actually assure achievement of the required level of performance. Either of the proposed methodologies would begin to address this problem.

These approaches appear to presume that setting the standard in either manner will achieve the required level of environmental performance in part because new NGCC generation is expected to displace more carbon-intensive generation, thereby reducing overall emissions. In aggregate, the emissions reductions under either approach would be approximately equivalent to the predicted reductions under the rate standards analyzed in the Regulatory Impact Assessment that accompanies the Proposal, which generally supports this position.

An approach like the ones EPA proposes is necessary because, in the absence of a methodology that accounts for new NGCC consistently when setting the standard and when states count emissions for the demonstration of compliance, new NGCC could create the opportunity to actually increase overall emissions. If the mass standard neither counts the emissions from new units towards the achievement of the standard nor adjusts to reflect the smaller overall load being served by existing units due to the construction of new units, significant leakage potential exists.

One way to address this type of leakage is to count emissions from both new and existing units against the total allocation in the mass standard, as EPA does in Method 2. An alternative would be to re-calculate the mass standard by excluding projected MWh generated by new sources from the MWh projected in determining the standard, as EPA does in Method 1.

²³ 79 Fed. Reg. 34,923 (Emphasis added).

Example 1: Mass Standard Reflects Only MWh from Existing Sources (Method 1)

In this alternative, the new and existing fleets could be treated as fully distinct from one another:

State A adopts a mass standard of 35 tons based on a 2012 Affected Source load of 70 MWh and a rate standard of 1000 lbs/MWh. This result would be environmentally equivalent to the proposed rate standard for existing sources, with existing sources achieving a performance equivalent to a rate standard of 1000 lbs/MWh and new sources subject to the new source performance standard.

By 2030, State A's load grows to 100 MWh, with the incremental 30 MWh served by new NGCC with an emissions rate of 850 lbs/MWh, producing an incremental 12.5 tons emissions.

On a system-wide basis, this method results in an overall performance of 47.75 tons, rather than 50 tons. If State A's rate standard were lower than 850 lbs/MWh, the level of overall performance would be somewhat worse than if A followed the other methodology offered by EPA, illustrated in Example 2.

Example 2: All Emissions Count Against the Standard (Method 2)

If State A adopts a mass standard based on projected load of 100 MWh and an intensity standard of 1000 lbs/MWh, the standard in 2030 is 50 tons. Suppose State A builds a new NGCC plant with an emissions rate of 850 lbs/MWh and derives 30 MWh from the plant.

If State A were not required to account for new gas in complying with its standard, the new plant would emit 12.75 tons CO₂, and the remaining load could be met by existing sources that are still permitted to emit 50 tons. The combined sources would emit 62.75 tons from 100 MWh of generation, operating at an effective rate of 1,255 lbs/MWh. The existing sources would perform even worse, emitting 50 tons from 70 MWh of generation, performing at a rate of 1429 lbs/MWh. This manner of accounting would create a net increase in statewide emissions and would not be environmentally equivalent to meeting a rate standard of 1000 lbs/MWh for existing sources.

If the emissions from the new build are counted against the standard, the remaining 70 MWh must emit no more than 37.25 tons, meeting

an average emissions rate of 1064 lbs/MWh for existing sources. Averaging the existing sources with the new build, the combined emissions rate is 1000 lbs/MWh, producing an environmentally equivalent outcome to the proposed rate standard, when the combined fleet is considered.

The outcome of either Example 1 or Example 2 (with the appropriate method of accounting for new NGCC) is permissible from the standpoint of maintaining equivalent performance. Nevertheless, several potential pitfalls remain.

First, states that adopt Method 1 may choose to preferentially dispatch new sources rather than existing sources. If this preferential dispatch results in emissions beyond those that would otherwise be associated with the projected incremental load, leakage occurs. In an extreme case, a new NGCC unit may replace an existing NGCC unit, with no emissions reductions occurring at all while the state claims credit for reductions equal to the emissions of the retired plant.

Example 1 is equivalent to EPA's Method 1 only if none of the new generation that serves incremental load displaces 2012 affected generation. I.e., if State A's 2012 affected resources generated only 70 MWh, the mass standard under Method 1 would be 35 tons. But if incremental load is 30 MWh, and State A builds a new NGCC unit that provides 50 MWh while curtailing some 2012 resources, emissions from those 2012 resources could still reach 35 tons if the standard is not adjusted accordingly. Meanwhile, the new resources would emit 21.25 tons, for total emissions of 56.25. In this scenario, the state has not achieved equivalent environmental performance, and produced 6.25 tons leakage.

For this reason, EPA's Method 1 should contain a mechanism that adjusts the standard based on net MWh reductions from 2012 affected sources that are replaced by MWh from new fossil generation.

(B) Preventing Leakage from New NGCC in Rate Standard States

Leakage can also result from improper accounting for new NGCC in states that adopt a rate standard. A state that adopts a mass standard behaves for leakage purposes as if it were a state with a rate standard of zero lbs/MWh. As a result, similar leakage potential exists for states that adopt a rate standard, if to a somewhat lesser degree. The potential leakage is particularly high for states with the lowest and highest rate standards. EPA has requested comment on how best to address new NGCC for states that adopt a rate standard.²⁴

Environmental performance would be hindered in states with high rate standards if these states have the option to include both the generation and emissions from new fossil units when making a demonstration of compliance with the rate standard. If

²⁴ 79 Fed. Reg. 34,924.

states with high rates have this option, they will have an incentive to build more new NGCC than is needed to serve statewide load, and export the surplus to states that have low rate standards or have adopted a mass standard. However, this potential would be significantly reduced or eliminated if EPA requires all states to account for leakage caused by incremental imports or exports, as we recommend above. Provided that import/export leakage is sufficiently addressed, therefore, EPA could require all states to count all generation and emissions from new NGCC towards their demonstration of compliance without creating the potential for significant leakage.

Example 1: Leakage from New NGCC in High Rate State

Suppose State A has an existing fossil fleet that operates at an average of 2000 lbs/MWh and a 2012 load of 75 MWh. If State A has a 2030 load of 100 MWh and a rate standard of 1500 lbs/MWh, 2030 emissions would be 150,000 lbs.

If A is able to count all new NGCC towards the achievement of its emissions rate, the state could continue to operate its existing fleet unchanged, and build enough new NGCC to provide 75 MWh at a rate of 1000 lbs/MWh to achieve an average emissions rate of 1500 lbs/MWh, as required. In this case, total emissions are 225,000 lbs: 75,000 lbs higher than would constitute equivalent performance with the BSER.

However, if State A builds its way to compliance in this manner, it will produce 50 MWh electricity more than it needs. If this electricity is exported to neighboring states, some or all of these emissions could be accounted for and avoided through the ECO/ICO mechanism or other import/export leakage prevention measure.

If, on the other hand, State A builds only enough new NGCC to serve the incremental load by 2030 of 25 MWh, 2030 emissions are 175,000: 25,000 lbs higher than permitted for equivalent performance. But including this generation in the rate standard calculation results in a statewide rate of 1750 lbs/MWh. To achieve the rate standard of 1500 lbs/MWh, the state will need to reduce generation from its existing or new fleet at a rate sufficient to achieve the rate standard. Therefore no leakage is expected in this instance.

This methodology for addressing new sources in a rate standard is akin to EPA's Method 2 for converting a rate standard to a mass standard. In order to maintain consistency among states, if EPA requires rate states to include new NGCC generation and emissions in achieving compliance with a rate standard, it should also require states that adopt a mass standard to follow Method 2. EPA should also

include projected new NGCC as a component of BSER when calculating states' rate standards, as the agency has proposed in its Oct. 28 NODA.

While requiring all states to account for emissions from new NGCC could be an effective way to reduce leakage, States that have rate standards lower than the emissions rate of a new NGCC plant may prefer to exclude generation and emissions from new NGCC in their demonstration of performance. If all rate states follow the same rule, whether new NGCC is included or excluded from demonstrations of compliance, no leakage is expected to occur on a national level.

If EPA elects instead to require rate states to exclude new NGCC generation and emissions from demonstrations of compliance, states with power sectors dominated by coal generation can still readily achieve their rate targets through measures such as those described in Building Blocks 1, 3, and 4 of BSER, they will also have the incentive to shift generation from existing sources to new sources in order to maximize the effect of these measures on the overall emissions rate. In order to minimize this incentive, in the event EPA requires states to exclude new NGCC from rate calculations, states should be permitted to adopt a mass standard based on either translation Method 1 or Method 2.

In this manner, the requirement that all states adopt a uniform methodology for the treatment of new NGCC under a rate standard will help to ensure that state plans achieve equivalent stringency with BSER. On the other hand, if states with high rate standards and low rate standards are individually permitted to elect to include or exclude new NGCC, significant leakage may result.

Example 2: Leakage Caused by Inconsistent Treatment of New NGCC in Rate States

Suppose State A is as described in Example 1 and that State B adopts a rate standard of 500 lbs/MWh. State B's 2012 fossil fleet has an emissions rate of 750 lbs/MWh and served a load of 75 MWh. State B's 2030 load is 100 MWh, resulting in total emissions of 50,000 lbs in 2030.

If both states achieve a level of performance equivalent to the BSER, State A will emit no more than 150,000 lbs and State B will emit no more than 50,000 lbs. Combined emissions should not exceed 200,000 lbs.

If each state is permitted to exercise its preferred choice:²⁵

State A includes new NGCC, 2030 emissions are 150,000 lbs.
State B excludes new NGCC, emitting 37,500 lbs from existing resources (75 MWh times 500 lbs/MWh) and 25,000 lbs from new resources for a total of 62,500 lbs in 2030. 12,500 pounds of leakage occur in State B.

If both states are required to include new NGCC:
No leakage occurs, as described in Example 1.

If both states are required to exclude new NGCC:

State A emits 137,500: 25 MWh new NGCC times 1000 lbs/MWh plus 75 MWh at the required rate of 1500 lbs/MWh.
State B emits 62,500 lbs as described above. Combined emissions equal 200,000 lbs. While some leakage occurs in State B, it is offset by the improved environmental performance in State A.²⁶

²⁵ To see why these are the preferred choices, consider the following: In Example 2, State A's average emissions rate including all 2012 EGUs and 25 MWh of new NGCC is 1750 lbs/MWh – it has not yet achieved its rate target of 1500 lbs/MWh. Assuming new and existing resources are replaced in a manner that maintains a constant emissions rate of 1750 from these resources, State A would need to replace 14.3 MWh from this generation with zero-emission resources in order to achieve its target emissions rate of 1500. By contrast, if A excluded new NCGG generation and emissions from its demonstration of compliance, it would need to replace 18.75 MWh of its existing fleet with zero-emission resources. State A would therefore prefer to include new NGCC: including new NGCC requires the state to implement a smaller amount of new zero-carbon generation.

If State B includes new NGCC, B's 2030 emissions would be 81,250: 31,250 lbs more than would be equivalent to the BSER, and equivalent to a rate of 812.5 lbs/MWh – it is even further from its 2030 target than it was in 2012. To achieve the required rate of 500 lbs/MWh, State B would need to replace 38.5 MWh from this average fleet with zero-emission resources. By contrast, if State B is permitted to exclude the new NGCC MWh and emissions, it would only need to replace 25 MWh of its existing fleet with zero emissions resources. State B would therefore prefer to exclude the new NGCC, again because this method requires the state to implement a smaller amount of new zero-carbon generation.

²⁶ States can balance the economic burdens associated with maintaining a no-leakage equilibrium like the one described in this example through credit trading or other forms of agreement among themselves.

As these examples illustrate, and as is borne out by our more detailed analysis, leakage potential exists where states may elect to include or exclude new NGCC from demonstrations of compliance with a rate standard. A rule that either requires all states to include new NGCC or to exclude new NGCC from demonstrations of compliance will eliminate leakage on a national level, assuming that import/export leakage is also prevented.

However, a rule that requires all states to exclude new NGCC would allow leakage to occur in states with the lowest emissions rate targets. Providing these states with a mass-based backstop on their rate standards could eliminate this leakage potential.

To maintain consistency among all states, whether they adopt a mass standard or a rate standard EPA should either:

- A) Require all rate states to include new NGCC generation and emissions in their demonstration of compliance *and* require all mass states to count emissions from new NGCC against their mass standard; **or**
- B) Require all rate states to exclude new NGCC generation and emissions from their demonstration of compliance. In this case, mass states may be permitted to adopt a standard that excludes generation from new NGCC from contributing to the load used to determine the standard, or one that includes this new NGCC generation in both determining the standard and in the demonstration of compliance.

In either case, EPA should also require all states to take adequate steps to prevent or correct for leakage caused by incremental imports or exports.



**IETA-NIPPC JOINT COMMENTS ON OREGON DEPARTMENT OF
ENVIRONMENTAL QUALITY'S NOVEMBER 21, 2016
DRAFT CONSIDERATIONS FOR DESIGNING
A CAP AND TRADE PROGRAM IN OREGON**

December 22, 2016

The Northwest and Intermountain Power Producers Coalition ("NIPPC")¹ and the International Emissions Trading Association ("IETA")² (the "Joint Commenters") appreciate this opportunity to share input and recommendations on the Oregon Department of Environmental Quality's ("ODEQ") November 21, 2016 Draft Considerations for Designing a Cap and Trade program in Oregon (the "Draft Considerations"). The Joint Commenters represent a consortium of business and industry interests with extensive experience in Cap and Trade programs and their development throughout the world, as well as entities with significant carbon emissions in the state of Oregon. We embrace the need for a price on carbon, and believe that a Cap and Trade program is by far the best mechanism to achieve carbon policy goals.

A properly implemented Cap and Trade program has the power to: measurably limit greenhouse gases at least cost to Oregonians; provide flexible and economically sound options for regulated entities to manage compliance; address competitiveness concerns for affected industries; reward business innovation while unlocking private finance and investment into low carbon solutions; support environmental justice goals, and, if desired, provide a revenue source for other important programs. Participating in a multi-jurisdictional Cap and Trade market, such as the existing Western Climate Initiative ("WCI"), will best position Oregon and regional partners to measurably reach future climate targets at the lowest possible cost.

The Joint Commenters believe that ODEQ's Draft Considerations represents an excellent initial analysis of considerations for designing an effective Cap and Trade program in Oregon. In particular, we support the Preliminary Findings identified in Section 3 of the Draft Considerations, and urge that they be adopted in the final report. We provide the following

¹ NIPPC is a member based advocacy group representing electricity market participants in the Pacific Northwest. Membership includes a diverse cross section of entities across the electricity value chain in the region. NIPPC is committed to facilitating cost effective electricity sales, offering consumers choice in their energy supply, and advancing fair, competitive power markets. Learn more about NIPPC at www.nippc.org.

² IETA is the world's leading business voice on the design, evaluation, and expansion of carbon pricing solutions and climate finance. IETA's 150+ member companies include some of the world's largest power, industrial, manufacturing, assurance and financial corporations. Learn more about IETA at www.ieta.org.

additional comments³ to assist ODEQ and the state in building a fulsome record on which to base its future carbon policy decisions.

Our comments are set out in three general sections. The first provides background on the status of carbon pricing worldwide, and documents the projection that by 2017 nearly fifty percent of worldwide GDP will be subject to Cap and Trade pricing systems. Here, the message is clear: Oregon is part of a global movement towards climate market solutions – the state is not undertaking this effort alone. The second section provides information broadly applicable to all emissions trading programs that we believe must be reflected in the policy record underpinning any ODEQ recommendations on this topic. The third section addresses some of the specific design elements discussed within the Draft Considerations and proposes recommended actions.

Key messages to building an effective carbon pricing program in Oregon:

- Emissions trading, specifically Cap and Trade, ensures emissions reduction certainty.
- Emissions trading achieves measurable emission reductions at least cost.
- Emissions trading enables cross border program linkages, cooperation, and partnerships.
- Emissions trading can most effectively respond to macro economic fluctuations.
- Emissions trading drives economically rational, low carbon innovation solutions.
- Emissions trading can best support low carbon transitioning for business and consumers.
- Emissions trading can address industry competitiveness and leakage concerns.
- Emissions trading provides a global response to a global challenge.
- Emissions trading is more effective than a carbon tax for creating real reductions in greenhouse gas emissions.

1. **Carbon Pricing International Trends and Market Outlooks**

As illustrated in the carbon pricing map below, over 40 national and 20 subnational jurisdictions – representing 25% of global greenhouse gas (“GHG”) emissions – currently use some method of carbon pricing. Since 2009, GHG Cap and Trade programs have predominantly driven the growth of carbon pricing worldwide.

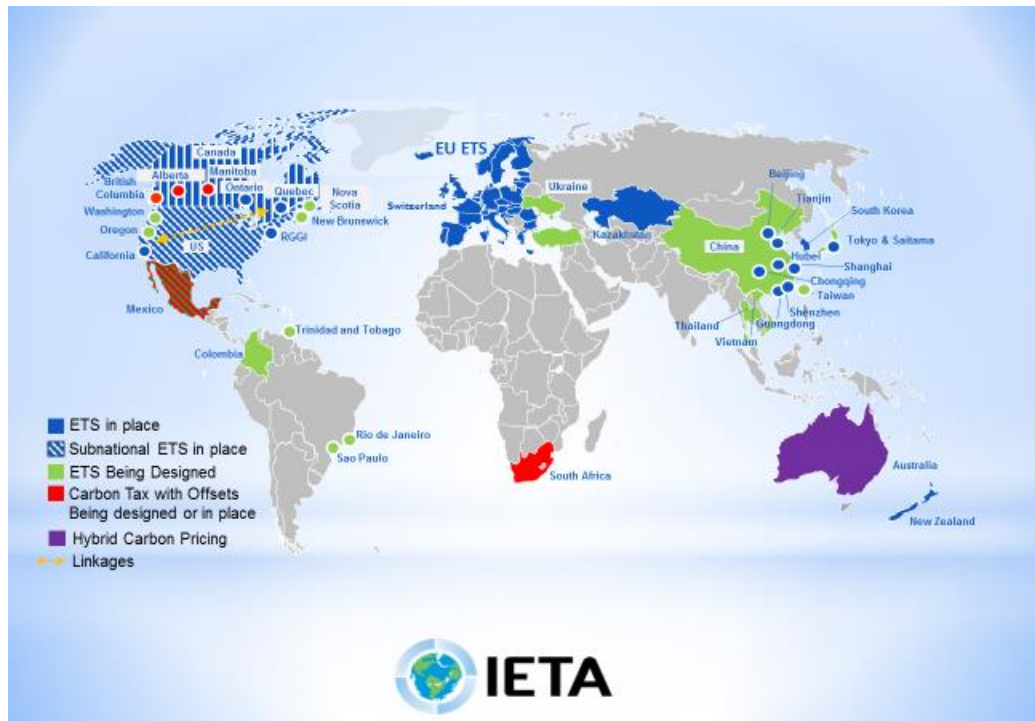
The International Carbon Action Partnership (ICAP)’s Status Report 2016⁴ delves further into global carbon pricing figures and coverage. The report, released in February 2016, shows that 40% of global GDP is now covered by a flexible, market-based emissions trading system.

This figure is projected to increase to nearly 50% of GDP by 2017, once China implements its national Cap and Trade program by next year.

³ The Joint Commenters previously provided oral comments at the ODEQ’s December 19, 2016 workshop.

⁴ See ICAP’s “Status Report 2016”, <https://icapcarbonaction.com/en/status-report-2016>.

Spurred by Article 6 of the Paris Agreement (informally known as the “markets article”),⁵ this bottom-up carbon pricing momentum, particularly regarding international trading and market linkages, will continue to build. Detailed considerations about the implementation of Article 6 are shared in IETA’s May 2016 report, “A Vision for Market Provisions of the Paris Agreement” and IETA-EDF’s April 2016 Joint Report, “Carbon Pricing: The Paris Agreement’s Secret Ingredient.”⁶



These international figures and trends convey an unmistakable story: market mechanisms, and specifically Cap and Trade, have become the primary policy tool to tackle climate challenges, and this approach is here to stay. We therefore urge Oregon to focus on structuring its approach to accentuate the strengths of proven jurisdictional programs, with emphasis on enabling a smooth transition into regional and cross-border markets. Wherever possible, Oregon should adopt best practice nomenclature, standards, infrastructure and tools that are in use under existing programs.

2. **General, High Priority Cap and Trade Program Considerations**

We unequivocally believe that Cap and Trade should be the carbon pricing instrument of choice for Oregon. An active and vibrant carbon market, building on existing frameworks, and

⁵ See UNFCCC ‘Paris Agreement’ <https://unfccc.int/resource/docs/2015/cop21/eng/l09.pdf>.

⁶ All referenced reports can be accessed via the IETA homepage www.ieta.org.

empowering and driving market efficiencies and clean private investment, will prove essential for achieving Oregon's long term climate goals.

1) **Flexible, Outcome Based Market Programs Offer Clear Benefits Over Taxation**

Cap and Trade offers a number of distinct and quantifiable benefits over a carbon tax approach – these benefits should neither be discounted nor ignored. The hallmark feature of Cap and Trade is certainty related to environmental outcomes (*i.e.* achieving GHG target and pollution reductions). The “cap” effectively represents the program’s overall “emissions budget,” or the total number of allowances that are available to covered entities. This fixed sum of emissions will not exceed a given limit and will ratchet down over time. Implementation of a quantifiable “absolute cap”, specifying a fixed, declining amount of emissions allowable per year, is critical to achieving environmental success and Oregon’s GHG reduction goals. In contrast, a carbon tax simply cannot guarantee, nor is it capable of timely measuring, GHG reduction outcomes in order to help inform forward looking climate policy.⁷

2) **Cost Effectiveness and Containment as Guiding Principles**

Cap and Trade programs not only deliver outcome certainty, but they do so at least cost to consumers and businesses. Oregon’s ambitious climate targets will require significant, economy wide accelerations in deep GHG reductions. It therefore becomes vital that cost containment – or, achieving emissions reductions at the lowest possible cost – serves as a core guiding principle while Oregon moves to finalize the carbon pricing program and map out Oregon’s climate future. Efforts must focus on pursuing least cost abatement opportunities, amplified in full scale market trading systems, including a broad and robust offsets market, and ensuring efficiencies and cross border market and program alignment. In this regard, a Cap and Trade program is substantially more effective than a carbon tax because it allows regulated entities to seek the least cost mechanism for compliance. Empirical data bears this out: In British Columbia, which has a carbon tax priced at CA\$30/tCO₂e, economy-wide GHG emissions have increased. In California and Quebec, by contrast, which have a linked Cap and Trade market price around US\$12-13/tCO₂e, carbon emissions have measurably decreased since program launch.

3) **Ability to Respond to Macro-Economic Shifts and Trends**

Historical price data shows that flexible pricing systems respond to economic downturns with lower prices on carbon – this ability to respond to economic shocks is unique to emissions trading.⁸ Unlike the politicized nature of a tax, enabling the open market to set the price of carbon allows for better flexibility and avoids price shocks and other undue

⁷ With a carbon tax, the outcome of actual emissions needs about a year to be accurately known. Further, to sustain any reductions, the tax must continually increase to meet the rising cost of additional emission reductions. Haites, Erik, Margaree Consultants, Inc., 2016. Carbon Pricing Options for Canada, pp. 5.

⁸ Historic price and market data across existing emissions trading programs is available at <https://www.edf.org/climate/worlds-carbon-markets>

burdens.

4) Enable Near and Longer Term Market Linkages

In creating a Cap and Trade program, a top priority for Oregon should be the pursuit of a system capable of effectively linking – fully or partially – to other regional markets. Structuring Oregon’s program to gradually ratchet up climate ambition, while ratcheting down GHG emissions, will prove critical if deep, broad and sustainable linkages are to flourish. The benefits of cooperative approaches and regional linkage are clear: the bigger and broader the market, the wider the range of abatement opportunities and improved efficiencies, thereby driving down program costs while driving up clean projects, jobs, and market opportunities.

5) Enable Policy Harmonization and Alignment

Moving forward, Oregon must look across borders to ensure that program rules and accounting, once adopted, are complementary and readily adaptable to rapidly changing carbon policy and market landscapes. We urge Oregon to closely track developments that will – or could potentially – affect the state program design and de facto dynamics in Washington State, California and beyond. Now is the best time to be aware of, and account for, any challenges that could emerge down the line.

6) Recognize Early Action

Businesses that have been proactive in reducing GHG emissions prior to the development of a Cap and Trade program should be recognized and rewarded under future rules. These actions must be clearly defensible and supported by documentation, mandated by the program authority. Under a flexible market mechanism, “early action” can be recognized through a variety of design options, such as reserved allowance allocations or dedicated offset credit issuances.

7) Borrow, Learn and Leverage Existing Programs

Moving forward, Oregon should rely heavily on the experiences, lessons learned and best practices from existing carbon pricing programs across North America and beyond. Building on – or at least ensuring complementarity with – established programs will enhance efficiencies, cross border harmonization, and broader program integrity (e.g. avoid double counting of GHG emissions), while strengthening climate cooperation and potentially deepening policy ambitions.

3. Specific Input on Proposed Design Elements

1) Program Scope and Point of Regulation

As noted in the Draft Considerations, a broad program scope, covering as many sources of emissions as possible, will produce more cost-effective emission reductions than a program with a narrow scope. A broad program scope is also necessary to facilitate linking with other jurisdictions, which will further reduce compliance costs to meet program goals. At a minimum, the program scope should initially cover any emission source in excess of 25,000 metric tons CO₂ equivalent (“tCO₂e”) in a given year, a level that could ratchet down as the program matures.

For the power market, the Joint Commenters support an approach to accounting that prevents double counting of carbon imports. One approach, resting regulation with the first jurisdictional deliverer, has been adopted by other WCI jurisdictions. Assigning the regulatory compliance obligation with the ultimate power consumer can also work. The key is ensuring that electricity is only subject to carbon pricing one time across linked markets, and would not, for example, be subject to carbon pricing based on production in Oregon then again if delivered to California, or vice versa.

For gas markets, the Joint Commenters support the point of regulation to be the gas utilities with respect to retail and small industrial emitters. We strongly encourage ODEQ to propose that the point of regulation directly include large emitters – entities that emit in excess of 25,000 tCO₂e per year. Limiting the point of regulation for natural gas emissions to utilities, as Ontario is pursuing under its first Cap and Trade compliance year, is inefficient as it keeps individual emitters out of the market, while placing too much market power into the hands of too few entities. Large emitters should be responsible for their own compliance and sourcing of least cost reductions. As noted in the Draft Considerations, failure to include large industrial emitters in the point of regulation for gas might also inhibit the primary technique for reducing leakage through allowance allocations.

2) Distribution of Allowances / Recognition of Early Action

The Joint Commenters support the Draft Considerations’ recommendation that multiple allowance distribution methods be used in Oregon, including allowance auctioning, consignment for the power sector, and free allocations to Energy Intensive Trade Exposed (“EITE”) sectors to ensure competitiveness and leakage avoidance.

In particular, all fossil fuel generation constructed in Oregon after 1997, whether by an investor owned public utility regulated by the Oregon Public Utilities Commission or by independent power producers, was required to comply with the requirements of Oregon Revised Statutes Vol. 10, Section 469.503 and the Oregon Department of Energy’s Energy Facility Siting Council regulations, which required such entities to take action to mitigate their carbon footprint through funding carbon offset purchases. These entities should receive credit – via early action allowance allocations, offsets or another form – to reflect the significant financial commitments they already have paid specifically to mitigate their carbon footprint.

Similarly, the Draft Considerations should recommend that all electric generation – whether utility or non-utility – be treated equally with respect to distribution of allowances. Independent power developers compete directly with public utilities in the sale of power, and the legislature has made it clear that policies be adopted to ensure elimination of barriers to competitive retail power markets.⁹ To the extent allowances are granted to utilities, such allowances must also be granted to their competitors in the independent power sector.

3) **Offsets should be widely encouraged**

Offsets represent real, verifiable reductions in carbon emissions. Offsets also generally provide the least cost mechanism for carbon reduction. Use of offsets will allow Oregon to meet its climate policy goals at the lowest cost to the state economy. Any concerns that availability of offsets will reduce the incentive for companies to invest in reductions of emissions are unfounded. Oregon's climate goal should be to ensure an overall reduction in GHG emissions. If it is economically more efficient to create that reduction through an offset project than, for instance, through more expensive on-site plant modifications, that economic benefit is realized across Oregon's economy in the form of lower overall program and compliance costs, without sacrificing the climate goal. For example, if an electric utility is able to fund creation of an offset for the equivalent of \$8 /tCO₂e, rather than invest in plant modifications at \$20/tCO₂e, utility ratepayers receive the benefit of that \$12/tCO₂e cost savings.

Offsets also offer an opportunity to spread the incentive for emission reductions to sources not directly covered by a Cap and Trade program, such as agriculture (e.g. dairy) and forestry industries, many of which reside in economically disadvantaged and rural communities. Notably, to the extent Oregon offsets are useable in linked jurisdictions, they can provide an engine for economic growth by allowing generation of in state revenue to support climate goals in other jurisdictions.

Oregon will need to determine the types of offset protocols usable for compliance with its program. However, Oregon need not undertake this process from scratch. Offsets in various forms are utilized in carbon markets throughout the world. In addition to the California and Quebec protocols cited by the Draft Considerations, offset protocols have also been developed for use in the Regional Greenhouse Gas Initiative ("RGGI") market; various European carbon markets ("EU ETS", Switzerland, Norway); British Columbia's Climate Neutral Government and Greenhouse Gas Industrial Reporting Programs; Alberta Specified Gas Emitters Regulation ("SGER") market; and emerging markets throughout Asia, including China, Korea, and Japan¹⁰. A wealth of robust offset

⁹ See, e.g. 17 O.R.S 757.646, directing the Oregon Public Utility Commission to eliminate barriers to a competitive retail market structure in the power industry.

¹⁰ On 21 December 2016, the Governments of Ontario and Quebec jointly launched an Offset Protocol Adaptation Project for "**Ontario, Quebec and Other Potential Jurisdictions**". In 2017, 13 selected protocols, from WCI and non-WCI programs, will be reviewed and adapted to Ontario-Quebec. This timely project, led by the Climate Action Reserve (CAR), could help inform future thinking and program design considerations under Oregon's future market. We encourage ODEQ to closely track this project, its outputs and protocol recommendations. More project details are available <http://climateactionreserve.org>.

quantification methodologies, protocols, consultation mechanisms and third-party registry experience is also available across today's sophisticated voluntary market.

4) Environmental Justice Considerations

The Joint Commenters support the Draft Considerations' findings that Oregon has sufficient tools to neutralize the potential negative effects a Cap and Trade program could have on disadvantaged populations and rural communities, and urge Oregon to utilize these tools. In evaluating these "environmental justice" issues, we encourage ODEQ to consider the following:

First, Oregon must recognize that taking action against climate change through carbon reduction policies in and of itself promotes environmental justice. Disadvantaged populations and rural communities tend to be those that are least able to afford mitigation from climate change, whether in the form of increased costs for air conditioning/heating, retrofitting facilities to protect against flooding, the costs of bringing additional sources of water to rural communities or the countless other costs climate change imposes on society. A properly designed Cap and Trade program also can provide substantial economic to these communities, such as local offset development project investments and employment.

Second, the Joint Commenters note that many of the environmental justice concerns traditionally expressed with respect to Cap and Trade programs are not related to carbon emissions at all – instead, they often focus on concerns related to localized particulate emissions from industrial facilities and other co-pollutants. As noted in the Draft Considerations, while a Cap and Trade program assures collective reductions in GHG emissions, and likely will provide a benefit of reducing co-pollutants, the inherent flexibility of emissions trading means that the outcome on any given facility is uncertain.¹¹ Carbon and carbon equivalent gasses are global, rather than local, pollutants. Although a carbon Cap and Trade program cannot necessarily guarantee reductions of co-pollutants at individual locations, it will typically reduce such co-pollutant emissions in most instances. Concerns about remaining localized particulate emissions may be valid, but are best addressed through separate, complementary state/local air pollutant policy; they should not be considered as a negative factor for a carbon Cap and Trade program. Oregon could also consider directing a portion of future Cap and Trade revenues (from auction) to fund separate local air pollutant policies. However such concerns should not limit the State's ability to move forward with a carbon Cap and Trade program in and of itself.

5) Use of Revenue

Joint Commenters generally agree with the Draft Considerations' conclusions with respect to use of revenue received by the state as a result of a Cap and Trade program. Such revenue should be channeled into covering the costs of developing and administering the Cap and Trade program, with additional funds available to mitigate

¹¹ Draft Considerations at 39.

distributional impacts and furthering climate mitigation and resilience goals.

In Oregon, Joint Commenters appreciate the potential limitations on use of Cap and Trade revenue received from the transportation sector to highway funds based on Article IX, Section 3a of the Oregon Constitution,¹² however we do not believe that this is a foregone conclusion and encourage ODEQ and the state in general to continue to evaluate this concern. Joint Commenters note that, even assuming *arguendo* that Cap and Trade funds related to the transportation sector must be “exclusively for the construction, reconstruction, improvement, repair, maintenance, operation and use of public highways, roads, streets and roadside rest areas in this state,” state law defines highways broadly, to include “every way, thoroughfare and place, of whatever nature, open to the use of the public for the purpose of vehicular travel.”¹³ This definition leaves wide room for programs to utilize Cap and Trade revenue. Moreover, even under the most restrictive interpretation of Article IX, Section 3a, a substantial portion of the transportation highway funds can be directed for uses that comply with the constitutional limitations while also furthering carbon mitigation and environmental justice goals. For example, such funds can be used to further vehicle fuel efficiency, including electricity charging stations throughout rural Oregon.

6) **Complementary Mechanisms**

Joint Commenters submit that a Cap and Trade carbon program will work in complement with a variety of existing Oregon policies to reduce GHG emissions, specifically including SB 1547 (the “RPS/No Coal by Wire” bill) and the Clean Fuels Program, while reducing overall compliance costs for all programs. In general, a Cap and Trade program is not intended to be the sole policy driver of carbon reductions. Instead, the market program works in tandem with supplementary policies towards a comprehensive solution. The power and elegance of a Cap and Trade program is that it floats with the market, and can absorb any gaps left by other programs. For instance, in a given year, if power generators sufficiently reduce carbon output through RPS purchases to fall below their Cap and Trade target, these entities will have reduced compliance costs under Cap and Trade – meaning that customers will not be paying duplicate compliance obligations. The same is true under clean fuel standards. At the same time, a Cap and Trade program includes a hard cap in emissions. If complementary programs are less successful and driving reductions, the Cap and Trade market can ensure policy goals are in fact achieved.

In Conclusion

IETA and NIPPC appreciate this opportunity to record our joint comments related to ODEQ’s November 21, 2016 Draft Considerations for Designing a Cap and Trade program for Oregon. Our collective, diverse membership remains committed to supporting the successful creation, launch, and growth of market based carbon pricing in Oregon to help achieve the state’s future

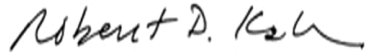
¹² This section provides, in part, that revenues from “[a]ny tax levied on, with respect to, or measured by the storage, withdrawal, use, sale, distribution, importation or receipt of motor vehicle fuel or any other product used for the propulsion of motor vehicles” ... “shall be used exclusively for the construction, reconstruction, improvement, repair, maintenance, operation and use of public highways, roads, streets and roadside rest areas in this state”.

¹³ 2015 ORS Vol. 8, Section 319.520.

climate targets. If you have questions related to these comments, please contact Katie Sullivan, IETA Managing Director, or Robert D. Kahn, Executive Director, NIPPC.”



Dirk Forrister, CEO & President, International Emissions Trading Association (IETA)



Robert D. Kahn, Executive Director, Northwest & Intermountain Power Producers Coalition

December 22, 2016

Colin McConnaha
Oregon Department of Environmental Quality
700 NE Multnomah Street
Portland, OR 97232

RE: DRAFT: Considerations for Designing a Cap-and-Trade Program in Oregon

The Northwest Food Processors Association (NWFP) submits the following comments on Oregon Department of Environmental Quality's study ("Draft Cap-and-Trade Report") of a cap and trade program in Oregon. NWFP is a non-profit organization of 152 food processing companies in Washington, Oregon and Idaho with over 250 production facilities throughout the Northwest in fruit and vegetable, seafood, dairy, poultry, bakery, specialty and fresh-cut food products. NWFP also has over 350 supplier members who supply goods and services to the food industry. Many NWFP members are located in the state of Oregon, several are potential covered parties, and others will be impacted by natural gas, electricity, transportation fuel and production costs as a result of greenhouse gas emissions regulation.

Northwest food processors are nationally recognized for their leadership and efforts to promote sustainability, to become more energy efficient and to reduce greenhouse gas emission levels. Through voluntary efforts, food processors are on track to meet their goal set in 2009 to reduce industry-wide energy intensity by 25% in 10 years.

NWFP shares the goal of the state of Oregon to protect and improve the environment and to reduce greenhouse gas emissions. However, NWFP opposes state solutions that would impose carbon taxes or mandate cap and trade. Such approaches will increase the price of energy and make food processors in those states less competitive while having little impact on overall carbon reduction. Climate change and greenhouse gas emissions are a global issue and a single national program is the best approach to addressing a global issue. At the state and federal level, NWFP supports policies that address greenhouse gas emissions directly and through collaboration between industry and government. We support incentives and innovative programs that promote and advance voluntary reductions in greenhouse gas emissions.

NWFP has reviewed the Draft Cap-and-Trade Program Report and has found it to be a cursory treatment of the issues. The Report lacks specificity on how this program has operated in other states, including positive and negative results of various implementation approaches, and on how it could operate in Oregon and the costs and other impacts associated with implementing

such a program. Further, approaches and mechanisms for implementation appear to be directed toward those that are compatible with California's Cap-and-Trade Program. NWFPFA recognizes that an investigation of linking with other markets was an objective of the legislature. However, this does not remove the need to fully investigate all implementation options so that a best approach for Oregon can be determined.

It is very unfortunate that the economic analysis was not available so that it could be included in the Draft Cap-and-Trade Report as financial impacts are key considerations. NWFPFA understands that Industrial Customers of Northwest Utilities will be submitting an economic analysis and supports that analysis.

NWFPFA has the following comments on specific topics in the Draft Cap-and-Trade Report.

Stringency: The Report very briefly discusses the options of front-loaded (greater initial rate of declines) and back-loaded (slower initial declines) trajectories. It then concludes that "a relatively steady decline [of the cap] may be most reasonable absent a compelling reason to adjust it in either direction." The reasoning against the back-loaded approach was that it "could encourage investment in technologies that make later aggressive reductions more difficult."¹ It would be helpful if examples where this could be the case were provided in the Report. Stavins points out that gradually phased-in targets provide time to incorporate advanced technologies into long-lived investments.² This is an important concept that should be raised in the Report.

The Report discusses the straight-line path adopted by California and how this could be applied in Oregon. NWFPFA recommends that other trajectories be analyzed as well to provide information that can be used to assist in determining the best trajectory approach for Oregon.

Allowance Distribution: NWFPFA urges DEQ to include a discussion of credits for early actions in the Report. Quebec provides such credits in its Cap-and-Trade System.³ This option would be particularly helpful to many Oregon manufacturers who have been voluntarily taking significant actions to reduce energy intensity and greenhouse gas emissions.

NWFPFA is greatly concerned that the Report does not reflect the complexity, required effort and resources to develop and implement a Cap-and Trade Program. For example, the Report states that "it is important to note that California and Quebec undertook considerable effort to develop formulae to specify precise allocation of free and consigned allowances⁴." There should be a discussion of these undertakings to inform the audience of the enormity of the effort involved.

¹ DRAFT: Considerations for Designing a Cap-and-Trade Program in Oregon, DEQ, Nov. 21, 2016, p.15.

² Stavins, Robert N. 2008. "Addressing Climate Change with a Comprehensive US Cap-and-Trade System.

³ Québec, Ministère du Développement durables, de l'Environnement, del la Faune et des Parcs. December 21, 2012. "Regulation Respecting a Cap-and-Trade System for Greenhouse Gas Emission Allowances, Overview. p. 9.

⁴ Id. DEQ. p.20.

California Air Resources Board (CARB) staff has been working on benchmarking for five years and has had to continually review, update and revise its benchmarks as issues must be addressed and new and better data becomes available. CARB staff works with industry sectors and stakeholders to ensure data is correct and calculated appropriately, to perform further analysis if necessary, and to assure that abnormal events are not skewing the benchmarks for its cap and trade program.

Because of the heterogeneous nature of the food processing sector, benchmarking this industry is not a simple endeavor. CARB staff reports that “Food and beverage processing are complex systems to benchmark because one type of input can go through a series of process steps to end up in a variety of products. Facilities commonly produce several different products by utilizing complex processing that incorporates the exchange of mass and heat among processing lines. It requires detailed engineering understanding of the manufacturing process to develop robust benchmarks.”⁵ EPA has developed ENERGY STAR Energy Performance Indicator benchmarking tools for several industrial products. EPA found that it had to significantly narrow its manufacturing types to specific products. In the food processing sector, it has developed tools for Frozen Fried Potato Processing Plants (31141143B1 and 31141144C1), Juice Processing Plants (specific 10-digit product classes), Cookie and Cracker Baking Plants (specific 10-digit product classes) and Wet Corn Milling.

Program Administration: The Report presents several key functions of a Cap-and-Trade Program and how they could be fulfilled by linking with WCI. The Report does not present any costs that would be incurred if Oregon was to join WCI nor does it provide any estimates of staffing and resource needs.

NWFPA thanks DEQ for this opportunity to provide comments on the Draft Cap-and-Trade Report. Please contact me if you have any questions regarding our comments or would like additional information.

Sincerely,

A handwritten signature in cursive script that reads "Pam Barrow".

Pamela Barrow
Vice President of Energy, Environmental & Sustainability

⁵ California Air Resources Board. 2016. Appendix C: New and Modified Product-Bases Benchmarks. p.5.

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December 22, 2016

Attention: Colin McConnaha
Department of Environmental Quality
700 NE Multnomah St
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Portland, Oregon 97232

Submitted via Email: mconnaha.colin@deq.state.or.us

Subject: NWIGU Comments on DEQ's Partial Draft Study of a Market Approach to Reducing Greenhouse Gas Emissions

Dear Mr. McConnaha,

The Northwest Industrial Gas Users (NWIGU) hereby submit comments to the partial Draft Study entitled "Considerations for Designing a Cap-and-Trade Program in Oregon." NWIGU is a non-profit association comprised of approximately thirty-eight end users of natural gas with major facilities in the States of Oregon, Washington and Idaho. NWIGU members include diverse end-user businesses, including food processing, pulp and paper, wood products, building products, aluminum, steel, specialty metals, chemicals, electronics, electric co-generation, aerospace and other commercial entities. NWIGU's members include large users of natural gas in Oregon that would be directly impacted by a cap-and-trade program as well as smaller natural gas users that would experience higher fuel costs as natural gas local distribution companies pass-through their compliance costs in their purchased gas commodity rates.

NWIGU appreciates the opportunity to comment on the Draft Study and looks forward to continued collaboration with DEQ and other stakeholders.

NWIGU supports the draft comments to be filed on December 22, 2016, by Associated Oregon Industries (AOI). Similar to AOI, NWIGU finds that the Draft Study addresses some of our organization's concerns with a cap-and-trade proposal, but falls short of vetting the full implications such a program would have on natural gas consumers in Oregon. These shortcomings are further explained in the section below.

NWIGU's concerns and recommendations for DEQ:

- **The Draft Study does not include the results from the macroeconomic analysis, thus it lacks the appropriate level of detail needed to contemplate the potential impacts of a cap-and-trade program on Oregon businesses.**

The Draft Study acknowledges that some economic production in Oregon could be lost due to cap-and-trade, but because the macroeconomic study is still underway, the draft cannot fully address the economic costs that could result from such a program. Furthermore, the draft does not address how current businesses might expand or how new businesses would be incentivized to enter the state if cap-and-trade were in effect. Lost income, jobs, sales and economic competitiveness are just a few of the economic impacts firms might incur under a cap-and-trade law in Oregon. Because the Draft Study lacks this important analysis, NWIGU cannot provide direct feedback on this topic. Therefore, NWIGU remains highly concerned that Oregon DEQ has prepared its Draft Report based on anecdotal information, rather than an analytical framework to support its recommendations.

- **The Draft Study should detail how leakage will be prevented.**

To guarantee that Oregon doesn't lose economic output to other states and countries, energy intensive industries should either be exempt from the cap-and-trade program or receive free allowances to utilize for compliance. The Draft Study discusses granting allowances to certain industries. However, it does not state whether allowances would be granted for a short time period, for example three years, or if they would be granted permanently. Unless permanent allowances are granted to energy intensive businesses, Oregon risks losing energy intensive manufacturing to other states and countries.

- **The Draft Study should establish a standard for what would be considered an energy intensive trade exposed business.**

Trade exposed is an unfortunate term in NWIGU's opinion. It implies that only those industries engaged in international trade are disproportionately at risk to cap-and-trade regulation. Nearly all Oregon manufacturers and industries face competition from companies that make identical or similar products where if the competitor had an energy price advantage, the competitor could take market share from the Oregon company. The Draft Study should include a robust discussion regarding the proposed methodologies to establish a definition for energy intensive and trade exposed businesses.

- **Cost containment mechanisms will be a critical component of cap-and-trade program design. The macroeconomic study should include sensitivities of various cost containment designs.**

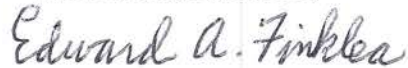
The Draft Study makes no attempt to estimate compliance costs, yet recommends adopting a cap-and-trade program. Without an estimate on the cost containment mechanisms contemplated for a cap-and-trade regulation, it is impossible for Oregon businesses, stakeholders and legislators to understand what the impacts will be to energy prices, jobs, economic output, income and tax revenues. This is information that is crucial before it can be determined whether cap-and-trade regulation is in the economic interest of Oregon. NWIGU is hopeful that the forthcoming macroeconomic study will include the granularity needed to explore various cost containment mechanisms under a cap-and-trade program.

- **DEQ should issue a Revised Draft Study that incorporates the results of the macroeconomic study. The Revised Draft Study should be subject to public feedback before being finalized and submitted to the Legislature.**

As noted above, the DEQ's Draft Study does not include the results from the macroeconomic analysis and, therefore, stakeholders have been cut off from what is arguably the most critical component of the Final Report that will be submitted to the Legislature. NWGIU strongly encourages DEQ to release a Revised Draft Study for stakeholder feedback in advance of publishing a Final Report for Legislative review.

NWIGU looks forward to providing additional constructive input when the macroeconomic analysis is released. NWIGU hopes that DEQ will make the final report, complete with the macroeconomic analysis, available to the public for comment before the report is presented to the Oregon legislature. Thank you for considering our comments on the Draft Study.

Respectfully submitted,

A handwritten signature in dark ink, reading "Edward A. Finklea". The signature is written in a cursive, flowing style.

Edward A. Finklea
Executive Director
Northwest Industrial Gas Users



NW Natural®

Mr. Colin McConnaha & Ms. Jessica Shipley
Department of Environmental Quality
700 NE Multnomah St., Suite 600
Portland, OR 97232

Subject: NW Natural comments on DEQ's Draft Considerations for Designing a Cap-and-Trade Program in Oregon.

December 22, 2016

Dear Mr. McConnaha & Ms. Shipley,

NW Natural appreciates the opportunity to provide comments on the Oregon Department of Environmental Quality's Draft Considerations for Designing a Cap-and-Trade Program in Oregon ("the Study"). NW Natural is a regulated local distribution company that has been providing energy to Oregon residents since 1859. As such, we are keenly interested in how the State thinks through a market approach to reduce greenhouse gas (GHG) emissions.

NW Natural believes climate change is real. The company supports efforts to reduce GHG and was the first standalone natural gas utility in the country to develop a voluntary offset program for its customers – Smart Energy. We are currently exploring a variety of ways to include Renewable Natural Gas (RNG) on our system, and are looking upstream to reduce methane emissions from natural gas production. Additionally, we believe natural gas can be used as both a greenhouse gas reduction tool in its typical residential, commercial and industrial applications, and also a low-carbon/low-cost/low-pollution vehicle transportation fuel, and can be used to serve rural and low-income populations, infusing equitable and affordable low-carbon solutions to communities that rely on more expensive and higher-polluting fuels such as diesel, oil and wood.

This Study, as directed by the legislature, thoughtfully reviews how a cap and trade might function in Oregon and we commend the agency's work on this very complicated subject. If such a policy was pursued by the State, we believe the implementation details would be decided by the legislature. As such, NW Natural would like to highlight a few key points we believe should be included in DEQ's final report to the legislature.

Size of Market is Crucial: It's critical that the market be as big and as flexible as possible for Oregon to reduce GHGs but also protect its economy and its underserved communities. We must recognize that Oregon does not have the economic size or diversity of its neighbor to the south, which boasts the 6th largest economy in the world. As such, Oregon could not create a robust and cost effective cap-and-trade market on its own. With its Clean Air Rule, Washington is attempting to create a program that draws lines around where emissions reductions can come from. This makes the program inefficient, unnecessarily costly for ratepayers, and less likely to reduce GHG emissions.

A Suite of Programs and Incentives is Necessary: Cap-and-Trade, and carbon pricing mechanisms more generally, is often held up as the panacea to reducing GHG emissions. However, a suite of programs, incentives and pricing mechanisms are necessary to reduce GHG emissions and help the economy transition to cleaner fuels.

Oregon is on the right track with its Clean Fuels Standard and Renewable Portfolio Standard, but if the legislature is to adopt a cap-and-trade program, it must also adopt a constellation of other programs to help the environment and economy move in the direction it desires. For example, California is working to reduce GHGs in the transportation sector not only through its Low Carbon Fuel Standard and cap-and-trade, but also through a Clean Vehicle Rebate Project that offers up to \$7,000 per eligible vehicle.¹ Other incentives include allowing single-occupant use of High Occupancy Vehicle (HOVs) lanes by certain qualifying clean alternative fuel vehicles,² and providing state, local and utility incentives for refueling infrastructure.³ Picking or choosing a few programs without providing compatible incentives for citizens to transition to cleaner fuels will not achieve the desired GHG reductions and will likely only hurt Oregon's economy.

The Environmental Value of an Oregon Program: Combined with a suite of incentives and programs, a statewide cap-and-trade program could potentially reduce statewide GHG emissions. But, it must be noted that the value in such a program is to position the state to benefit from a low-carbon global economy: Oregon will not have a significant impact on GHG emissions simply because, when compared with other states, Oregon ranks near the bottom, both in absolute terms and on a per-capita basis.⁴

Protections for Disadvantaged Communities: Combatting the regressive nature of a cap-and-trade program is crucial and the Study approaches this issue with appropriate detail. NW Natural notes that many low-income ratepayers are also renters, which means they are not in a position to make investments in more efficient appliances or weatherizing their home. The Study cites a variety of uses for credits or revenues to help disadvantaged communities; an additional use for such revenue is to invest in weatherization programs that help low-income renters. Providing an incentive to address energy efficiency in non-owner occupied housing (particularly for low-income) will ensure the program actually addresses the foundational issues around energy use instead of just offering on-bill assistance, which does nothing to solve the need for assistance in the first place.

Offsets are Good: NW Natural supports the use of offsets as a cost containment mechanism and as a way to gain emission reductions in uncovered sectors. We believe they are an important component of a market-based system. Additionally, we do not support the notion that offsets allow for pollution in vulnerable communities. If offsets are unavailable, allowances will be used and emissions within those vulnerable communities will still occur at the stack.

¹ California Air Resources Board: <https://www.arb.ca.gov/msprog/aqip/cvrp.htm>

² California Air Resources Board: <https://www.arb.ca.gov/msprog/carpool/carpool.htm>

³ Drive Clean California: https://www.driveclean.ca.gov/Calculate_Savings/Incentives.php

⁴ US Energy Information Administration: CO₂ Emissions at the State Level, 2000-2013.
<http://www.eia.gov/environment/emissions/state/analysis/>

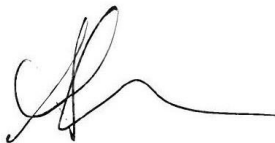
Protections for Energy Intensive Industries: The treatment of Energy Intensive, Trade Exposed businesses (EITE) needs to be thoroughly analyzed and direction must be given to the legislature in the final report. DEQ should consider how it will define EITE businesses, whether these businesses should be included in a cap-and-trade program, how likely these businesses would be to relocate to a state without such a program, and indicate whether these businesses would be included/excluded administratively or whether statutory exemptions are allowed. You note that California and Quebec developed specific procedures to allocate allowances, but there is no detailed discussion/analysis of whether Oregon could or should adopt similar procedures.

Rural versus Urban: The Study reviews how California deals with the distributional effects of its cap-and-trade program on vulnerable communities and makes some good points on how best to go about ensuring the communities are engaged and treated favorably. However, it's important, once again, to note the fundamental differences between Oregon and California on this topic: California is much more urbanized, with 10 metro areas with 500,000 or more people.⁵ As a matter of comparison, Oregon has one metro area with more than 500,000 people.⁶ This is to say that any redistribution of allowances or revenue will be more challenging in Oregon, since the state has a larger rural population.

Consideration of Unintended Consequences: There are many environmental issues to which the state must attend, GHG emissions being one and air quality being another. And, though dealing with these two pollutants often go hand-in-hand, there are times when they are decoupled. For example, wood stoves produce a significant amount of localized air pollution that is harmful to public health. Natural gas furnaces significantly reduce particulate emissions and associated health impacts, but the GHG savings is negligible. Similarly, compressed natural gas is a low-carbon alternative for heavy-duty diesel fleets. We've seen in the past year that areas of Oregon suffer from poor air quality, and diesel is among the main culprits. A Cap-and-trade program would make CNG more expensive to fleet owners looking to switch to a lower-emitting fuel.

We thank you again for the opportunity to provide feedback and are happy to answer any questions you may have.

Sincerely,



Shanna Brownstein
Government & Community Affairs, NW Natural

⁵ Based on US Census Data: https://en.wikipedia.org/wiki/List_of_California_urban_areas

⁶ Based on US Census Data: https://en.wikipedia.org/wiki/Oregon_statistical_areas

From: York Emily A
Sent: Wednesday, December 21, 2016 1:53 PM
To: MCCONNAHA Colin
Cc: SIFUENTES Julie; Goldfarb Gabriela
Subject: Comments on Cap and Trade Study

Hi Colin,

You and Jessica have done an amazing job with this project. I have learned a lot from your leadership on this very complex and controversial topic. KUDOS for all the hard work you've put in this year.

Thanks for the opportunity to submit comments on behalf of the Oregon Climate and Health Program:

- (1) **Why are we doing this?** We currently do not have any language in the document that orients the reader to the context in which we are operating in (other than the fact that Legislature asked DEQ to conduct the study).

Why does legislature want us to study this? Why are we looking for a way to control greenhouse gas emissions?

I think it's important to include at least a sentence or two in your introduction that explains the current climate context. This could draw from the Roadmap 2020 and 2050 goals. It could include referencing the Oregon Climate Change Research Institute findings which confirm that in the last 2 years Oregon recorded it's hottest year and lowest snowpack on record. We had our most severe wildfire season in modern history and 24 counties declared drought emergencies. I don't think it's over-political to state the facts for why we are even talking about this stuff.

- (2) **Policy Makers Will Skip to the Finding\$:** Because the primary audience is legislators and the study serves to educate legislators on cap and trade policy options and impacts, my hunch is that many will not read the study cover-to-cover and even their staff may be turning to (a) the executive summary (yet to be drafted), (b) the study's key findings (draft page 10-11), and (c) the "revenue"/show me the money section (draft page 20-22) . Here are my comments for those 3 key sections:

(a) **EXECUTIVE SUMMARY:**

Most of the study focuses, and is organized, by the consideration of negative impacts. If we were just to read the headings, for instance, we would get the sense that there are a lot of potential pitfalls. Yet there are positive impacts and benefits peppered throughout...

In the executive summary, I encourage you to highlight co-benefits, such as the reduction of co-pollutants (ozone and particle pollution) which will result in fewer premature deaths, asthma attacks, heart attacks, and hospital admissions (as indicated in the US Clean Power Plan). Draw from your different **Potential advantages of an Oregon cap-and-trade system** sections that highlight other benefits such as: that the cap-and-trade will stimulate under-investment in renewable energy generation necessary to achieve our long-term policy goals and that the cap-and-trade would make the

lower carbon fuels required by the Clean Fuels Program more cost effective, reducing the cost of CFP compliance.

(b) KEY FINDINGS:

Is #9 not redundant of what is already stated in # 4? Seems like the key findings are weighted toward industry concerns.

“Disadvantaged communities” are mentioned once in #10 in regard to the use of revenue generated outside of transportation fuels. In this point, I would suggest that revenue could also be used to assist small businesses in adapting to new climate conditions (e.g. assistance for farmers to shift to more drought-tolerant crops, etc.)

As for the bigger chunk of change, Highway Funds (#5) let’s pull out what is mentioned in the last paragraph of Section 6 page 44 (that these funds can be used to benefit disadvantaged and rural communities in a way that aligns with our GHG goals)– it’s a key point of discussion with huge cost savings in communities where multi-modal transportation infrastructure is severely lacking.

You may want to shift #11 and #12 up and have the last key finding be #10. At least it will be at the end of the list, where skimming eyes might rest.

(c) REVENUE section:

As much as possible, we should try to avoid sounding overly-bureaucratic and government-leaning (people want to see the money go to small businesses and communities in need, not more government “programs”). Here are some suggestions for that;

Change “General Spending” to something like “Basic Community Services” and put it at the top. Instead of saying that it will finance a “wide variety of government activities traditionally funded by other taxes” and referencing the European Union, how about:

Basic Community Services: Revenue from a cap-and-trade program could be used to finance a wide variety of programs that build community resilience and improve community livability across Oregon. This could include filling gaps identified in public safety, emergency preparedness, public health, and protections for clean air and clean water, all of which will be needed to address projected climate impacts in Oregon.

Why list “**broadening the scope of the program**” ... most legislators, even progressive ones, are not looking for ways to broaden the scope of programs that aren’t even yet in existence... they’re looking for ways to keep critical programs afloat. Maybe lump this one into “**Improving the efficiency of the program**”, but have it read something like:

Improve efficiency in reaching greenhouse reduction goals: Spending revenue on projects that reduce emissions from sources covered by the cap will lower demand for allowances and thereby reduce their cost. This can include providing funding for businesses and consumers to adopt lower-carbon alternatives (e.g. transportation options) and other investments that reduce emissions from sources not covered by the cap.

(3) **Keep consistent with how you address stakeholder concerns:** Page 40 under **Tools to neutralize potential negative effects** to disadvantaged communities: Why are we discussing **Programs outside of cap-and-trade**? We don't do that in the industry sections. For instance, we don't say that the state can implement additional policies to benefit businesses susceptible to leakage and that allowances don't need to "originate from the revenue generated by cap and trade auction"... see what I'm saying? I feel like this whole section opens a can of worms that is not within the parameters of the study. Including the mention of OHA's collaboration with DEQ on Cleaner Air which is not addressing our air quality concerns related to climate.

Let me know if I can clarify anything here. I am very thankful for the opportunity to engage and was also wondering if you would consider for future communications/meetings including OHA as part of your state agency stakeholder group, rather than your environmental justice stakeholder group.

Enjoy these last days of 2016 and I would love to buy you and Jessica a beer after Feb. 1st!

Emily York

Emily A. York, MPH
Climate & Health Program Coordinator Oregon
Public Health Division
www.healthoregon.org/climatechange

From: Doug Heiken
Sent: Thursday, December 22, 2016 11:25 AM
To: MCCONNAHA Colin
Subject: Oregon Wild Comments on Partial Draft of DEQ's Study of a Market Approach to Reducing Greenhouse Gas Emissions
Attachments: Market incentives for GHG cmt, 6-2-2016, DEQ.docx

RE: Oregon Wild Comments on Partial Draft of DEQ's Study of a Market Approach to Reducing Greenhouse Gas Emissions

Please accept the following comments from Oregon Wild regarding the Partial Draft of DEQ's Study of a Market Approach to Reducing Greenhouse Gas Emissions, <http://www.deq.state.or.us/aq/climate/GHGmarket.htm>. Oregon Wild represents approximately 15,000 members and supporters who share our mission to protect and restore Oregon's wildlands, wildlife and waters as an enduring legacy.

The draft says "emissions that are disbursed across many smaller sources would face high transactional costs to comply with the program and are therefore also excluded from established cap-and-trade programs." DEQ should consider the fact that Oregon has some timber interests that control large areas of forest and cause very significant GHG emissions each year. DEQ should consider a threshold such as 25,000 tonnes/year of CO₂e for inclusion in the program. It does not matter than GHG emissions are dispersed. What matters is that they are under the control of a single corporate interest. This would reduce transaction costs. These large forest land holdings can be part of the problem or part of the solution. We urge DEQ to consider creating incentives to modify forests management practices to increase forest carbon storage, such as by using longer rotations, retaining more trees in the forest during harvest, etc. As explained in our previous comments (June 2016) attached.

Off-sets derived from forest management activities must be very carefully proscribed and limited to situations where climate benefits are real, additional, verifiable, permanent, etc. Wood products should not be included in the offset program, because creation of wood products always involves emissions in the process of logging, slash disposal, log transport, mill waste, product transport, etc. Only a small fraction of the carbon in the forest is transferred to storage in wood products, most is accelerated toward the atmosphere. Also, carbon storage in wood products is generally not as long lasting as carbon in the forest. See Heiken, D. Myths & Facts on Forest, Carbon and Global Warming slide show clarifying many misconceptions about forests, logging, and carbon: <http://www.slideshare.net/dougoh/forest-carbon-climate-myths-presentation/>

The draft report cites the increasing risk of wildlife. This may or may not be the case. There is a lot of evidence that fire severity is about the same today as it was historically.

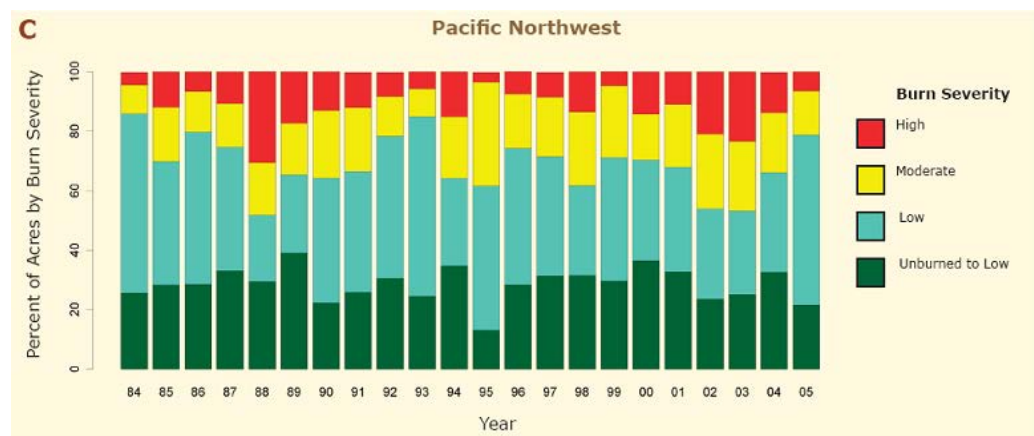
In the Pacific Northwest "MTBS [Monitoring Trends in Burn Severity] data does not support the assumption that wildfires are burning more severely in recent years." The majority of fire effects remain low severity and the proportion of high severity fire is not showing an increasing trend ..."

The majority of area burned falls within the unburned to low severity range, with relatively low annual variation in these severity classes. The high and moderate severity classes show higher relative variation between years, suggesting that these classes may be most influenced by variation in climate, weather, and seasonal fuel conditions. ...

Percentage of Area by Burn Severity—PNW & PSW

- 28 percent—unburned to low severity
- 36 percent—low severity
- 21 percent—moderate severity
- 15 percent—high severity

...



...

The Unburned-to-Low and Low severity classes are also interesting because their proportions are relatively stable from year to year. The Unburned-to-Low class averages approximately 28 percent of the burned area with only ± 6 percent variation from year-to-year (one exception in 1995) for the entire data record. This compares with the high severity class, which averages 15 percent of the area with ± 11 percent variation. Also, in 82 percent of the years the combination of the Unburned-to-Low and Low severity classes was 60 percent of the burned area. The lower end of the burn severity spectrum appears to be fairly consistent across the data record and regularly comprises a majority of the burned area.

MTBS: Monitoring Trends in Burn Severity: Report on the Pacific Northwest and Pacific Southwest Fires (1984 to 2005). http://mtbs.gov/reports/MTBS_pnw-psw_final.pdf.

In addition, even if fire hazard is increasing, carbon is more secure in forests than it is in wood products. This is because the risk of fire at any given location is small and forests continue to grow every year they do not burn. Logging proponents often claim that logging will increase carbon storage controlling carbon emissions caused by natural processes such as fire and insect-induced mortality. This is simply counter-factual. In most cases, managing forests in an effort to control natural processes that release carbon will only make things worse by releasing MORE carbon. This is mostly because no one can predict where fire or insects will occur, so the treatments must be applied to broad landscapes, yet the probability of fire or insects at any given location remains low, and only a small fraction of the

treated areas will actually experience fire or insects. As a result, many acres will be treated "unnecessarily" and therefore the cumulative carbon emissions from logging to control fire and insects (plus the carbon emissions from fire and insects that occur in spite of control efforts) are greater than emissions from fire and insects alone.

Law & Harmon (2011) conducted a literature review and concluded ...

Thinning forests to reduce potential carbon losses due to wildfire is in direct conflict with carbon sequestration goals, and, if implemented, would result in a net emission of CO₂ to the atmosphere because the amount of carbon removed to change fire behavior is often far larger than that saved by changing fire behavior, and more area has to be harvested than will ultimately burn over the period of effectiveness of the thinning treatment.

Law, B. & M.E. Harmon 2011. Forest sector carbon management, measurement and verification, and discussion of policy related to mitigation and adaptation of forests to climate change. Carbon Management 2011 2(1). <http://terraweb.forestry.oregonstate.edu/pubs/lawharmon2011.pdf>.

Campbell and Agar (2013) conducted a sensitivity analysis and found robust results indicating that fuel reduction does not increase forest carbon storage.

... we attempt to remove some of the confusion surrounding this subject by performing a sensitivity analysis wherein long-term, landscape-wide carbon stocks are simulated under a wide range of treatment efficacy, treatment lifespan, fire impacts, forest recovery rates, forest decay rates, and the longevity of wood products. Our results indicate a surprising insensitivity of long-term carbon stocks to both management and biological variables. After 80 years, ... a 1600% change in either treatment application rate or efficacy in arresting fire spread resulted in only a 10% change in total system carbon. This insensitivity of long-term carbon stocks is due in part by the infrequency of treatment/wildfire interaction and in part by the controls imposed by maximum forest biomass. None of the fuel treatment simulation scenarios resulted in increased system carbon.

Campbell, J, Agar, A (2013). Forest wildfire, fuel reduction treatments, and landscape carbon stocks: A sensitivity analysis. Journal of Environmental Management 121 (2013) 124-132
http://fes.forestry.oregonstate.edu/sites/fes.forestry.oregonstate.edu/files/PDFs/Campbell_2013_JEM.pdf

Sincerely,
/s/

Doug Heiken, Oregon Wild

Oregon Wild's mission is to protect and restore Oregon's wildlands, wildlife, and waters as an enduring legacy for future generations.



PACIFIC FOREST TRUST

Private Forests. Public Treasures.

December 16th, 2016

Colin McConnaha
Oregon Department of Environmental Quality
811 SW 6th Ave. Portland Oregon 97204

RE: DRAFT: Considerations for Designing a Cap-and-Trade Program in Oregon

Dear Mr. McConnaha,

Thank you for this chance to comment on the *Draft Considerations for Designing a Cap-and-Trade Program in Oregon* (draft). We are supportive of Oregon adopting a cap-and-trade program as part of the WCI and are grateful for the work that has been done so far to further this goal.

We urge you to consider the opportunities to more fully integrate natural and working lands into this cap-and-trade system as they could be either an asset or liability in achieving Oregon's climate goals. The natural lands lost every year to development have a significant climate impact. Yet, there is also the potential to increase carbon stored in Oregon's forests through conservation and improved forest management. As natural and working lands largely fall outside of the proposed cap, it is crucial to include provisions such as the reinvestment of auction revenues and forest offsets. This investment in forests and other natural lands will pay off not only in climate change mitigation, but also in sustained rural communities, wildlife adaptation to climate change, secure water supplies, and the many other benefits well-managed forests provide.

Natural and Working Lands are Central to Oregon's Climate Goals.

The Oregon Department of Forestry estimates that 704,000 acres of non-federal natural and working lands were lost to development from 1974-2014.¹ Just the wildland forest lost, 284,000 acres over that time period, generated around 96 MMTCO₂ (using an average of 93 metric tons of carbon^{2,3}, or 341 metric tons of CO₂, per acre of forest land). That works out to an annual emission of about 2.4 MMTCO₂ from the loss of wildland forests alone, which is not insignificant when you consider that the total inventoried emissions for the state were 102.9 MMTCO₂ in 2010.⁴

¹ Gray, Andrew N.; Hubner, Dan; Lettman, Gary J.; McKay, Neil; Thompson, Joel L. 2016. Forests, farms & people: Land use change on non-federal land in Oregon 1974-2014. Available at: <http://ir.library.oregonstate.edu/xmlui/handle/1957/58941>

² Wayburn, L.A., Franklin, J.F., Gordon, J.C., Binkley, C.S., Mladenoff, D.J., and Christensen, N.L. 2000. Forest Carbon in the United States: Opportunities & Options for Private Lands. The Pacific Forest Trust, San Francisco, CA. Available at: <https://www.pacificforest.org/forest-carbon-in-the-united-states/>

³ USDA. 2010. New Data Highlights Role of Forests in Fight Against Climate Change. Available at: <http://www.usda.gov/wps/portal/usda/usdamediafb?contentid=2010/10/0532.xml>

⁴ http://www.oregon.gov/deq/AQ/Documents/OregonGHGInventory07_17_13FINAL.pdf

While the loss of forests and other natural and working lands poses a challenge to meeting Oregon's climate goals, these lands are also some of the safest and most expandable carbon sinks. Forests nationwide are estimated to offset 11% of the US's greenhouse gas emissions, and the forests of the Pacific Northwest have the highest carbon storage potential in the nation.⁵ Oregon also has the most carbon stored in forests of any of the contiguous states, with 2,555 MMTC.⁶ Safeguarding and increasing this vast carbon store could be one of Oregon's more valuable assets in the fight against climate change.

Forest Carbon Offsets Can Reduce Land Conversion and the Costs of Compliance.

Offsets, as the draft study notes, "offer an opportunity to spread the incentive for emission reductions to sources not directly covered by the cap-and-trade program." They provide an opportunity to include forests and natural lands while reducing the cost of compliance for covered entities. A recent study indicated that an offset price of just \$10/ton had the potential to stabilize regional carbon stocks in western Oregon.⁷ The model predicts that for each \$1 increase in the offset price, an additional 4,700 acres of forest land could be protected from conversion to development.⁸ The forest carbon offset program represents an opportunity to curb land conversion and provide incentives for improved forest management practices that increase carbon stores.

Forest carbon offsets have already been accepted by many of Oregon's landowners. For instance, Green Diamond has recently listed over 600,000 acres of Oregon forest⁹ in California's forest offset program, which may be the largest forest carbon offset project registered in California to date. Including forest offsets in Oregon's cap-and-trade program would help expand this successful program and increase its reach to more landowners.

The draft study notes that careful consideration is required to ensure that offsets actually achieve the reductions. California's model for ensuring offsets are real, additional, quantifiable, permanent, verifiable and enforceable is one that could be easily replicated. For instance, forest carbon offset providers in California must contribute a percentage of offset credits to a buffer account that provides insurance in the case of unintentional

⁵ USDA. 2010. New Data Highlights Role of Forests in Fight Against Climate Change. Available at:

<http://www.usda.gov/wps/portal/usda/usdamediafb?contentid=2010/10/0532.xml>

⁶ USDA Forest Service, Forest Inventory and Analysis Program. 2014. Available at:

<http://www.fia.fs.fed.us/Forest%20Carbon/methods/docs/2014/Total%20forest%20carbon20140721.xlsx>

⁷ Latta, Gregory S.; Adams, Darius M.; Bell, Kathleen P.; Kline, Jeffrey D. 2016. Evaluating land-use and private forest management responses to a potential forest carbon offset sales program in western Oregon (USA). *Forest Policy and Economics*. 65: 1-8.

⁸ Latta, Gregory S.; Adams, Darius M.; Bell, Kathleen P.; Kline, Jeffrey D. 2016. Evaluating land-use and private forest management responses to a potential forest carbon offset sales program in western Oregon (USA). *Forest Policy and Economics*. 65: 1-8.

⁹ Green Diamond has two projects listed in Oregon with the American Carbon Registry: "Klamath IFM East" at 450,000 acres (<https://acr2.apx.com/mymodule/reg/prjView.asp?id1=273>) and "Klamath IFM West" at 185,000 acres (<https://acr2.apx.com/mymodule/reg/prjView.asp?id1=274>).

reversals such as fire.¹⁰ While the draft also notes that offsets sometimes require ongoing monitoring for years or decades – this should not be viewed as a downside as this monitoring ensures the permanence of the emissions reduction and the many other benefits of forest offset projects. As demonstrated by the forest carbon projects in 30 states and on over 2 million acres of land under California’s offset program¹¹, this ongoing monitoring is not prohibitive.

Reinvestment of Revenues in Natural and Working Lands Has Many Benefits.

The draft study lists five broad categories for the reinvestment of auction revenues. We would recommend that the available funds are primarily used to achieve additional greenhouse gas reductions and to mitigate distributional impacts.

Reinvesting the auction proceeds in areas not covered by the cap can broaden the scope of the program and achieve additional, and cost effective, greenhouse gas reductions. For instance, a recent California Legislative Analysis Office report showed that investments in forests topped the list of cost-effective GGRF investments – costing only \$4 per metric ton of CO₂ reduced.¹² The auction revenues also provide the opportunity to complement the forest offset program and expand to other natural and working lands such as wetlands, meadows, grasslands, and deserts that might otherwise be entirely left out of the cap-and-trade program.

Investing some of the proceeds in rural areas can also help mitigate some of the distributional concerns. As the 19% of Oregon’s population that lives in rural areas¹³ are often dependent on the land base, investments in natural and working lands can benefit these rural communities. In 2013, Oregon’s forest sector, the state’s second-largest employer,¹⁴ employed more than 58,000 people and paid a higher wage than the statewide average.¹⁵ Research on investments made by the Oregon Watershed Enhancement Board found that for every million dollars invested in forestry and watershed restoration, between 15 and 24 jobs were created.¹⁶

The reinvestment in natural lands with auction revenues supports rural economies and helps reduce GHG emissions. It also provides countless other co-benefits from restoring habitats that help wildlife adapt to climate change to improving water security.

¹⁰ Air Resources Board, 2015. Compliance Offset Protocol U.S. Forest Projects, adopted June 25, 2015. Available at: <https://www.arb.ca.gov/cc/capandtrade/protocols/usforest/forestprotocol2015.pdf>

¹¹ Data on ARB registered projects available at: http://database.v-c-s.org/VCS_OPR, <http://www.arb.ca.gov/cc/capandtrade/offsets/offsets.htm>, and <https://acr2.apx.com/myModule/rpt/myrpt.asp?r=111>

¹² <http://www.lao.ca.gov/Publications/Report/3445>

¹³ <https://www.census.gov/geo/reference/ua/urban-rural-2010.html>

¹⁴ <https://www.oregon.gov/LCD/pages/forlandprot.aspx>

¹⁵ <https://www.qualityinfo.org/-/a-comprehensive-estimate-of-oregon-s-forest-sector-employment>

¹⁶ Nielsen-Pincus, Max and Moseley, Cassandra. 2010. Economic and Employment Impacts of Forest and Watershed Restoration in Oregon. *Ecosystem Workforce Program, Working Paper Number 24*. University of Oregon.

Taking the time now to consider how natural and working lands can be incorporated into Oregon's cap-and-trade program through offsets and auction revenues is essential. This inclusion will make Oregon's climate goals more feasible as it could help reduce land loss and increase carbon storage. It will also help support rural communities, aid wildlife adaptation to climate change, and improve water security.

Thank you for considering these comments, and please do not hesitate to reach out if you have any questions or we can help in any way.

Sincerely,

A handwritten signature in grey ink, appearing to read 'Abby Halperin', with a stylized, flowing script.

Abby Halperin
Policy Associate

December 22, 2016

VIA ELECTRONIC DELIVERY

Oregon Department of Environmental Quality
700 NE Multnomah St.
Portland, OR 97232

Attention: Colin McConnaha

RE: Department of Environmental Quality's study of a market mechanism for reducing greenhouse gas emissions

Mr. McConnaha:

PacifiCorp appreciates this opportunity to comment on the Oregon Department of Environmental Quality's (DEQ) partial draft study (Draft Study) of a market mechanism for reducing greenhouse gas emissions in Oregon. These comments are primarily focused on considerations associated with a market mechanism to reduce greenhouse gases as it may apply to the electric sector. Overall, PacifiCorp appreciates the thoroughness of the Draft Study, and finds that it is thoughtful and comprehensive. PacifiCorp's primary concern with respect to the Draft Study is that it relies heavily on economic theories, largely adopted in California, that do not necessarily reflect the realities of the interconnected electric system or the operation of existing policies on electric utilities such as the recently adopted Senate Bill (SB) 1547, which eliminates coal from Oregon rates by 2030 and implements a fifty percent renewable portfolio standard (RPS) by 2040.

A cap-and-trade program is not effective as applied to imported energy

Oregon has already passed legislation that addresses the same greenhouse gas emissions that would be subject to the cap-and-trade program—namely those associated with imported electricity. SB 1547 is specifically designed to ensure that Oregon's greenhouse gas emissions reductions goals, as those goals apply to the electric sector, are achieved. Furthermore, in accordance with the Public Utility Commission of Oregon's integrated resource planning (IRP) guidelines, PacifiCorp already incorporates assumptions regarding future carbon regulations in its IRP. As a result, PacifiCorp's resource decisions already reflect carbon price assumptions associated with new emitting resources.

PacifiCorp continues to be concerned that the cap-and-trade program would impose additional costs on utility customers without adding corresponding greenhouse gas emission reductions. Customers should not have to pay twice to achieve the same result. Though the Draft Study addresses this issue and proposes an approach for its mitigation, as explained below, PacifiCorp continues to have concerns that this approach will be difficult to implement.

As noted in prior comments, a cap-and-trade program applied to emissions associated with energy imports is not the most effective way to reduce greenhouse gas emissions from the electric sector. Many of the economic theories cited in the Draft Study to support the imposition of a cap-and-trade program in Oregon simply do not apply to emissions associated with energy imports. Capping emissions associated with imported energy only serves to reduce the amount of emissions imported—the sources of the emissions themselves are not under the cap due to a single state’s lack of jurisdiction over sources located in other states. In a multi-state interconnected electric system and integrated energy market, a single state’s cap on imported emissions will not change the cost of producing those emissions. It will change the cost of using emitting resources to serve load in a specific location. This is why California’s regulations have not been found to have much of an impact on total emissions in the West.¹

The inherent limitation associated with regulating out-of-state resources that serve in-state load is why many states have turned to either multi-state programs such as the Regional Greenhouse Gas Initiative in the Eastern United States or RPS-focused policies. RPS policies are more effective in reducing emissions from the electric sector because the amount of energy produced at any given time is finite and limited by the amount of load. This means that more renewable energy will necessarily replace energy produced from other types of resources, including emitting resources. More flexible policies such as SB 1547 are a more effective way to achieve greenhouse gas reductions from the electric sector, which Oregon has fully pursued. In conjunction with these regulatory drivers, economic drivers such as the decline in the costs of natural gas and renewables have resulted in a reduction of greenhouse gas emissions in the electric utility industry of almost 21% from 2005 levels without a national carbon tax or cap-and-trade program.² In addition, more than half of all growth in renewable electricity generation (60%) and capacity (57%) since 2000 is associated with state RPS requirements.³ The only thing that a state-specific cap on emissions associated with imported energy is likely to accomplish is to increase costs for customers.

Allowance allocation “fixes” may not mitigate customer cost burden associated with a cap-and-trade program

PacifiCorp appreciates that DEQ recognizes that adopting a cap-and-trade program in addition to SB 1547 could effectively result in utility customers paying for the same greenhouse gas reductions more than once. DEQ notes that one option to address this issue is to allocate allowances to utilities based on the level of emissions the utilities predict they will achieve under SB 1547 policies.⁴ The sale of allowances at auction would generate a revenue stream that could be used to mitigate any increased costs experienced by customers. Under this approach, utilities would have no additional compliance burden from the cap-and-trade program beyond what they are already planning to accomplish with the SB 1547 policies. Although PacifiCorp supports the general concept of allowance allocation based on cost burden, as is done in California,

¹ <https://ei.haas.berkeley.edu/research/papers/WP236.pdf> at 20.

² Energy Information Administration Monthly Energy Review, March 2016.

³ U.S. Renewable Portfolio Standards 2016 Annual Status Report, Lawrence Berkeley National Laboratory.

⁴ Draft Study at 52.

PacifiCorp knows from its experience in California that it is inherently difficult to forecast that cost burden and allocate allowances accordingly. If allowances are under-allocated then customers are still subject to paying for both policies, again without attaining additional greenhouse gas emission reductions. Due to this and all of the foregoing, emissions associated with imported energy should not be regulated in Oregon via a cap-and-trade program.

A cap-and-trade program will not necessarily decrease the incremental costs of RPS compliance

One of the benefits of a cap-and-trade program highlighted by DEQ is that it is likely to increase the chances that Oregon will achieve the goals of its RPS policy because it will reduce the incremental cost of RPS compliance. However, as they are currently required to be calculated, a cap that applies to emissions associated with imported energy would not change PacifiCorp's incremental cost calculation. With respect to fuel costs, Oregon's incremental cost rules require a comparison between the costs of a proxy gas resource, which are based on PacifiCorp's official forward price curve, and the costs of a qualifying renewable resource. PacifiCorp's official forward price curve is based on West-wide modeling of energy markets and incorporates assumptions about existing and future carbon regulations. While it is unclear how and whether a cap-and-trade program adopted in Oregon would affect energy prices across the West, the adoption of carbon regulations can actually put downward pressure on future gas prices, making incremental costs greater.

The cost of renewables will continue to decline, regardless of a cap-and-trade program. Market forces including the adoption of higher RPS targets, the lower cost of capital and technological advances that increase the performance of renewables will continue to drive down renewable costs, helping utilities managing the incremental cost of RPS compliance.

PacifiCorp is happy to discuss these issues in more detail at your request. Please contact me with any questions.

Sincerely,

/s Mary Wiencke

Mary Wiencke
Dir. Environmental Policy & Strategy

Enclosures



Portland General Electric Company
1 SW Salmon Street • Portland, Oregon 97204

Portland General Electric
December 22, 2016

Mr. Colin McConnaha
Oregon Department of Environmental Quality
700 NE Multnomah St. #600
Portland, OR 97204-1390
Sent via email to McConnaha.Colin@deq.state.or.us

Re: COMMENTS OF PORTLAND GENERAL ELECTRIC REGARDING THE DEPARTMENT OF ENVIRONMENTAL QUALITY “CONSIDERATIONS FOR DESIGNING A CAP AND TRADE PROGRAM IN OREGON”

PGE would like to thank the Department of Environmental Quality (“DEQ” or “department”) for the opportunity to provide comments on “Considerations for Designing a Cap and Trade Program in Oregon” (“draft report”). We understand that the motivation for this study came pursuant to direction from the Oregon Legislature in Senate Bill 5701 (2016) and we very much appreciate the open and deliberative process that the department utilized to conduct the study. . We incorporate by reference our comments dated June 24, 2016, submitted to the department earlier this year regarding the outline for the draft report.

PGE has closely followed state and federal efforts around greenhouse gas (GHG) emission reduction programs for more than a decade. We were one of the first utilities in the country to call for a national market-based emissions reduction program. We were heavily involved in the debates around the regional adoption of the Western Climate Initiative (WCI) and in the discussions regarding first the Bingaman and then the Waxman-Markey federal legislation regarding cap and trade programs. We have also followed the development of the federal Clean Power Plan and submitted comments in the drafting of that rule to the Environmental Protection Agency. Our preferred approach would price carbon nationally and allow market forces to drive emission reductions in the most efficient manner.

Barring a national solution, we have worked diligently to reduce the emissions associated with serving our customers. These efforts have included increasing generation efficiency, retiring a coal-fired generation facility, adding renewables and achieving all cost-effective energy efficiency. Investments over the past decade are already avoiding nearly 1.6 million tons of CO₂ per year and we are on track to achieve another 2.2 million tons of annual reductions by 2021 – before we adopted Senate Bill 1547, which has the potential to result in additional reductions. SB1547 requires PGE to cease serving customers with coal-fired electricity by 2035 and increases the renewable energy sources in our portfolio to 50% by 2040.

In debates over carbon pricing or cap and trade programs that cross jurisdictional boundaries, we have consistently called for some or all of the following to be included in the design of the program: the need for any design to create a level-playing field for common reductions and a common set of market rules, the inclusion of all sectors in the cap and not phased-in over time, an understanding of the system sale issue for the electricity sector in the Pacific Northwest, the allocation of allowances at no cost to rate regulated utilities based on their historic emissions, a multi-year baseline calculation to ameliorate the potential skewing caused by hydroelectric variability, cost containment provisions to account for design flaws and price spikes that may result from a newly created marketplace, credit for early action, and reduction of GHG emissions through complimentary programs like electric vehicles and energy efficiency which we believe provide reductions at a lower cost to our customers.

We therefore review the draft report through the lens of those past debates and organize our comments by subject matter, not by section of the report itself:

- General comments
- Complimentary programs
- Level playing field for all entities
- Point of regulation
- Inclusion of all sectors in the cap
- Allocation of allowances
- Offsets

General comments

We note that DEQ uses the terms CO₂, greenhouse gases and CO₂e in a somewhat interchangeable fashion throughout the document. Those terms are not necessarily interchangeable and we would ask that the department spend some time reviewing each instance of use and determining whether the term is appropriate.

We believe that the department did a good job in meeting the requirements for the study laid out by the legislature in SB 5701 and the accompanying budget report. Those documents directed study of a market-based approach to controlling GHG emissions by providing economic incentives for achieving emissions reductions. DEQ's report contains information on all elements¹ and therefore satisfies the direct legislative ask.

The report does not identify the potential DEQ budget impact if Oregon were to adopt a cap and trade program. The report should clearly outline the potential costs to the state of developing, implementing, and then administering the program. Also, the report should describe the potential fees that may be

¹ These elements were 1) to identify a cap necessary to link to other jurisdictions, 2) assess interaction with existing programs and achieve GHG goals., 3) study and evaluate how existing programs in other jurisdictions control leakage and how those methods might be adapted to align with Oregon's economy and business sectors, and 4) study and evaluate how programs address potential impacts and benefits to disadvantaged populations and rural communities and how we might adopt those methods.

imposed upon regulated entities and whether or not the program would be funded through the sales of allowances or another method.

The report does identify a cap necessary to link to other jurisdictions, but does only the barest of review of programs other than WCI² and offers no rationale for why the department settled on WCI as that program to link to rather than the others. If it is not possible to link to those other programs, or if there are other infirmities associated with those programs, that information would be helpful to be included in the report.

Complimentary programs

California has adopted a host of measures which reduce carbon emissions outside of their cap and trade program. Oregon has adopted at least two of the larger reducing programs: an aggressive renewable portfolio standard and the low-carbon fuels standard. As the report states, these complimentary measures in California are expected to “achieve roughly 80% of the reductions required by 2020.”³ California is poised to increase the amount of direct regulation to carry forward reductions past 2020. PGE believes that the legislature should understand two important issues associated with the manner in which California is proceeding. First, California’s complimentary policies drive prices for allowances lower because they are accomplishing the “heavy lifting” in terms of carbon reductions. And second, the cost-effectiveness of these complimentary and direct policies need to be assessed prior to adopting a cap and trade program. Ultimately, the taxpayers of the state will be on the hook for paying for reductions accomplished and they should be able to rely on the legislature choosing the most cost-effective path for reductions.

In the adoption of Senate Bill 1547 (2016), Oregon directed investor-owned utilities to increase their renewable energy generation to 50% by 2040 and to reduce coal generated electricity in rates by 2030 and 2035. PGE has charted the carbon emissions that we expect to see in the future through 2040 and believe that we are on a path toward reduction of emissions on a pace that meets the state’s goals through that period. The Oregon Global Warming Commission agrees with our assessment. A path that utilizes existing least-cost, least-risk planning processes, with the customer protections around costs that exist in Oregon’s Renewable Portfolio Standard, that accomplishes the reductions in the electricity sector that science says is necessary, is our preferred path toward reductions. A cap and trade program that would layer on top of this aggressive reduction path must ensure that it does so without unnecessary costs, especially if those costs are levied for reductions that customers must already accomplish.

In calculating the costs for complimentary programs, it is also necessary for the department to ensure that those costs apply only to the marginal abatement obtained through the implementation of a cap and trade program. The department must isolate the costs that will be incurred in complying with the

² Report at 8-9, discussing the Regional Greenhouse Gas Initiative and the European Union Emissions Trading System.

³ Page 48

complimentary programs from those from the cap and trade program in order to validly determine the cost-effectiveness of per ton reductions.

Need for level playing field to reduce economic discrimination

PGE has consistently advocated for a national approach to carbon pricing and carbon regulation. Smaller state and regional level programs create an economic penalty on in-state businesses when compared to out-of-state businesses. This economic dislocation of businesses can result in emissions “leakage” from within the cap to outside the cap.

We understand that the department is engaged in an effort to analyze the economic effects of a cap and trade program on the state, and we are still waiting the results of that report. We encourage the department to allow entities to comment again once the results of that report are available. Past efforts have not clearly isolated the effect of carbon regulation on specific traded sectors, something that is critical to understanding the true effects of the program. This is a difficult task, as the report notes “no retroactive analysis has been done yet to isolate the effect of the cap and trade program on California’s economy.”⁴

On pages 31 to 35, the department addresses the general leakage risk and specific risk for the 50 entities identified in Oregon as having emissions greater than 25,000 tons per year. The department notes that “freely allocating allowances to certain industries and businesses is important for mitigating potential emissions leakage” due to economic dislocation. We agree. This is a concern and shows only one of the difficulties in implementing a state-level cap and trade program.⁵ But we believe the more important concern is that identified on page 35, where the department notes that electricity intensive industries “could face higher costs as a result of increased electricity prices due to the cap and trade program.” This economic effect could be particularly great for energy-intensive, trade-exposed industries like the semiconductor and other high-tech industries. This effect could encourage these businesses to move out of state, move within the state causing localized economic effects that might not register in a state-wide economic analysis, or receive their electricity through another source. Direct access provisions, whereby larger electricity users can choose their supplier, and the low- to no-carbon electricity supply provided to the public utilities from the federal hydropower system deserve mention in the report.

Point of regulation – Electrical Utilities

The WCI design rules⁶ require the point of regulation for electricity to be the generator, when the generator is located within the jurisdiction or the deliverer of the electricity where the generator is located outside the jurisdiction (so called first jurisdictional deliverer or FJD). During the creation of those design rules, PGE made clear that the FJD method would be difficult to implement due to the way

⁴ Report at 30.

⁵ That California needs to “continually assess the evolving nature of the research and evidence of emissions leakage and modify industrial assistance as needed” (page 32) shows that the department should be more upfront with the legislature as to the difficulty of this task.

⁶ We understand that any state that seeks to utilize the WCI platform uses the design rules developed in 2008. See, <http://www.wci-inc.org/program-design.php>

that the electricity system works in the Pacific Northwest and the use of “system sales” for our region. A system sale is a sale made from a group of generating resources or the seller’s entire system. This has the benefit of being able to back up a sale with other resources should a specific unit become unavailable. There are important operational, market efficiency and reliability benefits by using system sales that are unique to the Pacific Northwest. The draft report does not discuss the point of regulation for electrical utilities and PGE believes this should be discussed in the final report. Both PacifiCorp and PGE import a significant amount of their energy used to serve customers and that energy would be subject under the FJD approach.

Inclusion of all sectors in the cap – scope

The report states that a “broad program covering most emission sources within the economy ... lower[s] the overall cost of the program.” We agree. We appreciate the recognition that transportation fuels, the largest contributor to GHG emissions in Oregon, should be addressed moving forward. With transportation included, the report suggests an approach that would cover approximately 80% of Oregon’s emissions. However, it also suggests eliminating some sources with “high transactional costs to comply with the program.” While agriculture and forestry emissions may meet that criterion, it is unclear why small landfills or wastewater treatment facilities do – especially considering that landfills and wastewater treatment facilities are often operated by governmental entities with the resources necessary to understand and implement any requirements for compliance. Further, landfills and wastewater treatment facilities may serve as a source for compliance, generating energy from methane, and thus should be included under the cap.

The report states that “if it is believed that uncapped sectors will not or cannot reduce their emissions, requiring more from the capped sectors may be necessary for the state to hit its goal.”⁷ This statement suggests that capped sectors would have to provide reductions greater than their contribution to statewide emissions. In our view, capped sectors should have a proportional share of the target related to their emissions. Requiring more from one capped sector than another, or requiring more from the entirety of the capped entities so uncapped entities can continue to emit is unfair, unequitable and would exact additional costs.

Allocation of allowances - General

Allowance allocation and distribution is a key attribute of any cap and trade program as the report properly notes. During the WCI design discussions, PGE strongly opposed allowing individual partner states to adopt their own methodologies for allowance distribution. This we feared would cause difficulties especially in the utility sector where power is often moved across state lines. We also were concerned about the economic effects on competitive businesses. The department notes that the WCI program has left allowance distribution to the states and those jurisdictions must “discuss and seek to address any competitive issues or concerns.” We agree, but we believe that the department should be clear with the legislature whether it believes that California can be moved to change their allocation

⁷ Page 17

methodology or whether standardization, in a fashion that would not disadvantage competitive Oregon businesses, is possible.

Allocation of allowances - Utilities

PGE believes that allowances should be provided to rate regulated utilities for free on the basis of historical emissions in order to mitigate costs for customers. In order to reduce our emissions, we will have to build or buy resources that emit less CO₂. Our customers will have to pay for those resources.

There are two specific statements in the allowance distribution section that PGE finds could be confusing to the casual reader. First is this sentence “auctioning allowances ... avoids the possibility that regulated parties which receive allowances for free still charge the market price for those allowances to their customers and pocket the resulting windfall profits.”⁸ And the second is where DEQ notes that the utilities “pose little risk of this and are thus more feasible recipients of free allocation.”⁹ The term “regulated parties” is used in the first sentence to refer to those regulated by the cap and trade program, but PGE notes that utilities are both regulated by the Oregon Public Utility Commission (OPUC) and would be regulated under the cap and trade program. The qualifiers in the second sentence, “little risk” and “more feasible” suggest that the first statement applies to regulated utilities. In our opinion, regulation by the OPUC ensures that electric and natural gas utilities would not benefit from any windfall and free allocation causes no risk in that regard.

The report also notes that freely allocating allowances can “hinder ... the resultant emission reductions that are sought by a cap and trade program.”¹⁰ We note that the department itself argues that one of the benefits of a cap and trade program over a carbon tax is that cap and trade provides certainty over emission levels.¹¹ The method of allowance allocation should not affect the emissions reductions, only the price paid for those reductions.

The adoption of a cap and trade system may increase inequity between utilities within the state due to historic investments and the ability of some utilities to take advantage of low carbon electricity from the federal hydropower system. The department should discuss the need to ensure that electricity customers should not be penalized for choices made and policies adopted decades ago. In looking at the economic effects of a cap and trade program, the department should make certain that it is not only assessing the overall economic effects on the state, but also the economic effects that may occur within the state.

Offsets

Since the mid-1990s, Oregon has required any entity building a fossil-fuel generating facility to either construct offsets or pay a statutorily determined rate to The Climate Trust to invest in offsets. PGE’s customers have paid millions of dollars under this statutory requirement for the construction of the Port

⁸ Page 19

⁹ Id.

¹⁰ Page 19

¹¹ Page 6

Westward I and II facilities and the Carty Generating Station. These funds have been invested in offsets that have been already working to reduce the effect of emissions from those facilities. The department should mention this program in the offset section of the report and also discuss ways that Oregon utilities can obtain credit for these offsets within the cap and trade program. To the extent that customer moneys have already been invested, those benefits should be captured by the program.

The corollary to that point is that to the extent that new plants are constructed under a future adopted cap, those plants should not be subject to the climate offset provisions. Such an outcome would merely charge customers twice for the same reductions needed.

Thank you for the opportunity to provide comments. We look forward to reviewing the economic analysis and the final draft when it becomes available.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Brendan J. McCarthy", is written over a light blue rectangular background.

Brendan J McCarthy
State Environmental Policy Manager
Portland General Electric

Comments of Powerex Corp. on
The Oregon Department of Environmental Quality's
Study of a Market Approach to Reducing Greenhouse Gas Emissions

Submitted by	Company	Date Submitted
Brian Moghadam for Connor Curson 604.891.6028	Powerex Corp.	December 22, 2016

Powerex Corp. ("Powerex") appreciates the opportunity to comment on the Oregon Department of Environmental Quality's November 21, 2016 Draft Considerations for Designing a Cap-and-Trade Program in Oregon.

Powerex is a corporation organized under the Business Corporations Act of British Columbia, with its principal place of business at Vancouver, British Columbia, Canada. Powerex buys and sells wholesale power, renewable and gas products in the United States and Canada. Powerex is an active participant in energy markets across Western North America, including carbon markets and markets for renewable electricity resources.

Powerex supports the use of cap and trade as an efficient mechanism for reducing the compliance costs of emissions mitigation while providing flexibility for covered entities to manage their compliance and respond to changes in the economy. Linking to other jurisdictions in a multi-jurisdictional carbon market, such as the existing Western Climate Initiative ("WCI") market, can greatly enhance the ability to manage compliance costs and provide maximum flexibility to industry.

Powerex has long participated in the California Cap and Trade market. The California market has progressed through a long evolution, and is now a well-developed model. Building on California's experience will simplify design and will provide familiarity and confidence to covered entities and market participants.

Once again, Powerex appreciates the opportunity to provide these comments. We look forward to participating in any future process on both finalizing the DEQ's draft report, and any further cap and trade program design discussion that may take place in Oregon.

From: Hannah Sohl
Sent: Wednesday, December 21, 2016 1:06 PM
To: colin.mcconnaha@state.or.us
Subject: Oregon GHG Study

Hey Colin:

Thanks for all your work on the GHG study for Oregon. Would you be able to send me a list of all the entities and their pollution levels that would be covered under a 25,000 cap, including where in Oregon they are located?

We are working with our communities to explain the cap and trade concept, and it would be really helpful to be able to answer questions about which entities are polluting at which levels.

Thanks, and have a great holidays!

Hannah

--

Hannah Sohl
Director
[Rogue Climate](#)

Dec 21, 2016

Colin McConnaha
700 NE Mulnomah St #600
Portland Oregon 97232

RE: Comments on DEQ Public Review Draft on Cap and Trade Program for Oregon

Dear Mr. McConnaha

Thank you for the opportunity to review the above captioned document. My own comments are based on my organization's ongoing analysis of climate stability policy, especially the functionality of California and Quebec jurisdictions adopting a Cap and Trade (C&T) policy and compatibility with Oregon policy goals.

Overall I found the draft document concise and sound, and it extended my own prior understanding of the C&T policy approach to limiting GHG emissions. Here is a very brief summary of notes I made while reading the draft report:

1. PP 8-9, review of extant market based policies: You mention BC's tax and the EU ETS. Many people draw attention to the BC revenue neutral tax as a viable policy without utilization of the most current meta analysis of that BC's emissions are also again on the increase. Furthermore, the NeRC PSU study economic modeling found a revenue neutral tax needed to be in the beginning range of \$60-150/ton CO₂e. Thus BC's tax of \$28 (current value) is probably one reason it is not accomplishing a goal of reducing emissions. On this point, I draw attention to Sweden and Denmark (since you are also drawing attention to the EU generally). Sweden's emission tax is approximately [\\$150/ton](#), and Sweden has emissions per capita less than half Oregon or the United States, notwithstanding Sweden's cold climate, industrialized economy, and consistently robust economy. The main points I make here are: 1) in mentioning a carbon tax policy, such policy effectiveness depends on the strength of the market signal the fee sends; 2) for a revenue neutral tax to be effective, evidence suggests that the market price of the externality exceed \$100/ton; 3) a jurisdiction with a high external pricing mechanism should be included in your discussion; and 4) either [a carbon tax or a C&T could work](#) depending on their respective designs.

2. P.13, final paragraph -- Regarding the discussion of the miscellaneous emissions which will not be encompassed at equal or less than 25,000MMtons/year: The trading and selling of units of emission reduction units from these small scale activities could be obtained through credits, a characteristic within AB32. The challenge on this point is that certain cultural sectors, like disadvantaged communities feel that hot spots will persist because large emitters will obtain allocations to pollute disproportionately in low income communities by purchasing credits offsite. It turns out this observation is mentioned later in the report, so maybe just allude by reference that more will be said about this further along in the report.

3. P.14, description of "entities": It appears that the report occasionally confuses the meaning of entities and facilities. At least for me, and I've found with others, it is necessary to distinguish an "entity" which I take to be the company which is involved, and the "facility" which is a geographic specific locale emitter. Therefore, it is likely that some entities will have multiple facilities and the count of entities and facilities and for purposes of numerical representation the distinction should be made clearer.

4. P17, second paragraph -- the discussion of emission reduction slope: This discussion point could be stated more clearly. As is, it deserves to be noted that early emission reductions have a kind of reverse discount rate, that it makes reaching the ultimate targets easier when early reductions are steeper. It is also quite likely that low-hanging fruit theory of early reduction means that early action incentives have disproportionately high payback.

5. P20, sixth paragraph -- "...aside from the administrative systems...": Yes, management of the auction does have administrative burden although it is worth mentioning the considerably lessened load if Oregon were to join the existing program run by WCI Inc?

6. P21 "five broad purposes": Revenue directed toward Research and Development as a investment purpose is conspicuously missing here. in the natural resource realms, research into adaptation, such as timber management to lower catastrophic fires, water efficiency, genetic adaptations of plant materials, agricultural and forest management practices. Similar applications in building trades, communication and transportation may similarly apply.

7. P24, first paragraph bullet list: Smaller landfills (below 25,000 MtonsCO2e) may also be suitable for voluntary inclusion.

8. P32 Paragraph 3 -- "Communities": I believe you mean 'geographically' localized communities here, as distinguished from the broadly different meanings which "communities" may otherwise imply.

9. P38 Paragraph 1 -- "...health insurance...": This clause could be helpfully expanded to include "...health insurance or alternative economic resources...". This is because there are numerous means which may be utilized by different sectors of the population.

10. P38 Para 2 -- More meaningful to me than your example of "more efficient appliances" would be more efficient vehicles and weatherization, the big ticket items which contribute major efficiency improvements.

11. P48 Para 2 -- Interactions with RPS amendment 1547: This is the stated expectation of 1574 proponents although some analysis by others posits that 1574 will have neutral to negative emission impacts on Oregon, due to fuel stitching to CH4 (e.g. PGE amending 600MWH plant to 1400MW) and simply resource bookkeeping shuffles across the western grid (kind of like gerrymandering). Current fracked CH4 is being found in some research to be more intensive on global temp. increase than direct combustion of coal.

12. P59 final paragraph - C&T design complementary to Clean Fuels: This paragraph seems rushed and incomplete. It is my opinion that the two programs can be treated as complementary, where compliance is integral without overlapping or double jeopardy. In my view, the C&T is the overarching limit, not a second overlay.

13. P60 final paragraph - Energy Facility Siting Council policy resulting in exclusive use of the "monetary path": The EFSC monetary path is a classic example of pricing failure; the reason the monetary path is being exclusively used is the Council has failed to exercise its legitimate charge to match the fee base to externality damage to atmospheric commons. The current fee is below all published scientifically rationale for economic burden to the public. Thus, your main point is well taken, and the EFSC's pricing mechanism could be replaced with a C&T alternative which more realistically reflects the social/environmental costs of emissions within EFSC current purview.

In conclusion, I believe this DEQ report is on the right path. I appreciate the opportunity to make these few comments on the current draft and look forward to the final document.

Sincerely, Tom Bowerman

Tom Bowerman, Project Director



Western States Petroleum Association
Credible Solutions • Responsive Service • Since 1907

Catherine Reheis-Boyd
President

December 21, 2016

Mr. Colin McConnaha
Oregon Department of Environmental Quality

Re: WSPA Comments on the Oregon Department of Environmental Quality DRAFT: Considerations for Designing a Cap-and-Trade Program in Oregon

Mr. McConnaha:

The Western States Petroleum Association (WSPA) is a non-profit trade association that represents companies that account for the bulk of petroleum exploration, production, refining, transportation and marketing in the five western states including Oregon. WSPA appreciates the opportunity to provide the Oregon Department of Environmental Quality (DEQ) our comments regarding the DRAFT: Considerations for Designing a Cap-and-Trade Program in Oregon. Our member companies would be affected by any proposed Cap-and-Trade Program.

As the study states, its goal is to lay out "broad policy choices" and "does not examine significant details that would need to be explored through subsequent analysis." WSPA's analysis of the study is high level and is not exhaustive or meant to explore each and every potential design element of a potential Oregon program.

As Oregon considers policies to reduce greenhouse gases, WSPA supports a well-designed, market-based approach as the most cost-effective option.

Unique Characteristics of Oregon

A primary concern with the draft is that there is a heavy reliance on the idea that programs in other jurisdictions, such as California, are working well, and that Cap-and-Trade programs can easily be replicated in diverse jurisdictions. It is important to note that each jurisdiction requires careful, individualized analysis so that undue pressure is not put on citizens of any one jurisdiction. While DEQ is correct that a broader marketplace could reduce costs for citizens of Oregon, the Oregon economy is fundamentally different from the other jurisdictions in the California-Quebec Cap-and-Trade Market.

The study assumes in many places that such a policy would have little economic impact. We believe this assertion is not only factually unproven, but is a disservice to Oregon businesses and consumers who would be impacted by the policy. Moreover, a mistaken belief that the impact is small may lead Oregon policymakers to downplay the importance and necessity of important design features that would reduce the impact of the program. In a recent article in the *LA Times*, Professor Jim Sweeny (an advisor to the state on economic issues related to carbon policy) from Stanford University was quoted as saying: "It is dubious as to whether the California goal will be achieved without large economic costs."

The Oregon analysis points to the idea that “CA has the highest manufacturing output of any state,” as further evidence that California climate policy is not causing a significant economic impact. In fact, data suggest that California’s manufacturing base is eroding. For example, according to the California Manufacturers and Technology Association, between 1977 and 2000, California received 5.6% of all new manufacturing in the United States. Between 2001 and 2015, that number fell to 1.8%. (<http://www.cmta.net/multimedia/20160720mnfginvestsince77.pdf>).

Further, in 2015, California ranked dead last amongst the 50 states in manufacturing investments per capita. Because of this erosion of the state’s manufacturing base, California continues to significantly lag the nation in manufacturing job growth – with a 2.8% growth rate since 2010 vs 6.9% for the rest of the country¹. This is not to say that action to address climate should not be considered, but rather that a serious (not anecdotal) analysis of the impact of such policy should be undertaken, as should an analysis of program design elements that could reduce impact. The choices made in design can have massive influence on the economic impact.

Emissions from manufacturing and industrial sources are a significant component of the California/Quebec programs, relative to Oregon. By contrast, in Oregon the majority of emissions come from residents of the state through household energy use and transportation; and from commercial enterprises. A strong recommendation to the legislative body should include a clear understanding of how such a program will affect citizens of Oregon relative to how the same program affects citizens of other jurisdictions.

Design Premise

Another concern with the Oregon draft is that it focuses on literature and analysis that ignore the design flaws of existing programs, such as California’s (i.e., suggests that programs with significant flaws are working well). Specifically, the California Air Resources Board (ARB) is proposing major and permanent programmatic changes based on what are likely to be transitional market conditions that would serve to only weaken cost containment further. Faulty major assumptions are: (1) oversupply of allowances as a permanent condition that must be addressed by the regulation, rather than the market, and (2) allowance prices will continue to remain low. Both of these assumptions are unfounded and lead to unnecessary regulatory interventions in the market and a continuing apathetic approach to cost containment. Regulatory or legislative intervention to relieve a market crisis will inevitably harm both the function of California’s program and its reputation, eroding the confidence of the compliance entities, market participants and those responsible for implementing carbon reduction programs in linked jurisdictions. In short, California’s program is not a good example to follow.

As ARB’s own Emissions Market Advisory Committee stated, “It is far better to have a transparent and credible process for limiting allowance prices established in advance than relying upon ad hoc emergency measures during periods of stress.”^[1] It is imperative that economic experts be consulted during the rulemaking process with regard to potential cumulative market impact of regulatory changes and adjust these program features as necessary to minimize market volatility and maximize program cost containment.

¹http://cmta.net/multimedia/20160516_mfg_investments_by_state_2015.pdf

² *Price Ceiling in the Greenhouse Gas Emissions Cap-and-Trade Market*, Severin Borenstein, James Bushnell and Frank A. Wolak, Emissions Market Assessment Committee, November 8, 2013.

Complementary Policies

The report states that “the flexibility of market-based mechanisms can achieve reductions at lower cost than more prescriptive regulatory programs.” However, the report goes on to describe a pathway that would keep command and control features in addition to a market-based approach. These so-called “complementary policies” may not result in incremental or additional GHG reductions. They only shift reductions from occurring in the most effective manner to a manner prescribed by regulators – and in doing so the cost of the program is significantly increased. Section 7, which discusses the role of these so-called complementary policies, falls victim to many of the fallacies associated with analysis of the policies.

As noted above, the Cap-and-Trade program in California on which the proposed Oregon program is to be modeled is currently undergoing significant review. California’s overly complicated mix of programs, which includes complementary policies, such as the Low Carbon Fuel Standard (LCFS), may not be yielding the desired emission reductions. In the three years since the California program launched, it is premature to say that the program is ‘working’ with regard to actual emission reductions versus actual leakage. Oregon should be wary of adopting overlapping, duplicative and costly regulations.

DEQ’s literature selection itself may result in inadvertent confirmation bias.

Analysis as long ago as 2012 concluded that there are risks in adopting both complementary policies and market mechanisms such as Cap-and-Trade. The report *Implications of Policy Interactions for California’s Climate Policy*, Schatzki and Stavins, commented as follows:

“Of concern to any jurisdiction considering a new cap and trade program with a layered approach is that a complementary policy can shift emission reductions to lower-cost emission reduction activities only if it targets non-GHG market failures, such as information problems or behavioral biases regarding household energy use, or targets sectors not covered by the cap and trade system.” Stavins, Pg2

To restate, Oregon should properly analyze and be wary of any option that would include both a LCFS and Cap-and-Trade.

Thank you for your consideration of WSPA's comments. We welcome any questions or comments you might have. Please contact me at this office or Jessica Spiegel of my staff at (360) 352-4512 or email Jessica@wspa.org.

Sincerely,



cc: Jessica Spiegel, WSPA

From: HEUSER Jason

Sent: Friday, December 23, 2016 2:54 PM

To: MCCONNAHA Colin <McConnaha.Colin@deq.state.or.us>

Subject: Comments re: DEQ's Study of a Market Approach to Reducing Greenhouse Gas Emissions

Thank you for the opportunity to comment on DEQ's draft study on market based approaches to reducing greenhouse gas (GHG) emissions. The Eugene Water & Electric Board (EWEB) would like to make the following comments:

- Direct, economy wide, technology neutral, and regional pricing of carbon is the most efficient way to reduce GHG emissions.
- A market based approach for Oregon that is linked to other states and provinces is the best approach. Setting a uniform carbon price regionally helps address competitive issues and a larger footprint for trading allowances would provide better liquidity and efficiency.
- To the extent allowances are allocated without cost to load serving entities in the electric sector (presumably with requirements to be utilized on behalf of ratepayers), early action by those load serving entities in energy efficiency, demand response, and renewables, should be taken into account.
- The market design should not disincentivize the electrification of the transportation sector.
- Local offsets (Oregon) should be prioritized as much as feasible so as to leverage the peripheral benefits of cleaner air/water, fish/wildlife, and general conservation benefits within Oregon. This could be done perhaps through a multiplier incentive for local offsets.
- With regard to how a market based mechanism interacts with other Oregon GHG reduction policies, we strongly urge DEQ to consider how using a higher price or more stringent cap and reduction glidepath, while simultaneously retiring existing indirect policies (i.e. Oregon's Renewable Portfolio Standard) could result in an emissions reduction glidepath that would be more cost effective overall on a \$/ton basis.

Thanks you for considering this input.

Jason Heuser

Legislative Affairs Coordinator

Eugene Water & Electric Board