

**Summary of the 2017 Joint Meetings of the
Senate Environment and Natural Resources Committee
House Energy and Environment Committee**

Introduction

During the 2017 legislative session, the Senate Environment and Natural Resources Committee and House Energy and Environment Committee held nine joint informational hearings focused on issues related to climate change and a cap-and-invest program and policies:

February 3, 2017: 2017 Report to the Legislature, Oregon Global Warming Commission

February 20, 2017: Economic and Emissions Impacts of a Clean Air Tax or Fee in Oregon (SB 306, 2013); Considerations for Designing a Cap-and-Trade Program in Oregon; and 2017 Oregon Climate Assessment Report

March 7, 2017: Overview of Risky Business Report and Overview of the E2 Report

March 14, 2017: Carbon Markets 101

March 21, 2017: Overview of Associated Oregon Industries Report: Oregon Cap and Trade - Analysis of Economic Impacts of Senate Bill 1574 (2016) and The Mechanics of the North American Carbon Market

March 28, 2017: Rural Economies and Environmental Justice Communities: Impacts and Opportunities

May 1, 2017: Oregon Business Leaders' Greenhouse Gas Emissions Reduction Task Force Report: "Business-Smart Strategies for Decarbonizing Oregon's Economy"

May 17, 2017: Labor Perspective on Climate Policy

June 12, 2017: California Cap and Trade Program and Rural Communities

This paper summarizes the information received by the committees at these hearings and provide links to the materials submitted by presenters.

February 3, 2017: 2017 Report to the Legislature, Oregon Global Warming Commission

Meeting Materials:

<https://olis.leg.state.or.us/liz/2017R1/Committees/SENR/2017-02-03-15-00/MeetingMaterials>

Angus Duncan, Chair Oregon Global Warming Commission

Jessica Shipley, Senior Policy Analysts, Oregon Department of Energy

The Oregon Global Warming Commission (OGWC) biennial report to the legislature typically includes current greenhouse gas inventory data and updated emission projections. The relevance of the 2017 report is improved by using data no more than six months old in the transportation and utilities sectors, and includes a summary of new work such as forest carbon accounting efforts.

The report addresses six distinct sections:

1. Oregon's Historical GHG Emissions and GHG Inventory. The new data points included in the report are from 2014 and 2015. Oregon's GHG emissions peaked in 1999, experienced a mini-peak in 2007, and were flat 2012-2014. In 2015, there was an emissions uptick mostly due to increases in the transportation sector. Transportation was the highest source of GHG emissions in that year at 37%, followed by electricity use at 30% and natural gas at 12%. Projections to 2050 indicate there will be a decrease in emissions in 2030 due to the passage of Senate Bill 1547 (revising the Renewable Portfolio Standard). The takeaway is that under existing policies, there will be a 10 million metric ton CO₂ gap in 2020 between actual GHG emissions and GHG goals, and a 44 million metric ton gap in 2050.
2. Electricity Options: Efficiency, Gas and Renewables. It is important to find an appropriate mix of policy and technology to drive utility emissions down while providing reliable power and preventing price spikes. Two recent events are substantially shaping the landscape of electricity options: 1) Senate Bill 1547 (2016), which requires 50% new renewables by 2040 and the elimination of coal from electricity supply, and 2) the decision to close PGE's coal plant in Boardman. One outstanding issue is the need to identify a replacement resource following the Boardman closure. PGE is considering one approach that involves a large baseload gas plant, and one approach that is mostly renewables-based with some integrating gas. Both approaches meet reliability criteria. If PGE selects the gas baseload option, emissions will start increasing again, creating further divergence between GHG goals and emissions in the utility sector between 2020 – 2035. Another outstanding question is whether Pacific Corps will wait until 2030 to end service from coal plants outside of Oregon, or close plants on an earlier timeline. A strong trend in the last 8-10 years has been the rapid drop in installation cost of solar and wind generation, and an equally dramatic drop in battery storage technologies. The OGWC recommends utilities take advantage of these declining cost curves and the opportunities they present to keep emissions trajectories going

downhill.

3. Transportation Emissions. Transportation sector emissions have started to increase in the past two years for two identifiable reasons: 1) Oregon highway vehicle miles travelled have been increasing since 2010, likely due to recession recovery and lower gasoline prices, and 2) people are buying bigger – SUVs. SUVs accounted for 65% of new auto sales in 2015, representing an increase of 14% over the previous year. Clean transportation strategies include transit, electric vehicles, and other miscellaneous initiatives. Transit strategies consist of extended service and accessibility so that individuals who are unable, or who don't need or want to drive, have meaningful alternatives. For those who do need or want to drive, electric vehicles offer very low GHG emissions. Electric vehicles are increasingly cost-competitive with traditional vehicles. For example, the cost of a Chevy Bolt is in the mid-\$30,000s, and travels 200 miles on a single charge. The cost of electric vehicles is expected to continue to decrease, particularly as battery costs decrease.

4. Forest Carbon Accounting. In the 2010 OGWC "Roadmap," there was insufficient forest carbon data on which to base policy decisions. In 2016-2017, OGWC convened a Forest Carbon Task Force that includes academic, agency, and industry experts to identify the information needed, and to quantify and inventory total forest carbon by region, ownership (public and private), pool (carbon in living trees, dead trees, soil and roots, and smaller pools), and movement between pools and the atmosphere. The U.S. Forest Service has been the Task Force's primary partner and methods have been based on ground-sourced data transects. Results indicate there are about 11 billion tons of carbon dioxide equivalent in Oregon forests, and Oregon's total carbon emissions are approximately 60 million tons. This suggests there is a dynamic between carbon gains or losses based on forest management decisions. Detailed results by region, ownership, and pool are available. The Task Force has the following work to complete before presenting its findings to the legislature: 1) quantify historical carbon flux among pools, 2) describe future climate change-induced carbon flux (e.g., wildfire extent and severity), 3) describe effects of human interventions on forest carbon content (e.g., harvest, forest health thinning), and 4) identify net effect of human interventions after displacement of carbon emissions (e.g., structural wood replacing steel, forest biomass-to-energy replacing fossil fuel generation). Oregon may be the only state doing this kind of forest carbon accounting work and there is a high level of enthusiasm among participants.

5. Adaptation and Preparation. The 2017 OCCRI Climate Assessment documents extreme heat events, decreased snowpack, and altered drought, flood, landslide, wildfire, and sea level rise occurrence. In 2010, agency directors and staff produced an "Adaption Framework" with many section headings, but not much detail on what Oregon should be doing to prepare for climate change. The OGWC is responsible for tracking carbon emissions and identifying carbon policies to reduce those emissions as well as helping prepare the state to deal with

the effects of climate change. According to Angus Duncan (OGWC Chair), “neither the commission or the state has done its job in this respect.” Little has been done to consider climate change’s effect on people, infrastructure, natural resources, or health. “The can has been kicked down the road until now, and we hope to pick it up in 2017 and 2018.”

6. State Climate Policy Challenges: Delivery, Oversight, and Accountability. OGWC is requesting authority, budget, and staff support (\$1 million per biennium). The commission needs financial support to manage the workload and to analyze cost-effectiveness. Right now, policy options are a menu with no prices. It is challenging for legislators to know which actions to prioritize, and which to defer. The OGWC would like authority to task state agencies with significant roles in either the emissions or adaptation/preparation agendas, to identify their respective shares of the state’s program, outline benchmarks for measuring progress, and to submit annual reports. The OGWC could then compile that information into a more comprehensive report to the legislature that includes areas where the state is making progress, not making progress, and reasons for lack of progress.

Key Report Recommendations:

- Include “clean transportation” in any 2017 transportation legislation, especially transit and electric vehicles.
- Defer enacting new forest management policies affecting carbon balances in Oregon’s forests until the Forest Carbon Accounting Project is complete.
- Direct state agencies to work with the OGWC to set agency climate benchmarks, and to provide annual progress reports to the OGWC.
- Provide the OGWC with sufficient resources – staff and budget – to enable execution of its responsibilities, including accountability, a cost-benefit analysis, and citizen communication.

February 20, 2017: Economic and Emissions Impacts of a Clean Air Tax or Fee in Oregon (SB 306, 2013); Considerations for Designing a Cap-and-Trade Program in Oregon; and 2017 Oregon Climate Assessment Report

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Economic and Emissions Impacts of a Clean Air Tax or Fee in Oregon (SB 306, 2013)

Tom Potiowsky, Director, NW Economic Resesarch Center, Portland State University
Mazen Malik, Senior Economist, Legislative Revenue Office

Senate Bill 306 (2013) directed the Legislative Revenue Office (LRO) to conduct a study of the economic and greenhouse gas emissions impact of implementing a clean air tax or fee in Oregon.

LRO partnered with Portland State University to produce the 2014 Carbon Tax Report. The study objectives included investigation of carbon tax level and tax base, impacts on key industries and communities, impacts on other taxes and stability of other laws, economic and GHG impacts, and equity issues.

Report Methodology:

- Established economic and emissions baselines for comparison to different carbon tax scenarios.
- Estimated price changes to gasoline, natural gas, and electricity under tax scenarios ranging from \$10 to \$150 per ton.
- Modeled GHG emission reduction under carbon tax scenarios.

Report Findings:

- GHG reductions depend on the price of millions of metric tons of carbon emitted.
- Significant GHG reductions can be reached. At approximately \$45/ton, the 2020 10% GHG reduction goal would be reached. 2050 GHG reduction goals would not be met under any tax scenario.
- Revenue generation potential can range from \$450 million to a few billion dollars annually.
- Economic impacts are small relative to the broader economy, and differ by region, income, and industry. The Portland metropolitan area would produce the largest reductions because it is the highest emissions producer.
- Negative impacts can be offset with targeted expenditure, investment, or economic development incentives.

Considerations for Designing a Cap-and-Trade Program in Oregon

Palmer Mason, Senior Legislative Advisor, Oregon Department of Environmental Quality

Colin McConaha, Senior Climate Policy Advisor, Oregon Department of Environmental Quality

Legislative Context for Cap-and-Trade Study:

- 2007: Legislature adopts GHG reduction goals and Renewable Portfolio Standard (RPS)
- 2013: Carbon tax study
- 2015: Clean Fuels Program (Senate Bill 324 lifted the sunset on the clean fuels program and directed DEQ to fully implement it)
- 2016: Healthy Climate Act (Senate Bill 1547)
- 2016: DEQ directed to conduct cap-and-trade study (Senate Bill 5701)
- 2017: Cap-and-trade bills introduced

Legislative Direction for Cap-and-Trade Study:

In February 2016, the legislature directed DEQ to study how a market-based approach to reducing GHG emissions in Oregon would function. The legislature required the report to address four topics of interest:

1. Identify the scope and stringency necessary to meet Oregon's GHG goals and to link with other jurisdictions.
2. Describe the interaction of a cap-and-trade program with existing state programs and policies, including the Renewable Portfolio Standard and the Clean Fuels Program.
3. Identify mitigation strategies for negative impacts on businesses, including other jurisdictions' strategies for minimizing leakage, and adapting those strategies to Oregon. (Leakage is the potential for trade-exposed businesses to move out of state to avoid increased carbon-based energy costs.)
4. Identify effects on disadvantaged populations and rural communities, including other jurisdictions' strategies for addressing these unique concerns, and adapting those strategies to Oregon.

DEQ's study approach involved looking through existing literature and policies in other jurisdictions, hiring a consultant for economic modeling, soliciting stakeholder input through a public process, and generating this report.

What is Cap-and-Trade?

A cap-and-trade program's cap is the overall limit the state establishes on GHG emissions. The program defines GHG sources covered by the cap and limits their collective emissions - it is not a cap on a particular source. The state enforces the limit by requiring sources to hold "allowances" to cover every ton of GHG they emit. The state can decide how it issues allowances into the system: by selling allowances at auction, or giving allowances to regulated parties for free, or both. Once allowances are introduced and a marketplace is established, those allowances can be bought and sold, and that is the trade element of cap-and-trade.

Study Findings:

1. Differences between cap-and-trade and a carbon tax
 - Cap-and-trade provides certainty for emission reductions by establishing an overall GHG limit, and by controlling cap reductions over time. Cap-and-trade does not provide certainty on price: the price to emit is established by the marketplace - by the relationship between the overall supply of allowances and the demand for those allowances.
 - A carbon tax explicitly defines the price of carbon. A carbon tax does not provide certainty of emissions reductions, it simply introduces a fee on those emissions. Modeling can be used to estimate the market response to a given tax level, and how emissions might be reduced at a certain level.

- Cap-and-trade yields emission reductions where they are cheapest for emitters, due to the market mechanism.
- Cap-and-trade offers more flexibility to mitigate economic impacts on businesses. The state controls allowance allocation, and can directly allocate some allowances to business at high-risk for leakage to offset or defray emission costs. Under a carbon tax, there is no analogous tool. Both cap-and-trade and a carbon tax could induce leakage.

2. Key design elements of a cap-and-trade program

- Cover as many emission sources as possible. A program in Oregon could likely cover a little more than 80% of emissions, including transportation fuels, natural gas, and electricity.
- Align cap with Oregon's GHG goals.
- Include cost containment mechanisms. There is no price certainty with a cap-and-trade program because the marketplace establishes the price. However, there are benefits to ensuring against price extremes by establishing minimum and/or maximum auction prices for allowances. Cost containment would likely also be required for Oregon to link to other marketplaces.

3. Options for state distribution of allowances

- Allowances can be distributed in two key ways: by auction and by free allocation to targeted entities.
- One benefit of auctioning allowances is that a clear price signal is established for regulated parties, which will help increase understanding of the value of carbon emissions. In addition, the state wouldn't have to manage allocations.
- Direct allocation of allowances to businesses may minimize leakage, and allocation to utilities can protect ratepayers.

4. Possible revenue uses

- Several hundred million dollars of allowances would likely be generated from auctions annually.
- Revenue from transportation would likely be restricted to spending on roads and bridges via the Highway Trust Fund due to state constitutional requirements.
- Remaining revenue could be invested to benefit disadvantaged and rural communities, minimize impacts to utility rates, further reduce emissions, and/or fund other state priorities.

5. Potential economic effects

- Statewide effect would be quite small (less than $\pm 0.1\%$ of gross state product).

- The small effect is not evenly distributed across economic sectors. Sectors more reliant on fossil fuels may experience a greater negative effect; less reliant sectors would see a more positive benefit.
 - Negative effects are disproportionately borne by low income households and rural parts of the state unless corrective mechanisms are implemented with program revenue.
 - Public health benefits were not modeled. GHG reductions would drive down emissions of co-pollutants (e.g., particulate matter) that pose a localized human health risk or effect. This study did quantify co-pollutant effects. Literature from northeast states and California suggest there are some significant human health benefits resulting from cap-and-trade implementation.
6. Interaction between cap-and-trade program and Oregon’s existing climate policies
- A cap-and-trade program could be designed to complement existing programs.
 - This study focused on the interaction between a cap-and-trade program and the RPS, the prohibition on importing coal-generated electricity, and Oregon’s Clean Fuels Program.
 - There is a risk of duplicating costs. Utility ratepayers are already paying for existing emissions reduction programs. A cap-and-trade program would have to be designed to avoid overlap. Offset methods could include the allocation of allowances directly to utilities to avoid the costs of the program, or recycling auction revenue back into the sector to offset ratepayer costs. The PUC would likely play an important role to ensure that ratepayers benefit.
 - Policies tailored to specific economic sectors would still play an important role, particularly in the early years of introducing a cap-and-trade program. At the outset, a cap-and-trade program doesn’t send a particularly strong, prescriptive signal to utility or transportation sectors to transform those markets to achieve state GHG goals, and to comply with a cap aligned to those goals. Setting goals by sector helps transform those sectors in a gradual way.

2017 Oregon Climate Assessment Report

Kathie Dello, Associate Director, Oregon Climate Change Research Institute

The Oregon Climate Change Research Institute (OCCRI) produces the Oregon Climate Assessment Report (OCAR). It released the first OCAR in 2010; it was a comprehensive review of climate change research to-date. In 2013, the OCAR focused on climate change occurrence and impact in the Pacific Northwest region. The most recent 2017 OCAR is a shorter update to previous OCARs, and includes scientific literature from summer 2013 through summer 2016. To produce these reports, OCCRI staff read, cull, and compile relevant scientific literature from peer-reviewed sources. The 2017 OCAR incorporates 350 scientific papers.

Bottom Line:

- Climate change is, and will continue to impact Oregon through coming decades. It is already here, not just an expected future phenomenon.
- GHG reductions are necessary, but not enough. Oregon must adapt to change.

Report Findings:

- Climate change will continue to impact the health of Oregonians. Vulnerable populations are particularly at risk. Women, children, elderly, rural, and tribal individuals are disproportionately impacted by climate change.
- Oregon will continue to warm. This report indicates some regional trends can now be attributed to human activity (e.g., the 2014-2015 snow drought). This is a rapidly evolving field in climate science. Scientists are now able to examine some large weather events and determine if they were more likely because of climate change.
- Declining mountain snowpack is having and will have significant impacts on water resources.
- Coastal flooding and erosion has increased. Oregon has many assets at less than four feet elevation. Other ocean issues associated with climate change will impact Oregon's fisheries.
- Changing climatic suitability and disturbances will drive forest vegetation transformation. Increasing wildfire frequency and intensity as well as pest and disease distributions will affect forest composition. Fine particulate matter from wildfires is expected to increase by 160% by mid-century across the entire western U.S., causing adverse human health impacts.
- Agriculture will experience short term gains (e.g., warmer temperatures will catalyze greater yields and allow growth of new crops). Long-term adaptations to heat stress and water availability will be necessary.

Oregon Climate Change Modeling:

- Globally, 2016 was the warmest year on record based on measured data.
- Climate change modeling consists of decision-making scenarios about whether to reduce GHG emissions, and by what degree.
- Most graphic model outputs show temperature observations for the 20th century to the present, and multiple possible trajectories from the present into the future.
- Scientists expect a warmer Oregon by mid-century. Precipitation outcomes are less clear. Some years will be wet years, and others dry. On average, models do show drier summers, which may impact seasonal water resources.
- Snow is the "smoking gun" of climate change in the western U.S., and especially in Oregon. Historically, the National Resource Conservation Service measures snowpack on April 1 of each year to evaluate the quantity of water that will be available for summer use. Oregonians rely on mountain snowpack; it's the most important source of stream recharge, reservoir fill, and water resource for fish, agriculture, and recreation.

- Climate modeling shows that future warming will decrease April 1 snow water equivalency (snowpack) by mid-century. The Cascades are fairly low in elevation compared to other mountain ranges (4,000 - 6,000 ft). Precipitation will increasingly occur as rain rather than snow, and snow will melt out sooner in the season. There will be implications for water needs at certain seasonal moments in time.
- Oregon can expect to have good snow years from time to time. However, conditions similar to 2015 will become more frequent in the future. Planning for that future is very important. In 2015, many ski resorts couldn't open. Washington State recently reported a \$0.5 billion agriculture loss due to the 2015 drought.

March 7, 2017: Overview of Risky Business Report and Overview of the E2 Report

Meeting Materials:

<https://olis.leg.state.or.us/liz/2017R1/Committees/SEN/2017-03-07-17-30/MeetingMaterials>

Overview of Risky Business Report

Jamesine Rogers Gibson, Union of Concerned Scientists, provided an overview of the Risky Business Report.

The Risky Business Project is a non-partisan effort focused on economic risk and opportunities of climate change in United States. The Project commissioned an independent risk assessment to provide data on climate risk to businesses and investors through 2100.

The Project analyzed risk at a regional scale for three sectors (energy, infrastructure, and commodity agriculture) and the overarching issues of health and labor productivity. The analysis did not take account of potential adaptation measures.

Key report takeaways:

- The United States economy is vulnerable to a significant and diverse number of risks due to climate change. Remaining on the current greenhouse gas emission path will only make these risks worse and more expensive. Examples of risk include rising sea levels and storm surges that will more than double cost of coastal property loss; the average number of days over 95 degrees Fahrenheit (F) will double or triple, affecting labor productivity, health costs and energy systems.
- Oregon-specific climate risks identified in the report include: An eightfold increase in days with temperatures greater than 96 degrees F each year and rising temperatures by mid-century that could result in a 54 percent increase in the annual burn area in the western US. The analysis did not look at other major risk in Oregon, including water availability and drought, ocean acidification or tourism.
- Immediate actions to address mitigation/resiliency and to reduce greenhouse gas emissions can reduce the worst risk. Modest global emissions reductions can avoid up to

80 percent of projected economic costs resulting from increased heat-related mortality and energy demands. Past emissions have locked-in some effects—there is a need to adapt to the risks we cannot mitigate and mitigate the risks we cannot adapt to.

Overview of the E2 Report

Bob Keefe and Mike Mercer, E2, provided an overview of the E2 Report: “Oregon: Changing Climate, Economic Impacts & Policies for Our Future”

E2 has approximately 900 business members across the country; it is an affiliate of Natural Resource Defense Council. Interested in economic benefits of climate policies. E2 prepared the “Oregon Report” looking at costs and benefits of addressing or ignoring climate change in Oregon by compiling information from other reports.

- Oregon Report conclusions: Not addressing climate change will cost Oregon billions of dollars in economic costs; addressing climate change, especially through increasing clean energy, will create jobs, drive economic growth, and add billions potentially to the state’s economy.
- To reach its conclusions, the report looked at economic impacts in the following areas: outdoor recreation, agriculture, transportation, consumer energy costs, coast and timber.
- Clean energy jobs are growing twice as fast as other statewide job growth and in numbers of Oregonians working in various energy jobs.
- Conclusion:
 - Oregon can do nothing about emissions but this poses significant risks to the Oregon economy.
 - Oregon can take steps to reduce and cap greenhouse gases and invest in green energy.
 - Oregon has a real opportunity right now and a strong base on which to build at a time when the country is lacking leadership at the national level.

March 14, 2017: Carbon Markets 101

Meeting Materials:

<https://olis.leg.state.or.us/liz/2017R1/Committees/HEE/2017-03-14-17-30/MeetingMaterials>

Colin McConaha, Senior Climate Policy Director, Oregon Department of Environmental Quality (DEQ)

A cap-and-trade program’s cap is the overall limit the state establishes on GHG emissions. The program defines GHG sources covered by the cap and then limits collective emissions from those sources – it is not a cap on a particular source. The state enforces the limit by requiring sources

to hold “allowances” to cover every ton of GHG they emit. The state can decide how it issues allowances into the system: by selling allowances at auction, or giving allowances to regulated parties for free, or both. Once allowances are introduced and a marketplace is established, those allowances can be bought and sold, and that is the trade element of cap-and-trade.

Six Key Elements of a Cap-and-Trade Program

1. Scope

- Approximately 83% of Oregon’s statewide emissions could be covered by a cap-and-trade program.
- Seventeen percent of emitting sources would not be covered due to small size (below an emissions threshold of 25,000 metric tons), or because of difficulty quantifying emissions reliably. Agriculture and waste are examples of sources that wouldn’t be covered.
- DEQ recommends that the scope be set as large as possible. A cap-and-trade program is most effective when it covers as many sources as possible because it moderates the price and frees-up the highest amount of least-cost reductions to be achieved by the program.
- One option to extend the reach of a cap-and-trade program is to use offsets to credit emission reductions achieved by sources not subject to the cap, so long as they are capable of reliable measurement with sufficient rigor. Offset credits can be issued into circulation and used much like allowances.

2. Stringency

- Stringency is the relationship between where the state sets the cap and the source of emissions subject to the cap. The stringency of the cap bears directly on reductions and whether the state is on track to meet its GHG reduction goals.
- Stringency considerations include: whether the cap is aligned to Oregon’s GHG goals; whether the state adjusts to ensure all sources are “doing their share”; whether the trajectory between milestone years 2020 and 2050 is aligned; and compatibility to link with other programs. Jurisdictions with existing cap-and-trade programs require linking programs to have similarly stringent caps. Oregon’s long-term goal (75% in 2050) is similar, but not as stringent as California’s and Ontario’s (80%). Other jurisdictions also have more interim milestones.

3. Allowance distribution:

- The state issues allowances into the system, which is how the cap is enforced. Emissions sources subject to the cap must acquire sufficient allowances to cover their emissions.
- The state’s method of distributing allowances is a very important part of a cap-and-trade program, and there are two primary distribution options:
 - An auction is the simplest option with noteworthy benefits. Auctions offer a clear price signal within the market (entities can clearly see the cost to emit GHGs), they require no state formula for distribution, and they generate revenue. Revenue can become a tool to mitigate some effects on low income households and rural communities.
 - The alternative mechanism for distributing allowances is to allocate them freely to entities covered by the program. One clear benefit of this method is that the state can

defray the cost of acquiring allowances for selected parties. Free allowance distribution is the most significant tool available to mitigate leakage. The state can identify businesses at highest risk of leakage - energy intensive trade exposed (EITE) businesses – and give those entities free allowances to offset leakage pressure.

- In California, food processing, pulp and paper, and industrial sources were provided a phased-in allocation of free allowances. Transportation was added in 2015. The DEQ study notes California EITE sectors and aligns Oregon's with them.

4. Revenue

- Revenue will be generated as long as allowances are auctioned.
- Revenue from transportation would likely be restricted to spending on maintenance of roads and bridges via the Highway Trust Fund due to state constitutional requirements.
- Remaining auction revenue could be allocated and spent at the discretion of the legislature. Possible expenditures could benefit disadvantaged and rural communities, minimize impacts to utility rates, further reduce emissions, and/or fund other state priorities.
- Current litigation challenging California's cap-and-trade system has chilled auction interest, reducing the revenue stream. This is the fifth time the California auction has been undersubscribed. Two causes include the Morningstar lawsuit against ARB which contests the legality of auctioning allowances, and uncertainty about whether there will be a cap-and-trade program in California after 2020, when the program is currently scheduled to sunset.

5. Cost Containment:

- Cap-and-trade provides certainty over GHG reduction outcomes, but not over carbon pricing.
- There are several mechanisms for containing price volatility (how much the price can fluctuate over time).
- Banking: Banking is the ability of a business to hold onto allowances between compliance periods. Currently, compliance periods are three-years long in the Western Climate Initiative (WCI) system and unlimited banking is allowed. Businesses with surplus allowances can use them in later years.
- Linking with other programs: Linking with other programs is also a price containment mechanism. It allows for a broader, deeper economy to be covered by the program, which provides greater stability.
- Price Floor: The state can also set a price floor, or minimum price at which it will auction allowances. Businesses can not submit bids at an amount below the floor price. The WCI's current price floor is just under \$13.
- Price Ceiling: The state can set a price ceiling, providing a maximum price for allowance sales. In the WCI, a soft ceiling exists – it's not an absolute cap on allowance pricing, but it provides a moderating signal should prices exceed a certain amount. WCI jurisdictions also have an allowance reserve - an amount each jurisdiction withholds from the system

unless the price exceeds a certain amount. If the price exceeds the ceiling, a reserve auction is held and the state issues additional allowances into the system to help moderate the price.

- Offsets: Offsets are a compliance instrument separate from allowances though used in the same way. Offsets represent a ton of emissions reduced through an eligible program or source not subject to the cap, that has been through rigorous protocols to ensure actual, additional reductions have been achieved. Offset credits represent real emissions reductions. Credits can be turned in to the state, much like an allowance to mitigate a company's emissions. California restricts offset usage; a company can cover up to 8% of its compliance requirements with offsets.

6. Program Administration

- The agency responsible for administering the cap-and-trade program would need an allowance tracking system. WCI jurisdictions currently use a system that Oregon could presumably use as well if the state was linked to that system.
- The system would rely heavily on entities reporting their emissions to DEQ, who would then monitor and verify compliance.
- Oregon would need a software platform to conduct auctions. Currently California and Quebec hold a joint auction; Oregon could presumably join and use the common platform.
- Oregon would want to do some market monitoring itself, but also use the third party that WCI contracts with, to monitor the market for errors and nefarious gaming. Spikes and dips should appear rational and understandable.
- New agency staff would be needed to design and administer the program. Stakeholder engagement would be a key agency function. The existing GHG reporting program administered by DEQ would likely need to be expanded and bolstered to provide additional monitoring and verification for a cap-and-trade program.

Jason Eisdorfer, Utility Program Director, Public Utilities Commission (PUC)

The Public Utilities Commission (PUC) regulates Oregon's three investor-owned electric utilities (PGE, PacificCorp, and Idaho Power), and three natural gas utilities (NW Natural, Cascade, and Avista). The PUC is responsible for two core regulatory activities:

1. Rate-making: an in-depth process to determine the prudence of utility investments. The PUC must set rates that are just and reasonable.
2. Integrated Resource Plans (IRPs): utilities must study potential resource actions to meet customer needs in a least-cost and least-risk manner over a 20-year period. IRPs also consider a utility's legal environmental compliance obligations. According to the Department of Justice, the PUC doesn't have the authority to recapture environmental damage costs from utility actions in consumer rates. However, for the past 15 years, the PUC has required utilities and IRPs to analyze and account for the risk of potential future GHG emissions

regulatory action, and identify what resource action they would take to meet the state's GHG emission reduction goals.

Relationship between cap-and-trade and existing regulatory policies:

1. Energy Efficiency (Senate Bills 1149 and 838). The Energy Trust of Oregon acquires cost-effective energy efficiency for investor-owned utilities. Cost-effective energy efficiency is the first resource, and resource of choice. It is always less expensive to invest in avoiding energy use up front than to pay the cost of acquiring the next unit of energy. Energy efficiency also reduces load and therefore the need to generate electricity, including electricity from fossil fuels.
2. Renewable Portfolio Standard (RPS) (Senate Bill 838). In 2007, the legislature passed the RPS to require 25% of the demand for energy to be satisfied by renewable energy by 2025. Last year the legislature extended the RPS to 50% by 2040 (Senate Bill 1547). Studies indicate that cap-and-trade would mimic an RPS in terms of developing renewable energy, in that more renewables would be put on the grid to reduce carbon emissions. A utility would consider the carbon price when acquiring resources. Under cap-and-trade, it is possible that a utility could react to the declining emissions mandate in the short and medium terms by moving from coal to natural gas. An RPS on top of cap-and-trade would guide the utility towards a renewable path rather than a wholesale shift from coal to gas. The RPS could specify a trajectory of renewables that must be met. On the other hand, a rigid renewable portfolio standard schedule might not allow a cap-and-trade system to find the least-cost path towards emission reductions because renewables are being required, rather than letting the market mechanism of a cap-and-trade system find the least-cost reductions. Ultimately, if a cap-and-trade program and an RPS were thoughtfully designed, they could guide a utility to invest in the desired resources.
3. Electric Vehicles (EV) Programs. Currently, EV programs are not really considered for grid investments because of the small amount of EVs in the system. However, in aggregate and over time, EVs connected to the electric system could provide a tool to integrate renewable energy. The PUC is currently investigating three aspects of the EV program: a review of utility proposals for transportation electrification investments (required by Senate Bill 1547); rulemaking that would require the utilities to produce five-year transportation electrification plans; and PUC staff are preparing a memo suggesting an investigation of how utilities may participate in the clean fuels program, and how to use any credits that may come back to the utility as a result. These are not traditional aspects of utility regulation, but markets are clearly moving in the direction of transportation. Utilities could more easily and economically make investments in electric vehicle infrastructure and market growth if coupled with cap-and-trade and the clean fuels program. Cap-and-trade would create a price signal, which would tend to move transportation participants to EVs. As they move to EVs, if the utility were connected to the clean fuels program, the utility could also be the aggregator and receive credits from the clean fuels program, which could be recycled. There are many ways those credits could be spent, including giving back to EV and charging infrastructure investors or investing in further greening of the electricity system.

Depending on Cap-and-Trade Design:

- Investor-owned utilities would continue to be subject to PUC rate regulation and planning requirements. Staying ahead of the emissions cap would be part of smart integrated planning and investment. PUC would maintain oversight, looking at IOU planning over time and at how they would meet the mandates of cap-and-trade on a least-cost least-risk basis.
- The utility would become a participant in the allowance market, sometimes buying and sometimes selling allowances.
- Rates could go up as a price signal, but the customers' annual costs could largely stay the same (either through free allowances or allowance revenue).

Sean Penrith, Executive Director, The Climate Trust

Paris Agreement:

- The U.S. joined 194 other signatories committed to limiting the increase in global average temperature to well below 2°C above pre-industrial levels.
- More than 50% of the agreement signatories have market-based instruments in their plans to meet climate targets.
- Countries responsible for approximately 50% of global GHG emissions have a carbon price mechanism planned or in place. The U.S. is the only top-ten economy without a carbon price.

EU Emission Trading Scheme (ETS):

- The European system was the world's first and largest GHG trading system.
- The EU was able to grow its GDP by 45% between 1990 and 2012, while reducing emissions 19%.
- The European system has had many challenges: allowances were over-allocated due to modeling issues; the offset market was scammed (offsets were created in South Africa and Latin America that were not subject to appropriate review and rigor and offsets were often double-sold or double-counted - California has introduced substantial rigor as a result and has the authority to invalidate offsets); price implosion occurred because there was no price floor; and there was no cost containment mechanism to put a soft ceiling on prices. EU has recently created a market stability reserve, which holds surplus allowances out of the market to constrain the market and drive prices.
- Currently, the EU is aligning the cap with its 2030 target to reduce GHG emissions by at least 40%. It is improving free allocation rules, and readjusting the declining cap to 2.2% per year.

Regional Greenhouse Gas Initiative (RGGI):

- The first regional cap and trade system in the U.S., consisting of 9 New England states.
- RGGI only places an emissions cap on the electric sector.

- RGGI is not, and was never meant to be, an economic development program. Its purpose is to reduce emissions of CO₂ from power plants to mitigate economic, social, and environmental risks of climate change.
- The CO₂ cap declines 2.5% each year from 2015 to 2020.
- RGGI holds quarterly allowance auctions.
- Offset emissions reductions are allowed outside the capped electric sector. However, not a single offset has been transacted in the RGGI system because the price of RGGI allowances is so low that it's not economically feasible to produce an offset. California tried to avoid this outcome by requiring a price floor, which has a spread correlation to the price of an offset. Currently in California allowances are selling for \$13.57, and offsets are around \$11.
- RGGI states are on track to achieve GHG emission reductions of 45% below 2005 levels by 2020.
- The program has raised nearly \$3 billion to support investments in energy efficiency, renewable generation, and other public benefit programs.
- Health and productivity benefits are estimated at \$5.7 billion.
- A correlation has been identified between decreasing cap and improved air quality.
- Electricity consumers have benefitted from savings of \$341 million, and natural gas and heating oil consumers have saved \$118 million.
- Initially, there were concerns that putting a price on carbon would lead to lost jobs and decreased system reliability – this fear has not been realized thus far.

China Pilot & National Progress:

- China launched 7 regional ETS pilots in 2013.
- In 2017, China launched a national ETS that will be twice the size of the EU's system.
- The Chinese system includes a carbon emission trading market of 8 sectors.
- Their goal is to peak CO₂ emissions by 2030, which is extremely aggressive.

California's Assembly Bill 32:

- California wanted to ensure that a cap-and-trade system was not a central plank of state policy, but a backstop to other programs it has, such as clean cars, LCFS, and a renewable energy standard.
- California is relying on other targeted programs to deliver the bulk of its emissions reductions. Cap-and-trade is only designed to address approximately 16% of emissions in the event one of the targeted policy programs does not perform well.
- Assembly Bill 32 covers 85% of emission sources.
- California is on track to reach its 2020 targets.
- The bulk of the revenue from auctioning allowances goes into a greenhouse gas reduction fund (GGRD). The spending of those funds must be directed to an activity that

reduces GHG emissions. The state has been reasonably successful in doing that if the bullet train is considered part of emissions reduction.

- One of the failures of Assembly Bill 32 and cap-and-trade is targeted reinvestment into disadvantaged communities. Twenty-five percent of the GGRF must be reinvested into disadvantaged communities. These communities are upset because they don't see tangible effects. Many communities don't believe air contamination (particulate matter) is being addressed adequately.
- California's 2030 target scoping plan states that natural and working lands are integral to the state's climate change strategy, and that storing carbon in trees, plants, aquatic vegetation, and in soil is one of the most effective ways to remove GHG from the atmosphere. This approach resonates with Oregonians. Oregon has about 9.7 billion tons of CO₂ equivalent stored in forests.
- For compliance, covered entities need to report emissions annually to the California Air Resources Board. Entities submit compliance instruments equal to their annual GHG emissions. Though allowances and offsets are both considered compliance instruments, there is a difference: allowances are essentially permits to pollute, whereas each offset is 1 ton of actual CO₂ avoided or reduced. California restricts the use of offsets to achieve compliance to 8%.
- Emissions have declined more rapidly than anticipated. Offsets have delivered 54 million metric tons. Economic growth has occurred while emissions have gone down. California states that it effectively decoupled the growth of its GDP from emission reductions.
- A pending lawsuit has put a chill on the allowances market.
- For uncapped sectors, California's Air Resources Board has adopted six offset protocols. The bulk of California's offsets are generated from the forestry sector, followed by ozone-depleting substances and livestock digesters. Since the offset market responds to offset demand, California is seeing a lot of private capital entering the market to fund those projects. Approximately half of the 8% obligation limit is being used by covered entities.
- California has received \$2.2 billion revenue over 2015-2016. Expenditures funded high speed rail (\$500 million), affordable housing (\$400 million), low-carbon transportation, low-carbon transit solutions, and energy efficiency.

March 21, 2017: Overview of Associated Oregon Industries Report: Oregon Cap and Trade - Analysis of Economic Impacts of Senate Bill 1574 (2016) and The Mechanics of the North American Carbon Market

Meeting Materials:

<https://olis.leg.state.or.us/liz/2017R1/Committees/SENR/2017-03-21-17-30/MeetingMaterials>

Overview of Associated Oregon Industries Report: Oregon Cap and Trade - Analysis of Economic Impacts of Senate Bill 1574 (2016)

Joel Fischer, Senior Policy Analyst, Oregon Business Association
Mike Freese, Vice President, Associated Oregon Industries
Ken Ditzel, FTI Consulting

Ken Ditzel, FTI Consulting, described study to understand the macroeconomic impacts of a cap-and-trade program based on Senate Bill 1574 (2016). Presentation covered:

- Summary of SB 1574
- DEQ and FTI model assumptions and approaches
- Major findings
- Family-of-four and costs of living impacts

Major report findings include:

- Greenhouse gas allowance prices remain below \$100/ton roughly through 2035. Then prices jump due to less-elastic sectors needing to reduce their emissions.
- Study found that with a cap-and-trade program:
 - Oregon's gross domestic product (GDP) growth from 2016 to 2035 is positive, though diminished from the baseline.
 - There is a \$1.3 billion-dollar lost GDP opportunity in 2035, mostly in Portland.
 - There is a reduction in Oregon GDP of 0.4 percent from the baseline in 2035.
 - For some areas, primarily smaller regions/rural, there can be an economic benefit.
 - There is a similar result with jobs. The study found a 5,000-job loss in 2035 compared to situation with no cap-and-trade program.
 - Family-of-four price impacts:
 - Electricity costs vary with the utility. PacifiCorp has the highest price increases due to its out-of-state assets; because the Eugene Water and Electric Board is almost 100 percent zero-carbon, there is little price change.
 - Gasoline costs: by 2050, retail gasoline prices will be over \$7.50/gallon, natural gas prices will be 180 percent above baseline.
 - The cost of living impact for a family of four, by 2050 is \$2,500 on average. This varies across regions of the state, mainly due to utility price variability.

The only cost containment mechanism included in this study was offsets with an assumed price of zero. The study did not look at linking with California or any other jurisdiction.

The Mechanics of the North American Carbon Market

Minister Glen Murray, Ontario Ministry of the Environment and Climate Change

Ontario conducted a two and half year process examining various carbon pricing options, including modeling of economic impacts. They eliminated carbon tax option because it required a price of \$75/ton to start and they thought it was too expensive for their economy. After review

of all cap-and-trade options they landed on the Western Climate Initiative model. All coal plants in Ontario were closed prior to starting the cap-and-trade program.

Key takeaways:

- Linked markets provide very good price stability.
- Significant factor in keeping down price is linkage to other jurisdictions.
- Industries are enthusiastic supporters of the cap-and-trade program.
- It's important to look at global markets. Ontario is talking with northeastern states (those that are part of the Regional Greenhouse Gas Initiative - RGGI) about expanding into transportation, etc.
- Do this sooner rather than later. The sooner there is a North American system the sooner leakage issues go away and a competitive edge exists.
- Do not put money into highways. Instead fund electric vehicles, massive deployment of chargers, and subsidize purchase of electric vehicles.
- We don't expect to see a "hockey stick" (significant increase in cost in future) because people will be getting funds to retrofit homes, etc. and there will be a massive reinvestment in buildings, transportation and technology.
- Ontario has seen a huge upside to decarbonizing its economy.

Michael Gibbs, Assistant Executive Officer, California Air Resources Board

Shared background on the California cap-and-trade program that started in 2013, including the status of greenhouse gas emissions and recent economic growth in the state. State has reduced emissions while continuing to grow the economy.

California looked at different systems to reduce GHG emissions and decided on cap-and-trade approach and designed jointly with the Western Climate Initiative. There are 350 emitters in California large enough to be covered by the cap-and-trade program. The overall cap has declines by 3.5 percent per year until 2020. They have found no evidence that cap and trade has been any drag on the state's economy.

Effort to minimize leakage in industrial sector:

- To prevent leakage and to continue to grow the industrial sector while reducing emissions, gave free allowances to industrial emitters based on emissions intensity benchmark (measured in emissions per unit of product produced).
- The amount of free allocation declines each year to keep incentive in place to reduce emissions.
- The amount of free allowances is adjusted based on actual production at a facility – more production leads to more free allowances.
- Manufacturing employment is up since the program started in 2013.

Auctions:

- Allowances that are not provided for free are auctioned.
- There are two sets of auctioned allowances:
 - A portion to electricity and distribution facilities (consigned to auction and sold on their behalf). These facilities have received about \$4 B so far; these funds are returned to electricity and natural gas customers as a direct rebate on their bill to cover the increased cost in electricity due to program.
 - Remaining allowances auctioned have generated about \$4.4B to date. These funds go into a dedicated fund that is appropriated by legislature. A three-year investment plan is prepared to help inform the legislature. Auction revenues are invested in multiple ways – a lot into transportation, affordable housing, EV charging, low income weatherization. Also, about 1/3 must be invested in disadvantaged communities.
 - Auction proceeds are not used to run the program; a separate fee (12 cents/metric ton/year) is paid by large emitters to cover the cost of all climate programs.

Linking with other programs:

- California experience shows you can have cap and trade while protecting your economy. Linking allows jurisdictions with smaller economies to use this tool. Linking means compliance mechanisms are tradeable.
- Linkage questions that Oregon would need to answer:
 1. What would Oregon need to do to link?
 - Program goals would need to be at least as ambitious. California law prevents linking with a less stringent program.
 - All linked programs must have same market rules. For example, all programs must have same floor price and a limit on how many allowances may be held by a single entity.
 - Offsets need to meet same specifications as other jurisdictions, including that they are real, permanent, verifiable and enforceable.
 2. How much independence could Oregon keep if linked?
- Each jurisdiction decides how to allocate allowances and how to use its auction proceeds.
- Modeling found that allowing banking resulted in more early reductions and early use of the program.
- Multi-year compliance approach is also important to avoid circumstances of a single year, for ex., a bad hydro year. Linking helps smooth out the cost curve, i.e., it may be dry here, not dry in another linked jurisdiction.
- Idea that decarbonizing is an opportunity, not just a cost. There is an opportunity to not just avoid downsides but to also create significant upsides. A smaller economy needs to link.

March 28, 2017: Rural Economies and Environmental Justice Communities: Impacts and Opportunities

Meeting Materials:

<https://olis.leg.state.or.us/liz/2017R1/Committees/HEE/2017-03-28-17-30/MeetingMaterials>

Peter Weisberg, The Climate Trust

The Climate Trust is a nonprofit organization that has been working in carbon and offset markets and they are a market participant in California's carbon market. A cap and trade system requires that certain entities must have a permit to emit carbon. California, and the bulk of systems, allow for two types of permits, allowances are a state issued permit that that allows an entity to emit a ton of CO₂-e emissions and offsets which are projects that are not regulated by the state system and can demonstrate a new emission reductions. Both types of permits create an opportunity for economic development through either revenue generated from auctioning allowances or through revenue raised as a result of offset projects.

Offsets

- Two primary benefits of including offsets in system – Creates economic benefit for rural economies and lowers overall compliance cost of meeting emission targets. It is estimated that carbon prices in California would be approximately \$100 a ton without offsets or \$20 a ton with offsets.
- Offset integrity – Protocol defines what projects qualify and how they qualify to make sure that reductions are real, permanent, quantifiable, verifiable, enforceable and additional. There are three levels of review before offset credits can be sold.
- Projects – Offsets occur in uncapped sectors, they are primarily in forestry and agriculture sectors providing an opportunity for economic development in rural areas. Anticipate California will demand \$2.18 billion in demand for offsets through 2025.

Allowances

- Allowance revenue basics – Three ways to distribute allowances: allocate, or give them away to entities for free to address leakage in certain industries; auction allowances and return revenue to citizens; or government reinvestment, when revenues are reinvested to reduce greenhouse gas emissions. California distributes their revenue in all three ways: 1/3 of allowances are auctioned and revenue gets allocated into greenhouse gas reduction fund; 1/3 returned to ratepayers through utilities and 1/3 is allocated to leakage prone industries. Companies pay for the allowances and that is passed down to consumers.
- Potential revenue for Oregon program – An estimate done by Renew Oregon estimates that an Oregon at least \$700 million per year in revenue to reinvest in greenhouse gas mitigation. Key assumptions include: prices at California floor, 50% of industry allowances

are allocated, remaining allowances are auctioned. The 2017 California Climate Investments report showed a 5.16x leverage ratio from additional public and private capital from the Greenhouse Gas Reduction Fund. This leveraging ratio would equate to approximately \$3.6 billion per year in Oregon.

- Opportunities for rural reinvestment – Examples of the types of projects that could be funded by the sale of allowances: restoration and forest health treatment, integrated biomass resources, long-term forest management, soil carbon restoration, avoided conversion of grasslands into croplands, dairy manure management, and nutrient management.
- Controlling cost impacts –California’s cap and trade system includes a price floor to provide long term certainty and a ceiling for the purpose of being able to release allowances to lower the price of compliance.

Jim Walls, Lake County Resources Initiative

Lake County Resources Initiative (LCRI) is a nonprofit in Lake County. In 2008, LCRI developed a plan to become a net energy exporter by 2012, they will reach that goal within two years.

- Financial savings – An independent study done for the Ford Family Foundation showed that in 2011 LCRI had assisted in instilling renewable in 22 homes, businesses and ranches which will result in saving \$1.9 million over the life of the equipment.
- Solar impacts – Up until this point, the majority renewables installed in Lake County has been solar energy. Although, solar energy does not create long term jobs they have benefited from the construction work needed. LCRI estimates that the solar installations are providing 70k in new taxes and will, if approved by the county, be generating an additional \$420 k. Lake County is 78 percent federal land so this increase in taxes is significant to the county.
- Geothermal and biomass technology – Incentives are necessary to make geothermal and biomass available in Lake County. LCRI has estimated that geothermal and biomass technology would generate a minimum of 135 new jobs in Lake County.

Kyle Petrocine, Wallowa Resources

Wallowa Resources (WR) is a non-profit launched in 1996. WR promotes and creates rural businesses through investment, market development and R&D.

- New technology – Forward thinking, consistent policy and investment affecting natural resource based economies can help support new low and zero carbon businesses. An example is Integrated Biomass Resources, LLC which utilizes non-saw timber for value added products. IBR is a result of a public private partnership and currently has 22 full

time employees and generated \$2 million in gross revenues from the sale of post and pole, firewood, kindling, chips, hog fuel and energy in 2015.

- Restoration – The Upper Joseph Creek Stewardship Project forest restoration project in Wallowa County resulted in \$6 million in job creation and product value while restoring forestland and its associated watershed. This innovative county-based collaborative became a model of over 60 similar efforts. These types of investments result in healthier outputs of water, air, food and fiber all while strengthening communities.
- Renewable energy – WRI develops zero impact in conduit micro-hydro projects creating clean energy utilizing existing infrastructure. WRI is currently advocating for community hydro development similar to recent community solar legislative efforts. Small- scale distributed micro-hydro projects have the potential to generate direct benefits to landowners by helping to diversify revenue streams and secure valuable working lands.
- Regional solution implementation – Adopting a broad regional carbon regulation strategy enables knowledge and information sharing across jurisdiction which is increasingly important for rural communities surpass the connectivity of urban areas outpace that of rural areas.
- Transition support – Rural economies need clear, consistent and well thought through policy change implemented to allow for a healthy response. Investment of carbon legislation revenues in these types of programs will help improve the health of rural landscapes and communities.

Barry Bushue and Jenny Dressler, Oregon Farm Bureau

The Oregon Farm Bureau is the largest general agricultural association in the state. Agriculture is Oregon's second largest driver in the economy.

- Cost impact on industry – Agriculture industry relies on the businesses that would be regulated by carbon policies like fuel, manufacturing, transportation, gas and electricity. Those higher costs would be passed down to the farmer. Agriculture is largely a price taking industry and lacks the ability to set its own price.
- Uneven playing field – Some farmers could benefit from carbon pricing program while others would be harmed by it.
- Competition with businesses in other states – There would be a disadvantage of applying restrictions on our economy when others are not held to same standard.

Direlle Calica, Affiliated Tribes of Northwest Indians

The Affiliated Tribes of Northwest Indians (ATNI) is the second oldest intertribal organization in the country representing over 50 tribes in a seven-state region. Energy is one of the newest committees that has been established by ATNI.

- Engagement – Looking for opportunities for tribes to engage more significantly in terms of exercising tribal sovereignty, self-determination around energy independence, economic self-determination and job creation.
- Biomass – A number of tribes in Pacific Northwest are heavily oriented to forestry and are very interested in opportunities to invest in biomass technology.
- Energy efficiency measures – Some housing stock is subpar so installing efficiency measures is not always beneficial.
- Opportunities – Looking for ways for tribes to be a part of energy industry, solar, energy efficiency are examples of areas that are being explored. ANTI is working to build relationships with utilities to engage in a more active way.
- Priorities – Tribes have identified some key priorities through working with ANTI which include economic development, climate, environment, and infrastructure. ANTI is looking to balance needs for economic development and revenue but also inherent responsibility to be a steward of natural resources and cultural principles.
- Confederated Tribes of the Warm Springs – In the 1990's the Confederated Tribes of the Warm Springs set aside approximately 14 percent of their forested area for sustainability. To generate some revenue for being good stewards of the land they decided to enter an offset agreement with California.
- Proceeds from proposed carbon tax in Washington – Washington tribes would only be able to access those revenues through the schools that their children attend or through creative partnerships. Tribes should be included in the development of these programs.

Alan Hipolito, Verde

Verde serves communities by building environmental wealth through social enterprise, outreach and advocacy. Since 2005, Verde has brought new environmental investments to Portland's neighborhoods, involved community members in the planning and building of these investments, and ensured that low-income people and people of color directly benefited from the investments.

- Adapt environmental resources to needs of community – You can adapt to the needs of the community by starting enterprises so businesses train low income adults, create contracting opportunities for businesses, and bring new environmental investments to neighborhoods.
- Outreach and advocacy – Verde works with their neighbors, peer organizations and policy makers to strengthen the connection between the environment and community by bringing people into the design of environmental projects and programs.
- Climate program design – A well-designed policy can be a way to create jobs for workers, contracts for businesses, educate youth and support housing. In order to accomplish that

there must be transparent, inclusive legislative design around carbon pricing and implementation, and a clear commitment to benefiting front line communities.

May 1, 2017: Oregon Business Leaders' Greenhouse Gas Emissions Reduction Task Force Report: "Business-Smart Strategies for Decarbonizing Oregon's Economy"

Meeting Materials:

<https://olis.leg.state.or.us/liz/2017R1/Committees/SEN/2017-05-01-15-00/MeetingMaterials>

Merritt Paulson, Owner and Chief Executive Officer, Portland Timbers and Portland Thorns

Described the Oregon Business Leaders' Greenhouse Gas Emissions Reduction Task Force process and membership. There was unanimous task force support for the report.

Lane Shetterly, Partner, Shetterly, Irick and Ozias

Takeaways from report:

- The report is grounded in solid science and economics.
- Oregon has already done a good job in reducing its greenhouse gas emissions, but still needs to do more to reach its goals.
- There is a business case to be made for greenhouse gas reductions. There is opportunity to be had in moving forward in a responsible and proactive manner

Catherine Macdonald, Director of Policy and External Affairs, The Nature Conservancy

Identified task force purpose and goal to “design a 5-year action plan for significantly reducing greenhouse gas emissions in Oregon while creating jobs, growing the economy, and positioning the state to provide leadership and model positive change.” Noted that adapting to climate change will be expensive, reducing greenhouse gas emissions will be expensive and the only way to do both responsibly is to do so while maintaining a strong economy.

John Tapogna, President, ECONorthwest

Described the business case for greenhouse gas (GHG) reduction:

- By reducing energy needs and waste, businesses can improve their bottom lines.
- There are substantial and diverse risks facing the US economy and assets.
- Businesses that reduce their GHG footprint will have a significant market advantage.
- Jurisdictions with low-carbon, low-cost energy and supportive policies for reducing GHG emissions will be well positioned to incite business expansion and attract new businesses.

Oregon's gross domestic product is largely decoupled from GHG emissions.

Identified challenges to meeting GHG goals:

- Goals are not binding.
- Oregon Global Warming Commission is under-resourced.
- State agencies aren't mandated to implement measures to reduce GHG emissions.
- Federal and state investments to reduce GHG emissions have declined.
- Existing state policy/investment playing field is complex.
- Without careful design reducing GHG emissions can have a significant impact on Oregon's economy.

Reviewed key strategic planks recommended by Task Force:

- Transportation – address congestion in Portland metropolitan area to get freight and people moving and accelerate conversion of alternative-fuel vehicles.
- Regain Oregon's leadership in energy efficiency.
- Invest in the development of a thorough analysis and modeling effort to inform development of any carbon pricing program. Task force felt additional research should be done to best design a carbon pricing program for Oregon. Additional work has been done since by The Department of Environmental Quality and Associated Oregon Industries. Look at mitigating business leakage resulting from carbon pricing program.
- Maximize Oregon's potential to benefit from agriculture, forestry and ecosystem-based climate mitigation solutions.
- Modernize how Oregon invests in GHG emission reductions.
- Require and fund the state agencies to advance effective climate mitigation and adaptation measures.

Designing smart policies:

- Set goals and let the market find the best solutions.
- Require consistent, predictable performance improvement.
- Go upstream in the manufacturing process to capture 100 percent of the market.
- Facilitate private sector investment and innovation.
- Reward performance, not investment.
- Invest in new infrastructure when it is designed, rather than waiting to retrofit or replace it.

Other points:

- Prevent business leakage.
- Avoid or mitigate disproportionate impact to rural economies.
- Avoid or mitigate impacts on low income Oregonians.
- Build on Oregon's strengths.
- When possible, align policies and programs to meet multiple state goals.

Task Force conclusions:

- It is possible to continue to grow the value of goods and services while reducing GHG emissions.
- Well-designed public policies and investments have an important role to play.
- Oregon needs to strengthen its approach to reducing emissions and addressing climate adaptation.

May 17, 2017: Labor Perspective on Climate Policy

Meeting Materials:

<https://olis.leg.state.or.us/liz/2017R1/Committees/SEN/2017-05-17-15-00/MeetingMaterials>

Barbara Byrd, Secretary/Treasurer, Oregon AFL-CIO

AFL-CIO (American Federation of Labor and Congress of Industrial Organizations) represents about 140,000 members in Oregon. It first took a position on climate change in 2008: it is committed to dealing with climate change in a way that guarantees economic growth and equity. The organization believes that climate policy should be tied strategically to economic development goals and should offer opportunities to create good jobs for the future: jobs that pay a decent wage, that are safe, and that offer pathways to higher paying positions. Specifically:

- Revenues from carbon pricing schemes should be invested into clean energy solutions and infrastructure (infrastructure investment = job creation).
- Flexibility should be built-in to protect the state's manufacturing sector from leakage.
- A fund should be created to provide transition assistance to any worker whose job is adversely impacted.
- "High road" standards should be used for construction work associated with climate mitigation and adaptation, along with the use of registered apprenticeship programs to train skilled workers for jobs in renewable and energy efficiency.
- Communities that have been adversely affected by climate change and those that might be affected by higher energy prices must be treated equitably.
- Most important to the AFL-CIO: there should be a worker's voice incorporated into any kind of advisory or oversight committee that might be created in association with climate policies.

Jim Young, Principal and Secretary, The Labor Institute

The Labor Institute is a nonprofit education strategy organization. It partners with steelworkers and an array of manufacturing workers on environmental policy. A flexible and effective approach is needed that also maximizes job creation and job security. The Labor Institute has long been involved with and supportive of climate policies on principle that people deserve both

environmental sustainability and economic prosperity: it is not a choice between the two. Workers support five underlying concepts:

- Invest in jobs – A portion of revenue generated by market programs should be dedicated to create secure family-sustaining job opportunities, including for manufacturing workers, who need training for those jobs. Revenue should also be used for green modernization and development and deployment of clean energy technologies.
- Prevent leakage – This is a real threat to job security and merely shifts emissions elsewhere. Carbon policy in Oregon should address and combat leakage to ensure a level playing field.
- Prioritize domestic and recycled sources - Promote and maximize domestic content – source products nearby, as close to the point of use as possible.
- Provide for compliance flexibility – Carbon reduction for energy-intensive industries in particular should provide regulated parties with the ability to comply throughout production cycles. Use phased-in approaches.
- Assist displaced workers – Provide real, just transition grant assistance that makes dislocated workers whole and gets them to retirement. The Labor Institute has a model worker transition program.
- Lessons from California – Importance for labor to be involved from the beginning. Compliance flexibility, stages of development, is a major takeaway. Model after the California Resources Board – it was very good at listening to impacted industries, the cement industry in particular – the board could easily have forced immediate compliance, but didn't.

Tim Frew, Executive Secretary/Treasurer, Oregon State Building and Construction Trades Council

The Oregon State Building and Construction Trades Council (OBTC) represents approximately 25,000 construction workers in 21 member unions that are highly skilled in a wide array of crafts. It brings the needs of unions from all building-related trades together to advocate for local jobs, strong wage and hour laws, safe working conditions, and funding for major infrastructure projects. Its apprenticeship programs continue great traditions of quality work and best practices. Investments in rebuilding energy infrastructure puts its members to work in wind, solar, pumped hydro, geothermal, energy transmission, energy storage, building small modular reactors and installing energy retrofits.

Carol Zabin, Chair, UC Berkeley, Green Economy Program, Center for Labor Research and Education

The Center for Labor Research and Education at the University of California, Berkeley has been doing work on green economy and climate policy for 10 years.

- Job impact – There has been no net job loss detected thus far in California, nor loss in any specific sector related to climate policy. California has met targets for 2020. The jobs picture may change with bigger and bigger reduction targets. Nearly all studies have shown small net job growth, primarily because there is higher job creation in non-fossil-fuel sectors than in fossil fuel sectors, and because of the effect of local production versus importing fossil fuels.
- Management of possible contractions - Possible future contraction of high greenhouse gas emitting sectors is clearly important. Investments must be intentional: in the best available technologies; to avoid leakage; and to address other transition issues if and when they come up.
- California emission targets and investments - California is already meeting 2020 targets. Significant investment in economic development has been generated by cap-and-trade – \$3.4 billion for new construction jobs and white collar jobs. Also, investor-owned utilities invest over \$1 billion a year, which is also a big job generator.
- Training infrastructure – A trained and skilled workforce is essential. Quality workmanship at the outset is less costly than correcting the effects of poor workmanship later. Oregon can lean on assets and training infrastructure that already exist through its apprenticeship programs and community colleges.
- Impacts in rural areas – Rural/poorer/higher-unemployment areas also experienced positive impacts because of renewable projects that needed large sites only available in rural areas. These projects also increased local tax revenues.
- Green jobs/good jobs - Affected sectors are the energy sector, the building/construction sector, and the manufacturing sector, but not all “green” jobs are “good jobs (middle class/quality jobs with family-supporting wages and benefits). For example, California has learned that rooftop solar installers tend to be low wage with few benefits and no career path. California subsidized this industry with a number of initiatives designed to favor it, but it overemphasized individual homeowners and individual rooftops – a very expensive way to produce renewable energy, with no economies of scale. Oregon should move straight to community-level solar, not individual – go a bit bigger in scale for the best value. To help ensure good job opportunities in a clean energy economy, workforce standards should be embedded into program requirements; and workforce agreements that include language to prioritize local hiring or hiring from particular groups to create pipelines into apprenticeship programs for disadvantaged communities.
- Risk of industrial contraction – California built-in flexibility in the form of free allowances for trade-exposed and high-emitting industries to combat leakage. If regulations force in-state producers out of state, and then bring imports back into the state it doesn’t help anything – flexibility is needed. California is currently involved renewing and redesigning its program and industry supports flexibility over strict mandates and strict facility caps.
- Effect of carbon prices on jobs – The current price per ton of carbon in California was \$12 or \$13 at the last auction. California has discussed capping the price. The market

mechanism is complementary to programs and policies that move the economy toward clean energy. As the price of carbon goes up the quantity used is going down. In the *same way that high electricity* prices haven't resulted in high utility bills: because energy use is reduced – energy may be more expensive but efficiencies result in reduced energy use and smaller actual energy bills.

- Affected economic sectors – The pieces of the economy that are affected are quite limited – the energy sector, the building sector, and the manufacturing sector – not some of the bigger growth sectors like health care or tech/biotech or the general services sector.
- Benefits of larger scale programs – Other nuances came to light with respect to producing jobs: the research demonstrates that you can build programs that succeed in creating good jobs in a “high-road” especially around wage inequality issues. It is not only possible and but often less costly to support clean energy development that relies on skilled and trained labor and produces good middle-class, career-track jobs. This is demonstrated by the distinction between residential scale solar and utility-scale solar; the same distinction exists between energy-efficiency programs targeting individual homes versus public and commercial buildings and institutions – you a lot more bang for the buck in terms of energy savings with larger scale programs. Larger scale achieves both better jobs and the greatest possible energy savings for each dollar invested. There is a small net positive effect overall, without reinventing whole training systems/assets that result in better jobs.
- Comparing Oregon and California – When comparing or modeling after California, it is important to remember that there are some industries that have to be in California because of its size. Oregon doesn't have that luxury. California is big enough to make mistakes and correct and not lose businesses. Businesses in Oregon don't have to be here. California has economy of scale that other states don't have.

June 12, 2017: California Cap and Trade Program and Rural Communities

Meeting Materials:

<https://olis.leg.state.or.us/liz/2017R1/Downloads/CommitteeMeetingDocument/133361>

Arjun Patney, Policy Director, American Carbon Registry, Winrock International Institute for Agricultural Development

American Carbon Registry is the first U.S. voluntary greenhouse gas registry, founded in 1996. It has issued over 80 million tons of CO₂-e emission reduction credits. The role of the registry is to: develop and approve carbon protocols/methodologies; review and register products; oversee independent verification; issue serialized offsets; and track transactions and retirements. The American Carbon Registry has been approved as an offset project registry for California since 2012. California compliance offset protocols are based off protocols developed by the registries

in the voluntary market. The California Air Resource Board (CARB) went through a rulemaking process to adjust protocols prior to issuing the official compliance protocol. Registries then use the protocols adopted by CARB. The majority of offset credits issued are from improved forest management projects (35 mil), destruction of ozone depleting substances (14 mil), livestock manure digesters (3 mil), and mine methane (4 mil). There have not been any offsets from urban forestry or rice cultivation. Urban forestry has been in existence since the beginning (of? the century? the year?) but the economics have not worked to make offset credits useful. The rice cultivation protocol was recently created.

Key takeaways:

- Protocol examples:
 - Fertilizer management – Oregon has 2-4 million acres of fertilized land and reducing N fertilizer in crop production could reduce N₂O emissions.
 - Grazing Land and Livestock Management – It is important to bring together various practices to improve the economics of these projects. It is important to scale the complexity of the quantification of the carbon benefit to the size of the farming operation.
 - Compost additions to grazed grassland – A one-time application of compost can sequester 1-5 tons of CO₂ per acre per year, with long lasting benefits from migration of material into soil, increased vegetation, and CO₂ absorbed by vegetation. If this was done to 5% of California's rangeland it would absorb 28 million tons of CO₂ per year.
 - California Wetland Restoration – Projects include agriculture to wetland, dry agriculture to rice, open water to wetland. There is some methane generation but it is outweighed by CO₂ benefits.
- Aggregation – At current carbon prices, cost can be a barrier for offset project types with low volumes like fragmented farming operations, which could be addressed by allowing small operations to consolidate. Allowing consolidation into one project would provide the necessary economy of scale to bear the cost of monitoring, data collection, and verification. California's system does not allow aggregation because of an invalidation provision. Quebec, and likely Ontario, allow aggregation and address the issue of invalidation by setting aside a small portion of each project in a buffer pool. If there is an issue found, a certain number of credits are retired from the buffer pool allowing for aggregation without having to go back to the individual credit.
- Interest in more in-state offsets – Consider giving DEQ discretion to approve higher limits or no limit on offsets from projects in Oregon, so long as WCI linkage is not jeopardized.

Steve Frisch, President, Sierra Business Council and Sierra Small Business Development Center

Sierra Business Council (SBC) is a network of 4,000 small business in a rural region of California. SBC started working on this issue when California first started having conversations about the potential for a climate policy. There was a great amount concern that implementation of a climate policy would be “bad for business.” Over the last 11 years, they have seen positive impacts in their region as a result of the adoption of a climate program: about \$530 million in investments and just under 20,000 jobs in northeastern California from 2008-2015.

Key takeaways:

- Alignment and integration of policy to meet a greater goal – Look at how different types of climate-related policies can work together to achieve other objectives like job creation or economic development and look at how this can affect budget stability.
- Equitable distribution of funding – Make sure that every region and appropriate sectors of the economy benefit from the program. When designing a program make sure to include clear and transparent mechanisms for protecting the most vulnerable people – consider? prices associated with the program and equitable distribution of funding across the state.
- Need to incorporate flexibility – Build-in flexibility so you can meet your objectives without requiring an administrative or legislative fix. An example is the process that California uses to manage the distribution of revenue from the program: it requires legislative direction every three years to identify individual purposes to appropriate funds to agencies to create programs to respond to the legislature’s direction. This lack of flexibility makes it challenging to redirect funding to address pressing issues in a timely manner. One possible solution is to set a portion of the money aside to address unforeseen circumstances.
- Value/plan for co-benefits – There are co-benefits associated with implementing climate policy. It is important to look at how you value the co-benefits when making funding distribution choices. An example: during a forest restoration project there is a co-benefit of improved water supply or resilience to drought and there should be a mechanism for considering co-benefits and valuing them in the distribution of funding.
- Small revolving loan fund – Difficult to get investment capital for larger scale projects in rural regions, it is helpful if public funding can be used to help leverage those private investments.
- Interaction with low carbon fuel standard – California has seen an emergence of alternative fuel industry, some of which is in rural areas of California. It is important to mitigate the increased fuel costs for people that live in rural areas because they generally have to drive more vehicle miles. In California, a portion of the cap and trade program is going towards EV programs in disadvantaged regions.