

Including transportation in a Washington State cap-and-trade system: Why and How?

Why include transportation?

Transportation is Washington's largest GHG emissions contributor at 45% of total GHG emissions¹ and is expected to grow in the future. Rationales for considering inclusion of the transportation sector in a Washington State cap-and-trade system, include the following:

- It **applies a price signal consistently to all aspects of the transportation challenge** thereby encouraging both short-term and long-term emission reductions from efficiency improvements, cleaner fuels, and reduced travel. Cap-and-trade can complement measures to improve vehicle efficiency, such as the federal light-duty vehicle standards for fuel economy, and reduce the GHG emissions of fuels used by vehicles, such as the Clean Fuels Standard (CFS) under consideration in Washington State. For example, sending a price signal through the cap-and-trade system can help to dampen the potential rebound effect of consumers increasing their driving in response to having more efficient vehicles.
- It can **help Washington State achieve its long-term statutory emissions limits** of reducing greenhouse gas emissions to 25% below 1990 by 2035 and 50% below 1990 levels by 2050, and **increase the certainty of doing so**. While other transportation policies can make important contributions to reducing transportation emissions, a cap-and-trade system provides a mechanism that can "close the gap" in reaching emissions limits and enable achievement of reductions that cannot be achieved (or achieved as cost-effectively) through other means. Conversely, leaving half of the State's emissions out of a cap system would make it much more difficult to reach the limit.
- It can **help Washington State achieve its limits in the most cost-effective and efficient manner**. By including more sectors and regulated entities in the cap, it lowers the overall cost of meeting the same emissions reductions target.
- By sending the same carbon price signal to all covered emissions sources, it **levels the playing field among sectors, emissions sources, and emission reduction opportunities**. It provides perceived fairness to covered sources, and avoids penalizing emission reducing technologies that may compete against technologies that face a lower or no carbon price. For example, under a cap-and-trade system that includes electricity but not transportation, electric vehicle owners would be faced with a carbon price for electricity consumed that owners of gasoline powered cars would not face for gasoline consumed. This would distort the market, creating an unfair disincentive for electric vehicles and other emission-reducing technologies.
- It **can create an additional source of funding and support for transportation solutions** (e.g. transit, or land use planning to reduce VMT) furthering emissions reduction goals. The amount of funding available could be significantly greater if transportation is included and allowances are auctioned rather than given freely. Conversely, if transportation were not included there may be little rationale for using auction proceeds to support transportation solutions.
- It encourages reductions in transportation emissions, which will **reduce criteria air pollutants associated with fuel combustion**. Motor vehicle emissions are one of the main sources of air pollution in Washington, as identified by the Washington Department of Ecology.²

¹ Washington State Department of Ecology. Based on the 2011 GHG Emissions Inventory.

The pure price response to the expected range of carbon prices – say on the order of 10 to 40 cents a gallon for a carbon price of \$10-40 per ton CO₂ – may appear to be quite limited. Economists typically gauge price response in terms of the *price elasticity of demand* for transportation fuels: the percentage that the demand for gasoline is likely to decline for each percent increase in the price of fuel. Over the short-term, the price elasticity of demand for gasoline is generally quite small, on the order of -0.10, which translates to a 1% reduction in gasoline demand for a 10% increase in gasoline prices.³ Short-term elasticity tends to be particularly low because there are few short-term response options beyond reducing the number and length of optional trips, while long-term elasticities can be more significant. While over the short-term, people may only change their vacation plans or inflate their tires, over the longer term, they can alter capital investments decisions such as the purchase of a more fuel-efficient car, change where they choose to live and work, and influence urban development and transit planning.⁴ Furthermore, research suggests that if the increase in price is perceived to be more permanent (e.g. such as that resulting from a carbon price), then consumers are much more sensitive to price increases than for temporary price fluctuations (e.g. resulting from fluctuations in global oil prices).⁵

How would one include transportation?

There are several components to how transportation fuels can be incorporated into a cap-and-trade system. As an example, we describe how California and Quebec will incorporate transportation in their cap-and-trade programs starting in 2015.

- The **coverage of transportation fuels** will include gasoline, diesel, natural gas (including compressed natural gas (CNG) and liquefied natural gas (LNG)), and propane (or liquefied petroleum gas, LPG). Fuels used in aviation and marine applications will not be covered. Biomass-derived fuels such as biodiesel, ethanol, and biogas are explicitly exempted from cap-and-trade regulations.
- The **point of regulation** for transportation fuels under a cap-and-trade system is the upstream fuel supplier, i.e. the “terminal rack”. The terminal rack is the point in the distribution chain where transport fuels are transferred from a pipeline or storage facility to tanker trucks to be distributed locally to the retail market.⁶ The current excise tax on vehicle fuels in Washington, i.e. the “gas tax”, is charged at the terminal rack. Regulating at terminal rack significantly reduces administrative costs, as compared with regulated at far more abundant fueling stations.
- Fuel suppliers must **meet their compliance obligation** in the same way as other regulated entities (i.e. electric utilities and industrial facilities). They must meet their compliance obligation through a combination of reducing their emissions (i.e., reduced supply of fuels), surrender of allowances, or surrender of offsets. Fuel suppliers that supply a quantity of fuel that would result in 25,000 metric tons or more of CO₂e emissions annually will be regulated.

² Washington Dept. of Ecology. 2014. Air Quality - Motor Vehicles. Available at: http://www.ecy.wa.gov/programs/air/cars/automotive_pages.htm

³ Hughes, J.E., C. R. Knittel, and D. Sperling. 2008. Evidence of a Shift in the Short-Run Price Elasticity of Gasoline Demand. The Energy Journal 29:1. Available at: http://web.mit.edu/knittel/www/papers/gas_demand_final.pdf

⁴ Knittel, C.R. n.d. The Importance of Pricing Transportation Fuels within California’s Cap-and-Trade Program. MIT Sloan School of Management. Available at: <http://web.mit.edu/knittel/www/papers/CATransportationFuels.pdf>

⁵ Li, S., J. Linn, and E. Muehlegger. Gasoline Taxes and Consumer Behavior. Working Paper. National Bureau of Economic Research, March 2012. Available at: <http://dash.harvard.edu/bitstream/handle/1/8506866/RWP12-006-Muehlegger.pdf?sequence=1>

⁶ For more information see page 31, in Washington Dept. of Commerce, 2013. Petroleum Supply and Use in Washington State. October 2013. Available at: <http://www.commerce.wa.gov/documents/petroleum-whitepaper-7-15-2013.pdf>.

Standard default emissions factors by fuel type (e.g., gasoline and diesel) are used to quantify the emissions that would result from the complete combustion of fuels sold by regulated fuel suppliers.⁷

- **Allowances** for transportation fuel suppliers can be auctioned, given away freely, or some combination of both. California and Quebec have made it a priority to auction all of the allowances for fuel suppliers, as there is viewed to be no consumer benefit from free allocation to suppliers. The carbon price applied to fuel suppliers is likely to be passed on to the fuel distributors and evident in the retail price sold to consumers.

Are both cap-and-trade and a Clean Fuels Standard needed?

Cap-and-trade and a Clean Fuels Standard work together to reduce emissions from the transportation sector. These programs are generally considered part of a multi-faceted approach—including reduction in carbon from fuels, increased vehicle efficiency, and decreased vehicle miles traveled—required to achieve GHG reductions in the transportation sector.

On its own, cap-and-trade is unlikely to induce demand for the broad portfolio of lower carbon transportation fuels needed to achieve longer-term GHG reduction targets. CFS can address this by sending clear policy signals to investors that long-term solutions are needed for lower carbon and cost competitive transportation fuels while yielding modest near-term emission reductions. Investments to comply with a CFS will reduce the compliance requirements for entities under a cap-and-trade program. For parties subject to both programs, the reduction in the carbon content of fuel achieved through a CFS program will result in a lower compliance obligation in the cap-and-trade program. For example, the increased blending of lower carbon biodiesel with conventional diesel helps achieve the targets of a CFS and yields a reduction in the GHG emissions from the production and use of petroleum-based fuels, this reduces an entities obligation under a cap-and-trade program by displacing a petroleum-based fuel.

With the transportation sector included in a cap-and-trade program, complementary measures, like a CFS, are still needed to spur long-term investments in fossil fuel alternatives. In principle, a CFS directly encourages innovation and investment in the supply and delivery of cost competitive lower carbon fuels (e.g., biofuels, electricity, natural gas, and hydrogen). This complements the price signal placed on carbon emissions imposed by a cap-and-trade system.

⁷ This means that specific combustion efficiency of one model of a gasoline powered car over another is not regulated differently, because the carbon price is applied upstream at the fuel supplier. The combustion efficiency of a vehicle will influence the cost to an individual consumer by affecting their demand for fuel.

CERT Member Written Input – Synthesis

Background Notes

1. The material used to create this synthesis is drawn strictly from CERT member, and CERT member affiliated organization, written submittals, with a particular focus on those submittals provided in response to the post July 29 meeting questions.
2. For perspectives shared during discussions at the July 29 meeting, please see the July 29 meeting summary. Note that, there is overlap between the two sources of CERT perspectives, and these will be merged as part of preparing the first draft of the CERT product.
3. The presentation structure follows the general flow of the written questions posed to CERT members. The flow is:
 - Section 1: Comparative Perspectives on Emissions-Based and Price-Based Policy Approaches;
 - Section 2: Perspectives on Linking a Washington Cap and Trade System to the California\Quebec Market; and
 - Section 3: Perspectives on Specific Policy Design Elements.
4. The synthesis attempts to strike a balance between consolidating overlapping perspectives into single statements and preserving specific details where they provide additional context or insight to a perspective. This approach, at times, results in a near verbatim presentation of an individual’s submission. Where points have been consolidated, please forgive any loss of fidelity to individual perspectives, and feel free to bring that loss to the contractor team’s attention.
5. The text seeks to present input directly related to the CERT charge – examining market mechanisms targeted at carbon emission reductions. In certain instances, submissions addressed broader or different carbon emission policies or programs. That type of input has not been included in this synthesis, while every attempt was made to capture the material directly relevant to the CERT charge.
6. Please keep in mind that this text captures CERT member *perspectives*. We have not fact checked the submissions, though we plan to make a thorough review and follow up as needed with individual CERT members prior to preparing and providing for review the first draft of the CERT product. In the mean time, perspectives submitted that were stated as matters of fact have been presented cautiously to avoid the potential for perpetuating an inadvertent inaccuracy.
7. “Author’s Notes” are included in several places. These notes seek to provide context helpful to better understanding the perspectives being shared.

CERT Member Written Submissions: Synthesis by Policy and Design Element Categories

Section 1: Comparative Perspectives on Emissions-Based and Price-Based Policy Approaches

Basis for Emissions-Based Preferences

1. More likely to remain in place for the long term and not be as subject to the ups and downs of the economy – a price-based system would be more vulnerable to legislative or direct voter repeal during recessionary periods.

2. Can help to catalyze carbon emissions reduction efforts beyond Washington.
3. Greater certainty of meeting carbon emission targets, that also creates greater certainty of protecting public health. The emissions-based approach delivers both:
 - a. The power of the law by making the state's emission limits enforceable; and
 - b. The power of the market by aligning the price of fossil fuels with their true cost, removing enormous economic disincentives for alternative solutions.
4. A price-based approach does not provide a similar level of certainty for meeting emissions targets, unless accompanied by measures to ensure accountability for achieving the state's emission limits.
5. An emissions-based approach may be able to provide sufficient price certainty with proper controls, including a ceiling and floor price.

Basis for Price-Based Preferences

1. A tax is simpler, more efficient, and a better match for Washington's carbon emission circumstances.
2. If Oregon adopts a carbon tax, Washington runs the risk of missing an opportunity to participate in coordinating a regional approach and the associated leadership opportunity. There is also the risk, if an emissions-based policy is pursued in Washington, of creating a programmatic checkerboard among OR, WA, and BC.
3. A price-based approach will be more cost-effective, and it provides greater price certainty to enable the best deployment of capital.

Blended Approach

1. No need to see the two options as mutually exclusive. It may be the case that, if cap and trade fails to reduce emissions in, for example, the transportation sector, imposition of a tax targeted at the sector could be needed\helpful.

Section 2: Perspectives on Linking a Washington Cap and Trade System to the California\Quebec Market

Pros

1. Linkage is the only way to make a cap and trade system viable for Washington. The universe of covered sources in Washington is not large enough to stand alone; linking will create a larger, more stable market.
2. Participating in a broader market will contribute to the momentum toward an expanded regional (e.g., larger Western linked system), national, and international market.
3. Linkage allows for leveraging existing administrative structures, thereby lowering market operational costs, and with lower administrative costs, the opportunity increases to devote resources to ensuring, for example, environmental justice priorities are met.
4. The market will be more robust for trades and offsets, thereby increasing compliance options and reducing compliance costs.

5. The California\Quebec market provides a proven and regulated financial model to establish a global price for GHG emissions as measured by carbon equivalents.
6. Linkage creates “stickiness” – a program in cooperation with others potentially is a more binding commitment.
7. In agreement with the Governor’s Office rationale:
 - a. Level playing field for participants that work across borders.
 - b. Administrative costs and economies of scale.
 - c. Market size and liquidity.
 - d. Help spur national and international action.

Cons

1. Washington would be adopting a program designed through WCI but then tailored for an individual state (California) primarily designed for another state that remains in “beta” mode after several years of implementation, and may not well reflect Washington’s hydro-based system and transportation-heavy carbon emissions profile.
2. The California offset approach has remained controversial and has not met objectives for availability (as a percent of the cap), and this gap will take on more pressure with changes to the cap in 2015. Washington will require a different approach if offsets are to be a meaningful part of the program.
3. Adopting the “California Model” holds the potential to play into anti-California sentiment.
4. Quantifying and capturing the benefits of the forest products sector remains a contentious issue in the California cap and trade program. This creates a concern over offset opportunities, and concern that the Washington forest products industry would be at a competitive disadvantage to California.
5. (Author’s Note: the role of “flexibility” for Washington relative to the California/Quebec Market generated mixed perspectives.)
 - a. “Flexibility,” to customize Washington’s system in certain areas has some appeal, but also has potential downsides (increased complexity and administrative burdens, reduced consistency, and greater opportunity for exceptions and modifications that could undermine the effectiveness of the system) – the advantages of consistency and simplicity with the California/Quebec market outweigh the rationale for customizing the system.
 - b. Overall the rationale for linkage is sound. The reality of sufficient flexibility to meet Washington’s needs remains in question. Flexibility must be explored further, and in detail, through discussions with the California/Quebec market administrators.
6. The state needs to have a better understanding about how allowances and offsets would flow between capped entities, and the comparative carbon emission reduction cost advantage or disadvantage on Washington covered entities and the resulting pattern of revenue flows and investments between jurisdictions participating in the market.
7. There is a need to ensure that a majority of the state’s required emission reductions occur within the state.

Section 3: Perspectives on Specific Policy Design Elements (note: the reference point for these perspectives is the Governor's Office July 29 CERT meeting Power Point slides covering the related design elements.)

Coverage

1. Washington State should consider a phased approach for regulated sectors similar to California AB-32 and Waxman-Markey (as a means to provide time for a more stable transition from business-as-usual to improved carbon emissions performance).
2. Not sure that 25,000 MT CO₂e per year is a sufficiently low threshold for Washington State. There is a need to investigate impacts of a lower threshold on emissions reductions needed to meet the State's limits.
3. Currently, the California/Quebec program excludes fugitive emissions from landfills and wastewater treatment plants. For considering how to address these sources for Washington, it will be important to consider the technology of fugitive methane gas system best practices, challenges of measuring these types of emissions, and how financial support for solutions such as methods to increase organics recycling will help reduce these sources.

Emissions Limits

1. The numbers in state law need to be updated per our latest scientific understanding and per UNFCCC methodologies.

Allowance Distribution

1. A substantial portion of allowances (some perspectives indicate ALL, with possible temporary exceptions for trade-exposed industries) should be auctioned, with a need to phase in the approach to provide time for a stable transition to greater carbon emissions reductions.
2. Transportation fuels should not receive free allowances. Fifteen percent minimum auction in Year 1 implies that there would be some free allowances for transportation fuels.
3. The State needs to auction at least as much as California, and the State should consider whether it is possible to limit trading further, for instance, to only those entities with compliance obligations.
4. Incentivize carbon reduction opportunities in carbon-intensive industries through a tiered rebate approach, tying a portion of the allowance pool to the direct and indirect compliance costs of energy intensive industries. Rebates would be pegged to efficiency – the more efficient the producer, the greater the rebate.
5. Washington should learn from other cap and trade program experience that free allowance distribution does not ensure consumers are protected from price increases and can lead to windfall profits for covered entities.
6. As an alternative to a low starting auction amount (the proposed 15 percent), the program could have initially low allowance price minimums and ceilings and/or more modest emissions reductions requirements for initial compliance years.

Cost Containment: Offsets

1. Strict offset protocols (e.g., those used for the California market) are desirable to protect vulnerable communities from the potential negative consequences of offset use.
2. Adopt the California 8 percent limit on an entity's offset purchases per compliance period.
3. A key to maximizing the benefits of forestry offsets is to maintain the health and vitality of Washington's working forests.
4. Ten percent of compliance obligations could be well over 50 percent of the total emission reductions under Washington law – that blows a gaping hole in the system, undermining its integrity and effectiveness, and raising environmental justice issues.
5. It is important that all offsets be located within the United States, Mexico, or Canada (this is the same approach as California, but it is stricter than what was suggested as part of the WCI design framework).

Cost Containment: Other Measures

1. Strong cost controls are needed to ensure cost-effective investing. For cap and trade, this means the need for a price or cost cap, and probably a floor.
2. Although it creates uncertainty, the Governor should have authority to intervene to influence allowance prices under specified conditions.

Revenue Distribution

1. Funds from either system have a history of not going for intended purposes (e.g., some states have "raided" or "swept" these funds when economic conditions became difficult or non-supporters were elected). There is a need to protect the integrity of original revenue use intentions.
2. Add an additional principle to those presented by the Governor's Office: any use of revenues needs to be calculated with the assumption that emissions will in fact decline per the statutory limits, so as to avoid creating constituencies for prolonged emissions. Recycling revenues directly to consumers and using revenues to provide consumers with more practical and affordable alternatives while creating sustainable jobs are among the best ways to ensure that the program delivers results over the long haul.
3. Investments needed to supplement/compliment the emissions reduction impact of whatever market mechanism is selected (Author's Note: most often the perspectives suggesting these investments derived from a cap and trade orientation. Also note: support for these investments reflected, at least in part, the perspective that cap and trade or carbon tax alone will be insufficient to reduce emissions – particularly transportation emissions - by the amount needed to meet the State's emission limits.)
 - a. Investments with direct benefits to reducing carbon emissions, spurring economic development in the energy efficiency/clean energy sectors, and supporting complimentary actions by local governments to pursue smart growth, transit oriented development (TOD), and development of alternative transportation modes (e.g., transit, rail, bikes, pedestrian). (Author's Note:

- b. Fund preservation, maintenance, and completion of major transportation corridor projects already underway in the State; provide an equitable share to maintaining and improving the transportation infrastructure in Washington.
 - c. Local GHG reduction strategies such as energy efficiency retrofits, waste prevention and recycling infrastructure, and forest protection and restoration initiatives.
 - d. Revenue allocation programs should include incentives and/or regulations that reward business for energy efficiency investments made at energy intensive facilities beyond “business as usual” (there will need to be careful accounting for real, verified emission reductions), as well as training to ensure existing and new workers can participate in emerging sectors.
 - e. Use to spur investment in grid modernization.
 - f. Use to spur deployment of clean energy technologies, such as wind, biomass, solar, and nuclear.
 - g. Public transportation systems will experience an increase in fuel costs, while they are an important component of providing alternative, lower emission choices. The State should consider potential exemptions, rebates, and/or direct allocation of revenue to support such strategies that directly reduce GHG emissions.
4. Protecting Disadvantaged Communities
- a. Adopt the California model to revenue distribution for disadvantaged communities. Set aside 25 percent of auction revenues for these communities, with 10 percent reserved for direct investment in them.
 - b. Investment designed to increase access to non-carbon alternatives for low income communities and communities of color by reducing cost barriers and educating about options.
 - c. Adjust for disproportionate impact of increase in transportation costs on rural areas (that experience greater VMT averages).
5. Climate adaptation measures to address inevitable impacts (and the potential for inequitable impact on low-income communities and communities of color).
6. (Authors Note: certain submissions indicated support for a revenue neutral approach. These same submissions indicated, however, that it is important to use revenue for one or more of the following purposes.)
- a. Address disproportionate impacts (on, for example, low income households).
 - b. Aid energy intensive, trade exposed industries (at least initially) to address competitiveness concerns.
 - c. Invest in energy efficiency and green technology development (which can represent a significant economic opportunity for Washington).
 - d. Support other energy investments to further reduce carbon emissions.
 - e. Support adaptation – climate impacts are an inevitable.
 - f. To the extent a revenue neutral approach is taken, reduce the B&O tax and sales tax commensurate with the impact of a carbon emissions price.

Leakage Protection

1. Policies should address and combat leakage to ensure a level playing field between in-state and out-of-state companies and prevent jobs from leaving Washington.
2. Washington should try to harmonize its leakage policies with other states and regions – a regional approach will strengthen the ability to address leakage issues stemming from products imported from state or other countries that lack carbon reduction laws and/or regulations.

Reporting and Verification

1. Make reporting of energy intensity for commercial/industrial buildings mandatory and publicly available\readily accessible (possible use of EPA’s Energy Star Portfolio Manager). This can be a key ingredient in driving material emissions reductions in this important emissions sector.

Carbon Emissions Reduction Taskforce

Notes from July 29, 2014 Meeting

Materials for this meeting can be found here:

http://www.governor.wa.gov/issues/climate/documents/20140729_CERT_MeetingMaterials.pdf

Welcome, Introductions, and Agenda Review

The Co-Chairs, Governor's Office representatives, and Rob Greenwood welcomed CERT members. Material covered with and presentations for the CERT thus far have mainly focused on how carbon emission reduction programs have been implemented in other jurisdictions. This meeting began the process of bringing a Washington State-specific focus to how these policy design options could be implemented. The agenda had two major discussion segments: 1) a presentation and discussion of the comparative aspects of a linked cap-and-trade system and a carbon tax; and 2) a presentation by, and discussion of, the Governor's Office on the perspectives and further thinking related to a carbon emission limits and market mechanism program for Washington.

Considerations for WA of Emissions-Based or Price-Based Carbon Emissions Reduction Market Mechanisms

The contractor technical team described the design options and implications if Washington State were to implement a cap-and-trade emissions program that is linked with the existing California and Quebec markets, including identification of design elements that would need to be identical, harmonized, or are more flexible with respect to customization by Washington. They also described the options for a carbon tax approach in Washington. In addition, the contractor technical team discussed how a Washington cap-and-trade program linked to the California and Quebec markets and a WA carbon tax program could address the topics in the eight content areas of the previously introduced Evaluation Framework. For further details on these topics, see the additional meeting materials "Program Features and Options for a Washington State Linked Cap-and-Trade System and Carbon Tax" and the "Review of the Evaluation Framework, version 2". (The presentation slides can be found in the meeting materials.)

Governor's Office Perspective on Policy Design Approaches

The Governor's Office provided a presentation related to current thinking on policy mechanisms available to reduce carbon emissions and to provide the next iteration of a "Starting Point" program for consideration by the Taskforce. The aim of the presentation was to spur discussion among the CERT and was not intended to be a comprehensive or complete proposal with the focus provided on a limited number of design elements of most relevance to the CERT. The presentation stressed that, based on input from CERT members, the Governor's Office has continued to consider and reflect on both price-based and emissions-based policy options for implementing a market-based carbon emissions reduction program in Washington.

The slides from the presentation can be found here:

http://www.governor.wa.gov/issues/climate/documents/20140729_CERT_Presentation.pdf

The presentation reiterated principles the Governor's Office put forth at the June meeting for a market-based emissions reduction system (and as contained in the Governor's Executive Order). These include a cap on emissions, strong accountability, use of market mechanisms, minimizing disproportionate impacts, and spurring investment and jobs.

The presentation addressed the options for WA using a price-based approach or an emissions-based approach and explored how each could fulfill the principles outlined above. For both policy options, the Governor's Office, for discussion purposes, used the following basic program assumptions:

- The price and emissions-based programs in Washington would cover the same sectors;
- The transportation sector would be included; and
- The revenue options would be the same for both policy mechanisms.

Since the CERT has begun its work, it has reviewed options that take a price-based approach, like the BC program, and options that prioritize emissions reduction, such as the California and European cap-and-trade systems. In practice the two approaches (cap-and-trade, and tax) share much in common. Both approaches make the social costs of carbon pollution real for emitters and for consumers, both leverage the rules of the market (though in different ways), both can create undesired impacts on, and have implementation mechanisms to address, businesses and households, and both can generate behavior and technology changes that lead to reduced carbon emissions.

While the two systems can be designed with similar objectives, there are tradeoffs and differing benefits to the two approaches. An emissions-based system can provide greater emissions level certainty, while a price-based system can provide greater price certainty. The presentation indicated that a program containing elements of an emissions-based system as its foundation can have several advantages that may influence the choice of policy approach. In particular, emissions-based systems tend to:

- Provide greater certainty of meeting emissions targets;
- Allow for a broader range of cost containment options, such as allowance banking or offsets; and
- Enable linking with programs in other jurisdictions, thereby expanding compliance options and building towards a more regionally inclusive program.

The presentation further indicated that, if WA were to pursue an emissions-based program, then linking to an existing cap-and-trade program (the California and Quebec existing carbon emissions market) would provide certain advantages over creating a WA-only program. The factors contributing to exploring the cap-and-trade system in a linked context include the following:

- Market size: to function well, cap-and-trade systems need a sufficiently large number of market participants. By joining with other jurisdictions, Washington would have better access to the number of market entities needed for a well-functioning market.
- Administrative and implementation costs: Washington could leverage already established investments in institutions and trading platforms (CITSS, auction platforms, offset registries, etc.), thereby significantly reducing administrative requirements and implementation costs.
- Level playing field: By joining with other jurisdictions, and harmonizing design features, Washington would better support similar industries facing similar carbon costs and incentives.
- Ability to expand participation: The linked system could be readily expanded to include additional jurisdictions, thereby enhancing these and other benefits.

For this meeting, the Governor's Office focused on a few cap-and-trade design elements of likely interest to the CERT: coverage; setting the emissions limits; allowances; cost containment; and revenue.

The focus on these elements in part reflected the degree of flexibility Washington would have over them while participating in a linked system.

Key Highlights of CERT Member Observations

Based on the presentations by the contractor technical team and the Governor's Office, CERT members posed several questions for follow-up consideration after the meeting.

- Which of the identical, harmonized, or flexible linked cap-and-trade system design elements are most likely to face difficulty from cost, implementation, and political standpoints?
- What is the current status of the efforts in Oregon to develop a market based emissions reduction program?
- Does the state have, or can it prepare marginal abatement cost curves for WA emitters to support better understanding the comparative advantage of WA covered sources in a system linked to California and Quebec?
- Can the state provide more detail on the type and location of the covered entities in Washington (presented visually if possible)?
- Can the state provide a clearer sense of how a cap-and-trade system and other complementary policies could come together to influence emissions reduction in the WA transportation sector?
- What would be the location-specific impacts on covered sources and what type and magnitude of potential disproportional impacts can be anticipated?
- What are the anticipated negative aspects of implementing a WA-based cap-and-trade system that is not linked to the California\Quebec market?
- How does an allowance reserve work with a cap-and-trade system?
- What type of linkage is possible among jurisdictions that pursue a price-based approach (carbon tax) to emissions reduction?
- What anticipated price level is needed to meet Washington's statutory emissions limits?
- What information exists to understand the emissions reduction impact that can be anticipated from the implementation of a cap-and-trade system in WA?
- Is there a cap-and-trade system that has been applied to an economy like that in the State of Washington, particularly to one with a large percentage of emissions from the transportation sector?
- Can/should the State consider hybrid approaches instead of a cap-and-trade program only or a carbon tax program only?
- What are the anticipated revenues for a cap-and-trade system? Do these differ from a carbon tax approach? And what discretion would Washington have over use of these revenues if it links to the California\Quebec market?
- In terms of future analytical efforts, what is the value of running IPM given that emissions from the electricity sector are a small percentage of overall emissions?
- If WA auctions only 15% of allowances, is this compatible for linking with CA?

During discussions, individual CERT members also made observations regarding the aspects of a price-based system or an emissions-based system that resonated with them. These views included the following (note that, CERT members expressed these views in their individual capacity as CERT members, and not all CERT members shared the views of other members).

Views on the positive aspects of a price-based (Carbon Tax) system

- A price-based system appears easier to administer than an emissions-based system.

- A price-based system would appear to be more effective at targeting emissions from imports to the Washington economy.
- A price-based system appears to provide a more targeted means to reduce emissions from the transportation sector (a clear signal can be sent at the pump).
- Allowance prices in existing cap-and-trade markets seem too low to send a meaningful price signal for changing carbon emissions-related behavior.
- A tax/fee appears to provide a more certain and consistent price signal aiding long-term business investment decision making.
- A carbon tax makes the intent of setting a price on carbon more transparent than a cap-and-trade system
- The concept of a tax is better understood than a cap-and-trade system making messaging related to a tax much more straight forward.

Views on the positive aspects of an emissions-based (cap-and-trade) system

- Cap-and-trade systems are generally considered to provide for more certainty relative to meeting an emissions cap.
- Washington's participation in a linked cap-and-trade system could help to influence and catalyze broader regional, national, and possibly international carbon emissions reduction action.
- The potential for greater public health impact derived from the greater certainty of emissions reduction under a cap-and-trade system.
- A cap-and-trade system may be less vulnerable to future alteration in response to legislative sentiment (a tax can be changed more quickly), thus providing greater certainty to business decision making (the longer-term price signal is stronger under cap-and-trade).
- A carbon tax may have more of a tendency to be perceived as just a cost of doing business and therefore just be incorporated into business as usual behavior with a limited carbon emissions reduction response.
- Implementation of a cap-and-trade system signals a strong, on-going commitment to carbon emissions reduction.
- New taxes typically face very strong political headwinds.
- Cap-and-trade systems provide for a greater range of compliance options resulting in greater economic efficiency for carbon emissions reduction (i.e., provides for the lowest cost of carbon emissions reduced).

Views on important aspects of either market mechanism approach

- Mixed views emerged regarding the attractiveness of flexibility in the program design, particularly around the ability to modify pricing structures. Some observations indicated support for such flexibility, particularly to control price spikes, while other observations focused on the need for a stable and certain price signal to create the incentive for, for example, clean energy investments.
- A transparent (e.g., public disclosure) reporting and verification element for emissions reduction will be important to influence behavior, for example, the ability of the public to know the energy efficiency status of a building.
- Any regressive income impacts (or other equity impacts) must be addressed, with revenue recycling options available under both market mechanisms to do so.

Next Steps

- CERT members were encouraged to provide additional feedback and submit questions after the meeting. The contractor team indicated a follow up email would be sent out on July 30 detailing how CERT members can provide additional input before the September 9 CERT meeting.
- The contractor team further indicated its plan to send out a communication to the CERT regarding the plan for and rationale behind the analytical work that will occur prior to the September 9th meeting.

Memorandum: Analytics to evaluate economic impacts of a carbon emissions reduction program in Washington State

Goals of Analytics: In support of the Carbon Emissions Reduction Taskforce, the Governor's office and the forecasting team at the Washington State Office of Financial Management are working to evaluate the economic impacts of a program to reduce carbon pollution through market mechanisms.

Initial scenarios will be presented at the September 9 meeting of the Taskforce: a baseline or "business as usual" scenario that assumes no policy is set in place to reduce carbon emissions; and one or more carbon price scenarios that assess the impacts of a price on carbon emissions levied on the major sources of emissions including energy, industry and transportation. For our purposes at this initial stage of modeling, the price scenario represents the most basic approach, a simple \$12 dollar MTCO₂ price on carbon pollution with no consideration of allowance distribution, exemptions or other compliance options. Following the September 9 meeting, additional modeling will be carried out based on feedback provided by the Taskforce.

The aim of the analytical work is to evaluate what effects on the economy a market policy to reduce carbon and other greenhouse gas emissions will have. What sectors will experience job growth or loss? Will there be impacts as the state transitions from more carbon-intensive processes to a greener economy? How might the revenues from a carbon policy be best used to create jobs or income, or both?

Tools: To begin to answer these and other questions, the State will utilize two models, which, when combined, will characterize the effects of a carbon price on reduced emissions and the broader economy.

Carbon Tax Analysis Model (CTAM): This open-source Microsoft Excel-based model built for the Washington Department of Commerce is designed to forecast how CO₂ emissions shift when the price of those emissions changes. CTAM calculates the impact of a given price on carbon on each fuel in each sector of the economy and estimates the change in consumption levels for each fuel use.

CTAM will provide modeled energy data (electricity, residential, commercial, industrial and transportation) as inputs for the second model, REMI. REMI is a dynamic forecasting and policy analysis tool. REMI is an econometric, input-output model that can characterize complex relationships between industries in an economy. We will use the model to analyze economic growth as well as income distribution impacts - negative to positive – of a variety of approaches to putting a price on carbon.

Assumptions: The initial modeling results will be used to help the Taskforce explore the potential impacts of a carbon emissions reduction program and to identify further analyses that will inform the Taskforce's recommendations. For these initial model runs, the pricing scenario assumes the following:

- Program start date of 2016
- Applies the statutory cap to the electricity, transportation and building energy sectors.
- Initial price of \$12 MTCO₂
- Applies the same price to all emissions from covered sectors, both above and below the cap
- Use of economic data from 2013 as a baseline
- Model runs iteratively through 2040
- For the initial model run, we assume any revenue generated would be spent within the state for general state budget purposes. The results set a baseline for comparison and all subsequent model runs will look at applying revenue to address concerns or opportunities identified by the Taskforce

Anticipated Results and Next Steps: REMI will project the economic changes for 2020, 2025, 2030, 2035, and 2040, against the reference case (2013). The initial first run results will be summarized in a presentation by the modeling team and are expected to address questions in the context of the scenarios we are starting with.

- *Gross State Products GSP*
- *Output by industry*
- *Total employment*
- *Jobs by industry (+ and -)*
- *Jobs by occupation (+ and -)*
- *Price impact to energy commodities (electricity, natural gas, transportation fuels and other fuels)*
- *Personal income*
- *Personal income by quintile (e.g., households in lowest 20%, Low-Middle 20%, Middle 20%, High-Middle 20%, and Highest 20%) and household consumption and spending*
- *Revenues annual and cumulative (associated with auction)*
- *Carbon emissions reduction*
- *\$ per metric ton of greenhouse gas reduction by 2020, 2035 and 2050*

We want to underscore again that the initial modeling run will be based on a basic policy that puts a price on carbon pollution. It models the effect of this additional cost to the economy and not the specific policy design implications of a price-based or an emissions-based approach. Additional modeling runs will be done to evaluate policies that attempt to mitigate concerns or enhance opportunities.

Based on feedback provided by the Taskforce and continued discussion of the policy design options that remain under consideration, the Governor's office, in consultation with the Co-Chairs and the consultant team will seek to iterate new, more specific economic analyses between September and November as the Taskforce works toward its concluding recommendations.

Carbon Emissions Reduction Taskforce: *Meeting 5*

September 9, 2014, Tuesday, 10:00 am – 3:00 pm

SEIU Healthcare Local 775NW, 215 Columbia Street, Seattle, WA 98104

Agenda

10:00 Welcome and Introductions – CERT Co-Chairs

10:15 Agenda Review - Rob Greenwood

10:25 Modeling the Impacts of a Price on Carbon

- Presentation of Initial Modeling Results – Governor’s Office and Office of Financial Management
- Questions and Discussions from CERT Members

12:00 Lunch (*Provided for CERT members*)

12:15 Cap-and-Trade and Washington State’s Transportation Sector

- Review of Transportation Memorandum Content (Contractor Team)
- Questions and Discussions from CERT Members

1:30 CERT Member Perspectives: Written Submissions\July Meeting Discussions

- Review of Presentation of Draft Synthesis Document Content and July Draft Meeting Summary (Rob Greenwood)
- Questions and Discussions from CERT Members

2:15 Final CERT Product – Proposed Approach – CERT Co-Chairs/Rob Greenwood

2:45 Next Steps - CERT Co-Chairs/Rob Greenwood

3:00 Adjourn

Next Meeting: October 28, (Time TBD), Seattle (Location TBA)