CARBON EMISSIONS REDUCTION TASKFORCE

Meeting 1: April 29, 2014, 11:15 am – (NLT) 1:30 pm

Shoreline Community College, 16101 Greenwood Ave N, Shoreline, WA

AGENDA

Introductions

Discussion with Governor – Taskforce charge and initial thoughts

Meeting agenda and objectives

Taskforce Meeting Dates – review and finalize

Taskforce Process – discuss and finalize

Background information – discuss highlights; list additional information requests

Next meeting – 10:00 am to 1:00 pm, Thursday, May 15th (Location: Seattle, TBA)

> Presentation by, and discussion with, United Kingdom Department of Energy and Climate Change regarding greenhouse gas emissions trading systems and market-based mechanisms

DOCUMENTS ATTACHED HERE:

Taskforce Charge (page 3)

Taskforce Meeting Dates (page 4)

Taskforce Process (page 5)

Climate Facts (page 7)

Major Climate Change Initiatives in Washington (page 11)

Chapter 70.235 RCW: Limiting Greenhouse Gas Emissions (page 13)

Washington's Greenhouse Gas Emissions (page 20)

Market-based Mechanisms for Greenhouse Gas Reductions (page 22)

DOCUMENTS TO BE PROVIDED AT THE APRIL 29 MEETING

Final List of Taskforce Members

Governor's formal climate action documents

CERT Request for Qualifications and Quotations

TASKFORCE CHARGE

The Taskforce is asked to provide recommendations on the design and implementation of a carbon emission limits and market mechanisms program for Washington. Their recommendations and advice will inform legislation to be requested by the Governor for consideration during the 2015 legislative session.

The program must establish a cap on carbon pollution emissions, with binding requirements to meet our current statutory emission limits. The Taskforce will recommend how Washington can meet these limits through market mechanisms, such as trading, taxes, and incentives, in an effective and efficient manner.

The Governor is seeking advice on market policy options and related economic analysis, with the intent of designing a program that will maximize the benefits and minimize the costs of implementation, while considering the state's specific emissions and energy sources, businesses and jobs, and communities.

The Taskforce facilitation team, working with staff, will summarize information on existing carbon market programs and develop policy design options for review by the Taskforce.

Key Questions for Taskforce:

1. What is the basic policy that will best harness the market to help Washington meet its greenhouse gas emission limits? What market mechanism or combination of mechanisms would be most effective and most efficient?
2. How quickly can we reduce emissions and by how much? What is the scope, stringency, point of regulation, and timing of emission reductions, to meet the statutory limits?
3. How do we fairly allocate the responsibility to reduce emissions? If emission allowances are used, how should they be distributed?
4. What will it cost and who pays? How do we mitigate any disproportionate impacts to business sectors and communities?
5. Who watches the market? What's the right oversight and regulation of the market programs?
6. Do we go it alone, or connect with others? Should we link with carbon markets in other states and jurisdictions?
7. Who can best implement the program? What administrative entities are needed to effectively operate the program and ensure public confidence?

The Taskforce will deliver its final recommendations by no later than November 21, 2014.

CARBON EMISSIONS REDUCTION TASKFORCE

MEETING DATES

(Subject to change by Taskforce)

April 29th, 2014	Organization; discuss charge; background information
May 15th	United Kingdom presentation on emissions trading and market mechanisms. Discuss key carbon market design elements
June 24th	Discuss initial policy design options. Discuss scope and methods for economic analysis
July 29th	Discuss preferred policy design options for economic analysis. Discuss baseline scenario
September 9th	Review economic analysis results. Discuss revisions to policy design
October 28th	Discuss draft report on Taskforce recommendations and advice.
Week of Nov. 17	Present final report, recommendations and advice to the Governor

CARBON EMISSIONS REDUCTION TASKFORCE

DRAFT PROCESS *(For discussion/approval by the Taskforce)*

MEETINGS

1. Taskforce members and their staff will be notified of meeting details by email. Meeting information will also be posted on a Taskforce website, available through the Governor's website.
2. Alternate members are not needed. A member may invite someone to observe the meeting.
3. If a member is unable to attend a meeting, they:
   - are encouraged to offer thoughts in advance, based on materials distributed prior to the meeting, and
   - can catch up through the meeting summary and direct briefing from the facilitator or other staff.
4. The Taskforce may decide to allow members to listen or participate via conference phone.

OPEN MEETINGS

5. Meetings will not be closed to the public, but will not be advertised. (TVW may decide to broadcast one or more of the meetings.)
6. The Taskforce will not hold public hearings, and is not tasked with taking public comments during their meetings. The Governor's Office is responsible for keeping legislators fully informed, and for stakeholder and public review of any subsequent reports and actions.
7. The facilitator will manage any meeting disruptions, as needed.

MEETING DOCUMENTS

8. Meeting materials will be distributed by email in advance of meetings, for member review.
9. Meeting materials will be posted on the Taskforce website, after the meeting.
10. Brief meeting summaries will be distributed after each meeting, and posted on the website.

SUPPORT

11. A facilitation and project management team, including support for policy design and economic analysis, will be hired competitively by early June.
12. An appointed advisor from the Governor's Policy Office will start work in early May.
13. The Forecasting Division of the Office of Financial Management will provide oversight on the economic analysis.
14. Staff from state agencies with related expertise and jurisdiction will be available to support the Taskforce.

MEDIA INQUIRIES

15. Media inquiries about the process may be directed to the Governor's communications office, or to the facilitator.
16. Members may express their views to the press, but are asked not to speak for other members.

DECISIONS

17. Agreement will be pursued, where possible, but will not be required.
18. The Taskforce will not be asked to vote on any proposal.
19. Participation does not imply or presume agreement with, or support for, any action taken in response to the advice of the Taskforce members.

REPORT

20. The conclusions of the Taskforce will be documented in a report prepared by the facilitation team. They will also be discussed with the Governor at the final meeting of the Taskforce.
21. Report will note agreement where reached, and will capture the advice of all members, where agreement is not reached.
22. The report will correctly distinguish the views of the group from individual views. The report will also note if views are provided on behalf of the individual member, or on behalf of their organization, as needed.

OTHER?

Climate Facts

The University of Washington's Climate Impacts Group (CIG) has summarized the most recent research on the impacts of climate change to Washington specifically (where possible) or the Pacific Northwest more generally in a recent report.[1] In short the CIG found[2] that observed changes in regional climate, water resources, and coastal conditions are consistent with those observed globally as a result of human-caused climate change, despite large natural variations. Natural climate variability will continue to result in short term trends opposite those expected from climate change, as evidenced by recent regional cooling and increases in spring snowpack. However, projected changes prior to mid-century are largely inevitable, driven by the warming that is already "in the pipeline" due to past emissions.

Key Observed Changes and Future Projections for Washington and the Pacific Northwest

<table>
<tr><th colspan="2">Temperature</th></tr>
<tr><td rowspan="2">The Pacific Northwest warmed about +1.3°F between 1895 and 2011, with statistically-significant warming occurring in all seasons except for Spring. This trend is robust: similar 20th century trends are obtained using different analytical approaches. All but five of the years from 1980 to 2011 were warmer than the 1901-1960 average. There have been statistically-significant increases in nighttime heat events west of the Cascade Mountains in Washington (1901-2009), but not significant trends in daytime heat events or cold events (1895-2011).</td><td>Average annual temperature for 2050s</td></tr>
<tr><td>A +4.3°F (range: +2.0 to +6.7°F) increase for a low greenhouse gas scenario or +5.8°F (range: +3.1 to +8.5°F) for a high greenhouse gas scenario (both relative to 1950- 1999). Overall, warming is expected to be fairly uniform across Washington State. More frequent extreme heat events and less frequent extreme cold events are expected.</td></tr>
<tr><th colspan="2">Precipitation and Hydrology</th></tr>
<tr><td rowspan="6">There is no statistically-significant trend towards wetter or drier conditions in Pacific Northwest precipitation for the period 1895-2011. Natural variability has a large influence on regional precipitation, causing ongoing fluctuations between wet years and dry years and wet decades and dry decades. Trends in heavy precipitation events are ambiguous.

Washington Cascades snowpack decreased by about −25% between the mid-20th century and 2006, with a range of −15 to −35% depending on the analysis starting date. Snowpack in recent decades has increased as a result of natural variability. Most Washington glaciers are in decline (with some exceptions). The spring peak in stream flow is occurring earlier for many snowmelt-influenced rivers in the Pacific Northwest as a result of decreased snow accumulation and earlier spring melt.</td><td>Seasonal precipitation for mid-century</td></tr>
<tr><td>A majority of models project increases in winter, spring, and fall precipitation, as well as decreasing summer precipitation.</td></tr>
<tr><td>Extreme precipitation for 2050s</td></tr>
<tr><td>The number of days with more than one inch of rain increases +13% (±7%) for a high greenhouse gas scenario (relative to 1971-2000).</td></tr>
<tr><td>Average April 1 snowpack in Washington State for 2040s</td></tr>
<tr><td>Decrease of -38 to -46% for a low and a medium greenhouse gas scenario (relative to 1916-2006).</td></tr>
</table>

[1] Snover, A.K, G.S. Mauger, L.C. Whitely Binder, M. Krosby, and I. Tohver. 2013. *Climate Change Impacts and Adaptation in Washington State: Technical Summaries for Decision Makers*. State of Knowledge Report prepared for the Washington State Department of Ecology. Climate Impacts Group, University of Washington, Seattle.

[2] Text here is excerpted from the report. Please see the full report for the citations for all data in this summary.

Coastal Ocean	
The coastal ocean is acidifying, but ocean temperatures show no strong trends. Ocean waters on the outer coast of Washington and the Puget Sound have become about +10 to +40% more acidic since 1800. The sea level is mostly rising; but it varies with location, e.g., rising at Friday Harbor +0.4 in./decade (1934-2008) and Seattle +0.8 in./decade (1900-2008) but falling at Neah Bay −0.7 in./decade (1934-2008). This is because local sea level change reflects variations in vertical land motion resulting from plate tectonics and other processes. As a result, sea level is currently falling in some locations.	**Sea level in Washington State, for 2100** Sea level rise of about +4 to +56 inches for low to high greenhouse gas scenarios (relative to 2000). Local amounts of sea level rise will vary. **Ocean acidity, for 2100** An increase of +38 to +41% for a low greenhouse gas scenario and +100 to +109% for a high greenhouse gas scenario (relative to 1986-2005).

What Does This Mean for Washington?

Projected regional warming and sea level rise are expected to bring new conditions to Washington State. By mid-century, Washington is likely to regularly experience average annual temperatures that exceed the warmest conditions observed in the 20th century. Washington is also expected to experience more heat waves and more severe heavy rainfall events, despite relatively small changes in annual and seasonal precipitation amounts. While climate change is expected to have important consequences for most sectors, key areas of risk have been identified. According to analyses completed for the U.S. National Climate Assessment, priority issues of concern for the Pacific Northwest are:

Key Areas of Risk for the Pacific Northwest		
Changes in the natural timing of water availability, due to the impacts of warming on snow accumulation and melt, reducing water supply for many competing demands and causing far-reaching ecological and socioeconomic consequences.	Coastal consequences of sea level rise, river flooding, coastal storms, erosion, inundation, and changes in the coastal ocean including increasing ocean acidity.	Additional forest mortality and long-term transformation of forest landscapes, caused by the combined impacts of increasing wildfire, insect outbreaks, and tree diseases.

Impacts for Washington's communities, economy, and natural systems

The CIG report provides extensive detail on the range of impacts that will affect Washington. These impacts are summarized in the report, and are reproduced below. Please see the report for more detail.

Water
Washington's water resources will be affected by projected declines in snowpack, increasing stream temperatures, decreasing summer minimum streamflows, and widespread changes in streamflow timing and flood risk. These changes increase the potential for more frequent summer water shortages in some basins (e.g., the Yakima basin) and for some water uses (e.g., irrigated agriculture or instream flow management), particularly in fully allocated watersheds with little management

flexibility. Changes in water management to alleviate impacts on one sector, such as hydropower production, irrigation or municipal supply, or instream flows for fish, could exacerbate impacts on other sectors.
Forests
Washington's forests are likely to experience significant changes in the establishment, growth, and distribution of tree species as a result of increasing temperatures, declining snowpack, and changes in soil moisture. A rise in forest mortality is also expected due to increasing wildfire, insect outbreaks, and diseases. The projected changes could affect both the spatial distribution and overall productivity of many ecologically and economically important Pacific Northwest tree species, including Douglas-fir, ponderosa pine, lodgepole pine, and whitebark pine.
Plants and Animals
Areas of suitable climate for many plants and animals are projected to shift considerably by the end of the 21st century. Many species may be unable to move fast enough to keep up, resulting in local species losses and changes in the composition of plant and animal communities. Challenges are expected for many federally-listed endangered and threatened species dependent on coldwater habitat, including salmon, trout, and steelhead. Projected impacts on other habitat types in Washington State, including wetlands, sagebrush steppe, prairies, alpine tundra and subalpine habitats, would affect species dependent on those habitats.
Coast and Ocean
Sea level is projected to rise in most areas of the state, increasing the likelihood for permanent inundation of low-lying areas, higher tidal and storm surge reach, flooding, erosion, and changes and loss of habitat. Sea level rise, rising coastal ocean temperatures, and ocean acidification will also affect the geographical range, abundance, and diversity of Pacific Coast marine species. These include key components of the marine food web (phytoplankton and zooplankton) as well as juvenile Chinook salmon and commercially important species such as Pacific mackerel, Pacific hake, oysters, mussels, English sole, and yellowtail rockfish.
Infrastructure
Climate change is expected to affect the longevity and performance of built infrastructure in Washington State. Most climate change impacts are likely to increase the potential for damage and service disruptions, although some risks (such as snow-related highway maintenance and closures) may decrease. Higher operating costs and reduced asset life are also expected. Sea level rise and increased river flooding are important causes of impacts on infrastructure located near the coast or current floodplains.
Agriculture
Washington crops and livestock will be affected by climate change via increasing temperatures and water stress, declining availability of irrigation water, rising atmospheric carbon dioxide, and changing pressures from pests, weeds, and pathogens. Some impacts on agriculture may be beneficial while others may lead to losses – the consequences will be different for different cropping systems and locations. While impacts on some locations and subsectors may be significant, most agricultural systems are highly adaptable. As a result, the overall vulnerability of Washington's agricultural sector to climate change is expected to be low. However, given the combination of increasing water demands and decreasing supply in summer, water stress will continue to be a key vulnerability going forward.

Human Health
Climate change is expected to affect both the physical and mental health of Washington's residents by altering the frequency, duration, or intensity of climate related hazards to which individuals and communities are exposed. Health impacts include higher rates of heat-related illnesses (e.g., heat exhaustion and stroke); respiratory illnesses (e.g., allergies, asthma); vector-, water-, and food-borne diseases; and mental health stress (e.g., depression, anxiety). These impacts can lead to increased absences from schools and work, emergency room visits, hospitalizations, and deaths.

Global Overview

For additional information on climate risks and impacts at the global scale, see the latest report issued by the United Nations' Intergovernmental Panel on Climate Change, approved March 31, 2014:

http://ipcc-wg2.gov/AR5/images/uploads/IPCC_WG2AR5_SPM_Approved.pdf

Major Climate Change Initiatives in Washington

This summary focuses on climate action initiatives, and does not include other environmental, energy, and transportation policies that have had major climate change implications. For a comprehensive list, please see Ecology's website (**http://www.ecy.wa.gov/climatechange/laws.htm**).

West Coast Governor's Global Warming Initiative (2003-2005)

The Governors of California, Oregon, and Washington launched the West Coast Governors' Global Warming Initiative in September 2003. They committed the states to acting, "individually and regionally to reduce greenhouse gas emissions." Key outcomes included the adoption of California's "clean car" standards (RCW 70.120A.010) and uniform appliance energy efficiency standards in the West. New law was enacted to require new fossil-fueled generating facilities, and existing facilities increasing their capacity by 15%, to mitigate 20% of their carbon dioxide emissions (RCW 80.70.020).

The Climate Registry and Greenhouse Gas Reporting (2006-current)

Washington, along with other North American jurisdictions, helped found The Climate Registry in 2007 to put in place common greenhouse gas reporting protocols and a uniform tracking mechanism. These efforts laid the foundation for a mandatory greenhouse gas reporting program in Washington. As a result, industrial sources and other entities that emit at least 10,000 metric tons of greenhouse gas emissions annually in Washington, or fuel suppliers that provide product equivalent to that amount, must report their emissions to Ecology (RCW 70.94.151). In addition, Ecology provides a statewide inventory of greenhouse gas emissions from all sources every two years (RCW 70.235.020).

Washington Climate Change Challenge (Signed in February 2007)

Executive Order 07-02 (**EO 07-02**) established goals for reducing greenhouse gas emissions, creating jobs and reducing fuels spending, and lead to the creation of the Climate Advisory Team (below). It also directed state agencies to assess steps required to prepare for the impacts of climate change. The state greenhouse gas emissions reduction limits in the EO were later established in law (RCW 70.235.020), requiring Washington to return greenhouse gas emissions to 1990 levels by 2020, reduce emissions to 25% below 1990 levels by 2035 and, by 2050, reduce emissions to 50% below 1990 levels. A related requirement in which all new electric generating resources, including those under long term contract, must meet a greenhouse gas emission performance standard (RCW 80.80.040) was also put in place.

Climate Advisory and Action Teams (2007 and 2008, respectively)

Convened in 2007, the Climate Advisory Team (CAT) identified 12 targeted areas and 45 sets of mitigation strategies encompassing a range of greenhouse gas emission reduction policies and programs. Reconvened and expanded in 2008 as the Climate Action Team (CAT), the group focused on four areas— the built environment, transportation, reducing the waste stream, and the role of the State Environmental Policy Act. Taken together, the CAT efforts put in place a roadmap to achieve the state's

reduction goals. A parallel process with Preparation/Adaptation Working Groups (PAWGs) identified strategies for Washington to prepare for and adapt to the impacts of climate change.

Western Climate Initiative (2007 – 2011)

A collaboration of North American jurisdictions working to reduce greenhouse gases, the Western Climate Initiative (WCI), was created by the governors of Washington, Oregon, California, Arizona and New Mexico with other states and Canadian provinces (including British Columbia) later signing on. The signatories set a regional greenhouse gas reduction goal, recognized The Climate Registry as a common emissions tracking entity, worked on a range of emission reduction policies and, most significantly, created a basic framework (2008) and comprehensive program outline (2010) for a regional cap-and-trade program. WCI became a non-profit entity in late 2011 at which point the states and provinces not committed to the cap-and-trade program at that time exited the now reconfigured WCI Inc.

Washington's Leadership on Climate Change (Signed in May 2009)

To strengthen Washington's commitment to climate change work, as well as prepare Washington businesses for a carbon-constrained economy, this Executive Order (**EO 09-05**) addressed climate, energy, and transportation policy. Highlights include working with TransAlta to phase out coal power production from their Centralia power plant, developing industry emission benchmarks, identifying emission reduction strategies to help meet the state's statutory greenhouse gas reduction limits, and analyzing the technical and economic implications of a low carbon fuel standard for transportation fuels.

Pacific Coast Collaborative (Climate policy focus from 2010 – current)

The Pacific Coast Collaborative (PCC) was formed in 2008 by Washington, Oregon, California, and British Columbia to foster regional policy action, including climate action such as enhanced appliance efficiency standards. Most recently, the 2013 **Pacific Coast Action Plan on Climate and Energy** called for the jurisdictions to account for the costs of carbon pollution and, where appropriate and feasible, link these programs. The action plan also calls for adopting low carbon fuel standards in Washington and Oregon.

North America 2050 (2011 – current)

An outgrowth of cooperation among regional climate change policy initiatives, this collaboration of states and provinces focuses on climate change actions other than cap-and-trade, such as EPA's ongoing action on power plants, offsets, transportation, and industrial benchmarking.

Climate Legislative and Executive Workgroup (2013-2014)

The Climate Legislative and Executive Workgroup (CLEW), created by the 2013 Legislature (E2SSB 5802), charged with recommending actions and policies to reduce greenhouse gas emissions in Washington that, if implemented, would ensure achievement of the state's emissions targets. The law required that the technical work be done by a consultant, under the guidance of the Governor and four legislators that comprised the CLEW. The Workgroup submitted differing views in their final report: **http://www.governor.wa.gov/documents/Jan_30_2014_CLEW_final_combined_report.pdf.**

Chapter 70.235 RCW -- LIMITING GREENHOUSE GAS EMISSIONS

70.235.005 -- Findings — Intent.

(1) The legislature finds that Washington has long been a national and international leader on energy conservation and environmental stewardship, including air quality protection, renewable energy development and generation, emission standards for fossil-fuel based energy generation, energy efficiency programs, natural resource conservation, vehicle emission standards, and the use of biofuels. Washington is also unique among most states in that in addition to its commitment to reduce emissions of greenhouse gases, it has established goals to grow the clean energy sector and reduce the state's expenditures on imported fuels.

(2) The legislature further finds that Washington should continue its leadership on climate change policy by creating accountability for achieving the emission reductions established in RCW 70.235.020, participating in the design of a regional multisector market-based system to help achieve those emission reductions, assessing other market strategies to reduce emissions of greenhouse gases, and ensuring the state has a well trained workforce for our clean energy future.

(3) It is the intent of the legislature that the state will: (a) Limit and reduce emissions of greenhouse gas consistent with the emission reductions established in RCW 70.235.020; (b) minimize the potential to export pollution, jobs, and economic opportunities; and (c) reduce emissions at the lowest cost to Washington's economy, consumers, and businesses.

(4) In the event the state elects to participate in a regional multisector market-based system, it is the intent of the legislature that the system will become effective by January 1, 2012, after authority is provided to the department for its implementation. By acting now, Washington businesses and citizens will have adequate time and opportunities to be well positioned to take advantage of the low-carbon economy and to make necessary investments in low-carbon technology.

(5) It is also the intent of the legislature that the regional multisector market-based system recognize Washington's unique emissions portfolio, including the state's hydroelectric system, the opportunities presented by Washington's abundant forest resources and agriculture land, and the state's leadership in energy efficiency and the actions it has already taken that have reduced its generation of greenhouse gas emissions and that entities receive appropriate credit for early actions to reduce greenhouse gases.

(6) If any revenues that accrue to the state are created by a market system, they must be used to further the state's efforts to achieve the goals established in RCW 70.235.020, address the impacts of global warming on affected habitats, species, and communities, and increase investment in the clean energy economy particularly for communities and workers that have suffered from heavy job losses and chronic unemployment and underemployment.

70.235.010 -- Definitions.

The definitions in this section apply throughout this chapter unless the context clearly requires otherwise.

(1) "Carbon dioxide equivalents" means a metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential.

(2) "Climate advisory team" means the stakeholder group formed in response to executive order 07-02.

(3) "Climate impacts group" means the University of Washington's climate impacts group.

(4) "Department" means the department of ecology.

(5) "Director" means the director of the department.

(6) "Greenhouse gas" and "greenhouse gases" includes carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and any other gas or gases designated by the department by rule.

(7) "Person" means an individual, partnership, franchise holder, association, corporation, a state, a city, a county, or any subdivision or instrumentality of the state.

(8) "Program" means the department's climate change program.

(9) "Western climate initiative" means the collaboration of states, Canadian provinces, Mexican states, and tribes to design a multisector market-based mechanism as directed under the western regional climate action initiative signed by the governor on February 22, 2007.

70.235.020
Greenhouse gas emissions reductions — Reporting requirements.

(1)(a) The state shall limit emissions of greenhouse gases to achieve the following emission reductions for Washington state:

(i) By 2020, reduce overall emissions of greenhouse gases in the state to 1990 levels;

(ii) By 2035, reduce overall emissions of greenhouse gases in the state to twenty-five percent below 1990 levels;

(iii) By 2050, the state will do its part to reach global climate stabilization levels by reducing overall emissions to fifty percent below 1990 levels, or seventy percent below the state's expected emissions that year.

(b) By December 1, 2008, the department shall submit a greenhouse gas reduction plan for review and approval to the legislature, describing those actions necessary to achieve the emission reductions in (a) of this subsection by using existing statutory authority and any additional authority granted by the legislature. Actions taken using existing statutory authority may proceed prior to approval of the greenhouse gas reduction plan.

(c) Except where explicitly stated otherwise, nothing in chapter 14, Laws of 2008 limits any state agency authorities as they existed prior to June 12, 2008.

(d) Consistent with this directive, the department shall take the following actions:

(i) Develop and implement a system for monitoring and reporting emissions of greenhouse gases as required under RCW 70.94.151; and

(ii) Track progress toward meeting the emission reductions established in this subsection, including the results from policies currently in effect that have been previously adopted by the state and policies adopted in the future, and report on that progress.

(2) By December 31st of each even-numbered year beginning in 2010, the department and the department of commerce shall report to the governor and the appropriate committees of the senate and house of representatives the total emissions of greenhouse gases for the preceding two years, and totals in each major source sector. The department shall ensure the reporting rules adopted under RCW 70.94.151 allow it to develop a comprehensive inventory of emissions of greenhouse gases from all significant sectors of the Washington economy.

(3) Except for purposes of reporting, emissions of carbon dioxide from industrial combustion of biomass in the form of fuel wood, wood waste, wood by-products, and wood residuals shall not be considered a greenhouse gas as long as the region's silvicultural sequestration capacity is maintained or increased.

70.235.030

Development of a design for a regional multisector market-based system to limit and reduce emissions of greenhouse gas — Information required to be submitted to the legislature.

(1)(a) The director shall develop, in coordination with the western climate initiative, a design for a regional multisector market-based system to limit and reduce emissions of greenhouse gas consistent with the emission reductions established in RCW 70.235.020(1).

(b) By December 1, 2008, the director and the director of the department of commerce shall deliver to the legislature specific recommendations for approval and request for authority to implement the preferred design of a regional multisector market-based system in (a) of this subsection. These recommendations must include:

(i) Proposed legislation, necessary funding, and the schedule necessary to implement the preferred design by January 1, 2012;

(ii) Any changes determined necessary to the reporting requirements established under RCW 70.94.151; and

(iii) Actions that the state should take to prevent manipulation of the multisector market-based system designed under this section.

(2) In developing the design for the regional multisector market-based system under subsection (1) of this section, the department shall consult with the affected state agencies, and provide opportunity for public review and comment.

(3) In addition to the information required under subsection (1)(b) of this section, the director and the director of the department of commerce shall submit the following to the legislature by December 1, 2008:

(a) Information on progress to date in achieving the requirements of chapter 14, Laws of 2008;

(b) The final recommendations of the climate advisory team, including recommended most promising actions to reduce emissions of greenhouse gases or otherwise respond to climate change. These recommendations must include strategies to reduce the quantity of emissions of greenhouse gases per distance traveled in the transportation sector;

(c) A request for additional resources and statutory authority needed to limit and reduce emissions of greenhouse gas consistent with chapter 14, Laws of 2008 including implementation of the most promising recommendations of the climate advisory team;

(d) Recommendations on how projects funded by the green energy incentive account in RCW 43.325.040 may be used to expand the electrical transmission infrastructure into urban and rural areas of the state for purposes of allowing the recharging of plug-in hybrid electric vehicles;

(e) Recommendations on how local governments could participate in the multisector market-based system designed under subsection (1) of this section;

(f) Recommendations regarding the circumstances under which generation of electricity or alternative fuel from landfill gas and gas from anaerobic digesters may receive an offset or credit in the regional multisector market-based system or other strategies developed by the department; and

(g) Recommendations developed in consultation with the department of natural resources and the department of agriculture with the climate advisory team, the college of forest resources at the University of Washington, and the Washington State University, and a nonprofit consortium involved in research on renewable industrial materials, regarding how forestry and agricultural lands and practices may participate voluntarily as an offset or other credit program in the regional multisector market-based system. The recommendations must ensure that the baseline for this offset or credit program does not

disadvantage this state in relation to another state or states. These recommendations shall address:

(i) Commercial and other working forests, including accounting for site-class specific forest management practices;

(ii) Agricultural and forest products, including accounting for substitution of wood for fossil intensive substitutes;

(iii) Agricultural land and practices;

(iv) Forest and agricultural lands set aside or managed for conservation as of, or after, June 12, 2008; and

(v) Reforestation and afforestation projects.

70.235.040
Consultation with climate impacts group at the University of Washington — Report to the legislature.

Within eighteen months of the next and each successive global or national assessment of climate change science, the department shall consult with the climate impacts group at the University of Washington regarding the science on human-caused climate change and provide a report to the legislature summarizing that science and make recommendations regarding whether the greenhouse gas emissions reductions required under RCW 70.235.020 need to be updated.

70.235.050
Greenhouse gas emission limits for state agencies — Timeline — Reports — Strategy — Point of accountability employee for energy and climate change initiatives.

(1) All state agencies shall meet the statewide greenhouse gas emission limits established in RCW 70.235.020 to achieve the following, using the estimates and strategy established in subsections (2) and (3) of this section:

(a) By July 1, 2020, reduce emissions by fifteen percent from 2005 emission levels;

(b) By 2035, reduce emissions to thirty-six percent below 2005 levels; and

(c) By 2050, reduce emissions to the greater reduction of fifty-seven and one-half percent below 2005 levels, or seventy percent below the expected state government emissions that year.

(2)(a) By June 30, 2010, all state agencies shall report estimates of emissions for 2005 to the department, including 2009 levels of emissions, and projected emissions through 2035.

(b) State agencies required to report under RCW 70.94.151 must estimate emissions from methodologies recommended by the department and must be based on actual operation of those agencies. Agencies not required to report under RCW 70.94.151 shall derive emissions estimates using an emissions calculator provided by the department.

(3) By June 30, 2011, each state agency shall submit to the department a strategy to meet the requirements in subsection (1) of this section. The strategy must address employee travel activities, teleconferencing alternatives, and include existing and proposed actions, a timeline for reductions, and recommendations for budgetary and other incentives to reduce emissions, especially from employee business travel.

(4) By October 1st of each even-numbered year beginning in 2012, each state agency shall report to the department the actions taken to meet the emission reduction targets under the strategy for the preceding fiscal biennium. The department may authorize the department of general administration to report on behalf of any state agency having fewer than five hundred full-time equivalent employees at any time during the reporting period. The department shall cooperate with the department of enterprise services and the department of commerce to develop consolidated reporting methodologies that incorporate emission reduction actions taken across all or substantially all state agencies.

(5) All state agencies shall cooperate in providing information to the department, the department of enterprise services, and the department of commerce for the purposes of this section.

(6) The governor shall designate a person as the single point of accountability for all energy and climate change initiatives within state agencies. This position must be funded from current full-time equivalent allocations without increasing budgets or staffing levels. If duties must be shifted within an agency, they must be shifted among current full-time equivalent allocations. All agencies, councils, or work groups with energy or climate change initiatives shall coordinate with this designee.

70.235.060

Emissions calculator for estimating aggregate emissions — Reports.

(1) The department shall develop an emissions calculator to assist state agencies in estimating aggregate emissions as well as in estimating the relative emissions from different ways in carrying out activities.

(2) The department may use data such as totals of building space occupied, energy purchases and generation, motor vehicle fuel purchases and total mileage driven, and other reasonable sources of data to make these estimates. The estimates may be derived from a single methodology using these or other factors, except that for the top ten state agencies in occupied building space and vehicle miles driven, the estimates must be based upon the

actual and projected operations of those agencies. The estimates may be adjusted, and reasonable estimates derived, when agencies have been created since 1990 or functions reorganized among state agencies since 1990. The estimates may incorporate projected emissions reductions that also affect state agencies under the program authorized in RCW 70.235.020 and other existing policies that will result in emissions reductions.

(3) By December 31st of each even-numbered year beginning in 2010, the department shall report to the governor and to the appropriate committees of the senate and house of representatives the total state agencies' emissions of greenhouse gases for 2005 and the preceding two years and actions taken to meet the emissions reduction targets.

70.235.070
Distribution of funds for infrastructure and capital development projects — Prerequisites.

Beginning in 2010, when distributing capital funds through competitive programs for infrastructure and economic development projects, all state agencies must consider whether the entity receiving the funds has adopted policies to reduce greenhouse gas emissions. Agencies also must consider whether the project is consistent with:

(1) The state's limits on the emissions of greenhouse gases established in RCW 70.235.020;

(2) Statewide goals to reduce annual per capita vehicle miles traveled by 2050, in accordance with RCW 47.01.440, except that the agency shall consider whether project locations in rural counties, as defined in RCW 43.160.020, will maximize the reduction of vehicle miles traveled; and

(3) Applicable federal emissions reduction requirements.

70.235.900 -- Scope of chapter 14, Laws of 2008.

Except where explicitly stated otherwise, nothing in chapter 14, Laws of 2008 alters or limits any authorities of the department as they existed prior to June 12, 2008.

70.235.901 -- Severability — 2008 c 14.

If any provision of this act or its application to any person or circumstance is held invalid, the remainder of the act or the application of the provision to other persons or circumstances is not affected.

Washington's Greenhouse Gas Emissions

Washington greenhouse gas emissions have risen from 88.4 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) in 1990 to 92.4 $MMTCO_2e$ in 2011 (the most recent year data are available). Transportation dominates the emissions profile of recent years (45%; 3-year average 2009-2011) with on-site building energy (21%) and emissions associated with electricity use (20%) contributing significantly. Agriculture (6%), waste management (4%), and industrial (4%) processes are less significant. The table on the next page shows sector emission forecasts going forward.

Contribution of Existing Policies toward Washington's Emission Limits

The Climate Legislative and Executive Workgroup (CLEW) assessed how existing and future policies could help meet the state's emissions limits. The results[3] indicated that Washington will not meet its statutory goals with current state and federal policies:

	Greenhouse Gas Emissions ($MMTCO_2e$)		
	2020	**2035**	**2050**
Projected Greenhouse Gas emissions *without* federal and state policy (Business As Usual)	115.1	128.1	138.2
Estimated reductions from existing state policies[a]	-15.8	-29.0	-36.5
Estimated reductions from existing federal policies[a]	-1.4	-1.6	-1.6
Projected GHG emissions *with* federal and state policy	97.9	97.5	100.1
Greenhouse Gas emissions limits	88.4	66.3	44.2
Additional reductions required to meet limits (Gap)	**9.5**	**31.2**	**55.9**

[a] Accounts for interactions between policies (e.g., where policies target the same sources and reductions overlap)

Contribution of New Policies toward Washington's Emission Limits

To map out potential ways in which Washington could achieve its greenhouse gas emission reduction limits, the CLEW reviewed a select list of policies, including cap and trade, carbon tax, low carbon fuel standards, instituting zero emissions vehicle mandates, and others. The results indicated that Washington can meet its statutory 2020 limits if near-term action is taken to implement a new comprehensive emission reduction program that includes a cap and trade policy. However, in order to meet the limits for 2035 and 2050, both early action, and policies that are made stronger over time, will be required.

[3] Leidos, Inc., *Evaluation of Approaches to Reduce Greenhouse Gas Emissions in Washington State –Final Report*, October 14, 2013, Prepared for State of Washington Climate Legislative and Executive Workgroup (CLEW).

State Forecast of Washington GHG Emissions (MMTCO2e, Oct 2013)

Sources	2020	2035	2050
Electricity	**18.4**	**20.4**	**22.1**
Coal	14.8	15.0	16.8
Natural Gas	3.6	5.3	5.3
Petroleum	0.1	0.1	0.1
Residential/Commercial/Industrial	**21.7**	**20.8**	**20.1**
Coal	0.3	0.3	0.3
Natural Gas	11.9	11.9	11.7
Oil	9.3	8.4	7.8
Wood (CH4 and N2O)	0.3	0.3	0.3
Transportation	**43.6**	**43.5**	**49.1**
Onroad Gasoline	21.2	17.5	14.8
Onroad Diesel	9.5	10.2	11.1
Marine vessels	3.3	3.4	3.5
Jet Fuel and Aviation	8.0	8.7	9.5
Rail	0.9	0.9	0.9
Natural Gas and LPG	0.7	2.8	9.1
Fossil Fuel Industry	**0.7**	**0.8**	**0.9**
Natural Gas Industry (CH4)	0.7	0.8	0.9
Coal Mining (CH4)	0.0	0.0	0.0
Oil Industry (CH4)	0.0	0.0	0.0
Industrial Processes	**5.6**	**8.6**	**10.9**
Cement Manufacture (CH4)	0.3	0.3	0.3
Aluminum Production (CO_2, PFC)	0.4	0.3	0.3
Limestone and Dolomite Use (CO_2)	0.0	0.0	0.0
Soda Ash	0.1	0.1	0.1
Ozone Depleting Substances (HFC, PFC and SF_6)	4.5	7.5	9.8
Semiconductor Manufacturing (HFC, PFC, SF_6)	0.1	0.1	0.2
Electric Power T&D (SF_6)	0.3	0.2	0.2
Waste Management	**4.4**	**5.4**	**6.3**
Solid Waste	3.6	4.4	5.1
Wastewater	0.8	1.0	1.2
Agriculture	**5.3**	**5.5**	**5.7**
Enteric Fermentation	2.0	1.9	1.9
Manure Management	1.3	1.6	2.0
Agriculture Soils	2.0	1.9	1.8
Total Gross Emissions	**99.6**	**104.9**	**115.0**

Market-based Mechanisms for Greenhouse Gas Reductions

Environmental outcomes can be achieved through policy action or can result independently from economic forces in our market-based system. An increasing trend in environmental policy is to combine both means to harness the power of markets to address environmental challenges. To do so, a program incorporates policy mechanisms structured on principles of market theory as core elements. As a result, the program should achieve its objectives more efficiently and with less overall cost to society.

A market-based mechanism to reduce emissions aims to, first and foremost, put a price on emissions. By quantifying and incorporating the costs of emissions in the prices paid for goods and services in our economy, emissions should decrease over time. In addition, a market-based mechanism may create a market in which compliance instruments for the program can be traded, sold, or otherwise exchanged. If certainty is desired in limiting total emissions the program can be structured so that there is an upper limit, or cap, on the total emissions allowed. Climate policy market-based mechanism options include:

Cap and Trade: Puts a cap on greenhouse gas emissions by creating permits to emit greenhouse gases under that cap. Creates a carbon market and policy system in which permits can be bought, sold, freely given, or otherwise distributed. The quantity of emissions is fixed, while allowing the price to fluctuate.

Carbon Tax: Establishes a price on emissions of greenhouse gases but does not create a separate market system. In contrast to cap and trade, it fixes the price while allowing the quantity to fluctuate. This approach can work in concert with other tax changes to be, in effect, "revenue neutral" to society, as a whole.

Cap and Dividend: Creates a permit system like cap and trade, but rather than creating a trading market all permits are auctioned and all or most of the proceeds are returned to society on a per capita basis.

Cap and Invest: Similar to cap and dividend, except all proceeds are invested in programs or research.

Carbon Mitigation Markets: Requires that some or all greenhouse gas emissions are offset by investing in emission reduction projects or buying emission reductions from

projects through a carbon market. In effect this sets a price on greenhouse gas emissions based on the costs of emission reductions projects.

Importantly, these mechanisms are not mutually exclusive. Moreover, they can be designed to incorporate elements of each other and to change over time. Examples include:

- Price limits: By integrating price floors or ceilings into a capped system it can act in a similar manner to a carbon tax at those extremes. This is generally considered a "hybrid" system.
- Timing: A carbon tax can lay a price foundation to phase into a capped system at a later time.
- Sectors: Different policy mechanisms can be used for different sectors of the economy.
- Size: Capped systems often rely on emission thresholds to establish eligibility. Other mechanisms may make more sense for entities that fall under the emissions threshold.

Ultimately, putting in place a greenhouse gas reduction program may involve the use of one or more market-based mechanisms calibrated to achieve the desired emission reductions. From a technical standpoint both price-based and quantity-based approaches can be set to achieve the same outcome.