Presentation to the Climate Legislative and Executive Workgroup
October 14, 2013

Washington Greenhouse Gas Emissions Forecast

Why have the WA GHG emission forecast numbers changed since the last Workgroup meeting?

Answer: The numbers changed for two major reasons ~

1. The state forecast model was revised to improve growth projections for certain sectors. These growth projections were embedded in the original state forecast model, and they compounded without change over time, leading to higher emission forecasts in the out years. The growth projections have been changed to reflect better information on future growth in those sectors.

    MAIN EFFECT: Emission forecasts, particularly in 2035 and 2050, went down

2. The double counting of emission reductions from three existing policies was removed from the forecast. The state's forecast included the effect of certain existing policies – for example, where these policies were embedded in the economic and energy forecasts used to update the forecast.

    MAIN EFFECT: Emission forecast for 2020 went up

Steps Taken to Estimate the Current WA GHG Forecast and the Gap between the Forecast and the Statutory Targets

State (Ecology and Commerce) updated the modeled forecasts	LEIDOS calculated emission reductions from existing state and federal policies
2010 GHG Emissions Forecast	1. Calculate individual reductions from each policy
Economic and Energy Update (September 2013)	2. Calculate integrated reductions, considering interactions between individual policies
Improved Model Update (sector growth projections) (October 2013)	

LEIDOS calculated the current forecast and the gap
Increase the State's October 2013 forecast by removing the effect of three existing policies that were embedded in the forecast (to avoid double counting the emission reductions) (aka "clean projection")
Reduce the "clean projection" forecast by the integrated effect of all existing state and federal policies ("current forecast" or "expected, current trajectory")
Compare the current forecast to the statutory targets to determine the "gap"

State (Ecology and Commerce) updated the modeled forecasts

2010 GHG Emissions Forecast (December 2010)

- Ecology projected GHG emissions from 2009-2035

- Presented to CLEW on Sep 11

Economic and Energy Update (September 2013)

- Ecology updated the existing state forecast model based on:

    - [Population Estimates and Forecasts by Year: 2000-2040](#), issued by OFM in 2011
    - [2013 Employment Projections](#) from 2011 to 2021, developed by WA Employment Security Department, and
    - The [2013 Annual Energy Outlook](#) with energy projection to 2040, developed by the Energy information Administration

- Ecology projected GHG emissions out to 2050

- Presented to CLEW on Sep 27

Improved Model Update (October 2013)

- Ecology and Commerce reviewed model assumptions

- Annual growth rates for marine fuels and ozone depleting substances were high and inconsistent with recent national trends

- State agencies reviewed other sector growth rates in the model, and adjusted those where new information was available

State Forecast of Washington GHG Emissions
Comparison of Estimates from September 27, 2013 and October 11, 2013
(Changes: September numbers in [brackets] and Oct numbers in red)

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	**[44.8] 43.6**	**[46.5] 43.5**	**[53.5] 49.1**
Onroad Gasoline	21.2	17.5	14.8
Onroad Diesel	[9.7] 9.5	[10.0] 10.2	[11.6] 11.1
Marine vessels	[4.5] 3.3	[6.8] 3.4	[10.3] 3.5
Jet Fuel and Aviation	[7.9] 8.0	[9.6] 8.7	[10.3] 9.5
Rail	0.9	0.9	0.9
Natural Gas and LPG	0.7	[1.8] 2.8	[5.6] 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**	**[10.9] 8.6**	**[22.9] 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	[9.9] 7.5	[21.8] 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	**[4.8] 4.4**	**[6.7] 5.4**	**[9.4] 6.3**
Solid Waste	[3.9] 3.6	[5.7] 4.4	[8.1] 5.1
Wastewater	0.8	1.0	[1.3] 1.2
Agriculture	**5.3**	**[5.6] 5.5**	**[6.1] 5.7**
Enteric Fermentation	2.0	1.9	1.9
Manure Management	1.3	[1.8] 1.6	[2.4] 2.0
Agriculture Soils	2.0	1.9	1.8
Total Gross Emissions	**[101.3] 99.6**	**[111.7] 104.9**	**[135.0] 115.0**

Current Forecast and Gap

	GHG Emissions (MMTCO$_2$e)		
	2020	2035	2050
State's Oct 2013 forecast	99.6	104.9	115.0
Projected GHG emissions *without* Federal and State policy ("clean projection)	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 ("current forecast")	97.9	97.5	100.1
GHG emissions target	88.4	66.3	44.2
Additional reductions required to meet target ("gap")	**9.5**	**31.2**	**55.9**

[a] Accounts for interactions between policies