Item D. **Executive Order 20-04: Directing Agencies to Reduce and Regulate Greenhouse Gas Emissions**

Environmental Quality Commission Briefing

May 7, 2020

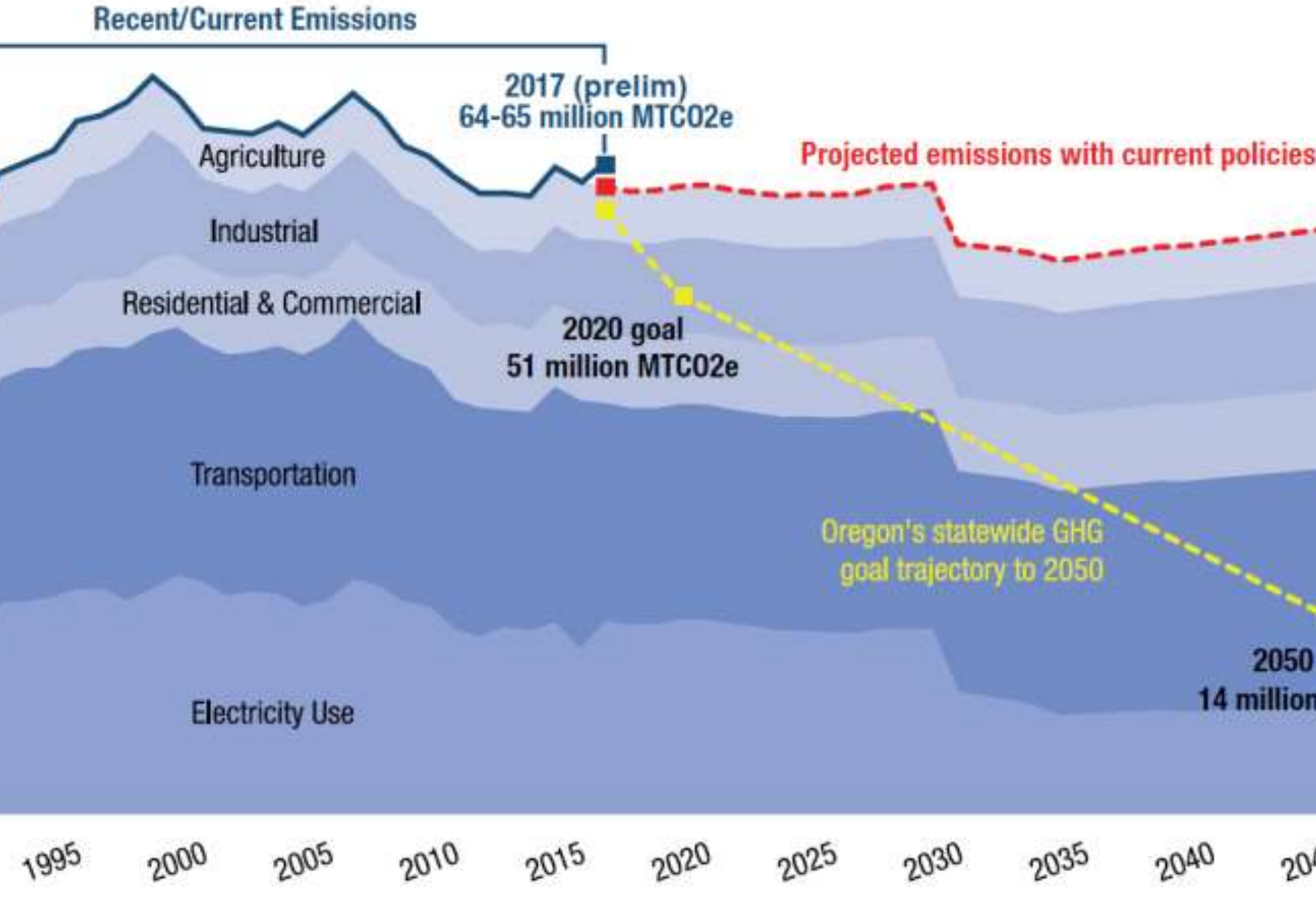
Richard Whitman, Colin McConnaha, Michael Orman | Oregon Department of Environmental Quality

Oregon Greenhouse Gas Reduction Goals

1. ORS 468A.205(1)(c) – 2007 Oregon Legislature:
   - At least 10 percent below 1990 levels by 2020
   - At least 75 percent below 1990 levels by 2050

2. Executive Order 20-04 – Governor's Direction:
   - At least 45 percent below 1990 levels by 2035
   - At least 80 percent below 1990 levels by 2050

Figure 1. Oregon past and projected greenhouse gas emissions compared to goals



Underpinnings of Oregon GHG Goals

- The goals are set to avoid the worst effects of climate change (to keep temperature increases in the range of 2.7 to 3.6 degrees Fahrenheit). They work ***if*** every state, and every nation, does their part.
- Average temperatures increases understate the actual impacts, because heat increases are not evenly distributed. To illustrate, if the ***global average*** temperature increase is 2.7 degrees, we would see temperatures at mid latitudes rise by twice that amount – or 5.4 degrees. And, if the ***average increase*** is 3.6, that mid latitude number rises to 7.2 degrees.
- Similarly, if the global average increase is 2.7 degrees, NASA predicts about 14 percent of Earth's population will be regularly exposed to extreme heat waves. If the global increase is 3.6 degrees, that number jumps to 37 percent.
- A Degree of Concern-Why Global Temperatures Matter (NASA, 2019)

Climate Impacts in Oregon – Snowpack and Hydrology

Projected changes in western U.S. winter snow-related hydrology at the middle and end of this century

Mountain Range	Snow Water Equivalent (% Change)	
	2050	2100
Cascades	–41.5	–89.9
Klamath	–50.75	–95.8
Rockies	–17.3	–65.1
Sierra Nevada	–21.8	–89.0
Wasatch and Uinta	–18.9	–78.7
Western USA	**–22.3**	**–70.1**

Projections are for RCP8.5. **USGCRP**, 2017: *Climate Science Special Report: Fourth National Climate Assessment*

Climate Impacts in Oregon – Wildfire

Model simulations for areas west of the Cascade Range, including the Klamath Mountains, project that the fire return interval, or average number of years between fires, may decrease by about half, from about 80 years in the 20th century to 47 years in the 21st century (Sheehan et al., 2015). The same model projects an increase of almost 140% in the annual area burned in the 21st century compared to the 20th century, assuming effective fire suppression management and a high emissions pathway (RCP 8.5) (Sheehan et al., 2015).

Climate Impacts in Oregon – Wildfire

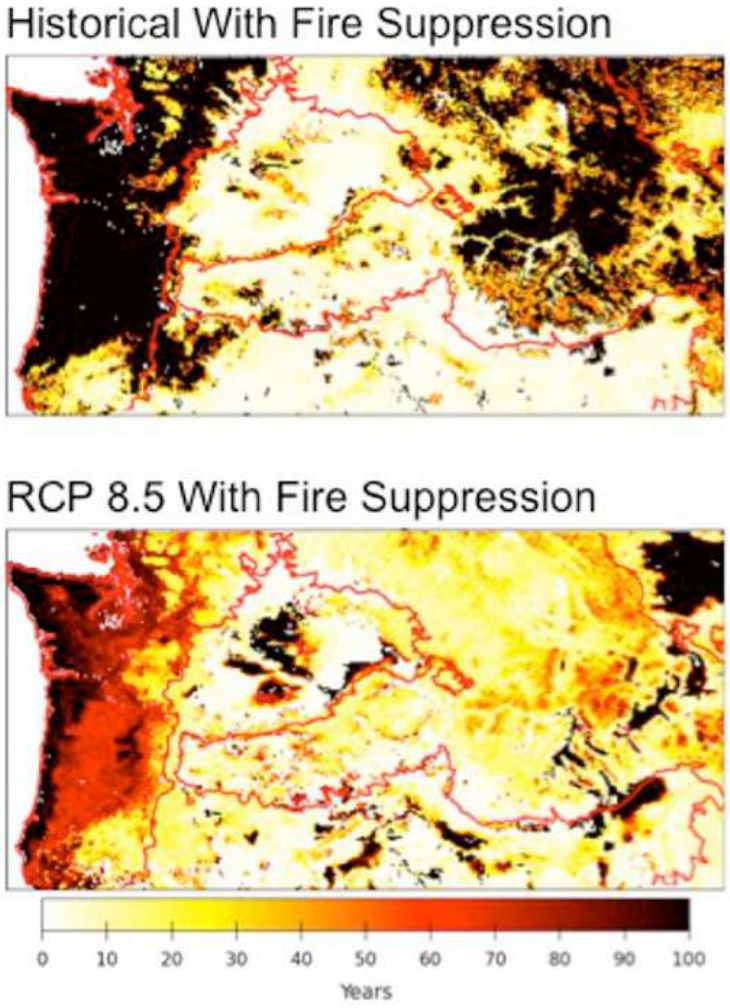
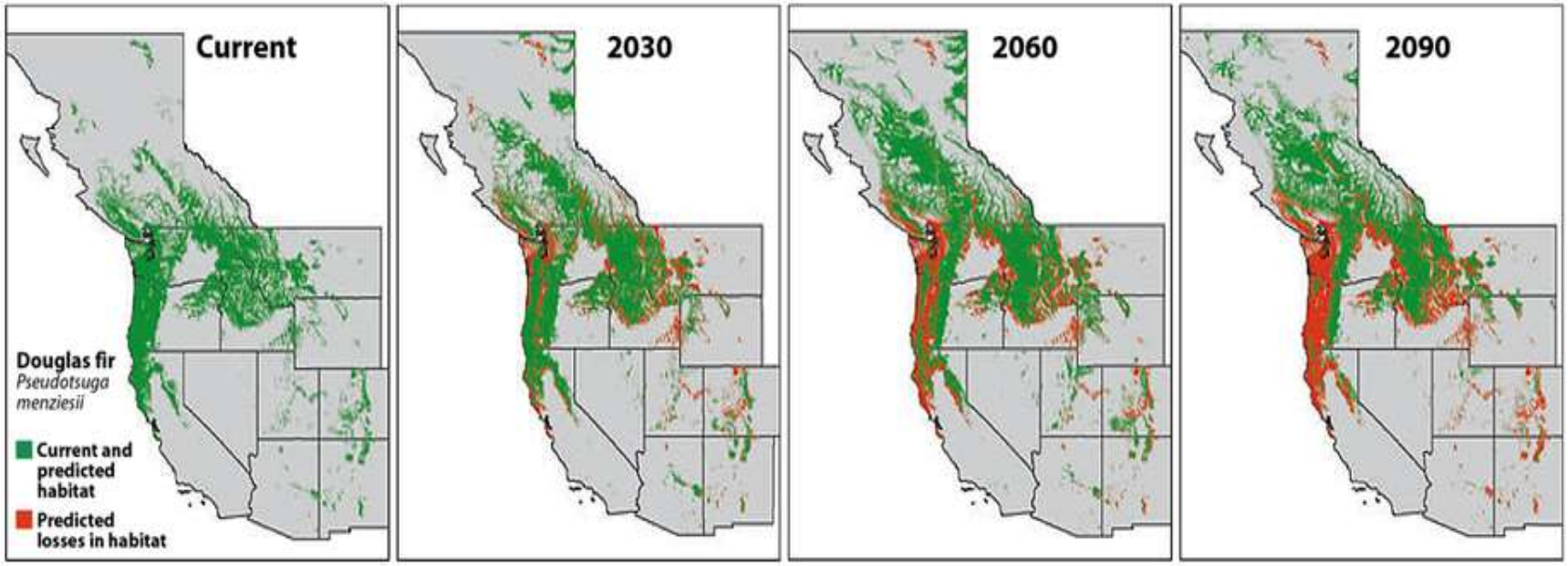


Figure 5.2 Simulated mean fire intervals for 20th century (top) and 21st century (bottom) for a high emissions pathway (RCP 8.5) under fire suppression (left) and no fire suppression (right) (Figure source: Dominique Bachelet; data source: Sheehan *et al.*, 2015)

Climate Impacts in Oregon – Vegetation Change



As the climate in western North America gets warmer and drier, the Douglas fir's range is expected to shrink and shift inland

Climate Impacts in Oregon – Bottom Line

- Public health consequences (smoke, heat, disease, algal blooms)
- Private and public property damage (fire and floods)
- Less productive and more fire-prone forests
- Less productive shellfish and crab industries
- Reduced water supplies for agriculture
- Deteriorating water quality and less productive fisheries
- Disproportionate effects on rural communities
- Intergenerational effects – our kids and grandkids

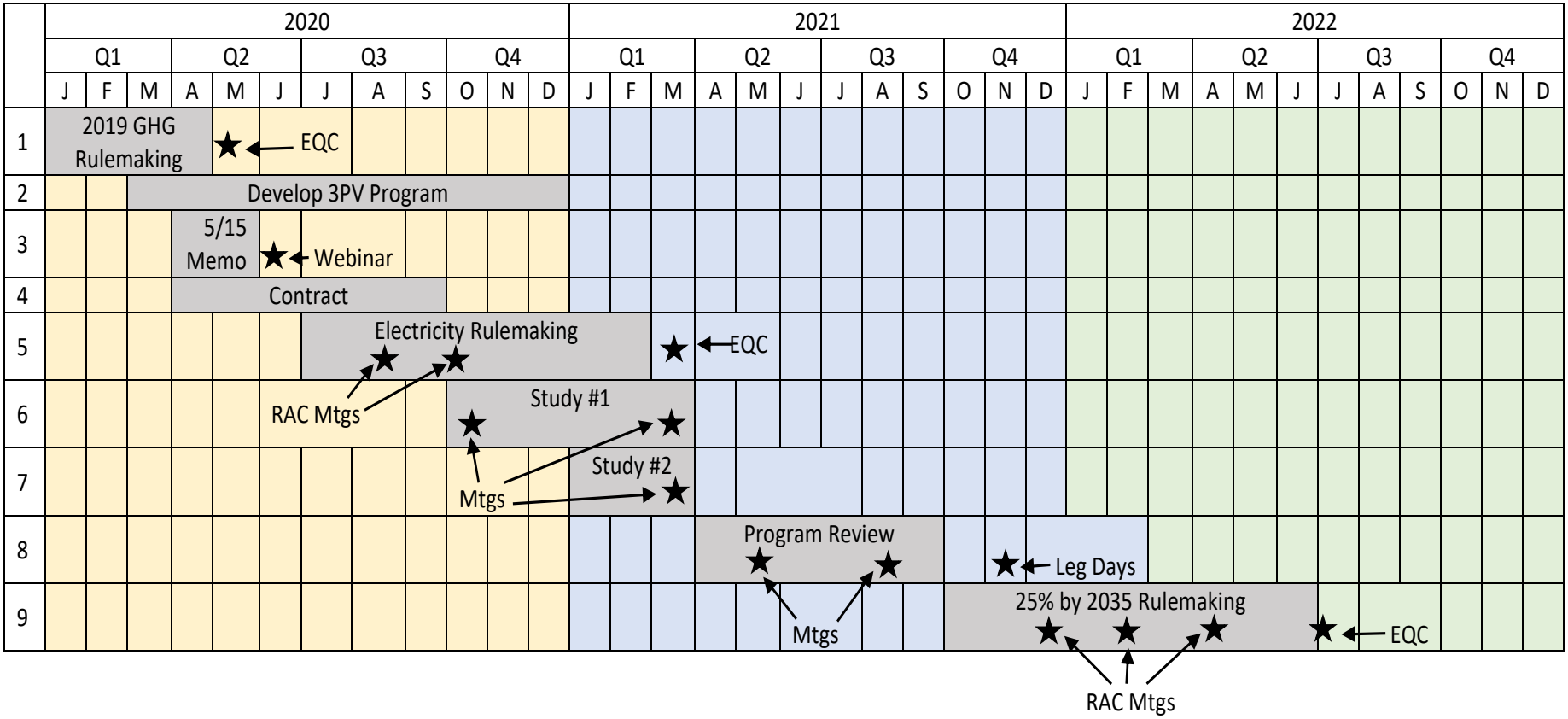
5 Policy Directives to DEQ/EQC in EO

1. **Expand the Clean Fuels Program (CFP)**
   - **Existing program**: 10% reduction in carbon intensity of transportation fuels by 2025
   - **New**: 20% reduction by 2030 & 25% reduction by 2035
   - **New**: Accelerate transportation electrification by utilities
2. **"Cap and reduce" GHG emissions** from:
   - Large stationary sources
   - Transportation fuels
   - Other liquid and gaseous fuels, including natural gas
3. **Regulate methane emissions from landfills**
4. **Develop and implement strategies to prevent and recover food waste**
5. **Implement the Statewide Transportation Strategy**

Element 1: Clean Fuels Program – Progress to Date

- **GHGs reduced** – Over 4 million tons – over 6% of Oregon's statewide emissions
- **Over-compliance** with the standards – over 730,000 credits in the bank
- **Petroleum displaced** – over 900 million gallons of gasoline and diesel displaced
- **Biofuels Getting Cleaner** – the carbon intensity of biodiesel has fallen by 34% and ethanol by 13%
- **Non-fossil diesel increased** – from 5% in Q1 2016 to over 11% in Q4 2019
- **Electricity** has replaced more than 12 million gallons of gasoline

Element 1: Expand the Clean Fuels Program



Element 2: **Cap and Reduce Programs**

Directives to EQC and DEQ:

Sector-Specific Cap and Reduce Program(s)

- Take actions necessary to "cap and reduce" GHG emissions consistent with science-based emissions reduction goals from :
  - Large stationary sources
  - Transportation fuels, including gasoline and diesel
  - All other liquid and gaseous fuels including natural gas

Reports to Governor

- Preliminary report to the Governor by May 15, 2020
  - Focused on the process to develop the program to cap
  - Process must conclude with **implementation by January 1, 2022**
- Final report on that process by June 30, 2020

Element 2: Cap and Reduce Programs Preliminary Report on May 15, 2020

DEQ will include the following in the May 15 preliminary report to the Governor:

- **Description** of the authority given DEQ/EQC by the Oregon legislature to control air pollution, including greenhouse gas emissions
- **Proposed policy development process** including opportunities for public, partner and stakeholder engagement and tentative rulemaking timelines
- **Key policy considerations** and program design options
- Solicitation of input **on the proposed policy development process, particularly in light of restrictions on gatherings**

Element 2: Cap and Reduce Programs Tentative Process for Policy Development

- **Phase 1: Process Engagement** (Spring 2020)
  - Solicit input from public on proposed development process to inform the Final Report due June 30, 2020
- **Phase 2: Scoping** (Summer & Fall 2020)
  - Engage in discussions on program design features and issues prior to opening formal rulemaking
  - Solicit feedback from partners, public and stakeholders
- **Phase 3: Formal Rulemaking** (Late 2020 – 2021)
  - Develop and propose rules for consideration
  - Provide enhanced opportunities for public and stakeholder engagement

Element 3: Regulate Landfills to Reduce Methane Emissions

Reduce Methane Emissions from Landfills

- **Existing Requirements**: Federal program requires monitoring, testing, and gas collection systems
- **New Directive**: Investigate requirements of neighboring states and establish more a program that is equivalent in terms of degree of control ofgreenhouse gas reductions

Element 3: Regulations for Methane Emissions from Landfills

- **Phase 1: Process Engagement** (Spring 2020)
  - Solicit input from public on proposed development process to inform the Final Report due June 30, 2020
- **Phase 2: Scoping** (Summer 2020)
  - Engage in discussions on regulatory options and alternatives
  - Solicit feedback from public and stakeholders
- **Phase 3: Formal Rulemaking** (Fall 2020 – Winter 2021)
  - Develop and propose rules for consideration
  - Provide enhanced opportunities for public and stakeholder engagement

Element 4: Implementing the Statewide Transportation Strategy

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STS - Development Process

SB 1059

2010

GreenSTEP developed

Stakeholder Groups Formed

Modeling & Analysis

Policy Development

STS Adopted by the OTC

2013

STS – Identified Model Inputs

Variables	• Population Growth and Demographics • Income Growth • Fuel Price	
Vehicles and Fuels	• Vehicle Fuel Economy (MPG) • Vehicle and Fuel Type • Fleet Mix	
Pricing	• Pay as you drive insurance • Gas taxes • Road user fee	
Systems and Operations	• Intelligent Transportation Systems • Parking Fees • Education on Driving Efficiency • Managed Road Growth	
Transportation Options	• Public Transportation Service • Biking and Walking • TDM (home & work-based, ridesharing) • Car Sharing	
Land Use	• Housing (Single- & Multi-family dwellings) • Urban Growth Boundary Management • Mixed Use Areas	

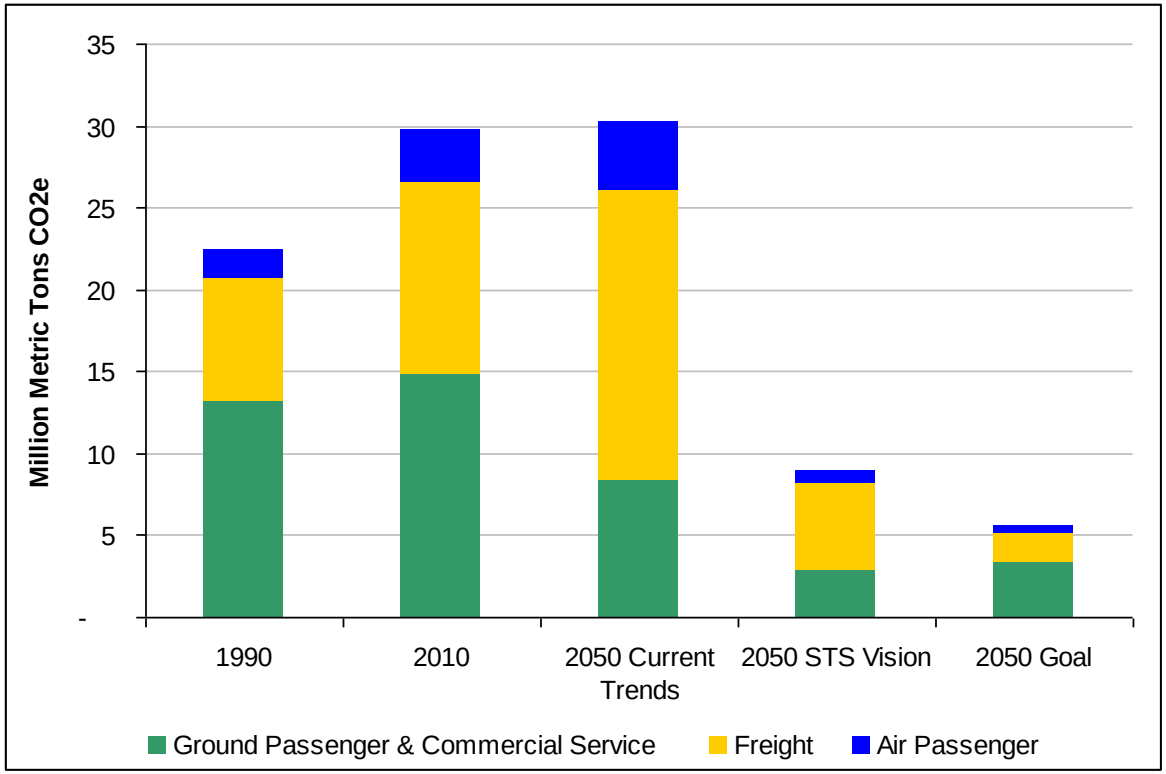
STS –Tested Inputs

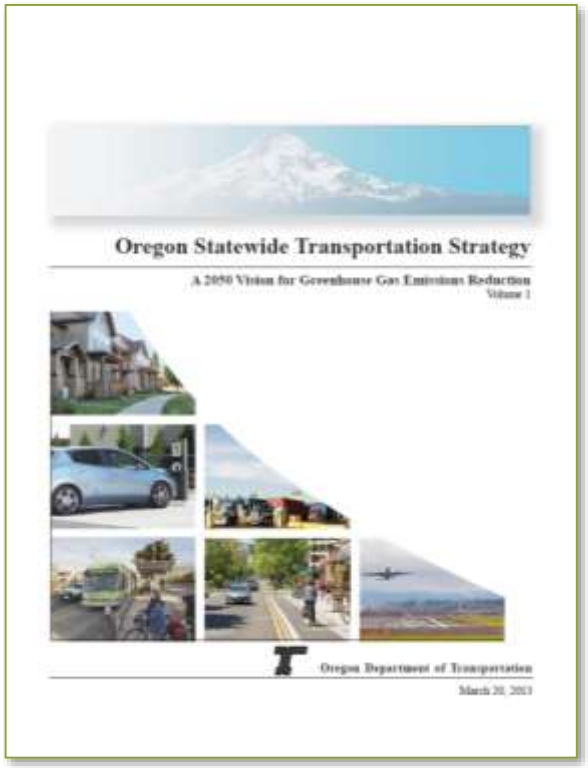
Ran Over 200 Scenarios / Combinations

- Vehicle Fuel Efficiency
- Pricing and Markets
- Systems and Operations
- Transportation Options
- Land Use



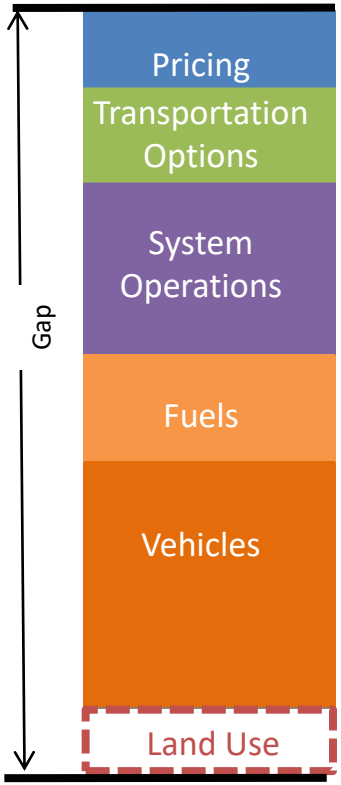

STS- Vision and Roadmap





STS – 2018 Monitoring Report

STS – Closing the Gap



Investments ($)

Tolling Technology
Operational Costs

ITS
Managed Rd Growth

Transit Service
Biking Walking
Park and Ride
TDM Programs
Employee Commute Options (ECO)

EV Charging Stations
Alt. Fuel Stations
EV Rebates
Incentive Programs
Clean Fuels Program

STS – Update and Work Planning

Future efforts:

- Finalize Work Plans
- Finalize Communications and Outreach Plans
- Updated and seek feedback from Commission as projects are implemented.
- Continue coordination and collaboration amongst agencies
- Provide a report to the Governor on June 30, 2020.

Element 5: Reducing Food Waste

- Because of the high energy inputs into food production, distribution and use, preventing food waste is one of the most cost-effective ways of reducing lifecycle GHG emissions.
- Current programs, which are cooperative efforts by government, the food products industry, grocers, restaurant associations, food banks, local governments, and others, could decrease food waste by between 2 and 10 percent by 2030.
- Significant new program/policy work will be needed to achieve reductions beyond this level.
- DEQ Materials Management Program to lead a collaborative Strategic Planning effort to develop the next phase of food waste prevention and recovery opportunities

Timing and Resources

- Legislative Emergency Board approved funding, combined with existing resources
- Agencies directed to prioritize and expedite rulemaking to accelerate GHG reductions
- Cap and reduce programs to commence no later than January 1, 2022
- Coordination of rulemakings to recognize current limitations on resources of partners, stakeholders, and the public
- Extensive use of virtual meetings