Oregon Statewide Transportation Strategy

Adaptation of the Transportation Sector

Joint Committee on Transportation
Amanda Pietz, ODOT
February 25, 2019

Mitigation and Adaptation

Mitigation	Comprehensive (Everyone)	Publically Vetted	Complete Assessment
Adaptation	Inward Facing (ODOT only)	Internally Developed	Preliminary Assessment

Mitigation

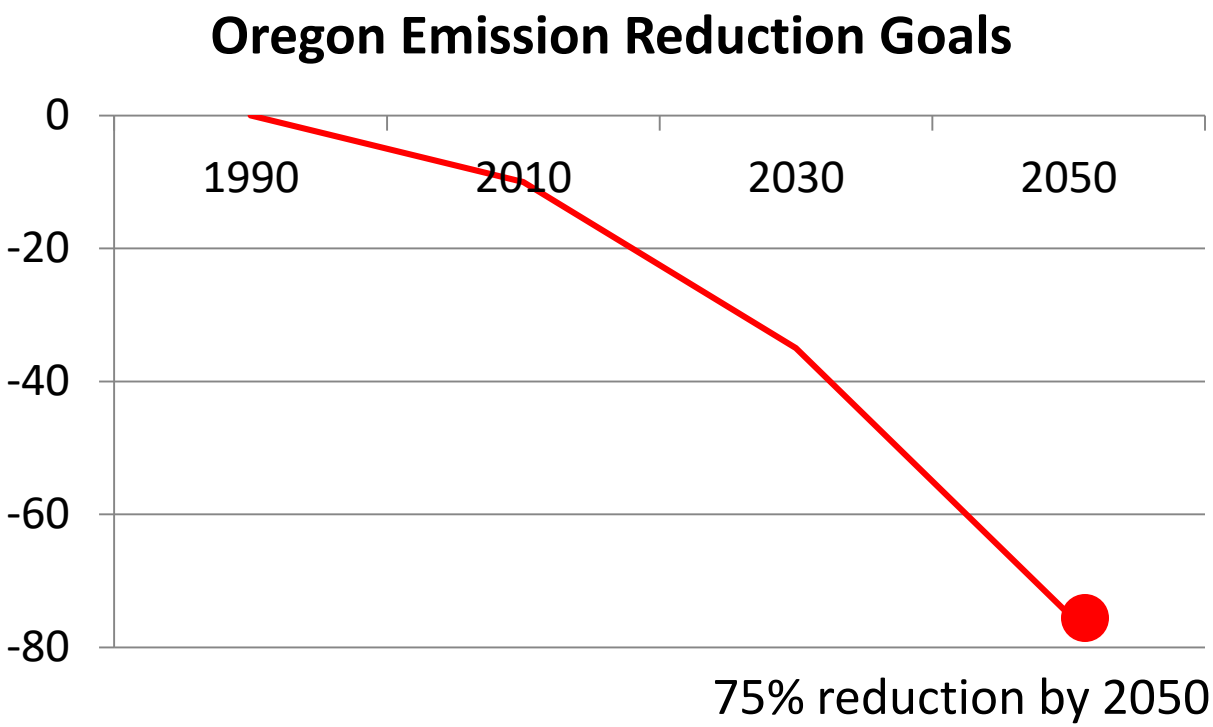
Oregon Statewide Transportation Strategy

A 2050 Vision for Greenhouse Gas Reduction

Statewide Transportation Strategy

A Legislative Directive (ORS 184.617)

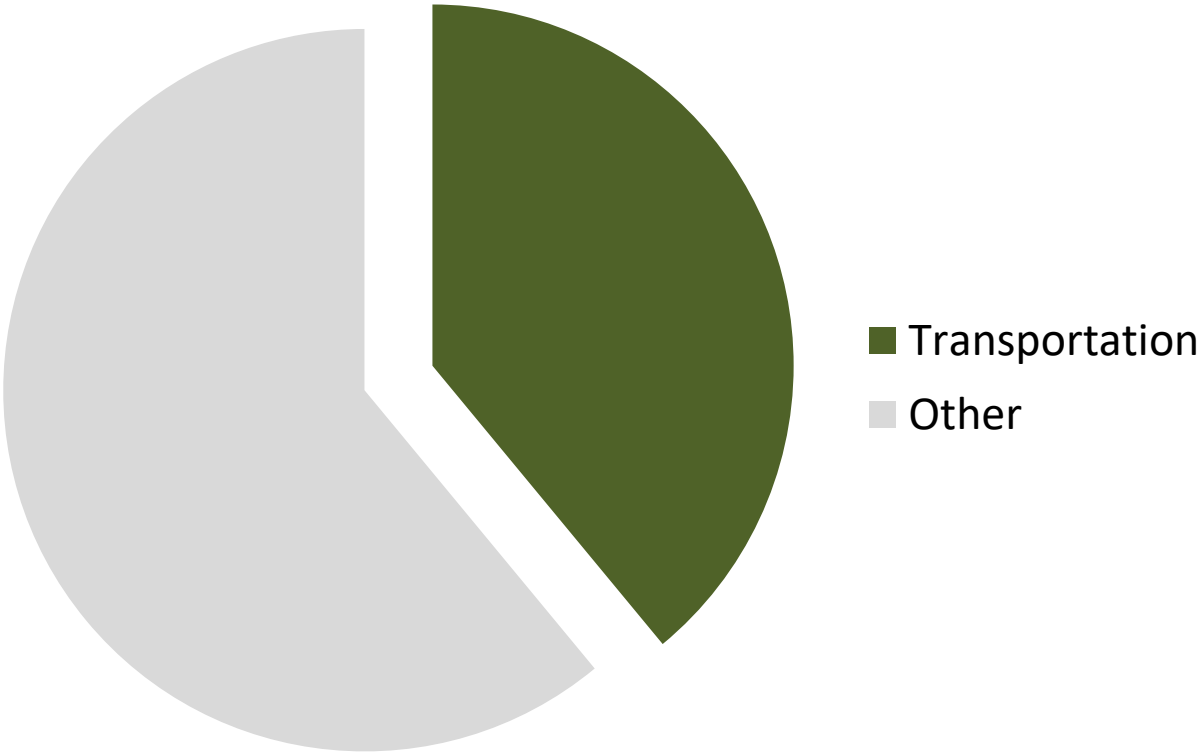
"Aid in achieving the greenhouse gas emissions reduction goals set forth in ORS 468A.205."



Statewide Transportation Strategy

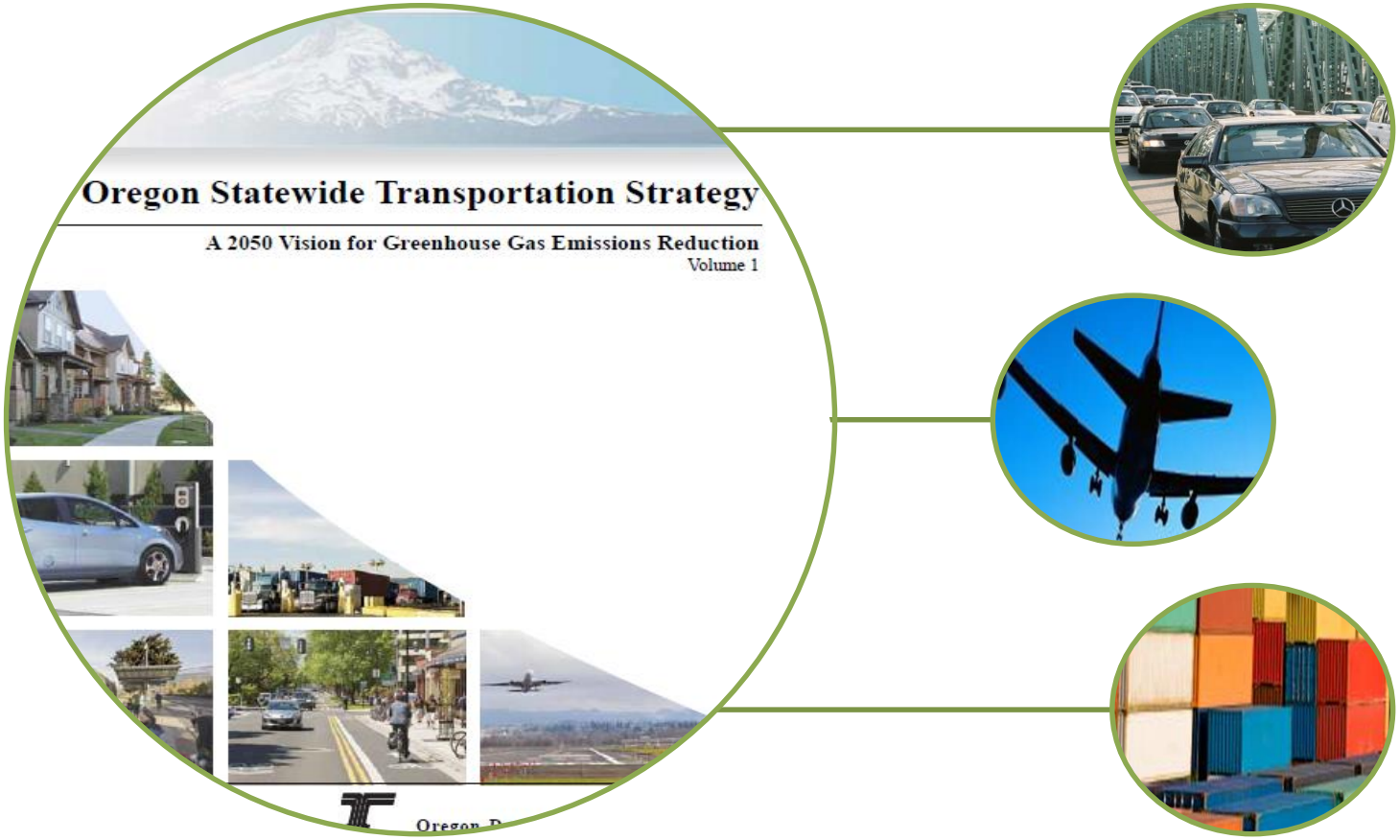
A Legislative Directive (ORS 184.617)

"…focus on reducing greenhouse gas emissions resulting from transportation."



Statewide Transportation Strategy (STS) Document

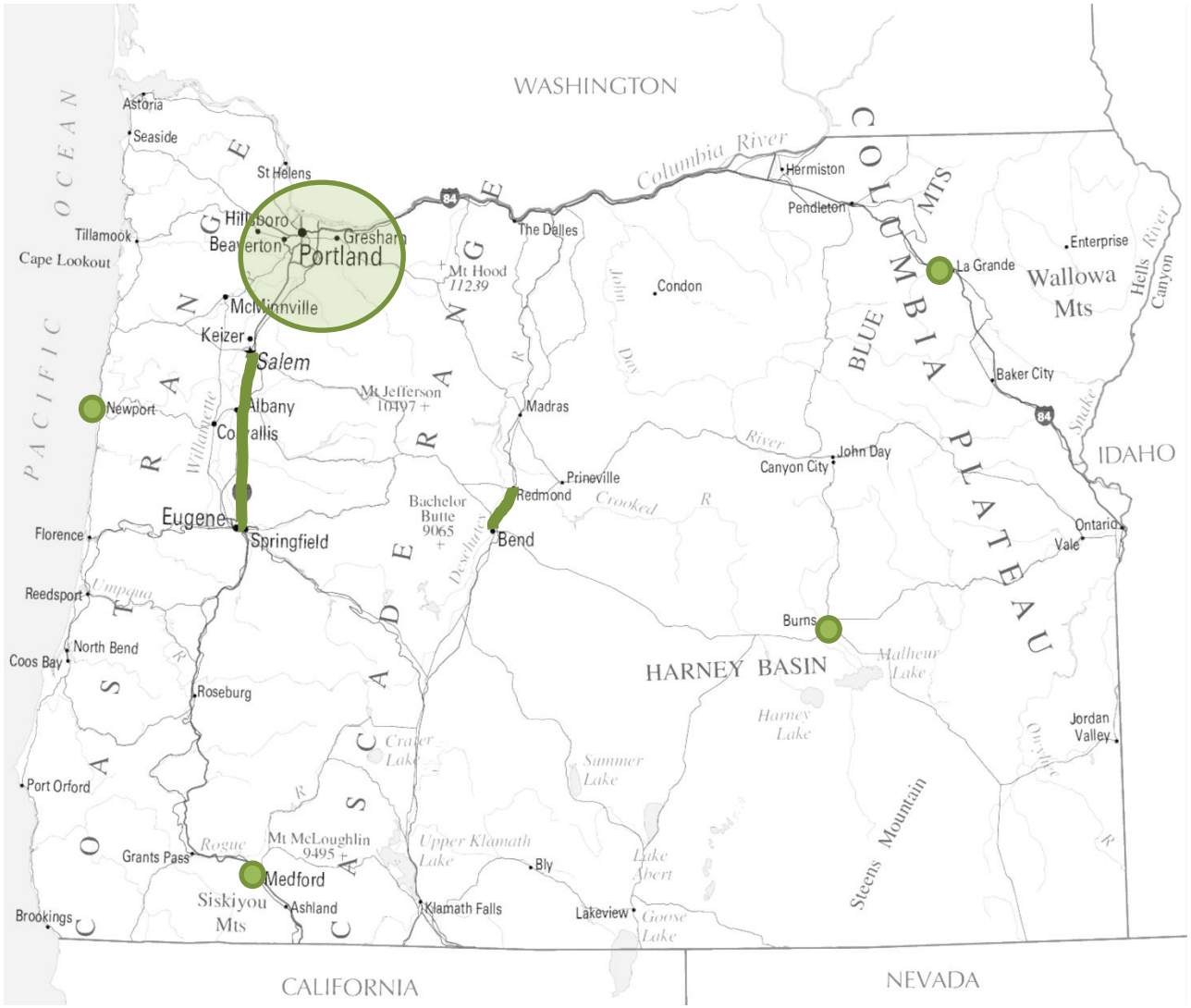
A 2050 Vision for GHG Reduction



STS: A Carbon Reduction Roadmap

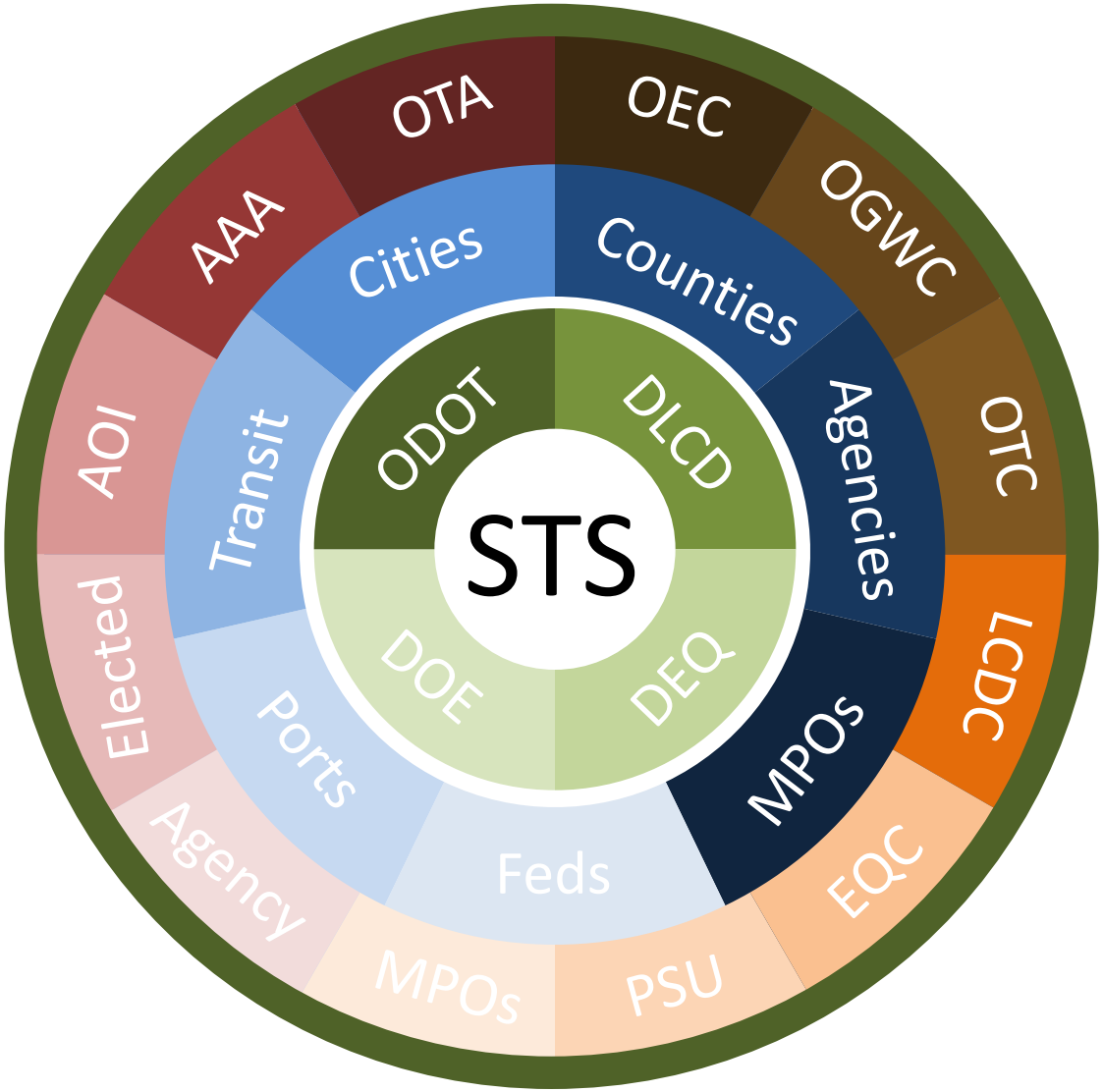
Policies, Programs, and Investments

Illustrative Map – The STS Does Not Identify Projects



STS Development

Extensive Stakeholder Engagement

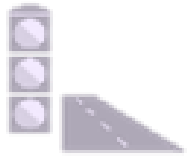


STS Development

Modeling and Analysis

visioneval
exploring tomorrow today

Modeling and Analysis - Inputs

Regional Variables	• Population Growth and Demographics • Income Growth • Fuel Price	
Vehicles and Fuels	• Vehicle Fuel Economy (MPG) • Fuels • Commercial Fleets	
Pricing	• Pay as you drive insurance • Gas taxes • Road user fee	
Systems and Operations	• Intelligent Transportation Systems • Parking Fees • Education on Driving Efficiency • Road Growth	
Transportation Options	• Transit service • Biking and walking • TDM (home & work-based, ridesharing) • Car Sharing	
Land Use	• Future Housing (Single- & Multi-family) • Urban Growth Boundary • Population in Mixed Use Areas	

Modeling and Analysis – Ran Over 200 Scenarios

Inputs

Level of intensity (sample)

Vehicle Fuel Efficiency

Pricing and Markets

Systems and Operations

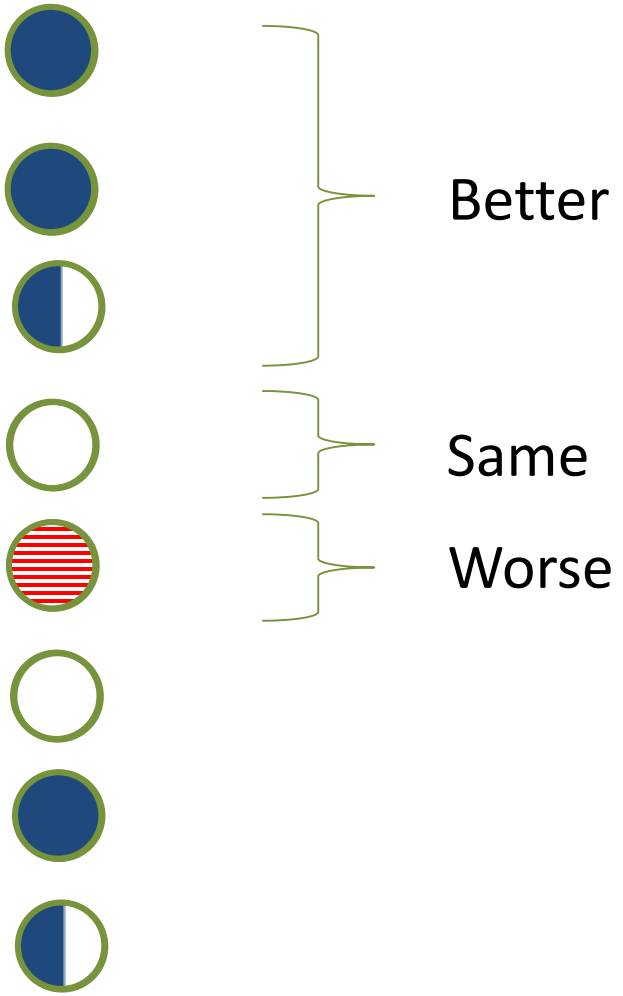
Transportation Options

Land Use

Modeling and Analysis – Ran Over 200 Scenarios

Outcomes

Report Card (sample)



Scenario Evolution

Movement of People on the Ground

Urban
- ⊘ UGB expansion
- ↑ Transit service
- ↑ Biking & walking
- ↑ Parking pricing

Tech
- ↑ PHEV & EV
- ↑ Renewable energy
- ↓ Fuel carbon intensity
- ↓ Light truck ownership

System Optimization
- ↑ Max System Ops & Mgmt.
- ↑ TDM & Carsharing
- ↑ Speed smoothing
- ➲ Mode shift

Pricing
- ↑ PAYD insurance
- ↑ Parking pricing
- ↑ True cost pricing
- ↑ Congestion pricing

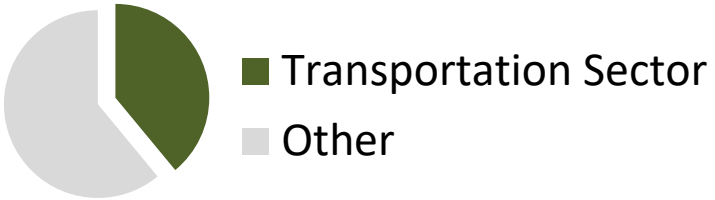
Combined

Enhanced Combo
- ➲ Greater mode shift
- ↑ More pay for parking and at higher cost
- ↓ Ave. vehicle age
- ↑ Increase in PHEV / EV
- ↑ Increase in TDM
- ↑ Low / no emission commercial vehicles

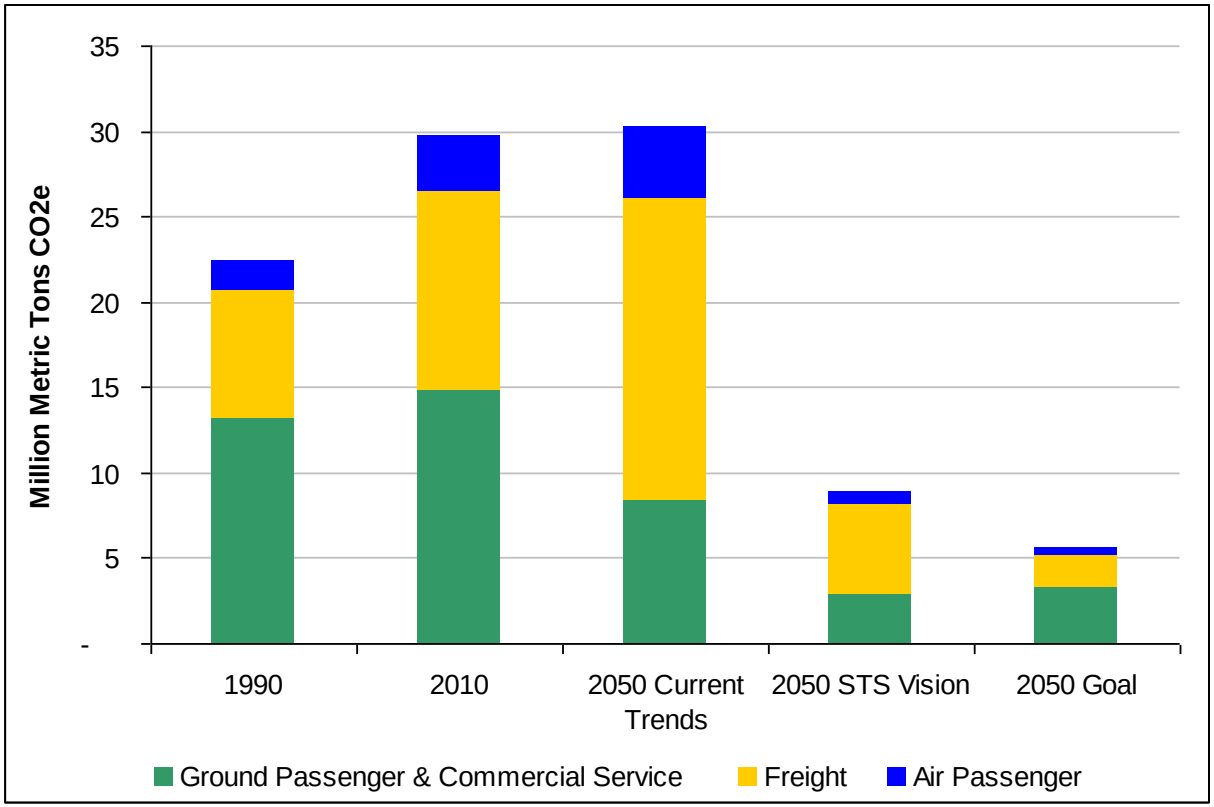
Enhanced + Price
- ↑ Higher per Mile fee in addition to other taxes

Enhanced + Tech
- ↑ Cleaner power generation
- ↑ Increase PHEV / EV
- ↑ EVs have longer range

Findings



Overall, 60% fewer *transportation sector* GHG emissions than 1990 (~80% per capita)



Strategies

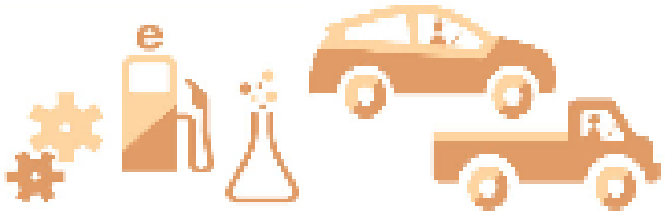
- Vehicle and Fuels
- Systems and Operations
- Pricing
- Transportation Options
- Land Use

All Actions Needed

Many Authorities

ODOE
counties
ODOT
legislature
DEQ
businesses
cities
private-sector
individuals
DLCD

STS Strategies - Vehicles and Fuels



Incentives $

- Newer, higher MPG vehicles
- Low-no emission vehicles
- EV Subsidies
- Bio-fuel production

Policies

- ZEV
- Clean Fuels
- Black Carbon
- Commercial Fleet Requirements

Infrastructure $

- EV Charging
- Alternative Fueling Stations
- Electrifying transit corridors

DEQ

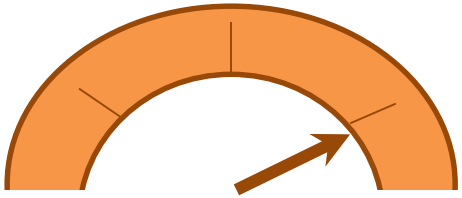
Leg.

DOE

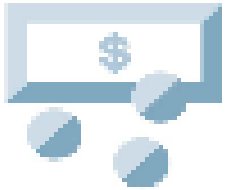
ODOT

Private

Cities / Counties



STS Strategies - Pricing



Per-Mile Fees
- Flat or variable fee
- Pay-As-You-Drive Insurance

Other User Fees
- True Cost Pricing

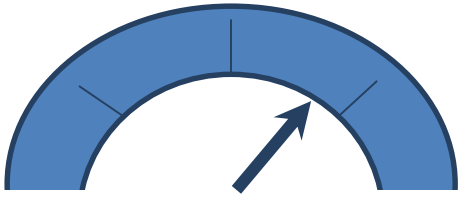
Leg.

ODOT

Infrastructure
- Tolling technology
- Data collection, storage, and feedback

Private

ODOT



STS Strategies - Systems and Operations

Intelligent Transportation Systems $

- Variable Speeds
- Ramp Metering
- Traveler Information
- Signal Timing
- Active Traffic Management

ODOT

Cities / Counties

Infrastructure $

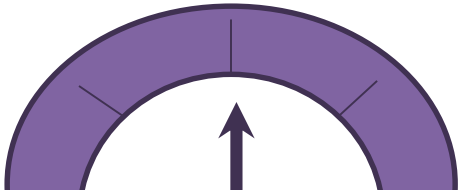
- Safety Improvements
- Auxiliary Lanes
- Managed Road Growth

Policies/Other $

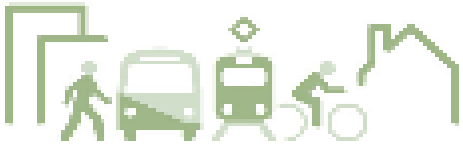
- Eco-Driving
- Parking Pricing

Cities / Counties

ODOT



STS Strategies - Transportation Options



Public Transportation $

- Intercity
- Intracity
- High-capacity transit
- Passenger Rail
- Increased Frequency
- More routes

Cities / Counties

Transit Agencies

ODOT

Biking and Walking $

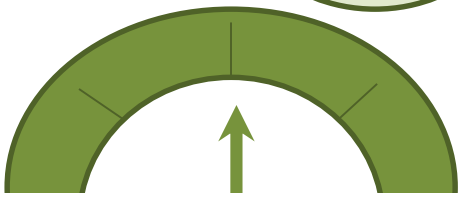
- Connections to schools, jobs downtowns, and shopping
- Completing the network
- Safety fixes
- Making the system accessible - ADA

Demand Management $

- Rideshare and carpool
- Employer programs
- Household programs

Cities / Counties

ODOT



STS Strategies - Land Use

Compact Development
- 20-minute neighborhoods
- Mixed use development
- Zoning codes

Urban Growth
- Control UGB expansion

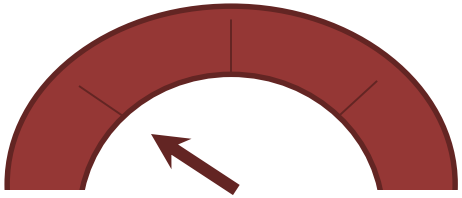
Cities / Counties

DLCD

Industrial Lands
- Urban consolidation centers

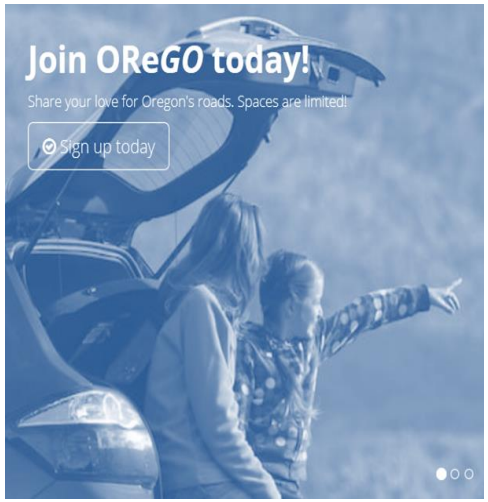
Cities / Counties

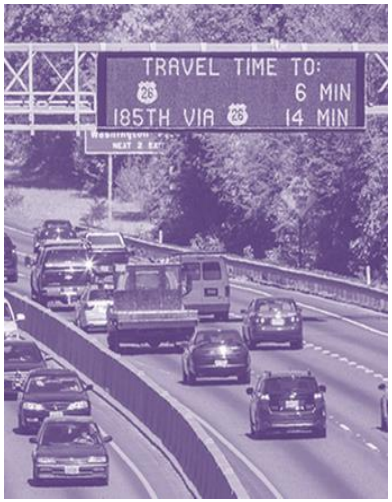
DLCD

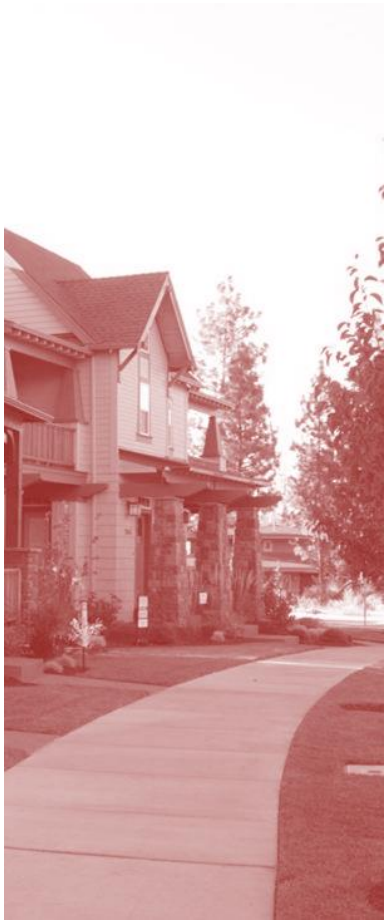


Progress: Driving Forces

For Reducing GHG Emissions





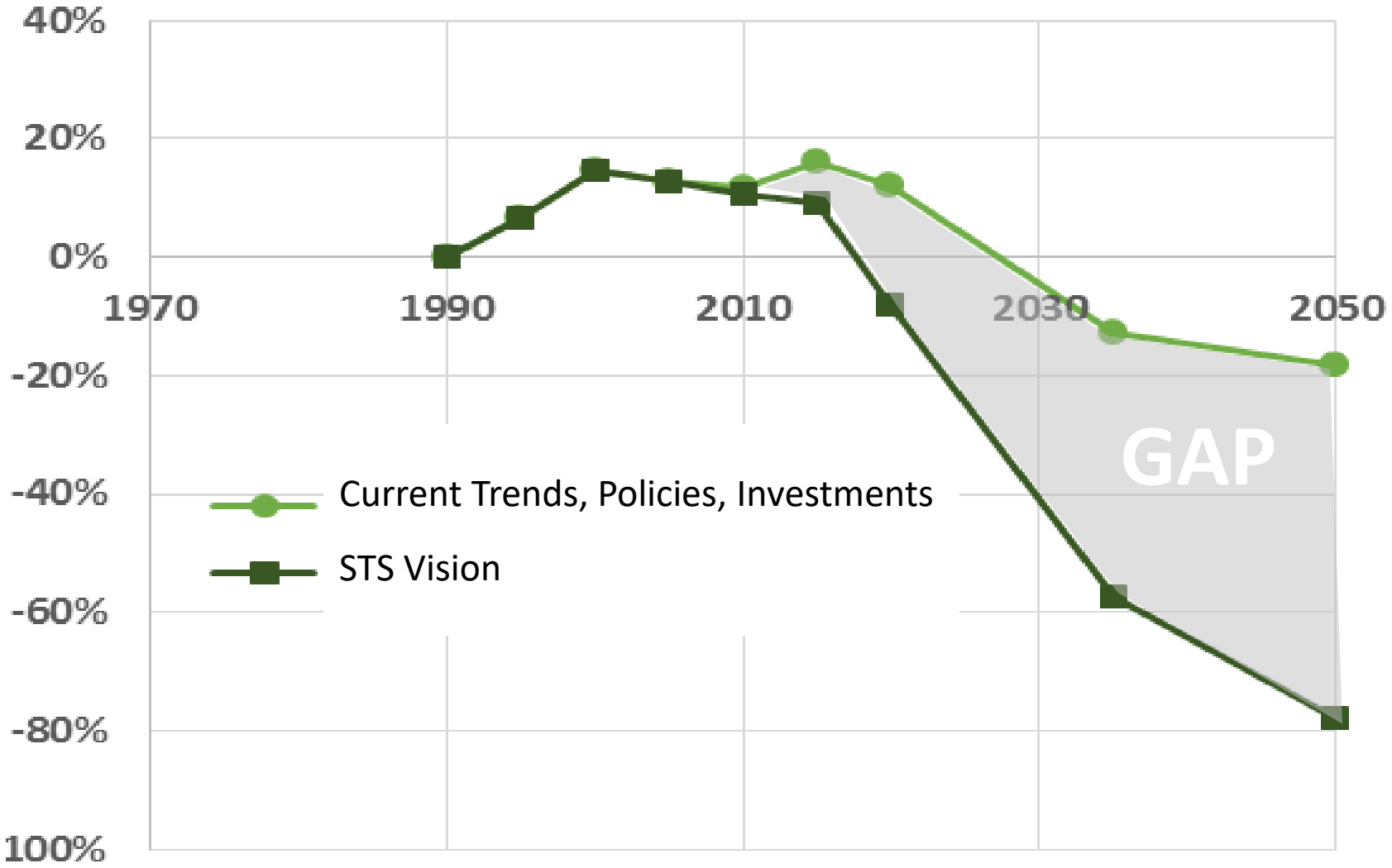


Progress: Restraining Forces

For Reducing GHG Emissions

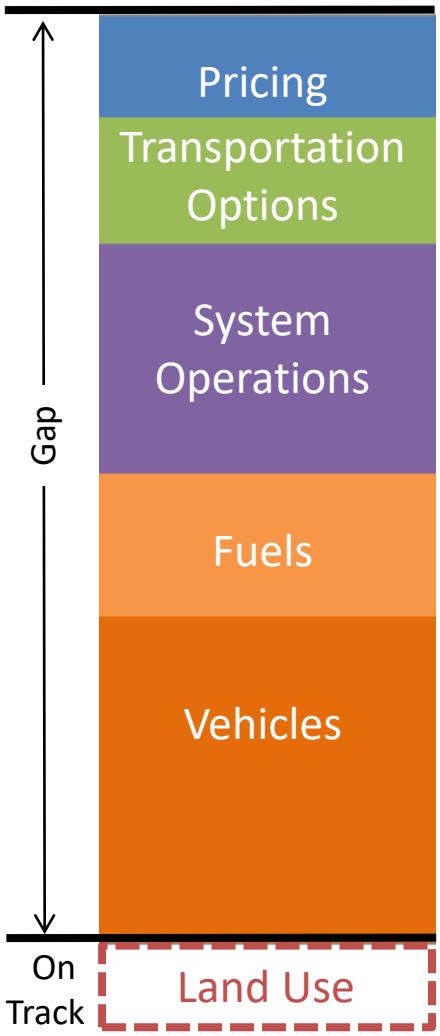
Percent Change in GHG Emissions from 1990

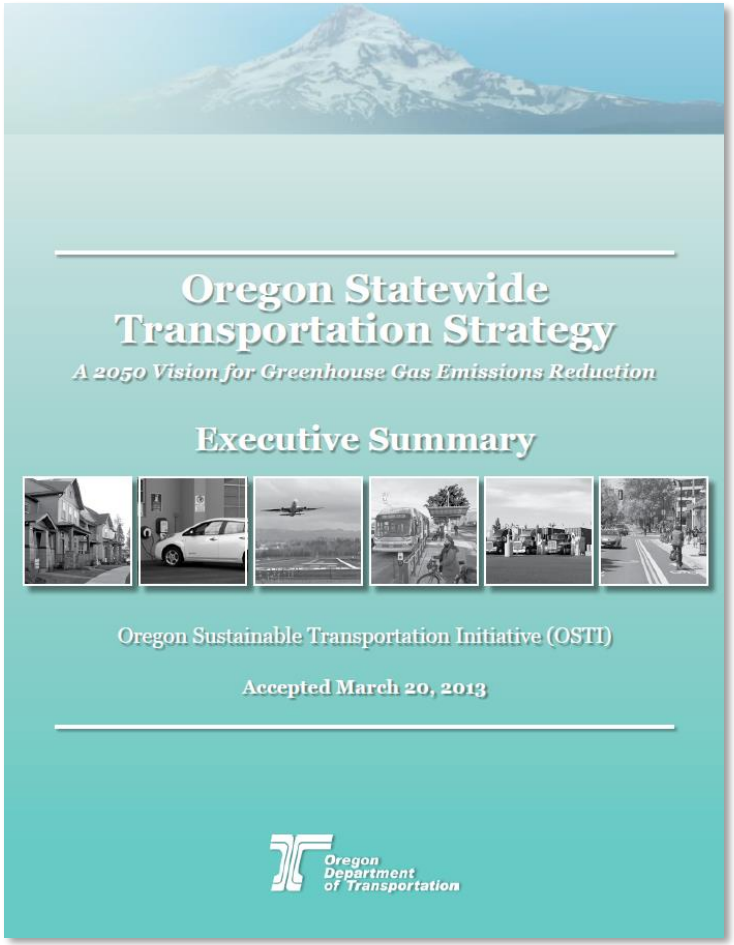
Light Duty Vehicles



Closing the Gap

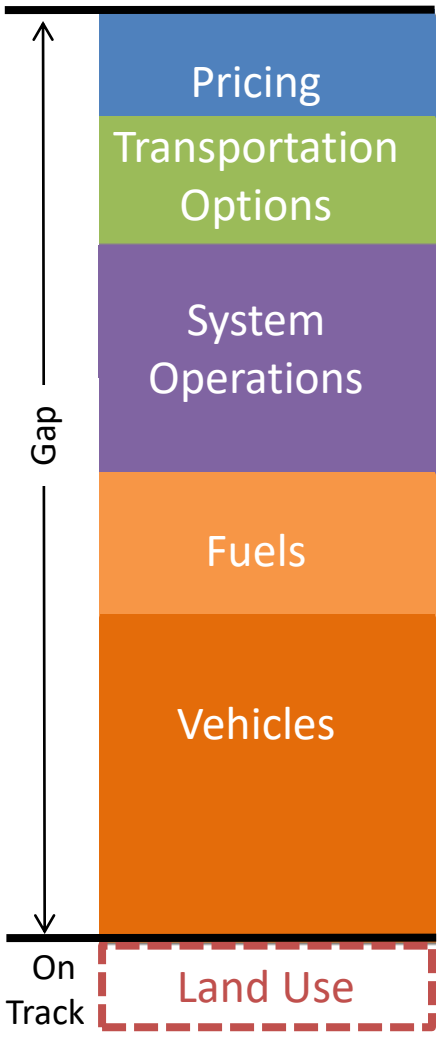
Getting from Today's Trends/Plans to the STS Vision





Closing the Gap – Through Investments

Getting from Today's Trends/Plans to the STS Vision



Investments ($)

Tolling Technology
Operational Costs

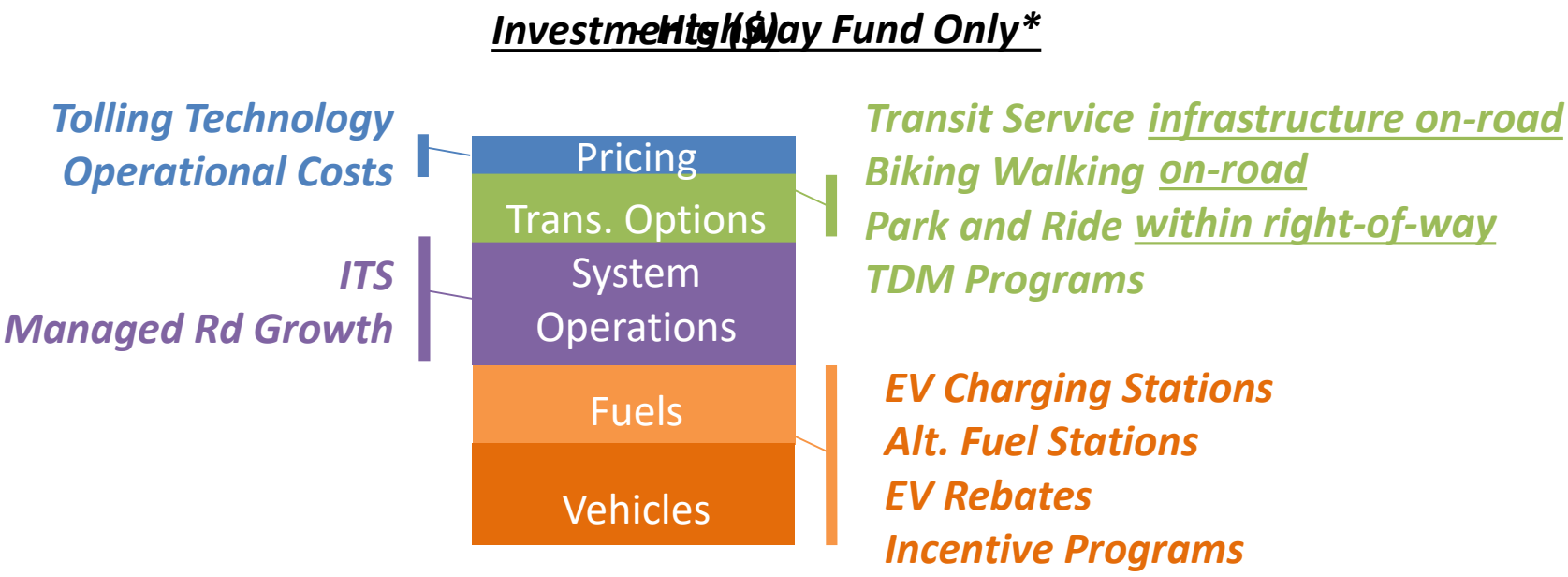
ITS
Managed Rd Growth

Transit Service
Biking Walking
Park and Ride
TDM Programs

EV Charging Stations
Alt. Fuel Stations
EV Rebates
Incentive Programs

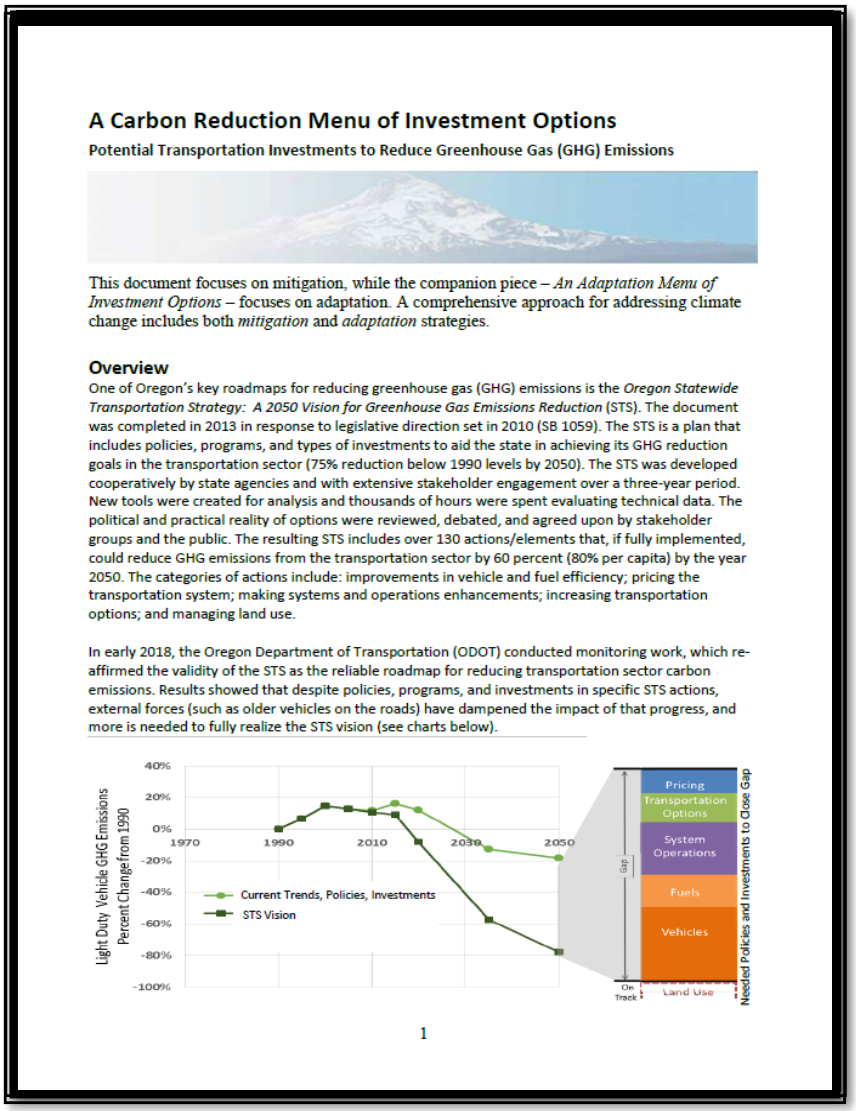
Closing the Gap – Through Highway Fund Investments

Getting from Today's Trends/Plans to the STS Vision



** Highway Trust Funds are to be used "exclusively for the construction, reconstruction, improvement, repair, maintenance, operation and use of public highways, roads, streets and roadside rest areas in this state."*

For more information…



A Carbon Reduction Menu of Investment Options

Potential Transportation Investments to Reduce Greenhouse Gas (GHG) Emissions

This document focuses on mitigation, while the companion piece – *An Adaptation Menu of Investment Options* – focuses on adaptation. A comprehensive approach for addressing climate change includes both *mitigation* and *adaptation* strategies.

Overview

One of Oregon's key roadmaps for reducing greenhouse gas (GHG) emissions is the *Oregon Statewide Transportation Strategy: A 2050 Vision for Greenhouse Gas Emissions Reduction* (STS). The document was completed in 2013 in response to legislative direction set in 2010 (SB 1059). The STS is a plan that includes policies, programs, and types of investments to aid the state in achieving its GHG reduction goals in the transportation sector (75% reduction below 1990 levels by 2050). The STS was developed cooperatively by state agencies and with extensive stakeholder engagement over a three-year period. New tools were created for analysis and thousands of hours were spent evaluating technical data. The political and practical reality of options were reviewed, debated, and agreed upon by stakeholder groups and the public. The resulting STS includes over 130 actions/elements that, if fully implemented, could reduce GHG emissions from the transportation sector by 60 percent (80% per capita) by the year 2050. The categories of actions include: improvements in vehicle and fuel efficiency; pricing the transportation system; making systems and operations enhancements; increasing transportation options; and managing land use.

In early 2018, the Oregon Department of Transportation (ODOT) conducted monitoring work, which re-affirmed the validity of the STS as the reliable roadmap for reducing transportation sector carbon emissions. Results showed that despite policies, programs, and investments in specific STS actions, external forces (such as older vehicles on the roads) have dampened the impact of that progress, and more is needed to fully realize the STS vision (see charts below).

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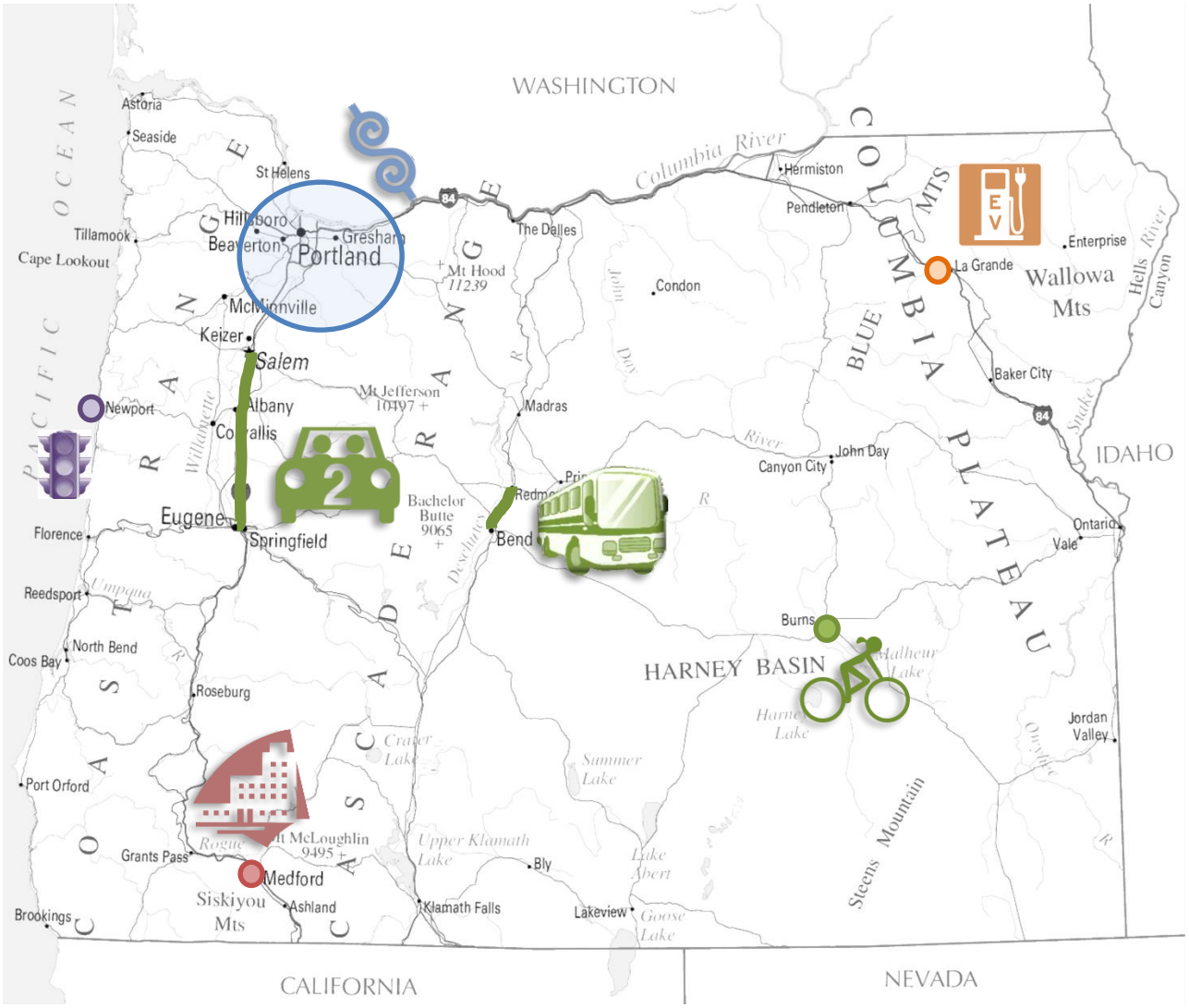
A Carbon Reduction Menu of Investment Options

Additional Questions?

Oregon Statewide Transportation Strategy

The STS Identifies Investment Types Not Projects



Adaptation

Adaptation of the Transportation Sector

Climate Change Vulnerabilities and Adaptation Strategies

Transition

From talking about the STS to the Adaptation Strategy

Mitigation	Comprehensive (Everyone)	Publically vetted	Complete Assessment
Adaptation	Inward Facing (ODOT only)	Internally developed	Preliminary Assessment

Climate Change Adaptation in Oregon

The Oregon Climate Change Adaptation Framework

December 2010

ODOT's Climate Change Adaptation Strategy Report

April 2012

Oregon Department of Transportation

Climate Change Risks

Maintenance and Operations

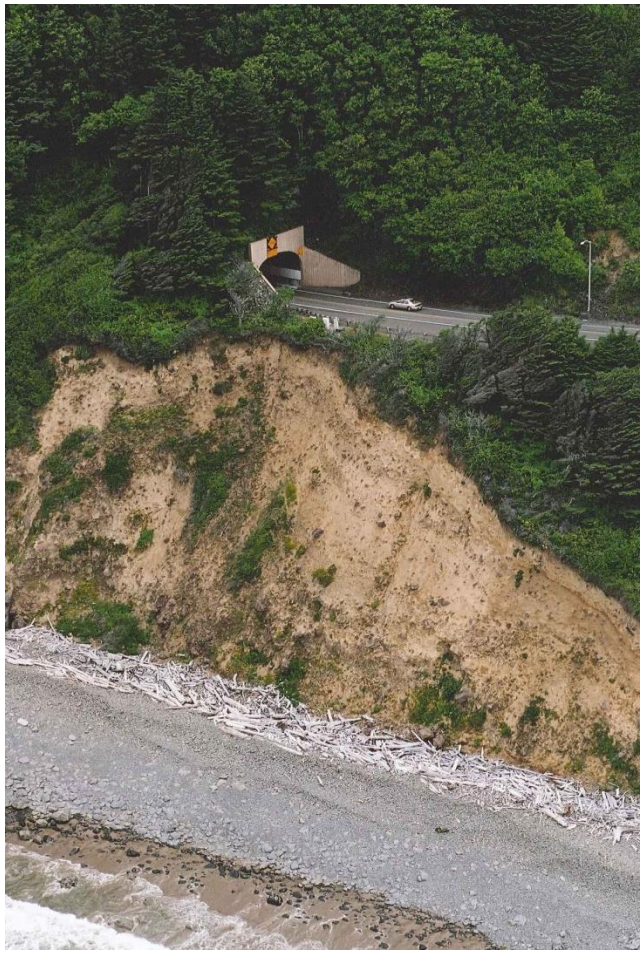
Investment Options

Assets

Investment Options

Priority Corridors

Investment Options



For more information…

An Adaptation Menu of Investment Options

Potential Transportation Investments to Adapt to Climate Change Impacts

This document focuses on adaptation, while the companion piece – *Carbon Reduction Menu of Investment Options* – focuses on mitigation. A comprehensive approach for addressing climate change includes both *mitigation* and *adaptation* strategies.

Overview

Extreme weather and climate change pose a serious and increasing risk to transportation systems. Oregon is facing many of these threats now and they are projected to get worse in the coming decades. According to the Oregon Climate Assessment Report (OCAR),[1] the state will continue to experience climate variability and extremes in the form of increasing annual air temperatures, wildfires, and changing precipitation patterns. The coast is projected to experience the effects of rising sea levels and higher storm surge in the coming decades.

Adaptation consists of actions to reduce the vulnerability of natural and human systems or to increase system resiliency in light of expected climate change or extreme weather events. Adapting how transportation systems are planned, designed, operated and maintained can help to reduce travel delays and disruptions for all travelers, and lower transportation costs from repairs and reconstruction.

In Oregon, primary climate stressors impacting transportation include:

- Extreme Precipitation
  - Damages roads and can result in closures due to concentrated runoff and scour, flooding, landslides and rock-fall.
- Sea Level Rise
  - Damages roads and can result in closures from increased wave heights, flooding, storm surge, and coastal erosion.
- Extreme Temperatures and Wildfires
  - Damages roads and can result in closures due to extreme heat and wildfires.

The 2010 *Oregon Climate Change Adaptation Framework* looked at these and other risks, and high-level adaptation needs and activities were identified for transportation and other sectors. A few years later (2012) the Oregon Department of Transportation (ODOT) developed *ODOT's Climate Change Adaptation Strategy Report*. Both documents identify the need to better understand transportation infrastructure risks to stressors such as sea level rise through monitoring systems, and to conduct pilot projects to plan

[1] Produced biennially by the Oregon Climate Change Research Institute (OCCRI) at Oregon State University- http://www.occri.net/media/1055/ocar3_final_all_01-30-2017_compressed.pdf

An Adaptation Menu of Investment Options

Additional Questions?

Adaptation of the Transportation Sector