



Oregon Statewide Transportation Strategy

A 2050 Vision for Greenhouse Gas Emission Reduction

2018 Monitoring Report



Oregon Department of Transportation

April 19, 2018

2018 Monitoring Report**Statewide Transportation Strategy: A 2050 Vision for Greenhouse Gas Emissions Reduction**

The purpose of this document is to report on the Oregon Department of Transportation's (ODOTs) progress implementing the Statewide Transportation Strategy (STS) since 2013. In the past five years, ODOT and others in the state have contributed to helping move Oregon in the direction of the STS vision. ODOTs continued commitment to sustainability and the environment is demonstrated through implementation actions that support the STS vision today and into the future.

More work is needed if the vision is to be fully realized, including contributions by the Oregon Legislature, other state agencies, counties and cities, the private sector, and the people who live, work, and/or play in Oregon.

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1.0 Introduction

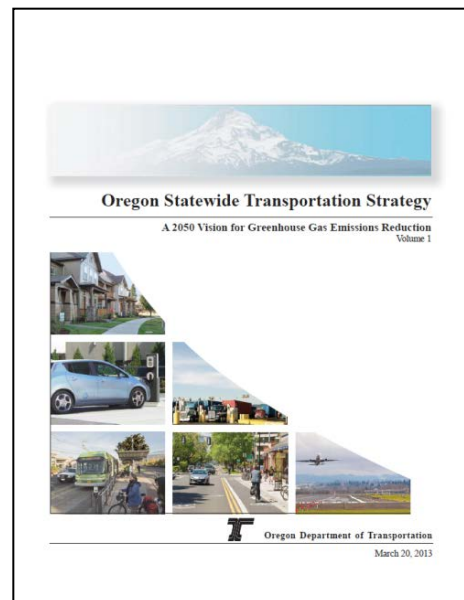
The *Oregon Statewide Transportation Strategy: A 2050 Vision for Greenhouse Gas Emissions Reduction* (STS) was initiated out of legislative direction to examine ways that the transportation sector can reduce greenhouse gas (GHG) emissions and help achieve Oregon’s GHG reduction goals. The document includes a mix of transportation technology, operations, and mode choice options that, along with land use elements and pricing strategies, can result in substantially fewer emissions from the transportation sector. Successful implementation of the STS requires actions at the national, state, local, and personal level across industry and government. In recognition of the Oregon Department of Transportation’s (ODOTs) role in achieving the reductions, the agency created a Short-Term Implementation Plan in 2014. The five-year Short-Term Implementation Plan addressed seven different focus areas ranging from transportation planning to intelligent transportation systems.

This report addresses the ODOT led actions contained in the Short-Term Implementation Plan, describes additional efforts by the agency, and provides a summary of progress towards achieving the overall STS vision.

2.0 Background

2.1 Oregon Statewide Transportation Strategy

In 2010, the Oregon Legislature passed Senate Bill 1059 (Chapter 85, Oregon Laws 2010, Special Session), directing the Oregon Transportation Commission to develop a statewide transportation strategy to aid in achieving Oregon’s GHG emissions reduction goals.¹ In accordance, the *Oregon Statewide Transportation Strategy: A 2050 Vision for Greenhouse Gas Emissions Reduction* was completed in 2012.² The process leading up to the STS was unique. It was the first statewide planning effort targeting a single goal (GHG emission reduction) and spanning the authority of multiple state agencies. No other state had fully engaged in such an effort. Stakeholder opinions varied from adamant support of the effort to fundamental disbelief in climate change and the need to reduce GHG emissions.



The first step in the development of the STS was the formation of stakeholder groups to guide the process. The Commission Chair at the time, Gail Achterman, took on the leadership role of the STS Policy

¹ 2015 ORS 468A.205. Oregon Legislature. Accessed February 2018. <https://www.oregonlaws.org/ors/468A.205>

² *Oregon Statewide Transportation Strategy: A 2050 Vision for Greenhouse Gas Emissions Reduction*. Oregon Department of Transportation. Accessed February 2018.

https://www.oregon.gov/ODOT/Planning/Documents/Oregon_Statewide_Transportation_Strategy.pdf

Advisory Committee. Other members included commissioners from the Environmental Quality Commission, other state agencies, high-level elected officials, advocates and more. Technical groups were also formed to vet assumptions and work analysis details. Technical members included ODOT staff and staff from other state agencies, as well as representatives from Metropolitan Planning Organizations (MPOs), counties, cities, universities, and advocacy organizations.

These groups helped to determine the scope and focus of the STS. Several assumptions had to be made, including how to define “transportation sector.” The transportation sector was defined as including the movement of people and goods on all modes (e.g. car, truck, rail, air). Within the transportation sector, the groups chose to examine strategies including: advancements in engines and fuels, other technology, operational improvements, options for biking, walking, public transportation and other modes, as well as how land use patterns can impact travel, and options for pricing the transportation system.

Each strategy was examined to determine its GHG reduction potential. This was done using a scenario planning process. In scenario planning, different future scenarios are compared to business as usual - i.e. changes in policies and investments are compared to a continuation of what we are doing today. Impacts were quantified by using the GreenStep (Greenhouse gas Strategic Transportation Energy Planning) model, which has been adopted nationally. The tool also accounted for external factors that influence travel such as population, gas prices, and income.³

The stakeholder groups guiding the process recognized the need to understand impacts to other outcomes beyond GHG emissions, such as health and equity. For example, changes to household costs was one of the primary outcomes the stakeholder groups looked to in assessing how hard to push on certain strategies, such as pricing. A majority of the 2.5 year STS development process was spent on modeling and analysis. Extensive research was conducted and the technical groups spent hours debating and agreeing on inputs. The policy groups then vetted the political and practical plausibility of the assumptions. Through the cooperative analysis process it became clear that no single solution was the answer, and that a multi-faceted and aggressive approach was needed from all sectors to reduce transportation related emissions.

The analysis process included broad assumptions for things like the proportion of electric vehicles in the fleet by 2050. The document was formed around these assumptions, where actions were identified that were thought to help achieve those levels. Six categories of strategies and 133 elements were identified and included in the STS. The categories included:

- **Vehicle and Engine Technology Advancements** – Strategies in this category increase the operating efficiency of multiple transportation modes through a transition to more fuel-efficient

³ *GreenSTEP & RSPM Model Version 3.5 Technical Documentation*. Oregon Department of Transportation. Accessed February, 2018. <https://www.oregon.gov/ODOT/Planning/Documents/GreenSTEP-RSPM-Documentation.pdf>

vehicles, improvements in engine technologies, and other technological advancements. Example elements include Zero Emission Vehicle (ZEV) programs, electric vehicle charging infrastructure, and fleet turnover to a greater share of electric or low carbon fuel vehicles. Many of the elements in this category require legislative action, are under the authority of the Department of Environmental Quality and Oregon Department of Energy, or are reliant on market forces to drive change.

- **Fuel Technology Advancements** – This category contains improvements in vehicle efficiency and reductions in the carbon intensity of fuels and electricity used to power vehicles. Strategies in this category increase the operating efficiency of transportation modes through transitions to fuels that produce fewer GHG emissions or have lower lifecycle carbon intensity. Example elements include Clean Fuels Standards, and transitioning to low carbon renewable fuels. Many of the elements in this category require federal programs, legislative action, are under the authority of the Department of Environmental Quality and Oregon Department of Energy, or are reliant on market forces to drive change.
- **Systems and Operations Performance** – Strategies in this category address intelligent transportation systems, air traffic operational improvements and other innovative approaches to improving the flow of traffic, reducing delay on transportation systems, and providing travelers with information that helps them drive more fuel efficiently or avoid significant delays. Strategies in this category improve the efficiency of the transportation system and operations through technology, infrastructure investment, and operations management. Example elements include in-car displays that notify the driver of their fuel efficiency as they travel, providing real time information on crashes and delays, promoting vehicle-to-vehicle communications, and supporting autonomous vehicles. Many of these elements are under the authority of the private sector, ODOT, local jurisdictions, and Oregon Department of Aviation, or are reliant on market forces to drive change.
- **Transportation Options** – This category contains strategies for providing infrastructure and options for public transportation, bicycle, and pedestrian travel, enhancing transportation demand management programs, shifting to more efficient modes of goods movement, and providing alternatives to certain air passenger trips. This category encourages a shift to transportation modes that produce fewer emissions and provide for the more efficient movement of people and goods. Example elements include providing park-and-ride facilities, promoting ride-matching services, adding biking and walking infrastructure, enhancing passenger rail services, and a significant growth in public transportation service. Many of these elements are under the authority of ODOT, local jurisdictions, transit agencies, and Oregon Department of Aviation, or are reliant on market forces to drive change.
- **Efficient Land Use** – Strategies in this category focus on infill and mixed-use development in urban areas to reduce demand for vehicle travel, expand non-auto travel mode choices for

Oregonians, and enhance the effectiveness of public transportation and other modal options. This category promotes more efficient movement throughout the transportation system by supporting compact growth and development. This type of development pattern reduces the distances that people and goods must travel, and provides more opportunities for people to use zero or low energy transportation modes. Example elements include supporting mixed-use development, limited expansion of urban growth boundaries, and development of urban consolidation centers for freight. Many of these elements are under the authority of Oregon Department of Land Conservation and Development and local jurisdictions, or are reliant on the market forces of housing costs, generational preferences, or job locations to drive change.

- **Pricing Funding and Markets** – This category addresses the true costs of using the transportation system and pricing mechanisms for incentivizing less travel or travel on more energy efficient modes. A “user pays true cost” approach ensures that less efficient modes are responsible for the true cost of their impacts to the transportation system and environment. Strategies in this category support a transition to more sustainable funding sources to maintain and operate the transportation system, pay for environmental costs and provide market incentives for developing and implementing efficient ways to reduce emissions. Example elements include transitioning to a user or mileage based fee, adding a carbon fee, promoting pay-as-you-drive insurance programs, and diversification of Oregon’s economy. Many of the elements in this category require legislative action.

Together, the strategies contained in the STS aid the state in achieving its GHG emission reduction goal. The state goal is to reduce overall emissions by 75 percent below 1990 levels by 2050. This goal is somewhat ambiguous, as it is unclear if the goal is meant to be per capita or total, and there are no sector-specific breakdowns. Reports by the Oregon Global Warming Commission indicate that the transportation sector accounts for 35 percent of total emissions in Oregon.⁴ The STS advisory groups chose not to divide emission reductions by population or by sector. The STS vision achieves a 60 percent total reduction by 2050, which equates to around 80 percent per capita (Figure 1).

⁴ *Biennial Report to the Legislature*. Oregon Global Warming Commission. Accessed February, 2018.
<https://static1.squarespace.com/static/59c554e0f09ca40655ea6eb0/t/59dd4984a8b2b090a38f07a1/1507674513035/2017-OGWC-Legislative-Report.pdf>

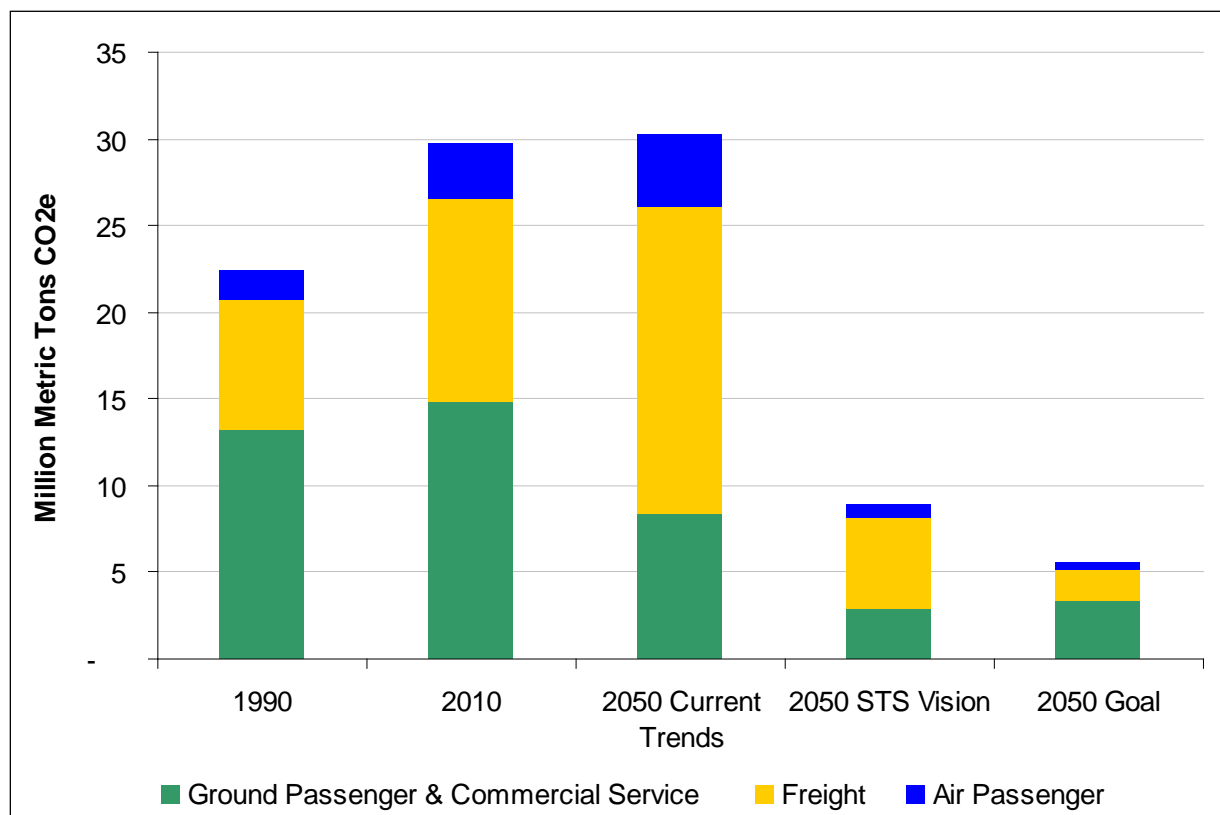


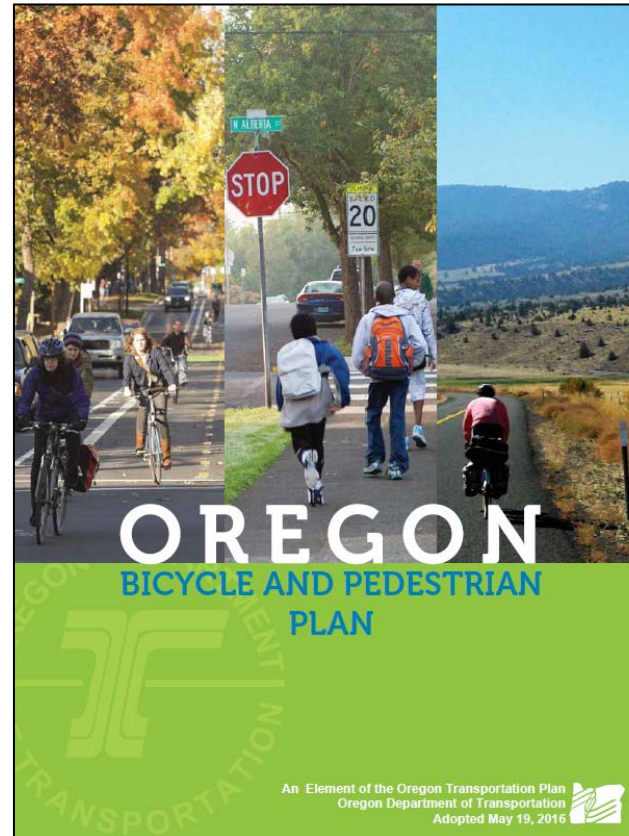
Figure 1: Projected Statewide Transportation Sector GHG Emissions (STS 2013)

To realize the full reduction potential of the STS, all of the strategies contained in the document would need to be implemented. The diverse strategies range from advancements in vehicles and fuels, to the siting of industrial land. Such a broad view of transportation means that the STS identified opportunities far beyond ODOT, to the purview of other agencies like the Department of Environmental Quality, and Department of Land Conservation and Development. Implementation requires commitments by these and other state agencies, local jurisdictions, the private sector and individuals, in addition to ODOT.

In part because strategies in the STS fall under multiple authorities, the Oregon Transportation Commission chose not to adopt the STS document outright, instead accepting the final product. The document represents a strategy, not a plan, of ways to reduce transportation-related emissions across sectors. If adopted as a statewide plan, the STS would take on a regulatory role. The document was not intended to be directive or regulatory, but rather to chart a broad path forward with a number of policy choices and options to achieve the vision. The STS went through a full planning process, including a formal public review period. That rigor was placed on the process so that the STS could stand on its own as a Strategy, and influence decisions across sectors.

The majority of, if not all, strategies under the authority of the ODOT have been adopted through other statewide plans. The STS implements the Sustainability Goal of the *Oregon Transportation Plan* and its strategies have been directly incorporated into or expounded upon in other statewide plans like the recently adopted *Oregon Transportation Options Plan* (2015) and *Oregon Bicycle and Pedestrian Plan* (2016).

Even though the STS has been incorporated into other plans, the document itself still serves a roadmap for reducing overall transportation sector emissions. It received national acclaim, winning the AASHTO Presidents Award for Planning in 2013.⁵ Locally, it spurred development of an ODOT Short-Term Implementation Plan, and was the basis for similar planning efforts in Portland Metro and elsewhere in the state. Its impacts are both direct and indirect, the results of which are described in this document.



2.2 ODOT STS Short Term Implementation Plan

In 2014, ODOT created a STS Short-Term Implementation Plan⁶ that identified action items for the agency to implement over a five-year period to help move Oregon towards achieving the STS vision. The plan identified new, enhanced, or reprioritized efforts that ODOT deemed as important to its mission and to moving in the direction of the STS vision. While the impetus for these action items varies (e.g. improving safety, encouraging transit, increasing fuel efficiency), all of these programs align with the STS. Extensive internal and external outreach was done in the creation of the implementation plan.

Seven implementation programs were identified, which include:

- **Electric Vehicles and Low Emission Fuels**

Actions under this category were identified that support transition to electric vehicles and low emission fuels. Actions included communication materials around electric vehicle charging stations and data sharing with state agencies like Department of Environmental Quality.

⁵ Winners of 2013 President's Transportation Awards. AASHTO Journal. Accessed February, 2018. <https://news.transportation.org/Pages/102513PresidentsAwards.aspx>

⁶ *Statewide Transportation Strategy Short-Term Implementation Plan*. Oregon Department of Transportation. Accessed February 2018. <https://www.oregon.gov/ODOT/Planning/Documents/STS-Short-Term-Implementation-Plan.pdf>

- Eco-Driving**
 This program focused on a low cost approach to reducing GHG emissions by providing information to citizens on how to drive more fuel efficiently. Eco-Driving focused on the development of education materials and deployment through partnerships.
- Road User Charge Economic Analysis**
 This work item focused on the economic impact of pricing strategies, specifically road-usage fees. At the time the STS was developed, there was much debate over the economic impact of GHG reduction efforts.
- Scenario Planning and Strategic Assessment**
 The intent of this program was to partner with MPOs to engage in long range scenario planning efforts that explore local actions for reducing GHG emissions.
- Intelligent Transportation Systems (ITS)**
 One of ODOT's biggest potential contributions to reducing emissions in the short term is through operational improvements to reduce congestion and increase fuel efficiency. This program focused on technology to smooth traffic flow, reduce crashes, and provide traveler information about road conditions, travel times, and options.
- Transportation Planning and Project Selection**
 Part of the original commitment to STS implementation included adding strategies from the STS into statewide plans and expanding on the STS direction. ODOT also identified the need to explore how investment programs can support STS implementation.
- Stakeholder Coordination**
 Since several of the strategies outlined in the STS fall outside of ODOT's purview, this action was identified to assure continued coordination with other state agencies, and other entities working on activities aligning with the STS vision.

The ODOT Short-Term Implementation Plan was shared with the Oregon Transportation Commission in February 2014, prior to it being finalized. At that time a commitment was made to come back to the Commission and report on implementation activities sometime in 2018.

3.0 ODOT Implementation Efforts

In the four years since the STS Short-Term Implementation Plan was developed, ODOT has actively worked to implement the seven focus areas. In addition, other initiatives have been undertaken by ODOT that align with the STS and help to realize its vision. The nature of these efforts and specific activities are described below. Information on the amount of GHG emission reduction cannot be

precisely tracked for each activity but was evaluated for each strategy category in the STS (e.g. transportation options) and is described later in this document. Below is a narrative account of actions that support STS implementation.

3.1 Putting the STS Short-Term Implementation Plan into Action

The STS Short-Term Implementation Plan committed ODOT to pursuing activities within its authority to implement the Statewide Transportation Strategy. It was intended to cover a five-year period roughly spanning 2014-2019. The actions originally specified have evolved slightly over time to take advantage of unforeseen opportunities and changing priorities and practices. The seven focus areas have, however, remained the same. A highlight of accomplishments is listed under each of the focus areas below.

Electric Vehicles and Low Emission Fuels

Over the past four years ODOT has worked on several efforts that support cleaner vehicles and fuels, including:

- **West Coast Electric Highway**

In 2014, ODOT completed the installation of the West Coast Electric Highway, a network of 44 DC fast charging stations along the I-5 and U.S. 101 corridors, as well as several east-west routes from the coast to central Oregon. These stations, completed with federal grant funding, are part of a larger multi-state effort to enable long-range electric vehicle travel from British Columbia to Baja California. As of 2017, the 44 Oregon stations have dispensed more than 870 megawatt hours of charging, powering more than 3 million miles of all-electric driving in the state. ODOT is partnering with utilities providers, automakers, and charging providers to investigate new opportunities to increase access to electric vehicle charging stations and increase range confidence for electric vehicles drivers in the state.

- **Multi State ZEV Action Plan**

ODOT is continuing to participate in the Multi-State ZEV (Zero Emission Vehicle) Task Force, a bicoastal group of policy makers working to implement the California Zero Emission Vehicle program. This group serves as a forum for its eight member states to coordinate electrification efforts, exchange best practices and lessons learned, and engage with automakers, utilities, and other stakeholders to collaborate on developing strategies to support the



growing market for electric vehicles. ODOT also participates in the Pacific Coast Collaborative, along with Washington, California, and a number of cities and counties in west coast states to establish fleet targets for electric vehicles. Lastly, ODOT works directly with its other state agencies such as the Department of Environmental Quality and Department of Administrative Services, as well as with public-private partnerships like Drive Oregon, to coordinate electric vehicle activities.

- **Low Emission Fuels**

In support of low emission fuel infrastructure, ODOT funded the creation of two CNG (compressed natural gas) fueling stations in the state: one in Wilsonville and one in the Rogue Valley area. Funding for these projects was allocated by the Oregon Transportation Commission from the Congestion Mitigation and Air Quality (CMAQ) program. The CMAQ program also supports retrofitting diesel engines to be cleaner, through funding provided to the Department of Environmental Quality. In addition, ODOT works with the Department of Environmental Quality to provide technical data and support for the Clean Fuels Program.

Related to these specific actions, ODOT has worked to integrate information on electric vehicle charging infrastructure into maps and publications available to the public. The agency has also been engaged in several legislative conversations around these topics and continues to seek public-private partnerships. In addition, ODOT participated in Travel Oregon's Electric Byways project that developed travel itinerary to a variety of destinations throughout the state using the network of electric vehicle charging stations.

EcoDriving

In 2015, ODOT initiated the EcoDriving program to educate individuals about a method of driving which improves fuel economy and reduces emissions. Materials developed also cited the co-benefits of EcoDriving, including: reduced vehicle wear and tear, improved safety of all road users, and user cost savings. ODOT created a Toolbox that enables local jurisdictions and individuals to create customized community-based education on EcoDriving practices. ODOT has successfully partnered with local jurisdiction fleets (Washington County and Hillsboro) to implement the EcoDriving program and funded research with Portland State University and the Transportation Research and Education Center to evaluate the effectiveness of the program and make adjustments as needed. ODOT has partnered with Oregon Department of Environmental Quality, Oregon Department of Energy, and Columbia-Willamette Clean Cities Coalition to identify strategic opportunities to implement EcoDriving technology and practices with private-sector companies.

Road User Charge Economic Analysis

ODOT contracted with Oregon State University to conduct economic analysis of a road user charge. The report was completed in 2016 and included information helpful to understanding the economic impacts of various road user charge alternatives across the state, including in urban and rural areas, as compared to the impact of the fuel tax. Information has been used to inform OReGo and potential fee structures for road user charges.

Although the Short-Term Implementation Plan was focused solely on economic analysis, the OReGO program goes a step beyond work envisioned and significantly advances strategies identified in the STS.

- **OReGO**

Drawing on the success of several pilot projects resulting from the policy development work of the Road User Fee Task Force, the state passed Senate Bill 810 in July 2013 establishing the nation's first mileage-based revenue program for light-duty vehicles (passenger vehicles). The program, branded OReGO, successfully launched on July 1, 2015. Enrolled volunteers pay 1.5 cents per mile driven and are credited 34 cents per gallon for the state fuels tax paid on gallons used to drive taxable miles. ODOT uses private sector partners to administer the program. They provide account management services, devices and options to volunteers. ODOT oversees these functions. As the OReGO Program continues, it is evaluating other technologies that could be used to report mileage and fuel consumption. If these technologies are accurate and secure, they will be deployed into OReGO. This will provide more options to OReGO participants and allow the market to innovate and grow.

Road user fees in Oregon continue to be explored through OReGO and other mechanisms, including increased taxes and fees and value pricing concepts. These are discussed later in the document.

Scenario Planning and Strategic Assessment

Similar to ODOT's requirement to develop a Statewide Transportation Strategy, Portland Metro and Central Lane MPOs were charged by the Oregon Legislature to conduct scenario planning and agree on a preferred scenario for reducing transportation sector GHG emissions. The 2009 Jobs and Transportation Act required the Department of Land Conservation and Development (DLCD) and ODOT to provide technical and financial support. ODOT honored this commitment by fully funding Central Lane MPOs effort, providing substantial funding to Portland Metro, and staff time to both efforts to answer technical questions.

Portland Metro was required to go a step further than Central Lane MPO, and implement their preferred scenario. Metro's resulting scenario plan, *Climate Smart Strategy*, was completed in 2014 and is now being implemented through the area's Regional Transportation Plan and other local plans. The strategy itself and subsequent implementation go a long way in supporting the STS vision. Portland Metro provided ODOT with an update on their implementation progress, which is included as Appendix A.



Central Lane MPO completed their scenario planning effort in 2015. Since that time ODOT has helped to support the City of Eugene evaluate GHG emissions as part of their Climate Recovery Ordinance and the agency is engaged in conversations with the MPO on using ODOT's scenario planning analysis tools to inform their upcoming Regional Transportation Plan update.

Other MPOs were later encouraged, but not required to conduct scenario planning. The STS Short-Term Implementation Plan identifies continued support for interested MPOs to engage in these efforts, including technical support and negotiated financial assistance. ODOT has made presentations describing strategic assessments and offering support to each MPO, multiple times. The following MPO volunteered to engage in a strategic assessment:

- **Corvallis Area MPO (CAMPO)**

CAMPO was the first MPO to engage in a strategic assessment. They developed long range approaches for substantially reducing transportation related emissions. ODOT paid for MPO staff time, conducted the modeling and analysis, and worked with DLCD and the MPO in gathering data and sharing results. This effort was used to inform the area's Regional Transportation Plan update on the impacts of policy changes to environmental, equity, sustainability, and mobility outcomes. The CAMPO Strategic Assessment report was awarded the FHWA 2015 Environmental Excellence Award.

- **Rogue Valley MPO (RVMPO)**

The Rogue Valley MPO was the second and only other MPO to volunteer for a Strategic Assessment. In 2016 the MPO conducted a review of their existing plans and policies and identified potential approaches for reducing transportation-related emissions. In addition to emissions, the RVMPO work focused on household travel costs, congestion reduction, and alternative modes. The results of this effort were used to inform the development of the area's Regional Transportation Plan update, as well as other local planning projects.

Based on these experiences and those with Metro and Central Lane, ODOT and DLCD have updated the scenario planning guidance document to align with best practices and lessons learned.

Additionally, in 2017 DLCD engaged in a process to update the Land Conservation and Development Commission MPO GHG reduction targets. These were originally set in 2011 and were a requirement in the same Legislation that triggered development of the STS. Both in the original target setting and in the recent update, ODOT provided much of the technical analysis and support for these efforts. The agency also participated on the advisory committee.

In addition to supporting MPOs volunteering to take on this work, ODOT has led development of modeling and analysis methods and tools to support scenario planning. ODOT authored and evolved the statewide GreenSTEP model to the Regional Strategic Planning Model (RSPM) specifically for use at the regional scale. ODOT has continued to add to the new tool to address the analysis interests of

communities and expand upon the outcomes measured. New, complementary tools have been paired with RSPM to better integrate land use considerations and other inputs. With significant national interest in this work, ODOT sought financial support from others to develop the tools, including support from FHWA and many other states. The effort focuses on a comprehensive tool set for scenario planning based on Oregon's GreenSTEP and RSPM. The now termed "VisionEval" set of tools and associated pooled fund, will allow state DOTs and local jurisdictions across the nation to explicitly evaluate transportation policy choices against GHG emissions and other important outcomes.

Similar to the proliferation of the scenario planning analysis tools developed by ODOT, significant community interest has been expressed for "place types" a new land use classification system developed by ODOT and DLCD originally to support MPO strategic assessments. Place Types allow stakeholders and planners to envision their community landscape in ways that increase local engagement while facilitating translation to modeling and analysis inputs. The outgrowth of this work goes far beyond STS implementation to improving planning practices across Oregon and the nation.

Intelligent Transportation Systems

Intelligent Transportation Systems (ITS) utilize technology to optimize the system. ODOT deploys several types of ITS technology such as: variable messaging to travelers, speed smoothing techniques like adaptive speed limits and ramp metering, and more.



Some of the more impactful ITS planning or deployment efforts for reducing GHG emission have been focused where traffic congestion is most severe, in the Portland metropolitan area. Efforts include:

- **Corridor Bottleneck Operations Study (CBOS) and ITS Operational Improvements in Portland**

ODOT Region 1 conducted a study that looked at ITS operational improvements for addressing bottlenecks. These areas consist of stop-and-go traffic that results in increased emissions, as well as safety issues and congestion. A number of freeway safety improvements were identified, several of which have been addressed or are planned, and some that will be addressed with funding from the 2017 Oregon Legislature through HB 2017.

- **Oregon 217 RealTime**

The Oregon 217 RealTime variable message signs are a good example of an ODOT project that helps to implement the STS and reduce emissions. The effort demonstrates a significant reduction in crashes and crash severity as well as improvements in travel time reliability, all of which impact emissions. Prior to RealTime sign installation, Oregon 217 experienced heavy traffic congestion during peak commute periods due to high traffic density and crashes. To address these issues ODOT installed RealTime travel information signs in 2014. Throughout the project area, total crashes were reduced by 21 percent, severe crashes were reduced by 60 percent, and rear-end collisions were reduced by 18 percent, while travel times remained the same or slightly improved. These improvements are even more notable given the overall increase in vehicle travel in the corridor during the same period. The program will build on the successful implementation of the Oregon 217 RealTime project with targeted deployments on other major corridors including I-5, I-84, I-205 and U.S. 26. Portions of the proposed systems on I-84 and U.S. 26 have been funded and programmed for construction.

Statewide traveler information is another key ITS strategy that helps with emission reduction. People can plan their trips on more efficient modes, be aware of and avoid reoccurring or intermittent delay, and more. ODOT's primary traveler information tool is TripCheck:

- **TripCheck**

The TripCheck website provides comprehensive information about roadway conditions and closures, alternative transportation options, and travel services. Many enhancements have been made to the website since the development of the STS in 2013. Today people can plan trips with TripCheck across more than 40 public transportation services using their internet connected device. ODOT's TripCheck system had over 32 million visits in 2015, an average of 2.6 million visits a month. TripCheck now includes crowd-sourced traffic reports and delay information and also has been reformatted to support smart phones and tablets. TripCheck places the most current transportation system information in travelers' hands so they can "know before they go" and make more informed travel choices.

Transportation Planning and Project Selection

Several of the strategies in the STS have been incorporated into or expanded upon in ODOT's statewide transportation plans. Key plans include:

- **Oregon Transportation Options Plan**

ODOT developed and the Oregon Transportation Commission adopted the first in the nation statewide Transportation Options (TO) Plan in 2015. The Plan identifies strategies and investments designed to spread travel demand across the system and to less carbon intensive modes. There is a write-up in the document on the linkages between the TO Plan and the STS, and several of the strategies in the STS are adopted into or elaborated much more deeply in this plan. The plan has resulted in a statewide program and implementation efforts that are described later in this document.

- **Oregon Bicycle and Pedestrian Plan**

In 2016 the Oregon Bicycle and Pedestrian Plan was adopted. Biking and walking were recognized in the STS as opportunities to shift to zero emission modes. The plan includes all biking and walking strategies called for in the STS and goes into much greater details about the planning, investment, construction, and maintenance work needed to support a robust biking and walking system. One of the performance measures in the Bicycle and Pedestrian Plan directly relates to the metric in the STS, which is increased utilization of these modes for short trips.

- **Other Adopted Plans**

The Oregon Rail Plan and Transportation Safety Action Plans also have furthered concepts identified in the STS. The Oregon Public Transportation Plan is currently being developed and like the Bicycle and Pedestrian Plan, expounds on all related strategies in the STS. The plan targets an interconnected, efficient and effective public transportation system.

The draft Oregon Public Transportation Plan and adopted Transportation Options Plan have included GreenSTEP analysis – the tool used to develop the STS. Each of these and other updated policy plans have incorporated or expanded elements of the Statewide Transportation Strategy.

For project selection, many of the investment programs reviewed or identified by the Oregon Transportation Commission in the Statewide Transportation Improvement Program (STIP) align with the direction of the STS. In the most recent STIP allocations (2021-2024) the OTC increased funding to transportation options, directed strategic investments for biking and walking, and continued support for operational investments. In addition, continued funding going to maintenance and safety also contribute to GHG emission reduction by helping to reduce crashes and therefore intermittent delay and idling.

Other funding programs, such as CMAQ directly invest in efforts that reduce emissions and support cleaner air. In 2017, the Oregon Transportation Commission reset the direction of the CMAQ program

and narrowed the list of eligible projects. The list was narrowed based on the direction of statewide plans as well as the STS directly. The CMAQ program quantifies the impacts of specific investments against criteria pollutants and any project funded must show positive impacts. Performance measures for the program have been proposed and are expected to be adopted into the Oregon Highway Plan in May 2018. These will help assure continued alignment with the STS and marked progress in reducing emissions and improving air quality.

In addition, the STS can be seen influencing efforts leading up to the landmark transportation funding package in 2017. Although the STS was not at the center of the 2017 Keep Oregon Moving Act, it was explicitly called out as a further justification for funding in the Oregon Transportation Commission Investment Strategy.

- **Oregon Transportation Commission – 2017 Strategic Investment Strategy**

To help lay the groundwork for the 2017 Keep Oregon Moving Act, ODOT and the Oregon Transportation Commission produced a Strategic Investment Strategy in early 2017. The document identified needs for the transportation system and included investment options. The Investment Strategy explicitly mentions the STS and some of the key funding areas, like public transportation. The OTC Investment Strategy was the basis for many of the legislative conversations and helped to lead a significant increase in funding for public transportation – a key strategy in the STS.

Several of the funding focus areas in the Bill support the STS and are described briefly below.

- **2017 Keep Oregon Moving Act (HB 2017)**

The 2017 Oregon Legislature, through HB 2017, established several significant funding sources that support key actions in the STS, including additional dedicated funding for biking and walking and incentive programs for electric vehicles. Most significant to the STS, a new funding source for public transportation was identified. An employee payroll tax is expected to generate around \$100 million per year in additional revenue for public transportation. As the STS calls for a tripling or more of transit service in many areas, these additional funds are a significant step forward.

ODOT continues to identify investments that support STS implementation and work with the legislature on supportive policies and funding.

Stakeholder Coordination

The last of the STS Short-Term Implementation Plan focus areas was directed at assuring continued collaboration. Many of the implementation activities described above demonstrate follow-through in this item by the partnerships formed with other state agencies and stakeholders. To facilitate stakeholder coordination, ODOT monitors and provides information on initiatives that align with the STS to ensure external and internal coordination to improve efficiencies, remove redundancies, and identify leveraging opportunities, as appropriate.

3.2 Other ODOT Efforts that Support the STS

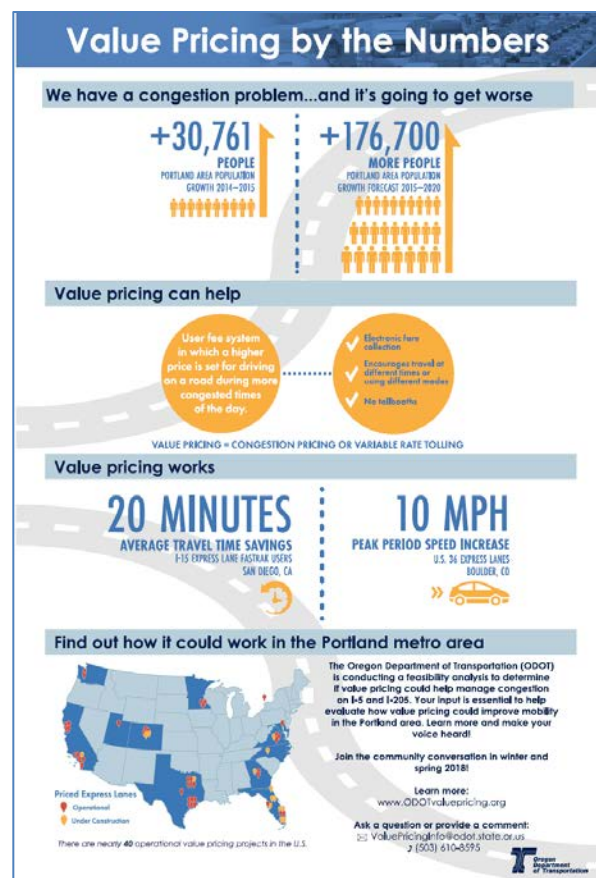
Beyond the seven focus areas in the STS Short Term Implementation Plan, ODOT has engaged in other initiatives or work efforts that support the STS vision. Within ODOT's authority, the following efforts highlight, but do not exhaustively describe, work that contributes to reduced GHG emissions:

- **Oregon Sustainable Transportation Initiative**

The Oregon Sustainable Transportation Initiative (OSTI) is the umbrella program which the STS, scenario planning, and GHG target rulemaking fall under. It is a partnership between ODOT and DLCD, with support from the Department of Environmental Quality and Department of Energy. The program started in 2010 following legislation directing a number of work efforts for ODOT and DLCD aimed at reducing transportation-related GHG emissions. Since that time, the program has continued. In addition to work efforts mentioned earlier, two major guidance documents that support local jurisdictions have been updated. The Scenario Planning Guidelines was one of those documents. The other is the GHG Toolkit. The Toolkit includes strategies and actions for reducing emissions at the local level. In the past several years ODOT and DLCD have added strategy reports and case studies that describe how a jurisdiction might go about implementing strategies, like parking pricing, that reduce GHG emissions.

- **Value Pricing**

ODOT is exploring ways to apply value pricing to parts of Interstate 5 and Interstate 205 to help reduce congestion. The Portland Area Value Pricing Feasibility Study is based on direction from the 2017 Keep Oregon Moving Act and will determine what types of value pricing may be successfully applied and what the impacts of options will be. ODOT is working with local government officials, stakeholders, and the public to ensure that the voice of those who may be impacted is heard. A Policy Advisory Committee comprised of elected officials, business leaders, environmental justice organizations, transit providers, and active transportation advocates, among others, has been established to provide a recommendation on value pricing to the Oregon Transportation Commission by mid-2018. A recommendation will then be forwarded to FHWA by the end of 2018.



- **Transportation Options Program**

In 2015, the Oregon Transportation Commission adopted the Oregon Transportation Options Plan. Since that time ODOT has launched a statewide transportation options program. Activities include an inventory and assessment of park and ride facilities, programs supporting veterans and transportation disadvantaged individuals get to work and critical services, safety education for children traveling to school, working with major employers on flexible work schedules and telecommuting to reduce peak hour trips, and much more. These types of efforts were recognized in the STS and specific strategies identified are being implemented. In addition to agency efforts, ODOT works with transportation options providers across the state to deliver these services, and provides funding to jurisdictions to conduct innovative efforts that directly implement the Oregon Transportation Options Plan.

- **Bicycle and Pedestrian Program**

In 2016, the Oregon Transportation Commission adopted the Oregon Bicycle and Pedestrian Plan. Since that time the program has focused on several implementation activities that also support the STS. ODOT is engaged in inventorying the biking and walking system to identify critical gaps. Aligned with changes in the way biking and walking investments are funded at ODOT, the agency can now start to pinpoint and strategically invest in filling system gaps. This will help to work towards a complete network which can provide greater opportunities for more people to bike and walk, as called for in the STS.

- **Public Transportation Program**

Providing expanded and improved public transportation services is a key component of achieving the STS vision. ODOT has made numerous investments in tools and guidance to help expand and improve transit services across the state. This includes transit service planning software licensing for all transit providers in Oregon, development of an open source tool for analyzing the statewide fixed route transit network, passenger survey templates for transit providers to utilize, and the development of a Transit Development Plan guidebook. ODOT has also made advances in data collection methods and technologies to improve traveler information and support real time trip planning for transit users. The 2017 Keep Oregon Moving Act established a new dedicated source of funding for expanding public transportation service in Oregon. This new source called the Statewide Transportation Improvement Fund will be used for expanding transit services and supporting investments, and includes resources for the purchase of electric or alternative fuel buses.

- **Passenger Rail Program**

The Amtrak Cascades service is a state-supported intercity passenger rail service funded by the states of Oregon and Washington. It connects 18 cities along the I-5 corridor between Eugene, Oregon and Vancouver, British Columbia. The additional cities connected in Oregon are Albany, Salem, Oregon City, and Portland. With the Amtrak Cascades service Oregon strives to create an efficient, safe and cost-effective alternative to highway and air travel, support future growth

and operate an efficient, high-quality intercity passenger rail service that helps minimize the need for state subsidies, be sensitive to community and environmental impacts, and business costs, and integrate with local roadway, transit, bicycle and pedestrian transportation networks. The Oregon Amtrak Cascades schedule was adjusted in mid-December of 2017 to provide a more user-friendly morning service south from Portland. When Washington adds two more Portland-Seattle round trips, Oregon's southbound morning train will become a Portland connection for the first train of the day arriving from Seattle. The service started using eight new Charger locomotives in 2017 that meet EPA Tier 4 emission standards that replaced seven older Amtrak units.

- **Freight Program**

ODOT investments in roadways not only seek to reduce congestion and delay for people but also for trucks. Improving these conditions can help reduce truck engine idling and fuel consumption, which are critical aspects of reducing emissions from the freight sector. ITS and operational improvements, discussed earlier in the report, have helped to reduce stops and starts on several Oregon roadways. In addition, ODOT undertook a study to identify Oregon's most congested roadways and bottlenecks for trucks. The Oregon Freight Highway Bottleneck Project used a variety of key measurable indicators to identify and prioritize locations on Oregon's highway network that were experiencing significant freight truck delay, unreliability and increased transportation costs. Solutions are being identified for these areas, and some projects have received funding as a result of this work. In addition, in ODOT's more regulatory capacity of weighing trucks, efforts have been sustained to reduce truck idling. The Green Light truck preclearance system uses a combination of high speed weigh-in-motion scales, transponders, and computer systems to weigh participating trucks at highway speeds, reducing truck delay and engine idling at weigh-in stations. In addition to efficiencies for freight movement on roadways, ODOT has a role in supporting freight efficiencies for other modes through the *Connect Oregon* funding program. In the past five years *Connect Oregon* has supported the creation of intermodal freight facilities, allowing easier and more efficient transfer of goods between truck and rail. Also, many projects have supported efficiency in the rail system, allowing more goods to travel by this less carbon-intensive mode.



4.0 Progress towards the Overall STS Vision

4.1 Overview

The STS includes actions under the authority of ODOT, other state agencies, local jurisdictions, and the private sector. In assessing overall progress towards the STS vision the same modeling and analysis process used to develop the STS was followed. Inputs were gathered from other state agencies, local jurisdictions, within the agency, and through research that provides an updated view of today's progress relative to the STS vision in both the short and long term.

Analysis shows that many actions called for in the STS are moving in the right direction. However, overall progress is diminished by external factors. In 2012, when the majority of work on the STS was completed, fuel prices were at an all-time high. In the six years since prices have dropped and according to national sources are forecasted to stay low. In addition Oregonians have held onto their vehicles longer than originally anticipated and have not transitioned to newer more fuel efficient or low/no emission vehicles. The result is more internal combustion engines in the fleet that get fewer miles per gallon than was anticipated in the STS. Additionally, Oregon's population continues strong growth and incomes have recovered from the recession. As a result, lower gas prices coupled with higher incomes and post-recession increases in driving means that vehicle miles traveled (VMT) have increased in Oregon. Since the STS looks at total emission reduction and not per capita, more people and a stronger economy means more emissions.

The chart below (Figure 2) shows an estimate of GHG emissions projected from current plans and trends, compared to the STS vision. The chart shows an uptick in emissions following the recession and projected reductions in the long term. In the long term it is assumed that vehicles get more efficient, which helps to bring the curve down. While the overall trend line is moving in the right direction, it falls short of the levels called for in the STS vision. That vision can still be achieved through aggressive vehicles and fuels policies. In the short term, programs like Clean Fuels, public transportation funding from the 2017 Keep Oregon Moving Act, improved systems operations, and other efforts individually mark progress and help Oregon to reduce emissions.

On a per capita basis, GHG reductions are closer to the STS vision, although they are not fully in line.

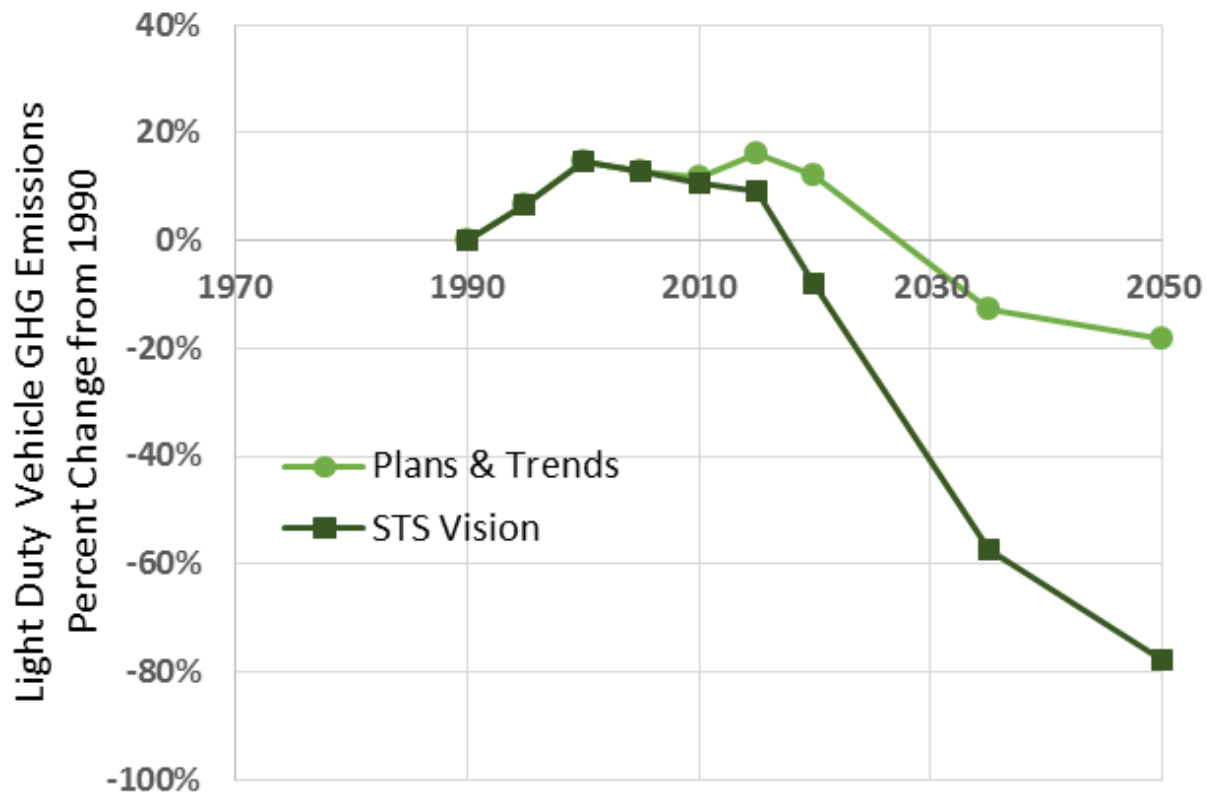


Figure 2: Projected Total GHG emissions of current plans and trends compared to the STS vision.

4.2 Analysis and Results

The STS identified promising approaches for reducing GHG emissions from the transportation sector. The 60 percent total GHG emission reduction below 1990 levels envisioned in the STS by 2050 is an estimate of GHG emissions projected to be reduced as a result of changes to vehicles and fuels, operational improvements, and increased use of cleaner modes. Going back to measure what has actually resulted from the STS is challenging. There is no way to directly measure air quality improvements from specific actions, nor is it possible to directly attribute emissions from transportation. Estimates are used to determine relative shares and contributions.

For the STS monitoring work, inputs from 2012 were updated to current conditions. ODOT staff worked closely with staff from the Oregon Department of Environmental Quality and Department of Energy to develop model inputs that best represent the current trends of today and the anticipated future. The business as usual view was updated from the trends at the time the STS was developed to better represent where we are heading now. These updates were then compared to the STS vision to determine if current actions are moving towards or away from the vision. The monitoring work not only

looked at the directionality of progress, but how well progress is tracking with the original STS trajectories and the types of actions identified in the “what it would take” sections of the STS document. This analysis was conducted for each of the six categories of strategies in the STS and is described below.

Figure 3 illustrates the relative impact of the different STS strategies on reducing emissions. It is intended to show the importance of certain strategies over time. For example, because vehicle and fuels are not as clean in the near term, robust system operations strategies are needed to help smooth traffic and reduce emissions from idling cars. In the long term, vehicle technology advancements have the greatest impact towards achieving the STS vision.

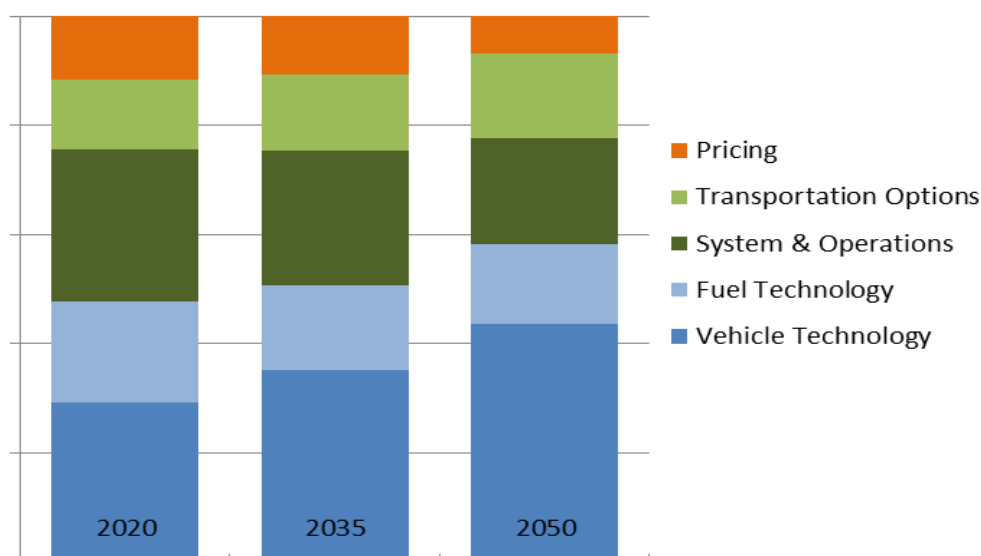






Figure 3: Relative Impact of STS Strategies on Emissions Reductions

As the chart also illustrates, all types of strategies are needed in the short, medium, and long term. Even if a trajectory is off in one category it can be compensated for in another. Further, even if the overall trajectory is off in the short-term, gains can be made in the mid and long term to get back on track with the STS vision.

Focusing on the near term, many of the activities being pursued today move in the direction of the STS vision. Some strategy categories meet the STS vision while others fall short. The narrative description provides information on the directionality of trends in the short term (2020) and long term (2050). Tables are included which show progress in the short term. Progress is marked as:

-  on track with or exceeding the STS vision;
-  moving in the direction of the STS vision;
-  little to no progress towards the STS vision; or
-  moving away from the STS vision / trending in a negative direction.

- **Vehicle and Engine Technology Advancements**

Passenger automobiles and commercial ground vehicles will continue to be an important mode on the transportation system, and as such advancements to vehicle and engine technology are important to achieve the STS vision. Despite implementation efforts that support cleaner vehicles, effectiveness of these actions is most heavily reliant on consumer behavior. Market forces such as lower fuel prices and higher costs for alternative fuel vehicles has resulted in fewer people changing out their high emission vehicles for lower emission vehicles. The average vehicle age on Oregon roadways is 12 years old. Thus, contrary to what was anticipated in the STS, few people have transitioned to higher MPG cars or alternative fuel vehicles. Similarly, the share of light trucks and SUV's has not decreased as expected and continues to be a very popular market segment for automobile consumers in Oregon. A summary of these results in the near term (progress through 2020) is shown in the Table 1 below.

Table 1: Summary of Vehicle Technology Advancements Progress Relative to STS in 2020

Vehicle Mix	○
Fuel Efficiency (MPG)	◐
Battery Range	●
SUV/Light truck share	🇺🇸
Vehicle Age	🇺🇸

Despite solid advancements in the battery range of electric vehicles and other efforts, overall results in this category show it is not making a lot of progress in the direction of the STS vision. Especially in the long term, the STS envisions that most new vehicles sold in Oregon are low to no emissions, whereas today that percentage is fairly low.



- Fuel Technology Advancements**

The use of cleaner fuels and reducing the carbon intensity of fuels has the potential to greatly reduce GHG emissions from the transportation sector. The STS calls for transition to vehicles powered by compressed natural gas (CNG), liquefied natural gas (LNG), biofuels, or electricity. Similar to vehicle and engine technology, current market conditions have slowed turnover to low/no emission vehicles. The Clean Fuels Program provides benefit through reduced emissions and contributes towards achieving the STS vision, however the STS vision assumed a continuous and more aggressive Clean Fuels Program in the future. The carbon intensity of fuels, and especially electricity has improved. The STS anticipated the public transportation bus fleet would transition more to electric or CNG/LNG, but only a few fleets have; although several indicate they plan to move to low-no emission fuels in the future. A summary of these results in the near term (progress through 2020) is shown in the Table 2 on the following page.

Table 2: Summary of Fuel Technology Advancements Progress Relative to STS in 2020

Fuel Carbon Intensity	
Electric Carbon Intensity	
Bus Fuels	

While these and other programs have led to cleaner fuels and technology and moved in the direction, not enough progress has been made to come close to the STS vision in the long term.

- Systems and Operations Performance**






ITS technologies such as variable speed limits, advanced signal timing, and incident management techniques are important components to keep the transportation system operating in reliable manner to help increase efficiency. These activities, in addition to traveler information systems have helped to increase the efficiency of the transportation system and short term progress is moving in the right direction and close in many respects. While there has been targeted deployment, the STS vision assumes very aggressive and widespread utilization of ITS with near full penetration across the transportation system in the long term.

Increased systems operations and performance is also measured by how fuel efficiently people drive. ODOTs EcoDrive efforts have helped but have been mainly targeted at fleets, not the general public. Private sector improvements, such as real time feedback in vehicles and gamification of fuel efficiency, help to target the general public. Because vehicles have not turned over as quickly, there are fewer cars on the road with this technology than was hoped to make a difference. Thus short term progress is relatively stagnant.

In addition to operational strategies, parking management was included in this category. Often when people have to pay to park they choose to carpool, take public transportation, bike or walk, as opposed to paying a fee to drive and leave a vehicle. Paid parking coverage in urban areas is on target and exceeds the STS trajectory in the short term; however prices are lower

than those projected and are less than anticipated in the STS. A summary of these results in the near term (progress through 2020) is shown in the Table 3 below.

Table 3: Summary of Systems and Operations Performance Progress Relative to STS in 2020

Intelligent Transportation Systems	
Managed Road Growth	
Parking Coverage	
Parking Price	
Fuel Efficient Driving	

- **Transportation Options**







Transportation options programs and investments in biking, walking, and public transportation support individuals in choosing lower emitting modes of travel. The provision of comprehensive and frequent transit systems in metropolitan areas across the state is a critical strategy in the STS. The funding provided for public transportation through the 2017 Keep Oregon Moving Act will provide much benefit through expanded and improved transit service. Progress moves in the direction of the STS and is nearly on track in the short term. However, as population grows and operational costs rise, service levels will fall far short of the 4-6 times growth beyond population as called for in the STS by 2050.

Biking and walking progress is measured by changes in use, especially short trips. Biking and walking mode shares have increased for these distances and are expected to catch up to the STS vision in the long term given trends of continued and targeted investments.

Demand management programs, through raising awareness about transportation options and travel choices, affect travel efficiency and emissions by influencing the mode choice and the amount of trips individuals make on the system. Employer-based and household-based transportation demand management programs are being implemented broadly, showing progress above and beyond the STS vision. A summary of these results in the near term (progress through 2020) is shown in the Table 4 below.

Table 4: Summary of Transportation Options Progress Relative to STS in 2020

Transit Service	
Bike	
Carshare	
Demand Management Programs	

The provision of Transportation Options programs are on track in the near term, including planned car share programs and transportation demand management programs.



- **Efficient Land Use**

Strategies in this category promote more efficient movement throughout the transportation system by supporting compact growth and development. The configuration of land uses and transportation systems in Oregon has sought to support reduced trip lengths and vehicle miles traveled.

Data shows that the proportion of households living in proximity to expanded transportation options and shorter trip lengths has increased.

Overall land use growth is on track with that of the STS vision, growth still occurs but is controlled through limited urban growth boundary expansion. A summary of these results in the near term (progress through 2020) is shown in the Table 5 below.

Table 5: Summary of Efficient Land Use Progress Relative to STS in 2020





Urban Growth Boundary Expansion	
Mixed Use Areas	

Additional information was provided by the Department of Land Conservation and Development in support of these findings and is included in Appendix B.

- **Pricing, Funding, and Markets**

Successful implementation of the STS relies on adequate funding and user pricing systems to maintain and improve system performance, provide transportation options, and enhance operations. Recent influxes of transportation funding through increased fees help to provide some of the revenue needed to support the STS. However, long-term operations and maintenance costs, and inflation continue the need to increase revenue for transportation. Efforts around user fees and value pricing start to get at pricing strategies in the STS. The document however projected these programs to be widespread in the mid-term. Although there is progress in pricing, funding, and markets, it is minimal compared to the STS vision. An important component of the STS vision is for transportation system users to pay the full cost of travel. Although the Keep Oregon Moving Act includes provisions to raise user fees on the system, it does not fully cover the cost of wear and tear on the system and other social and environmental impacts of driving (noise, energy security, health). A summary of these results in the near term (progress through 2020) is shown in the Table 6 below.

Table 6: Summary of Pricing, Funding, and Markets Progress Relative to STS in 2020

More Sustainable Funding Source	
Congestion Fee (Portland area)	
PAYD Insurance	
True Cost Pricing (Social and Physical Costs)	

With current efforts and our newer plans, Oregon is on track to reduce GHG emissions by 15-20 percent below 1990 levels by 2050, which falls far short of the STS vision. External factors including more people in the state, more travel, and less fuel-efficient vehicles slows our overall progress. Without addressing these challenges changing this trajectory will be difficult.



5.0 Conclusion

ODOT is doing everything the agency committed to in its Short-Term Implementation Plan. In addition, the agency has taken on more to aid achieving the STS vision. For ODOT's part, the agency has been aggressive with the actions under its authority. It is possible that more work can be done to achieve the vision, but not without trade-offs towards other important investments, like maintaining Oregon's roads and bridges. Within the budget and programs ODOT has, the agency has put a lot of work towards the operational, modal, and technological improvements that help move the STS forward. The agency plans to continue these investments and activities, taking advantage of new opportunities and being supportive of other actions that move the needle towards the STS vision.

While Oregon is on the right track, more work, innovation, and investments are needed to realize the state GHG reduction goals. Policymakers would need to determine what else could be done. Targeted work efforts and continued partnerships and collaboration are essential. The responsibility does not solely rest with ODOT, other agencies, local jurisdictions and more need to do their part, and support from the legislature is needed.

Appendix A:
Portland Metro Report of Implementation of the Climate
Smart Strategy



IMPLEMENTING THE CLIMATE SMART STRATEGY



The 2018 Regional Transportation Plan is a key tool for the greater Portland region to implement the adopted Climate Smart Strategy and achieve a new 2040 greenhouse gas emissions reduction target adopted by the Land Conservation and Development Commission in 2017.

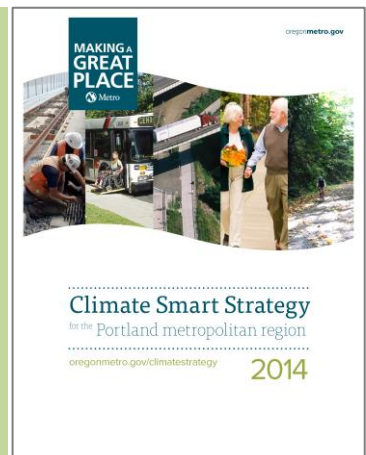
As directed by the Oregon Legislature in 2009, the Metro Council and the Joint Policy Advisory Committee on Transportation (JPACT) developed and adopted a regional strategy to reduce per capita greenhouse gas emissions from cars and small trucks by 2035 to meet state targets. Adopted in December 2014 with broad support from community, business and elected leaders, the Climate Smart Strategy relies on policies and investments that have already been identified as local priorities in communities across the greater Portland region. Adoption of the strategy affirmed the region's shared commitment to provide more transportation choices, keep our air clean, build healthy and equitable communities, and grow our economy – all while reducing greenhouse gas emissions.

Analysis of the adopted strategy demonstrated that with an increase in transportation funding for all modes, particularly transit operations, the region can provide more safe and reliable transportation choices, keep our air clean, build healthy and equitable communities and grow our economy while reducing greenhouse gas emissions from light-duty vehicles as directed by the Legislature. It also showed that a lack of investment in needed transportation infrastructure will result in falling short of our greenhouse gas emissions reduction goal and other desired outcomes.

The Climate Smart Strategy is built around ten policies to help the region reduce greenhouse gas emissions from cars and small trucks while making our transportation system safe, reliable, healthy and affordable.

Climate Smart Strategy

1. Implement adopted local and regional land use plans
2. Make transit convenient, frequent, accessible and affordable
3. Make biking and walking safe and convenient
4. Make streets and highways safe, reliable and connected
5. Use technology to actively manage the transportation system
6. Provide information and incentives to expand the use of travel options
7. Make efficient use of vehicle parking and land dedicated to parking
8. Support Oregon's transition to cleaner fuels and more fuel-efficient vehicles
9. Secure adequate funding for transportation investments
10. Demonstrate leadership on reducing greenhouse gas emissions



The strategy also identified actions that can be taken by the state, Metro, cities, counties and others to support implementation and performance targets to enable the region to monitor progress. The responsibility of implementation does not rest solely with Metro. Continued partnerships, collaboration and increased funding from all levels of government will be essential.

A list of Metro implementation activities and accomplishments follows. Additional performance monitoring will be reported as the 2018 Regional Transportation Plan is finalized for adoption in Fall 2018.

Find out more information about the 2018 Regional Transportation Plan at oregonmetro.gov/rtp.



2014 CLIMATE SMART STRATEGY IMPLEMENTATION

REPORT ON 2015-2018 METRO ACTIONS AND NEXT STEPS

Adopted in December 2014 with broad support, the Climate Smart Strategy is a set of policies, strategies and near-term actions to guide how the greater Portland region will integrate reducing greenhouse gas emissions with ongoing efforts to create the future we want for our region. The Land Conservation and Development Commission approved the region's strategy in May 2015. Find out more information about the 2014 Climate Smart Strategy at oregonmetro.gov/climatesmart.

A list of Metro implementation activities and accomplishments follows.

Policies	<p><u>Completed</u></p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Adopt Climate Smart Strategy policies in Regional Framework Plan (Dec. '14) <p><u>Under way through 2018 Regional Transportation Plan update</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Adopt Climate Smart Strategy policies in 2018 Regional Transportation Plan
Toolbox of possible actions (2015-2020)	<p><u>Completed</u></p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Provide briefings to regional, statewide and national audiences (ongoing) <input checked="" type="checkbox"/> Expand Community Planning and Development Grant program criteria and eligibility to include climate smart policies and actions in local plans (2015) <input checked="" type="checkbox"/> Advocate for increased funding for transportation, transition to cleaner, low carbon fuels and more fuel-efficient vehicles, Cap-and-Invest program, and other Climate Smart Strategy actions in Metro legislative agendas (2015-ongoing) <input checked="" type="checkbox"/> Expand Regional Travel Options Grant Program criteria and emphasis on climate smart investments and actions for FY 15-17 and 17-19 grant cycles (2015-17) <input checked="" type="checkbox"/> Increase funding for effective climate smart investments, including optimizing built road capacity, bike and pedestrian safety retrofits, and new MAX and enhanced transit service through 2019-21 regional flexible fund allocation process (April '17) <input checked="" type="checkbox"/> Advocate for significantly increased transit operations funding in the region to accelerate Climate Smart Strategy implementation (Aug. '17) <p><u>Under way</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Continue JPACT finance subcommittee and other regional funding discussions <input type="checkbox"/> Adopt updated Regional Travel Options (RTO) Strategy that further advances Climate Smart Strategy investments and related activities, including trip reduction services for commuters, vanpools and carpools, Safe Routes to Schools, tools to connect people to demand-responsive transit options, and biking and walking counts <p><u>Under way through 2018 Regional Transportation Plan update</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Adopt Regional Transit Strategy that defines a bold vision for transit in the region <input type="checkbox"/> Adopt the Regional Transportation Safety Strategy with a Vision Zero framework and target to eliminate fatal crashes and improve safety for all modes <input type="checkbox"/> Update best practices in street design and complete streets to improve safety for all
Performance monitoring	<p><u>Completed</u></p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Adopt performance measures in Regional Framework Plan (Dec. '14) <p><u>Under way through 2018 Regional Transportation Plan update</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Evaluate greenhouse gas emissions using EPA's "MOVES" emissions model <input type="checkbox"/> Review and adopt Climate Smart Strategy measures and targets in plan as part of addressing final federal performance-based planning requirements and amendments to the Metropolitan Greenhouse Gas Reduction Targets Rule (OAR 660-44) <input type="checkbox"/> Report performance of 2018 Regional Transportation Plan and next steps for Climate Smart Strategy implementation in final plan

Appendix B:

Department of Land Conservation and Development

Report on STS Implementation Progress

G3- Compact, Mixed-Use Development

Goal – To promote compact, mixed-use development to reduce travel distances, facilitate use of zero- or low-energy modes (e.g., bicycling and walking) and transit, and enhance transportation options.

Trajectory

- **2010** - On average, approximately 20 percent of Oregon urban households are living in compact, mixed-use neighborhoods.
- **2020** - Over 20 percent of urban households live in compact mixed-use neighborhoods.
- **2035** - Approximately 30 percent of urban households live in compact mixed-use neighborhoods.
- **2050** - Over 30 percent of urban households in Oregon live in compact mixed-use neighborhoods.

Methodology

Data used in the analysis consisted of [Oregon Place Types](#) for MPOs by TAZ. The percent of population for each mixed, mixed-high, and Transit Oriented Development TAZ were summed across each metropolitan area.

Findings

- **2010** - On average, approximately 25 percent of Oregon urban households are living in compact, mixed-use neighborhoods.
- **Future Years** – On average, approximately 28 percent of Oregon urban households are living in compact, mixed-use neighborhoods.⁷

The findings show that Oregon is meeting the goals for compact mixed use neighborhoods in 2010 and 2020, and indicate that meeting the 2035 and 2050 goals is feasible. The future year numbers are conservative estimates due to limitations in the future year Design and Transit built form attributes, these levels were kept at the 2010 value which may be limiting the Mixed Use/TOD.

When looking at the individual metropolitan area results, a bulk of the progress comes from the Portland Metro area. There are significant opportunities to improve on this measure for other metropolitan areas that don't show much movement from the base year and have low numbers overall.

Actions\Opportunities

Many features of the land use planning system contribute to the success of this measure, UGBs, efficiency measures, and the Transportation Planning Rule for example. Opportunities for

⁷ Due to the differing planning horizons available at the time of this report, future years include a mix of 2035, 2040, and 2042.

increasing the development of compact mixed use neighborhoods outside of regulatory strategies include incentives for infill development, reduced parking requirements, and ensuring that zoning codes allow for mixed use development. There are two ways for local governments to increase compact mixed use neighborhoods, one is to include zoning provisions that allow or require it, the other is to redevelop existing areas with infill and mixed land uses.

G4- Urban Growth Boundaries (UGB)

Goal – To encourage communities to accommodate most expected population growth within existing Urban Growth Boundaries (UGB) through infill and redevelopment.

Trajectory

On average, the area within metropolitan area urban growth boundaries expands at about 15% of the rate of metropolitan area population growth.

Methodology

Data used in the analysis consisted of Urban Growth Boundaries GIS layers for metropolitan areas, and annual population estimates for Oregon MPOs, (Center for Population Research and Census, Portland State University) for 1990, 2000, 2010, and 2015. As Corvallis and Bend MPOs were designated after the 2000 Census, and Albany and Grants Pass MPOs were designated after the 2010 Census, the rate of change for these MPOs was captured from 2000 and 2010 respectively. For all other metropolitan areas, the rate of change was calculated from 1990 to 2015.

Findings

On average, the area within metropolitan area urban growth boundaries has expanded at about 17% of the rate of metropolitan area population growth from 1990 to 2015.

The findings show that Oregon is not meeting the goal for this measure, but doing so is feasible. Due to the nature of UGB expansions in order to maintain a 20 year supply of land, this measure will produce uneven results over time. For instance, over the five year period that the Grants Pass MPO was included in the measure, the City of Grants Pass adopted a UGB amendment that captured surrounding rural residential lands, and didn't take in much if any resource lands. This can lead to skewed results in any given reporting period.

Actions\ Opportunities

There are several components of Oregon's land use planning system that contribute towards meeting this goal, such as land use efficiency measures, priority of land scheme, and the Transportation Growth Management program. Success in meeting this goal is closely tied to the previous goal of developing compact mixed use neighborhoods, as the more compact our cities develop, the less they need to rely on UGB growth expansions to accommodate population growth.

Opportunities for making more progress towards this goal include working with cities to encourage infill development, updating plans and codes to ensure that new development occurs in a compact form, and reducing barriers to developing multi-family and mixed-use buildings