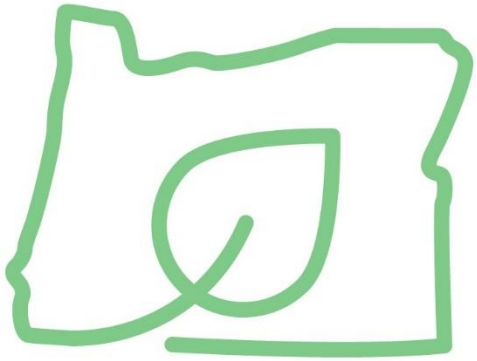
Oregon Department of Transportation

Climate Action Plan

Appendix A. Climate Action Plan; 5-Year Actions 2021-2026



Oregon Department of Transportation
Climate Office
July 2021

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ODOT 5-Year Climate Actions

The information contained in this appendix provides additional information and details on the work ODOT is committed to conduct as part of the Climate Action Plan 2021-2026 to reduce emissions from transportation, address equity and climate justice, and make the transportation system more resilient to extreme weather events. The agency's work to address the impacts of climate change is continually evolving, moving forward ODOT will continue to identify efforts and opportunities to help achieve Oregon's climate goals.

Policy and Investments

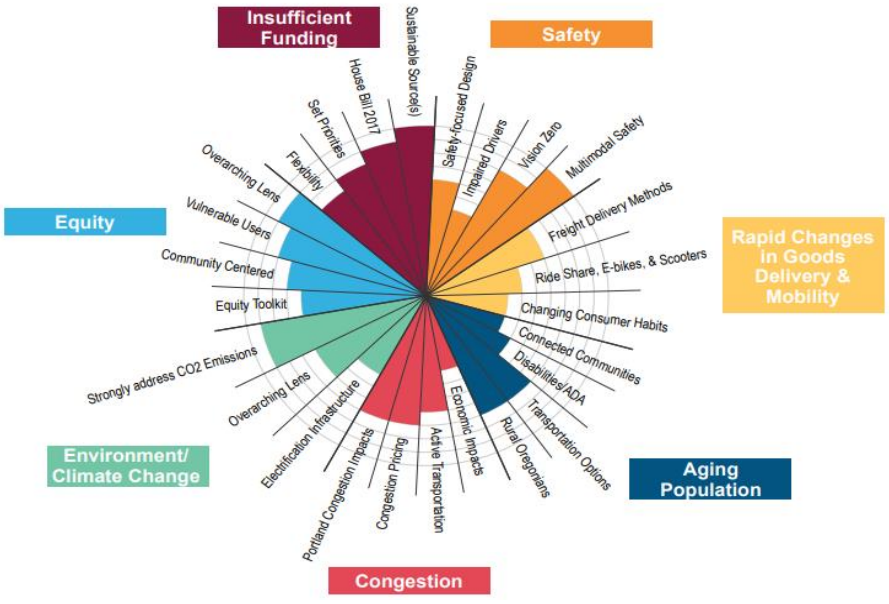
Incorporating climate change and emissions reductions considerations is ODOT's policy framework is critical to ensure ODOT establishes a long term vision and foundation to guide transportation system development and investment. The Oregon Transportation Plan guides decisions by ODOT and other transportation agency's statewide, which are reflected through investments in the transportation system.

Oregon Transportation Plan Update

ODOT is preparing a statewide update to the Oregon Transportation Plan, or OTP, the long-range transportation system plan for the state. The OTP establishes a vision and policy foundation to guide transportation system development and investment. The OTP and its mode and topic plans guide decisions by the Oregon Department of Transportation and other transportation agencies statewide, and is reflected in the policies and decisions contained in local and regional plans.

The updates to the OTP will be developed in consultation with stakeholders representing a variety of transportation interests as well as work groups providing expertise in climate change and resiliency, equity, safety, freight, technological innovations, and mobility as a service. Public involvement efforts will use a robust equity-driven, inclusive and culturally responsive approach.

Early outreach has identified several key themes related to emissions reduction and climate change, including the linkage between the transportation system and the environment, balancing climate goals with mobility goals, proactive reduction in carbon emissions, managing demand and congestion relief.



ODOT STAKEHOLDER EARLY INTERVIEW KEY THEMES AND RELATED TOPICS

Looking towards the future, ODOT is considering a range of trends, opportunities and uncertainties, as continual population growth, increasing freight volume, dramatic technological changes, and the threat of climate change and disruptive events impact our communities and the transportation system. To prepare for these drivers of change ODOT will analyze a range of possible future scenarios to explore and prepare for a variety of impacts to the agency and Oregonians who rely on the state transportation system.

The OTP Update represents a critical opportunity to guide the agency's strategic decision-making and shape a statewide transportation system that is climate resilient and that accommodates multiple users with different needs. The OTP Update will:

- Focus on high-level "drivers of change" and related transportation scenarios to develop a plan that is flexible over time
- Understand the system's multiple users and their needs, and articulate the interrelationship of modes, jurisdictions, and regional contexts, and
- Understand system conditions, needs and challenges to inform a framework for prioritizing transportation investments.

Statewide Transportation Improvement Program (STIP) GHG Evaluation

Executive Order 20-04 directs ODOT to develop and apply a process for evaluating the greenhouse gas (GHG) emissions implications of transportation projects when planning for the STIP. ODOT will test new methods for applying a climate lens and report on the process to the Governor's Office by June 30, 2021. This new process will enable funding managers, project teams, and the Oregon Transportation Commission (OTC) to make informed decisions about the tradeoffs between program and project investments, and balance important outcomes like climate, equity, safety, and the economy.

ODOT will consider GHG emissions at three phases of STIP decision-making: 1) when funding is allocated between STIP programs, 2) as project lists are compiled and narrowed, and 3) when the STIP is finalized.

Various methods will be used to estimate the potential GHG emissions of programmatic decisions and for different types of projects. Information will be generated that shows how programs or projects may increase, decrease, or have no change on emissions. New data and support tools will also be prepared, including a GHG Index showing how projects perform relative to other similar projects. This information will be shared with program managers, scoping teams, and the OTC. ODOT will also collect a baseline of climate data from the past STIP, and will use this to inform programs and projects being scoped. Projects will move forward for a variety of reasons but with a clear understanding of climate impacts. The goal will be to show programmatic GHG emissions reductions overtime.

This planning effort began as the OTC considered and approved program funding allocations for the 2024-2027 STIP (January 2021). The process being developed will be applied on an on-going basis as ODOT scopes and selects projects through 2021 and early 2022. The Climate Office will present summaries and reports to the OTC when they make key STIP decisions through July 2023. Lessons learned during implementation will be collected and used to make adjustments and improve the process going forward.

The ODOT Climate Office is also developing policy direction relating to induced and latent demand on the transportation system. This effort will outline and differentiate aspects of GHG emissions effects for a range of large urban congestion projects, such as new lane-miles, auxiliary lanes, ITS/Operations, and tolling projects. This policy- focused effort will define and differentiate the impact of projects in various locations and contexts, examine induced and latent demand, and outline potential qualitative and quantitative analysis needs for evaluating impacts. A key outcome will be a policy framework for how the Agency approaches this topic with consistent definition of terms and messaging around transportation solutions when communicating with stakeholders. This effort will involve input from different parts of the Agency, such as Planning, and the Urban Mobility Office, to review drafts, arrive at consensus, and to develop a final policy paper.

STIP Funding for Public and Active Transportation

In support of the agency's commitment to multimodal transportation, Oregon Transportation Commission has approved funding to support a number of public and active transportation improvements in the 2024-2027 STIP. The ODOT Public and Active Transportation Program includes a variety of sub-programs that provide funding for public transportation services and capital projects, pedestrian and bicycle projects, Safe Routes to School (SRTS) education and infrastructure, and Transportation Options programs. The funds will be used for a variety of projects around the state to expand and improve walking and bicycling infrastructure, improve public transit service and support transit providers, and increase transportation demand management programs.

STIP Public Transportation Funding

The ODOT's Public Transportation programs supports public transportation trips across the state through the distribution of grants, policy leadership, training and technical assistance to communities that provide public transportation services. The 2024-2027 STIP increased funding for public transportation by $33.5 million for a total of $77 million. The $77 million is split between three programs; transit vehicle replacement, enhanced mobility for seniors and individuals with disabilities, and mass transit for urban fixed-route systems. The transit vehicle replacement program was allocated $15 million for the replacement of vehicles to low and no emission vehicles. This is a new grant program to incentivize the transition of vehicles such as buses and vans to electric or low emission fuels. This program will be developed with local stakeholder including rural transit providers, local governments and non-profits. Eligible recipients include rural service providers, or urban systems operating rural out of district service. The seniors and people with disabilities program was allocated $50 million of funding that can be used for capital, purchased service, and preventive maintenance projects for transportation providers. The mass transit for urban fixed-route systems was allocated $12 million of funding that will be used to keep urban fixed-route bus fleets in good condition and replace buses which are in service past their established useful life.

STIP Bicycle and Pedestrian Funding

A total of $55 million has been allocated in the 2024-2027 STIP for pedestrian and bicycle projects and SRTS infrastructure projects that will address the areas of most need on the state system. The Pedestrian and Bicycle Strategic program was allocated $45 million in federal funding dedicated to address critical gaps in the state system for walking and biking. The ODOT SRTS infrastructure program

was allocated $10 million in federal funding to help reduce pedestrian and bicycle network gaps within a one mile radius of a school.

The Pedestrian and Bicycle Strategic and ODOT SRTS infrastructure program sub-allocations may be used for projects on the state system beginning in 2024. The Public Transportation Division is preparing to compile needs lists, identify possible projects, develop design approaches and cost estimates, and prioritize the scoped projects for the 2024-2027 STIP. The other sub-allocations are for competitive local grants, programs that promote public and active transportation, and transit improvements that will use existing program structures.

The increased funding for pedestrian and bicycle projects in the 2024-2027 STIP is intended to improve our progress on key performance measures by funding the necessary improvements on or along state highways, with a focus on priority locations identified through the Active Transportation Needs Inventory (ATNI) using data like essential destinations, household income, existing conditions, and crash risk factors. Funds may be used for a variety of improvements that primarily benefit walking and biking safety and access, however the priority is to improve sidewalks, bike lanes and crossings.

Sidewalk Improvement Program

The Sidewalk Improvement Program (SWIP) is managed by the ODOT Pedestrian and Bicycle Program and allocates State Highway Trust Fund dollars to improve walking and biking infrastructure including, crossings, sidewalks, and bike facilities on or along state highways. The SWIP helps ODOT to meet the requirements of ORS 366.514 and provide support to local jurisdiction for pedestrian and bicycle improvements. Funds are allocated to each ODOT region for bicycle and pedestrian improvements on or along state highways. Project funding requests are submitted by the ODOT Region Active Transportation Liaison on a rolling basis and projects may be delivered by a local agency via an Intergovernmental Agreement.

The SWIP's budget is an estimated 1% of ODOT's projected State Highway Fund revenues in order to meet the minimum pedestrian and bicycle expenditure requirements of ORS 366.514. The SWIP is distributed to the regions by formula with priority given to projects that address priority needs identified in the Active Transportation Needs Inventory (ATNI) and that contribute to ODOT Key Performance Measures. The region Active Transportation Liaison must submit a funding request form and receive approval from the Pedestrian and Bicycle Program Manager before State Pedestrian and Bicycle Program funds can be programmed on a project.

Integrating Climate Goals with Federal and State funding opportunities

The ODOT Climate Office will identify and prepare for federal and state funding opportunities, and ways to integrate climate considerations into funding approvals, awards, and program/project implementation. This includes the FAST Act Reauthorization, pass through funding programs, and potential Federal infrastructure legislation. Another area of focus will be on state grant programs ODOT administers. These opportunities would involve making changes to eligible activities and projects, and criteria or guidelines for program allocations to local jurisdictions. For example, ODOT has the ability to

align the current Congestion Mitigation and Air Quality Improvement, or CMAQ program, with other ODOT climate mitigation efforts.

The CMAQ program provides a flexible funding source to State and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act. CMAQ projects must demonstrate the three primary elements of eligibility: 1) Transportation project; 2) Emissions reduction and; 3) Located in or benefitting an air quality nonattainment or maintenance area. Additional changes could be made in eligibility to increase the number and type of projects benefitting climate goals. For example, recent changes to program language placed considerable emphasis on selecting project types to include electric and natural gas vehicle infrastructure and diesel retrofits. Under this action, further alignment would occur between CMAQ and other grant programs with ODOT's climate mitigation efforts.

Climate Justice Approach

Climate change is more than an environmental issue, it is also a social issue that can have a number of disruptive or unintended impacts. The impacts of climate change are not equally created or equally distributed across society. Often the climate hazards (including extreme weather, health impacts of emissions, sea level rise, landslides, and wildfires) disproportionately impact marginalized communities and underserved communities around the state, which are often the communities least responsible for contributing to climate change. These communities may also be also be further disadvantaged by responses to climate change which might reproduce or exacerbate existing inequalities. Climate Justice requires acknowledgment that past and current policies, practices, and investments may exacerbate differing social, economic, public health and other adverse effects on communities throughout the state and seeks to eradicate or mitigate these adverse effects on marginalized and underserved communities as much as possible.

Modernizing the transportation system in Oregon offers important opportunities to address climate justice (slow climate change and alleviate inequalities) while improving outcomes for all Oregonians. ODOT Climate Office will lead development of a data-driven approach to integrate climate justice into agency policies, decision-making processes, and investments. Integration of this approach will ensure ODOT's work extends beyond improving the transportation system and results in an environmentally friendly transportation system that advances the protection of marginalized and underserved communities from climate hazards. Priority will be placed on developing an approach to climate justice that provides a deeper understanding of the full costs associated with the environmental and social impacts of climate change and the actions needed to guard against climate hazards. The climate justice approach will be developed in conjunction with ODOT's existing work to prioritize equity with an emphasis on designing fair, transparent, and inclusive decision-making processes, accessible to all Oregonians.

Equitable Engagement Compensation Policy

ODOT's Equitable Engagement Compensation Policy seeks to reduce barriers to community engagement in order to support diverse and representative community participation in decision-making processes. Some community-based organizations cannot participate in ODOT rulemaking, advisory committees,

focus groups, or other engagement events because of financial hardship. Investments are needed to make sure diverse and representative voices, perspectives, and expertise are “at the table” with ODOT when making decisions. Moving beyond to diverse and representative voices will require new techniques, including compensation for community-based organization’s time to help bring them to the table.

As an agency, ODOT must be intentional in ensuring diverse and representative voices, perspectives, and expertise are at the table when decision-making is happening. Establishing an investment policy to provide reimbursement for community members in need for their input, expertise, and counsel recognizes the value ODOT gets by hearing directly from these community members and will result in:

- decisions that are more sustainable
- greater legitimacy and accountability of decision making processes
- highlighting information that policy makers need for decision-making

The tools to provide compensation for participants in ODOT decision-making processes include incentives, stipends, and community engagement agreements/contracts. These tools recognize the culturally-informed knowledge that people draw from and their experiences in the community, which is essential to informing ODOT decisions. The Equitable Engagement Compensation Policy will provide a consistent framework for when to consider and utilize compensation mechanisms for committees, focus groups, or other engagement efforts to ensure consistency and equity across ODOTs outreach efforts.

Managing Demand

Managing demand on the transportation system by providing alternative transportation options is a key component of reducing emissions from vehicles. Travel options such as walking, biking, using public transportation and carpooling can reduce congestion and vehicle emissions, increase safety, lower transportation costs of individuals, and decrease wear and tear on other parts of the transportation system.

Net-Zero Consultation Pilot

In 2022, the ODOT Public Transportation Division (PTD) will hire a consultant to develop a pilot program with a selection of small to medium transit agencies to reduce their organizational carbon footprint with the ultimate goal of accomplishing net-zero emissions. The consultant will complete comprehensive carbon emissions inventories for each agency and help them develop emission reductions plans that can inform short and long-term agency purchasing and planning. This could include analysis of the steps needed to electrify a transit fleet or transition it to other alternative fuels. The consultant may also be asked to assess how building construction and use, employee travel, and other agency practices can be adjusted for maximum impact.

PTD expects this project to result in significant long-term cost savings for participating agencies and give them the tools to set reasonable reduction targets and track progress on those targets. The consultant may also help agencies understand and use incentive programs established by other state organizations. A final task is likely to be the creation of a framework or guide that other public transportation agencies can reference for transit-specific methods for emissions reduction. Based on the findings of the pilot, PTD would seek to expand and improve the program to reach additional public transportation providers.

Oregon Passenger Rail Program

The Oregon Passenger Rail Program provides efficient and accessible intercity passenger rail service connecting job markets, recreation, and tourism centers throughout the state, thereby supporting local economies. The Pacific Northwest has a highly developed intercity passenger rail system. The Amtrak Cascades passenger rail service is one of the nation's rail corridors with the highest ridership, connecting Eugene, Portland, Seattle, and Vancouver, British Columbia (with numerous stops along the way), serving a market of over 10 million people. The service is a partnership between the ODOT Public Transportation Division (PTD) and the Washington State Department of Transportation (WSDOT). Both states pay Amtrak to operate the service, with the states also covering the operating and maintenance costs of the trains.

Achieving full potential for the Amtrak Cascades corridor requires addressing the following constraints:

- Collaboration: The Amtrak Cascades service is operated by ODOT and WSDOT on privately-owned infrastructure in Oregon, Washington, and British Columbia. The complexities of these partnerships makes the management and changes to the Oregon service more challening.
- Travel times: Passenger rail service will become more competitive with increased automobile traffic congestion on the I-5 corridor. However, growing freight rail demand will increase rail

congestion, which may lead to increased travel times for passenger trains without infrastructure improvements.

- Reliability: Passenger trains travel on shared tracks with freight trains, which creates challenges for the Amtrak Cascades service to be reliable and fast enough to be a viable transportation alternative for many travelers.
- Frequency: Two round-trip services (plus the Coast Starlight) between Eugene and Portland do not provide sufficient schedule flexibility for many travelers. More frequency is needed to meet passenger needs.
- Funding: Operation and planning funding for the Amtrak Cascades Oregon service comes from Transportation Operating Funds (TOF) and Driver and Motor Vehicle Services Division custom vehicle license plate fees. Without continued funding and a funding increase, Oregon will be challenged to fund or provide the required match for federal funds to improve, maintain, and operate passenger rail services.

PTD completed a Corridor Investment Plan (CIP) in April 2021 and is working on development of phasing the improvements needed to implement the plan. The CIP proposes to significantly increase passenger rail service, with up to six daily round-trip trains serving communities within the Willamette Valley and cities in Washington and Vancouver, British Columbia. In addition to operating costs, additional funding will be necessary to make the needed improvements.

Intercity Public Transit Service

POINT Intercity Bus Service

The POINT (Public Oregon Intercity Transit) bus service is a safe, affordable, and environmentally-friendly alternative to long-distance driving within Oregon and connecting to Northern California. The service consists of multiple routes operated by private transit companies under contract with the ODOT PTD. POINT provides intercity transit service where there is a travel need that cannot be met by either public- or private-sector carriers due to operational cost, complexity, or jurisdictional restrictions. To close gaps in the intercity transit network and support regional mobility, PTD funds and manages multiple intercity bus routes as part of its POINT service. PTD functions as the transit provider of last resort to meet such needs by contracting with private transit companies to provide essential intercity bus service in diverse regions throughout Oregon.

The service is open to the general public and provides the following types of critical connections:

- Between urban and rural communities.
- To and through areas where travel options would otherwise be limited.
- To and from major transportation hubs around the state – such as Union Station in Portland, Hawthorne Station in Bend, and Front Street Station in Medford.
- To and from Amtrak and Greyhound services around the state.

Whenever possible, POINT bus stops and schedules are co-located and coordinated with local transit service in the route service areas to support existing services, enable easy transfers between services, and strengthen the robustness of the statewide transit network. PTD receives regular feedback from the public through periodic passenger surveys, Facebook, the POINT website, and communications with service operators. PTD maintains working partnerships with public and private carriers and travel-oriented organizations and businesses in each POINT service area.

Columbia Gorge Express & Multnomah Falls Shuttle

The Columbia Gorge Express (CGE) provides public transportation service connecting Portland, Multnomah Falls, Cascade Locks, Hood River, and The Dalles. ODOT launched CGE in 2016 and three years later awarded operating funds to Hood River County Transportation District dba Columbia Area Transit (CAT). CGE has become the backbone for intercity transit service in the Oregon-Washington Columbia River Gorge region. The Multnomah Falls Shuttle (Shuttle) is a seasonal component of CGE service operated by the ODOT Public Transportation Division (PTD) in partnership with the U.S. Forest Service (USFS), Oregon Parks and Recreation Department (OPRD), and CAT. The Shuttle provides service between Multnomah Falls and Rooster Rock State Park when the parking lot at Exit 31 on I-84 (managed by ODOT) reaches capacity, serving visitors who are not able to park due to congestion.

CGE services demonstrate consistent demand and opportunity for continued growth, particularly during the peak summer months. Ridership has exceeded projected estimates for both Shuttle and intercity services. The launch of the Shuttle correlates with a 70 percent reduction in congestion near Exit 31 from 2015 (pre-shuttle) to 2019, despite an increase in daily traffic over the same period. In an evaluation of CGE service from 2016-2019, program stakeholders expressed overwhelming support for continuing and expanding the Shuttle. Ongoing challenges for CGE include improving safety and reducing congestion on I-84 and Exit 31, identifying permanent satellite parking facilities, and securing sustainable funding sources.

The Federal Lands Access Program (FLAP) is the only funding source for the Shuttle program. ODOT PTD will submit a second FLAP grant to fund the Shuttle for 2023 – 2025. Operating costs are estimated to be $400,000 per season. As part of the FLAP application, ODOT also intends to request planning funds to improve the Shuttle system.

As vehicle congestion and tourist visits continue to grow and strain gorge resources, ODOT is involved in several initiatives to provide safe, multimodal access:

1. Gorge Access Strategy: ODOT has worked with Congressman Earl Blumenauer's Office on legislation to fund development of a Columbia River Gorge access strategy. The intent of this strategy is to build a framework that will re-envision access to the gorge beyond the restrictions associated with current land ownership and agency regulations.
2. Gorge Transit Strategy: Led by the Mid-Columbia Economic District, this work will build on the recommendations of existing transportation plans throughout the Gorge to establish a comprehensive transit strategy for the region.
3. Vision Around the Mountain: This ODOT-led project will establish a long-term, regional transit vision guiding network coordination and integration for transit service providers in the Mt. Hood and Columbia River Gorge region.
4. Multnomah Falls Permit System: USFS is piloting a permit system for Multnomah Falls in summer 2021. ODOT has worked closely with USFS and Gorge partners to launch the pilot with the intent of managing congestion and prioritizing transit access at Exit 31. ODOT and Gorge partners will continue this work in 2022 to implement a permanent permit system and increase transit visibility and demand at Multnomah Falls and other key Gorge destinations.

Get There Outreach

The public outreach component of ODOT's Transportation Options program, branded under the name "Get There", includes an online tool, outreach to employers, and individual encouragement programs to support the adoption of alternative modes and reduce driving alone.

Get There Tool: https://getthereoregon.org/ is an online website that includes trip planning, carpool matching, and trip logging. Logged trips show both individual and collective progress in CO2 not emitted, money saved, and even calories burned for active mode trips like biking and walking. The tool is available free to everyone in Oregon.

Get There Business Forum: Regional grant recipients work with employers to reduce drive alone commute trips. The state program provides a number of services to support this work. A LinkedIn page, a newsletter, and custom branded articles in Oregon Business magazine reach employers with topical news about remote work trends, parking management and more. The Get There website allows employers to create networks for carpool matching and contests among employees.

Challenges and Encouragement: Regional grant recipients run local programs to encourage people to walk, bike or take transit for all trips. They provide education and participate in community events, and have strong culture of safety. These programs often distribute reflective items and bike lights in the fall. The state program supports these efforts with an annual Get There Challenge event, bulk purchase of bike lights and reflective items, and year round social media.

Micro Mobility and Mobility as a Service (MaaS)

The evolution of public transportation now means that micro mobility, i.e. bike and/or scooter share, has become part of the suite of solutions. ODOT's Transportation Options Program supports the integration of bikeshare with transit to expand public access to transportation solutions in both time availability and location. The program is supporting small and medium sized cities to explore how bikeshare could complement their local transit systems, and make the fare payment systems inoperable so a bus pass could also be used to rent a bike. This work is a cutting edge step towards Mobility as a Service, known as MaaS.

Oregon Transit and Housing Study

The Oregon State Legislature has asked ODOT to study policies and actions that could improve households' quality of life through increasing housing opportunities with easy connections to transit. The study will evaluate policies and actions that can lead to viable connections between housing and transit service. Transportation and housing are interrelated factors that can influence quality of life and the transportation choices available to individuals. In addition to comprising the two largest household budget expense items, housing and transportation choices are connected and can affect a household's physical environment, health outcomes, economic mobility, educational and cultural opportunities and numerous other factors. Better linking transit and housing enables reduced driving, saving money, improving congestion, and reducing emissions.

This study will primarily benefit local government housing and planning, tribal governments and transit partners. It will help address the growing challenges related to housing, including affordable housing,

and public transportation that many Oregon communities face. This study will provide a foundation and understanding of how housing and public transportation are linked and affect households' quality of life. The goal is to identify actionable strategies that can address unique circumstances throughout Oregon. The study will explore new tools for addressing growing transportation challenges while simultaneously tackling housing affordability. This information will help many stakeholders, from developers and affordable housing agencies to advocacy groups, to find cooperative solutions to meet local needs.

Pedestrian and Bicycle Performance Measures and Data Implementation Framework

The ODOT Bicycle and Pedestrian program is currently engaged in the Pedestrian and Bicycle Performance Measures and Data Implementation Framework project to develop new bicycle and pedestrian performance measures for ODOT to track progress in achieving the goals and desired outcomes related to walking and biking in Oregon. The measures will include proposed agency Key Performance Measures and proposed programmatic performance measures related to the outcome areas of Access, Safety and Utilization. This process will provide information about the performance measures that can be implemented in the near term through the project or within 1 year, with existing data and resources, as well as performance measures that can be implemented in the medium and longer terms as data and resources are developed. The methodology report will provide a summary for each near-term measure, including a description of the measure, data sources, targets, baseline performance, and implementation logistics for each near-term measure.

The Non-Motorized Data Management Strategy will identify how to obtain data needed to calculate medium and long-term measures. Through the Pedestrian and Bicycle Performance Measures and Data Implementation Framework project process, the project team and stakeholders identified a number of measures that would be valuable for the Oregon Department of Transportation (ODOT) to track, but for which data is not available. These are considered to be medium and long term measures, as they will need to be implemented in the future when data is available. The strategy provides an overview of those measures then describes the two main initiatives necessary to making that data available: a statewide pedestrian and bicycle facilities asset inventory and repository and a pedestrian and bicycle count program.

Active Transportation Needs Inventory Implementation and Update

The Active Transportation Needs Inventory (ATNI) was initiated to support the creation of a seamless network of Bicycle and Pedestrian needs for all ODOT highways. The ATNI project compiled existing sidewalks, bicycle lanes, shared use paths, and shoulder data sets to provide an inventory of existing infrastructure in all five ODOT regions. The inventory data was used to identify gaps and deficiencies in the network, and to develop a framework to evaluate and prioritize needs to fill the gaps on the system.

ODOT has completed the first statewide ATNI and over the coming years will be using the information and data to drive the investment decisions to support bicycle and pedestrian infrastructure, including the Safe Routes to School program and the Sidewalk Improvement Program. The ANTI information and data will also be used to improve ODOT's data-driven decision making processes, such as identifying priority pedestrian safety corridors for the pedestrian safety quick response funding allocated by the OTC. The Bicycle and Pedestrian program will also be working on incorporating the ATNI data into

ODOT's existing tools like TransGIS to make it more readily available to agency staff and external partners. ODOT expects to begin the process to update the whole ANTI for the state in the next 3-5 years to reflect our progress and the most recent available census, crash, and other active transportation data.

Agency Telecommuting Goals and Targets

ODOT employs approximately 4,500 people across the state. Each employee has different commute needs and requirements to report to work (i.e., commute, remote office, hybrid, etc.). The COVID-19 pandemic forced 1,800 employees to work remotely while the remaining workforce reported to job sites in order to maintain the safe operation of the transportation system. ODOT administration has established a goal to retain at least 1,500 employees in the remote work environment because of the cost savings and climate benefits of a smaller workforce commuting to the office. To obtain the agency's telecommuting targets, ODOT will work to educate employees on commute options, incentivize best practices, and report on data as available. As one of the largest state agencies, staff may also engage the Department of Administrative Services to initiate an enterprise-wide telecommute program

Pricing

The current costs of the transportation system are not fully recovered by the fees and costs paid by users of the system. Transitioning to more sustainable funding sources to maintain and operate the transportation system, and to recover from the environmental impacts of climate change is necessary for ODOT to provide an efficient and reliable transportation system for Oregon.

Oregon Toll Program

ODOT is exploring tolling as part of a comprehensive approach to better manage congestion and demand, and develop sustainable funding sources to maintain and operate the transportation system. The evolving needs of the transportation system requires ODOT to take action and make improvements. The agency is investing in transit, bicycle and pedestrian facilities and changing how we manage roads for safety and traffic flow. Tolling is another necessary tool to fix the transportation system. Tolls bring more reliable trips and address congestion, reduce greenhouse gas emissions, and fund bottleneck-relief projects.

In 2017, House Bill 2017 directed the Oregon Transportation Commission to pursue and implement tolling I-5 and I-205 in the Portland metro area for congestion management and transportation improvements. ODOT plans to use variable rate tolls to manage traffic flow and improve roadway efficiency by charging a higher price during peak traffic periods. The agency is considering methods for a predictable way of tolling where toll rates vary according to a set schedule so users would know the cost in advance of their trip. If a small percentage of highway users choose another mode of travel or time of travel it can reduce traffic congestion for those who can't modify their trip and improve traffic flow for the entire system

The Oregon Constitution (Article IX, Section 3a) specifies that revenues collected from the use or operation of motor vehicles is spent on roadway projects, which could include construction or reconstruction of travel lanes, as well as bicycle and pedestrian facilities or transit improvements in or along the roadway. In addition, the cost of projects or services needed to address negative effects of tolling could be paid using toll revenue. For example, if a local roadway was made less safe by drivers rerouting to avoid a toll, it could be upgraded using toll revenue with improved sidewalks, bike facilities and traffic calming measures to discourage rerouting and preserve neighborhood livability.

OReGO Implementation

ODOT continues to successfully operate the first fully functional road usage charge program in the country while continuing to conduct research to prepare for the future of transportation funding needs. As more cars run on electricity or use less gas, Oregon gets less funding to maintain roads and bridges. The OReGO Program preserves our roads by creating a fair and sustainable funding model that is based on actual use – miles driven – instead of gallons consumed.

Since the OReGO Program went live on July 1, 2015, it has been evolving under the direction of the Road User Fee Task Force and in compliance with legislation. In the next five years, it is likely that the legislative assembly will pass legislation to make the road usage charge program mandatory passenger vehicles. OReGO is premised on the idea that each road user will pay a rate based on their share of the

costs relative to their use of the road and one that is similar to those that pay fuel taxes. In other words, road usage charges are a base rate indexed to fuel tax rates. It is not variable by time of day nor is it applicable just to a feature or road segment, so it is not congestion pricing or tolling. The program has, however, been built on an open system concept that is designed to enable both congestion pricing and tolling in the future.

In the next five years, the OReGO team will be working on preparing for a potential mandate from the legislation. To support a mandate from the legislation, there are a number of items that will need to be addressed. These include, but are not limited to, the following:

- Implementing a manual reporting option that does not require vehicle location technology, which will provide more choices for participants in the program. The enabling statute requires that the program provide choices that include ones that do not require vehicle location technology, so a manual reporting option will be the second option that does not have vehicle location technology.
- Collaborating with the private sector to develop a connected vehicle ecosystem that supports both road usage charging and other functions, including safety. One of the keys to safe travel is having well-maintained roads and bridges and removing hazards. Allowing vehicles to connect with the infrastructure, other vehicles, and vulnerable road users like pedestrians and bicyclists, as well as others will reduce crashes.
- Assessing equity through three lenses - cost responsibility, tax, and social. The first will examine whether the various types of light duty (passenger vehicles) are paying for their road damage compared to other light duty vehicles. The second will examine both horizontal and vertical tax equity, and the third will looks at who is benefitting and who is burdened, which includes communities of color and rural/urban populations.
- Evaluating the outcome of the local area pricing pilot to determine if the existing road usage charge platform can support local area pricing, and what changes might need to be made to support other pricing methods. For example, if congestion pricing or pollution zones were established, it will be critical to determine what would need to be done to support that while minimizing the need for additional infrastructure.
- Launching a dealer education program and conducting a point of sale enrollment pilot. This will help dealerships address consumer questions about the program options and streamline the enrollment process when new vehicles are required to be in the program.
- Evaluating payment options for cash preferred payers. About 6 to 10% of households are cash preferred so it will be important to have a secure payment option for these people.
- Developing and testing transfer requirements for used vehicles to ensure these vehicles are enrolled in the program so they pay their fair share. This will be critical in a mandatory program.
- Working on interoperability with other states and the tolling program. Allowing the public to have one account to pay for all transportation services will ease the burden for those subject to the OReGO program as well as others.

True Cost Pricing

The full negative external environmental impacts of roadways are not always visible to users of the transportation system. These negative external impacts include increased emissions and pollution, energy consumption, and landscape transformation, as well as potential negative health, social, cultural and economic impacts to communities. The true costs of these impacts along with the impacts associated with maintaining and constructing the system are not fully covered by the users of the roadways. The traditional structure of fees and charges does not recover the full costs of the transportation system when external impacts such as congestion, climate change, health and social impacts are considered. True cost pricing strategies seek to recover the full costs of operating, maintaining and constructing the transportation system, and to mitigate the negative environmental impacts associated with these actions.

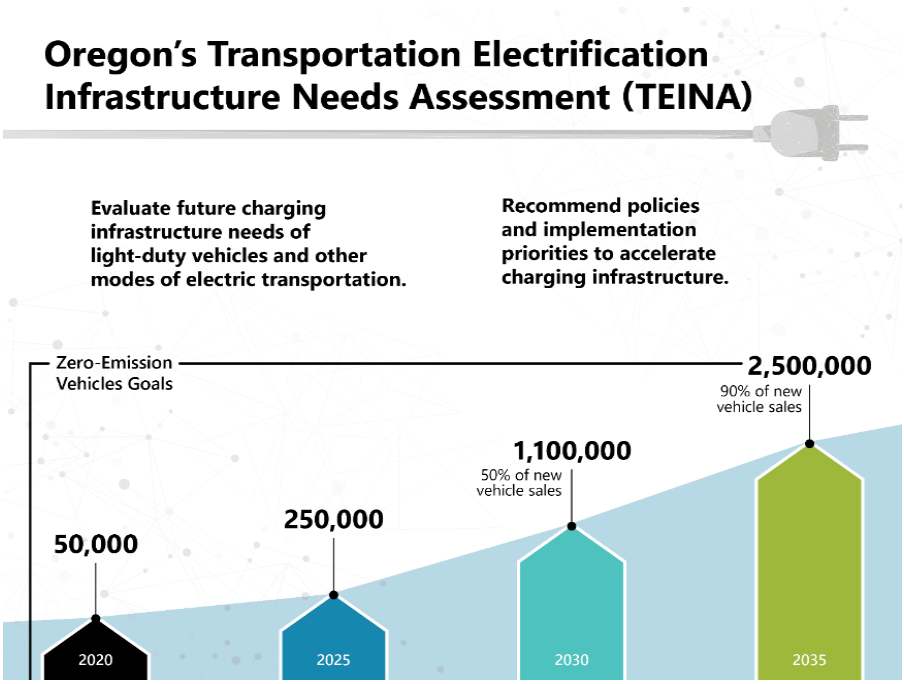
ODOT will establish a policy foundation to start to implement true cost pricing, exploring opportunities to do so within the road user fee structures, including tolling, road user charges, and other programs. Addressing accessibility, mobility and climate change and improving congestion relief are key components of ODOT's priority for a Modern Transportation System. Moving towards true cost pricing will assist ODOT to develop pricing solutions that balance the agency's mobility and environmental goals with equity concerns, and to identify connections and opportunities for the agency's existing work on revenue and finance. ODOT will work with local jurisdictions and other partners to remain consistent and develop a shared understanding to create a modern and reliable system that achieves Oregon's climate goals.

Electrification

Electrifying Oregon's transportation system supports one of the most effective ways to reduce vehicle emissions, which is transitioning to more zero emission vehicles for every mile driven. ODOT is a leader in facilitating the electrification of our transportation system. ODOT's goal is to triple the number of electric vehicles on Oregon roads by 2023, and to expand statewide electric vehicle charging infrastructure by 10-percent by the end of 2025. Opportunities for hydrogen fuel cell electric vehicles are included in this category because hydrogen fuel cells can be used to power electric motors for various types of vehicles.

Transportation Electrification Infrastructure Needs Analysis (TEINA) Study

In March 2020, Governor Brown signed Executive Order 20-04 which, among other things, directed ODOT to conduct a statewide transportation electrification infrastructure needs analysis to facilitate the transition to Zero Emission Vehicles (ZEVs) in support of the statewide adoption targets set forth in Senate Bill 1044 (2019). The TEINA study focuses on the infrastructure needs for the sizable and critically important Light Duty Vehicle (LDV) sector, but also includes a high level overview of the charging landscape for medium- and heavy-duty trucks, transit and school buses and micro-mobility vehicles such as e-bikes and e-scooters.



Across all sectors, the study highlighted an extraordinary need for charging infrastructure growth, in both the long term to meet Oregon's 2035 ZEV goals but also in the next four years.

TEINA Results: Number of Chargers Needed (Business As Usual Scenario)	2020	2025	2030	2035
Urban LDV	2,000	8,000	39,000	84,000
Rural LDV	1,000	5,000	22,000	49,000
Corridor LDV	400	2,000	3,900	6,100
Local Commercial	10	371	949	1,836
Buses	15	893	3,318	7,407
TNC	0	23	193	216
Long-Haul Trucking	0	39	219	690
Disadvantaged Communities	100	600	2,700	6,000
Total Number of Chargers	3,525	16,926	72,279	155,249
Increase Over 2020 Level		480%	2,050%	4,404%

To fill the infrastructure gaps identified and accelerate infrastructure deployment across all use cases, the study highlights a number of overall infrastructure goals.

Overall Infrastructure Goals:

To achieve these goals, policies and implementation priorities that can be undertaken by state agencies, utilities, Electric Vehicle charging service providers, the private sector, non-profit organizations, local jurisdictions and the legislature are identified.

TEINA Implementation

As highlighted by the TEINA study, there are many players within the EV industry – state agencies, regulators, utilities, EV Service Providers, the private sector, non-profit organizations, local and regional jurisdictions, etc. – and each has a distinct role to play in the acceleration of EV charging infrastructure across Oregon. Based on the policy recommendations and priorities identified by the TEINA study, the ODOT Climate Office plans to undertake the following next steps:

1. Develop a Statewide ZEV Charging Infrastructure Deployment Strategy that details implementation actions that should be undertaken in the next 2-5 years to meet the state's near term EV goals. The strategy will prioritize actions based on their ability to enable increased ZEV adoption, address geographic balance and equity concerns, identify leads (e.g., state agencies, utilities, local jurisdictions, etc.) to undertake each action and develop recommended processes for implementing these actions.
2. Convene workgroups of relevant stakeholders, leveraging existing workgroups where possible, to develop next steps for carrying out the policy recommendations and implementation priorities identified by the TEINA study.
3. Enable access to the TEINA modeling results to local governments, Metropolitan Planning Organizations (MPOs), Community Based Organizations (CBOs), non-profits and other interested parties in a format that facilitates EV charging infrastructure planning efforts.

EV Charging Grant Opportunities

The TEINA study highlighted an extraordinary need for EV charging infrastructure growth in both the near and long term in order for Oregon to meet its transportation electrification and GHG emissions reduction goals. To accelerate EV charging infrastructure deployment, significant state and federal investment will be needed, particularly in areas where the business case is not well established such as rural, BIPOC and historically marginalized communities. As such, the ODOT Climate Office is in the process of developing an equity-focused grant program that will provide funding to public and private entities for the purchase and installation of charging infrastructure in these communities.

Hydrogen Pathway Overview Study

As a follow-up to the larger TEINA study, ODOT is undertaking a study to better inform decision makers as Oregon prepares for the arrival of hydrogen Fuel Cell Electric Vehicles (FCEVs). The study will include an overview of major ongoing and planned hydrogen-related activities in California, Washington and the Northeast States that are likely to be of interest to Oregon moving forward as well as a market analysis summarizing the current and upcoming FCEV product offerings across the light-, medium- and heavy-duty vehicle sectors. In addition, by assuming a 10% penetration rate of FCEVs across the light-, medium- and heavy-duty vehicle sectors by 2035, the study will estimate both the fueling infrastructure needed and investment required to support hydrogen FCEVs in Oregon.

Electric Micro-mobility Strategy

Micro-mobility, while still a relatively small percentage of the overall mobility market, represents a rapidly growing sector. Comprised of a suite of electrified personal mobility devices – including bicycles, scooters, skateboards, one-wheels, unicycles and more – data on micro-mobility is scant, and challenges to micro-mobility adoption are not well understood. More information is needed before Oregon can suggest ways to facilitate greater adoption of micro mobility. As a follow-up to the TEINA study, the ODOT Climate Office is undertaking a micro-mobility study to better understand the barriers to electric micro mobility adoption in Oregon, and recommend ways to address these barriers.

Oregon Transportation Electrification Activity Maps (ORTEAMS)

The Climate Office concluded a study that developed a comprehensive map of Oregon's transportation electrification initiatives. The study is referred to as Oregon Transportation Electrification Activities

Mapping Study, (OR TEAMS). The intention of OR TEAMS is to assist ODOT, other state agencies, utilities, and the private sector to clearly see where opportunities and gaps are in the transportation electrification realm. The goal is to better position Oregon to accelerate electrification of transportation, reduce greenhouse gases (GHG) and provide all Oregonians with the benefits these new transportation technologies bring.

The OR TEAMS study captured over 160 activities throughout the state, undertaken by a wide range of stakeholders – including state agencies, local governments, utilities, charging companies, non-profit organizations, the auto industry and other transportation electrification industry participants. While OR TEAMS was not a comprehensive study, it is clear Oregon has a lot of transportation electrification activities compared to other states. State agencies are actively pursuing infrastructure development with an equity focus. Communities are recognizing the importance of an electric transportation future and are creating policies to encourage local investment. Transit agencies see the benefits of electric system and are testing e-bus models on certain routes. There are numerous existing partnerships across the state and opportunities for many more. OR TEAMS can be utilized to focus investments, plan efficiently, and act as a conduit for future partnerships.

Oregon West Coast Electric Highway Upgrade

The West Coast Electric Highway (WCEH) is an extensive network of electric vehicle DC fast charging and Level 2 charging stations along the West Coast, from British Columbia to the California-Mexico border. The initiative is a collection of projects, funding sources, and partners sharing the same vision – to provide confidence for EV drivers traveling up and down the West Coast through a public network of charging stations with DC Fast Charger (DCFC) equipment and Level 2 EVSE charging equipment, enabling electric vehicle drivers to enjoy longer trips and travel between cities.

The Oregon WCEH is an Innovative Partnership Project between the Oregon Department of Transportation and the private sector, currently offering 44 publicly available electric vehicle charging station locations that are privately owned and operated along I-5, parts of I-84, US Highway 101, and routes into Central Oregon. Oregon's WCEH has dispensed over 1.5 million kWh of charging and powered over 4 million miles of all-electric driving via more than 168,000 charging events since its inception. However, the WCEH needs a more robust public charging infrastructure to accommodate the electric vehicle charging needs of a broad spectrum of makes and models of ZEVs driven by Oregonians, and to support the anticipated growth in Electric Vehicle adoption.

ODOT is committed to maintaining service to active EV drivers who have come to rely upon the WCEH throughout Oregon, while expanding the WCEH's utility and capability. To better serve Oregon drivers of electric vehicles, the Oregon Legislature and the Oregon Transportation Commission have identified approximately $4 million in funding to update and enhance Oregon's public WCEH network by:

- Upgrading each of the 44 public WCEH sites by replacing the existing network of CHAdeMO-only DCFC equipment and installing new equipment that offers a dual-head DCFC with both CHAdeMO and SAE CCS-1 J1772 capability (50 kW or higher output), as well as replacing the

existing network of Level 2 EVSE J1772 charging equipment at each site with new, updated Level 2 EVSE chargers (7.2 kW or higher output);

- Enhancing each of Oregon's 44 public WCEH sites by improving network capabilities and offering additional features or amenities;
- Operating and maintaining these WCEH sites over five or more years.

Clean Vehicles and Fuels

Increasing the operating efficiency of multiple transportation modes through transitions to more fuel-efficient vehicles, adoption of alternative fuels, and other vehicle technological advancements are also key for reducing vehicle emissions. ODOT is working to identity opportunities to transition to alternative fuel vehicles, such as plug-in hybrids, electric cars, and other vehicles that are not dependent on higher emission fuels. ODOT also works to identify opportunities to enhance and expand the infrastructure to support the use of alternative fuels.

ODOT Light Vehicle Fleet Transition

To help achieve the statewide zero emission vehicle (ZEV) adoption goals in Senate Bill 1044 and the requirements in House Bill 2027 for state agencies to purchase light-duty vehicles that are zero-emission vehicles whenever possible, ODOT will continue to transition the agency's light vehicle fleet to ZEV's and electric vehicles. This includes working to identify opportunities to procure more all-electric, hybrid or plug-in hybrid, and alternative fuel models where appropriate, and to install electric vehicle charging and alternative fuel infrastructure at ODOT facilities to support these vehicles.

ODOT purchasing of light duty vehicles for agency use is guided by a number of procurement requirements, additionally a limited amount of funds is available to purchase these vehicles. The vehicle procurement decision matrix looks to purchase electric, hybrid, and alternative fuel vehicles before internal combustion engines in those areas that can support and sustain the equipment. The lack of supporting infrastructure is a major limiting factor to purchasing additional all-electric light vehicles, and as a result vehicle purchases typically result in hybrid or internal combustion vehicles. ODOT Fleet Services has identified 11 potential sites to install electric vehicle charging infrastructure at ODOT facilities around the state. As vehicle technology improves and supporting infrastructure expands, electric and ZEV vehicles will be an increasing more viable light duty vehicle option for ODOT.

FHWA Alternative Fuel Corridor Designations

The Federal Highway Administration (FHWA) designates national highways and interstates as Alternative Fuel Corridors to improve the mobility of alternative fuel vehicles (electric, hydrogen, propane, natural gas). A national network of highways supporting alternative fuels allows for regional travel using lower-carbon fuels, addresses range anxiety of burgeoning technology, and accelerates public interest of alternative fuels. To date there have been five rounds of designations; ODOT has nominated and received approval for: I-5 (hydrogen, electric, propane), I-84 (electric), US 101 (electric), US 97 (electric), US 20 (electric), and US 26 (electric). While no funding is currently attached to designation, the effect of labeling these important highways as Alternative Fuel Corridors positions Oregon to leverage future federal funding opportunities, supports partnerships with the private sector on alternative fuel opportunities, and encourages neighboring states to participate in planning for interstate transportation.

Support for Alternative Fuel Transit Fleets

ODOT Public Transit Division (PTD) continues to seek ways to enrich and diversify its portfolio of resources and tools to help transit providers make informed choices about alternative fuel adoption and use. The division is in the process of updating its vehicle asset webpage to provide current and useful

information and opportunities to procure cleaner, more fuel-efficient transit vehicles. The Oregon Transit Vehicle Lifecycle Cost Analysis Tool provides a spreadsheet for agencies to calculate the lifecycle costs of an existing bus fleet and calculate potential cost savings of transitioning to electric vehicles and other alternative fuel buses. This tool is accompanied by a guide that describes the key considerations and barriers involved in fleet electrification in Oregon. These resources were developed by the Zero Emission Vehicle Interagency Working Group (ZEVIWG), led by ODOT in close partnership with DEQ, ODOE, and other state agencies.

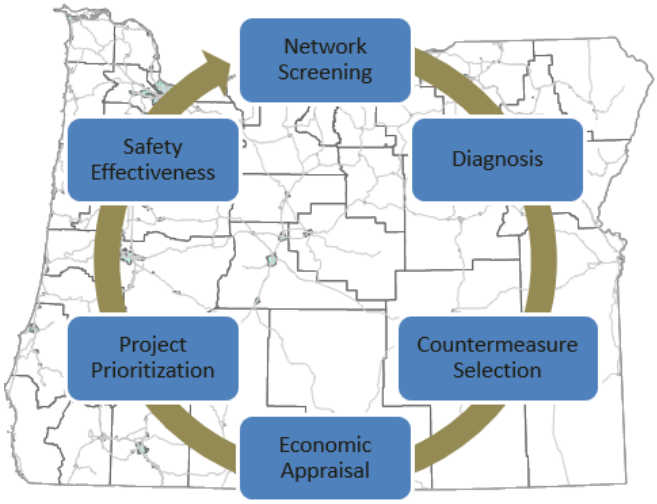
PTD intends to highlight this analysis tool and other emerging low or no emission resources on the PTD webpage and in upcoming conferences. HB 2017, which significantly increased state public transportation funding, provides one avenue among several for transit agencies to pursue projects that will reduce the collective carbon footprint of Oregon's public transportation network.

System Efficiency

Enhancing the efficiency of the of the transportation system through technology, infrastructure investment, safety improvements and operations management keeps the existing system fully optimized for all modes of travel. Improved system efficiency results in reduced congestion and emissions from vehicle idling, improves vehicle throughput and fuel consumption, and provides the needed safety measures to support walking and bicycling. Solutions to improve operations and safety provide a cost effective approach to meet the challenges presented by increased demands on the system coupled with increasing constraints on available funding.

All Roads Transportation Safety (ARTS) Program

ODOT administers the federally-funded Highway Safety Improvement Program (HSIP) through the All Roads Transportation Safety (ARTS) program. The goal of the All Roads Transportation Safety (ARTS) program is to reduce the frequency of fatal and serious injuries on all public roads through a data-driven process that is blind to jurisdictional ownership.



The ARTS program is a multi-step process that increases awareness of safety on local roads, promotes best practices for infrastructure safety, complements behavioral safety efforts, and focuses limited resources on the areas most likely to reduce the number of fatal and serious injury crashes in Oregon.

Improving safety and reducing the number of fatal and serious injury crashes also provides benefits to support system efficiency and reduce transportation emissions. Reducing the number of fatal and serious injury crashes reduces incidents of non-recurring congestion and the associated vehicle emissions. Improving safety for bicycles and pedestrians provides quality alterative to driving automobiles and supports the adoption of active transportation. To improve system efficiency and support emissions reduction, the ARTS program has identified the following actions:

Safety Countermeasures- Continue to research and support safety countermeasures that not only meet program goals but also those that help the agency meet GHG emissions goals. These include safety countermeasures that:

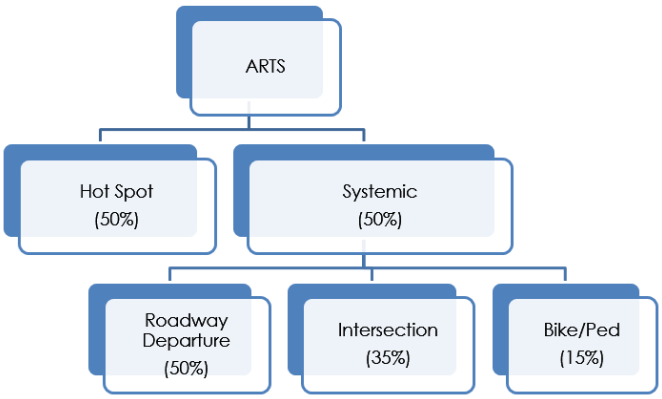
- Support a reduction vehicle miles traveled (VMT). This includes infrastructure investments in transit, biking, and walking.
- Increase network (auto, pedestrian and bicycle) connectivity and reduces out-of-direction travel to shorten trip lengths and reduce VMT.
- Support Intelligent Transportation Systems (ITS) elements that reduce incidents and smooth speeds leading to improved fuel efficiency. These include countermeasures that address non-

recurring congestion (chokepoints, safety constraints, and incident response) such as improved signing and traveler information

- Implement geometric improvements that reduce vehicle congestion, speed and vulnerable user exposure such as signal retiming & optimization, increasing visibility.
- Improve visibility and road conditions that contribute to weather related crashes.

Safety Implementation Plans- To better target locations for these types of safety improvements, ODOT will continue to update and apply the plans with each cycle of ARTs. Infrastructure investments in Pedestrian and bicycle improvements contribute to reductions in vehicle miles traveled (VMT). Because pedestrian and bicycle crashes are less frequent than motor vehicle crashes, it's difficult to apply typical crash-history based screening methods to identify and treat locations for reducing these types of crashes. Late in 2020, ODOT completed a pilot study of NCHRP Research Report 893, the purpose of this effort was to update ODOT's pedestrian and bicycle safety implementation plan using a risk-based systemic safety analysis methodology that flags activities, roadway features, and other contextual risk factors (e.g., land use) associated with pedestrian and bicycle involved crashes.

Safety Funding- The ARTS program will continue to update the statewide systemic funding split goal between Hotspot and Systemic applications based on the distribution of fatal and serious injury crashes between the emphasis areas (Roadway Departure, Intersection, and Pedestrian/Bicycle).



The traditional Hot Spot approach to safety is to identify "hotspot" locations where a high concentration of crashes occur, and then identify and implement measures to reduce the number of crashes occurring at that location. The systemic approach identifies a few proven low-cost measures to implement widely, then put those measures into effect where there is evidence that they would be most useful. These are typically lower costs implementations of measures that reduce fatal and serious injury crashes such as rumble strips, additional signal heads, RRFBs, Bike lanes, delineators and upgrades to marking and signing.

RealTime System Management

ODOT has implemented numerous Intelligent Transportation System (ITS) applications to improve both the safety and efficiency of the transportation system. Active Traffic Management solution monitor real time congestion and weather conditions and inform drivers of hazards through automated variable speeds, dynamic warning signs, and real-time travel time messaging. Ramp metering smooths traffic flow at freeway merge points to maximize throughput, reduce congestion, and improve safety. Hazard Warning Systems detect unsafe conditions and provide warnings to travelers to take action and to avoid

crashes, applications include dangerous curves, high winds, high water, icy roads, and cross-traffic at intersections.

Supporting Broadband Development

Advances in technology continue to change the way people work and the options available to manage and operate the transportation system. As many of these solutions require appropriate communication solutions to be effective, broadband communication is becoming increasingly important for ODOT to manage and operate the transportation system. These needs range from improved bandwidth for ODOT offices statewide to improved connections for current and future intelligent transportation system applications along the highway network. As part of the Strategic Action Plan, ODOT is working to develop an agency broadband strategy and implementation plan. It will help ODOT identify strategies to meet transportation needs dependent on broadband services as well as to consider the role ODOT can play in meeting the broader state goals for improving broadband access.

Enhanced Traffic Incident Management Strategies

Traffic incidents are a significant source of congestion and delay on the transportation system. Traffic Incident Management (TIM) consists of a planned and coordinated, multi-disciplinary process to detect, respond to, and clear traffic incidents so that traffic flow may be restored as safety and quickly as possible. TIM partners include transportation departments, fire and rescue, law enforcement, emergency medical services, towing, and hazardous material clean-up crews. ODOT actions to implement safe, quick clearance of traffic incidents include:

- ODOT's dedicated incident responder program includes 28 ODOT responders deployed in areas of the state that have the highest frequency of incidents. Data shows that dedicated incident responders produce a significant decrease in incident duration compared to redeploying maintenance workers to respond to incidents when they occur. As population and vehicle miles traveled increases around the state, incident count and frequency also continues to grow. Further investment in incident responders is needed to meet ODOT's goals for clearing traffic incidents and reducing incident related delay.
- Computer aided dispatch integration provides for the electronic exchange of information among response agencies. The benefits of this system include improved coordination among response agencies, improved situational awareness, quicker communication, and reductions in incident response and duration. ODOT currently participates in this type of integration with Oregon State Police and 911 centers in Central Oregon. A project is currently underway to expand this capability to 911 centers in the Portland Metro area.
- Implementation of the national incident responder training program for Oregon first responders. As of the end of 2020, 7,225 first responders have been trained in safe, quick clearance strategies.

Traveler Information

ODOT has developed a suite of systems providing real time information about the transportation system status that offers the traveling public many options when planning their trips, allowing them to avoid delays associated with incidents, construction, and other hazards on the system. ODOT's TripCheck

traveler information web site received over 17 million visits in 2020. In a 2019 survey of TripCheck users, 79% of survey respondents reported making some type of trip modification (e.g. different route, different time, different mode, or cancel trip) in the past 12 months in response to information obtained from TripCheck. An additional feature of ODOT's traveler information system is a data portal that makes this same system status information available to third parties for integration into navigation systems, smart phone applications, and other methods for distributing traveler information about ODOT highways.

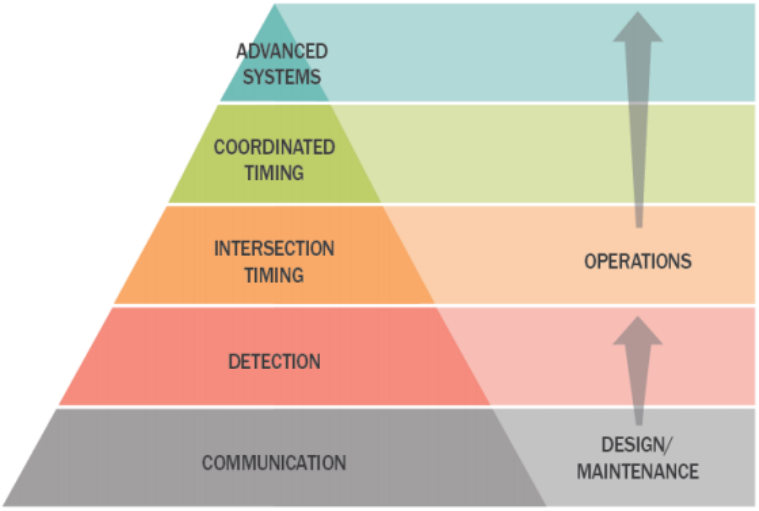
Connected Vehicle Applications

Connected vehicle applications represent the future of transportation system operations and involve communication among vehicles as well as communication between vehicles and infrastructure. Connected vehicle technology will potentially provide a significant amount of data from vehicles that will be useful to ODOT in implementing improved system operations strategies as well as provide new opportunities to provide data to vehicles about hazards. The US DOT has defined a number of Connected Vehicle applications with the specific objective of environmental benefits and emission reduction. ODOT is preparing for this future by beginning work on a Connected Vehicle Ecosystem (CVE) project, a project that is also a Strategic Action Plan Implementation item.

Traffic Signal Management Enhancements

ODOT's practices and goals for traffic signals are outlined in the Traffic Signal Management Plan, as well as the Transportation System Management & Operations (TSMO) Program Performance Management Plan. One of the stated goals for traffic signal operations in the TSMO plan is a reduction of greenhouse gases. This is can be accomplished by minimizing stops for vehicles traveling through a signalized corridor. Another strategy is to minimize control delay, which reduces time that vehicles spend idling. Additionally, multimodal systems which shift traffic away from single occupancy vehicles can be encouraged by providing safe and efficient bike and pedestrian facilities and implementing transit vehicle priority requests where feasible.

The Signal Management Plan gives the foundation on which traffic signal operations must be built in order to achieve the above desired outcomes, which includes reliable communication and detection, intersection timing, corridor timing, and advanced systems. The items in the pyramid build on top of each other, for example, Adaptive Traffic Signal Control (which optimizes signal timing based on real time traffic) is an advanced system which will only work after everything else in the pyramid is in place.



One of the goals in ODOT's Strategic Action Plan is to upgrade 75% of ODOT owned and maintained traffic signals to Advanced Transportation Controllers (ATC) by end of 2022. ATC controllers log hi-res data, which includes everything the controller senses or does to the nearest tenth of a second. This controller technology enables the implementation of Automated Traffic Signal Performance Measures that enhance ODOT's ability monitor and proactively manage signalized corridor performance. The performance measures include control delay, percent arrival on green, and many more. These make timing optimization easier and more objective but only work with an ATC controller as well as reliable communication and detection.

Detection failure dramatically increases delay and emissions at traffic signals. For example, failed detection often results in a green light for an approach with no demand while vehicles with a red light are idling. Currently ODOT does not have an inventory of all detection and is unable to track detection that has failed completely. Within the next five years we will be working to develop a statewide inventory of detection and begin systematically evaluating and tracking the health of vehicle, bike and pedestrian detection. This work is already underway, with automated reports on intermittent detection failure available to staff each morning, as well as with an ongoing ODOT sponsored detection health research project to develop a more robust algorithm for identifying malfunctioning sensors. When it is deployed, this algorithm will only work on data generated by modern ATC signal controllers.

Truck Parking Information Management System Study

Currently, commercial vehicle parking often overflows onto rest area ramps, freeway ramps and shoulders, and adjacent roads. This creates an unsafe situation for commercial vehicle operators as well as other motorists. The problem is compounded by the lack of information provided to commercial vehicle drivers to assist them in finding safe places to park their vehicles and rest. The TPIMS (Truck Parking Information Management System) concept was developed to address the growing number of concerns associated with truck parking along the nation's busiest freight corridors by providing parking availability and information to commercial vehicle operators in real-time. An additional benefit of implementing a TPIMS is the reduction in VMT from trucks no longer having to go in and out of each rest area to determine availability of parking spots.

ODOT will evaluate TPIMS for preliminary feasibility, rough costs, capital improvements involved, and long term maintenance responsibility. The project will include input from experts and stakeholders from a number of areas that would be impacted by deployment and identify impacts to agency resources, development and maintenance costs, Long term management responsibility, and agency liability. The findings of the evaluation will be used to inform a test pilot that would include installation of the TPIMS system and hardware at three rest areas on the I-5 corridor: French Prairie, Santiam and Manzanita. The total estimated cost is approximately $2.6 million for this first implementation of TPMIS. The system will be designed to be compatible with other automated information systems for trucks and TPIMS information in other states.

Connect Oregon Freight Investments

Connect Oregon is a funding program established by the state legislature to invest in non-highway modes of transportation, including freight. Connect Oregon I through VI has awarded $477 million for

infrastructure projects. These infrastructure projects ensure Oregon's transportation system is strong, diverse, and efficient.

Investments in rail and marine freight modes to make freight transport more efficient support Oregon's economy and can help reduce emissions from the transport of goods relative to shipping goods by truck. Additionally, shifting more goods to off-highway freight modes can help to reduce congestion in urban areas and reduce freight vehicle idling. On average freight railroads are 3-4 times more efficient than trucks, the primary reason is that rail can transport cargo further per ton-mile of fuel consumed. Railroads account for 40% of U.S. freight, but only 1.9% of U.S transport-related GHG emissions. Cargo ships travel on almost every major body of water and have capacity to transport the highest volume of freight of any mode of transportation at the lowest cost.

The state legislature identified five dedicated Connect Oregon projects to increase the efficiency of freight transport that are currently ongoing;

Mid-Willamette Valley Intermodal Center

The Mid-Willamette Valley Intermodal Center (MWVIC) will primarily serve the agricultural community in the Willamette Valley and Southern Oregon by providing infrastructure for transferring intermodal freight containers from trucks to rail. The Mid-Willamette Valley is considered the "grass seed capital of the world," producing almost two thirds of all U.S. cool-season grasses. Aside from grass seed, straw, and hay, a broader set of agricultural, wood, pulp, and waste products are regularly shipped out of the region.

The intermodal center allows agricultural producers in the region to consolidate their products to rail and avoid highway congestion on the I-5 corridor in the Portland, Seattle, and Tacoma areas while shipping their products to ports for transport by ship. The intermodal center will reduce the number of trucks using the highways in the Portland area, which potentially would reduce congestion, improve air quality, decrease carbon emissions, and lower highway maintenance costs. Operations of the facility are expected to come online by the end of 2021.

Treasure Valley Reload Center

The Treasure Valley Reload Center (TVRC) will serve the agricultural community in the Treasure Valley by providing infrastructure to transfer agricultural products from trucks to rail. The Treasure Valley collectively grows over 40 percent of the onions in the Pacific Northwest, with over 19,000 acres harvested each year. Over the past five years, an average of 490,000 tons of onions has been shipped out of the region each year to customers throughout the United States. The TVCR site is centrally located in the Treasure Valley which includes Malheur County (OR), Payette County (ID), Washington County (ID), Canyon County (ID), and the northern portion of Owyhee County (ID).

Agricultural products produced in the region are shipped to a broad set of domestic customers at destinations east and south of Oregon, both by truck and rail. The intermodal facility will allow agricultural producers to more efficient consolidate products for shipment and provide increased opportunity for rail transport. The TVRC has the potential to reduce the number of trucks using the highways in eastern Oregon, which would will reduce highway maintenance costs, improve air quality,

and decrease carbon emissions. Construction is anticipated to begin in early to the middle of 2021, with operations of the facility coming online by the middle of 2022.

Future Connect Oregon Freight Investments

In February 2020, the Oregon Transportation Commission adopted new rules for the Connect Oregon program which implemented the statutory changes from HB 2017 and HB 2592. Two separate Rules Advisory Committees met and worked to drafted rules based upon the program area; one for the air, marine and rail freight transportation, and another for Multimodal Statewide Investments Management (bicycle and pedestrian movement). Future rounds of the program will fund projects that support improved efficiency for aviation, rail, and marine freight projects. ODOT anticipates that there will be funding available for a competitive round of the Connect Oregon program at the end of 2021-23 biennium. ODOT will announce when the program is ready to launch or if there are changes to the anticipated funding.

Adaptation

The impacts from climate change on our transportation system are projected to increase and ODOT needs to be ready to respond. Climate impacts to transportation can include: extreme storms events and flooding, rising sea levels and storm surge, coastal erosion and landslides, and higher temperatures and wildfire risks. Through adaptation planning and research ODOT is taking the steps necessary to be prepared and make the transportation system more resilient to these hazards.

Statewide Adaptation Risk and Vulnerability Assessment, and Operational Roadmap

The Statewide Risk & Vulnerability Assessment The assessment will examine anticipated impacts and consequences of climate change on the transportation system and assets (by way of climate hazard and/or disaster event). The projected climate hazards will be mapped against ODOT's transportation infrastructure to help identify, at a corridor-level, and prioritize needs and develop region-specific strategies to address identified needs.

Based on risk assessment findings, stakeholder engagement and workshops, develop roadmap to implement and operationalize strategies, actions, and tactics to address identified risks & vulnerabilities in Oregon. Implementing adaptation strategies for unique conditions and locations may require changes in the way transportation projects are planned, scoped, designed, funded, and maintained. A priority corridor strategy would concentrate investments in these vulnerable corridors, such as US 101, the coast ranges or connections over the Cascades. This would be a cross-asset strategy that would build resilience throughout the system.

The resulting Statewide Adaptation Roadmap and Operational Plan will provide ODOT with actionable strategies for making proactive decisions and strategic investments, informed by the best available science and with the goal to protect assets over the long-term (50-100 years). A priority corridor strategy would concentrate investments in these vulnerable corridors, such as US 101, the coast ranges or connections over the Cascades. This would be a cross-asset strategy that would build resilience throughout the system.

Applying Climate Change Information to Hydrological and Coastal Design

ODOT does not routinely account for climate change projections in hydrologic and hydraulic design. Climate change effects including sea level rise and more frequent extreme precipitation events may have significant implications for the safety of ODOT infrastructure. A preliminary AASHTO Design Practices Guide for Applying Climate Change Information to Hydrologic and Coastal Design of Transportation Infrastructure has been released (NCHRP 15-61) but has not yet been implemented by state DOTs. To help ensure practical usability of this guide, several state DOTs including ODOT have been asked to pilot this guide and provide suggested revisions as a part of NCHRP Implementation Project 20-44(23).

The primary objective of this ODOT research pilot is to provide feedback to the NCHRP Implementation Panel 20-44(23) for the effectiveness and ease of implementation of the AASHTO Design Practices Guide for Applying Climate Change Information to Hydrologic and Coastal Design of Transportation Infrastructure (NCHRP 15-61). A secondary objective of this research is to provide feedback to ODOT

regarding possible impacts of using climate change information in design. Specifically, this pilot will investigate the level of effort and significance of design change(s) using climate projections for an existing coastal bridge with both inland and coastal hydrology inputs. In addition to assisting with pilot project survey responses for delivery to the NCHRP team, vulnerability assessments for the existing bridge will be performed and a new climate change informed design will be developed.

Coastal Landslide and Bluff Retreat Monitoring

Research project on monitoring coastal landslides and bluff retreat to inform coastal adaptation and risk assessments. This work will occur at five high risk landslide sites on the Oregon coast. The project will use Light Detecting and Ranging (LiDAR) and other cutting edge technologies to monitoring landform changes over time. We will use the results to inform project risks and priorities for protecting highways threatened by landslides. ODOT Research is leading the project which is guided by a Steering Team. Research will be on-going through 2023.

Coastal Resilience Policy and Adaptation Strategies

Climate driven hazards such as landslides, erosion, and sea level rise pose significant risks to state highways along the Oregon Coast. ODOT needs to identify priority locations for adapting to these hazards, implement strategies for shoreline protection, and pursue regulatory exceptions for improvements where needed and required. A challenge to meeting these goals is DLCD's Statewide Planning Goal 18 (Beaches and Dunes) which prohibits shoreline armoring of public infrastructure. In addition, a comprehensive coastal hazard vulnerability and risk assessment for US 101 does not exist.

This action involves research to develop a site-specific coastal hazard prioritization matrix for at-risk public infrastructure along US 101 that can both directly support DLCD Goal 18 policy changes as well as inform STIP project development. This research, now underway, will identify, characterize, and rank high-risk coastal hazard areas based on shoreline type and infrastructure present, historic and present erosion rates, vulnerability to sea level rise and storm surge, land use and geologic characteristics, detour potential, and economic constraints.

In 2022, DLCD will begin Goal 18 rulemaking to guide state and local land use exceptions for maintaining and securing coastal public infrastructure. In support of this state policy and rulemaking effort, ODOT will provide results from its coastal adaptation prioritization research, outlining areas at risk, mitigation options, and management strategies for planning and project development. The Climate Office will also coordinate with ODOT regions, state and local agencies, other stakeholders on adaptation options, and partner with DLCD through Goal 18 rulemaking.

Sustainability

Sustainability is a key ODOT priority to address the impacts of climate change. The agency is working to identify opportunities to utilize sustainable products and fuels, reduce energy and water consumption, recycle materials and equipment, and reduce the agency's carbon footprint. Sustainable practices are also incorporated into how ODOT plans, designs and builds transportation programs and projects.

Agency GHG Inventory

ODOT constructs and maintains hundreds of bridges and thousands of highway miles throughout the state. Vast amounts of materials go into construction and maintenance projects and significant amounts of fuel and electricity are used every day to manage projects and maintain roadways. While the agency tracks quantity, costs and other material specifications, ODOT does not currently have a baseline inventory of the greenhouse gas (GHG) emissions related to agency operations.

In February 2021, the Climate Office initiated an effort to inventory emissions related to ODOT's construction and maintenance operations. The inventory will provide ODOT with an important understanding of the emissions associated with work performed and services purchased by the agency. Inventory topics will be selected based on prevalence, emissions impact and data availability. Likely topics include: steel, concrete, asphalt, stationary and mobile fuel use. The project will also explore alternative materials and fuels with lower embodied carbon and assess potential pros and cons.

The project will conclude in December 2021. The results of the inventory will help ODOT better communicate some of the positive GHG reduction practices the agency already engages in. Additionally, once the inventory is in place, recommended actions and changes will be developed that will result in further emission reductions for agency practices. The final deliverable will provide a breakdown of current practices compared against the recommended actions and changes, including cost differences (with considerations for data and commodity pricing challenges), lifespan differences, reduction potential, and other co-benefits such as opportunities for equity, additional resiliency or local economic development. Subject matter experts will assist the project team in connecting the dots and help ensure a final product that is both influential and reasonable.

LED Lighting for Street Lights

ODOT's Region 1 (Portland metro) recently converted 8,500 streetlights to light-emitting diodes (LEDs). This cut the energy use of the Region's transportation system by half, saving money and avoiding approximately 4,250 metric tons of carbon dioxide equivalent emissions annually (i.e., equal to removing 925 cars of the system). The Climate Office aims to expand upon the success of Region 1 and convert all streetlights throughout the state to LEDs. The first step is data gathering to understand how many streetlights need to be converted. From there, the Climate Office and the Office of Innovative Funding will request proposals for an energy savings performance contract to manage and help fund the conversion project.

Solar Opportunities

ODOT is a national leader on implementing solar projects as a state department of transportation. In 2008, the agency installed a 104 kilowatt solar array within the open space of the I-5 / I-205 interchange.

The project was developed through an innovative, first-in-the-nation public-private partnership. The success of the nation's first solar highway project led ODOT to explore further opportunities, which led to a 1.75 megawatt array near an interstate rest area (Baldock Solar Station). Furthermore, maintenance districts on their own accord have begun to install solar arrays on agency-owned buildings to offset their emissions and provide energy resiliency in case of an emergency.

There are many options for ODOT to utilize solar energy but no formal policies or guidance for agency staff to consider. Building off past success, the Climate Office will lead the development of an agency policy to guide solar opportunities such as installation on agency buildings, expansion of the solar highway program, and subscriptions to community solar projects. Furthermore, the Climate Office will collaborate with the Office of Innovative Funding to identify and/or respond to public-private partnerships that further the agencies solar opportunities.

Agency Sustainability Plan & Annual Reports

In response to the 2001 Oregon Sustainability Act, ODOT maintains a Sustainability Plan and reports annually on performance measures. Volume II of the Sustainability Plan (2015) addresses the management of ODOT's internal operations toward sustainability objectives. This plan complements Volume I which set forth the overall context and vision for sustainability at ODOT. Since its completion in 2010, ODOT has made great strides in implementing many of its sustainability strategies and has demonstrated progress towards its goals. Volume II presents goals and strategies across several topic areas focused on economic, environmental, and social values. The goals provide a clear set of long and short-run targets and expected outcomes. Performance measures have been established to enable the agency to track its progress towards these goals and to evaluate trends and highlight successes.

The Sustainability Plan is used by ODOT managers and staff in decision-making, purchasing, construction, operations and maintenance of facilities as well as other daily routine activities. Sustainability at ODOT is an iterative process where goals and strategies are understood to change and evolve over time. The Sustainability Plan is scheduled to be updated in 2022.

Climate Opportunities from "Surplus" Properties

As the manager of thousands of miles of public right-of-way, ODOT is inherently a significant landowner. House Bill 2017 required the agency to inventory property ownership and determine the best use of each parcel of land. If property is deemed "excess" it can be reviewed for future use or other obligations. If there is no need for a given piece of property, it can be categorized as "surplus" and sold at market value.

While there is an existing system for maintenance districts, planning and other divisions to review excess properties, the Climate Office aims to engage in the process to evaluate ODOT-owned parcels for climate-benefiting opportunities. Areas for solar array installation, carbon sequestration, bicycle and pedestrian paths or EV charging may be identified through such an effort which can help meet the agency's climate goals.

Agency Partnerships

Reducing transportation emissions and achieving Oregon's climate goals requires collaboration across all sectors and levels of government. Many of the actions needed to reduce transportation emissions are outside the authority of the agency. To address these barriers ODOT is committed to engage in partnerships and provide support to other state agencies and local jurisdictions to reduce emissions from transportation.

Transportation and Growth Management (TGM) Program

The Transportation and Growth Management (TGM) Program is jointly managed by the Oregon Department of Transportation (ODOT) and the Department of Land Conservation and Development (DLCD). The mission of TGM is to support community efforts to expand transportation choices. TGM serves local governments through a competitive grant program and other non-competitively awarded community assistance programs. TGM services include grants for transportation and land use planning projects leading to local policy decisions, and Community Assistance to help resolve land use and transportation planning issues

TGM allocates approximately $5 million to planning grants per biennium. Eligible applicants include cities, counties, councils of government on behalf of a city or county, tribal governments, and certain special districts. The vast majority - 75% - of applications and awards within the last 10 years are from and to cities. In the last five years, projects focused on transit and active transportation have comprised 35% of awarded projects. Nearly 30% of recent TGM projects are to develop TSPs and TSP updates, all for cities with a population of 25,000 or less. These TSP projects primarily addressed local circulation and active transportation needs rather than capacity increases.

In the 2021 Application Packet, TGM announced that although always a consideration of the program, Equity and GHG Reduction will be a focus and expectation for the program going forward. Fire Recovery is also an emphasis for 2021. TGM made a number of changes to its instructions to support the focus such as asking applications to respond to questions such as:

- Who have you defined as a historically and currently underserved community? How will the impacts to those communities be addressed and their participation encouraged?
- What work will address GHG reduction? If in a metropolitan area, what work will help address GHG goals for the region?

TGM is also addressing the land use side of the equation with new publications addressing infill housing and downtown vitality.

Every Mile Counts

Every Mile Counts is a multi-agency partnership between the Oregon Department of Transportation (ODOT), Department of Land Conservation and Development (DLCD), Department of Environmental Quality (DEQ), and Department of Energy (DOE) to identify actions to implement the Statewide Transportation Strategy and reduce emissions from transportation. In response to Executive Order 20-04 directing agencies to reduce climate pollution, the four agencies worked together to develop a Statewide Transportation Strategy (STS) Multi-Agency Implementation Work Plan for June 2020-June

2022. The plan focuses on objectives and priority actions that can benefit from collaborative relationships and programs already established among the agencies.

The STS Multi-Agency Implementation Work Plan (2020-2022) represents the first two years of activities for the partnership. Progress has been made on each of the Every Mile Counts actions in the 2020-2022 work plan since it was initiated. Some actions have already resulted in work products, while others are just getting started. Many of the actions strengthen existing state priorities and participation in national emissions reduction partnerships. All of the actions in the work plan are critical components on the path to reduce transportation emissions in Oregon. The agencies will begin to develop a work plan for the next biennium starting in mid-2022.

Local GHG Reduction Planning Support

In response to Executive Order 20-04 directing agencies to reduce climate pollution, the Department of Land Conservation and Development (DLCD) is working to update Oregon's Transportation Planning Rules and related administrative rules. The rulemaking will significantly strengthen Oregon's rules about transportation and housing planning, particularly in the eight areas with populations over 50,000 people (Albany, Bend, Corvallis, Eugene/Springfield, Grants Pass, Medford/Ashland, Portland Metro, Salem/Keizer). Some rule changes to reduce greenhouse gas pollution and increase transportation choices may apply to communities outside those areas. The rulemaking will focus on reducing pollution while also increasing housing choices and creating more equitable outcomes for all Oregonians.

Oregon's transportation and land use planning system is a partnership between state and local governments. ODOT is committed to supporting local jurisdictions work to reduce transportation emissions and achieve the state's GHG emission reduction goals, and is a key partner in DLCD's rulemaking efforts. To support equitable engagement ODOT is providing funding for facilitation of a Rule Making Advisory Committee focused on meeting the greenhouse gas reduction goals through rule updates while increasing housing choices and creating more equitable outcomes for community members on the ground. ODOT also provided funding for Community Benefit Organizations that represent currently or historically underserved communities from around the state to participate in the Rule Making Advisory Committee to help ensure representation of diverse perspectives and voices. ODOT staff is collaborating with DLCD staff to make sure the updated Transportation Planning Rules and related administrative rules complement other state and federal transportation planning requirements. Looking forward ODOT has identified funding and staff resources to assist local jurisdictions to meet requirements that result from the rulemaking through 2025, and will partner with DLCD to secure funding to continue assisting local jurisdictions to meet any requirements.

ODOT ZEV Interagency Action Plan Responsibilities

In 2020, as part of Every Mile Counts, member agencies in the Zero Emission Vehicle Interagency Working Group (ZEVIWG) developed a ZEV Interagency Action Plan (ZAP) that highlights a list of priority actions for state-led activities in 2021 - 2022 to encourage ZEV adoption and utilization in Oregon. As part of this plan, ODOT will take the lead on a number of important initiatives including, but not limited to:

- Assess EV signage needs in Oregon: ODOT will assess opportunities to improve EV signage including signage placement and criteria, to improve EV charging accessibility to the public.
- Explore opportunities to increase EV charging infrastructure at state parks: ODOT, in collaboration with the Oregon Department of Parks and Recreation, will help identify parking areas within State Parks that are ideal candidates for EV charging infrastructure and assist in planning for EV charging deployment.
- Develop guidance on EV charging infrastructure for local jurisdictions: ODOT, in conjunction with sister ZEVIWG agencies, will develop an EV Guidebook for local governments that provides information on state EV policies, EV charger planning and needs, best practices for permitting and guidance on developing a local EV plan.
- Develop guidance on EV charging infrastructure Multi-unit Dwelling (MUD) owners and residents: ODOT, in conjunction with sister ZEVIWG agencies, will develop an EV guidebook for MUD owners and residents that includes information on state EV policies, best practices for EV charging installations and permitting requirements, among other things.

Employee Commute Options Rulemaking

ODOT is providing support and funding for components of the Oregon Department of Environmental Quality (DEQ) Employee Commute Options rulemaking, or ECO Rule. The ECO Rule is a rule that currently applies to businesses with more than 100 employees at a location in the Portland Metro Area. It requires those businesses conduct a survey of employees every two years and develop a plan for reducing drive alone commute trips. DEQ is updating the ECO Rule to strengthen the rule in the Portland Metro area and create a new rule to apply to other MPOs in the state. This effort is a multi-agency collaboration through the Every Mile Counts program.

ODOT's Transportation Options Program will support development of the rule, adoption and implementation by:

- Provide technical support to DEQ prior to and during rulemaking
- Develop a custom ECO Rule survey within the Get There tool
- Support implementation of the ECO Rule in MPO areas through grants and support materials
- Develop outreach materials that align with Oregon's emissions reduction goals
- Continue building relationships with businesses through the Get There Business Forum

Transit Partnerships with State Agencies and Organizations

ODOT Public Transit Division (PTD) regularly communicates and collaborates with other state agencies and other external organizations to construct informational resources and enhance emissions reduction initiatives. These external partners include the Department for Environmental Quality, the Department of Energy, Energy Trust of Oregon, and other regional climate and sustainability experts.

Specifically, PTD has been working with DEQ to assist with communication to public transportation agencies in support of DEQ's Alternative Fuels Study and Clean Fuels Program. The Study provides for consultation with fleet owners across the state to ensure that emerging alternative fuels policy aligns with their needs and capacity to invest in greener fuels and technologies. The Clean Fuel Program

provides financial incentives for public transportation agencies that electrify part or all of their fleet and encourages the growth of other alternative fuel industries in Oregon. PTD hopes to partner with Energy Trust of Oregon to help transit agencies improve the energy efficiency of new and renovated facilities.

Monitoring and Data

Monitoring progress is necessary to ensure that ODOT is on track to meet Oregon's GHG reduction goals and to effectively steer resources towards this effort. To effectively monitor this progress requires continued advancements in the data sources and analysis tools used to measures reductions in transportation and increased resiliency of the transportation system.

Climate & Emission Reduction Performance Metrics

Understanding and tracking the progress of ODOT's work to reduce emissions is key to meeting the agency's climate goals and addressing the impacts of climate change on the transportation system. ODOT will identity a number of performance metrics to track progress towards reducing transportation emissions and providing a multimodal transportation system. These metrics will include relevant existing agency performance measures, as well as new measures to track transportation emissions reduction. To communicate progress on these metrics, ODOT will develop a transportation emissions dashboard that will provide a transparent look at transportation emissions in Oregon. The dashboard will help to inform climate change and emissions reduction decision making at both the state and local level.

GHG Reduction Guidance Small Urban and Rural Communities

The Statewide Transportation Strategy identified that actions will be needed across all geographies of Oregon to reach state mandated GHG Reduction goals. To date long range strategic planning for GHG reduction has focused on larger urban areas. Very different actions may be required in small urban and rural areas, given their different demographic, economies, travel needs and modal choices. Lower densities in these areas mean more reliance on the auto and longer distances, while differing economies add other GHG dimensions. Additionally these areas are likely to bear a higher burden of extreme weather impacts from a changing climate. As such it important to develop unique GHG reduction strategies for these areas to provider their support towards achieving the state's shared climate goals

To support small urban and rural areas to reduce transportation emissions ODOT will develop a Non-Metropolitan Transportation GHG Reduction Strategy to provide guidance on GHG mitigation actions for small urban and rural outside of metropolitan areas. The effort will collaborate with other state agencies to include a multi-sector look at specific climate actions for these types of locations. ODOT will also identify opportunities to assist communities to inventory transportation GHG emissions and customize a GHG reduction strategy for communities outside metropolitan areas that choose to engage in this process.

VisionEval Implementation & Enhancements

Oregon's successful Climate mitigation program planning efforts, both at the state and local level, rely on analytic capabilities that frame important strategic discussions that lead to changes in decision-making and track progress toward GHG reduction goals. The VisionEval Strategic Planning model used to track statewide and local progress towards the state's GHG reduction goals needs to be maintained and updated to reflect emerging technologies and local inputs updated on a periodic basis in order to remain relevant and effective.

Maintenance and selected code updates of the tool has been greatly facilitated by ODOT's participation in the FHWA-hosted VisionEval pooled fund effort. ODOT will continue to participate in the next round of the pooled fund effort to ensure the VisionEval tool continues to meet ODOT's planning and analysis needs. ODOT will also identify resources to improve sensitivity to for a number of key items including; emerging modes, freight modes, active transportation, transportation demand management and intercity travel. These upgrades to the VisionEval tool are necessary to continue effective planning and monitoring progress towards Oregon's GHG emissions reduction goals.

GHG Tools, Analysis & Data

With the direction of EO20-04, ODOT will begin to include GHG mitigation reporting at all stages for the planning process. This reporting will create a consistent reporting approach across the agencies strategic and long-range plans, programming and project prioritization, and Corridor and Project analysis, such as NEPA projects. This effort will be to enhance the ability for ODOT and local jurisdictions to monitor progress towards both state and local GHG reduction goals and targets.

This project will continue the efforts begun with the Oregon Modeling Steering Committee GHG Subcommittee in 2019-2021 to enhance GHG analysis and reporting at all these levels. The subcommittee identified GHG Data & Analysis needs across the state and will develop a prioritized action plan of strategies to fill the most important gaps over the next 3-5 years. Many of these efforts involve ODOT as a lead or in a coordinating role to develop, implement, and provide guidance for tools, data, and analysis enhancements. When implemented these actions will support enhanced GHG reporting and GHG policies at all stages of the planning process. This may include more detailed GHG inventories.

Medium and Heavy Freight Vehicle Data for Alternative Fuels Planning

The ODOT Climate Office has formed an internal work group on a data value assessment. This pilot project will address data needs and gaps relating to ODOT's medium and heavy- duty vehicle data. ODOT's DMV and Commerce & Compliance Division have data related to medium and heavy-duty vehicles, including registrations and fuel efficiency. These data are collected for specific purposes (e.g. tax collection), but have the potential for re-use for other purposes. These datasets relating to trucks and larger vehicle classes are important for alternative fuels and GHG reduction planning, such as EV and Hydrogen.

This research effort is part of the NCHRP 20-44(12) implementation support program, titled *Building Capacity for Self-Assessment of Data Effectiveness for Agency Business Needs*. The project objectives are to improve understanding of the medium/ heavy vehicle data collection, current and potential new uses of the data, and identify actions that can be taken to improve availability, quality and usability of this data. A key outcome of this Data Value Assessment pilot will be an Action Plan for addressing data needs and gaps, and strategies for how to integrate data across and between agencies to meet multiple policy objectives. The resulting Action Plan will outline what an integrated medium/ heavy vehicle data set might include, and what specific business and decision-making processes it would feed. Partners on this project include data managers (DMV, Commerce & Compliance Division), and data users, (such DEQ, TPAU, and the Climate Office).

The outcomes of the research effort and Action Plan will be used to inform the development of a baseline of medium and heavy duty vehicle GHG emissions and establish the data needed to track changes in these emissions over time. This new medium and heavy duty vehicle data will provide the basis to identify market based emissions reduction strategies and opportunities. This data will also improve the modeling capability for these vehicle groups in regional and statewide long range planning efforts.

Adaptation Performance Measures

ODOT will conduct a national peer review and incorporate findings in development of best practices and performance metrics on system resilience and response to floods, wildfires, landslides, and sea level rise as well as best practices to address climate equity in this context (includes geographic equity and social equity considerations).

This work will also examine existing data to determine data collection needs as well as available tools for collecting adaptation related data to inform development and potential phased approach to implementation of adaptation performance measures. Note: this work is an extension of the Statewide Adaptation Roadmap and Operational Plan; strategies will contemplate gaps in existing data as well as options for monitoring progress and/or effectiveness of any strategies recommended for implementation.

Transit Key Performance Measures

To measure progress towards achieving Oregon's public transit goals, ODOT Public Transit Division (PTD) tracks two Key Performance Measures (KPMs) for the agency. ODOT PTD partners with local transit providers to offer safe and cost-effective public transportation. This system supports the state's economy and quality of life across diverse geographies and people. Public transportation is also vital for reducing congestion and greenhouse gas emissions and providing access to essential services, and transportation for those who cannot or choose not to drive. The demand for public transportation in Oregon is expected to grow in response to changing demographics.

Transit Ridership

To monitor progress on Transit Ridership, PTD tracks the average number of transit rides each year per Oregonian. The target for ridership is 32 transit rides per Oregonian, based on transit rides between 2011 and 2018. The effects of COVID-19 on local and regional transit ridership in Oregon were substantial. This ridership decline is consistent with national trends, where ridership fell by more than half between 2019 and 2020. With the infusion of STIF funding, PTD expects increased transit ridership across the state. However, investments in new services can take years to result in expanded ridership. Service costs are increasing, particularly with COVID-19 impacts, and low fuel prices can contribute to reduced demand for public transportation.

Public Transit Vehicle Condition

To monitor progress on Public Transit Vehicle Condition, PTD tracks the percent of public transit buses that meet replacement standards, having reached the end of their calculated useful life. The target is 40% of vehicles meeting replacement standards. PTD calculates the expected useful life of various types

and sizes of vehicles based on their mileage, age, and condition. The goal is to keep transit vehicles in a "state of good repair" based on guidance from the Federal Transit Administration (FTA) to ensure they operate at optimal performance. Achieving the target results in a more safe and dependable public transportation system across the state. Oregon transit providers rely on state funds to provide local match funding for FTA grants used to maintain an optimum replacement schedule. Ongoing STF and STIF funding will be essential in meeting the goal for vehicles in a state of good repair.

Future Opportunities

ODOT PTD is developing additional performance measures for program outcomes within the division. These efforts start with identifying the best metrics and data to develop performance against desired goals. Performance measures will allow PTD to track and report on the efficacy and success of programs for which PTD is responsible. Reporting to the Oregon Transportation Commission, external partners/stakeholders, and the Oregon Legislature will help inform policy and investment priorities, future funding decisions and determine program adjustments to drive targeted outcomes. PTD continues to update and refine the KPMs.