

**CLIMATE  
SMART**  
COMMUNITIES  
SCENARIOS PROJECT

## Exhibit A to Ordinance No. 14-1346B

# Climate Smart Strategy

### Recommended Draft

*This document reflects changes recommended to respond to public comments received and subsequent advisory committee review*

**December 9, 2014**

**MAKING A  
GREAT  
PLACE**



# Exhibit A to Ordinance No. 14-1346B

## **About Metro**

Clean air and clean water do not stop at city limits or county lines. Neither does the need for jobs, a thriving economy, and sustainable transportation and living choices for people and businesses in the region. Voters have asked Metro to help with the challenges and opportunities that affect the 25 cities and three counties in the Portland metropolitan area.

A regional approach simply makes sense when it comes to providing services, operating venues and making decisions about how the region grows. Metro works with communities to support a resilient economy, keep nature close by and respond to a changing climate. Together we're making a great place, now and for generations to come.

Stay in touch with news, stories and things to do.

[www.oregonmetro.gov/climatescenarios](http://www.oregonmetro.gov/climatescenarios)

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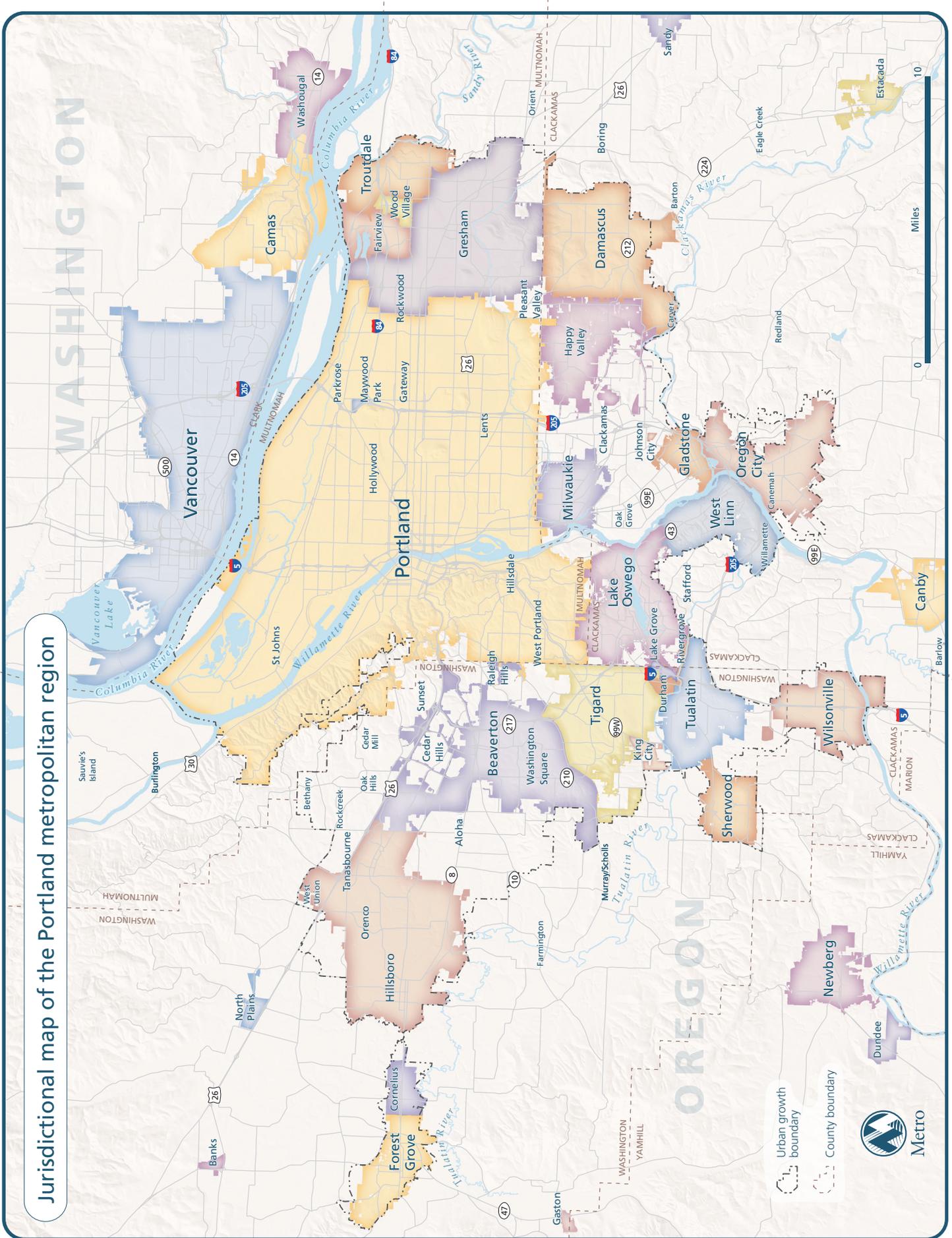
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# INTRODUCTION

The Climate Smart Communities Scenarios Project responds to a state mandate to develop and implement a strategy to reduce per capita greenhouse gas emissions from cars and small trucks by 2035.

The project engaged community, business, public health and elected leaders to shape a strategy that supports local plans for downtowns, main streets and employment areas; protects farms, forestland, and natural areas; creates healthy and equitable communities; increases travel options; and grows the economy while reducing greenhouse gas emissions.

After four years of research, analysis, community engagement and discussion, the Metro Policy Advisory Committee (MPAC) and Joint Policy Advisory Committee on Transportation (JPACT) finalized their recommendation to the Metro Council on the Climate Smart Strategy and supporting implementation recommendations (Regional Framework Plan amendments, toolbox of possible actions and performance monitoring approach) in December 2014.



## ATTRIBUTES OF GREAT COMMUNITIES

The six desired outcomes for the region endorsed by the Metro Policy Advisory Committee and approved by the Metro Council in 2010.

The Climate Smart Strategy and implementation recommendations support all six of the region's desired outcomes.





# ABOUT THE CLIMATE SMART STRATEGY

**The results are in and the news is good.** After a four-year collaborative process informed by research, analysis, community engagement and deliberation, the region has identified a Climate Smart Strategy that achieves a 29 percent reduction in per capita greenhouse gas emissions. The strategy does more than just meet the target. Analyses show it supports many other local, regional and state goals, including clean air and water, transportation choices, healthy and equitable communities, and a strong economy.

Analyses demonstrate significant benefits can be realized by implementing the Climate Smart Strategy.

More information on the results, expected benefits and estimated costs is available at :

**[oregonmetro.gov/climatescenarios](http://oregonmetro.gov/climatescenarios)**

This overview is designed to help elected, business, and community leaders, and residents better understand the strategy and supporting implementation recommendations as Metro Policy Advisory Committee (MPAC) and Joint Policy Advisory Committee on Transportation (JPACT) continue working to finalize their recommendation to the Metro Council in December 2014.

After a four-year collaborative process informed by research, analysis, community engagement and discussion, the region has identified a Climate Smart Strategy that achieves a 29 percent reduction in per capita greenhouse gas emissions and supports the plans and visions that have already been adopted by communities and the region.

## WHAT IS THE CLIMATE SMART STRATEGY?

The Climate Smart Strategy is a set of policies, strategies and near-term actions to guide how the region moves forward to integrate reducing greenhouse gas emissions with ongoing efforts to create the future we want for our region. Key components of the strategy include:

### CLIMATE SMART STRATEGY

- The key policies and strategies recommended to continue demonstrating the region's leadership in reducing greenhouse gas emissions from light-duty vehicles.
- The strategy relies on adopted local and regional land use and transportation plans and expected advancements in cleaner, low carbon fuels and more fuel-efficient vehicles.

### REGIONAL FRAMEWORK PLAN (RFP) AMENDMENTS

- Refinements to existing regional policies to integrate the key components of the Climate Smart Strategy, including policies and strategies to guide implementation and performance measures for tracking the region's progress.

### TOOLBOX OF POSSIBLE ACTIONS

- An advisory menu of possible near-term actions that state, regional and local governments and special districts can take in the next five years to begin implementing the strategy.
- A living document subject to further review and refinement as part of scheduled updates to the Regional Transportation Plan to reflect new information and approaches to reducing greenhouse gas emissions.
- Updates to local comprehensive plans and development regulations, transit agency plans, port district plans and regional growth management and transportation plans present ongoing opportunities to consider implementing the toolbox actions in locally tailored ways.

### SHORT LIST OF CLIMATE SMART ACTIONS

- A list of three actions for 2015 and 2016 to demonstrate the region's commitment to work together to begin implementing the strategy.
- The actions focus on transportation funding, advancements in clean fuels and vehicle technologies and collaboration among multiple partners to seek opportunities to implement projects that combine the most effective greenhouse gas emissions reduction strategies.

### PERFORMANCE MONITORING APPROACH

- Identifies measures and performance monitoring targets for tracking the region's progress on implementing the strategy.
- Monitoring and reporting system that builds on existing performance monitoring requirements per ORS 197.301 and updates to the RTP and Urban Growth Report.



## EXPECTED BENEFITS OF THE STRATEGY

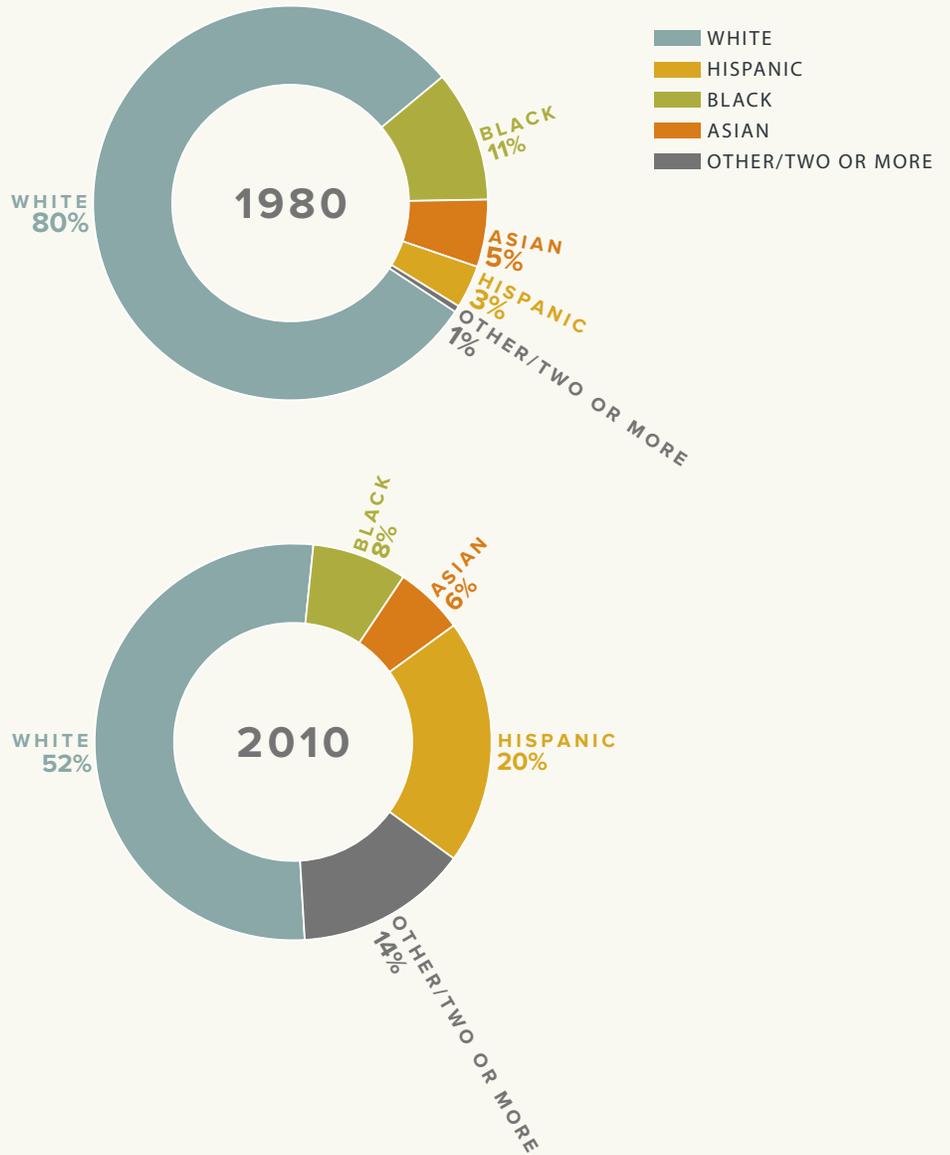
By 2035, the Climate Smart Strategy can help people live healthier lives and save businesses and households money through benefits like:

- Reduced air pollution and increased physical activity can help reduce illness and save lives. This helps save money that can be spent on other priorities.
- Less air pollution also means fewer environmental costs. This helps save money that can be spent on other priorities.
- Spending less time in traffic and reduced delay on the system saves businesses money, supports job creation, and promotes the efficient movement of goods.
- Households save money by driving more fuel-efficient vehicles fewer miles and walking, biking and using transit more. This allows people to spend money on other priorities, of particular importance to households of modest means.



People of color are an increasingly significant percentage of the Portland metropolitan region's population. Areas with high poverty rates and people of color are located in all three of the region's counties – often in neighborhoods with limited transit access to family wage jobs and gaps in walking and bicycling networks.

RACE AND ETHNICITY IN THE PORTLAND METROPOLITAN REGION



# REGIONAL CONTEXT

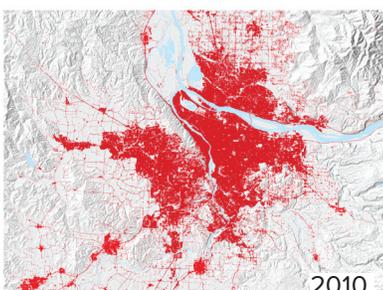
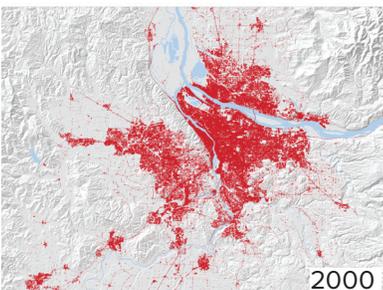
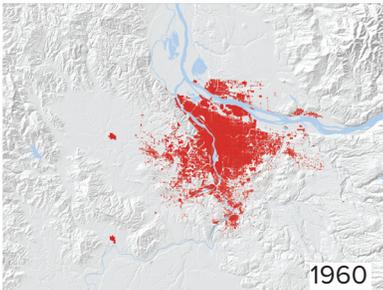
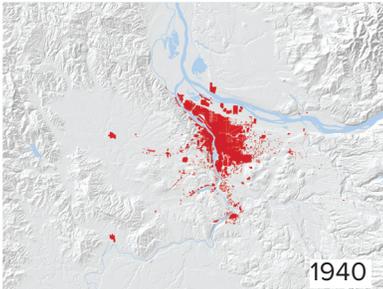
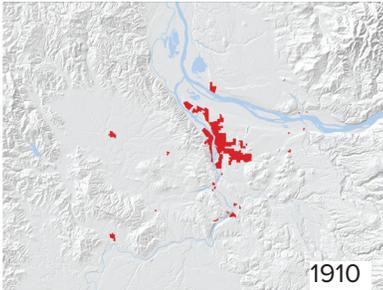
## OUR REGION IS CHANGING

The Portland metropolitan region is an extraordinary place to call home. Our region has unique communities with inviting neighborhoods, a diverse economy and a world-class transit system. The region is surrounded by stunning natural landscapes and criss-crossed with a network of parks, trails and wild places within a walk, bike ride or transit stop from home. Over the years, the communities of the Portland metropolitan region have taken a collaborative approach to planning that has helped make our region one of the most livable in the country.

Because of our dedication to planning and working together to make local and regional plans a reality, we have set a wise course for managing growth – but times are challenging. With a growing and increasingly diverse population and an economy that is still in recovery, residents of the region along with the rest of the nation have reset expectations for financial and job security.

Aging infrastructure, rising energy costs, a changing climate, and global economic and political tensions demand new kinds of leadership, innovation and thoughtful deliberation and action to ensure our region remains a great place to live, work and play for everyone.

In collaboration with city, county, state, business and community leaders, Metro has researched how land use and transportation policies and investments can be leveraged to respond to these challenges and meet state targets for reducing greenhouse gas emissions from cars and small trucks.



Sources: 1910, 1940, 1960 - Historic Metropolitan Planning Commission Maps, 2000, 2010 - NOAA CCAP Landcover

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The region expects to welcome nearly 500,000 new residents and more than 365,000 new jobs within the urban growth boundary by 2035.

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## PROJECT BACKGROUND

The Climate Smart Communities Scenarios Project responds to a 2009 mandate from the Oregon Legislature for Metro to develop and implement a strategy to reduce per capita greenhouse gas emissions from cars and small trucks by 2035.

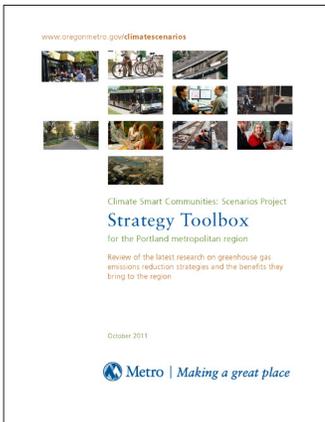
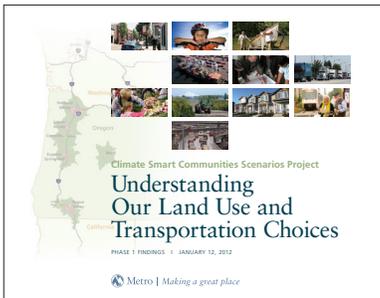
Metro is the regional government serving a population of 1.5 million people in the Portland metropolitan region. In that role, Metro has been working together with regional technical and policy advisory committees and community, business and elected leaders across the region to shape the Climate Smart Strategy and supporting implementation recommendations.

Development and adoption of the strategy was completed in three phases.

**Phase 1 began in 2011 and concluded in early 2012.** This phase consisted of testing strategies on a regional level to understand which strategies can most effectively help the region meet the state greenhouse gas emissions reduction mandate.

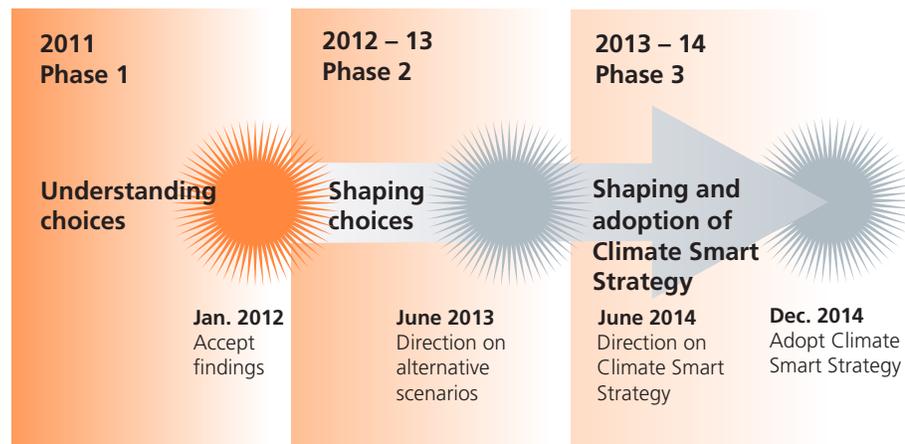
Most of the investments and actions under consideration are already being implemented to varying degrees across the region to realize community visions and other important economic, social and environmental goals.

As part of the first phase, Metro staff researched strategies used to reduce emissions in communities across the region, nation and around the world. This work resulted in a toolbox describing the range of potential strategies, their effectiveness at reducing emissions and other benefits they could bring to the region, if implemented.



We found there are many ways to reduce emissions while creating healthy, equitable communities and a strong economy, but no single solution will enable the region to meet the state's target.

### Climate Smart Communities Scenarios Project timeline

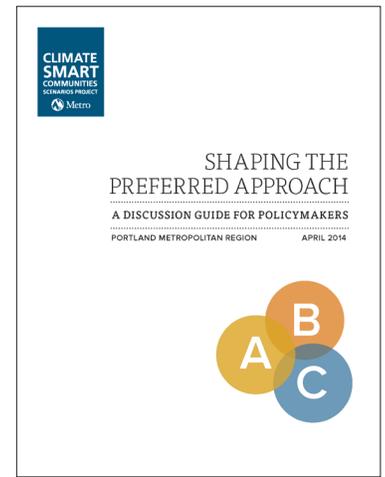


We found there are many ways to reduce emissions while creating healthy, more equitable communities and a strong economy, but no single solution will enable the region to meet the state’s target, including anticipated changes to fleet and technology.

The Phase 1 findings reinforced that investing in communities in ways that support local visions for the future will be key to reducing greenhouse gas emissions. Providing schools, services and shopping near where people live, improving bus and rail transit service, building new street connections, using technology to manage traffic flow, encouraging electric cars and providing safer routes for walking and biking all can help.

**The second phase began in 2012 and concluded in October 2013.** In this phase, Metro worked with regional technical and policy advisory committees and business and community leaders to shape three approaches – or scenarios – and the criteria used to evaluate them. In 2013, Metro analyzed the three approaches to investing in locally adopted land use and transportation plans and policies.

The purpose of the analysis was to better understand the impact of those investments to inform the development of the Climate Smart Strategy in 2014. Each scenario reflects choices about how and where the region invests to implement locally adopted plans and visions. They illustrate how different levels of leadership and investment could impact how the region grows over the next 25 years and how those investments might affect different aspects of livability for the region. The results of the analysis were released in fall 2013, and summarized in a Discussion Guide For Policymakers.



The analysis showed that if we continue investing at our current levels we will fall short of what has been asked of our region, as well as other outcomes we are working to achieve – healthy and equitable communities, clean air and water, reliable travel options, and a strong economy.

### Three approaches that we evaluated in 2013

#### SCENARIO



#### Recent Trends

This scenario shows the results of implementing adopted land use and transportation plans to the extent possible with existing revenue.

#### SCENARIO



#### Adopted Plans

This scenario shows the results of successfully implementing adopted plans and achieving the current Regional Transportation Plan which relies on increased revenue.

#### SCENARIO



#### New Plans and Policies

This scenario shows the results of pursuing new policies, more investment and new revenue sources to more fully achieve adopted and emerging plans.

## WHERE WE ARE TODAY



The Climate Smart Strategy includes assumptions for cleaner, low carbon fuels and more fuel-efficient vehicles as defined by state agencies during the 2011 target-setting process.

.....

**The third phase began in November 2013.** Building on the previous analyses and engagement, in February 2014, the Metro Policy Advisory Committee and Joint Policy Advisory Committee on Transportation approved a path for moving forward to shape and adopt a Climate Smart Strategy by December 31, 2014.

As recommended by MPAC and JPACT, the draft strategy started with the plans cities, counties and the region have already adopted – from local zoning, capital improvement, comprehensive, and transportation system plans to the 2040 Growth Concept and regional transportation plan – to create great communities and build a strong economy. This includes managing the urban growth boundary through regular growth management cycles (currently every six years).

In addition, MPAC and JPACT agreed to include assumptions for cleaner, low carbon fuels and more fuel-efficient vehicles as defined by state agencies during the 2011 target-setting process. A third component they recommended be included in the draft approach is the Statewide Transportation Strategy assumption for pay-as-you-drive vehicle insurance.

From January to May 2014, the Metro Council engaged community and business leaders, local governments and the public on what mix of investments and actions best support their community’s vision for healthy and equitable communities and a strong economy while reducing greenhouse gas emissions.

In May 2014, policymakers considered the results of prior engagement activities and analyses, and their February 2014 policy direction to recommend a draft strategy for testing during summer 2014. The recommendation carried forward their February recommendations related to adopted plans and assumptions for fleet and technology, and provided further direction around the remaining policy areas.

The draft strategy and supporting implementation recommendations were subject to a 45-day public comment period from Sept. 15 to Oct. 30, 2014. Metro received 90 letters and emails from local governments, community based organizations and individuals. An online survey attracted nearly 2,400 people, who shared their thoughts on each of the key policy areas recommended in the overall strategy. Metro staff identified changes to the draft documents for consideration by the Metro Council and regional policy and technical committees, who continued to fine-tune their recommendations to the Metro Council in November and December 2014.



A one-size-fits-all approach won't meet the needs of our diverse communities. A combination of all of the investments and actions under consideration is needed to help us realize our shared vision for making this region a great place for generations to come.

.....

## OVERVIEW OF CLIMATE SMART STRATEGY

The goal of the Climate Smart Strategy is to demonstrate leadership on climate change by meeting adopted targets for reducing greenhouse gas emissions from light-duty vehicles while creating healthy and equitable communities and a strong economy.

This section provides an overview of the policies and strategies recommended in the Climate Smart Strategy:

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

Each section includes a description of the policy and strategies, the potential climate benefit, cost, implementation benefits and challenges, and a summary of the how the policy is implemented in the strategy.

**EXPLANATION OF THE CLIMATE BENEFIT RATINGS**

In Phase 1 of the project, staff conducted a sensitivity analysis to better understand the greenhouse gas emissions reduction potential of individual policies. The information derived from the sensitivity analysis was used to develop a simplified five-star rating system for communicating the relative climate benefit of different policies. The ratings represent the relative emissions reduction effects of individual policy areas in isolation and do not capture variations that may occur from synergies between multiple policies or other benefits the policies may provide.

The ratings, in combination with fiscal, economic, equity, public health, transportation and environmental criteria and public input, informed development of the Climate Smart Strategy and all of these factors will continue to inform future implementation and investment decisions.

Estimated reductions assumed in climate benefit ratings	
less than 1%	★ ★ ★ ★ ★
1 – 2%	★ ★ ★ ★ ★
3 – 6%	★ ★ ★ ★ ★
7 – 15%	★ ★ ★ ★ ★
16 – 20%	★ ★ ★ ★ ★

**Source** Memo to TPAC and interested parties on Climate Smart Communities: Phase 1 Metropolitan GreenSTEP scenarios sensitivity analysis (June 21, 2012)

**A NOTE ON THE STATEWIDE TRANSPORTATION STRATEGY (STS)**

The Oregon Statewide Transportation Strategy (STS): A 2050 Vision for Greenhouse Gas Emissions Reduction, was accepted by the Oregon Transportation Commission in March 2013. The strategy resulted from a state-level scenario planning effort that examined all aspects of the transportation system, including the movement of people and goods, and identified a combination of strategies to reduce greenhouse gas emissions. The STS was developed as part of a larger effort known as the Oregon Sustainable Transportation Initiative (OSTI), an integrated statewide effort to reduce greenhouse gas emissions from Oregon’s transportation sector. The effort responded to two bills passed by the Oregon Legislature, House Bill 2001 (2009) and Senate Bill 1059 (2010), which were crafted to help meet state GHG reduction goals set forth in Oregon Revised Statute 468a.205.

The STS was developed over the course of two years involving extensive research and technical analysis, as well as policy direction and technical input from local governments, industry representatives, metropolitan planning organizations (MPOs), state agencies and others. The STS identifies the most effective greenhouse gas emissions reduction strategies in transportation systems, vehicle and fuel technologies, and urban land use patterns. Beyond reducing GHG emissions, these strategies were found to provide other benefits, including improved health, cleaner air, and a more efficient transportation system. The most promising strategies identified in the STS informed the development of the recommended Climate Smart Strategy.



RELATIVE CLIMATE BENEFIT



NO COST ESTIMATE  
AVAILABLE

## Implement adopted local and regional land use plans

In 1995, the Portland region adopted the 2040 Growth Concept, the long-range plan for managing growth that merges land use and transportation design elements to reinforce the objectives of both. The unifying theme of the 2040 Growth Concept is to preserve the region's economic health and livability and plan for growth in the region in an equitable, environmentally-sound and fiscally-responsible manner.

The 2040 Growth Concept includes land use and transportation building blocks that express the region's aspiration to incorporate population growth within existing urban areas as much as possible and expand the urban growth boundary only when necessary. It concentrates mixed-use and higher density development in urban centers (e.g., Portland central city, regional centers and town centers), station communities, corridors, and main streets that are well-served by transit and a well connected street network that supports biking and walking for short trips. Employment lands serve as hubs for regional commerce and include industrial land and freight facilities for truck, marine, air and rail cargo sites that enable goods to be generated and moved in and out of the region. Access is centered on rail, the freeway system and other road connections.

Since 1995, cities and counties across the region have updated their comprehensive plans, development regulations and transportation system plans to implement the 2040 Growth Concept vision in locally tailored ways. The 2040 Growth Concept and adopted local plans provide the foundation for the Climate Smart Strategy.

### BENEFITS

- compact urban form that uses land and public investments efficiently
- generates jobs and business opportunities
- protects air quality, farms, forestlands and natural areas
- provides a balanced transportation system to move people and goods
- supports housing for people of all income levels
- ensures safe and stable neighborhoods

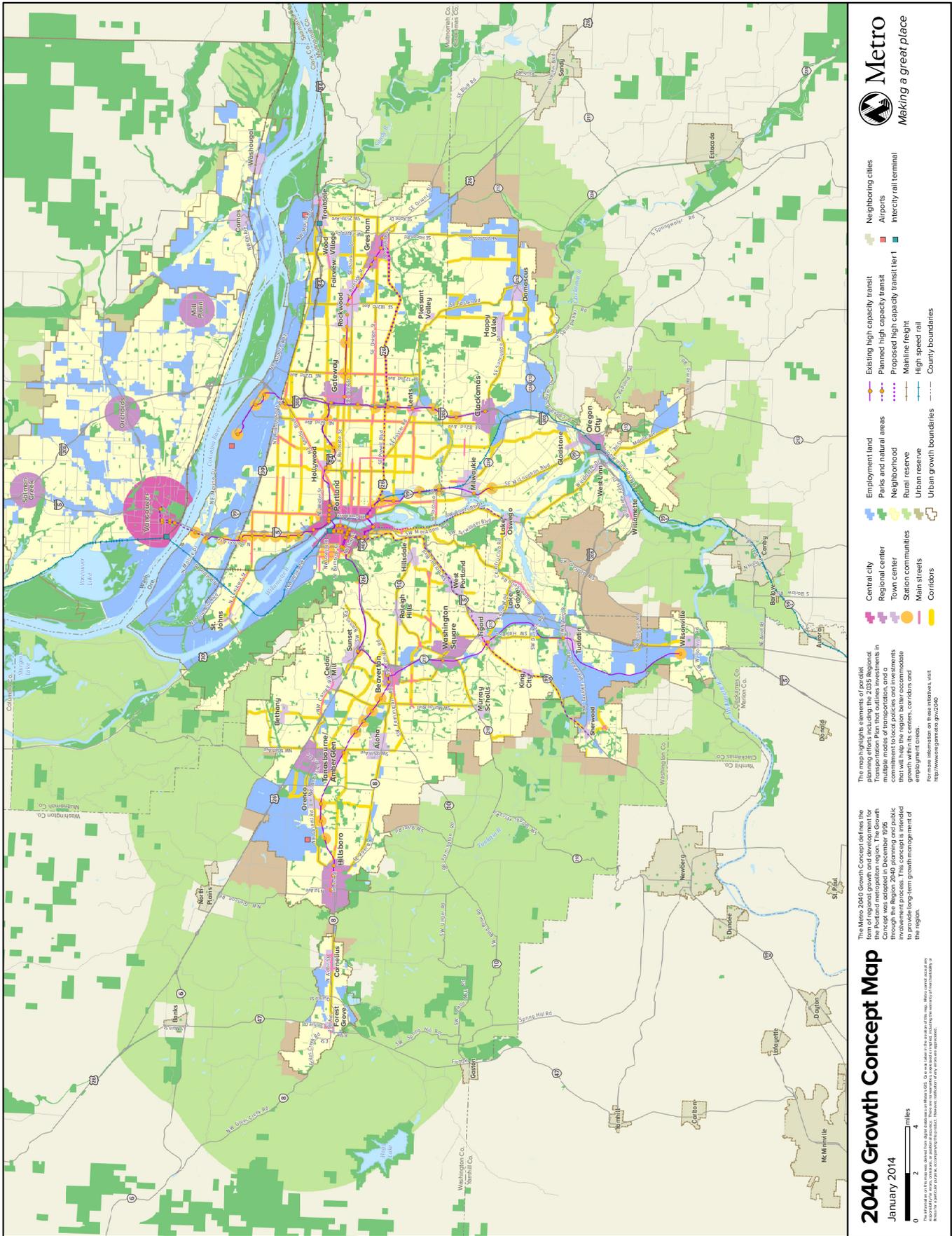
### CHALLENGES

- lack of sufficient funding to make investments needed to make adopted plans a reality
- not all designated growth areas have developed as planned
- lack of civic amenities, such as public gathering places, parks and community centers in some urban centers
- changing demographics

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## OUR SHARED VISION: THE 2040 GROWTH CONCEPT

An integrated land use and transportation vision for building healthy, equitable communities and a strong economy while reducing greenhouse gas emissions.





RELATIVE CLIMATE BENEFIT



ESTIMATED COST TO IMPLEMENT BY 2035 (2014\$)

Capital \$4.4 billion

Operations \$8 billion

## Make transit convenient, frequent, accessible and affordable

There are four key ways to make transit service convenient, frequent, accessible and affordable. The effectiveness of each will vary depending on the mix of nearby land uses, the number of people living and working in the area, and the extent to which travel information, marketing and technology are used.

**Frequency** Increasing the frequency of transit service in combination with transit signal priority and bus lanes makes transit faster and more convenient.

**System expansion** Providing new community and regional transit connections improves access to jobs and community services and makes it easier to complete some trips without multiple transfers. This includes local services like GroveLink, a partnership between the City of Forest Grove, Ride Connection and TriMet to improve neighborhood access to regional transit service and jobs and other destinations in the community.

**Transit access** Building safe and direct biking and walking routes and crossings that connect to stops makes transit more accessible and convenient.

**Fares** Providing reduced fares makes transit more affordable; effectiveness depends on the design of the fare system and the cost.

Transit is provided in the region by TriMet and South Metro Area Rapid Transit (SMART) in partnership with Metro, cities, counties, employers, business associations and non-profit organizations.

### BENEFITS

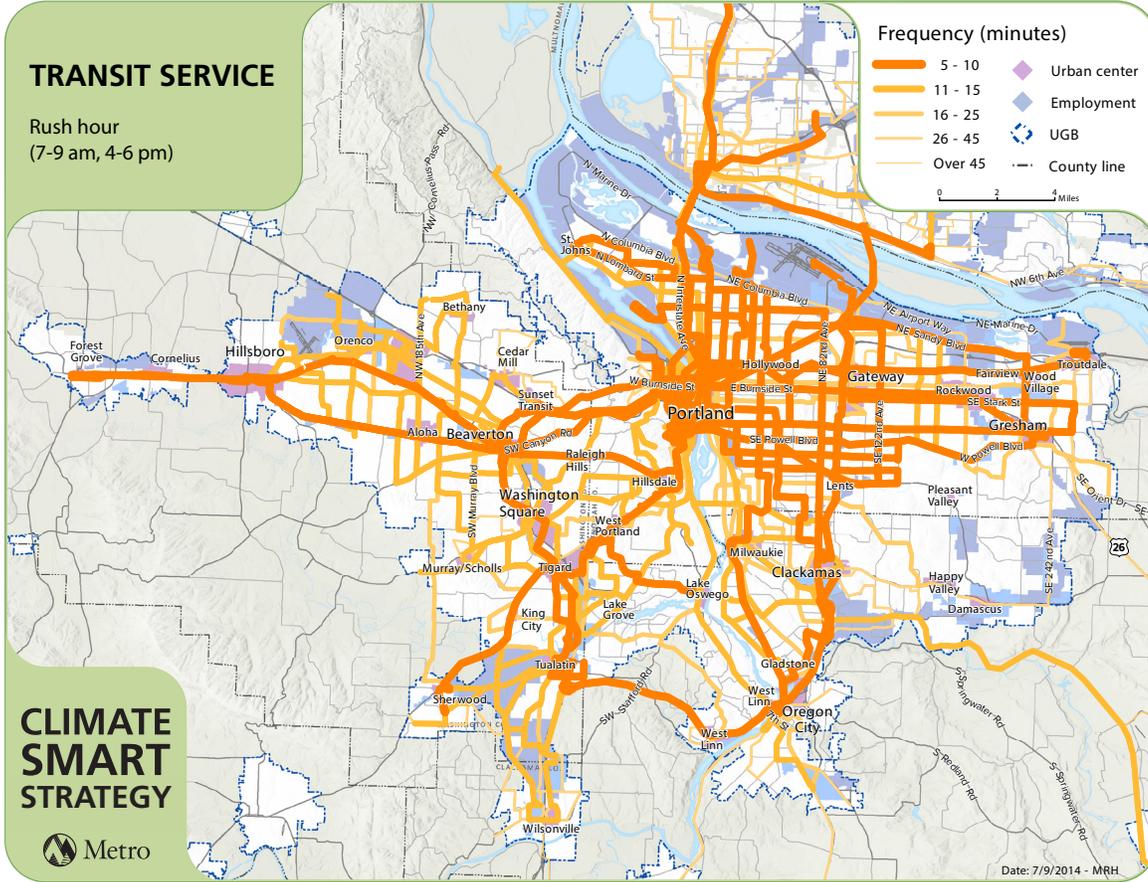
- improves access to jobs, the workforce, and goods and services, boosting business revenues
- creates jobs and saves consumers and employers money
- stimulates development, generating local and state revenue
- provides drivers an alternative to congested roadways and supports freight movements by taking cars off the road
- increases physical activity
- reduces air pollution and air toxics
- reduces risk of traffic fatalities and injuries

### CHALLENGES

- transit demand outpacing funding
- enhancing existing service while expanding coverage and frequency to growing areas
- reduced revenue and federal funding, leading to increased fares and service cuts
- preserving affordable housing options near transit
- ensuring safe and comfortable access to transit for pedestrians, cyclists and drivers
- transit-dependent populations locating in parts of the region that are harder to serve with transit

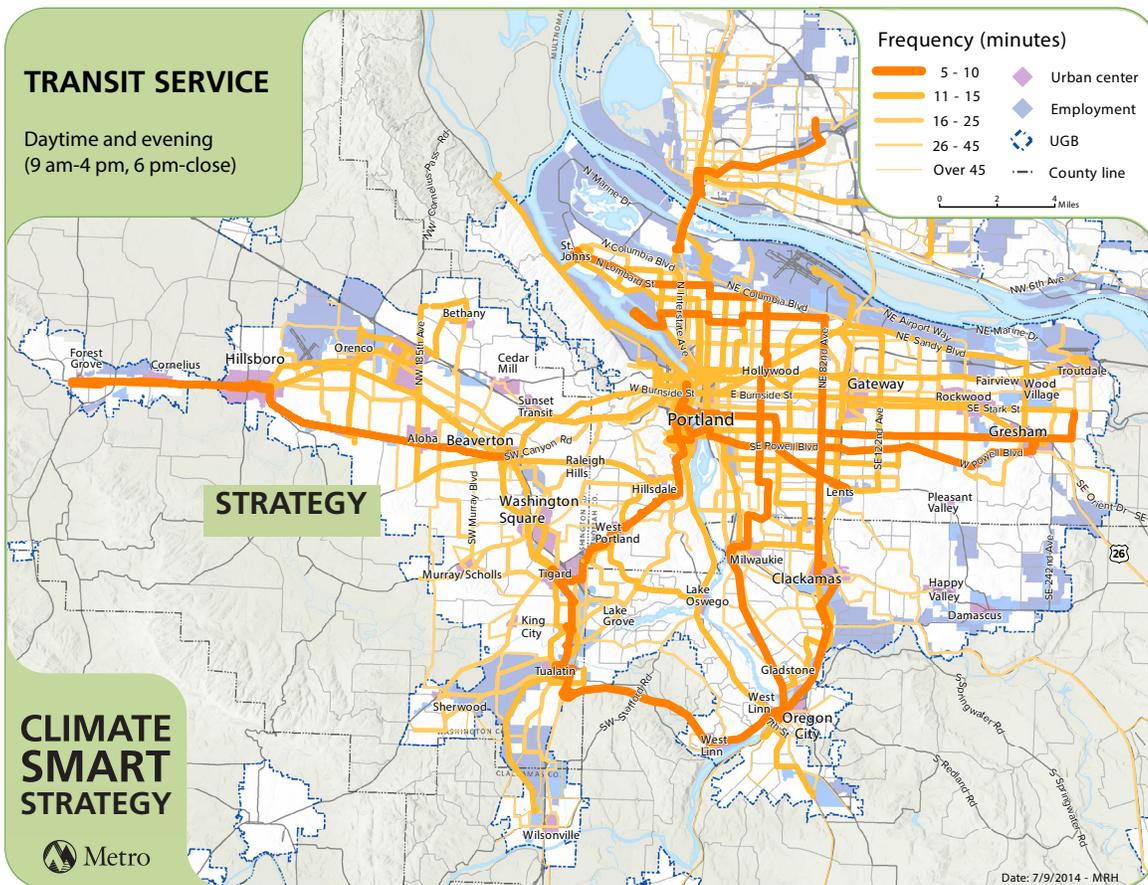
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## CLIMATE SMART STRATEGY



**55% jobs**  
**49% households**  
**62% low-income households**

Estimated jobs and households within ¼-mile of 15-minute or better service by 2035



**52% jobs**  
**37% households**  
**49% low-income households**

Estimated jobs and households within ¼-mile of 15-minute or better service by 2035

**Note:** The maps and cost estimates reflect the transit service operations and frequencies adopted in the full 2014 RTP and transit capital investments adopted in the constrained RTP plus additional capital to support operations level.



RELATIVE CLIMATE BENEFIT



ESTIMATED COST TO IMPLEMENT BY 2035 (2014\$)

\$2 billion

## Make biking and walking safe and convenient

Active transportation is human-powered travel that engages people in healthy physical activity while they go from place to place. Examples include walking, biking, pushing strollers, using wheelchairs or other mobility devices, skateboarding, and rollerblading. Active transportation is an essential component of public transportation because most of these trips begin and end with walking or biking.

Today, about 50 percent of the regional active transportation network is complete. Nearly 18 percent of all trips in the region are made by walking and biking, a higher share than many other places. Approximately 45 percent of all trips made by car in the region are less than three miles and 15 percent are less than one mile. With a complete active transportation network supported by education and incentives, many of the short trips made by car could be replaced by walking and biking. (See separate summary on providing information and incentives to expand use of travel options.)

For active travel, transitioning between modes is easy when sidewalks and bicycle routes are connected and complete, wayfinding is coordinated, and transit stops are connected by sidewalks and have shelters and places to sit. Biking to work and other places is supported when bicycles are accommodated on transit vehicles, safe and secure bicycle parking is available at transit shelters and community destinations, and adequate room is provided for walkers and bicyclists on shared pathways. Regional trails and transit function better when they are integrated with on-street walking and biking routes.

### BENEFITS

- increases access to jobs and services
- provides low-cost travel options
- supports economic development, local businesses and tourism
- increases physical activity and reduces health care costs
- reduces air pollution and air toxics
- reduces risk of traffic fatalities and injuries

### CHALLENGES

- major gaps exist in walking and biking routes across the region
- gaps in the active transportation network affect safety, convenience and access to transit
- many would like to walk or bike but feel unsafe
- many lack access to walking and biking routes
- dedicated funding is limited and in decline

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## CLIMATE SMART STRATEGY

**663**

Miles of bikeways, sidewalks and trails added by 2035

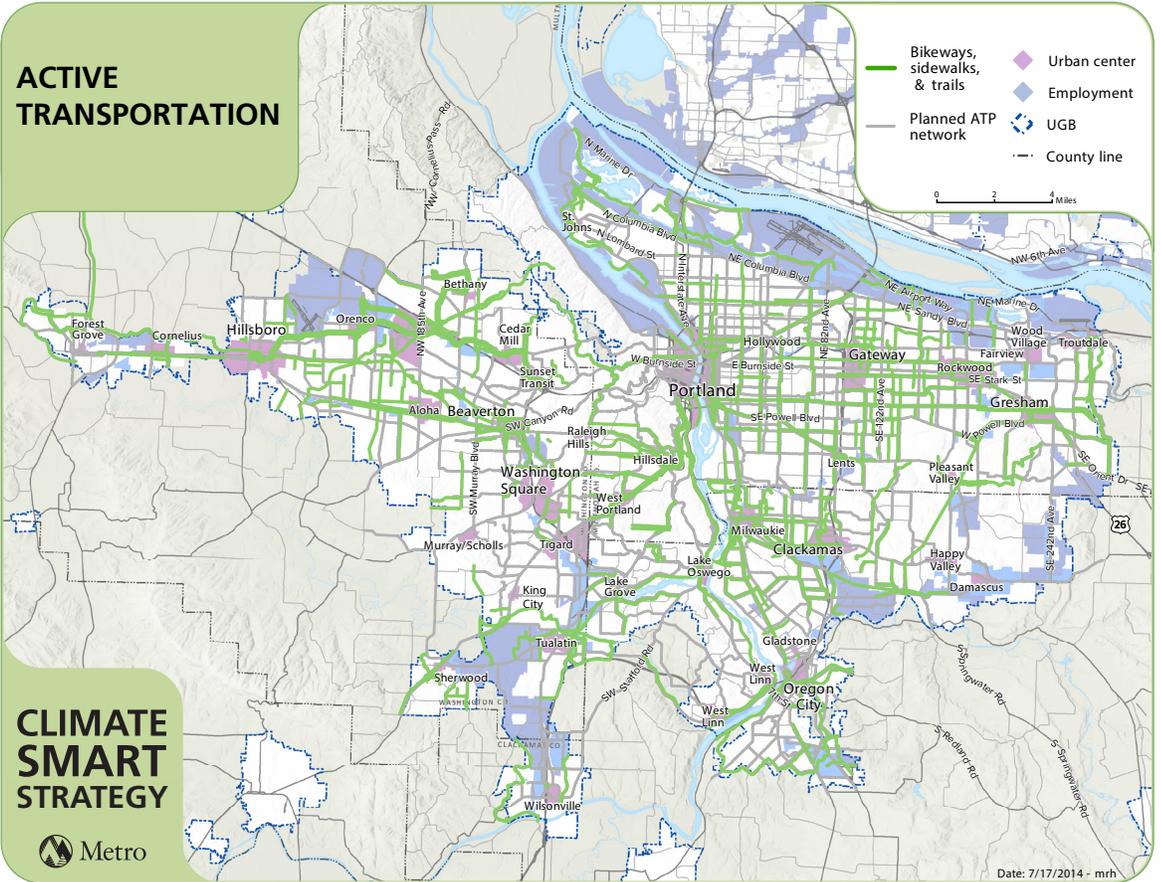
**61**

Estimated lives saved annually from increased physical activity by 2035

**\$500 million**

Societal value of the lives saved each year by 2035 (from increased physical activity)

### ACTIVE TRANSPORTATION



**Note:** The map and estimated cost reflect the active transportation investments adopted in the constrained 2014 Regional Transportation Plan.



RELATIVE CLIMATE BENEFIT



ESTIMATED COST TO IMPLEMENT BY 2035 (2014\$)

Capital \$8.8 billion

Operations, maintenance, and preservation (OMP) \$12 billion

## Make streets and highways safe, reliable and connected

Today, nearly 45 percent of all trips in the region made by car are less than three miles, and 15 percent are less than one mile. When road networks lack multiple routes serving the same destinations, short trips must use major travel corridors designed for freight and regional traffic, adding to congestion.

There are three key ways to make streets and highways more safe, reliable and connected to serve longer trips across the region on highways, shorter trips on arterial streets, and the shortest trips on local streets.

**Maintenance and efficient operation of the existing road system** Keeping the road system in good repair and using information and technology to manage travel demand and traffic flow help improve safety, and boost efficiency of the existing system. With limited funding, more effort is being made to maximize system operations prior to building new capacity in the region. (See separate summaries describing the use of technology and information.)

**Street connectivity** Building a well connected network of complete streets including new local and major street connections shortens trips, improves access to community and regional destinations, and helps preserve the capacity and function of highways in the region for freight and longer trips. These connections include designs that support walking and biking, and, in some areas, provide critical freight access between industrial areas, intermodal facilities and the interstate highway system.

**Network expansion** Targeted widening of streets and highways along with other strategies helps manage congestion and connect goods to market and support travel across the region.

### BENEFITS

- improves access to jobs, goods and services, boosting business revenue
- creates jobs and stimulates development, boosting the economy
- reduces delay, saving businesses time and money
- reduces risk of traffic fatalities and injuries
- reduces emergency response time

### CHALLENGES

- declining purchasing power of existing funding sources, growing maintenance backlog, and rising construction costs
- may induce more traffic
- potential community impacts, such as displacement and noise
- concentration of air pollutants and air toxics in major travel corridors

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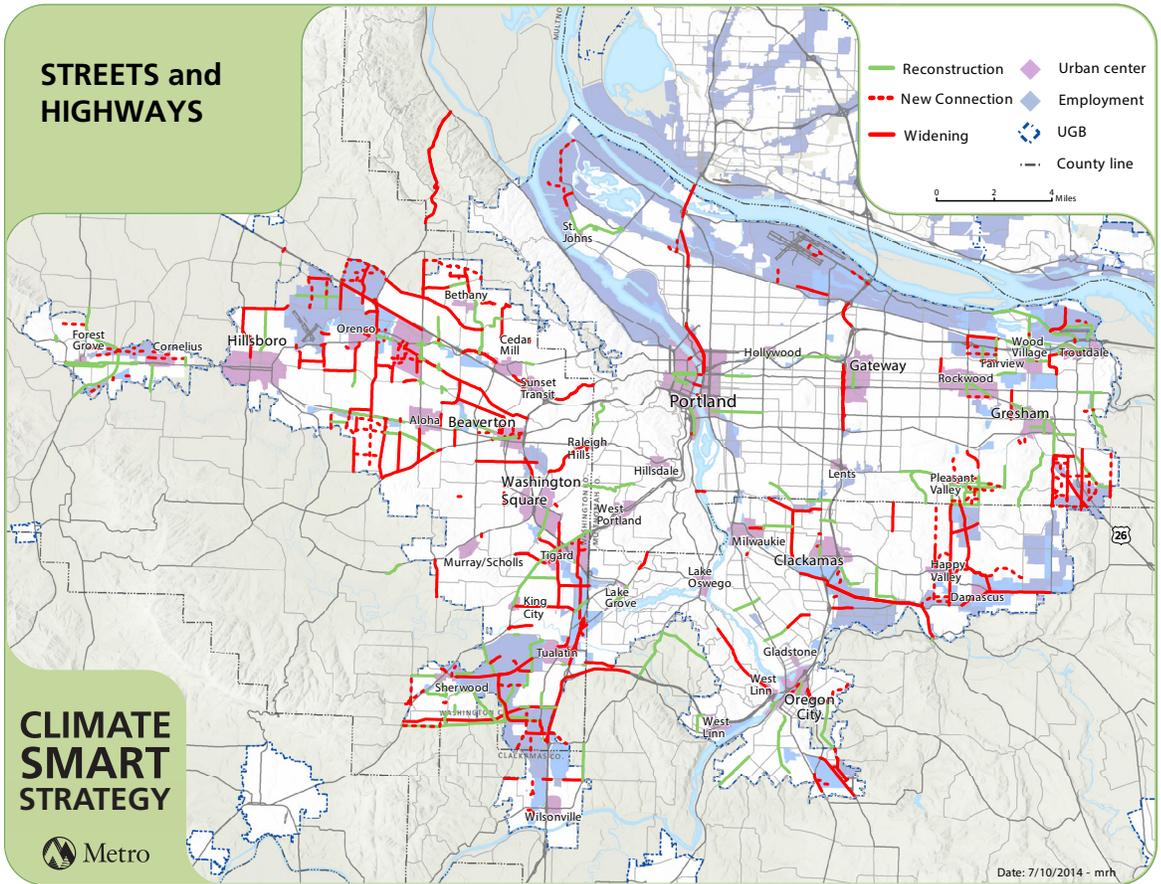
## CLIMATE SMART STRATEGY

**52**

Lane miles of freeways added by 2035 to support people and goods movement

**386**

Lane miles of arterials added by 2035, nearly two-thirds of which include bike and pedestrian improvements



**Note:** The map reflects capital investments adopted in the constrained 2014 Regional Transportation Plan for streets, highways and bridges in the region. The estimated costs includes capital costs adopted in the constrained 2014 RTP and preliminary estimates for local and state road-related operations, maintenance and preservation needs in the region.



RELATIVE CLIMATE BENEFIT



ESTIMATED COST TO IMPLEMENT BY 2035 (2014\$)

\$206 million

## Use technology to actively manage the transportation system

Using technology to actively manage the Portland metropolitan region’s transportation system means using intelligent transportation systems (ITS) and services to reduce vehicle idling associated with delay, making walking and biking more safe and convenient, and helping improve the speed and reliability of transit. Nearly half of all congestion is caused by incidents and other factors that can be addressed using these strategies.

Local, regional and state agencies work together to implement transportation system technologies. Agreements between agencies guide sharing of data and technology, operating procedures for managing traffic, and the ongoing maintenance and enhancement of technology, data collection and monitoring systems.

**Arterial corridor management** includes advanced technology at each intersection to actively manage traffic flow. This may include coordinated or adaptive signal timing; advanced signal operations such as cameras, flashing yellow arrows, bike signals and pedestrian count down signs; and communication to a local traffic operations center and the centralized traffic signal system.

**Freeway corridor management** includes advanced technology to manage access to the freeways, detect traffic levels and weather conditions, provide information with variable message signs and variable speed limit signs, and deploying incident response patrols that quickly clear breakdowns, crashes and debris. These tools connect to a regional traffic operations center.

**Traveler information** includes using variable message and speed signs and 511 internet and phone services to provide travelers with up-to-date information regarding traffic and weather conditions, incidents, travel times, alternate routes, construction, or special events.

### BENEFITS

- provides near-term benefits
- reduces congestion and delay
- makes traveler experience more reliable
- saves public agencies, consumers and businesses time and money
- reduces air pollution and air toxics
- reduces risk of traffic fatalities and injuries

### CHALLENGES

- requires ongoing funding to maintain operations and monitoring systems
- requires significant cross-jurisdictional coordination
- workforce training gaps





RELATIVE CLIMATE BENEFIT



ESTIMATED COST TO IMPLEMENT BY 2035 (2014\$)

\$185 million

## Provide information and incentives to expand the use of travel options

Public awareness, education and travel options support tools are cost-effective ways to improve the efficiency of the existing transportation system through increased use of travel options such as walking, biking, carsharing, carpooling and taking transit. Local, regional and state agencies work together with businesses and non-profit organizations to implement programs in coordination with other capital investments. Metro coordinates partners' efforts, sets strategic direction, evaluates outcomes, and manages grant funding.

**Public awareness strategies** include promoting information about travel choices and teaching the public about eco-driving: maintaining vehicles to operate more efficiently and practicing driving habits that can help save time and money while reducing greenhouse emissions.

**Commuter programs** are employer-based outreach efforts that include (1) financial incentives, such as transit pass programs and offering cash instead of parking subsidies; (2) facilities and services, such as carpooling programs, bicycle parking, emergency rides home, and work-place competitions; and (3) flexible scheduling such as working from home or compressed work weeks.

**Individualized Marketing (IM)** is an outreach method that encourages individuals, families or employees interested in making changes in their travel choices to participate in a program. A combination of information and incentives is tailored to each person's or family's specific travel needs. IM can be part of a comprehensive commuter program.

**Travel options support tools** reduce barriers to travel options and support continued use with tools such as the Drive Less. Connect. online carpool matching; trip planning tools; wayfinding signage; bike racks; and carsharing.

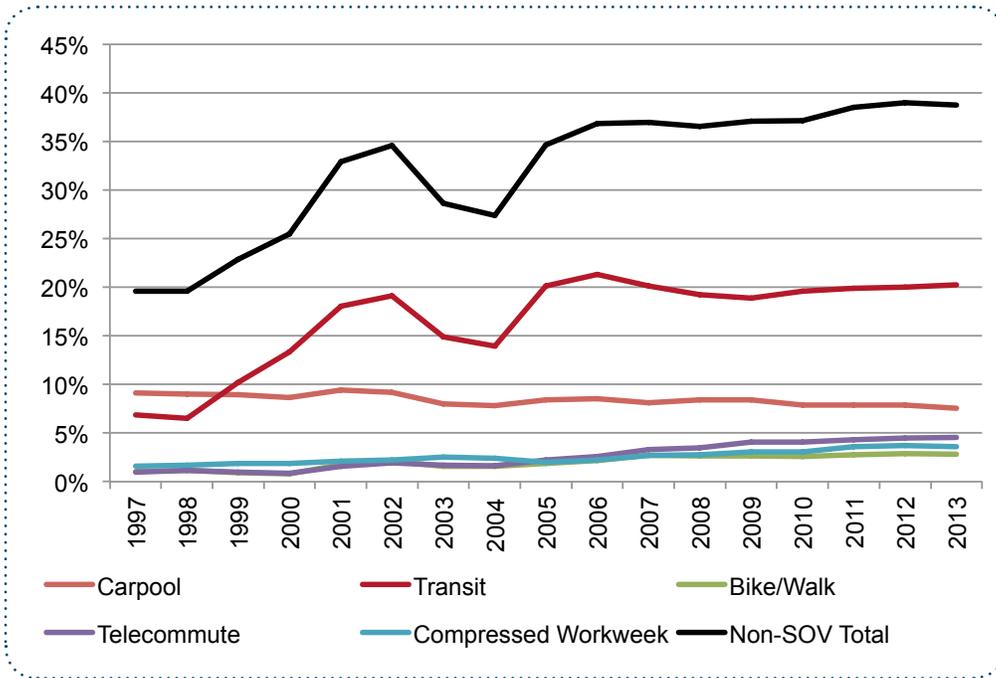
### BENEFITS

- increases cost-effectiveness of capital investments in transportation
- saves public agencies, consumers and businesses time and money
- preserves road capacity
- reduces congestion and delay
- increases physical activity and reduces health care costs
- reduces air pollution and air toxics

### CHALLENGES

- program partners need ongoing tools and resources to increase outcomes
- factors such as families with children, long transit times, night and weekend work shifts not served by transit
- major gaps exist in walking and biking routes across the region
- consistent data collection to support performance measurement

## Exhibit A to Ordinance No. 14-1346B



### EFFECTIVENESS OF EMPLOYER COMMUTER PROGRAMS (1997 - 2013)

The TriMet, Wilsonville SMART and TMA employer outreach programs have made significant progress with reducing drive-alone trips. Since 1996, employee commute trips that used non-drive-alone modes (transit, bicycling, walking, carpooling/vanpooling and telecommuting) rose from 20% to over 39% among participating employers.

### EFFECTIVENESS OF COMMUNITY AND NEIGHBORHOOD PROGRAMS

Community outreach programs such as Portland Sunday Parkways and Wilsonville Sunday Streets encourage residents to use travel options by exploring their neighborhoods on foot and bike without motorized traffic. Sunday Parkways events have attracted 400,000 attendees since 2008 and the Wilsonville Sunday Streets event attracted more than 5,000 participants in 2012.

Other examples of valuable community outreach and educational programs include the Community Cycling Center’s program to reduce barriers to biking and Metro’s Vámonos program, both of which provide communities across the region with the skills and resources to become more active by walking, biking, and using transit for their transportation needs.

In 2004, the City of Portland launched the Interstate TravelSmart individualized marketing project in conjunction with the opening of the MAX Yellow Line. Households that received individualized marketing made nearly twice as many transit trips compared to a similar group of households that did not participate in the marketing campaign. In addition, transit use increased nearly 15 percent during the SmartTrips project along the MAX Green Line in 2010. Follow-up surveys show that household travel behavior is sustained for at least two years after a project has been completed.





RELATIVE CLIMATE BENEFIT



ESTIMATED COST TO IMPLEMENT BY 2035 (2014\$)

No cost estimated. This policy area is primarily implemented through local development codes.

## Make efficient use of vehicle parking and land dedicated to parking spaces

Parking management refers to various policies and programs that result in more efficient use of parking resources. Parking management is implemented through city and county development codes. Managing parking works best when used in a complementary fashion with other strategies; it is less effective in areas where transit or bicycle and pedestrian infrastructure is lacking.

**Planning approaches** include conducting assessments of the parking supply to better understand needs. A typical urban parking space has an annualized cost of \$600 to \$1,200 to maintain, while structured parking construction costs averages \$15,000 per space.

**On-street parking approaches** include spaces that are timed, metered, designated for certain uses or have no restriction. Examples of these different approaches include charging long-term or short-term fees, limiting the length of time a vehicle can park, and designating on-street spaces for preferential parking for electric vehicles, carshare vehicles, carpools, vanpools, bikes, public use (events or café “Street Seats”) and freight truck loading/unloading areas.

**Off-street parking approaches** include providing spaces in designated areas, unbundling parking, preferential parking (for vehicles listed above), shared parking between land uses (for example, movie theater and business center), park-and-ride lots for transit and carpools/vanpools, and parking garages in downtowns and other mixed-use areas that allow surface lots to be developed for other uses.

### BENEFITS

- allows more land to be available for development, generating local and state revenue
- reduces costs to governments, businesses, developers and consumers
- fosters public-private partnerships that can result in improved streetscape for retail and visitors
- generates revenues where parking is priced
- reduces air pollution and air toxics

### CHALLENGES

- inadequate information for motorists on parking and availability
- inefficient use of existing parking resources
- parking spaces that are inconvenient to nearby residents and businesses
- scarce freight loading and unloading areas
- low parking turnover rate
- lack of sufficient parking
- parking oversupply, ongoing costs and the need to free up parking for customers

# Exhibit A to Ordinance No. 14-1346B

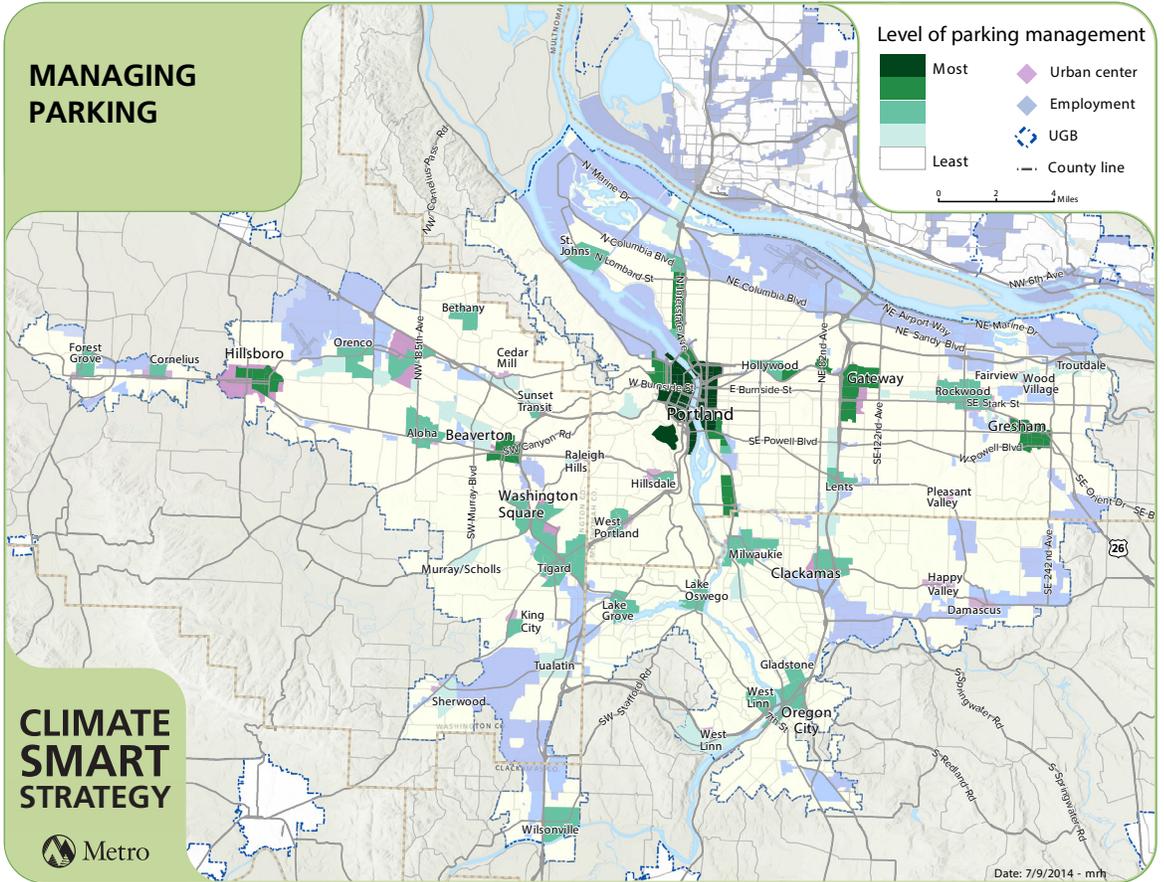
## CLIMATE SMART STRATEGY

**30% work trips**

**30% other trips**

Estimated share of trips to areas with actively managed parking

**Note:** The map reflects the constrained 2014 Regional Transportation Plan parking assumptions





RELATIVE CLIMATE BENEFIT



NO COST ESTIMATE  
AVAILABLE

## Support transition to cleaner, low carbon fuels and more fuel-efficient vehicles

There are a variety of strategies, vehicle technologies and fuels available to reduce greenhouse gas emissions including the development of higher fuel economy standards, lowering the carbon content of fuels, and deployment of electric vehicles and plug-in hybrids. The greenhouse gas emissions reduction potential of these strategies is directly related to the combination and pace at which these strategies are implemented over time, and the types, convenience and affordability of vehicle technologies and supporting infrastructure made available to businesses and consumers.

Much work is being done at state and federal levels to expand the number of vehicles available with higher fuel efficiency and lower emissions, and to reduce the carbon content of fuels. Oregon has made great strides in increasing the electric vehicle charging network; anxiety related to distances between charging stations is among the issues that need to be addressed.

Pilot projects and other policies can be implemented at the local and regional levels to support these efforts. Policies include developing a reliable network of public and private electric vehicle charging stations and supportive infrastructure, providing consumer and businesses incentives to make the higher initial purchasing costs of hybrid and electric vehicles more affordable, government and corporate purchases to increase visibility, supportive permitting and codes for electric vehicle charging and alternative fueling stations, and public education.

### BENEFITS

- reduces fuel consumption
- reduces costs to governments, businesses and consumers
- reduces air pollution and air toxics and associated healthcare costs
- creates economic development and job opportunities

### CHALLENGES

- legislative actions needed at state and federal level
- permitting and development code changes may be needed to allow for provision of charging and alternative fueling infrastructure
- more alternative fuel vehicles results in reduced fuel consumption, which reduces revenue to finance transportation investments
- concern about the potential costs associated with low carbon and alternative fuels

**FLEET AND TECHNOLOGY ADVANCEMENTS ASSUMED  
IN THE CLIMATE SMART STRATEGY**

Strategy assumptions		2010	2035
		Base Year Reflects existing conditions	Climate Smart Strategy
Fleet	Fleet mix (proportion of autos to light trucks)	auto: 57% light truck: 43%	auto: 71% light truck: 29%
	Fleet turnover rate (age)	10 years	8 years
Technology	Fuel economy (miles per gallon)	auto: 29.2 mpg light truck: 20.9 mpg	auto: 68.5 mpg light truck: 47.7 mpg
	Carbon intensity of fuels	90 g CO <sub>2</sub> e/megajoule	72 g CO <sub>2</sub> e/megajoule
	Light-duty vehicles that are electric vehicles (EV) or plug-in hybrid electric vehicles (PHEV)	<u>EV or PHEV</u> auto: 1% light truck: 1%	<u>EV or PHEV</u> auto: 8% light truck: 2%
	Electric vehicle battery range (miles)	auto: 50 miles light truck: 25 miles	auto: 215 miles light truck: 144 miles

All fleet and technology assumptions reflect the values defined in the State Agencies' Technical report (3/1/11) available at [arcweb.sos.state.or.us/pages/rules/oars\\_600/oar\\_660/\\_tables\\_660/660-044-0010\\_5-26.pdf](http://arcweb.sos.state.or.us/pages/rules/oars_600/oar_660/_tables_660/660-044-0010_5-26.pdf).



RELATIVE CLIMATE BENEFIT

N/A

RELATIVE COST

N/A

## Secure adequate funding for transportation investments

Communities have long relied upon state and federal funding to help fund local transportation system needs, financed largely through through gas taxes and other user fees. However, the purchasing power of federal and state gas tax revenues is declining as individuals drive less and fuel efficiency increases. The effectiveness of this revenue source is further eroded as the gas tax is not indexed to inflation.

Diminished resources mean reduced ability to expand, improve and maintain existing transportation infrastructure. Federal and state funding is not keeping pace with infrastructure operation and maintenance needs, so a substantial share of funding for future Regional Transportation Plan investments has shifted to local revenue sources.

Local governments in Oregon have increasingly turned to tax levies, road maintenance fees, system development charges and traffic impact fees in an attempt to keep pace, although some communities have been more successful than others. Expansion and operation of the transit system has relied heavily on payroll taxes and competitive federal funding for high capacity transit capital projects. But the region’s demand for frequent and reliable transit service exceeds the capacity of the payroll tax to support it.

The adopted RTP calls for stabilizing existing transportation revenue sources while securing new and innovative long-term sources of funding adequate to build, operate and maintain the regional transportation system for all modes of travel. The next update to the RTP will include updating the financial assumptions and potential funding mechanisms to advance implementation of adopted local and regional plans and the Climate Smart Strategy..

### BENEFITS

- transforms community visions into reality
- improves access to jobs, goods and services, boosting business revenues
- creates jobs and stimulates development, boosting the regional economy
- reduces delay, saving businesses time and money
- reduces air pollution and air toxics
- reduces risk of traffic fatalities and injuries

### CHALLENGES

- changing driving habits and declining purchasing power of existing funding sources due to inflation and improvement in fuel efficiency
- potential disproportionate impact of higher taxes and fees on drivers with limited travel options
- limited public support for higher fees and taxes
- patchwork of funding sources
- statutory or constitutional limitations on funding

# Exhibit A to Ordinance No. 14-1346B

## FUNDING MECHANISMS ASSUMED IN 2014 REGIONAL TRANSPORTATION PLAN AND CLIMATE SMART STRATEGY

EXISTING FUNDING MECHANISM	SOURCE		
	Federal	State	Local
Federal Highway Trust Fund <sup>1</sup>	●		
Federal Transit Fund	●		
Gas tax	●	●	●
Vehicle fees (e.g. registration, licensing fees)		●	●
Heavy truck weight-mile fee		●	
Local portion of State Highway Trust Fund <sup>2</sup>			●
Development-based fees <sup>3</sup>			●
Payroll tax			●
Transit passenger fares			●
Special funds and levies <sup>4</sup>			●
Tolls (I-5 Columbia River Crossing)		●	

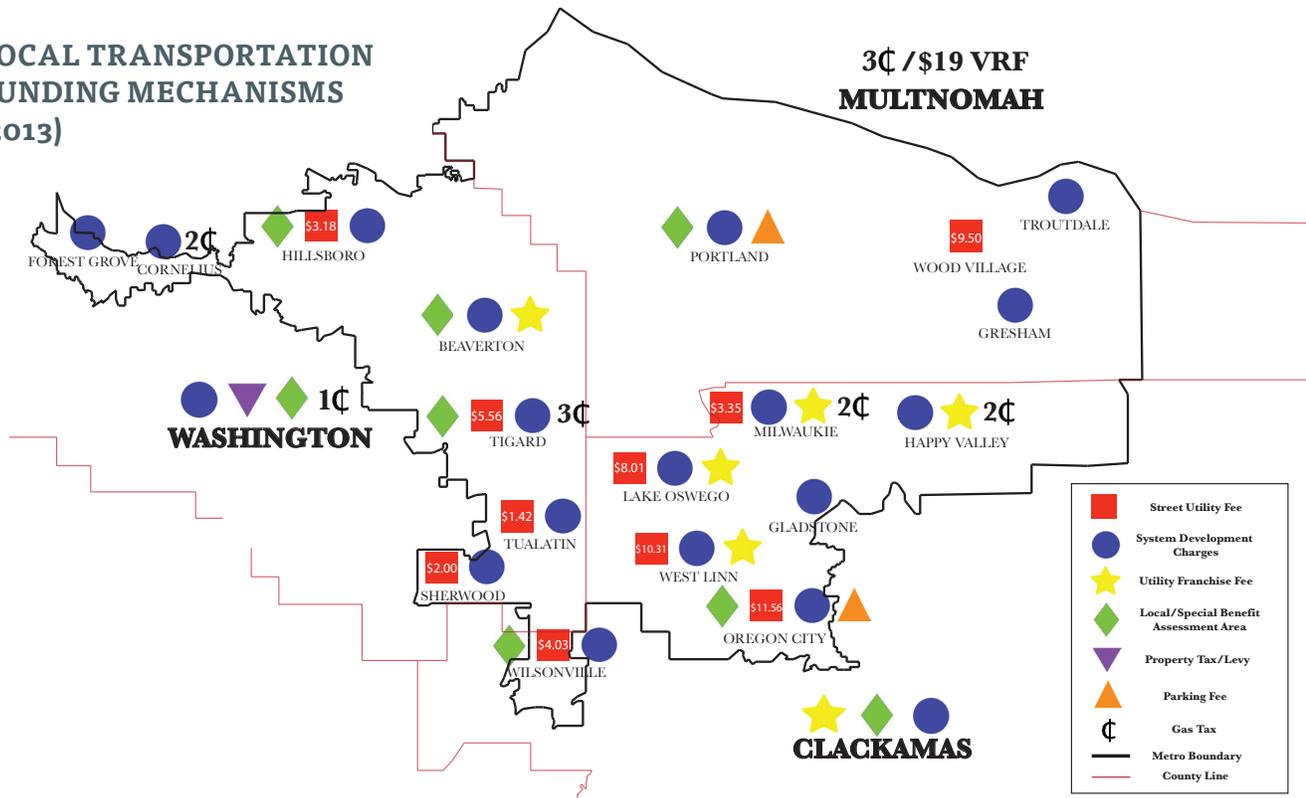
<sup>1</sup>The Federal Highway Trust Fund includes federal gas tax receipts and other revenue.

<sup>2</sup>The State Highway Trust Fund includes state gas tax receipts, vehicle fees and heavy truck weight-mile fees.

<sup>3</sup>Development-based fees include system development charges, traffic impact fees, urban renewal districts and developer contributions.

<sup>4</sup>Special funds and levies include tax levies (e.g. Washington County MSTIP), local improvement districts, vehicle parking fees, transportation utility fees and maintenance districts (e.g. Washington County Urban Road Maintenance District).

### LOCAL TRANSPORTATION FUNDING MECHANISMS (2013)



### A NOTE ON CLIMATE CHANGE ADAPTATION AND RESILIENCY

House Bill 2001 directed the region to develop and implement a strategy to reduce greenhouse gas emissions from light-duty vehicles by 2035 to help meet state greenhouse gas emissions reduction goals for 2050. The goal of the Climate Smart Strategy is to meet the state target for reducing greenhouse gas emissions and support other local, regional and state goals including clean air and water, transportation choices, healthy and equitable communities, and a strong economy. Most of the investments and actions proposed in the Climate Smart Strategy to reduce -- or mitigate -- greenhouse gases going into the atmosphere are already being implemented to varying degrees across the region to realize community visions and other important economic, social and environmental goals. It is also important to recognize that scientists believe Oregon is already being impacted by physical changes in temperatures and precipitation patterns due to climate change, and that more changes are coming.

While specific strategies to help the region adapt to a changing climate are not called out in the Climate Smart Strategy, it is important to acknowledge that this work will be highly important to mitigating risks and developing resilient communities.

Recent studies<sup>1</sup> for the state of Oregon say there is a greater than 90 percent chance that in coming decades, our state will face increases in average annual air temperatures and the likelihood of extreme heat events. Additionally, changes in hydrology and water supply are likely to occur, including reduced snowpack and water availability in some basins, changes in water quality, and the timing of water availability. These changes are expected to impact the region's economy, infrastructure, natural systems, and human health in a variety of ways.

To prepare for these changes, a short list of regional actions is suggested:

- Apply the insights from the Oregon Climate Assessment Report and the Oregon Climate Change Adaptation Framework to understand the scientists' expected changes for our state and potential low- and no-cost first steps in preparing for and responding to these changes.
- Consider physical climate risks as potential natural hazards. With this in mind, continue to implement the policies identified in Chapter 5 of the Regional Framework Plan (Regional Natural Hazards). The policies were developed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural hazards.
- Engage with public health officials, universities, and state agencies to identify strategies to address the potential impact of climate change on human health, such as developing public health adaptation resources, integrating planning at various government levels, and creating programs to monitor and respond to public health issues.

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<sup>1</sup> 2013 Oregon Climate Assessment Report, Oregon Climate Change Research Institute, available at [www.oc-cri.net/wp-content/uploads/2013/11/ClimateChangeInTheNorthwest.pdf](http://www.oc-cri.net/wp-content/uploads/2013/11/ClimateChangeInTheNorthwest.pdf).  
2010 Oregon Climate Change Adaptation Framework, Department of Land Conservation and Development, available at [www.oregon.gov/LCD/docs/ClimateChange/Framework\\_Final.pdf](http://www.oregon.gov/LCD/docs/ClimateChange/Framework_Final.pdf)

## GLOSSARY

**Adaptation** Adjustment in natural or human systems to a new or changing environment that exploits beneficial opportunities or moderates negative effects. “Climate adaptation” typically references efforts to respond to and minimize the impacts of a changing climate.

**Brownfield** A property for which the expansion, redevelopment, or reuse may be complicated by the presence or potential presence of a hazardous substance, pollutant, or containment. Cleaning up and reinvesting in these properties increases local tax bases, facilitates job growth, utilizes existing infrastructure, takes development pressures off of undeveloped, open land, and both improves and protects the environment.

**Carsharing** A membership-based system of short term automobile rental. Such programs are attractive to customers who make only occasional use of a vehicle, as well as others who would like occasional access to a vehicle of a different type than they use day-to-day. The organization renting the cars may be a commercial business or the users may be organized as a company, public agency, cooperative, or peer-to-peer. Zipcar and car2go are local examples.

**Climate change** Any change in climate over time, whether due to natural variability or as a result of human activity that persists for an extended period.

**Complete streets** A transportation policy and design approach where streets are designed, operated and maintained to enable safe, convenient and comfortable travel and access for users of all ages and abilities, regardless of their mode of transportation.

**Concept planning** A planning process to create a blueprint for the future of land brought inside the urban growth boundary for urbanization. The process is required to address the provisions listed in Title 11 of the Urban Growth Management Functional Plan. These provisions include a minimum level of residential units per acre, a diversity of housing stock, an adequate transportation system, protection of natural resource areas and needed school facilities.

**Drive Oregon** A nonprofit 501(c)(6) trade association dedicated to growing the electric mobility industry in Oregon. Members include innovators, entrepreneurs, and established industry leaders throughout the entire supply chain. Drive Oregon is funded in part with Oregon State Lottery Funds administered by Business Oregon.

**Eco-driving** A combination of public education, in-vehicle technology and driving practices that result in more efficient vehicle operation and reduced fuel consumption and emissions. Examples of eco-driving techniques include avoiding rapid starts and stops, matching driving speeds to synchronized traffic signals, avoiding excessive idling, and keeping tires properly inflated.

**ECO Rule** An Oregon Department of Environmental Quality administrative rule (OAR 340-242) that is also called the Employee Commute Options Program. Under the DEQ ECO program, employers with more than 100 employees must provide commute options and incentives to employees designed to reduce the number of cars driven to work in the Portland metropolitan region. The employers must provide incentives for employee use of commute options like biking, walking, use of transit, carpooling, guaranteed ride home, and financial incentives. The incentives must have the potential to reduce drive alone commute trips to the work site by 10 percent from an established baseline. The ECO program is one of several strategies included in the Ozone Maintenance Plan for the Portland Air Quality Maintenance Area. The Ozone Maintenance Plan will keep the area in compliance with the federal ozone standard.

**Employer-based commute programs** Work-based travel demand management programs that can include transportation coordinators, employer-subsidized transit pass programs, ride-matching, carpool and vanpool programs, telecommuting, compressed or flexible work weeks and bicycle parking and showers for bicycle commuters.

**Energize Oregon** A coalition of public and private partners working to expand electric vehicle sales and use in Oregon. The voluntary partnership was created in 2013 through a memorandum of understanding (MOU) between Governor Kitzhaber's office, the Oregon Department of Transportation, and Drive Oregon. The coalition has received state funding and includes Nissan, Honda, Ford, and General Motors as members.

**Fleet mix** The percentage of vehicles classified as automobiles compared to the percentage classified as light trucks (weighing less than 10,000 lbs.); light trucks make up 43 percent of the light-duty fleet today.

**Fleet turnover** The rate of vehicle replacement or the turnover of older vehicles to newer vehicles; the current turnover rate in Oregon is 10 years.

**Geometric changes to add capacity** Road design and engineering strategies to help alleviate bottlenecks, such as the addition or reconfiguration of turning lanes, strategic lane widening, realignment of intersecting streets, improved acceleration or deceleration lanes at interchange ramps, removal of a physical constriction that delays travel, such as widening an underpass, providing lane continuity (i.e., replacing a two-lane bridge that connects pieces of four-lane roadway), or eliminating a sight barrier. Such strategies may be applied to highways, arterials, or local streets.

**Greenhouse gas emissions** The six gases identified in the Kyoto Protocol and by the Oregon Greenhouse Gas Mandatory Reporting Advisory Committee as contributing to global climate change: carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>), methane (CH<sub>4</sub>), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>). More information is available at [www.epa.gov/climatechange](http://www.epa.gov/climatechange)

**GreenSTEP** A modeling tool developed by the Oregon Department of Transportation to estimate GHG emissions at the individual household level. It estimates greenhouse gas emissions associated with vehicle ownership, vehicle travel, and fuel consumption, and is designed to operate in a way that allows it to show the potential effects of different policies and other factors on vehicle travel and emissions. GreenSTEP travel behavior estimates are made irrespective of housing choice or supply; the model only considers the demand forecast components – household size, income and age – and the policy areas considered in this analysis.

**Guaranteed Ride Home Program** Through a Guaranteed Ride Home program, commuters who use modes such as carpool/vanpool, bicycle, walk, or public transportation, receive a subsidized ride home from work when an unexpected emergency arises.

**House Bill 2001 (Oregon Jobs and Transportation Act)** Passed by the Legislature in 2009, this legislation provided specific directions to the Portland metropolitan region to undertake scenario planning and develop two or more land use and transportation scenarios that accommodate planned population and employment growth, while achieving the GHG emissions reduction targets approved by LCDC in May 2011. Metro, after public review and consultation with local governments, is to adopt a preferred scenario, called the Climate Smart Strategy. Following adoption of the Climate Smart Strategy, local governments within the Metro jurisdiction are to amend their comprehensive plans and land use regulations as necessary to be consistent with the preferred scenario. More information can be found at [www.oregonlegislature.gov/bills\\_laws/lawsstatutes/2009orLaw0865.html](http://www.oregonlegislature.gov/bills_laws/lawsstatutes/2009orLaw0865.html)

**Health** A condition of complete physical, mental and emotional well-being, not merely the absence of disease.

**Health Impact Assessment** A combination of procedures, methods, and tools by which a policy, program or project may be evaluated as to its potential effects on the health of a population, and the distribution of these effects within the population.

**Individualized marketing** Travel demand management programs focused on individual households. IM programs involve individualized outreach to households that identify household travel needs and ways to meet those needs with less vehicle travel.

**Induced demand** Refers to the process whereby improvements in the transportation system intended to alleviate congestion and delay result in additional demand for the transportation segment, offsetting some of the improvement's potential benefits. For instance, when a congested roadway is expanded from 2 to 3 lanes, some drivers will recognize the increased capacity and take this roadway though they had not done so previously.

**Infill development** Refers to the development or redevelopment of vacant, bypassed or under-utilized lands in an area that is largely developed. An alternative to development that occurs outside existing urban areas.

**Intelligent transportation systems** Refers to advanced communications technologies that are integrated with transportation infrastructure and vehicles to address transportation problems and enhance the movement of people and goods. ITS can include both vehicle-to-vehicle communication (which allows cars to communicate with one another to avoid accidents) and vehicle-to-infrastructure communication (which allows cars to communicate with the roadway to identify congestion, crashes or unsafe driving conditions).

**Light-duty vehicles** Vehicles weighing 10,000 pounds or less, including passenger cars, light trucks, sport utility vehicles, motorcycles and small delivery trucks.

**Low Carbon Fuel Standard** In 2009, the Oregon legislature authorized the Environmental Quality Commission to develop low carbon fuel standards (LCFS) for Oregon. The program has since been renamed the Clean Fuels Program. Each type of transportation fuel (gasoline, diesel, natural gas, etc.) contains carbon in various amounts. When the fuel is burned, that carbon turns into carbon dioxide (CO<sub>2</sub>), which is a greenhouse gas. The goal is to reduce the average carbon intensity of Oregon's transportation fuels by 10 percent below 2010 levels by 2022 and applies to the entire mix of fuel available in Oregon. Carbon intensity refers to the emissions per unit of fuel; it is not a cap on total emissions or a limit on the amount of fuel that can be burned. The lower the carbon content of a fuel, the fewer greenhouse gas emissions it produces.

**Mitigation** To moderate a quality or condition in force or intensity. "Climate mitigation" typically references efforts taken to eliminate or reduce greenhouse gas emissions to reduce the long-term risk and hazards of climate change.

**Mixed-use development** Refers to portions of urban areas where commercial (e.g., retail, office, entertainment) and non-commercial uses (such as residential space), are located near one another. Different uses may be mixed vertically (e.g., housing above retail) or horizontally (e.g., housing within walking distance of retail). Mixed-use development reduces demand for motorized transportation by locating common destinations near residences where transit, pedestrian and bicycle access is convenient.

**Mobility corridor** Mobility corridors represent sub-areas of the region and include all regional transportation facilities within the sub-area as well as the land uses served by the regional transportation system. This includes freeways and highways and parallel networks of arterial streets, regional bicycle parkways, high capacity transit, and frequent bus routes. The function of this network of integrated transportation corridors is metropolitan mobility – moving people and goods between different parts of the region and, in some corridors, connecting the region with the rest of the state and beyond. This framework emphasizes the integration of land use and transportation in determining regional system needs, functions, desired outcomes, performance measures, and investment strategies.

**Oregon Sustainable Transportation Initiative (OSTI)** An integrated statewide effort to reduce GHG emissions from the transportation sector by integrating land use and transportation. OSTI is the result of several bills passed by the Oregon Legislature designed to help Oregon meet its 2050 goal of reducing greenhouse gas emissions by 75 percent below 1990 levels. Guided by stakeholder input, the initiative has built collaborative partnerships among local governments and the state's six Metropolitan Planning Organizations to help meet Oregon's goals to reduce GHG emissions. The effort includes five main areas: Statewide Transportation Strategy development, GHG emission reduction targets for metropolitan areas, land use and transportation scenario planning guidelines, tools that support MPOs and local governments and public outreach. More information can be found at [www.oregon.gov/odot/td/osti](http://www.oregon.gov/odot/td/osti)

**Oregon Zero Emission Vehicles (ZEV) Program** A program administered by the Oregon Department of Environmental Quality to advance the state's transition to zero emission vehicles. The program adopted California ZEV requirements to stimulate development of emission-free vehicles and bring them to commercial-scale production beginning with the 2018 model year. It is difficult to predict how many zero emission vehicles the rules will bring to Oregon. However, some estimates suggest that electric vehicles and plug-in hybrid electric vehicles could make up 5 percent of new vehicle sales in 2018, growing to 13 percent of sales in 2025. More information can be found at <http://www.deq.state.or.us/aq/orlev>

**Parking cash-out program** A transportation demand management strategy where the market value of a parking space is offered to an employee by the employer. The employee can either spend the money on a parking space, or pocket it and use an alternative mode to travel to work. The program is intended to reduce vehicle trips and increase the use of alternative travel modes. Also referred to as an employer buy-back program.

**Parking management** Strategies that encourage more efficient use of existing parking facilities, improve the quality of service provided to parking facility users, and improve parking facility design. Examples include developing an inventory of parking supply and usage, reduced parking requirements, shared and unbundled parking, parking-cash-out, priced parking, bicycle parking and providing information on parking space availability. More information can be found at [www.vtpi.org/park\\_man.pdf](http://www.vtpi.org/park_man.pdf)

**Pay-as-you-drive insurance (PAYD)** A method of insuring vehicles in which premiums are based in large part on the vehicle miles traveled within a given period of time. PAYD is also sometimes referred to as distance-based, usage-based, or mileage-based insurance. This pricing strategy converts a portion of liability and collision insurance from dollars-per-year to cents-per-mile to charge insurance premiums based on the total amount of miles driven per vehicle on an annual basis and other important rating factors, such as the driver's safety record. If a vehicle is driven more, the crash risk consequently increases. PAYD insurance charges policyholders according to their crash risk.

**Peer-to-peer carsharing** A car sharing program where the vehicle fleet is composed of privately owned vehicles that are available to rent to others at rates set by the car owners.

## Exhibit A to Ordinance No. 14-1346B

**Policy areas** Categories of land use and transportation strategies used in GreenSTEP to show how the application of different policies may impact GHG emissions.

**Preparation** Assessing the risks and vulnerabilities and identifying actions to protect residents and businesses from the most significant impacts of climate change. Many agencies have used the term “adaptation” to refer to similar efforts.

**Ramp meter** A traffic signal used to regulate the flow of vehicles entering the freeway. Ramp meters smooth the merging process resulting in increased freeway speeds and reduced crashes. Ramp meters are automatically adjusted based on traffic conditions.

**Reliability** Refers to consistency or dependability in travel times, as measured from day to day and/or across different times of day. Variability in travel times means travelers must plan extra time for a trip.

**Resilience** An ability to anticipate, prepare for, respond to and recover from significant multi-hazard threats with minimum damage to social well-being, the economy and the environment.

**Rideshare** A transportation demand management strategy where two or more people share a trip in a vehicle to a common destination or along a common corridor. Private passenger vehicles are used for carpools, and some vanpools receive public/private support to help commuters. Carpooling and vanpooling provide travel choices for areas underserved by transit or at times when transit service is not available.

**Scenario** A term used to describe a possible future, representing a hypothetical set of policies and strategies or sequence of events.

**Scenario planning** A process that tests different actions and policies to see their affect on GHG emissions reduction and other quality of life indicators.

**Social costs** In the context of the Climate Smart Communities Strategy, social costs refer to the unintended consequences of transportation, such as carbon emissions that contribute to climate change, air pollution that causes health and environmental problems, energy security costs associated with importing fossil fuels from foreign nations, and other such impacts.

**Statewide Transportation Strategy** The strategy, as part of OSTI, defines a vision for Oregon to reduce its GHG emissions from transportation systems, vehicle and fuel technologies and urban form by 2050. The strategy was accepted by the Oregon Transportation Commission in March 2013. More information can be found at [www.oregon.gov/ODOT/TD/OSTI/STS.shtml](http://www.oregon.gov/ODOT/TD/OSTI/STS.shtml).

**System efficiency** Strategies that optimize the use of the existing transportation system, including traffic management, employer-based commute programs, individualized marketing and carsharing.

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**Traffic incident management** Planned and coordinated processes followed by state and local agencies to detect, respond to, and remove traffic incidents quickly and safely in order to keep highways flowing efficiently.

**Traffic management** Strategies that improve transportation system operations and efficiency, including ramp metering, active traffic management, traffic signal coordination and real-time traveler information regarding traffic conditions, incidents, delays, travel times, alternate routes, weather conditions, construction, or special events.

**Transportation management associations (TMA)** Non-profit coalitions of local businesses and/or public agencies, and residences such as condo Home Owner Associations all dedicated to reducing traffic congestion and pollution while improving commuting options for employees, residents and visitors.

**Transportation system management** A set of strategies for increasing travel flow on existing facilities through improvements such as ramp metering, traffic signal synchronization and access management.

**Travel (or transportation) demand management (TDM)** The application of techniques that affect when, how, where, and how much people travel, done in a purposeful manner by government or other organizations. TDM techniques include education, policies, regulations, and other combinations of incentives and disincentives, and are intended to reduce drive alone vehicle trips on the transportation network.

**Travel time reliability** Refers to consistency or dependability in travel times, as measured from day to day and/or across different times of day. Variability in travel times means travelers must plan extra time for a trip.

**TripCheck** An Oregon Department of Transportation website that displays real-time data regarding road conditions, weather conditions, camera images, delays due to congestion and construction, and other advisories. Additionally, TripCheck provides travelers with information about travel services such as food, lodging, attractions, public transportation options, scenic byways, weather forecasts, etc. This information is also available through the 511 travel information phone line.

**Unbundled parking** A policy tool to encourage or require that residential or commercial parking be rented or sold separately, rather than automatically included with building space. Separate pricing can help reduce demand for parking as well as the combined housing/transportation costs for residents or business owners since occupants only pay for the parking they need. Unbundling can be done in several ways:

- Parking can be bought or rented separately when the apartment, condo, or office space is bought or leased.
- Renters can be offered a discount on their rent for not using parking spaces.
- Parking costs can be listed as a separate line item in lease agreements to show tenants the cost and enable them to negotiate reductions.

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- Unbundling can be encouraged informally by creating a market for available parking spaces; building managers can keep a list of tenants or owners with excess spaces available for rent.

**U.S. Conference of Mayors Climate Protection Agreement** An agreement where supporting mayors pledge to reduce greenhouse gas emissions by 7 percent below 1990 levels by 2012. On February 16, 2005, the Kyoto Protocol, the international agreement to address climate change, became law for the countries that have ratified it. On that day, Seattle Mayor Greg Nickels launched this initiative to advance the goals of the Kyoto Protocol through leadership and action by U.S. cities. By the 2005 U.S. Conference of Mayors Annual Meeting in June, 141 mayors had signed the Agreement – the same number of nations that ratified the Kyoto Protocol.

Since 2005, more than 1,000 mayors across all 50 states and Puerto Rico had signed on. Under the Agreement, participating cities commit to take following three actions:

- Strive to meet or beat the Kyoto Protocol targets in their own communities, through actions ranging from land-use and transportation policies to urban forest restoration projects to public information campaigns;
- Urge their state governments, and the federal government, to enact policies and programs to meet or beat the greenhouse gas emission reduction target suggested for the United States in the Kyoto Protocol 7 percent reduction from 1990 levels by 2012; and
- Urge the U.S. Congress to pass the bipartisan greenhouse gas reduction legislation, which would establish a national emission trading.

More information can be found at [www.usmayors.org/climateprotection](http://www.usmayors.org/climateprotection)

**Vehicle-to-vehicle communication technology** Wireless technology that allows for the transfer of information between vehicles. One major goal behind this research is to improve roadway safety. The Research and Innovative Technology Administration of the U.S. Department of Transportation (DOT) is currently investigating many potential benefits of this new technology.

**Vision Zero Strategy** An action plan for eliminating traffic fatalities and serious injury crashes for all modes of travel. The action plan typically includes a combination of enforcement, improved engineering, operations, design and emergency response, public education campaigns that identify dangerous or unsafe behavior on roads and streets to improve safety, and performance monitoring to track progress. Examples of adopted strategies can be found at: [www.nyc.gov/html/visionzero/pdf/nyc-vision-zero-action-plan.pdf](http://www.nyc.gov/html/visionzero/pdf/nyc-vision-zero-action-plan.pdf) and [www.mdt.mt.gov/homepage/articles/vision-zero.shtml](http://www.mdt.mt.gov/homepage/articles/vision-zero.shtml).

**Wayfinding** Signage, maps, street markings, and other graphic or audible methods used to convey location and directions to help travelers orient themselves and reach destinations easily.

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**West Coast Green Highway** An initiative to advance the adoption and use of electric and alternative-fuel vehicles along the I-5 corridor in Washington, Oregon, and California. More information can be found at [www.westcoastgreenhighway.com](http://www.westcoastgreenhighway.com)

**Workplace charging challenge** Part of the U.S. Department of Energy's (DOE's) EV Everywhere Grand Challenge, the Workplace Charging Challenge aims to achieve a tenfold increase in the number of U.S. employers offering workplace charging by 2018. More information can be found at <http://energy.gov/eere/vehicles/ev-everywhere-workplace-charging-challenge>