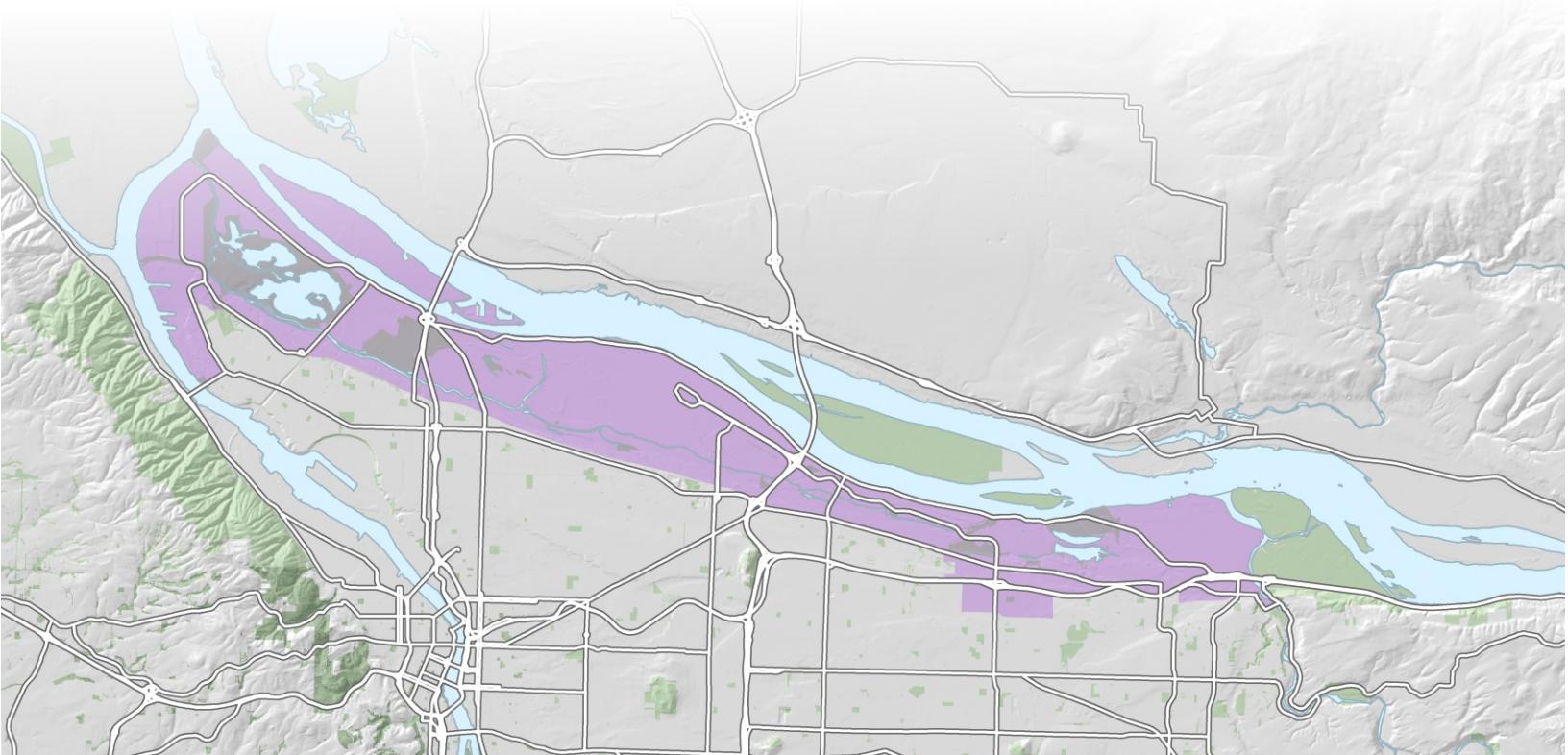




Columbia Multimodal Corridor Study

Final Report
December 2012



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Introduction

The Columbia Multimodal Corridor (the Corridor) spans a wide range of land uses and zoning, as well as business activity. The Corridor is a vital component to the economic health and vitality of the greater Portland metropolitan region. With expected growth in both jobs and housing over the next 20 years, congested roadways are a threat to businesses' ability to be cost competitive and maintain reliable travel times. This study is a roadmap for businesses as well as regional planners to make smart, strategic investments.

This report focuses on providing an overview of the existing transportation conditions with the Corridor and the best improvements for the coming twenty years. Businesses surveyed as part of this study indicated that access to efficient, multimodal transportation is the reason they are located here. The study examines current and future congestion and travel times in order to identify bottlenecks that will erode the Corridor's transportation advantage.

Columbia Multimodal Corridor Study Area



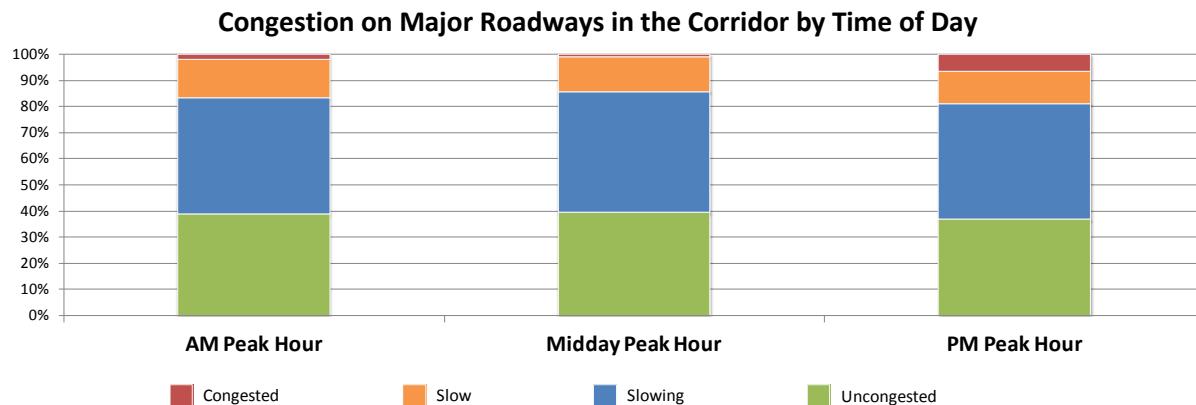
- The Corridor Boundary Area

Transportation Conditions

The Corridor area is serviced by a number of major transportation gateways including Interstate 5, Interstate 84, Interstate 205, Columbia Boulevard, Marine Drive, Sandy Boulevard, Martin Luther King Jr Boulevard, and Airport Way to name a few. Other gateways in the Corridor are marine terminals, rail lines, and airport (airport and cargo) facilities.

Congestion causes delay in the movement of goods and services. Often the "last mile" of the supply chain is the slowest, least efficient leg. For businesses exporting traded sector goods from within the Corridor, this last mile is actually the first mile. This inefficiency impacts existing businesses and is a deterrent to businesses looking to locate here.

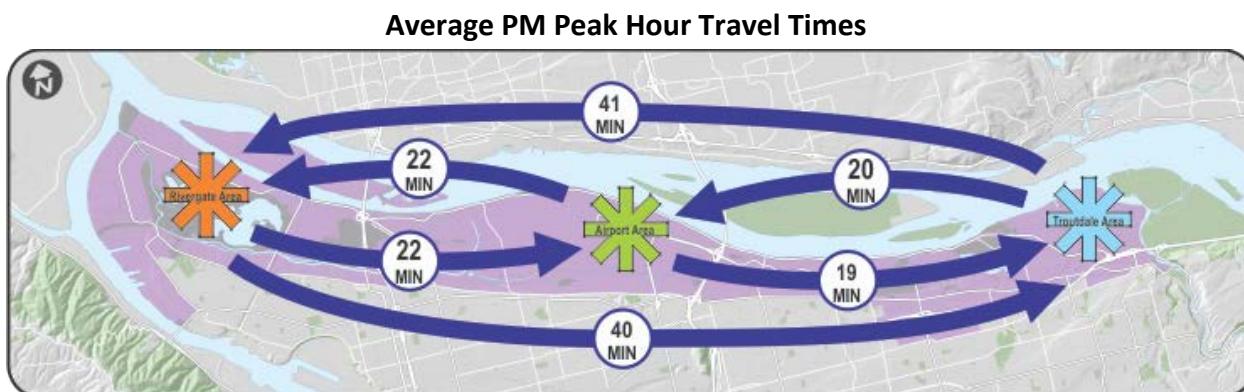




SOURCE: INRIX Data from 2008 to 2010 (Tuesday through Thursday)

Within the area there are approximately 210 miles of major roadways that are heavily traveled by freight. 19% of those roads are “slow” or “congested” in the PM peak period, 14% during the Midday, and 17% during the morning peak.¹ Because the region’s competitiveness is largely dependent on efficient transportation, congestion is a threat to our economic vitality.²

Individual travel times between key industrial areas in the Corridor were evaluated. These included the Rivergate terminal area, Portland International Airport (PDX), and Troutdale area. It was estimated that travel times within the Corridor were approximately 20 minutes between adjacent industrial facilities, and approximately 40 minutes from one end to the other.



SOURCE: INRIX Data from 2008 to 2010 (Tuesday through Thursday)

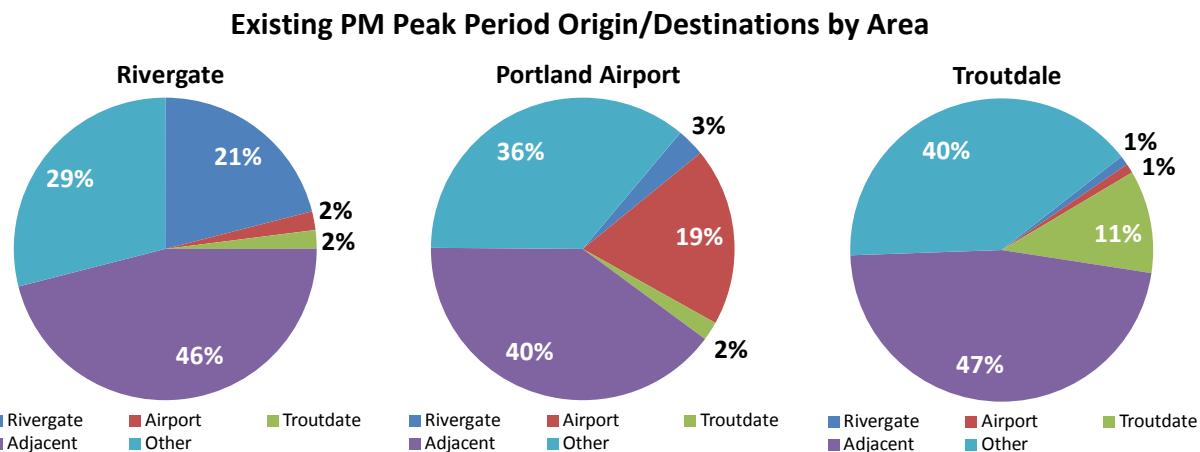
Depending on the route taken, there can be a significant difference in travel times from the same origin to the same destination. For example, traveling from Rivergate to Troutdale can take up to 45 minutes when using Columbia Boulevard, but only 30 minutes when using Marine Drive. Similarly, from the airport to Troutdale can take 15 minutes on Marine Drive, but just over 20 minutes on Sandy Boulevard.

¹ Based on INRIX data from 2008 to 2010 on Tuesday through Thursday travel days.

² “2005 Cost of Congestion to the Economy of the Portland Region” study.



An assessment was also done related to the origin and destination of PM peak hour trips for those same three key Port related land use areas. Generally about 10-20% of the trips stay within each area, about 40-50% stay within the area adjacent to the next Port area, and the remaining trips have an origin or destination further away. The same type of origin/destination percentages were also determined for the midday peak period as well. Some minor differences of within 3-5% occurs between the midday to the PM peak period. The following figure summarizes the PM peak period origin/destinations for the three areas.



SOURCE: 2010 Metro Regional Travel Demand Model

Generally speaking the same types of origin and destination for these three areas remain the same in the planning horizon of 2035 as well.

Businesses and Interviews

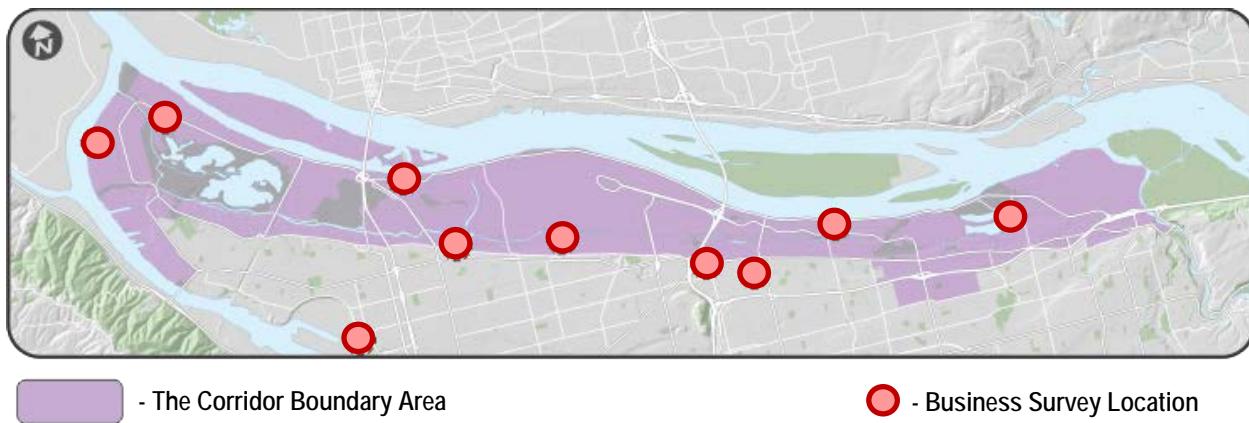
Within the Corridor boundary, there are numerous businesses that make a large impact on the regional and state economy. There are approximately 2,600 total businesses within the Corridor area, and roughly 65,000 total jobs. This equates to about 8% of the total Portland metropolitan business inventory. The top three types of businesses in the CCA boundary are manufacturing (21%), transportation/warehousing (18%), and wholesale trade (12%). These three business types comprise approximately 50% of the total businesses in the CCA.

The average annual salary for the roughly 65,000 jobs within CCA boundary is \$44,800. The average annual salary for the transportation/warehousing, wholesale trade and manufacturing sectors is \$49,200. This annual salary is significantly higher than the regions average annual salary of \$47,000.. The total payroll of the entire Corridor area is approximately \$2.9 billion dollars annually contributing roughly 8% of the total Portland metropolitan payroll.



Surveys were conducted with 10 businesses within (or in close proximity to) the Corridor boundary. Businesses were selected to help represent a wide variety of geographic, type of business, and use of the transportation system. The purpose of this survey was to gain a better understanding of how they utilize the CCA area, as well as what problems they face on a day-to-day basis for operations and access/mobility. This map shows the approximate location of the businesses surveyed.

Business Survey Locations



Survey responses indicated the primary reason many of these businesses located in the Corridor is easy access to regional facilities such as Interstate 5, Interstate 205, and Interstate 84. In addition they feel the area provides access to other non-motorized modes of transport like heavy rail, marine and air cargo facilities. Company representatives note congestion as the number one problem facing business operations now and in the future. Congestion and the reliability of roadways limit their ability to have on-time deliveries and receive/ship goods. Much of their delivery time is incurred in the "last mile" which references the last segment of roadway in and out of their business.

Project Summaries

There are a number of projects identified by both the Regional Transportation Plan (RTP) and the Port's Transportation Improvement Plan (PTIP) within the Corridor. Approximately 70 projects were identified but not all projects may have an expected benefit of freight movement, or mobility and access. Based on current (and future) congestion plots, a short list of approximately 30 projects were selected for additional analysis and focus with individual project sheets.

The projects range from localized intersection improvements to longer corridor improvements. The total estimated cost for the shorter list of projects that detailed sheets have been developed for is approximately \$290 million dollars.

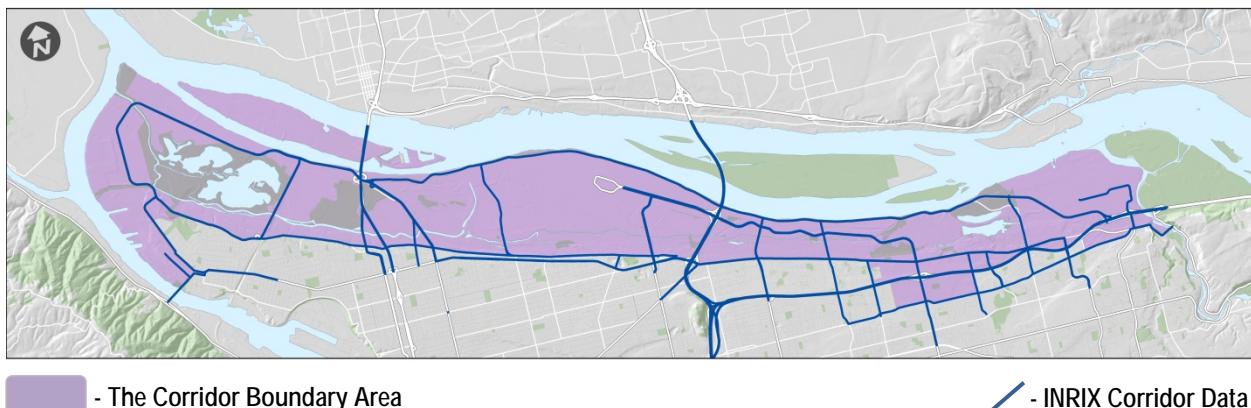


Transportation Background Information

There is a wealth of transportation information that helps to inform the conditions (both existing and future) for the Corridor area. While there is no technical analysis of operations found in this report, content is focused on travel time information, as well as origin/destination information. The travel times and origin/destination data focuses on three specific areas in the Corridor area: Rivergate Industrial District, Portland International Airport, and Troutdale.

In addition to the travel time and origin/destination data, speed data was also reviewed on the major corridors that serve the Corridor area. Generally this does not include local roadways, but rather roadways that would typically be utilized by freight. There are approximately 210 miles of this type of roadway within the Corridor. Speed data during the AM, Midday, and PM peak hours was assessed to determine congestion levels on the roadways. This data was for a three year period (2008 – 2010) and included only the midweek days (Tuesday through Thursday).

INRIX Travel Time and Speed Corridor Locations

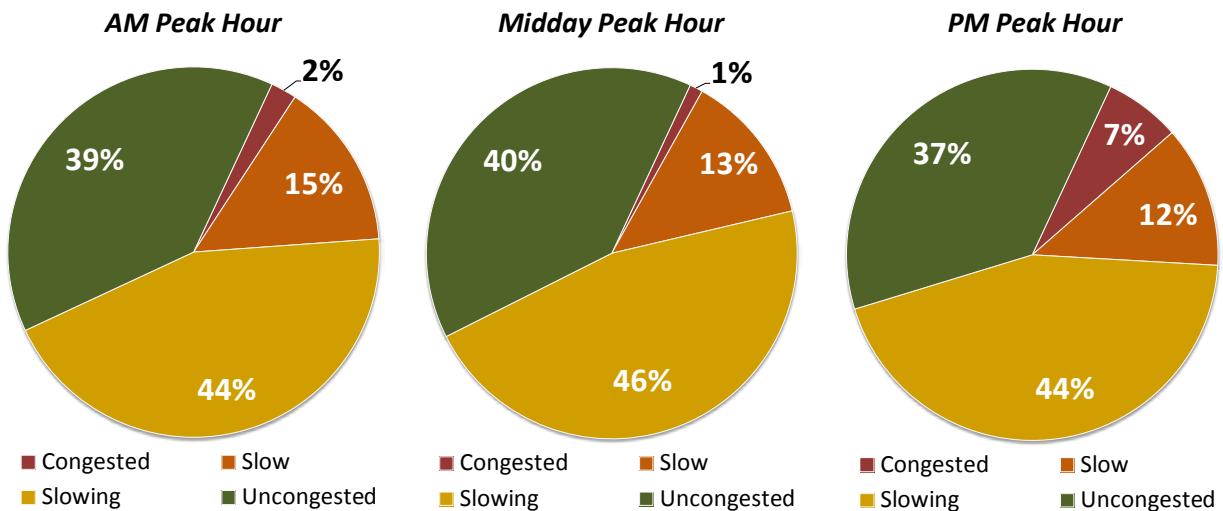


Congestion was organized and defined by four categories. The slowest is labeled “Congested” and was defined as a travel speed 60% or less than the posted speed limit. The next category was defined as “Slow” and was travel speeds between 60%-75% of the posted speed. The next category was “Slowing” and was defined as 75%-90% of the posted speed. The last category was speeds at 90% or higher than the posted speed and was called “Uncongested”.

Using these categories approximately 14%-19% of all roadways are “Congested” or “Slow” during the three peak hours of the day. Almost half of the roadways fall into the category of “Slowing”. It would be expected that over time as traffic demand grows, so would congestion. Given the economic importance of the corridor to the entire region, strategic investments that improve mobility and reliability in this area will contribute to the economic health of the entire region. The following figure shows the three time periods and the breakdown of the congestion categories.



Congestion on Major Roadways Within the Corridor Area



Travel times were also assessed for the three subareas, the time it would take to get travel between them, as well as other surrounding areas and regional destinations. Travel times were determined using Metro's Regional Travel Demand Model and INRIX data (existing travel time and speed data). These two tools allowed for existing and future estimated travel times for both the midday and PM peak periods.

Using data for the PM peak hour which shows that today 7% of the major roadways are already congested, it can be assumed that area businesses are already adapting to today's conditions. Business owners are already worrying about if inputs will arrive on time or will they need to shut down production early to account for congestion on the roadway. In many cases, Infrastructure improvements are the only remaining fix.

These area businesses look toward transportation policy makers to maintain efficiency of the corridor's transportation infrastructure allowing them to keep their competitive advantage and continue to grow and expand.

Generally speaking, existing travel times during the midday are slightly less than the PM peak period with travel times from the Corridor to/from areas west of the Willamette River taking between 30-40 minutes for midday trips, and 40-50 minutes for PM peak trips. Similar travel times are experienced in areas to the south as well (Oregon City and Clackamas Town Center). Areas adjacent to the Corridor to the south and north take approximately 20-30 minutes to travel, and generally doesn't vary based on the midday or PM peak periods.

Estimates of future planning horizon travel times (2035) generally grow by about 10 minutes for all areas. This is indicating that congestion is building over time, but is also an indication that during the



peak times congestion is already present. The following figures show the travel time estimates for the midday and PM peak hours to/from the Corridor to regional destinations.

The existing travel times between the three areas in the Corridor were also reviewed using INRIX data which is real time travel times and speeds along major corridors for every day of the most current three years of data (2008-2010). This information indicated travel times in the western portion of the Corridor were slightly higher (or more congested) than areas to the east. The following table summarizes the existing travel times by time of day, and also by major travel route.

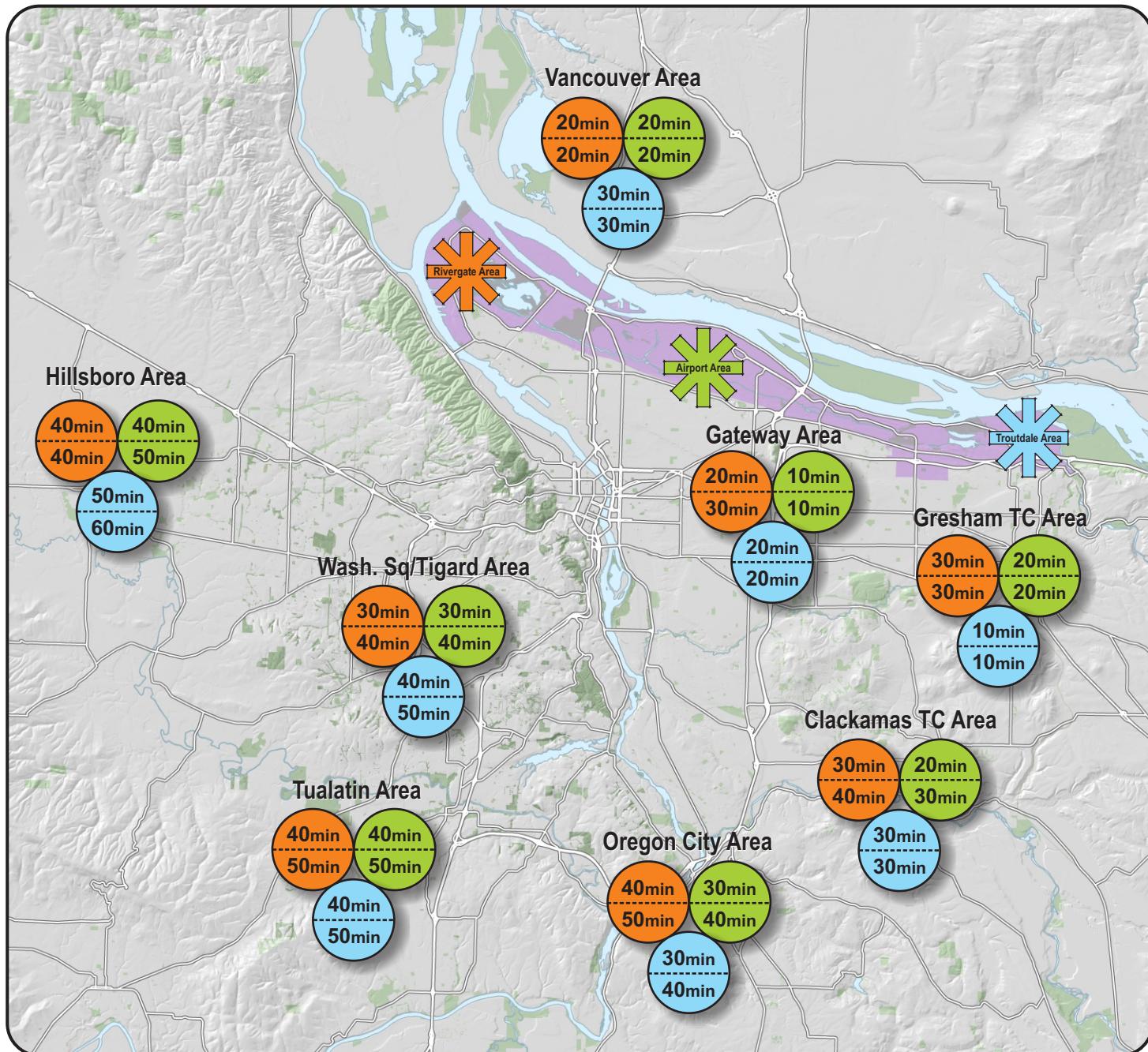
	AM Peak	Midday Peak	PM Peak
Columbia Boulevard			
Rivergate to PDX	24 min	23 min	23 min
PDX to Rivergate	23 min	23 min	22 min
Rivergate to Troutdale	43 min	42 min	42 min
Troutdale to Rivergate	43 min	43 min	43 min
Marine Drive/Columbia Boulevard			
Rivergate to PDX	21 min	21 min	21 min
PDX to Rivergate	22 min	22 min	22 min
Troutdale to PDX (via Marine Drive)	14 min	15 min	16 min
PDX to Troutdale (via Marine Drive)	15 min	15 min	16 min
Rivergate to Troutdale (via Columbia Blvd)	43 min	42 min	42 min
Troutdale to Rivergate (via Columbia Blvd)	43 min	43 min	43 min
Interstate 84			
Troutdale to PDX	19 min	16 min	22 min
PDX to Troutdale	18 min	16 min	18 min
Sandy Boulevard			
Troutdale to PDX	22 min	23 min	23 min
PDX to Troutdale	22 min	22 min	22 min

SOURCE: INRIX data (Tues – Thurs) for 2008 – 2010

The biggest difference in travel times is seen in the trip from Rivergate to/from Troutdale by using Marine Drive or Columbia Boulevard. It appears that Marine Drive is about 30% faster than Columbia Boulevard for all times of the day, explaining why freight favors this route.



Midday Peak Estimated Travel Time Data



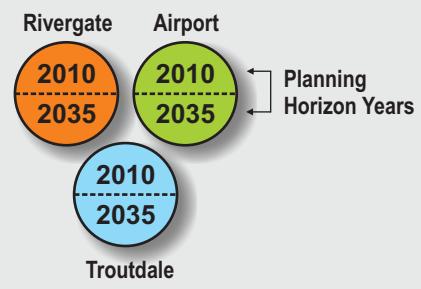
LEGEND

- CCA Boundary Area
- Rivers/Streams
- Parks/Open Space
- Major Roadway

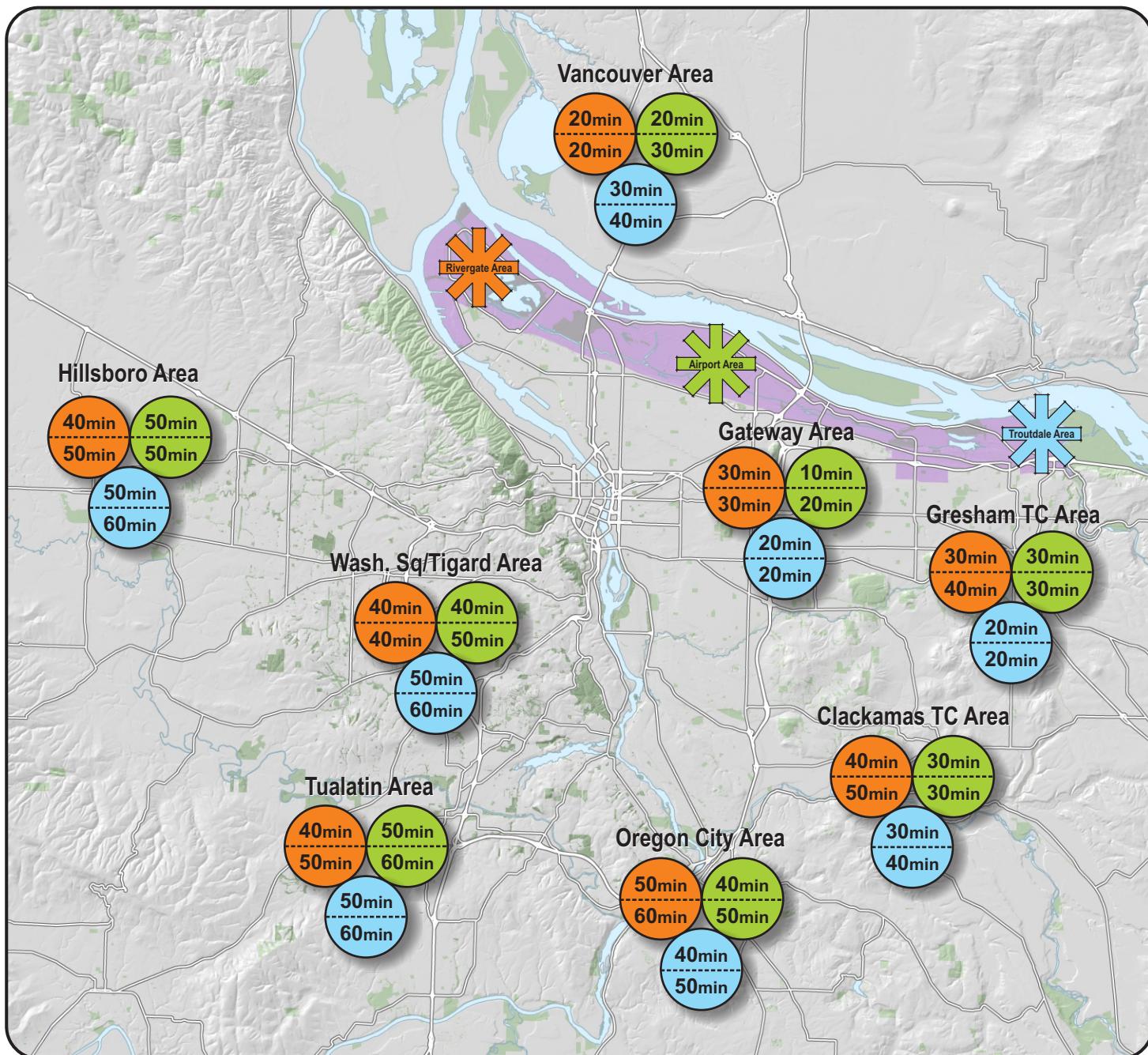
Major Origin/Destination

- Rivergate Area
- Airport Area
- Troutdale Area

Estimated Regional Travel Times



PM Peak Estimated Travel Time Data



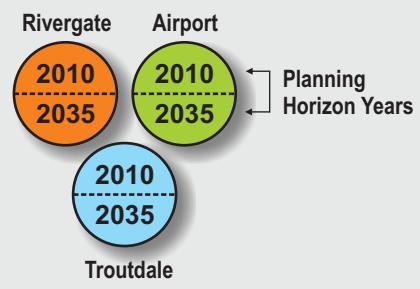
LEGEND

- CCA Boundary Area
- Rivers/Streams
- Parks/Open Space
- Major Roadway

Major Origin/Destination

- Rivergate Area
- Airport Area
- Troutdale Area

Estimated Regional Travel Times



An assessment of origin and destinations was done using the regional travel demand model to help define who the users are for the Rivergate, Airport, and Troutdale areas. A number of areas were defined to help group origins and destinations.

The origin/destination data that was reviewed was both existing (2010) and future (2035) years, with the midday and PM peak periods as the focus times.

In general, the percentage of trips to/from one particular area do not exceed 5-10%, with the exception of internal trips, Rivergate trips to/from North Portland, and trips between Marine Drive/Airport Way and Troutdale. All of these trip combinations are in the 15-30% categories.

The trip pairs from 2010 to 2035 generally stay the same with only some minor changes (either up or down) by a few percentages. A few notable exceptions to this are the Airport Area which has a slight uptick in internal PM peak period trips which a few of the adjacent geographic areas decrease. This is indicating a higher potential use of internal, or local, roads closer into the airport for users in that area.

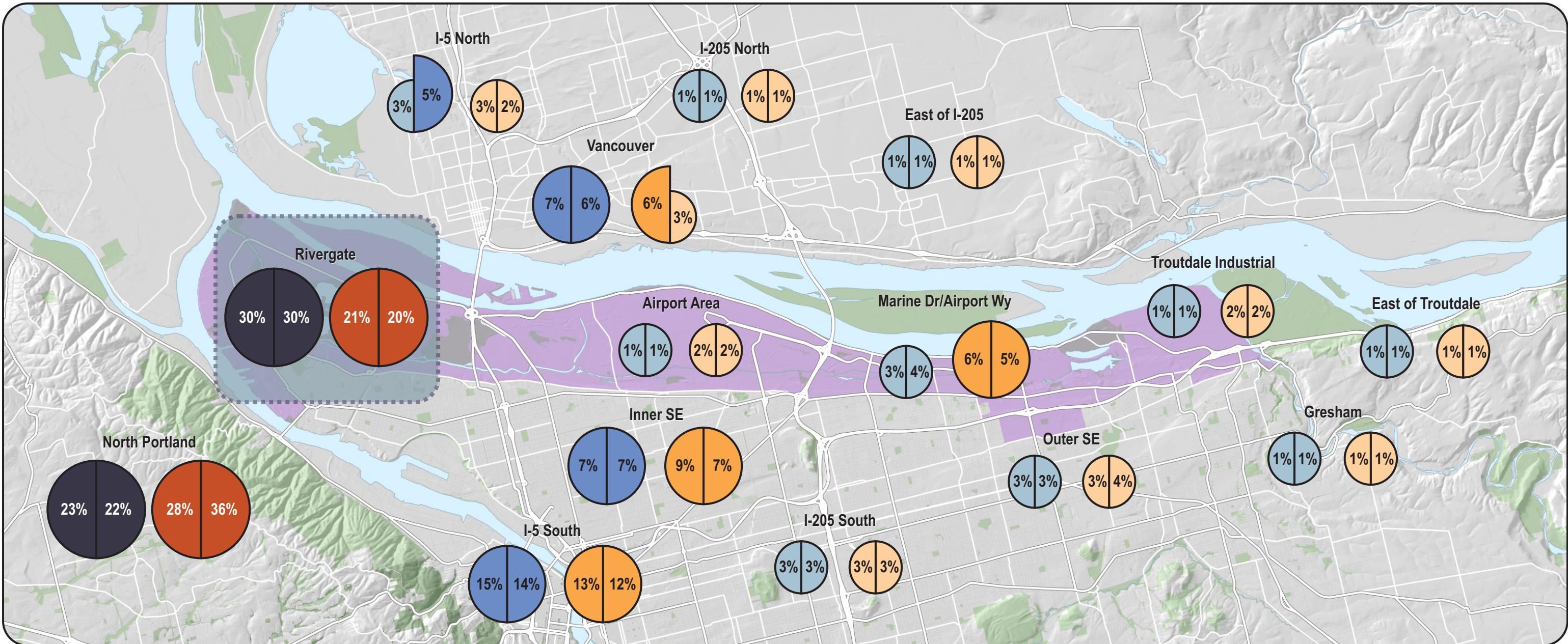
Another change is in the Troutdale Industrial area. This use changes from approximately 11% internal use today, up to 22% internal use in the future. A driving factor of this is the planned development of the Troutdale Reynolds industrial area north of the I-84 Troutdale interchange. This brings a lot of new trips into the area in the future that tend to have a more localized use.

Generally about 10-20% of the trips stay within each area, about 40-50% stay within the area adjacent to the next Port area, and the remaining trips have an origin or destination further away. The following graphics show the detailed trip distributions for origin/destination by core area in the Corridor.

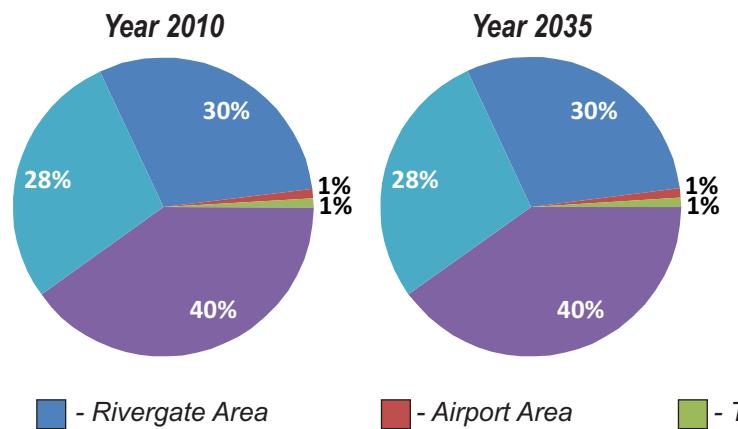
There are strong connections for trips between Rivergate and North Portland, as well as the Marine Drive/Airport Way area and Troutdale Industrial area.



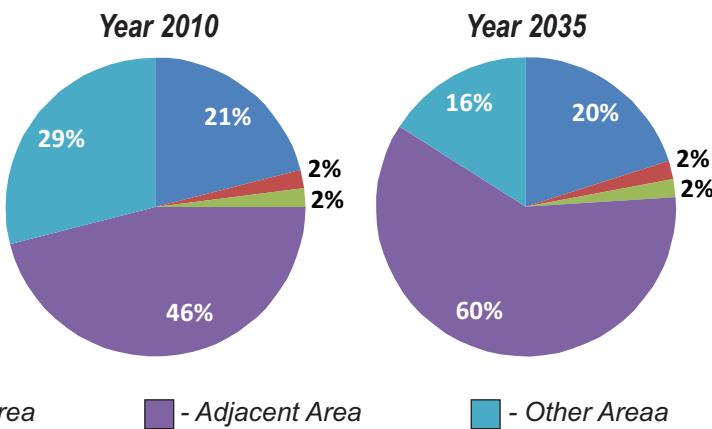
Rivergate Area Origin/Destination Data



Midday

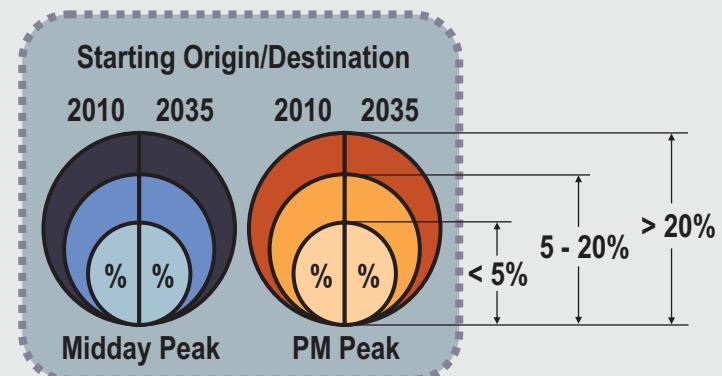


PM Peak

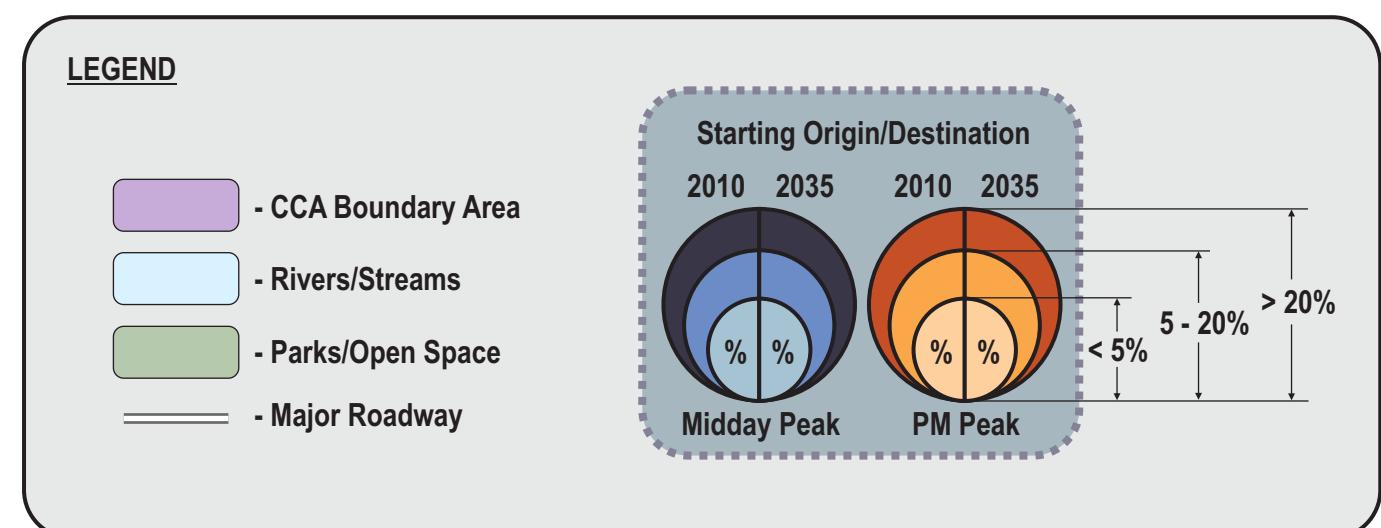
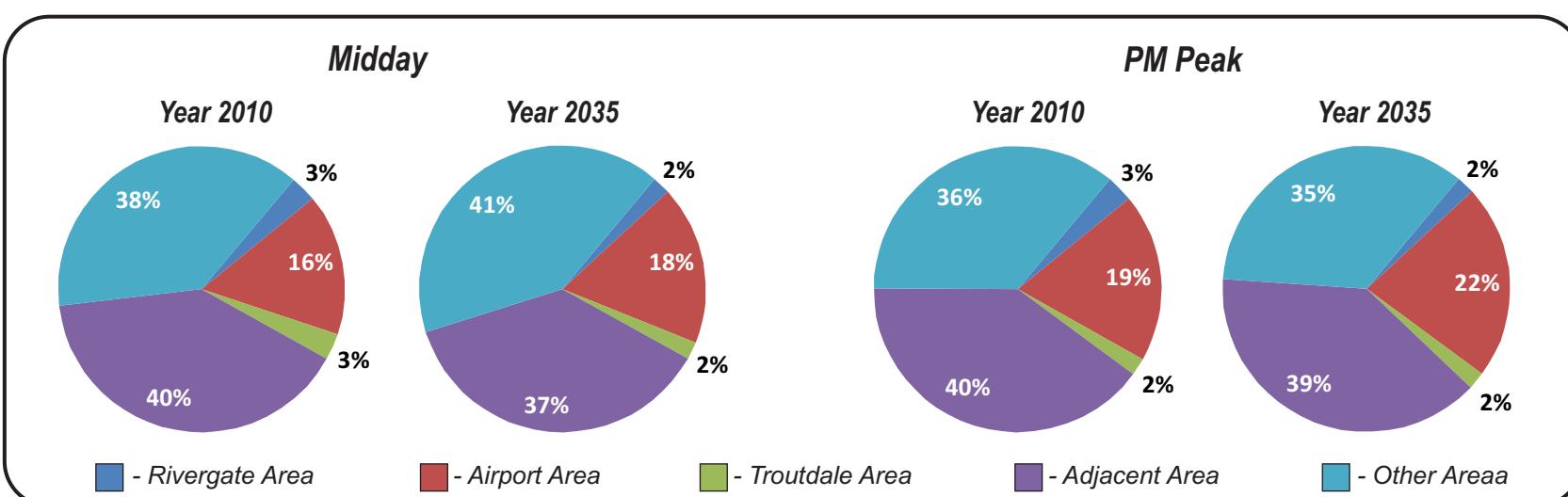
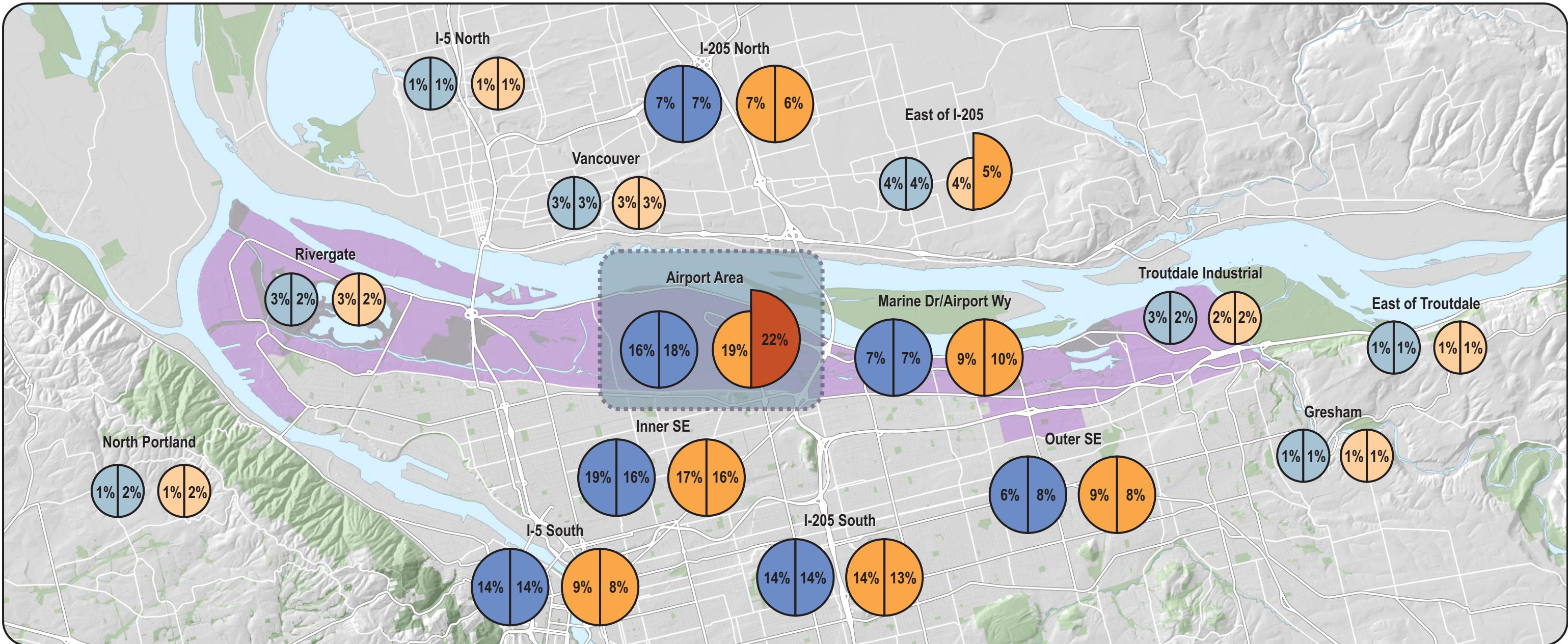


LEGEND

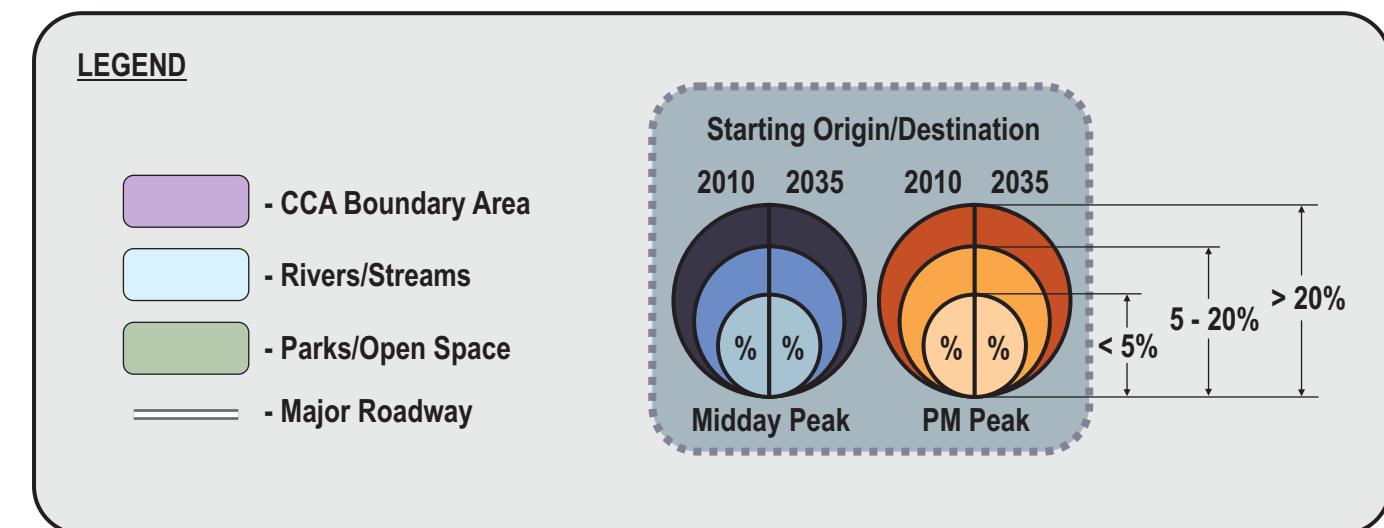
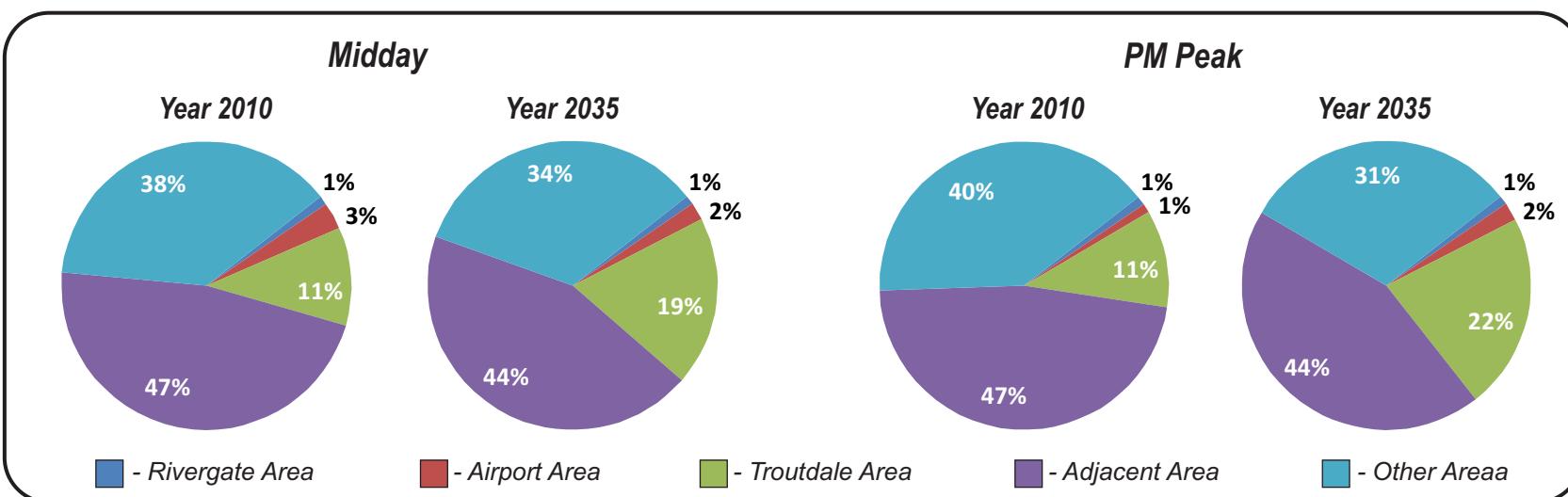
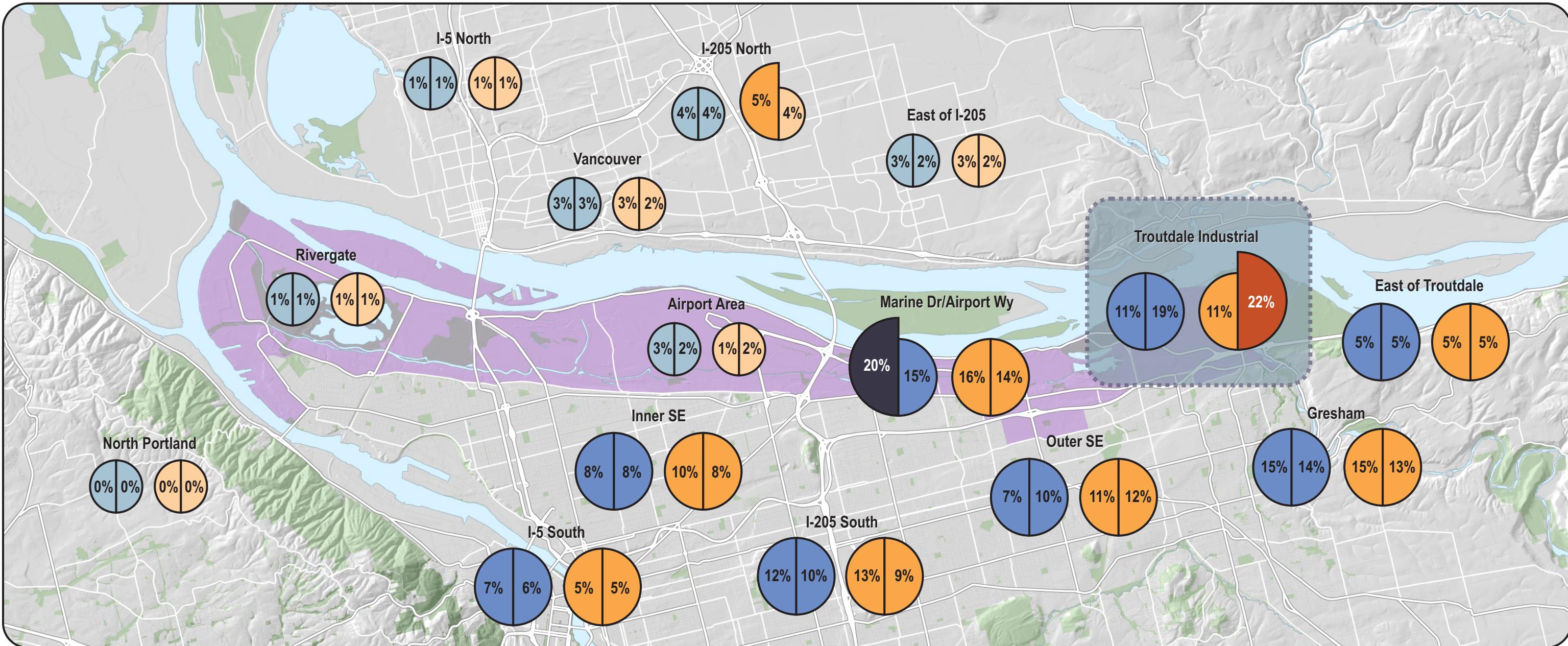
- CCA Boundary Area
- Rivers/Streams
- Parks/Open Space
- Major Roadway



Columbia Corridor - Airport Area Origin/Destination Data



Columbia Corridor - Troutdale Industrial Area Origin/Destination Data



Business and Interview Summary

The following summarizes characteristics of the businesses (types of jobs and average wages) located in the Corridor boundary, as well as key highlights from a select number of interviews conducted with certain businesses focusing on current issues facing the businesses related to transportation.

Business and Wage Overview

The Columbia Corridor is home to a number of businesses, many of which are focused on manufacturing, transportation, or transportation/warehousing (MTTW). There are a total of approximately 2,600 businesses within the Corridor's boundary employing approximately 65,000 people. This represents approximately 8% of the total Portland metropolitan area jobs. The number of jobs specifically in the manufacturing, transportation and/or warehousing field comprises just over half (51%) of all of the jobs in the area.

The average pay of workers in the Corridor area is approximately \$44,850 a year, with the MTTW jobs averaging approximately \$49,000 a year, indicating that the MTTW jobs have a slightly higher value to the Corridor area than all other jobs. In comparison, the Portland metropolitan average wage is approximately \$47,650 with an average wage for MTTW type jobs for the Portland area coming in around \$65,000 a year.

The map on the following page indicates the number of MTTW jobs in the Corridor area by location and density of employees on the upper portion, with the average density of salary by location on the lower half of the graphic. This shows that businesses are locating themselves closer to regional access facilities such as Interstate 5 and Interstate 205, with the highest density of employees located just east of Interstate 205. In addition, this appears to be where the higher average salary locations are as well.

Interview Summary

A number of interviews of current businesses were conducted within the Corridor area to help answer some questions related to how users in the area view the area. A total of 10 firms were selected to interview which comprise approximately 5% of the total workforce employees within the Corridor boundary.³ These companies were selected based on various characteristics related to the type of business, number of employees, and geographic location within the Corridor boundary. The range in employee size was from 20 to 1,700+, and had a broad variety in their nature representing diversity in transportation needs.

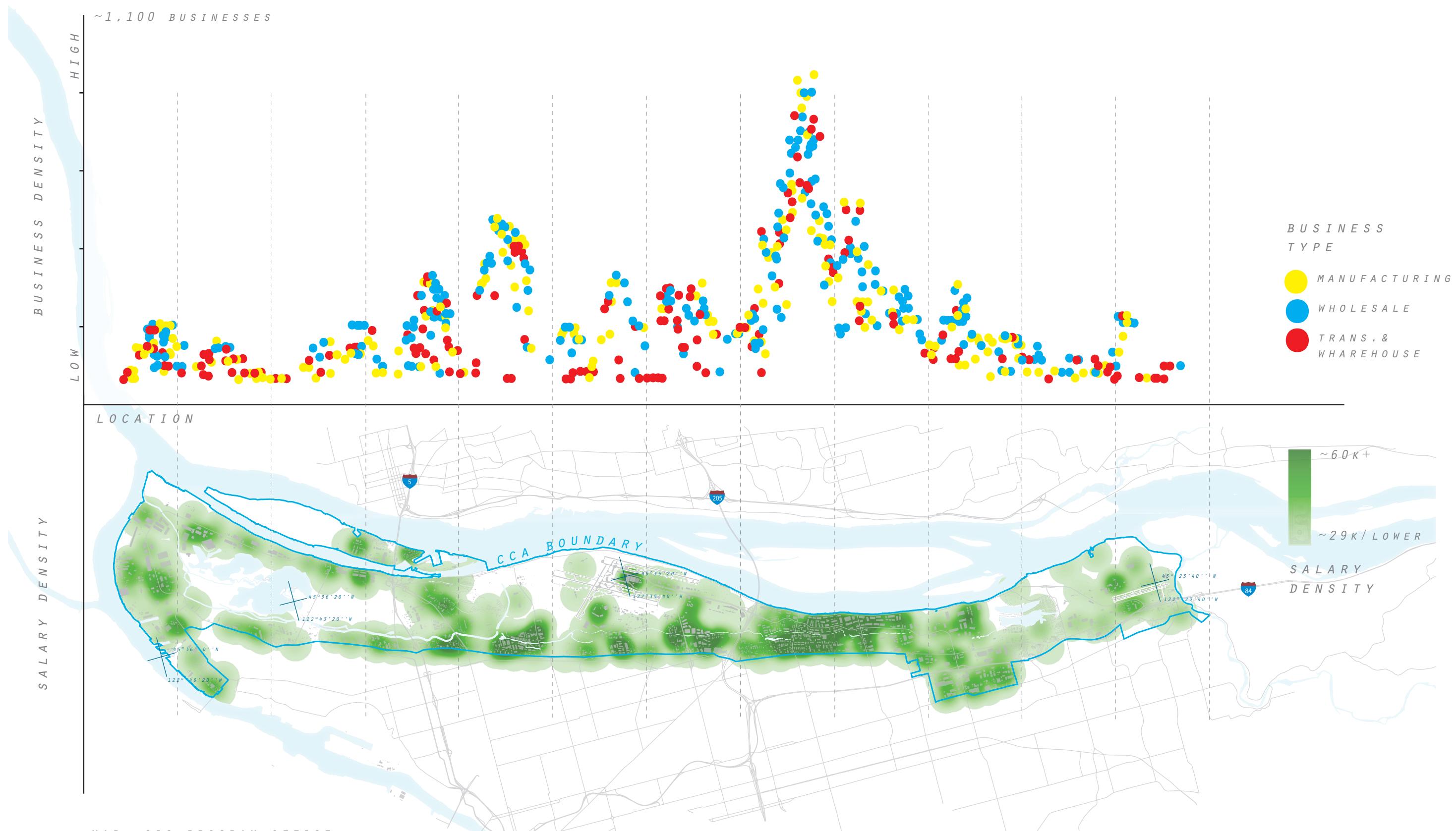
Examples of the types of businesses included for surveying included:

- A building materials producer that sources limestone rock from British Columbia, Canada by barge and ships finished goods to customers in Oregon, Washington, and California by truck and rail.

³ Detailed interview results can be found in the technical appendix.



BUSINESSES



Port of Portland geospatial data is gathered, maintained and primarily used for internal reference and analysis, and is only updated as resources permit. Geospatial data refers to data and information referenced to a location on the Earth's surface such as maps, charts, air photos, satellite images, cadastre and land and water surveys, in digital or hard copy form. Geospatial data may be gathered and maintained by more than one person or department within the Port, and data distributed by one person or department may not reflect the most recent data available from the Port or from other sources. Port geospatial data is not intended for survey or engineering purposes or to describe the authoritative or precise location of boundaries, fixed human works, or the shape and contour of the earth. The Port makes no warranty of any kind, expressed or implied, including any warranty of merchantability, fitness for a particular purpose, or any other matter with respect to its geospatial data. The Port is not responsible for possible errors, omissions, misuse, or misrepresentation of its geospatial data. Port geospatial data is not intended as a final determination of such features as existing or proposed infrastructure, conservation areas, or the boundaries of regulated areas such as wetlands, all of which are subject to surveying or delineation and may change over time. No representation is made concerning the legal status of any apparent route of access identified in geospatial data.

- A trucking company specializing in transportation high-value raw materials and finished goods supporting a “just-in-time” (JIT) and “lean” supply chains characteristic of high tech manufacturing.
- Manufacturer of multi-purpose tools that receives raw materials from Taiwan, Hong Kong, China, India, Portugal, and Mexico. Finished goods pass through multiple gateways as they are distributed worldwide. This distributor utilizes multiple modes of travel for both import and export, ranging from truck, rail, air freight, and ocean containers.

The businesses indicated that the primary corridors of use for them (for roadway use) were focused on the Interstate facilities (I-5, I-205, and I-84). Other forms of transport were also called out such as heavy freight rail, marine, and air cargo. The proximity to all of these corridor gateways makes the Corridor area a prime location for shipping and receiving.

Another point of interest brought up in the interviews related to access and the areas corridor gateways is that issues of congestion and labor disputes at other international ports (Los Angeles and Long Beach) forces the businesses to make strategic decisions to avoid these ports for routing freight.

The proximity of the Port of Portland air cargo facilities was also viewed as a big benefit to the businesses. The airport adds an environment of convenient and efficient service. In addition, the Port’s marine facilities are viewed as an important quality to the area. Many of the businesses import raw goods for processing (or storing) within the Corridor area, and then ship the goods as a direct export via ship, or load the final goods onto trucks and distribute the products.

“Within the Columbia Corridor access points to the interstate system require improvements”

Businesses were asked about the potential Columbia River Crossing project and the value added to the area based on improvements to the mainline freeway, as well as the interchanges. An overwhelming majority indicated that the project is an added benefit to the area to help reduce congestion (travel time), as well as improve access to the freeway via improved interchanges. Businesses located closer to the Interstate 205 facility indicated the need for a similar type of mainline and interchange improvement(s) for the freeway. Congestion within the Airport Way and Columbia Boulevard/Sandy Boulevard interchanges create delays and can be just as frustrating and productivity-killing as those found on the Interstate 5 interchanges.

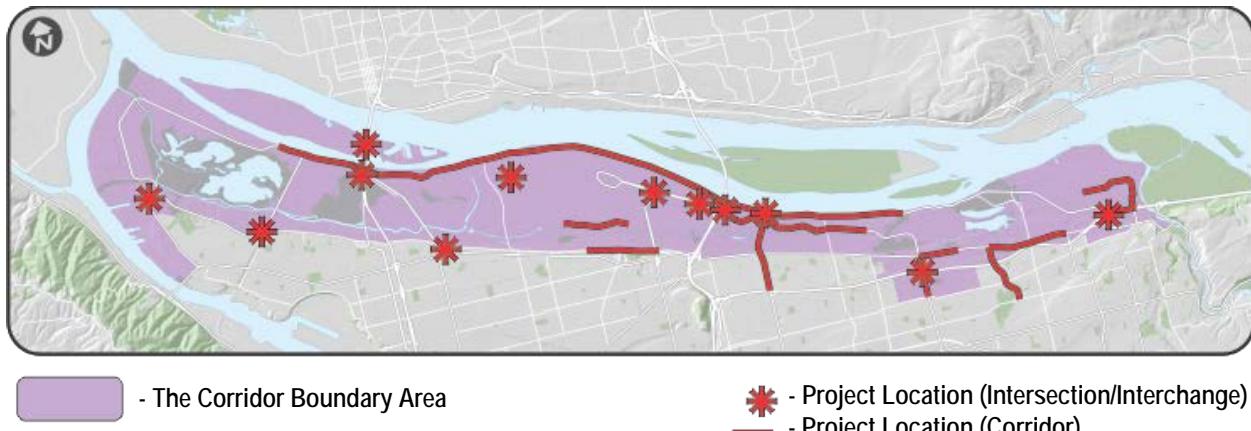
It is clear that congestion affects firm performance and generates compensating practices and behaviors, and that there is a large cost associated with this. It was also clear that, regardless of the predominant transportation mode a firm employs, there are strong linkages to the freeway and roadway systems, as these are typically the “last mile” connections for freight to connect to other modes and the principal conveyance for the labor force to access their worksite.



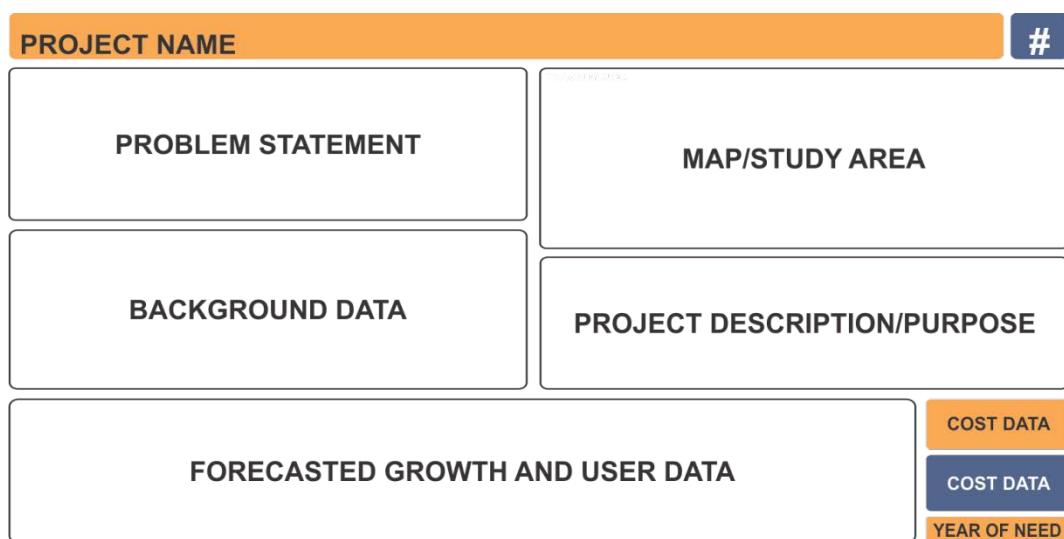
Project Summaries

There are multiple projects that have been identified within both the Metro Regional Transportation Plan (RTP) and Port's Transportation Improvement Plan (PTIP). Within the Corridor boundary approximately 70 projects have been identified to help address congestion and provide better access and mobility. While all of these projects are important at some level, there are a subset of projects that have been identified as having a large on preserving access within the corridor or congestion on facilities.

Project Locations for Focused Projects



These projects were selected to have more detailed information developed to provide background information, problem statement, project description, forecasted growth and user origin/destination information. The following pages contain these detailed project sheet one pagers, and the following template shows how each of these project sheets have been laid out.



BURGARD-LOMBARD NORTH STREET IMPROVEMENTS

PROBLEM STATEMENT

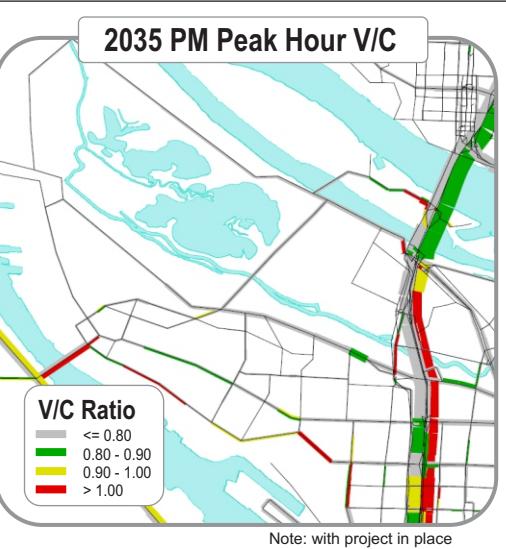
The current N Burgard Road has two northbound travel lanes, and one southbound travel lane with no sidewalks or bike lanes on the roadway. The absence of a center turn lane can create delay on the main roadway as vehicles wait for left turns. While congestion does not appear to be an issue in the future (see V/C plot to the right) access and mobility for users along the roadway, as well as no options for non-motorized travelers is concerning.



N Burgard Road looking north



N Burgard Road looking south

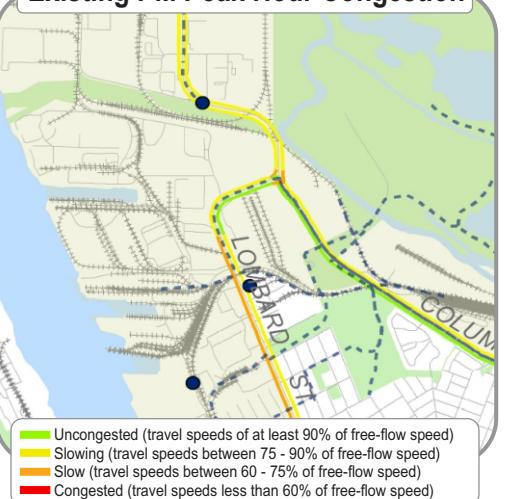


BACKGROUND DATA

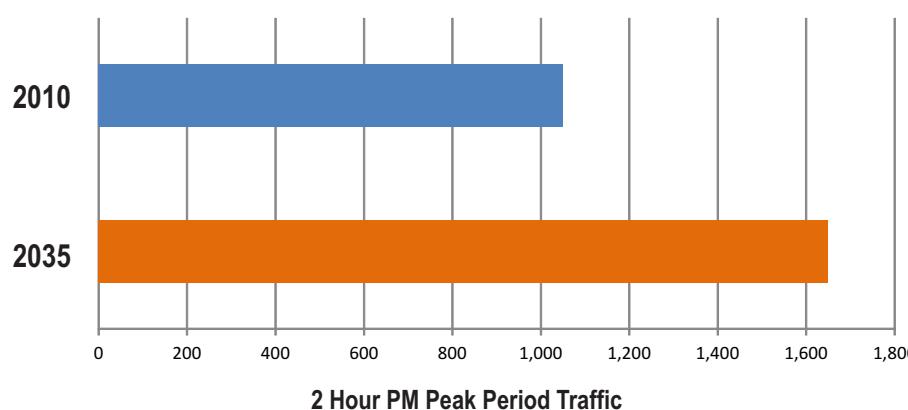
Various traffic data is available along N Burgard Road from the past few years.

- Functional classification of the roadway by the City of Portland is a "Major City Traffic Street", with a freight classification of "Regional Truckway". North of N Burgard Road is designated a "Freight District".
- Average daily traffic ranges from 3,000 to 5,000 vehicles a day (based on data collected from 2004-2008).
- Approximately 60 percent of vehicles east of Time Oil Road are motor vehicles, while the remaining 40 percent of vehicles are trucks.
- Posted speed north of Time Oil road is 40 miles per hour, and 85% of vehicles roughly travel this speed, or lower, with the 85th percentile speed ranging from 40-43 miles per hour. Less than 2 percent of vehicle travel 10% or higher over the posted speed.
- Posted speed south of Time Oil Road is 35 miles per hour, with many vehicles traveling faster than this. The 85th percentile speed is approximately 40-45 miles per hour.
- Recent speed and travel time data (2008-2010 data) indicates that vehicles on this road experience minimal congestion with speeds of 75% or greater than free flow speed.

Existing PM Peak Hour Congestion

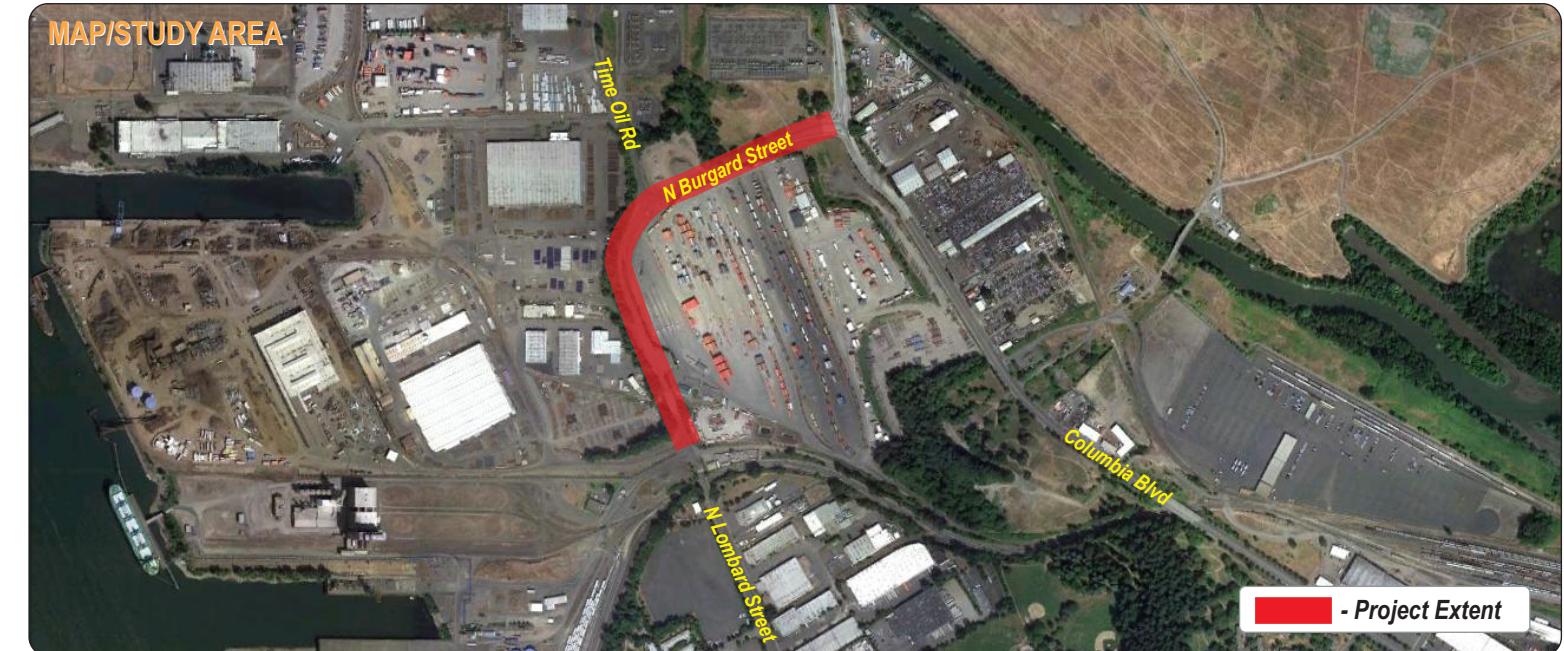


FORECASTED GROWTH AND USER DATA



Growth of approximately **600 vehicles** is expected on this roadway during the 2 hour PM peak period.

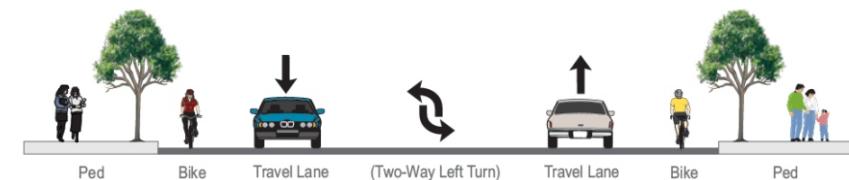
This represents a growth fo approximately **57%** from 2010 to 2035



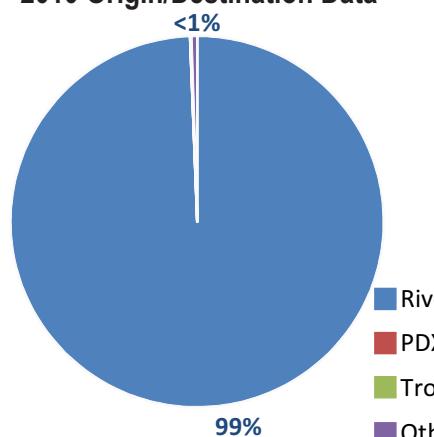
PROJECT DESCRIPTION/PURPOSE

The project has been identified in the Metro Regional Transportation Plan (#10218) as the "Burgard-Lombard, N: Street Improvements". The extent of the project is from the intersection of N Burgard Street/Columbia Boulevard to the UPRR Bridge on N. Lombard Street.

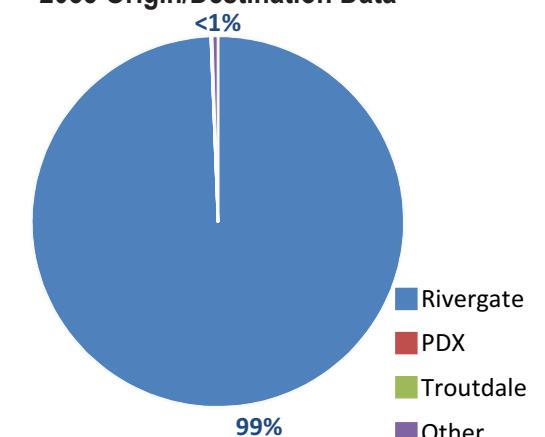
The purpose of the project is to improve freight mobility, safety and industrial site access. The project currently consists of widening the facility to a three lane cross section with 12 foot travel lanes, including a two way center turn lane. In addition, sidewalks and bike lanes have been included on this project. A prototypical cross section of this type of roadway has been included.



2010 Origin/Destination Data



2035 Origin/Destination Data



**ESTIMATED COST
(IN 2007 DOLLARS)**

\$17.0M

**ESTIMATED COST
(YEAR OF EXPENDITURE)**

\$25.2M

**PROJECTED
YEAR OF NEED** **2017**

N COLUMBIA BOULEVARD/N PORTLAND ROAD INTERSECTION IMPROVEMENTS

PROBLEM STATEMENT

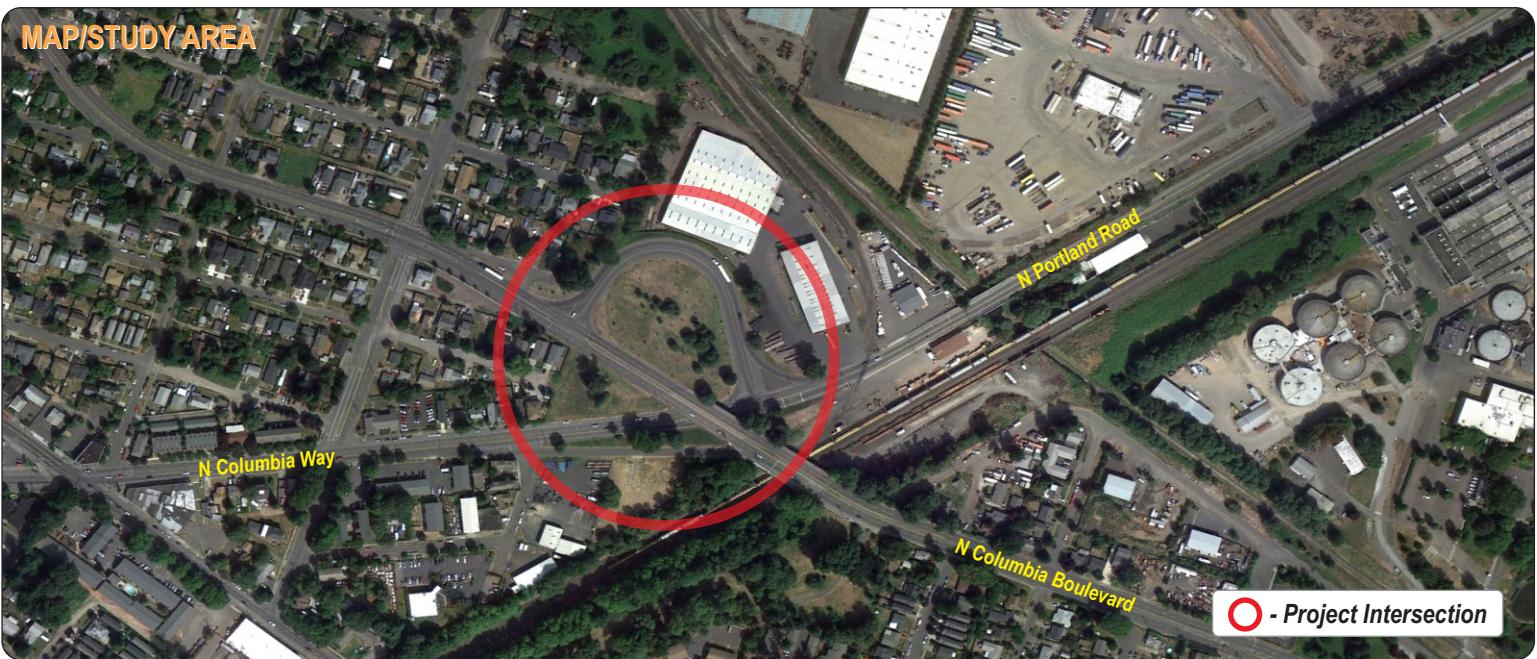
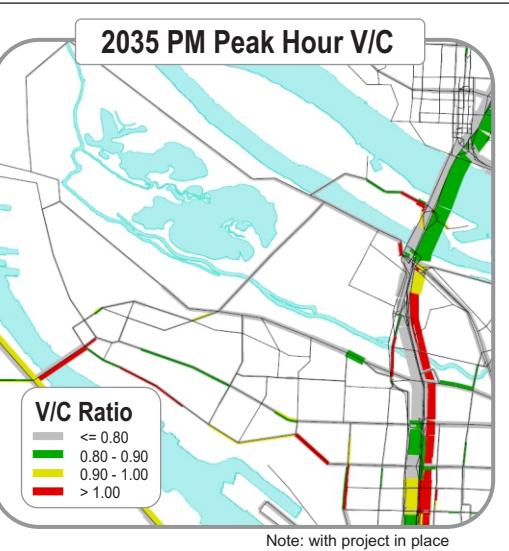
The current grade-separated intersection of N Columbia Boulevard and N Portland Road serves as a connection between two priority truck streets. However, truck traffic has been known to use neighborhood streets to connect to the Rivergate industrial area and St. John's Bridge. By redesigning this intersection truck traffic could be channelized onto these priority truck streets, preventing neighborhood travel.



N Columbia Boulevard looking East



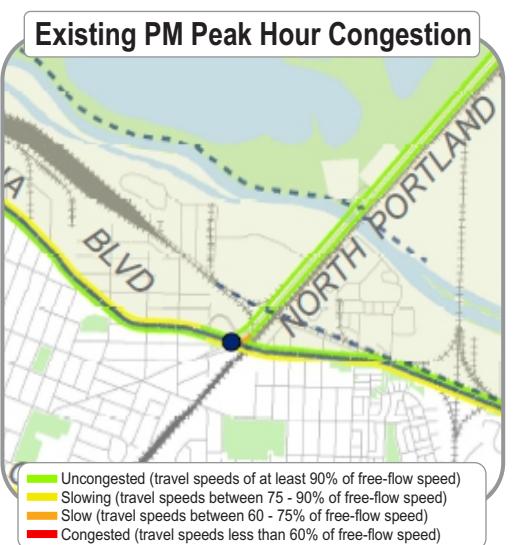
N Portland Road looking South



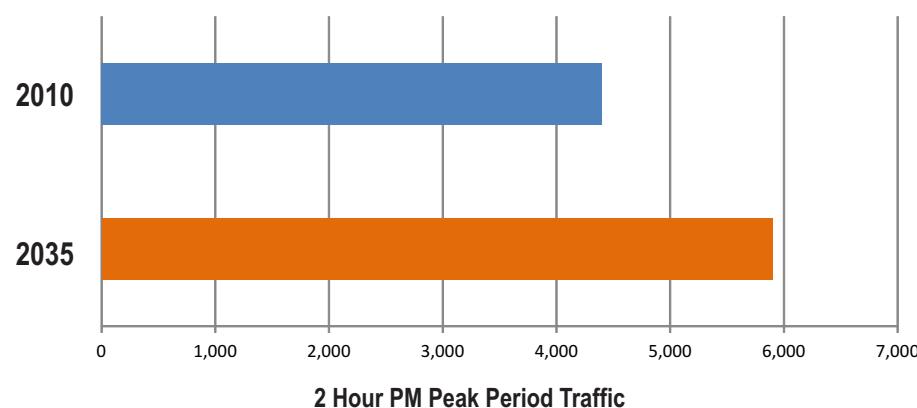
BACKGROUND DATA

Various traffic data is available along N Columbia Blvd and N Portland Rd from the past few years.

- By the City of Portland, the functional classification of N Columbia Blvd is a "Regional/Major City Traffic", and N Portland Rd is a Major City Traffic Street". These roadways are both classified as "Priority Truck Streets".
- Average daily traffic ranges from 8,000 to 9,000 vehicles a day on N Columbia Blvd (based on data collected from 2004).
- Approximately 89 percent of vehicles on N Columbia Blvd are motor vehicles, while the remaining 11 percent of vehicles are trucks.
- The posted speed of N Portland Rd is 45 miles per hour and the posted speed of N Columbia Blvd is 40 miles per hour.
- Recent speed and travel time data (2008-2010) indicates that vehicles on these roads experience minimal congestion with speeds of 75% of greater than free flow speed.



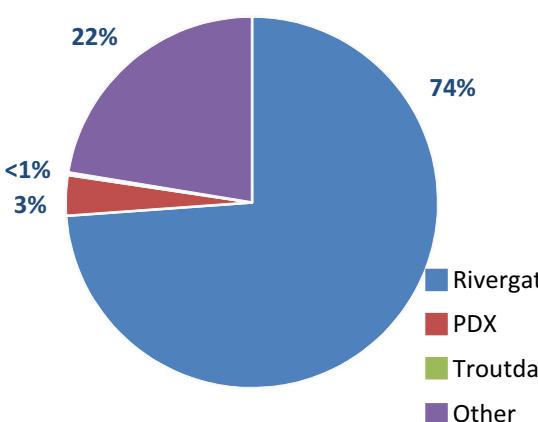
FORECASTED GROWTH AND USER DATA



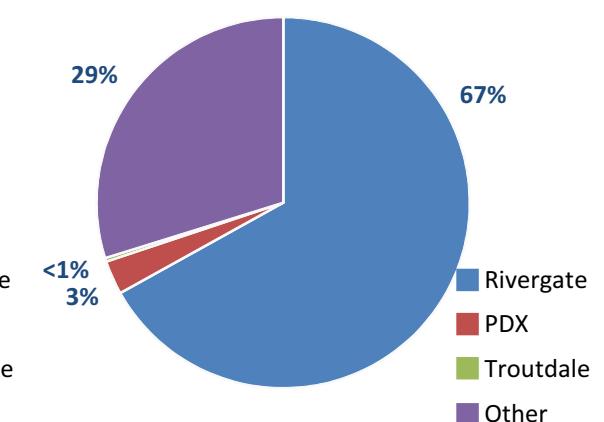
Growth of approximately **1500 vehicles** is expected on this roadway during the 2 hour PM peak period.

This represents a growth of approximately **34%** from 2010 to 2035

2010 Origin/Destination Data



2035 Origin/Destination Data



**ESTIMATED COST
(IN 2007 DOLLARS)**

\$1.2M

**ESTIMATED COST
(YEAR OF EXPENDITURE)**

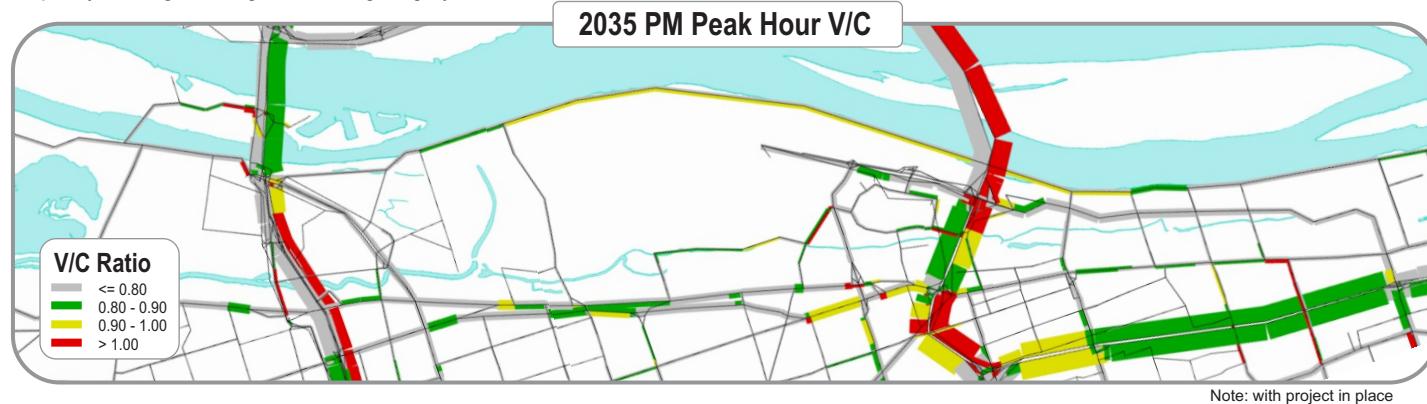
\$1.8M

**PROJECTED
YEAR OF NEED** **2017**

MARINE DRIVE ITS IMPROVEMENTS

PROBLEM STATEMENT

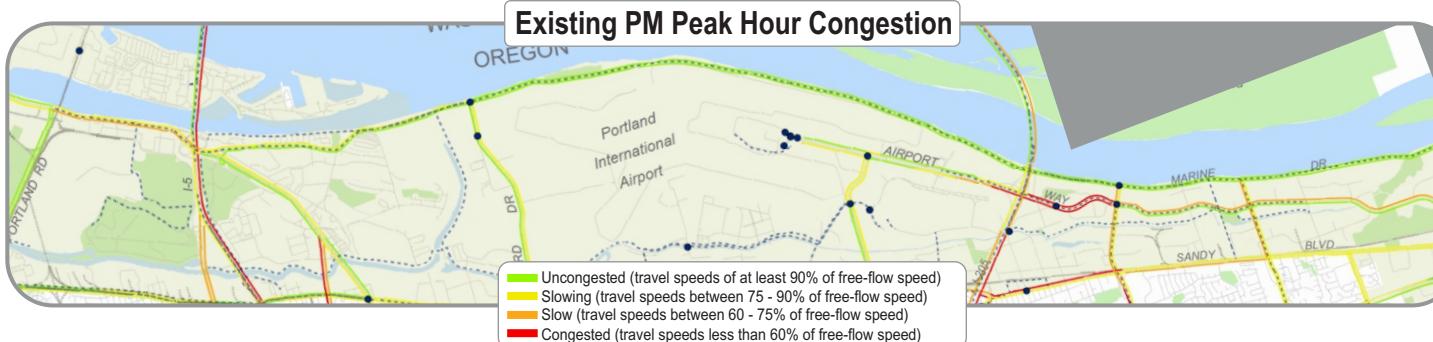
The Marine Drive corridor is forecast to experience moderate congestion (see V/C plot below). Implementation of traffic management solutions are a cheap way to mitigate congestion along lengthy corridors.



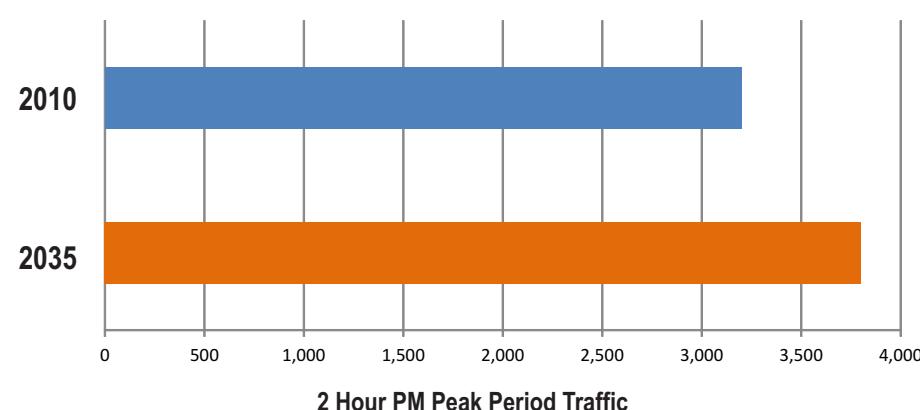
PROJECT DESCRIPTION/PURPOSE

The project has been identified in the Metro Regional Transportation Plan (#10346) as the "Marine Dr, N/NE (Portland Rd. to 185th): ITS". The extent of the project is from N Portland Road to NE 185th Drive.

The purpose of the project is to install a CCTV at N Portland Road and changeable message signs at N Portland Road, North Vancouver Way, and NE 185th Drive.

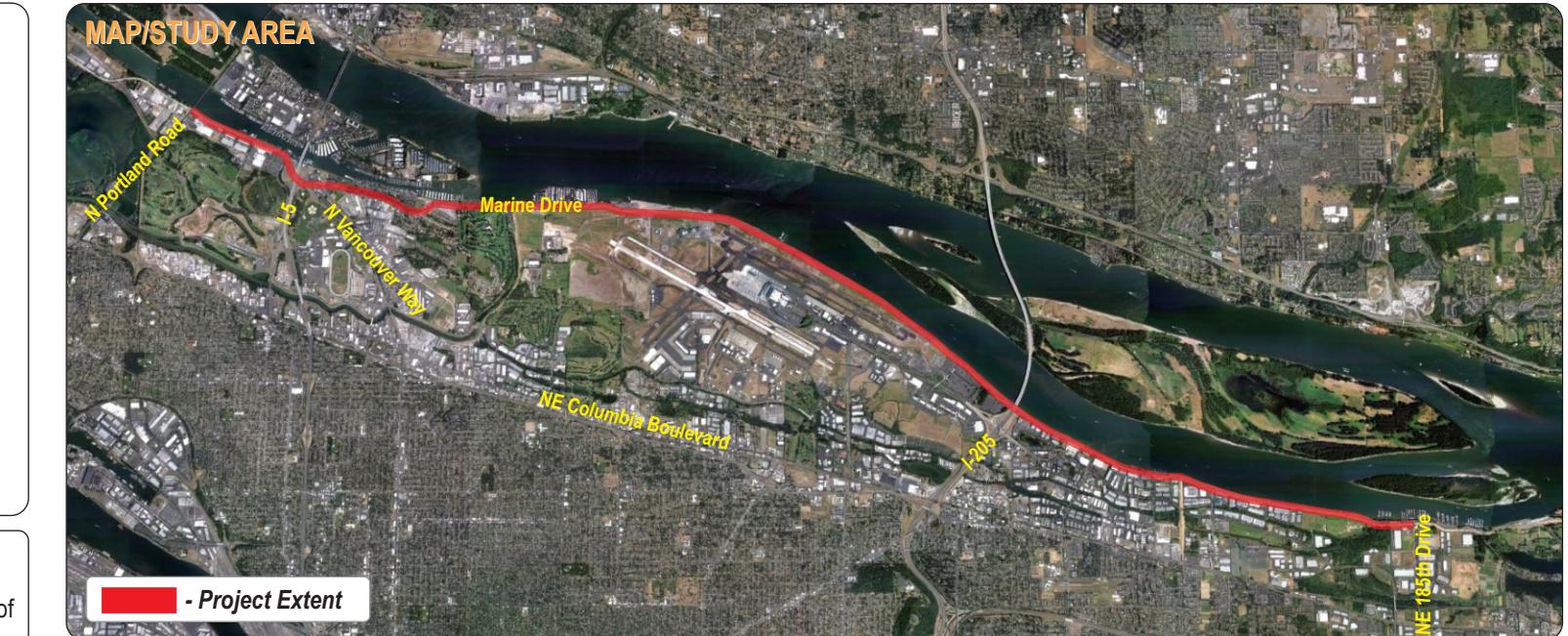


FORECASTED GROWTH AND USER DATA



Growth of approximately **600 vehicles** is expected on this roadway during the 2 hour PM peak period.

This represents a growth of approximately **19%** from 2010 to 2035

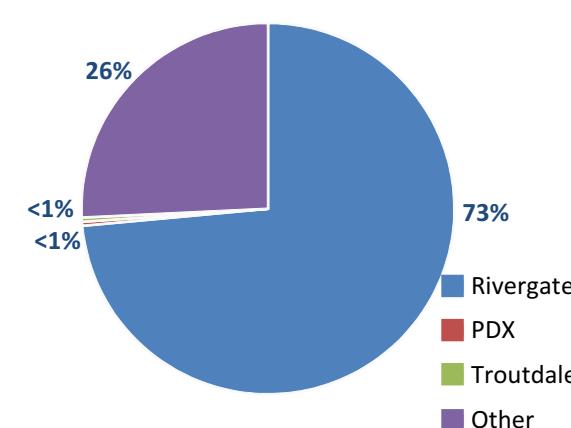


BACKGROUND DATA

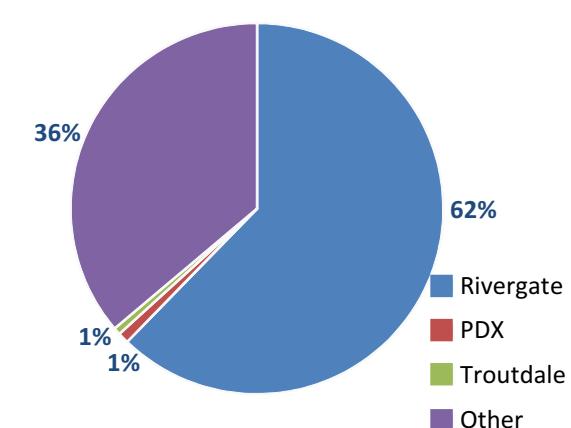
Various traffic data is available along Marine Dr from the past few years.

- By the City of Portland, the functional classification of Marine Dr is a "Major City Traffic Street" west of N Vancouver Way and a "Neighborhood Collector" east of N Vancouver Way. While the corridor is located within a "Freight District", only the segment of Marine Dr west of I-205 is classified as a "Priority Truck Street".
- Average daily traffic ranges from 3,500 to 5,000 vehicles a day on Marine Dr about the I-5 interchange (based on data collected from 2002 - 2009).
- Approximately 77 percent of vehicles on Marine Dr about the I-5 interchange are motor vehicles, while the remaining 23 percent of vehicles are trucks.
- The posted speed of Marine Dr is 40 to 45 miles per hour (depending on location).
- Recent speed and travel time data (2008-2010) indicates that vehicles on the road may experience moderate congestion with speeds of 60% or greater than free flow speed. However, for the most part, vehicles will experience uncongested travel with speeds of 90% or greater than free flow speed.

2010 Origin/Destination Data



2035 Origin/Destination Data



**ESTIMATED COST
(IN 2007 DOLLARS)**

\$0.2M

**ESTIMATED COST
(YEAR OF EXPENDITURE)**

\$0.5M

**PROJECTED
YEAR OF NEED** **2025**

NE MARTIN LUTHER KING JR BOULEVARD/NE COLUMBIA BOULEVARD AREA IMPROVEMENTS

PROBLEM STATEMENT

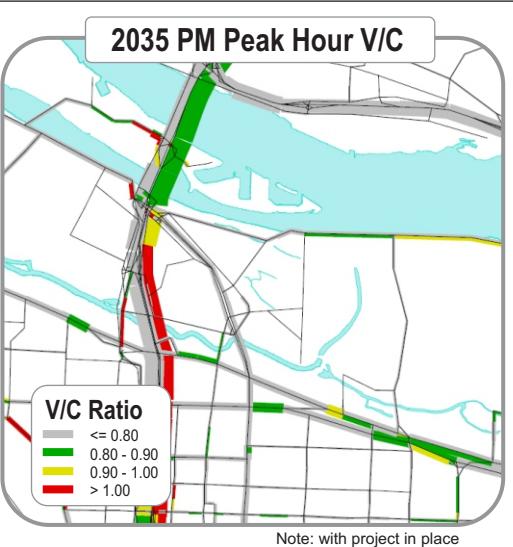
NE Columbia Boulevard currently has two travel lanes in each direction, with a center turn lane and sidewalks. However, there is an absence of bike facilities along this corridor.



NE Columbia looking West at NE MLK Jr



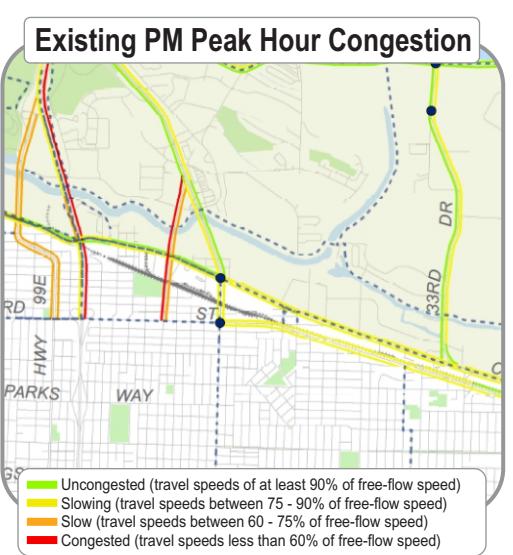
NE MLK Jr looking South at NE Lombard



BACKGROUND DATA

Various traffic data is available along the roadways in the study area from the past few years.

- By the City of Portland, the functional classification of NE MLK Blvd and NE Lombard St are "Regional/Major City Traffic", and the functional classification of NE Columbia Blvd is a "Major City Traffic Street". These roadways are classified as "Priority Truck Streets" and are within the "Freight District" north of the railway.
- Average daily traffic ranges from 12,500 to 15,500 vehicles a day on NE Columbia Blvd (based on data collected from 2005).
- The posted speeds are: 45 miles per hour on NE Columbia Blvd, 30 miles per hour on NE MLK Blvd, and 35 miles per hour on NE Lombard St.
- Recent speed and travel time data (2008-2010) indicates that vehicles on these roads experience minimal congestion with speeds of 75% or greater than free flow speed.



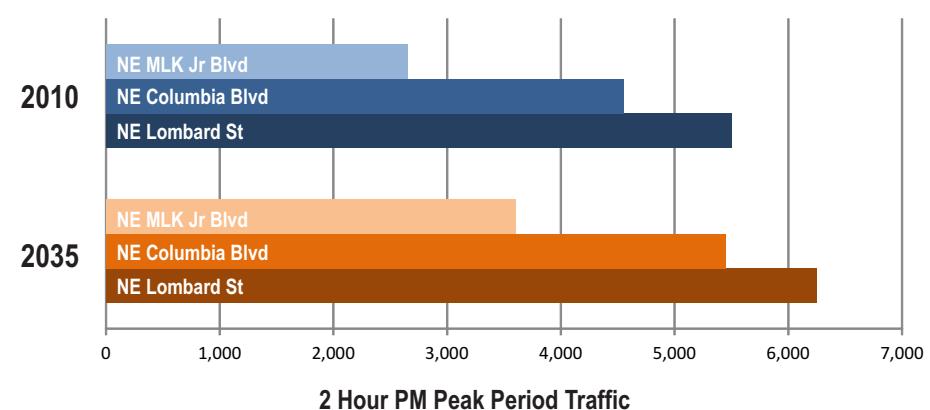
PROJECT DESCRIPTION/PURPOSE

The study area contains three projects identified in the Metro Regional Transportation Plan. These projects are #10208 "MLK O-Xing/Turn Lanes (Columbia-Lombard)", a segment of #10302 "MLK Jr, N (Columbia Blvd. - CEID): ITS", and #10339 "Columbia Blvd., N/NE (MLK Jr BL - Lombard): Bikeway". It should be noted that the City of Portland did a study for this location, and the overall project resulted into the Columbia/MLK right turn lane. The MLK Jr project was dismissed because of the railroad grade separation.

The purpose of project #10208 is to reduce delays at the intersections of NE Martin Luther King Jr Boulevard and NE Columbia Boulevard and NE Lombard Street through intersection and signal improvements, including the addition of right-turn lanes. The purpose of project #10302 is to install CCTVs along NE Martin Luther King Jr Boulevard from NE Columbia Boulevard to the Central Eastside Industrial District. The purpose of project #10339 is to construct bike lanes along NE Columbia Boulevard from NE Martin Luther King Jr Boulevard to NE Lombard Place. A prototypical cross section of NE Columbia Boulevard has been included.



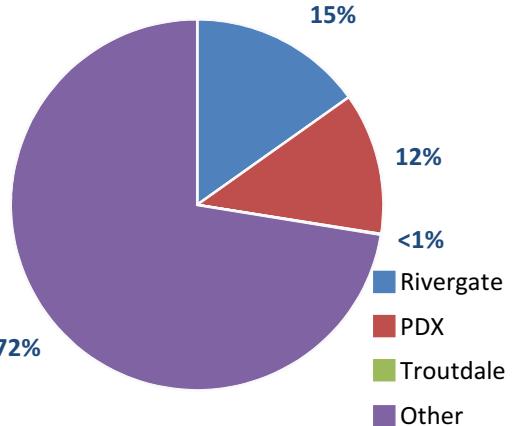
FORECASTED GROWTH AND USER DATA



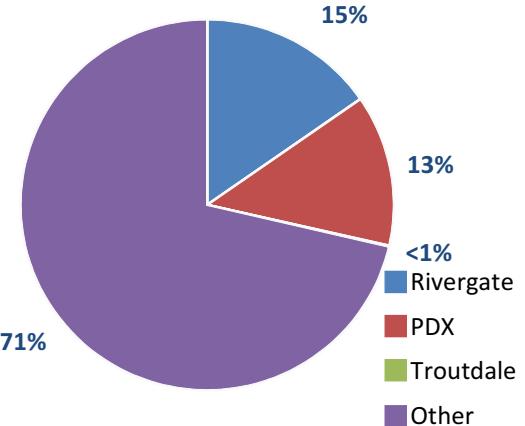
Growth of approximately **2,600 vehicles** is expected in this region during the 2 hour PM peak period.

This represents a growth of approximately **20%** from 2010 to 2035

2010 Origin/Destination Data



2035 Origin/Destination Data



Metro Regional
Transportation
Plan #

10208 10302 10339

ESTIMATED COST
(IN 2007 DOLLARS)

\$2.2M \$1.0M \$0.2M

ESTIMATED COST
(YEAR OF
EXPENDITURE)

\$3.3M \$2.0M \$0.3M

PROJECTED
YEAR OF NEED

2017 2025 2025

SW QUAD ACCESS

PROBLEM STATEMENT

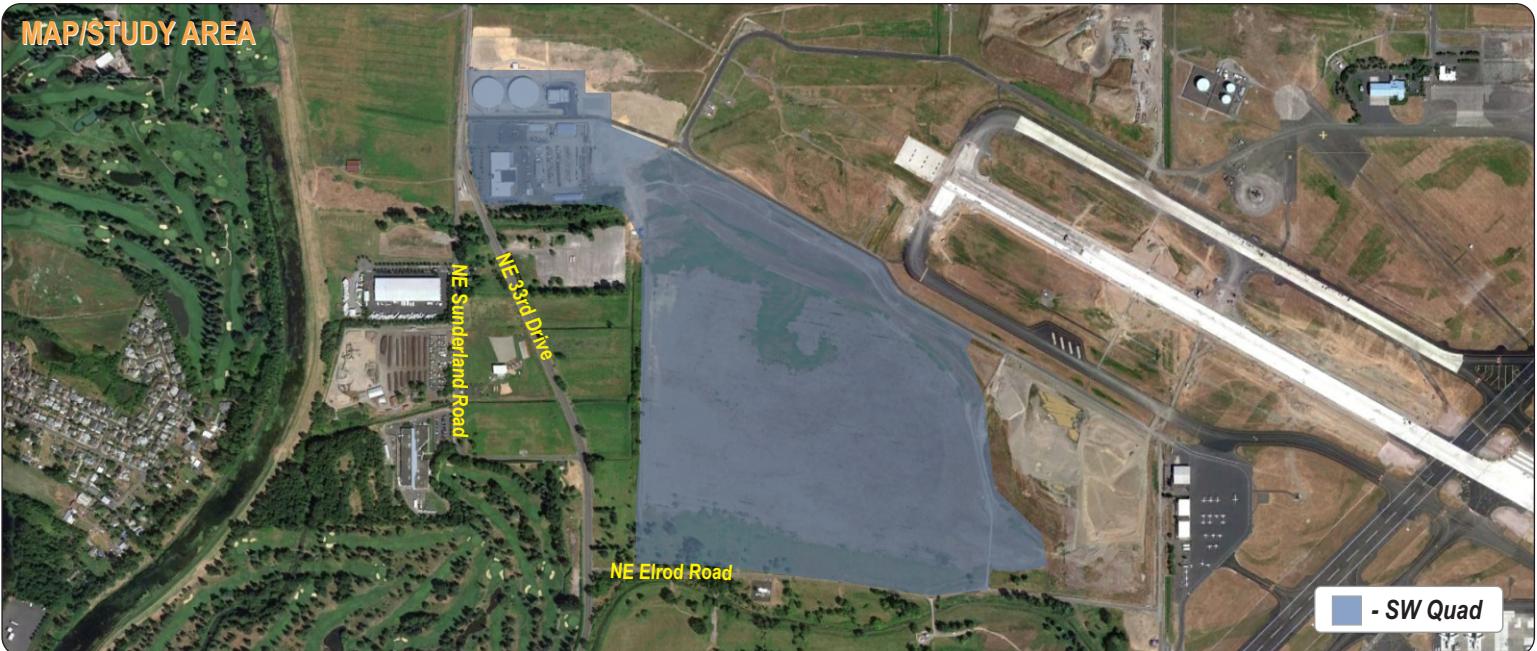
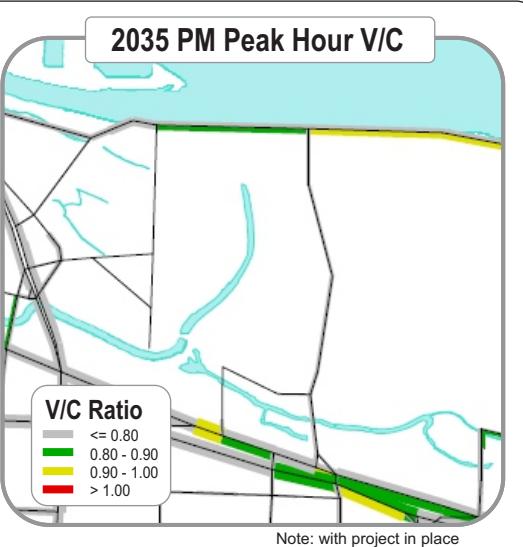
The developing area known as "SW Quad" currently has little to no street access. In order to serve the developing PDX properties, road access will need to be provided. To allow for efficient movement of traffic into SW Quad, access should stem from NE 33rd Drive.



NE 33rd Road looking North at NE Elrod Road



NE 33rd Road looking South at National Guard driveway



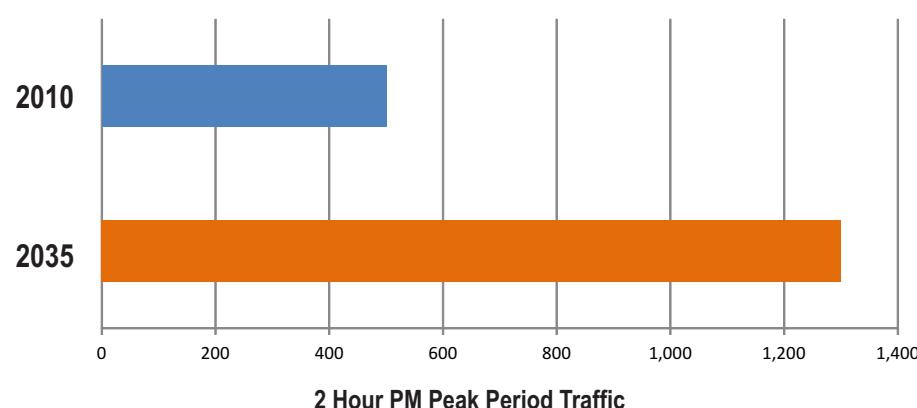
BACKGROUND DATA

Various traffic data is available along NE 33rd Dr from the past few years.

- By the City of Portland, the functional classification of NE 33rd Dr is a "Neighborhood Collector". Access roads into SW Quad would likely fall under the classification of "Local Service Traffic Street". SW Quad and NE 33rd Dr are located within a "Freight District", and therefore, all streets within the area are classified as "Freight Streets".
- Average daily traffic ranges from 4,800 to 5,100 vehicles a day on NE 33rd Dr (based on data collected from 2005).
- Approximately 88 percent of vehicles on NE 33rd Road are motor vehicles, while the remaining 12 percent of vehicles are trucks.
- The posted speed of NE 33rd Dr is 45 miles per hour.
- Recent speed and travel time data (2008-2010) indicates that vehicles on the road experience minimal congestion with speeds of 75% of greater than free flow speed.



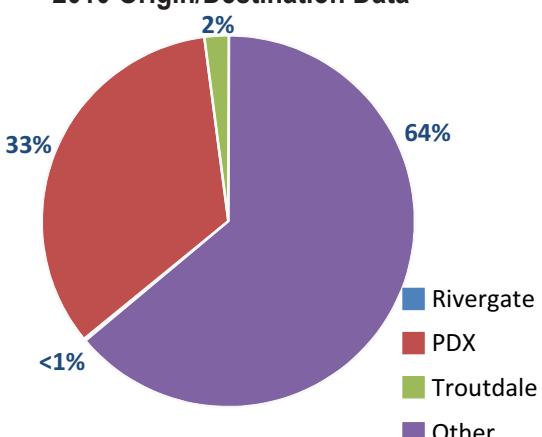
FORECASTED GROWTH AND USER DATA



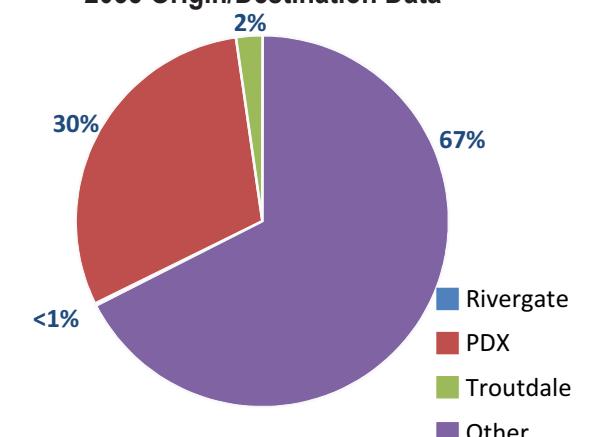
Growth of approximately **800 vehicles** is expected on 33rd Avenue during the 2 hour PM peak period.

This represents a growth of approximately **160%** from 2010 to 2035

2010 Origin/Destination Data



2035 Origin/Destination Data



**ESTIMATED COST
(IN 2007 DOLLARS)**

\$5.9M

**ESTIMATED COST
(YEAR OF EXPENDITURE)**

\$8.8M

**PROJECTED
YEAR OF NEED** **2025**

NE CORNFOOT ROAD IMPROVEMENTS

PROBLEM STATEMENT

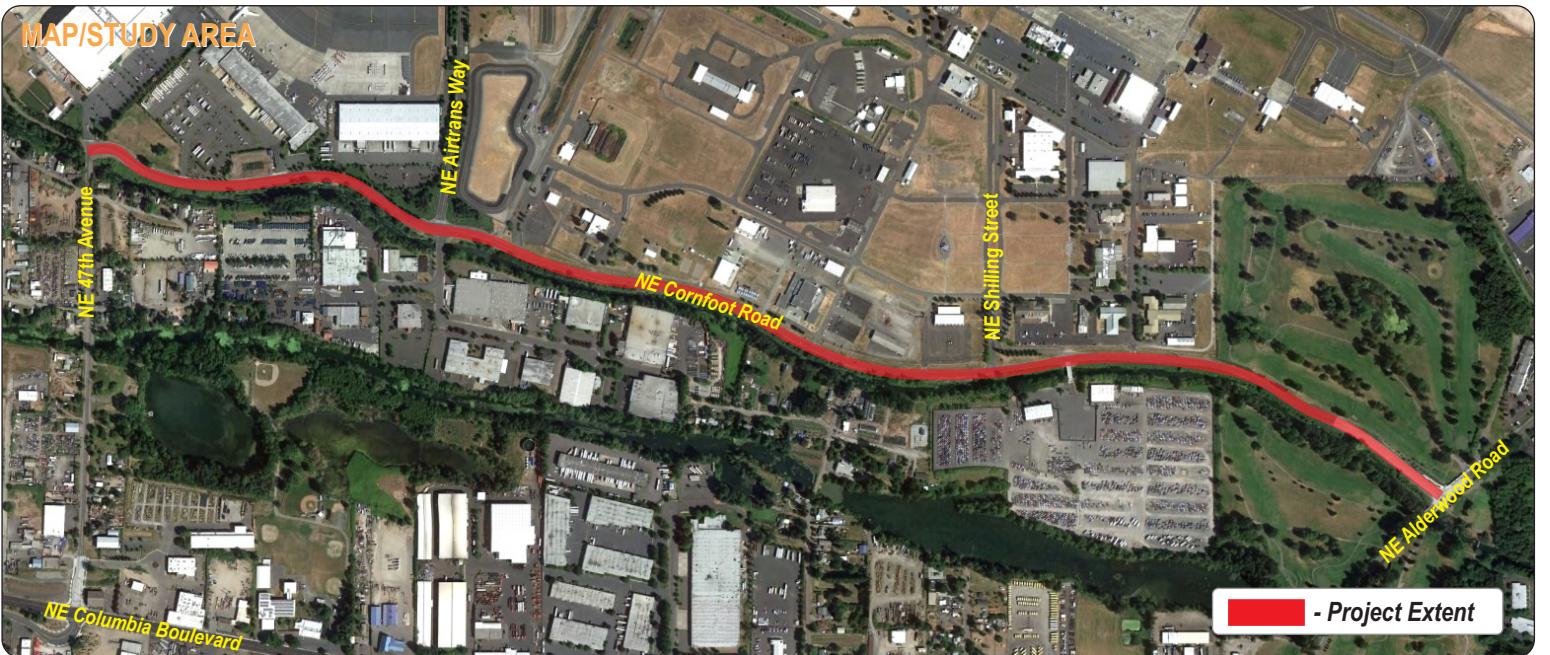
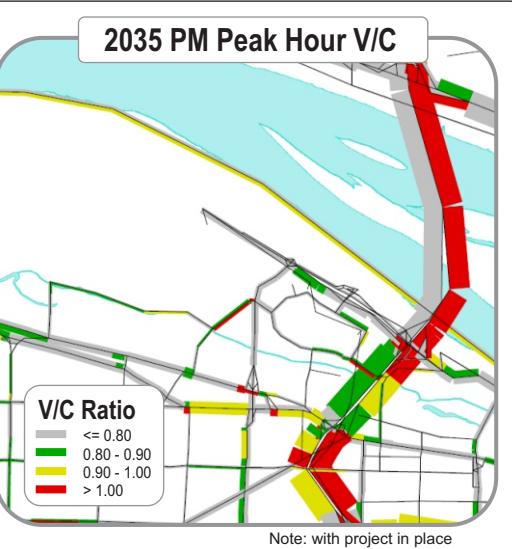
The Portland Transportation System Plan defines NE Cornfoot Road as a "City Bikeway". However, bicyclists currently have to share a travel lane with motorists due to the lack of shoulder lanes and bike lanes. This raises a concern of both safety and motor vehicle delay.



NE Cornfoot Road looking West at NE Airtrans Way



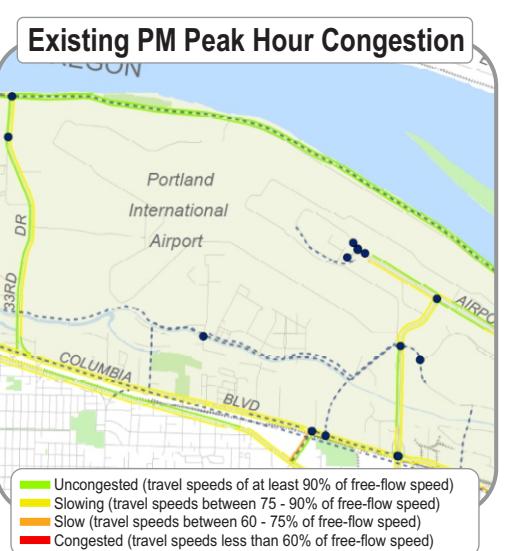
NE Cornfoot Road looking East near NE Shilling Street



BACKGROUND DATA

Various traffic data is available along NE Cornfoot Rd from the past few years.

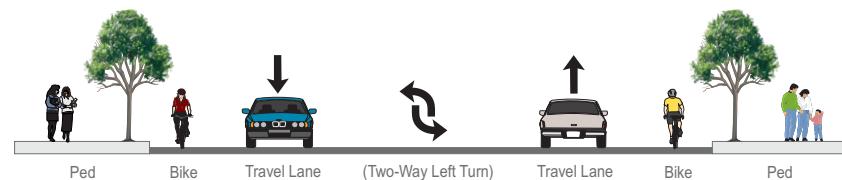
- By the City of Portland, the functional classification of NE Cornfoot Rd is a "Neighborhood Collector". This roadway is classified as a "Priority Truck Street" and is within a "Freight District".
- Average daily traffic ranges from 6,000 to 7,000 vehicles a day on NE Cornfoot Rd (based on data collected from 2011-2012).
- Approximately 80 percent of vehicles on NE Cornfoot Rd are motor vehicles, while the remaining 20 percent of vehicles are trucks.
- The posted speed of NE Cornfoot Rd is 40 miles per hour.



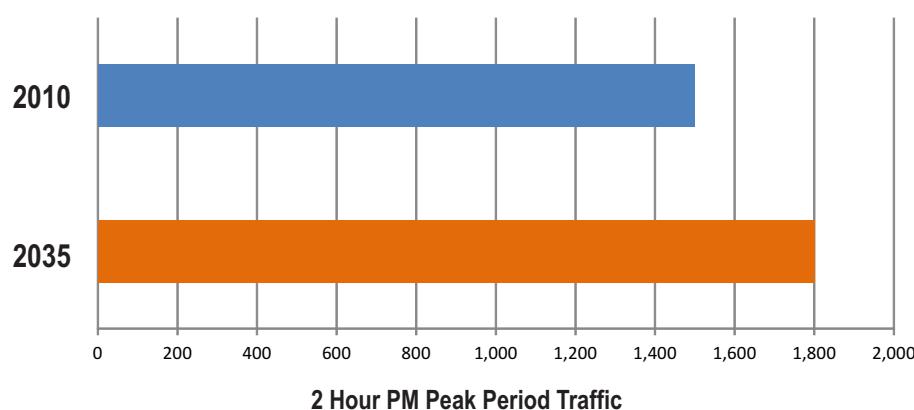
PROJECT DESCRIPTION/PURPOSE

The project has been identified in the Metro Regional Transportation Plan (#10340) as the "Cornfoot, NE (47th - Alderwood): Road Widening & Intersection Improvements".

The purpose of the project is to: widen the existing 2-3 lane NE Cornfoot Road from NE 47th Avenue to NE Airtrans Way to include bike lanes; signalize the intersection of NE Cornfoot Road at NE Airtrans Way and reconfigure traffic flow; and to stripe bike lanes along NE Cornfoot Road from NE Airtrans Way to NE Alderwood Road. A prototypical cross section of this type of roadway has been included.



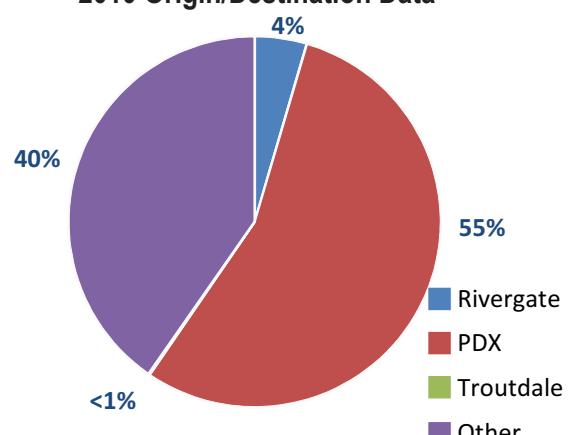
FORECASTED GROWTH AND USER DATA



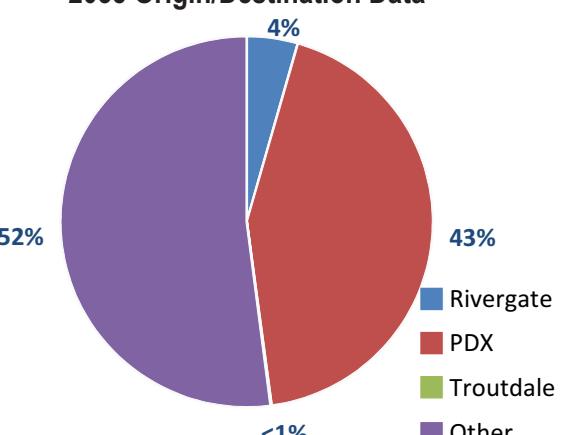
Growth of approximately **300 vehicles** is expected on this roadway during the 2 hour PM peak period.

This represents a growth of approximately **20%** from 2010 to 2035

2010 Origin/Destination Data



2035 Origin/Destination Data



**ESTIMATED COST
(IN 2007 DOLLARS)**

\$2.8M

**ESTIMATED COST
(YEAR OF EXPENDITURE)**

\$4.2M

**PROJECTED
YEAR OF NEED** **2017**

NE COLUMBIA BOULEVARD IMPROVEMENTS, NE 60TH AVENUE TO NE 82ND AVENUE

PROBLEM STATEMENT

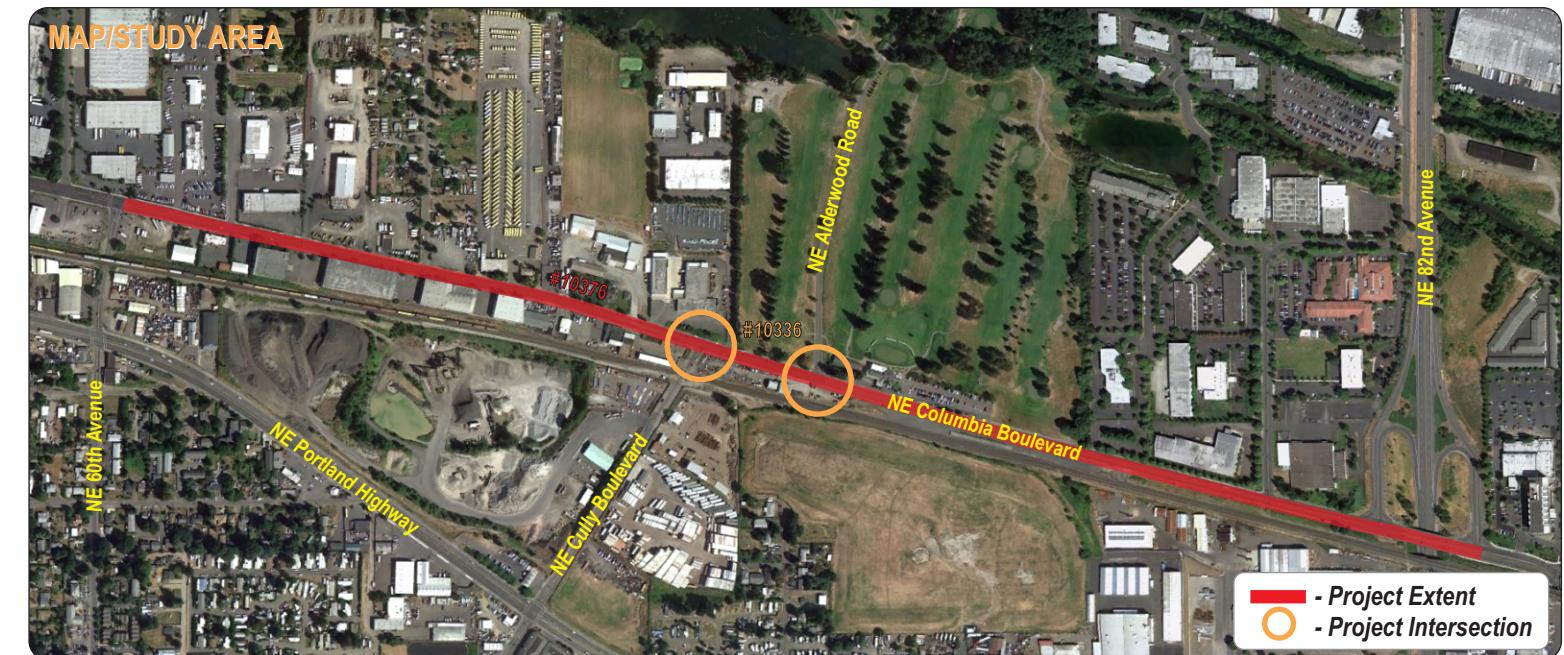
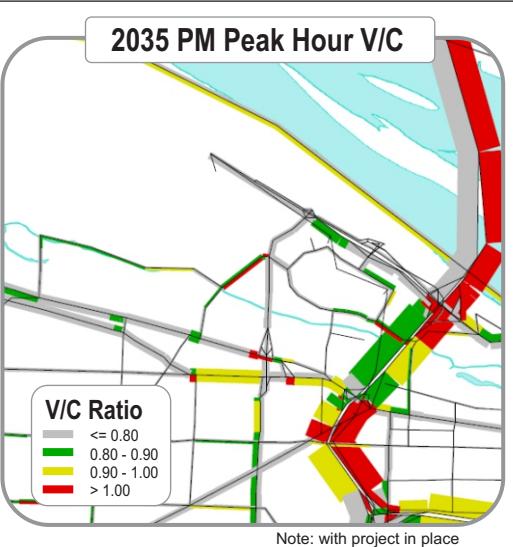
Currently, NE Columbia Boulevard is a three lane roadway with no bike lanes. In 2035, it is predicted that this facility will be over capacity near NE 82nd Avenue (see V/C plot to the right). Aside from congestion issues, with expanding air cargo facilities south of Portland, freight mobility and accessibility pose a concern. Truck movements at the intersections of NE Columbia Boulevard with NE Cully Boulevard and NE Alderwood Road can cause significant delay with the existing intersection and segment configurations.



NE Columbia Blvd looking East at NE Cully Blvd



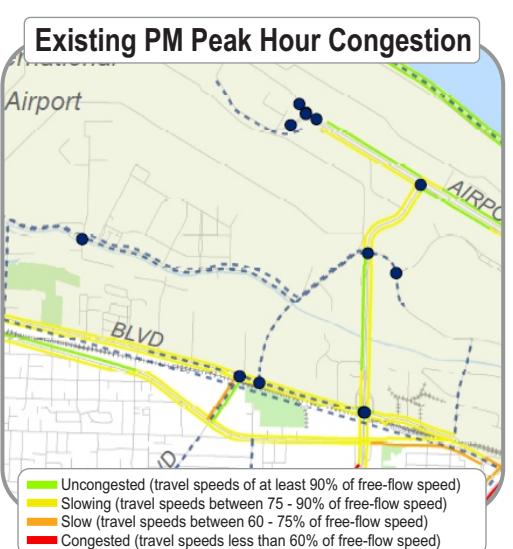
NE Columbia Blvd looking West at NE Alderwood Rd



BACKGROUND DATA

Various traffic data is available along NE Columbia Blvd from the past few years.

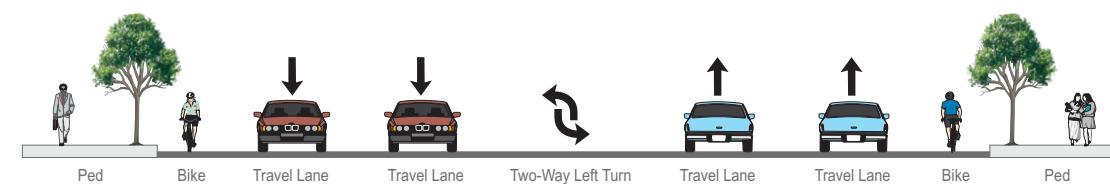
- By the City of Portland, the functional classification of NE Columbia Blvd is a "Major City Traffic Street". This roadway is classified as a "Priority Truck Streets" and borders the "Freight District".
- Average daily traffic ranges from 20,000 to 21,000 vehicles a day on NE Columbia Blvd (based on data collected from 2005).
- Approximately 82 percent of vehicles on NE Columbia Blvd are motor vehicles, while the remaining 18 percent of vehicles are trucks.
- The posted speed of NE Columbia Blvd is 40 miles per hour, and 85% of vehicles roughly travel this speed, or lower, with the 85% percentile speed ranging from 43-45 miles per hour. Less than 1.5 percent of vehicle travel 10% or higher over the posted speed.
- Recent speed and travel time data (2008-2010) indicates that vehicles on these roads experience minimal congestion with speeds of 75% or greater than free flow speed.



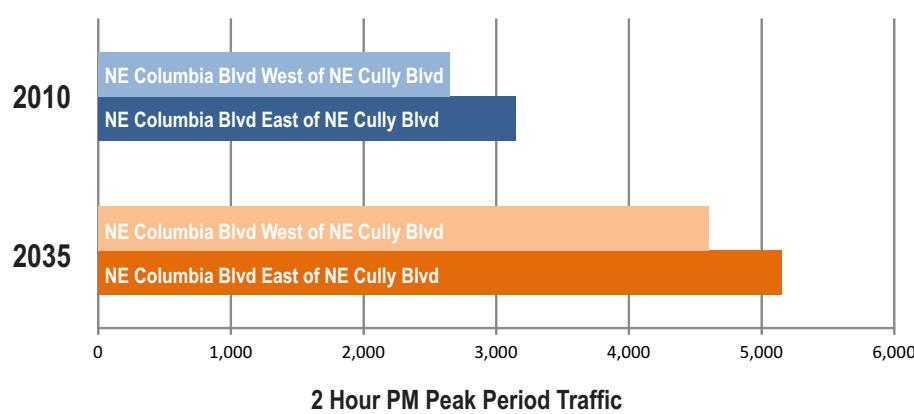
PROJECT DESCRIPTION/PURPOSE

Two Metro Regional Transportation Plan projects lie within the project corridor: (#10336) "Alderwood/Columbia Blvd/Cully, NE: Intersection Improvements" and (#10376) "Columbia Blvd. Widening". The widening project extends from NE 60th Avenue to NE 82nd Avenue.

The purpose of project #10336 is to provide signalization, left turn pockets, enhance turning radii, and to improve circulation for trucks. The purpose of project #10376 is to increase mobility and safety throughout this corridor for motorized and non-motorized modes by increasing the roadway to five lanes, which will include full bike lanes and sidewalks. A prototypical cross section of this type of roadway has been included.



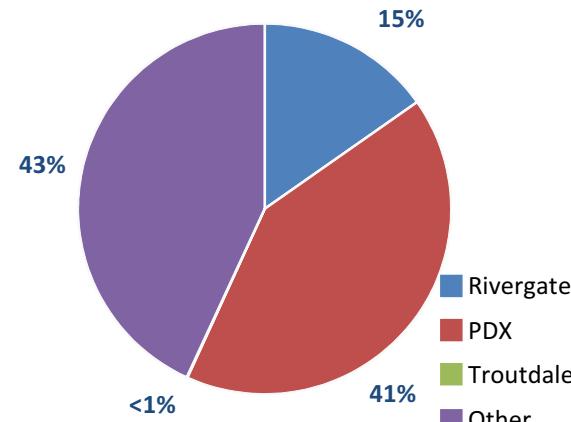
FORECASTED GROWTH AND USER DATA



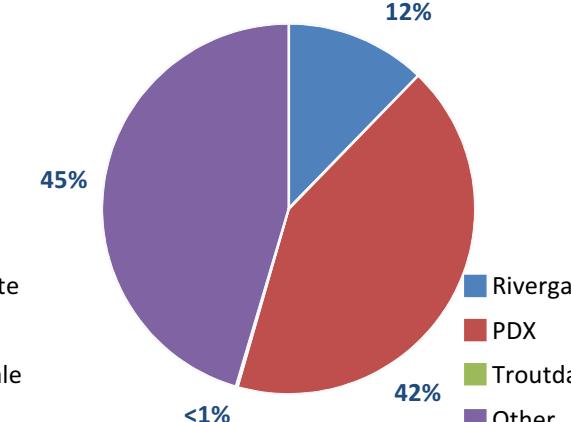
Growth of approximately **2,000 vehicles** is expected on this roadway during the 2 hour PM peak period.

This represents a growth of approximately **68%** from 2010 to 2035

2010 Origin/Destination Data



2035 Origin/Destination Data



Metro Regional Transportation Plan #	10336	10376
ESTIMATED COST (IN 2007 DOLLARS)	\$1.5M	\$14.9M
ESTIMATED COST (YEAR OF EXPENDITURE)	\$2.2M	\$22.0M
PROJECTED YEAR OF NEED	2017	2017

NE AIRPORT WAY/NE 82ND AVENUE GRADE SEPARATION

PROBLEM STATEMENT

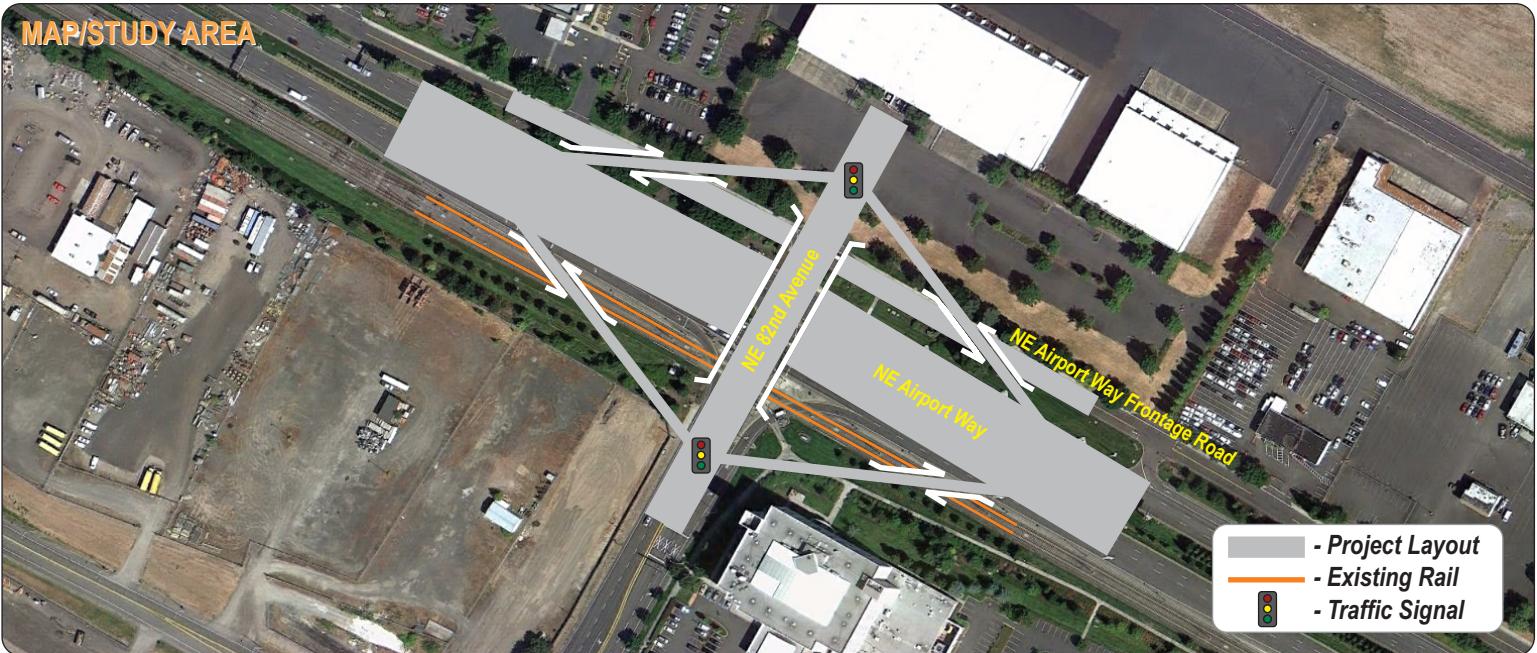
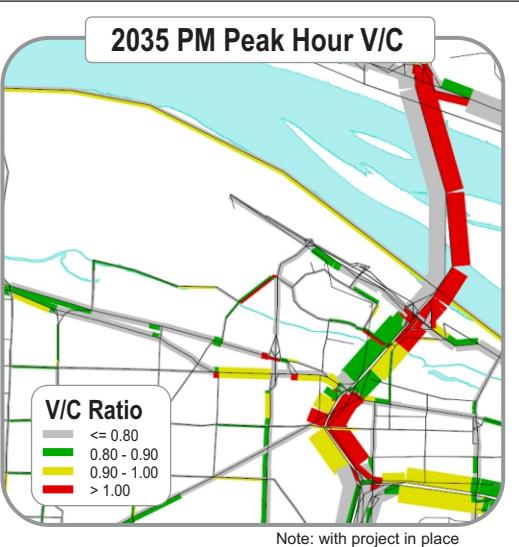
The current intersection of NE Airport Way and NE 82nd Avenue is a complex layout involving dual medians on the east leg, a rail crossing on the south leg, and an eight-lane pedestrian crossing along the east leg. As a result, intersection delay and safety are of concern.



NE Airport Way looking East at NE 82nd Avenue



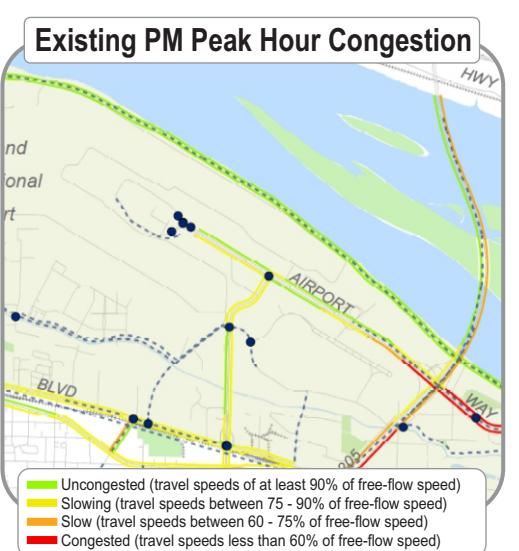
NE 82nd Avenue looking North at NE Airport Way



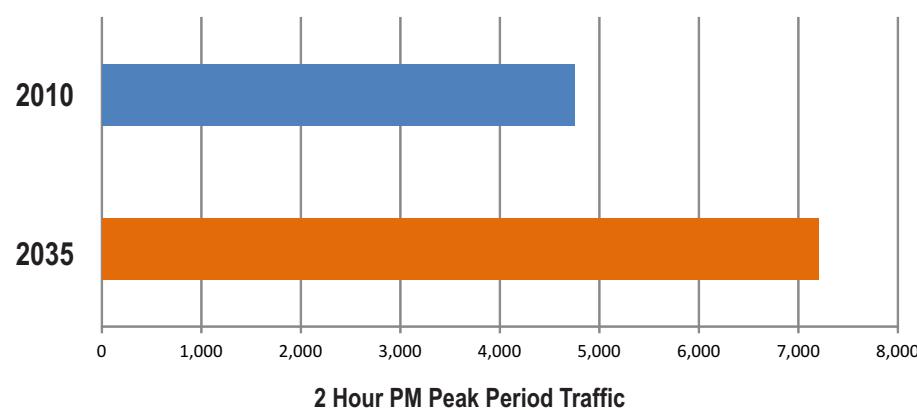
BACKGROUND DATA

Various traffic data is available along NE Airport Way and NE 82nd Ave from the past few years.

- By the City of Portland, the functional classifications of NE Airport Way and NE 82nd Ave are "Major City Traffic Streets". These roadways are classified as "Priority Truck Streets" and are within a "Freight District".
- Average daily traffic ranges from 16,200 to 23,000 vehicles a day on NE 82nd Ave and from 37,000 to 54,000 on NE Airport Way (based on data collected from 2012).
- Approximately 92 percent of vehicles on NE Airport Way are motor vehicles, while the remaining 8 percent of vehicles are trucks.
- Approximately 91 percent of vehicles on NE 82nd Ave are motor vehicles, while the remaining 9 percent of vehicles are trucks.
- The posted speed of NE Airport Way is 45 miles per hour, and the posted speed of NE 82nd Ave is 35 miles per hour.
- Recent speed and travel time data (2008-2010) indicates that vehicles on these roads experience minimal congestion with speeds of 75% or greater than free flow speed.



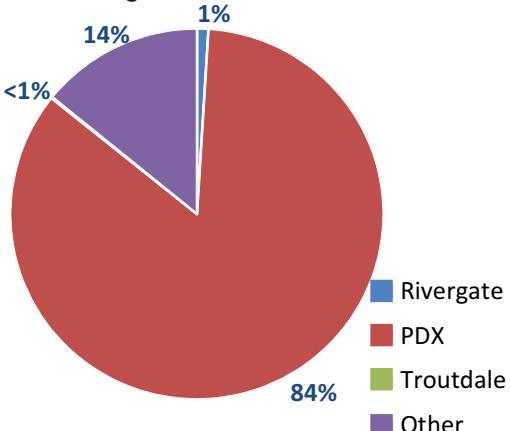
FORECASTED GROWTH AND USER DATA



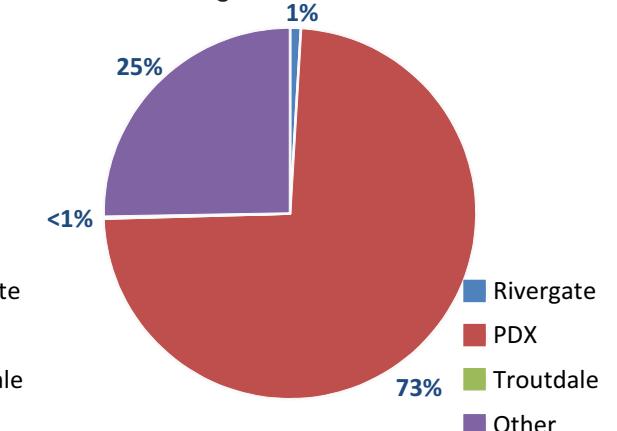
Growth of approximately **2,450 vehicles** is expected on this roadway during the 2 hour PM peak period.

This represents a growth of approximately **52%** from 2010 to 2035

2010 Origin/Destination Data



2035 Origin/Destination Data



ESTIMATED COST (IN 2007 DOLLARS)

\$92.0M

ESTIMATED COST (YEAR OF EXPENDITURE)

\$136.2M

PROJECTED YEAR OF NEED **2017**

NE AIRPORT WAY ITS IMPROVEMENTS

PROBLEM STATEMENT

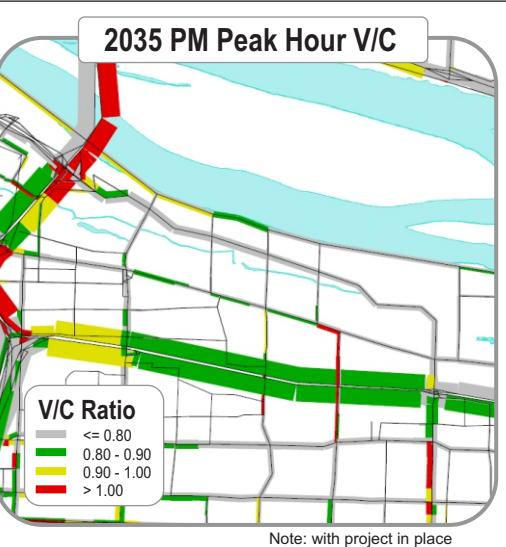
The corridor of NE Airport Way from I-205 to NE 158th Avenue is projected to experience congested speeds in 2035 (see congestion plot to the lower-right), especially between I-205 and NE 122nd Avenue due to high volumes of traffic connecting to/from I-205. An inadequate ITS system along this segment prohibits a fully optimized signalized corridor.



NE Airport Way looking East at NE 138th Avenue



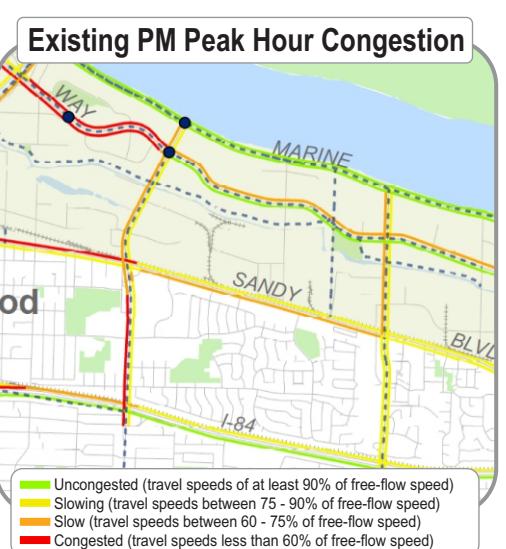
NE Airport Way looking West at 158th Avenue



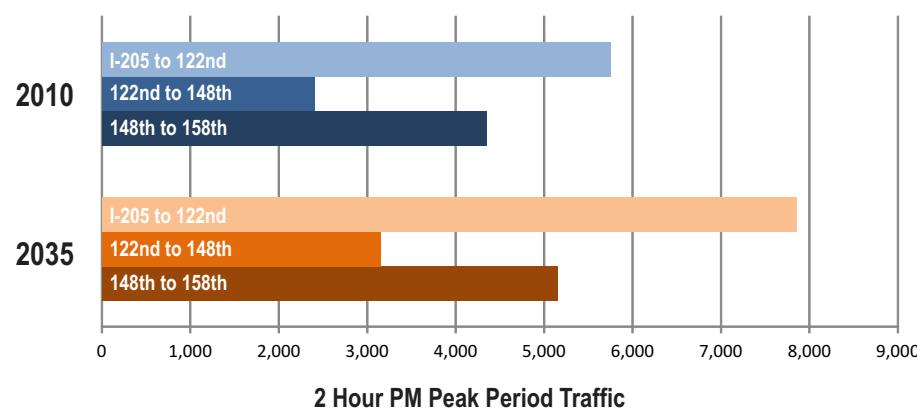
BACKGROUND DATA

Various traffic data is available along NE Airport Way from the past few years.

- Functional classification of the roadway by the City of Portland is a "Major City Traffic Street" from I-205 to NE Holman St and a "District Collector" from NE Holman St to NE 158th Ave. This roadway has a freight classification of "Regional Truckway" and is within a "Freight District".
- Average daily traffic ranges from 16,500 to 26,000 vehicles a day between I-205 and NE 122nd Ave, and from 6,100 to 10,500 vehicles a day between NE 122nd Ave and 158th Ave (based on data collected from 2003-2010).
- Posted speed along NE Airport Way is 45 miles per hour.
- Recent speed and travel time data (2008-2010 data) indicates that vehicles on this road experience significant congestion with speeds less than 60% of free flow speed.



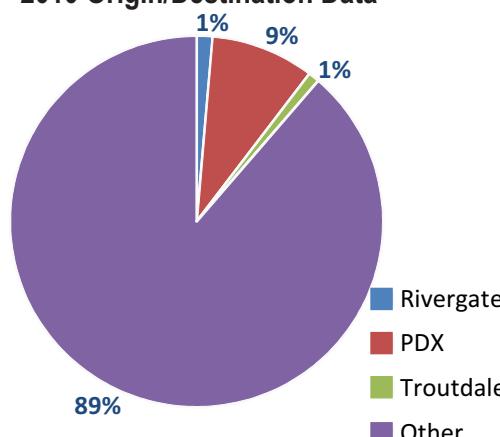
FORECASTED GROWTH AND USER DATA



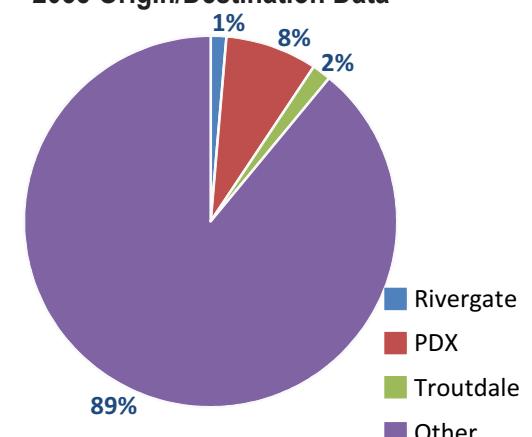
Growth of approximately **2,100 vehicles** is expected on this roadway west of 122nd and approximately **800 vehicles** east during the 2 hour PM peak period.

This represents a growth of approximately **29%** from 2010 to 2035

2010 Origin/Destination Data



2035 Origin/Destination Data



**ESTIMATED COST
(IN 2007 DOLLARS)**

\$0.3M

**ESTIMATED COST
(YEAR OF EXPENDITURE)**

\$0.4M

**PROJECTED
YEAR OF NEED** **2017**

NE 122ND AVENUE IMPROVEMENTS

PROBLEM STATEMENT

The intersection of NE Marine Drive and NE 122nd Avenue is currently unsignalized. As a result, traffic turning from NE 122nd Avenue onto NE Marine Drive has to find gaps in traffic traveling through the intersection, which is a concern of both safety and mobility.

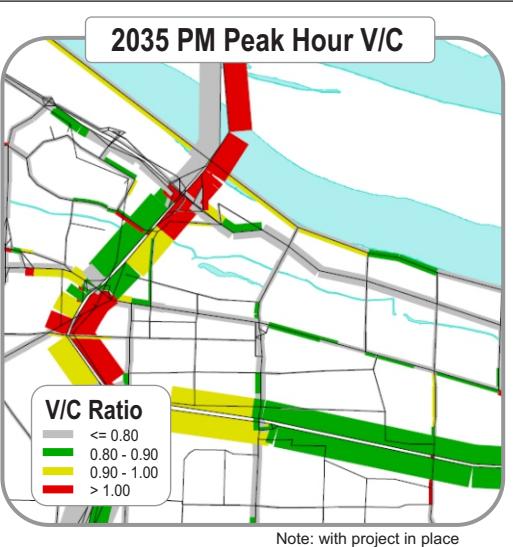
The corridor of NE 122nd Avenue from NE Marine Drive to I-84/I-30 is projected to experience congested speeds in 2035 (see congestion plot to the lower-right), especially between NE Sandy Boulevard and I-84/I-30. An inadequate ITS system along this segment prohibits a fully optimized signalized corridor.



NE Marine Dr looking East at NE 122nd Ave



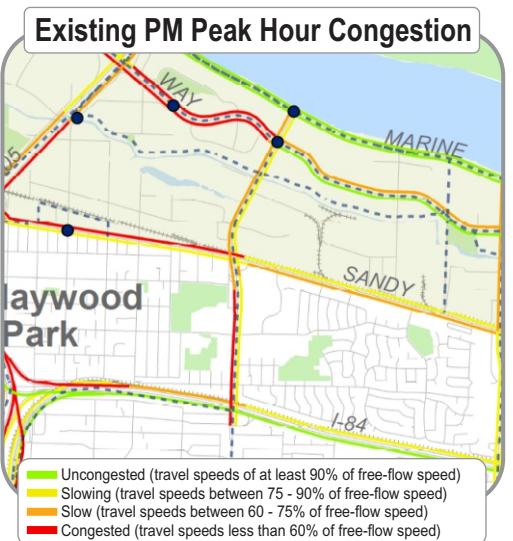
NE 122nd Ave looking South at NE Airport Way



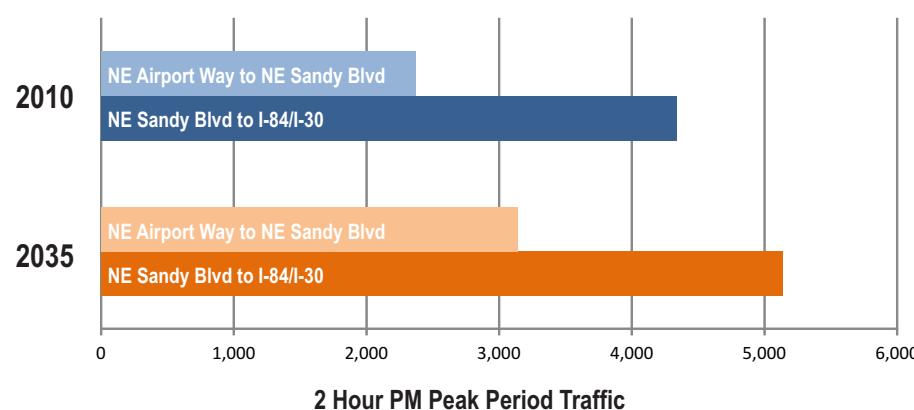
BACKGROUND DATA

Various traffic data is available along NE 122nd Ave from the past few years.

- Functional classification of the roadway by the City of Portland is a "District Collector" from NE Marine Dr to NE Sandy Blvd and a "Major City Traffic Street" south of NE Sandy Blvd. This roadway has a freight classification of "Priority Truck Street" from NE Airport Way to NE Sandy Blvd and "Major Truck Street" south of NE Sandy Blvd; The segment from NE Airport Way to NE Sandy Blvd is within a "Freight District".
- Average daily traffic ranges from 12,000 to 20,000 vehicles a day between (based on data collected from 2005-2006).
- Posted speed along NE 122nd Ave north of NE Sandy Blvd is 45 miles per hour and 35 miles per hour south of NE Sandy Blvd.
- Recent speed and travel time data (2008-2010 data) indicates that vehicles on this road experience significant congestion with speeds less than 60% of free flow speed.



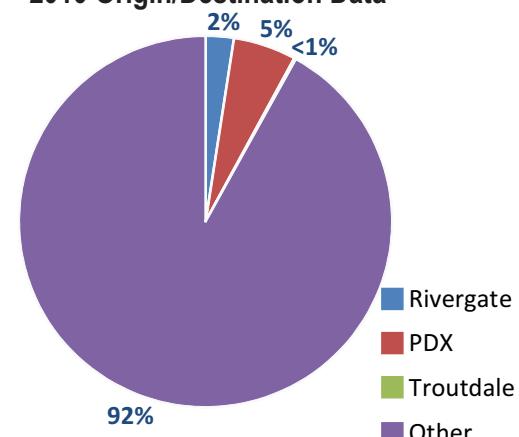
FORECASTED GROWTH AND USER DATA



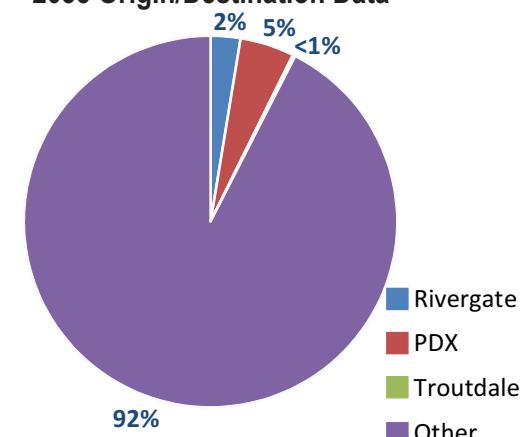
Growth of approximately **800 vehicles** is expected on this roadway during the 2 hour PM peak period.

This represents a growth of approximately **23%** from 2010 to 2035

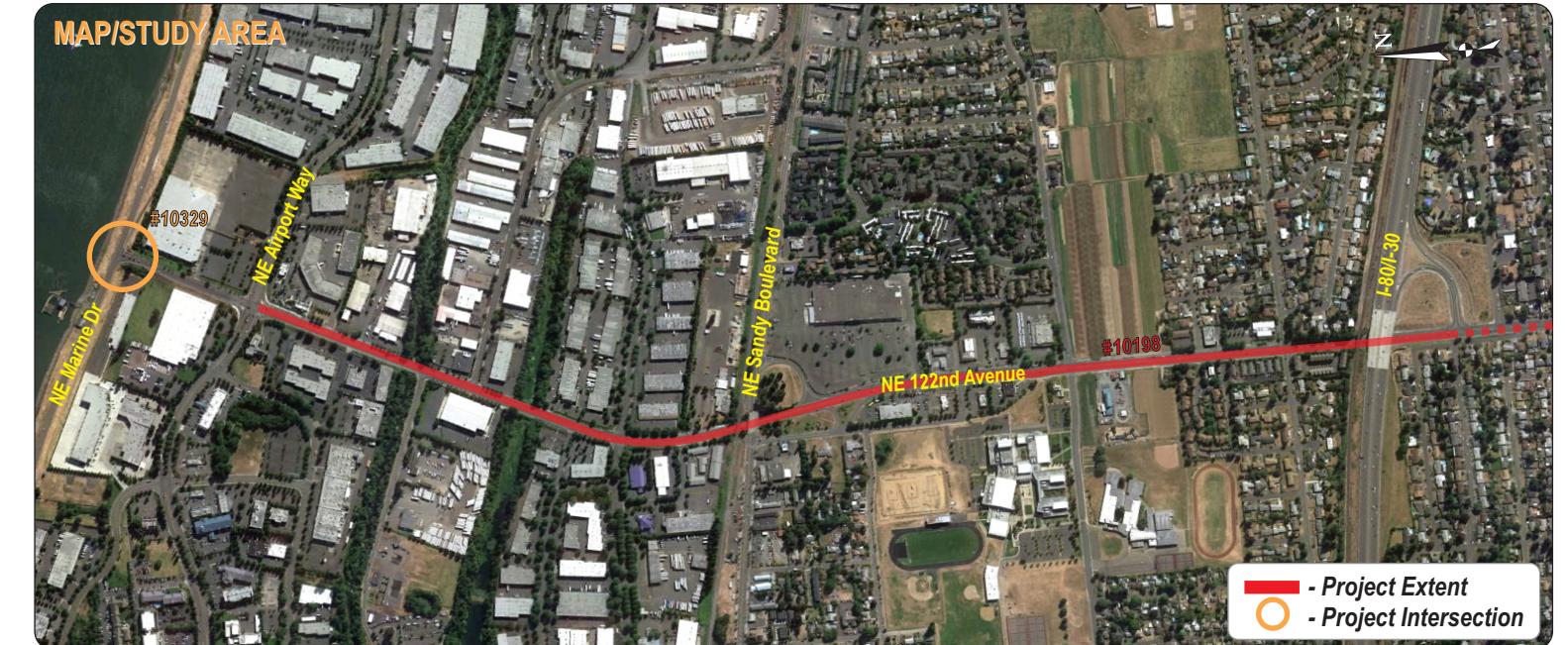
2010 Origin/Destination Data



2035 Origin/Destination Data



Metro Regional Transportation Plan #	10198	10329
ESTIMATED COST (IN 2007 DOLLARS)	\$0.5M	\$2.4M
ESTIMATED COST (YEAR OF EXPENDITURE)	\$1.0M	\$3.5M
PROJECTED YEAR OF NEED	2025	2017



PROJECT DESCRIPTION/PURPOSE

Two projects have been identified in the Metro Regional Transportation Plan (#10198) as "122nd, NE/SE (NE Airport Way to SE Powell Blvd): ITS" and (#10329) as "Marine Dr./122nd, NE: Intersection Improvements". While project #10198 extends from NE Airport Way to SE Powell Boulevard, the study area is only concerned with NE 122nd Avenue from NE Marine Drive to the I-84/I-30 eastbound ramps.

The purpose of project #10398 is to install needed ITS infrastructure (i.e. communication network, new traffic controllers, CCTV cameras, and vehicle/pedestrian detectors). Providing these ITS devices allow for more efficient and safe vehicle operation along the signalized corridor. The purpose of project #10329 is to signalize the intersection of NE 122nd Avenue and NE Marine Drive, and widen the NE Marine Drive to allow for a left turn lane.

NE 181ST AVENUE IMPROVEMENTS

PROBLEM STATEMENT

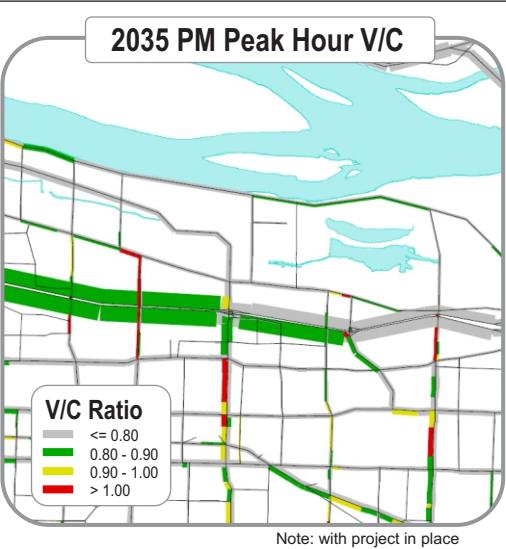
NE 181st Avenue serves as a major entry/egress route for freeway traffic in the region. This corridor from NE Sandy Boulevard to south of NE Hasley Street is projected to experience significant congestion in the future, especially south of NE Hasley Street where demand is forecasted to exceed capacity (see V/C plot to the right).



NE 181st Ave looking North at I-84 eastbound ramps



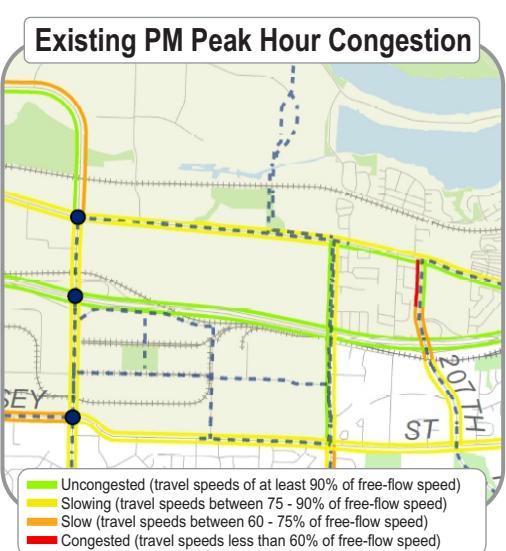
NE 181st Ave looking North at NE Sandy Blvd



BACKGROUND DATA

Various traffic data is available along NE 181st Ave from the past few years.

- Functional classification of the roadway by Multnomah County is a "Minor Arterial" from NE Airport Way to NE Sandy Blvd, a "Major Arterial" from NE Sandy Blvd to the westbound I-84 ramps and a "Primary Arterial" south of the westbound I-84 ramps. NE 181st Ave, a National Highway System route, is used as a truck corridor.
- Posted speed along NE 181st Ave is 40 miles per hour.
- Recent speed and travel time data (2008-2010 data) indicates that vehicles on this road experience minimal congestion with speeds of 75% or greater than free flow speed.

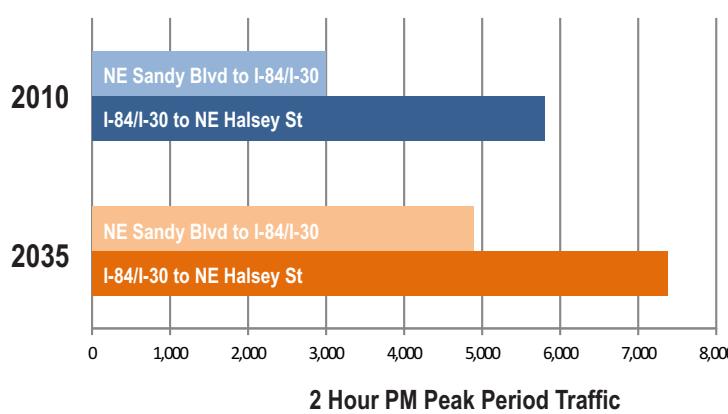


PROJECT DESCRIPTION/PURPOSE

Six projects have been identified in the Metro Regional Transportation Plan:

- (#10444) "181st Ave. Widening". This project widens southbound NE 181st Avenue to three lanes from NE Hasley Street to the I-84 eastbound ramps.
- (#10493) "181st Ave. Sandy to I-84". This project adds a southbound auxiliary lane and widens the railroad overcrossing.
- (#10495) "181st Ave. at Halsey". This project adds several turn lanes to the intersection.
- (#10496) "181st at I-84". This project involves freight mobility improvements.
- (#10497) "181st at Sandy, at Stark". This project adds a northbound right turn lane, a westbound left turn lane, and an eastbound right turn overlap. The project also involves adding second left turn lanes in the eastbound and westbound directions for the intersection of NE 181st Avenue and SE Stark Street; however, this intersection is outside of the study area.
- (#11262) "NE 181st Ave: ACM with Adaptive Signal Timing and Transit Priority Treatment". This project would provide real time and forecasted traveler information.

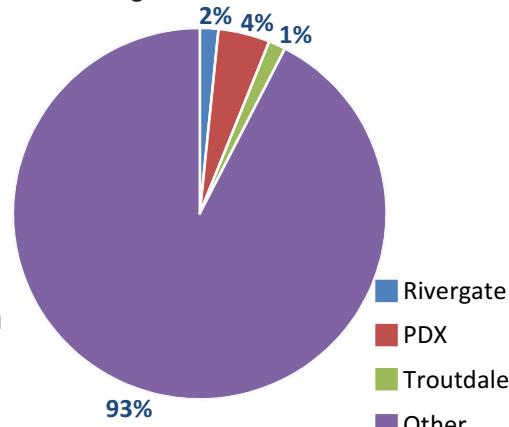
FORECASTED GROWTH AND USER DATA



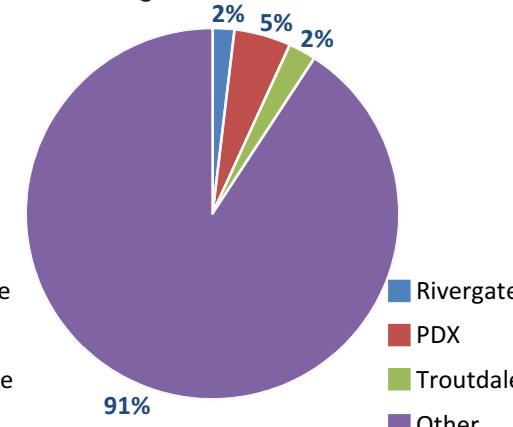
Growth of approximately **1500-1900 vehicles** is expected on this roadway during the 2 hour PM peak period.

This represents a growth of approximately **39%** from 2010 to 2035

2010 Origin/Destination Data



2035 Origin/Destination Data



Metro Regional Transportation Plan #	10444	10493	10495	10496	10497	11262
ESTIMATED COST (IN 2007 DOLLARS)	\$1.8M	\$0.8M	\$1.0M	\$0.3M	\$1.9M	\$1.7M
ESTIMATED COST (YEAR OF EXPENDITURE)	\$2.7M	\$1.7M	\$1.5M	\$0.5M	\$2.8M	\$2.7M
PROJECTED YEAR OF NEED	2017	2025	2017	2025	2025	2017

NE SANDY BOULEVARD IMPROVEMENTS

PROBLEM STATEMENT

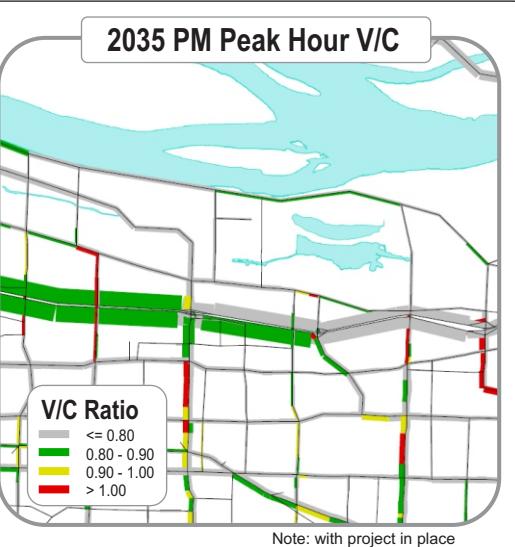
Currently, NE Sandy Boulevard consists of lane configurations varying from three to five lanes with gaps in sidewalks and bike lanes. The segment on NE Sandy Boulevard without a center turn lane can create delay on the main roadway as vehicles slow and wait to make turns. While congestion does not appear to be an issue in the future (see V/C plot to the right), mobility can be restricted. Importantly, filling gaps in bike lanes and sidewalks increases non-motorized safety and encourages non-motorized travel.



NE Sandy Boulevard looking East near NE 181st Avenue



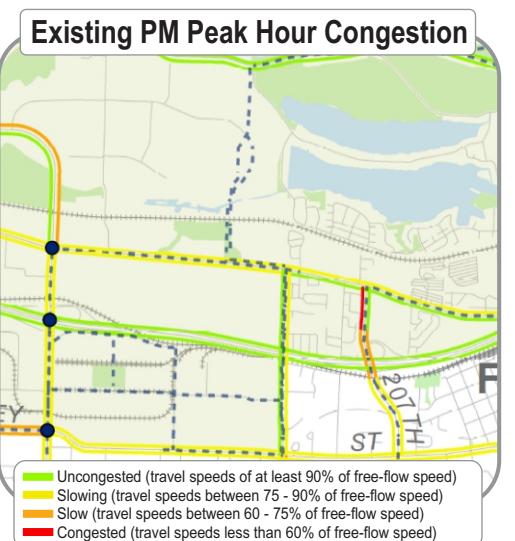
NE Sandy Boulevard looking West near NE 201st Avenue



BACKGROUND DATA

Various traffic data is available along NE Sandy Blvd from the past few years.

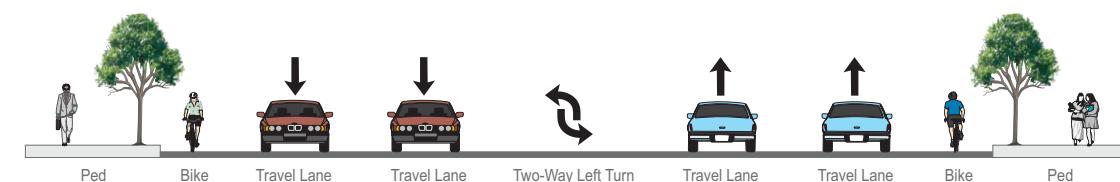
- Functional classification of the roadway by the City of Fairview is a "Minor Arterial" and is classified as a "Truck Route"
- Posted speed along NE Sandy Blvd is 45 miles per hour.
- Recent speed and travel time data (2008-2010 data) indicates that vehicles on this road experience minimal congestion with speeds of 75% or greater than free flow speed.



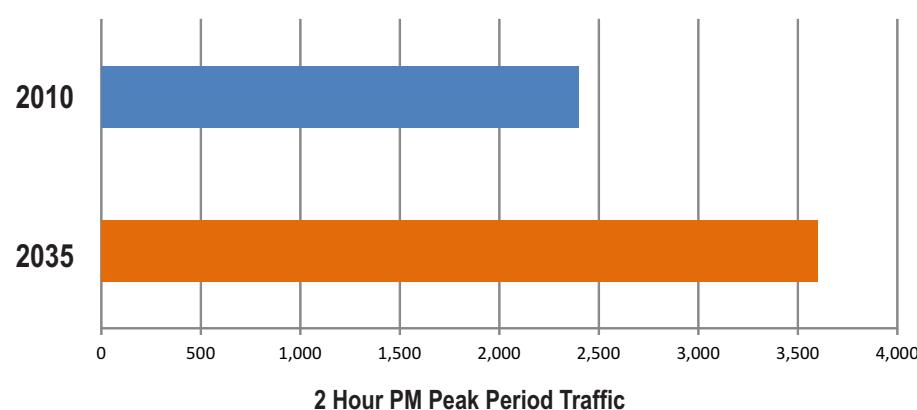
PROJECT DESCRIPTION/PURPOSE

The project has been identified in the Metro Regional Transportation Plan (#10443) as "Sandy Blvd. Widening". The extent of the project is from NE 181st Avenue to NE 202nd Avenue.

The purpose of the project is to widen NE Sandy Boulevard to a five lane cross section with 12 foot travel lanes, including a two way center turn lane. In addition, sidewalks and bike lanes have been included on this project. A prototypical cross section of this type of roadway has been included.



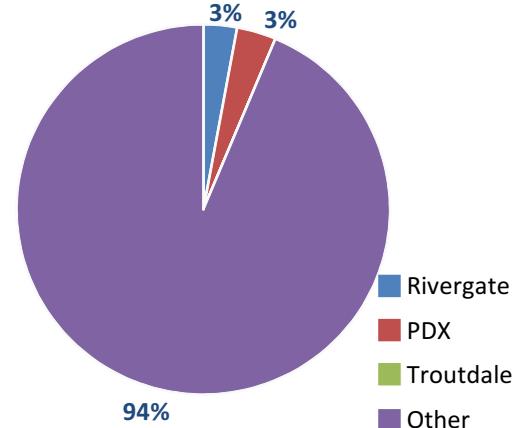
FORECASTED GROWTH AND USER DATA



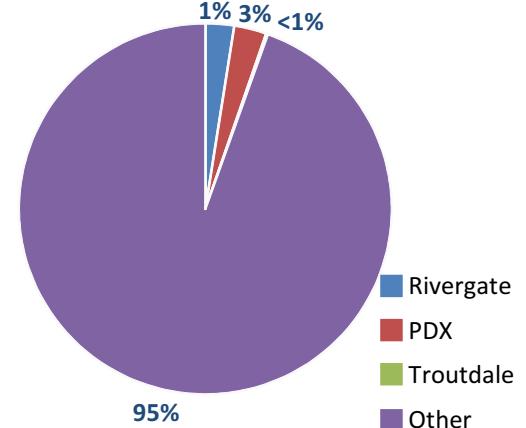
Growth of approximately **1,200 vehicles** is expected on this roadway during the 2 hour PM peak period.

This represents a growth of approximately **50%** from 2010 to 2035

2010 Origin/Destination Data



2035 Origin/Destination Data



**ESTIMATED COST
(IN 2007 DOLLARS)**

\$10.0M

**ESTIMATED COST
(YEAR OF EXPENDITURE)**

\$20.3M

**PROJECTED
YEAR OF NEED** **2025**

NE 207TH AVENUE ARTERIAL CORRIDOR MANAGEMENT

PROBLEM STATEMENT

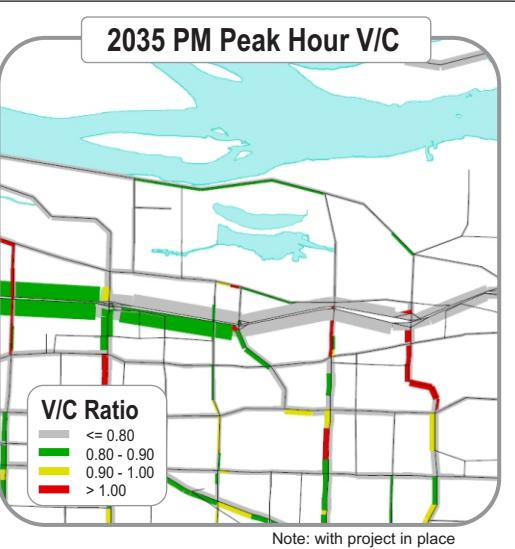
The current NE 207th Avenue corridor from NE Sandy Boulevard to NE Gilsan Street currently lacks communications to the central traffic signal system and the appropriate detection system. The current traffic signal controllers are in need of being upgraded as well.



NE 207th Ave looking North at I-84 eastbound ramps



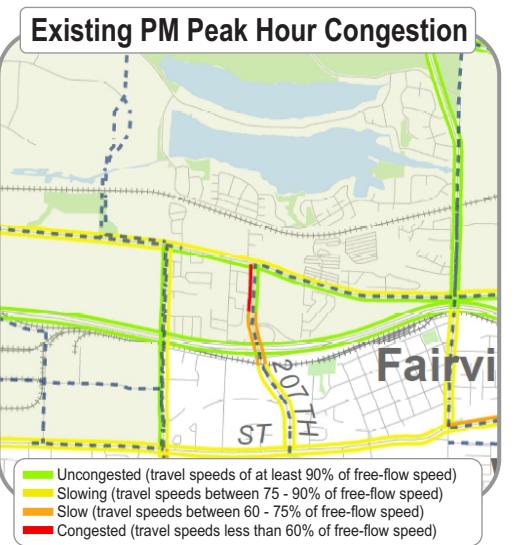
NE 2-7th Ave looking South at NE Hasley St



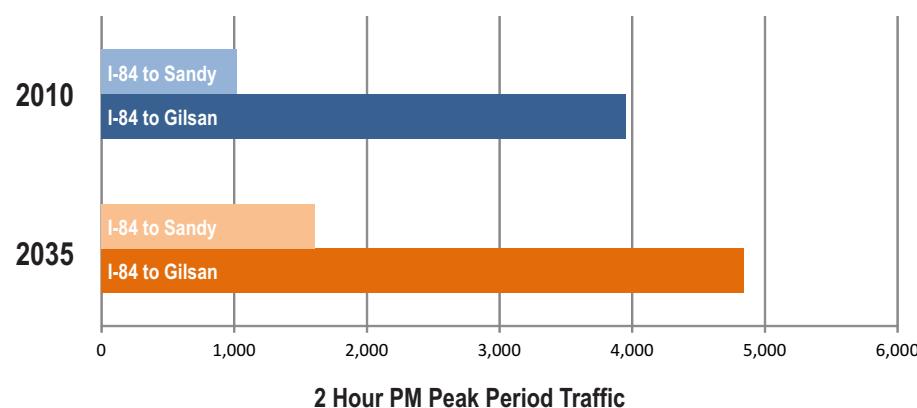
BACKGROUND DATA

Various traffic data is available along NE 207th Ave from the past few years.

- Functional classification of the roadway by the City of Fairview is a "Major Collector" north of I-84 and a "Major Arterial" south of I-84. NE 207th Ave is also classified as a "Truck Route".
- Average daily traffic is approximately 16,700 vehicles a day.
- Posted speed along NE 207th is 40 miles per hour.
- Recent speed and travel time data (2008-2010 data) indicates that vehicles on this road experience significant congestion with speeds less than 60% of free flow speed, especially north of I-84.



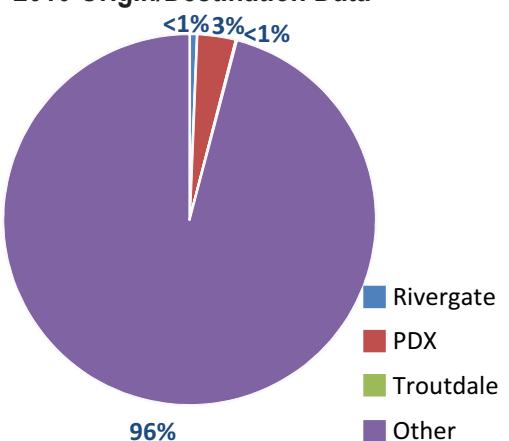
FORECASTED GROWTH AND USER DATA



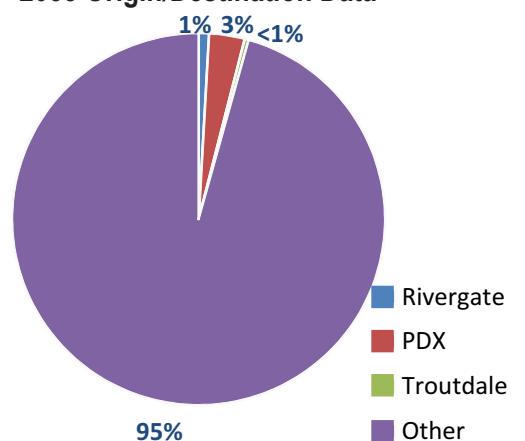
Growth of approximately **600 vehicles** is expected on this roadway north of I-84 and approximately **900 vehicles** south during the 2 hour PM peak period.

This represents a growth of approximately **30%** from 2010 to 2035

2010 Origin/Destination Data



2035 Origin/Destination Data



**ESTIMATED COST
(IN 2007 DOLLARS)**

\$0.9M

**ESTIMATED COST
(YEAR OF EXPENDITURE)**

\$1.3M

**PROJECTED
YEAR OF NEED** **2017**

NE SANDY BOULEVARD RECONSTRUCTION

PROBLEM STATEMENT

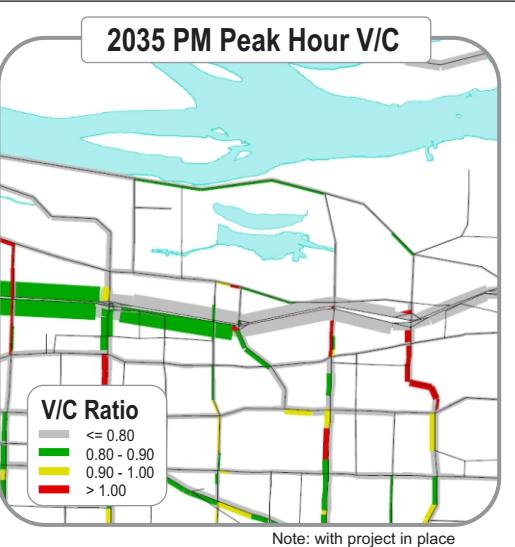
The current cross section of NE Sandy Boulevard varies from two to three lanes and has gaps in bike lanes and sidewalks. The absence of a center turn lane can create delay on the main roadway as vehicles wait for left turns. While congestion does not appear to be an issue in the future (see V/C plot to the right) access and mobility for users along the roadway, as well as no options for non-motorized travelers. The lack of bike lanes and sidewalks is a serious safety concern as well.



NE Sandy Blvd looking East near NE 223rd Ave



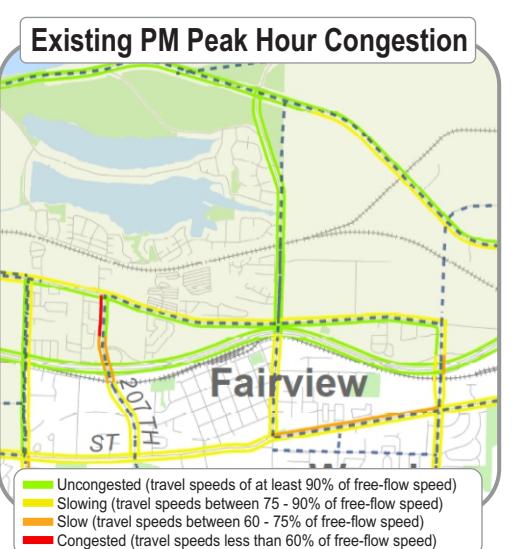
NE Sandy Blvd looking West near NE 238th Dr



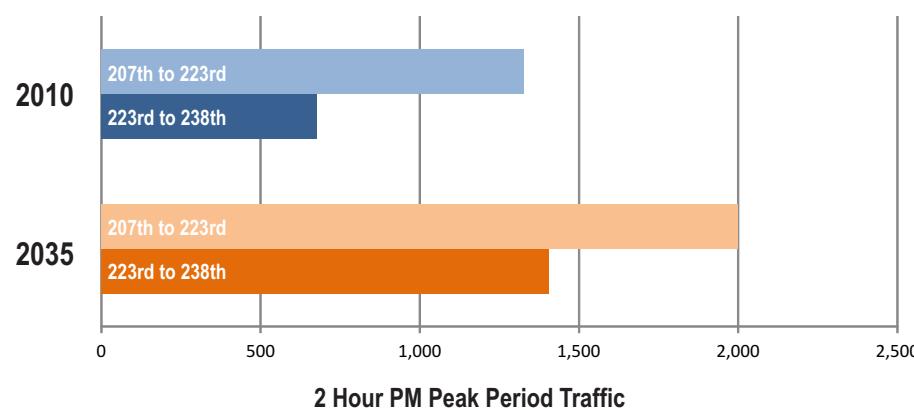
BACKGROUND DATA

Various traffic data is available along NE Sandy Blvd from the past few years.

- Functional classification of the roadway by the City of Fairview is a "Major Collector" and is classified as a "Truck Route".
- Average daily traffic is approximately 8,800 vehicles a day.
- Posted speed along NE Sandy Blvd is 45 miles per hour.
- Recent speed and travel time data (2008-2010 data) indicates that vehicles on this road experience minimal congestion with speeds of 75% or greater than free flow speed.



FORECASTED GROWTH AND USER DATA



Growth of approximately **700 vehicles** is expected on this roadway during the 2 hour PM peak period.

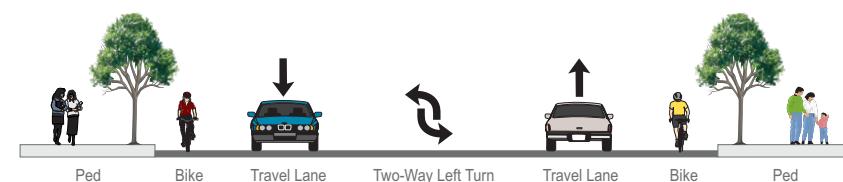
This represents a growth of approximately **70%** from 2010 to 2035



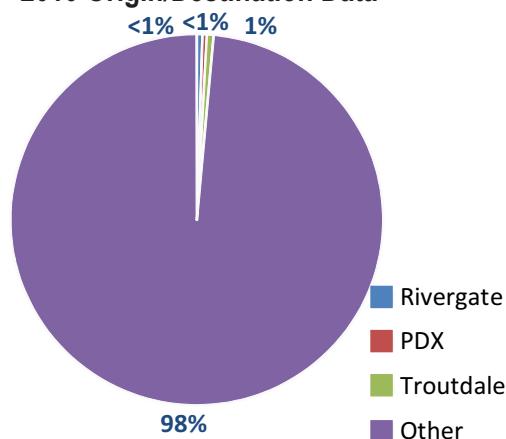
PROJECT DESCRIPTION/PURPOSE

The project has been identified in the Metro Regional Transportation Plan (#10339) as "Reconstruct Sandy Blvd.". The extent of the project is from NE 207th Avenue to NE 238th Avenue.

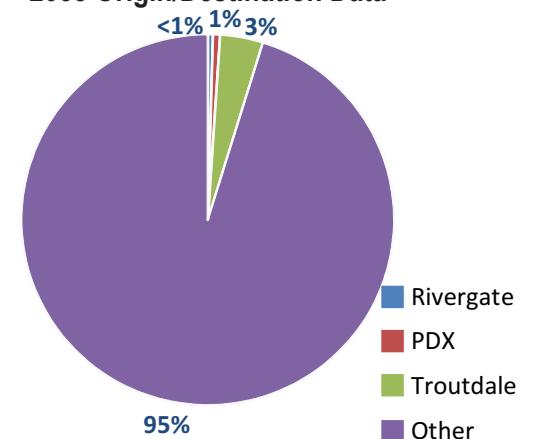
The purpose of the project is to reconstruct NE Sandy Boulevard to minor arterial standards with bike lanes, sidewalks, and drainage improvements. A prototypical cross section of this type of roadway has been included.



2010 Origin/Destination Data



2035 Origin/Destination Data



**ESTIMATED COST
(IN 2007 DOLLARS)**

\$7.4M

**ESTIMATED COST
(YEAR OF EXPENDITURE)**

\$11.0M

**PROJECTED
YEAR OF NEED** **2017**

TROUTDALE INTERCHANGE IMPROVEMENTS

PROBLEM STATEMENT

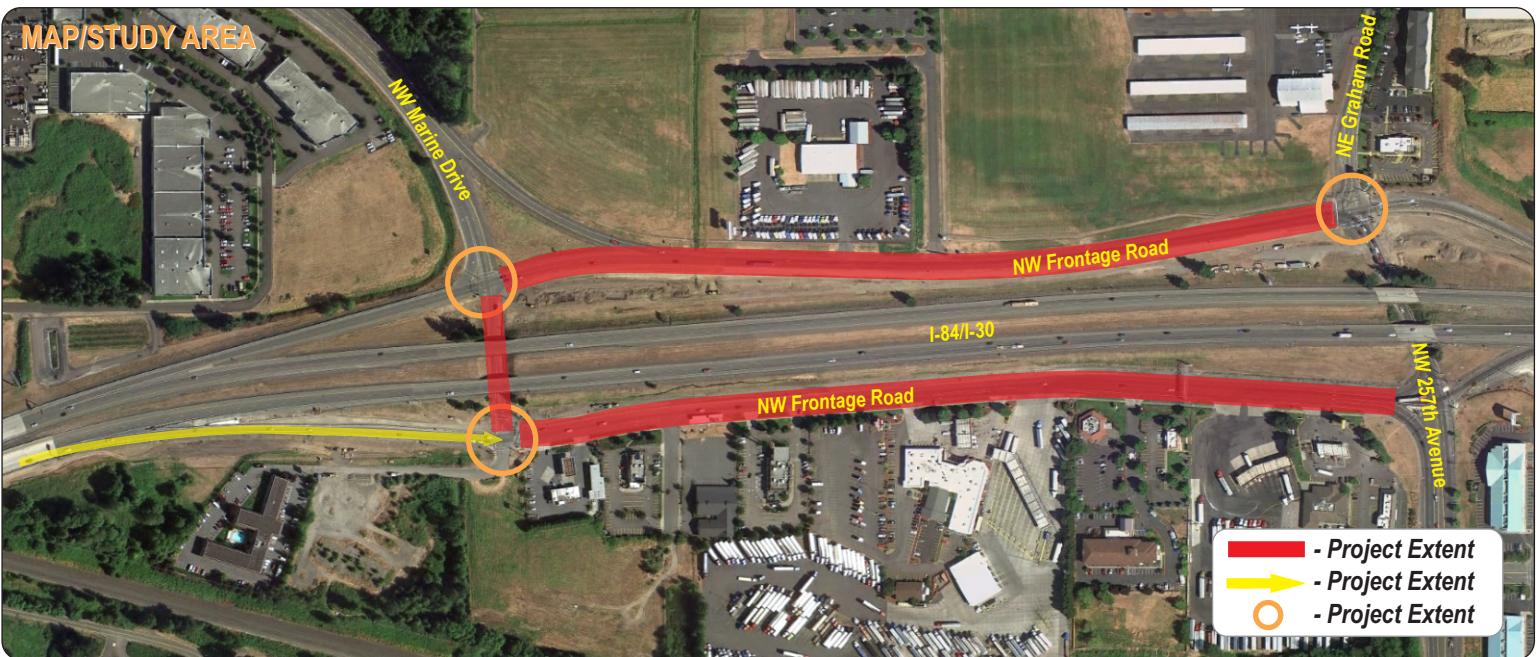
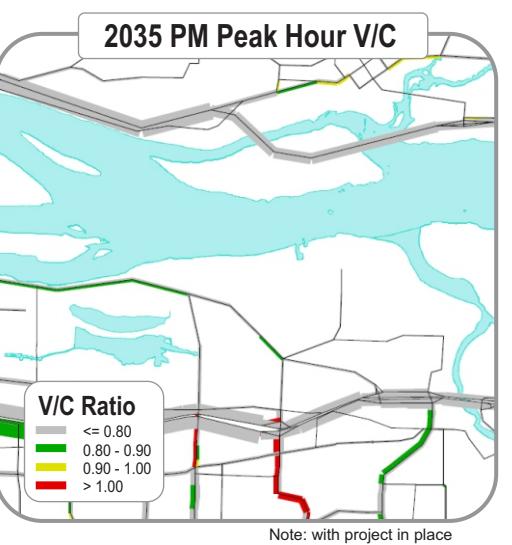
The Troutdale interchange network (see Map/Study Area map to the far right) currently experiences slight to moderate congestion.



NW Marine Dr looking South at North Frontage Road

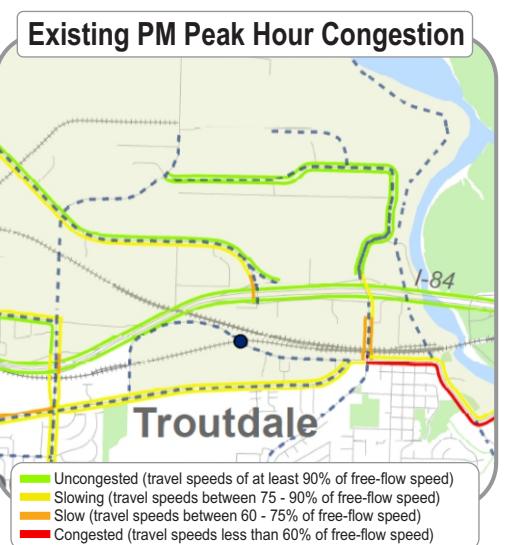


South Frontage Road looking East near NW Marine Dr



Various traffic data is available for this area from the past few years.

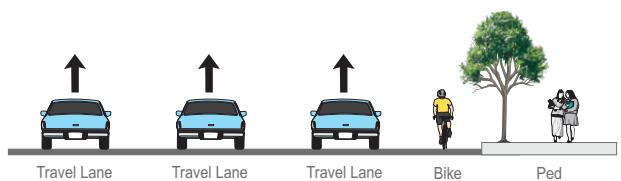
- By the City of Troutdale, functional classification of the I-84 ramps are "Principal Arterials"; the NW Frontage Roads, NW 257th Ave, and connecting streets between are "Arterials"; NW Marine Dr is a "Collector"; and NE Graham Rd is a "Local". Except for NE Graham Rd, the roadways within the study area are truck routes.
- Posted speed along the north NW Frontage Rd is 40 miles per hour and 35 miles per hour along the south NW Frontage Rd.
- Recent speed and travel time data (2008-2010 data) indicates that vehicles in this network experience moderate congestion with speeds of 60% or greater than free flow speed.



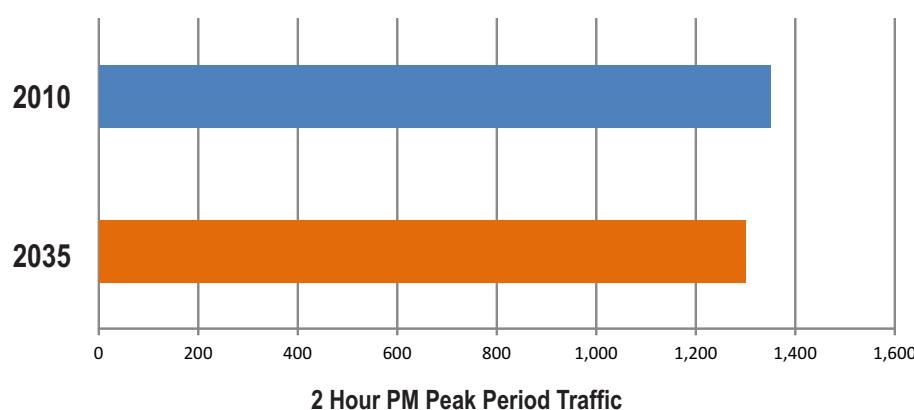
PROJECT DESCRIPTION/PURPOSE

The project has been identified in the Metro Regional Transportation Plan (#10863) as "Troutdale Interchange (Exit 17) Improvements".

The purpose of the project is to improve capacity and circulation of the I-84 interchange area from NW Marine Drive to NE Graham Road. The proposed improvements are to improve the eastbound off-ramp, widen both the north and south NW Frontage Roads, improve the intersection of the north Frontage Road and NE Graham Road, improve the intersections of NW Marine Drive and the frontage roads, and to create a two-way roadway along Marine Drive between the frontage roads. A prototypical cross section of both the north and south Frontage Road has been included.



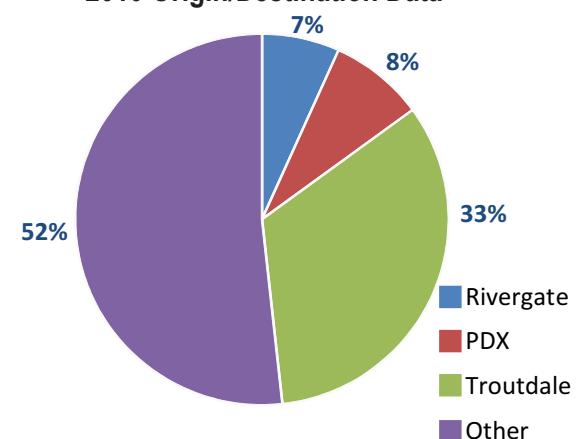
FORECASTED GROWTH AND USER DATA



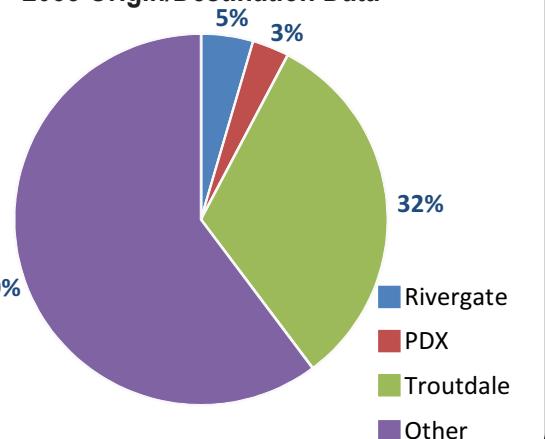
A reduction of approximately **50 vehicles** is expected on this roadway during the 2 hour PM peak period.

This represents a reduction of approximately **4%** from 2010 to 2035

2010 Origin/Destination Data



2035 Origin/Destination Data



**ESTIMATED COST
(IN 2007 DOLLARS)**

\$32.2M

**ESTIMATED COST
(YEAR OF EXPENDITURE)**

\$65.2M

**PROJECTED
YEAR OF NEED** **2025**

NW GRAHAM ROAD IMPROVEMENTS

PROBLEM STATEMENT

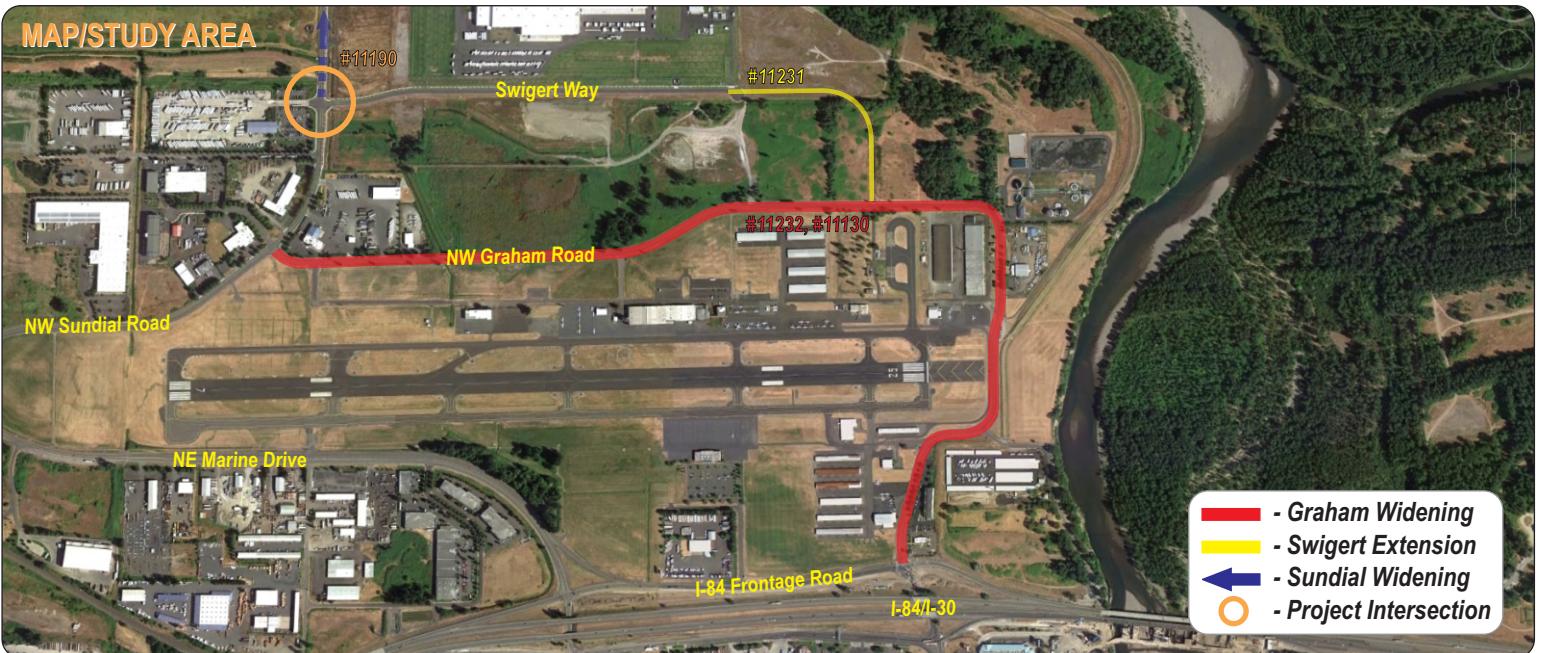
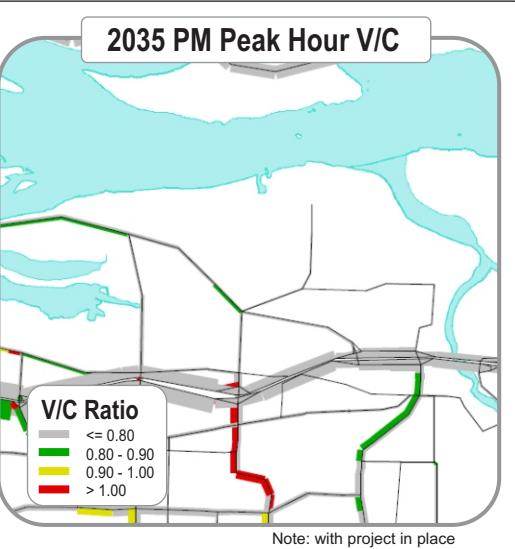
NW Graham Road serves as access to the Portland-TROUTDALE Airport. While this two lane facility is forecast to experience congestion (see V/C plot to the right), the lack of a center turn lane can create delay as vehicles wait for left turns. An extension of Swigert Way would increase freight mobility and accessibility as it would provide a complete connection to I-84/I-30. Graham Road is not structurally adequate for truck traffic and must be reconstructed to serve the industrial area north of I-84.



NW Sundial Rd looking North at NW Graham Rd



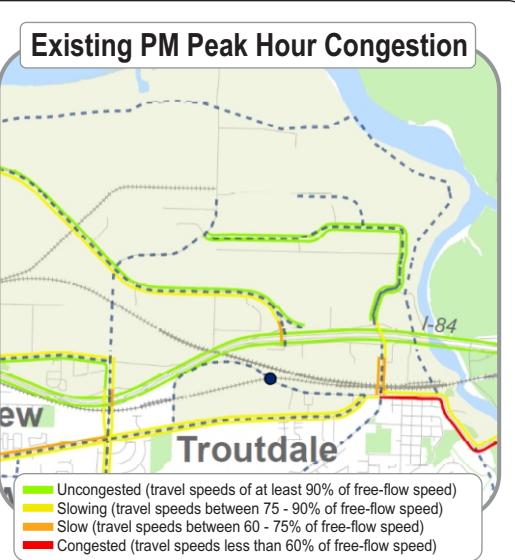
NW Graham Rd looking West near future Swigert Way



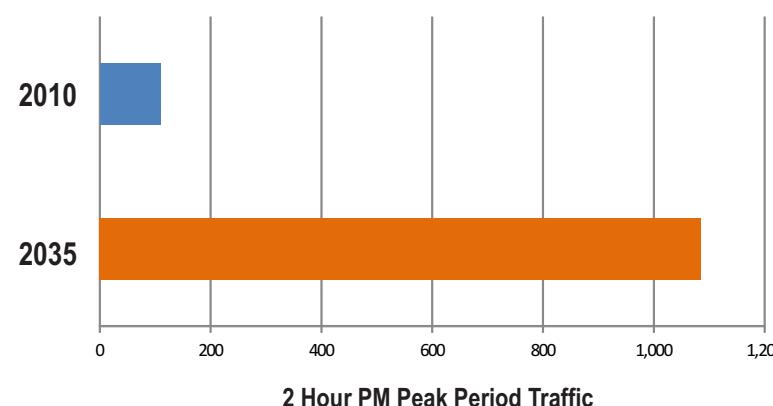
BACKGROUND DATA

Various traffic data is available in this area from the past few years.

- Functional classification of NW Graham Rd by the City of Troutdale is a "Local" and the functional classification of NW Sundial Rd is a "Collector". NW Sundial Rd is also classified as a "Truck Route".
- Posted speed along NW Graham Rd is 35 miles per hour.
- Recent speed and travel time data (2008-2010 data) indicates that vehicles on network do not experience congestion.



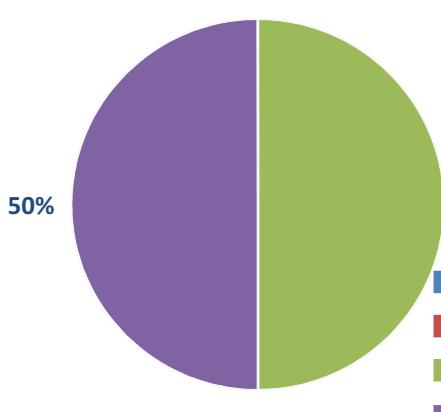
FORECASTED GROWTH AND USER DATA



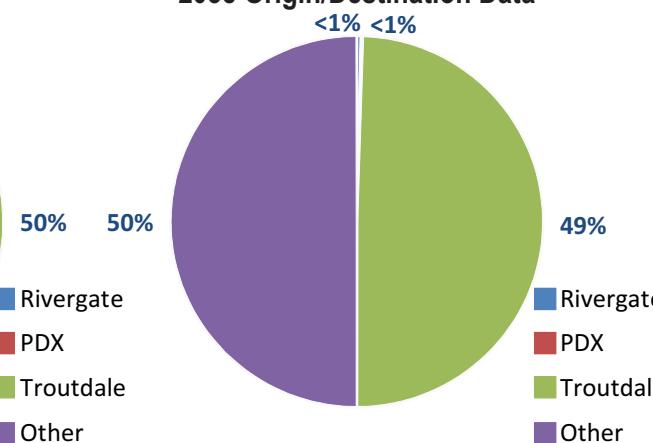
Growth of approximately **975 vehicles** is expected on this roadway during the 2 hour PM peak period.

This represents a growth of approximately **886%** from 2010 to 2035

2010 Origin/Destination Data



2035 Origin/Destination Data



Metro Regional Transportation Plan #	11232	11130	11190	11231
ESTIMATED COST (IN 2007 DOLLARS)	\$5.0M	\$8.5M	\$3.2M	\$2.5M
ESTIMATED COST (YEAR OF EXPENDITURE)	\$7.4M	\$12.6M	\$4.7M	\$3.7M
PROJECTED YEAR OF NEED	2017	2017	2017	2017

NE AIRPORT WAY BRAIDED RAMPS

PROBLEM STATEMENT

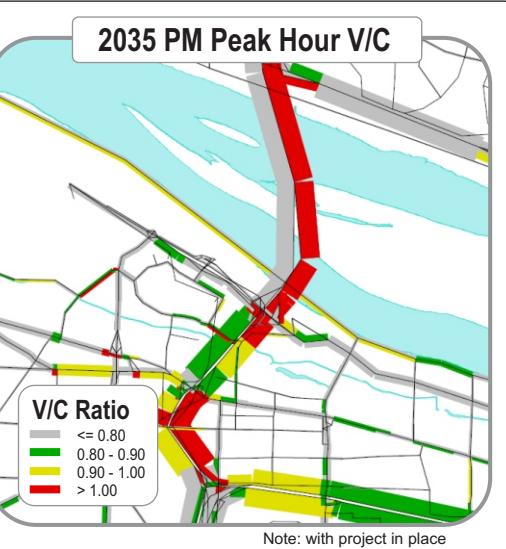
The current NE Airport Way on- and off-ramp configurations between NE Mt Hood Avenue and I-5 use shared merge lanes. These shared merge lanes are high-speed conflict areas, and have a significant impact on through-traffic as they often cause bottlenecks. The section of NE Airport Way experiences high levels of congestion about the I-205 interchange (see V/C plot to the right), and is projected to exceed capacity by 2035 in the PM peak hour.



NE Airport Way merge area looking West



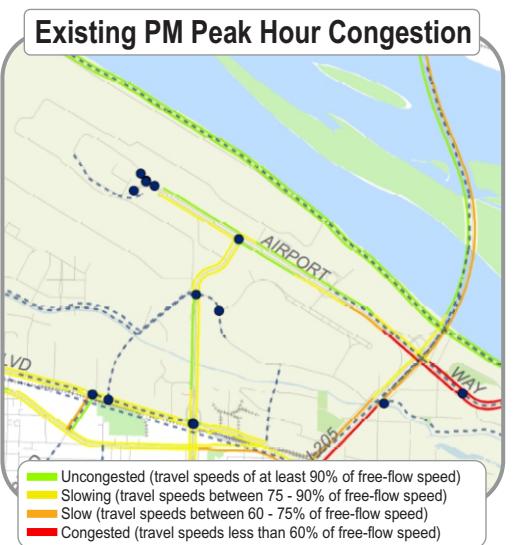
NE Airport Way merge area looking East



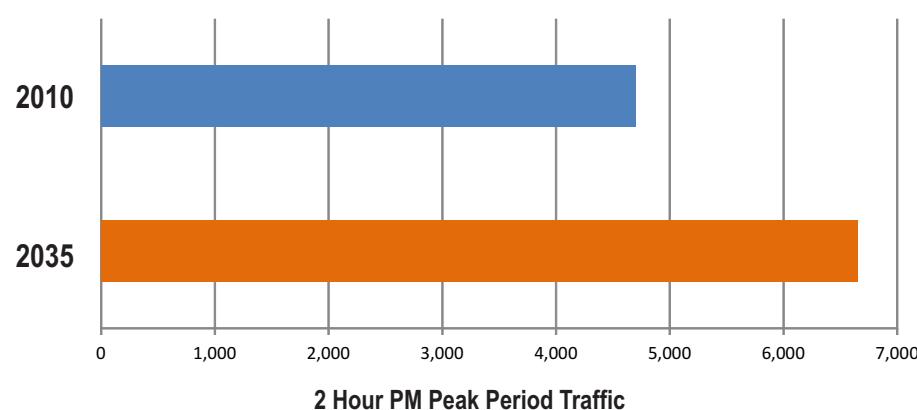
BACKGROUND DATA

Various traffic data is available along NE Airport Way from the past few years.

- By the City of Portland, the functional classification of NE Airport Way is a "Major City Traffic Street". This roadway is classified as a "Priority Truck Streets" and is within a "Freight District".
- Average daily traffic ranges from 11,500 to 14,500 vehicles a day on NE Airport way (based on data collected from 2003).
- Approximately 92 percent of vehicles on NE Airport Way are motor vehicles, while the remaining 8 percent of vehicles are trucks.
- The posted speed of NE Airport Way is 45 miles per hour.
- Recent speed and travel time data (2008-2010) indicates that vehicles on this road experience significant congestion with speeds of less than 60% of free flow speed.



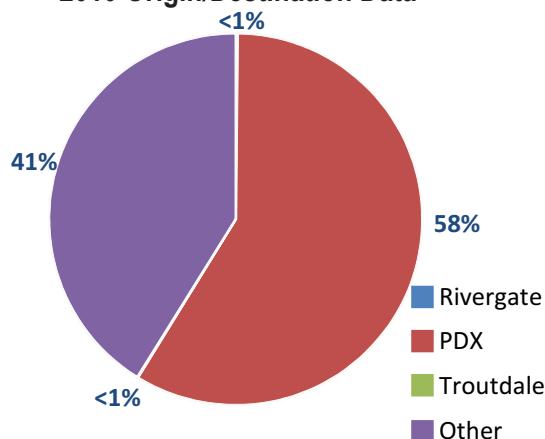
FORECASTED GROWTH AND USER DATA



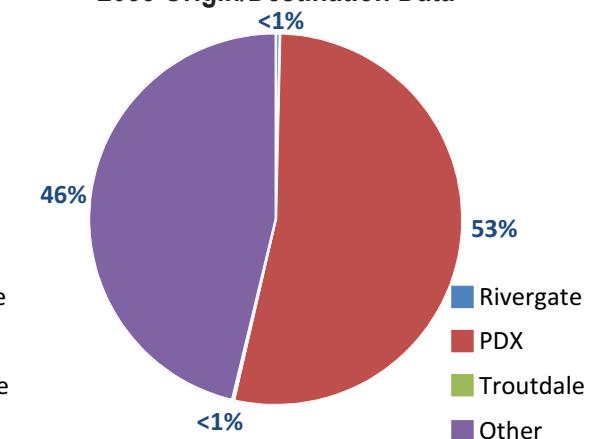
Growth of approximately **1,950 vehicles** is expected on this roadway during the 2 hour PM peak period.

This represents a growth of approximately **41%** from 2010 to 2035

2010 Origin/Destination Data



2035 Origin/Destination Data



ESTIMATED COST
(IN 2007 DOLLARS)

\$59.0M

ESTIMATED COST
(YEAR OF EXPENDITURE)

\$119.5M

PROJECTED
YEAR OF NEED **2025**

I-205/NE AIRPORT WAY INTERCHANGE IMPROVEMENTS

PROBLEM STATEMENT

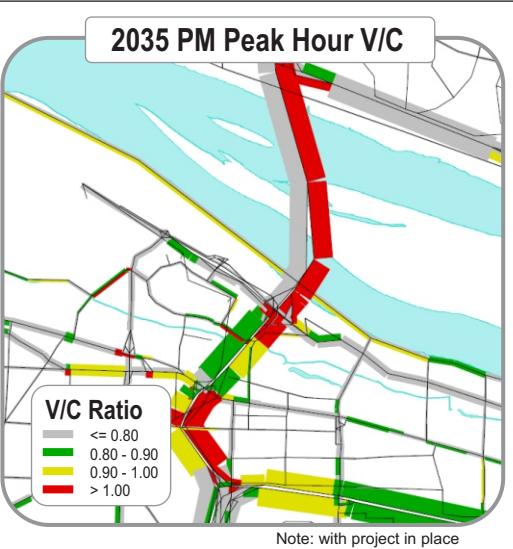
Future volumes are forecast to exceed the existing capacity of the I-205/NE Airport Way interchange, with bottlenecks occurring at several locations within the area. Primarily, the interchange between NE Airport Way and northbound I-205 is of concern. Significant delays occur along NE Airport Way about the I-205 interchange, and along I-205 from NE Sandy Boulevard across the river into Washington.



NE Airport Way looking West at I-205 northbound on-ramp



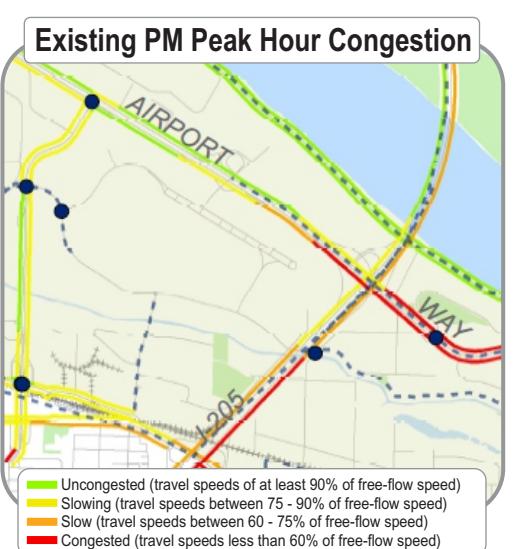
I-205 northbound on-ramp from NE Airport Way



BACKGROUND DATA

Various traffic data is available for this interchange from the past few years.

- By the City of Portland, the functional classification of NE Airport Way is a "Major City Traffic Street". This roadway is classified as a "Priority Truck Street" and is within a "Freight District".
- Average daily traffic is approximately 22,500 vehicles a day on NE Airport way (based on data collected from 2005).
- The posted speed of NE Airport Way is 45 miles per hour.
- Recent speed and travel time data (2008-2010) indicates that vehicles on this road experience significant congestion with speeds of less than 60% of free flow speed.

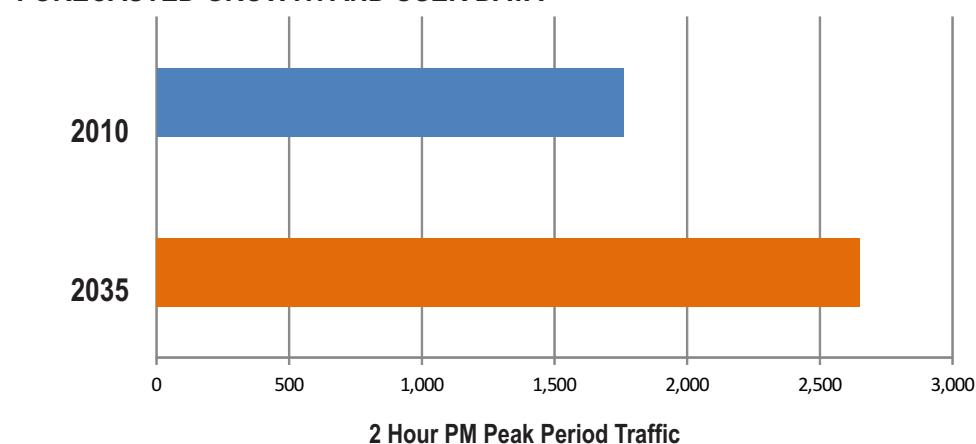


PROJECT DESCRIPTION/PURPOSE

The project has been identified in the Metro Regional Transportation Plan (#10865) as "I-205/Airport Way interchange".

The purpose of this project is to alleviate congestion at the interchange of NE Airport Way and I-205. This project would construct a westbound right bypass lane to forgo the signalized intersection, install ramp meters for the northbound on-ramp, construct a third westbound-through lane at the I-205 northbound on-ramp intersection with NE Airport Way, and an extension of the eastbound left-turn storage lane at the I-205 northbound on-ramp intersection with NE Airport Way.

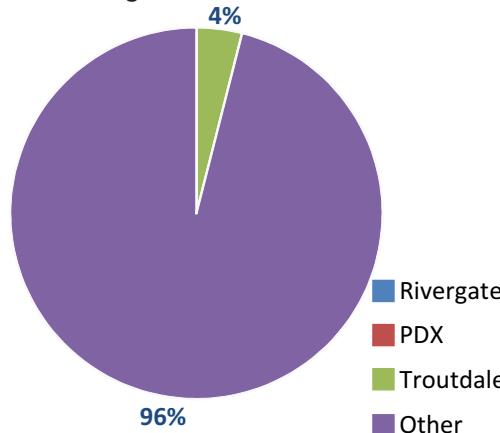
FORECASTED GROWTH AND USER DATA



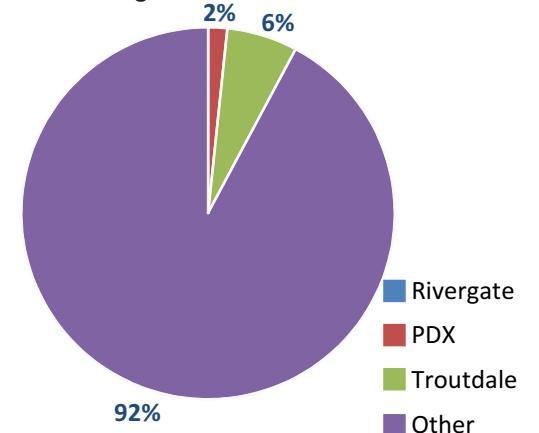
Growth of approximately **900 vehicles** is expected on this roadway during the 2 hour PM peak period.

This represents a growth of approximately **51%** from 2010 to 2035

2010 Origin/Destination Data



2035 Origin/Destination Data



**ESTIMATED COST
(IN 2007 DOLLARS)**

\$10.5M

**ESTIMATED COST
(YEAR OF EXPENDITURE)**

\$15.5M

**PROJECTED
YEAR OF NEED** **2017**

I-5 INTERCHANGE IMPROVEMENTS AT MARINE DRIVE AND HAYDEN ISLAND

PROBLEM STATEMENT

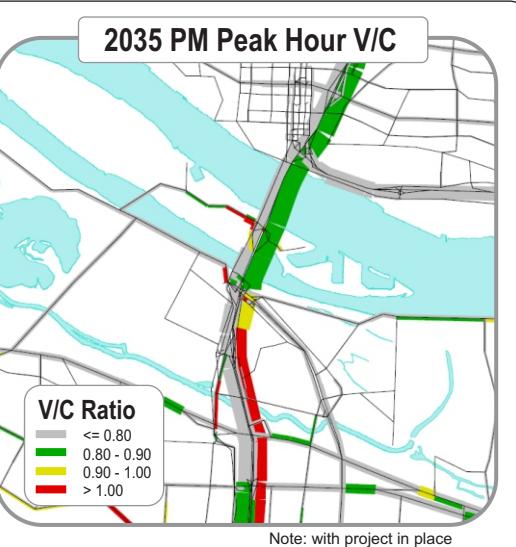
The corridor of I-5 from south of Marine Drive to north of Hayden Island experiences high levels of congestion, extending to traffic along Hayden Island and Marine Drive as well. In addition, access to I-5 from Hayden Island and access along the local roadway network could be improved.



Northbound I-5 looking north at Marine Dr interchange



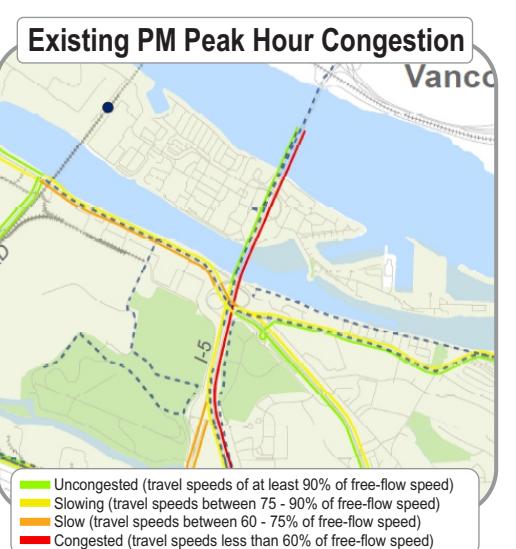
N Hayden Island Dr looking east at I-5 interchange



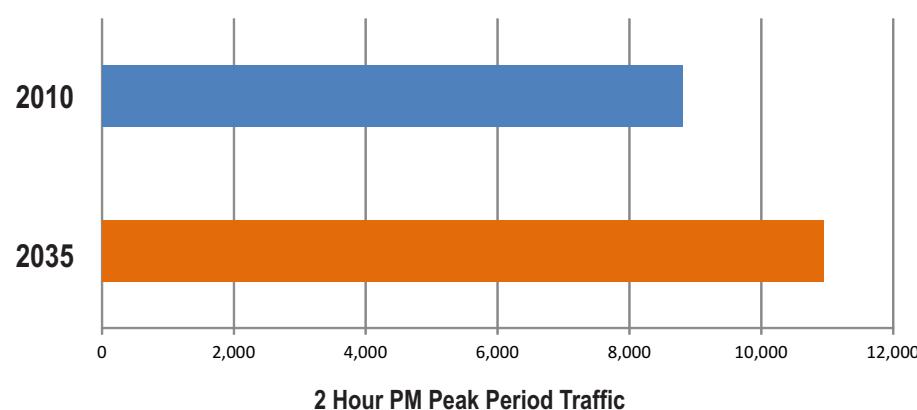
BACKGROUND DATA

Various traffic data is available in this area from the past few years.

- Functional classification of Marine Drive by the City of Portland is a "Major City Traffic Street" and classified as a "Priority Truck Street". Functional classification of N Hayden Island Drive is a "District Collector" and classified as a "Truck Access Street".
- Posted speed along Marine Drive is 40 miles per hour and 25 miles per hour along N Hayden Island Drive.
- Recent speed and travel time data (2008-2010 data) indicates that vehicles on network experience significant congestion with speeds less than 60% of free flow speed.



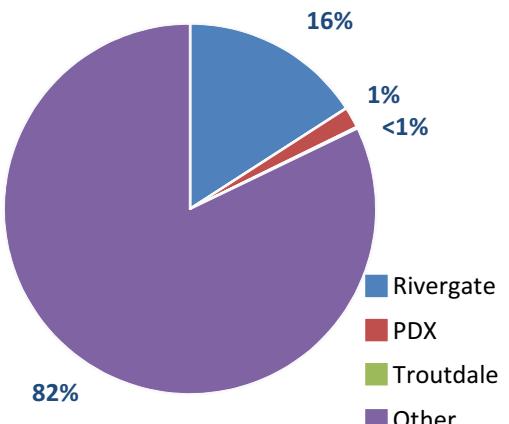
FORECASTED GROWTH AND USER DATA



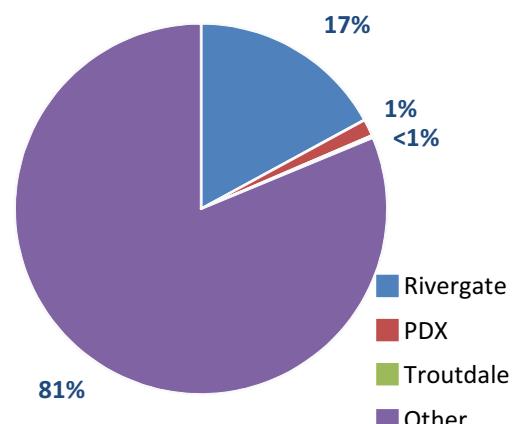
Growth of approximately **2,150 vehicles** is expected on this roadway during the 2 hour PM peak period.

This represents a growth fo approximately **24%** from 2010 to 2035

2010 Origin/Destination Data



2035 Origin/Destination Data



ESTIMATED COST
(YEAR OF EXPENDITURE)

\$450M

PROJECTED YEAR OF NEED **2007**

RAIL CROSSING IMPROVEMENTS

PROBLEM STATEMENT

At grade heavy rail crossings with roadways creates significant delay for motor vehicle and freight movements. In addition, there are safety concerns at crossings that are at grade, not only with motor vehicle/trucks, but also with pedestrians and bicycles. There are also potential noise issues with at grade rail crossings. The trains must (by law) sound their horn or whistle at these crossings as a warning indication. The sound of the horns can be a detriment to surrounding business, commercial and residential districts.

BACKGROUND DATA/PROJECT DESCRIPTION

- A Rivergate Boulevard:** Construct grade separated overcrossing at North Rivergate Boulevard.

The Port of Portland (Port) has recently completed the expansion of the South Rivergate Yard to support unit train operations at Columbia Grain. Another Port tenant at Terminal 5 in the Rivergate Industrial District is evaluating the prospect of expanding unit train operations as well. The unit trains exceed 7,000 feet in length and will be traveling at approximately 5 mph through North Rivergate Boulevard as just starting or coming to a stop. Due to the short length of the tracks at Rivergate Yard, inbound trains have to set over to another track and outbound trains have to double over to depart, resulting in the North Rivergate Boulevard at-grade road crossing being blocked for extended periods of time. Both conditions result in lengthy delays at the current at-grade vehicular crossing with North Rivergate Boulevard.

- BNSF Mainline High Speed Crossover Project:** The installation of higher speed crossovers on the BNSF Fallbridge Subdivision between Willbridge and Vancouver.

Current crossovers on this segment are rated for 10 mph train movement. The 10 daily Amtrak trains are a major user of this line. Under the current operating agreement, the BNSF cannot cross an Amtrak train from one main track to another without significantly delaying that Amtrak train. The result is that freight traffic in both directions is restricted to only one main line track when Amtrak trains are operating on the line, severely restricting the ability for freight trains to be routed in the most efficient manner.

- B Cathedral Park/St Johns Lead Whistle Free Zone:** The project will relocate the UPRR's St. Johns Lead out of the travel way of North Bradford Street. The concept plan, updated in 2009 through consultation with UPRR, calls for relocating the railway approximately 19 feet to the west of its current location within North Bradford Street.

North Bradford Street is a City of Portland Freight District Street that provides access to multiple industrial businesses. The St. Johns rail line connects Union Pacific Railroad's (UPRR) Barnes and Albina Yards. The St. Johns Lead provides train access to the Port's Terminal 4 and other rail served businesses in the Portland Harbor. Currently the St. Johns Lead rail line runs down the center of N. Bradford Street. Freight trains occupy the same street space with trucks, cars, bikes, and pedestrians. This situation creates safety concerns, degrades freight mobility, and increases train horn noise. Train horn noise, particularly at night time, is a constant problem for the community and complaints are ongoing.

- C Marine Drive Grade Separation:** Construct rail overcrossing on Marine Drive at Terminal 6 entrance gates.

- D Peninsula Junction:** Construct grade separated overcrossing Columbia Boulevard

- E 11th/13th:** Eliminate (close) at grade crossing and improve alternate roadway access

- F Cully Grade Separation:** Construct rail overcrossing at NE Cully at Columbia Blvd.

- G Graham Line - at 112th:** Install controlled siding on UP's Graham Line between 122nd and 162nd a 10,000' siding near Wood Village and a 10,000' siding near Parkrose, between East Portland Jct and Troutdale along UPRR's Graham Mainline.



PROJECT BENEFIT

- A Rivergate Boulevard:** A grade separated crossing at this location would greatly improve the access, safety and reliability for local businesses and emergency vehicle access. It would also give UP and BNSF mainline operational flexibility and improved capacity as departing trains could be made ready for departure and held at South Rivergate waiting for mainline slots. Reduces use of Ramsey and Barnes Yards for South Rivergate unit trains. The grade separated North Rivergate Crossing would allow outbound air-tests and inspections to be performed on the UP South Rivergate Lead improving local operations for both BNSF and UP. Also Supports increased rail related unit train volumes

- B Cathedral Park/St Johns Lead Whistle Free Zone:** The Port and City of Portland have been working with the Cathedral Park Neighborhood Association since at least 2004 to refine the project area and scope. This first phase of the project was chosen as it significantly impacts freight mobility and is the linchpin of a future whistle free zone. Other roadway alternatives to separating the train traffic from other modes impact the North Portland Greenway trail alignment and the Baltimore Woods area.

- C Marine Drive Grade Separation:** Eliminate road/rail at grade crossing, eliminate queues and delay at entrance to Terminal 6.

- D Peninsula Junction:** Eliminate road/rail at grade crossing, eliminate queues and delay at entrance to Terminal 6.

- E 11th/13th:** Improve Kenton Mainline operation and eliminate modal conflict (auto and rail)

- F Cully Grade Separation:** Eliminate road/rail at grade crossing greatly improving safety on one of the region's most critical freight routes, Columbia Blvd.

- G Graham Line - at 112th:** Currently, there are no sidings along this 15-mile long segment. Installing sidings improves capacity greatly throughout the Portland Triangle.

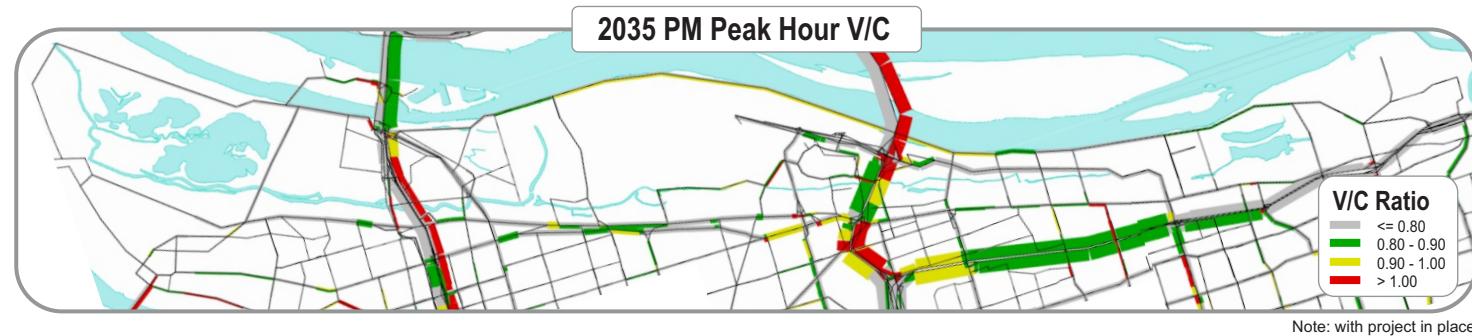
- BNSF Mainline High Speed Crossover Project:** Modern crossovers would greatly improve operational flexibility and capacity for freight and passenger trains traveling over this densely-trafficked corridor.

PROJECT TITLE	Rivergate Blvd	Peninsula Junction	Marine Drive Grade Separation	11th/13th	Cully Grade Separation	Graham Line at 122nd	BNSF Mainline	Cathedral Park/St Johns
ESTIMATED COST	\$8.7M	\$20M	\$13.6M	\$1M	\$30M	\$7M	N/A	\$2.5M
ESTIMATED YEAR OF NEED	2012	2012	2003	2007	2012	2012	N/A	2010

REGIONAL ITS PROJECTS

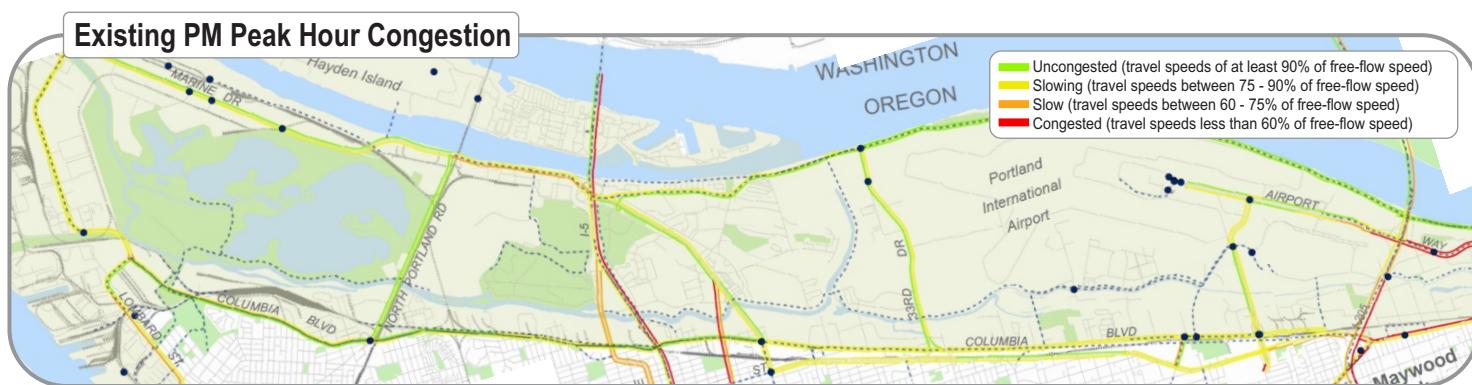
PROBLEM STATEMENT

Various areas that serve the primary Port of Portland facilities are forecasted to have congestion in the future, as well as major regional facilities that serve as gateways to these areas. Three of these areas and/or corridors are the Port of Portland International Airport area, the Rivergate Terminal area, and Columbia Boulevard. This congestion delays freight movement and the economic vitality for growth in the Columbia Corridor area.



BACKGROUND DATA

The Rivergate area, PDX terminal area, and Columbia Boulevard all have some level of slowing and congestion experienced today during the PM peak hour(s). Congestion in (and on) many of these areas increases as proximity to regional facilities such as Interstate 5 and Interstate 205 gets closer. As the figure indicates, congestion levels along Columbia Boulevard generally increase further to the east, while access to PDX terminal is congested around Interstate 205. The Rivergate area has the highest levels of congestion near Interstate 5.



EXAMPLES OF ITS



Variable message sign for parking information westbound on Airport Way



Variable message sign on Barbur Boulevard



Variable message sign on Interstate 5 indicating travel times to other facilities



PROJECT DESCRIPTION/PURPOSE

- A** The project has been identified in the Metro Regional Transportation Plan (#10373) as the "Rivergate ITS". The purpose of the project is to improve traffic efficiency in Rivergate by connecting information about the roadway system to ODOT's Highway ITS systems.
- B** The project has been identified in the Metro Regional Transportation Plan (#10302) as the "MLK Jr, N (Columbia Blvd. - CEID): ITS". The purpose of the project is to implement/install CCTV cameras at various locations and traffic monitoring stations at Clay and Burnside intersections. The project is actually along MLK Jr Boulevard and starts at Columbia Boulevard ending in the Central Eastside Industrial District (CEID).
- C** The project has been identified in the Metro Regional Transportation Plan (#10370) as the "PDX ITS". The purpose of the project is to improve traveler information and traffic/parking efficiency at PDX. Some of this type of ITS project work is already in place along Airport Way through the use of variable message signs, as well as the parking management system for the short term parking lot.

PROJECT TITLE	PDX ITS	Rivergate ITS	Columbia Blvd ITS
ESTIMATED COST (IN 2007 DOLLARS)	\$3M	\$0.48M	\$0.99M
ESTIMATED COST (YEAR OF EXPENDITURE)	\$4.4M	\$0.71M	\$2.0M
PROJECTED YEAR OF NEED	2017	2025	2025