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.

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.
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.

\(^1\) 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.

**Existing PM Peak Period Origin/Destinations by Area**

![Pie charts showing the distribution of origin/destination trips]

**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 region's 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.

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.
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.

<table>
<thead>
<tr>
<th></th>
<th>AM Peak</th>
<th>Midday Peak</th>
<th>PM Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Columbia Boulevard</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rivergate to PDX</td>
<td>24 min</td>
<td>23 min</td>
<td>23 min</td>
</tr>
<tr>
<td>PDX to Rivergate</td>
<td>23 min</td>
<td>23 min</td>
<td>22 min</td>
</tr>
<tr>
<td>Rivergate to Troutdale</td>
<td>43 min</td>
<td>42 min</td>
<td>42 min</td>
</tr>
<tr>
<td>Troutdale to Rivergate</td>
<td>43 min</td>
<td>43 min</td>
<td>43 min</td>
</tr>
<tr>
<td><strong>Marine Drive/Columbia Boulevard</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rivergate to PDX</td>
<td>21 min</td>
<td>21 min</td>
<td>21 min</td>
</tr>
<tr>
<td>PDX to Rivergate</td>
<td>22 min</td>
<td>22 min</td>
<td>22 min</td>
</tr>
<tr>
<td>Troutdale to PDX (via Marine Drive)</td>
<td>14 min</td>
<td>15 min</td>
<td>16 min</td>
</tr>
<tr>
<td>PDX to Troutdale (via Marine Drive)</td>
<td>15 min</td>
<td>15 min</td>
<td>16 min</td>
</tr>
<tr>
<td>Rivergate to Troutdale (via Columbia Blvd)</td>
<td>43 min</td>
<td>42 min</td>
<td>42 min</td>
</tr>
<tr>
<td>Troutdale to Rivergate (via Columbia Blvd)</td>
<td>43 min</td>
<td>43 min</td>
<td>43 min</td>
</tr>
<tr>
<td><strong>Interstate 84</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Troutdale to PDX</td>
<td>19 min</td>
<td>16 min</td>
<td>22 min</td>
</tr>
<tr>
<td>PDX to Troutdale</td>
<td>18 min</td>
<td>16 min</td>
<td>18 min</td>
</tr>
<tr>
<td><strong>Sandy Boulevard</strong></td>
<td></td>
<td></td>
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<tr>
<td>Troutdale to PDX</td>
<td>22 min</td>
<td>23 min</td>
<td>23 min</td>
</tr>
<tr>
<td>PDX to Troutdale</td>
<td>22 min</td>
<td>22 min</td>
<td>22 min</td>
</tr>
</tbody>
</table>

**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**

<table>
<thead>
<tr>
<th>Major Origin/Destination</th>
<th>Estimated Regional Travel Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rivergate Area</td>
<td>2010: 20min, 2035: 20min</td>
</tr>
<tr>
<td>Airport Area</td>
<td>2010: 30min, 2035: 30min</td>
</tr>
<tr>
<td>Troutdale Area</td>
<td>2010: 40min, 2035: 40min</td>
</tr>
</tbody>
</table>

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

**Planning Horizon Years**

Rivergate: 2010, 2035
Airport: 2010, 2035
Troutdale: 2010, 2035
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
- Rivergate
  - 2010
  - 2035
- Airport
  - 2010
  - 2035
- Troutdale
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.
Columbia Corridor - Airport Area Origin/Destination Data

Starting Origin/Destination Data

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

LEGEND

Rivergate Area
Airport Area
Troutdale Area
Adjacent Area
Other Area

Midday Peak
PM Peak

Year 2010
Year 2035
Year 2010
Year 2035

Midday
PM Peak
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. 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.
- 1,100 BUSINESSES

LOCATION

SALARY DENSITY

BUSINESS TYPE

MANUFACTURING
WHOLESALE
TRANS. & WHAREHOUSE

PORT OF PORTLAND

MAP: GIS PROGRAM OFFICE
DATA SOURCE: OREGON EMPLOYMENT DEPARTMENT - 2011 QCEW

The Port of Portland's data products are generated and distributed by the GIS Program Office, a unit of the Port's Geographic Information System (GIS) department. The data products are created using geospatial data collected from various sources, including public databases, private companies, and in-house surveys. The data is converted into a digital format and shared with various departments within the Port for various uses. The Port of Portland does not guarantee the accuracy, completeness, or timeliness of the data. The Port of Portland also does not endorse or guarantee any third-party products that use or link to Port data. The Port of Portland does not assume any responsibility for any errors, omissions, or misuse of its geospatial data. The Port of Portland does not provide warranties of any kind, express or implied, for any data products or services. The Port of Portland does not guarantee that the information is accurate, complete, or timely. The Port of Portland does not guarantee the accuracy, completeness, or reliability of any third-party products that use or link to Port data. The Port of Portland does not assume any responsibility for any errors, omissions, or misuse of its geospatial data. The Port of Portland does not guarantee that the information is accurate, complete, or timely. The Port of Portland does not guarantee the accuracy, completeness, or reliability of any third-party products that use or link to Port data. The Port of Portland does not assume any responsibility for any errors, omissions, or misuse of its 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.

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.

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.

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 from approximately 87% from 2010 to 2035.