2035

REGIONAL TRANSPORTATION PLAN

"Cause and Effect" Transportation Investment Scenarios Analysis for the 2035 Regional Transportation Plan

Modeling Assumptions

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2035 Regional Transportation Plan
"Cause and Effect" Transportation Investment Scenarios Analysis Modeling Assumptions

This document provides an overview of the regional models and network assumptions used in the 2035 Regional Transportation Plan (RTP) Investment Scenarios Analysis. This analysis is for research purposes only. *The scenarios do not represent future Metro Council, Oregon Transportation Commission (OTC) or TriMet policy intentions.*

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I. BACKGROUND

Purpose
The analysis is intended to provide policy makers with better information about new 2035 RTP policies and the implications of different transportation policy choices. Major objectives of the analysis are to:

- Evaluate distinct transportation investment policy choices that frame the boundaries of the political landscape and public opinion.
- Test RTP policies to better understand the effect of different transportation investments on travel behavior and development patterns.
- Test a set of proposed performance measures to determine which measures can best evaluate whether the transportation system is successful in meeting regional goals and policies.
- Evaluate the relative effect and cost of different transportation investments to inform what combinations of investments, tools and strategies are needed to best support the 2040 Growth Concept, and other regional goals and policies.
- Provide recommendations to guide the RTP System Development phase of the 2035 RTP update which will include analysis of hybrid transportation scenarios and development of a recommended alternative.

Overview
The analysis examined a series of four conceptual motor vehicle and transit systems for their ability to serve forecast 2035 population and employment growth and support the 2040 Growth Concept. Each of the four scenarios is based on a "What if" policy-theme focus from the 2035 RTP, resulting in a distinct mix and level of transit service, motor vehicle system investments and system management strategies in each scenario.

Each scenario is initiated by a "what if" question:

- *Concept A* - What if the region focused investments on increasing connectivity for all modes of travel?
- *Concept B* - What if the region focused investments to build out the high capacity transit connections identified in the 2040 Growth Concept and to expand regional transit service to complement the new HCT connections?
- *Concept C* - What if the region focused investments on adding new capacity and connections to the region's throughway system?
- *Concept D* - What if the region focused investments on optimizing the existing system and managing demand?

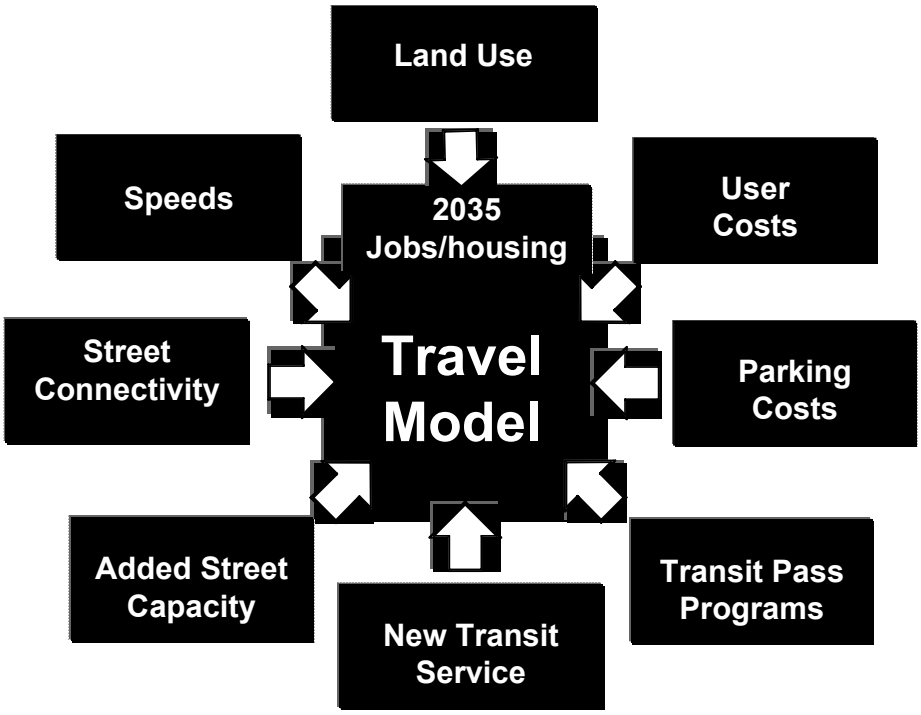
The transportation networks developed for analysis in Concepts A, B, C, and D are for research purposes only. *The scenarios do not represent future Metro Council, Oregon Transportation Commission (OTC) or TriMet policy intentions.*

The RTP Investment Scenarios Analysis will inform the *Making the Greatest Place* effort and state component of the RTP update. Recommendations for the *Making the Greatest Place* effort and RTP policy refinements will be developed based on what is learned through the analysis. The analysis is also intended to be a starting point for developing a recommended "state" system of transportation improvements and programs. The "cause and effect" understanding gained through this analysis will guide the design and analysis of subsequent "RTP hybrid alternatives" that will bear greater resemblance to realistic policy alternatives in Winter/Spring 2009.

Description of Regional Travel Model
The year 2005 and 2035 forecast travel volumes were estimated using the Metro regional travel demand model, with assignments executed in EMME/2. For travel forecasting purposes, land use assumptions are broken down into geographical areas called transportation analysis zones (TAZs). For the Portland metropolitan region, 2013 TAZs are identified (approximately five per U.S. census tract). The TAZ is the "unit geography" for travel within the demand model. Households and employment are located within TAZs. All the trips generated by the land use elements at the unit geography are aggregated and analyzed at the TAZ level.

Population and employment information is assigned to each TAZ. The cost of various forms of transportation, including parking and transit fare costs, and levels of street connectivity are also assigned to each TAZ or TAZ origin-destination zone pairs (as appropriate) based on regional transportation and land use policies. The inputs are shown in the diagram below.

Regional Travel Demand Model Inputs



The travel model estimates the number of trips that will be made, the distribution patterns of the trips throughout the region, the likely mode used for the trip, and the actual roadways and transit lines used for auto and transit trips. Traffic volume projections from these simulations help assess transportation system performance and identify future road and transit needs. Due to the macro-scopic nature of the regional model, the model does not effectively analyze walking, biking or local street traffic volumes at detailed analysis levels. In addition, the EMME/2 model is not sensitive enough to test which policy/pricing/regulatory change is the best, but it can help demonstrate the overall effect of packages of investments.

Description of Metroscope Model
Metroscope is a simulation model developed for testing planning policies in the urban land and real estate market. It utilizes extensive data describing attributes of the region's land and economic growth potential in order to mimic the responses of homeowners, renters, commuters, developers and business entrepreneurs to changes in the different attributes – where will people choose to live, work, travel, build

new communities and engage in commerce. Data attributes include: land and real estate value, vacant buildable land, redevelopment and infill land, environmental conditions, transportation network features, development trends and population and employment growth projections.

Metroscope includes a built-in transportation model that simulates levels of travel demand and congestion for the region's road and transit system. The transportation model outputs from Metroscope are not as extensive as the outputs that can be drawn from the regional travel demand model, thereby limiting Metroscope's ability to provide detailed information about travel behavior in the region. Metroscope is capable of providing extensive information about the effects of transportation investments on development patterns throughout the region. The outputs from the regional travel demand model (the roadway network, mode splits and trip tables) were converted to VISUM and provided to Metroscope where they are being re-run to analyze the effects on development patterns in the region.

Fuel Efficiency and Cost Assumptions

Fuel costs within the Metro travel demand model are considered as part of the auto operating cost, which consists of gasoline and oil, tire, and general vehicle maintenance costs on a per mile basis. Auto operating cost is used instead of fuel prices because it reflects the long-term relationship between fuel price and automobile fleet fuel efficiency (through technological changes, consumer preferences, and government regulations). This cost is $0.091 per mile in 1994 dollars ($0.13 per mile in 2008 dollars), and was derived from AAA reporting for 1994 (the year of the travel survey from which the Metro model was developed). Metro assumes the historical trend of relatively stable auto operating costs will continue into the future, as it has in the past. As gas fuel prices rise, fleet fuel-efficiency tends to increase and maintenance costs tend to drop over the long-term, which results in relatively stable operating costs. Given the recent spikes in the price of gasoline, Metro reviewed the auto operating cost assumptions within the model. Metro researched projections from the federal government and other reliable third parties to predict future fuel costs and fleet fuel efficiency. Based on this research, Metro's current auto operating cost of $0.091 per mile seems a reasonable assumption for future year model runs.

Household and Employment Assumptions

Using Metroscope, a 2035 regional household and employment growth forecast was prepared by Metro, and reviewed by local governments to serve as the basis for the 2035 Regional Transportation Plan. The Metroscope model uses information on accessibility from the regional travel demand model to help determine the relative attractiveness of areas within the region for growth in households and employment. The number of dwelling units and employees were calculated and assigned to TAZs for travel analysis. Table 1a summarizes household and employment information for 2005 and 2035 for the four-county region, which includes Clackamas, Clark, Multnomah and Washington counties. Table 1b summarizes the household and employment information within the Urban Growth Boundary. The 2035 land use assumptions were held constant for all of the model runs – 2035 Base Case, Concepts A, B, C, and D.

TABLE 1a Total Four-County Region Household and Employment Assumptions

Land Use	# of TAZs	2005	2035
Households	2013	767,020	1,208,686
Employees	2013	1,032,246	1,799,152
Population	2013	1,961,153	3,097,402

Table 1b Total Intra-UGB Household and Employment Assumptions

Land Use	# of TAZs	2005	2035
Households	2013	565,988	830,066
Employees	2013	869,582	1,434,072
Population	2013	1,408,207	2,039,851

Types of Assumptions to Compare Scenarios

The following types of assumptions will described for each of the six different model runs (2005, 2035 Base Case, Concept A, Concept B, Concept C, and Concept D).

Roadway Network Assumptions

This section identifies the major road projects and assumptions for different types of projects.

Transit Network Assumptions

This section identifies the major transit projects and assumptions for different types of projects, including transit headways. A more detailed summary of the transit headways for all bus, streetcar, commuter rail, light rail lines is included as Appendix A (includes assumptions for all of the Scenarios)

Traffic Analysis Zone (TAZ) Assumptions

The cost of various forms of transportation and levels of street connectivity are key elements in Metro's travel demand model that affect mode choice. The recommended intersection density, parking cost and transit fare factors vary by land use type and reflect regional transportation and land use policies adopted in the *2004 Regional Transportation Plan*.

The assumptions were not used for the purpose of allocating population and employment to individual traffic analysis zones (TAZ). Rather, they were developed to allow transportation variables, such as parking costs, transit subsidies and ease of pedestrian travel, to be adjusted to closely reflect the 2040 Growth Concept land uses at the TAZ level.[1] The net result is a model exercise that better predicts how mode share will respond to different land use types and mixes.

A summary of the transportation analysis zone (TAZ) assumptions for street connectivity, parking costs and transit fares as generally applied to the 2040 Growth Concept design types are included as Appendix B (includes assumptions for all of the Scenarios).

Intersection Density

The intersection density (e.g., a measure of street connectivity) represents the expected number of street intersections per mile for each 2040 grouping. Intersection density affects mode choice and trip length for all modes.

Parking Factors

Future year parking factors for the Central City are based upon the 2006 City of Portland's research and recommendations proposing a 1.5 percent above inflation rate. Parking factors for the regional centers, station communities and town centers are scaled from these costs. The parking costs are intended to represent both direct, out-of-pocket expense as well as the difficulty in finding a parking space and walking to a destination. The costs throughout the region are proportionally indexed to the parking prices in downtown Portland. For example, the parking costs in regional centers are 10% of those assumed for the Portland CBD.

Transit Pass Factor and Fareless Areas

The transit fare factors are reported as a proportion of the full transit fare that transit riders in each 2040 design type will pay. These factors are designed to reflect the presence of a Transportation Management Association (TMA) and/or the implementation of a program similar to the Transportation Demand Management Program, through which employers reduce the cost of transit available to their employees.

[1] It is important to note TAZ boundaries do not directly correspond to the 2040 Growth Concept design type boundaries or locally adopted comprehensive plans designations.

II. NETWORK ASSUMPTION COMPARISONS

2005

This section summarizes the assumptions in the 2005 Base Year model.

2005 Roadway Network Assumptions

The 2005 roadway network consists of the existing roadway system.

2005 Transit Network Assumptions

The 2005 transit base case consists of current service and existing MAX lines and frequent service bus lines as well as existing service for other transit districts like C-TRAN, SMART, CAT, SAM and SCTD.

A list of all of the 2005 transit service/headways (as well as for all of the other Scenarios) is included in Appendix A.

2005 TAZ Based Assumptions

(See Appendix B for a comparison of the TAZ assumptions for all Scenarios)

2005 Intersection Density

The 2005 intersection density was generated in ArcView using a cleaned TIGER file to establish intersections.

2005 Parking Factors

Parking factors are assumed only for portions of the Central City where there are existing charges for parking – Downtown CBD, Lloyd District, and River District/Northwest.

2005 Transit Pass Factor and Fareless Areas

Users are assumed to pay 100% of transit fares in all areas, except for travel within the fareless square in Downtown CBD and Lloyd District, and 60% of cost at OHSU.

2035 BASE CASE (FINANCIALLY CONSTRAINED SYSTEM)–"Reference Scenario"

This section summarizes the assumptions in the 2035 Base Case scenario. This system includes the network of projects assumed for the federal component of the 2035 RTP, and is based on revenue sources that can reasonably be expected to be available for transportation uses during the plan period. This system of investments complies with federal planning and air quality regulations. This network of projects provided the base upon which Scenarios A, B, C, and D are built. See Figure 1 for a map of the projects assumed in the 2035 Base Case network.

2035 Base Case Roadway Network Assumptions

Roadway projects included in the Financially Constrained network were derived from projects submitted by ODOT and local agencies as part of the 2035 RTP project solicitation process in spring 2007. This includes the following major capital investments[2]:

- Sunrise Project from I-205 to 122nd Avenue
- US 26, OR 217, and I-205 interchange improvements

[2] Note – The 2035 Financially Constrained network used as the Base Case for the Scenarios Analysis does not include some projects assumed in the conformity analysis for the 2035 RTP: I-5 Columbia River Crossing, Sunrise project from 122nd Ave to 172nd Ave, I-84/I-5 interchange improvements, and the I-5/99W Connector. These projects were not assumed because the RTP revenue forecast does not include funding for construction of these projects.

2035 Base Case Transit Network Assumptions

In general, the 2035 transit network includes an extensive mix of high capacity, regional and community service transit service. A list of all of the 2035 transit service/headways (as well as for all of the other Scenarios) is included in Appendix A. Some of the major capital investments include:

- I-205 light rail (MAX Green line)
- Portland Streetcar extension to Lowell St.
- MAX Red Line extension to Merlo (158th Avenue)
- Washington County Commuter Rail (WCCR).
- Milwaukie light rail
- Portland to Lake Oswego streetcar
- Eastside streetcar
- Burnside/Couch streetcar to Hollywood Transit Center
- Bus Rapid Transit along McLoughlin Boulevard

2035 TAZ Based Assumptions

(See Appendix B for a comparison of the TAZ assumptions for all Scenarios)

2035 Intersection Density

The 2035 FC assumptions were derived by applying minimum density values based on the TAZ's 2040 design type. Areas expected to have higher density development and greater street connectivity are assumed to have higher intersections per square mile.

2035 Parking Factors

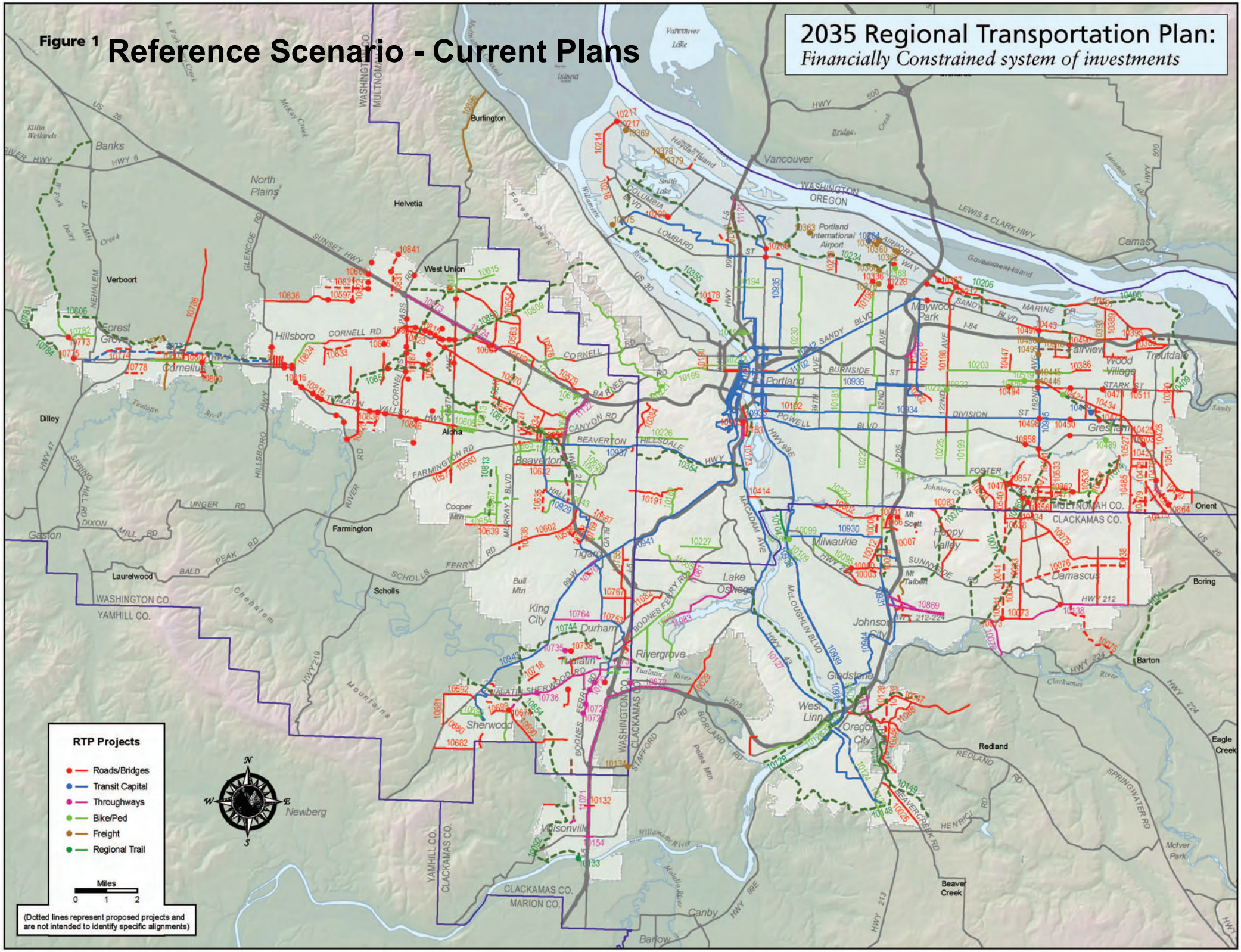
The 2035 FC system assumes increased parking costs in the Central City as well as new charges for Regional Centers, Station Communities, and Town Centers.

2035 Transit Pass Factor and Fareless Areas

The 2035 FC system assumes a decrease in the percent of fares paid by the user in the Central City, Regional Centers, Station Communities and Town Centers. It does not assume fareless areas outside of what is assumed for 2005 (Downtown CBD and Lloyd District).

Figure 1

Reference Scenario - Current Plans



CONCEPT A – A FOCUS ON MULTI-MODAL SYSTEM CONNECTIVITY

This section summarizes the assumptions in the 2035 Concept A scenario. The following policy variables are tested in this concept:

1. 4-lane major arterials spaced approximately1-mile apart and 2-lane minor arterials and collectors spaced approximately ½-mile apart, where reasonable.
2. Throughway overcrossings spaced approximately two miles apart, where reasonable, to improve access to centers and address congestion at interchanges.
3. Grade separation of railroad and arterial street network.
4. Implementation of the 2008 Transit Investment Plan, South Metropolitan Area Rapid Transit (SMART) Transit Plan and C-TRAN transit plan.
5. Build out of the regional bicycle and pedestrian systems, including regional trails with a transportation function.

See Figure 2 for a map of new street connections assumed in Concept A. The Purple lines represent major arterials and the Green represent minor arterials/collectors.

Concept A Roadway Network Assumptions

Roadway projects in Concept A include the 2035 Base FC system, plus other projects that help to achieve the regional arterial spacing standard (1 mile for major arterials, ½ mile for minor arterials/collectors). New major arterials were assumed to be 4 or 5 lanes, with 35mph speed limit. New minor arterials/collectors were assumed to be 2 or 3 lanes with 25mph speed limit, except where the speed was already higher. Concept A includes the following major capital investments:

- New arterial crossings of the Columbia, Willamette, Clackamas and Tualatin rivers
- I-5 Columbia River Crossing: same as 2035 Base Case, no capacity added to bridge
- Sunrise Corridor: same as 2035 Base Case.
- I-5 to 99W Connector: added new major arterial connection (5 lanes) from I-5 to 99W

Concept A Transit Network Assumptions

Transit projects in Concept A are the same as what is assumed in the 2035 Base FC system.

A list of the Concept A (and all other Scenarios) transit service/headways is included in Appendix A.

Concept A TAZ Based Assumptions

(See Appendix B for a comparison of the TAZ assumptions for all Scenarios)

Concept A Intersection Density

Intersection density assumed to remain the same for all 2040 areas except for Tier 2 Town Centers (Pleasant Valley, Damascus, Bethany, Murrayhill) and Outer Neighborhoods. These areas were assumed to have increased street connectivity since they are both developing areas with more opportunities to increase street connectivity than developed areas.

Concept A Parking Factors

Same as 2035 Base Case

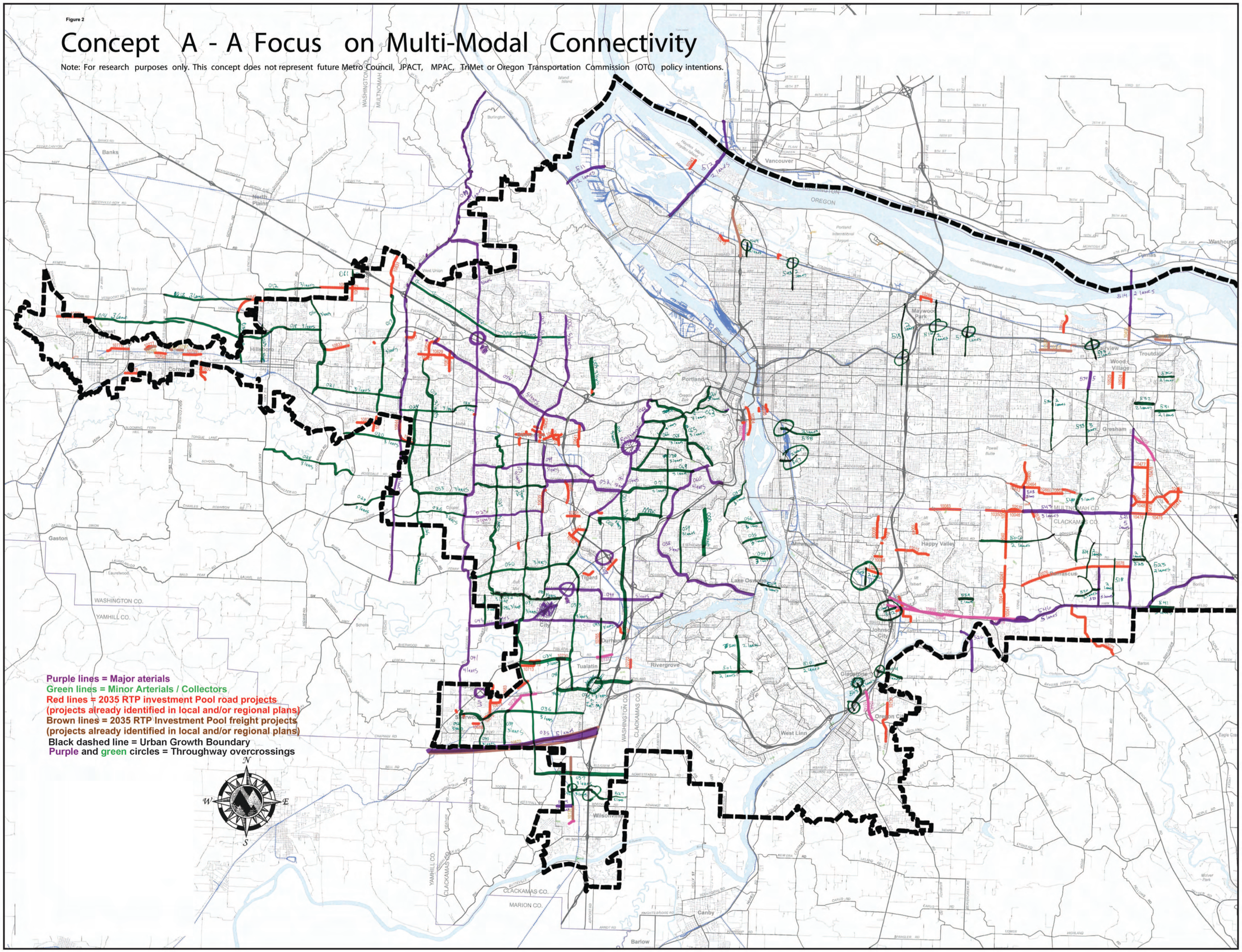
Concept A Transit Pass Factor and Fareless Areas

Same as 2035 Base Case

Figure 2

Concept A - A Focus on Multi-Modal Connectivity

Note: For research purposes only. This concept does not represent future Metro Council, JPACT, MPAC, TriMet or Oregon Transportation Commission (OTC) policy intentions.



CONCEPT B – A FOCUS ON HIGH CAPACITY TRANSIT (HCT) and Regional Transit Service

This section summarizes the assumptions in the 2035 Concept B scenario. The following policy variables are tested in this concept:

1. Transit system designs to improve coverage, speed and frequencies, address bottlenecks in the system and expand inter-urban connections.
2. HCT connections as defined in the HCT Study, including connections to all regional centers, inter-urban commuter rail to points outside the region and local aspirations.
3. HCT and streetcar network assumptions to be informed by current status of corridor studies.
4. Park-and-ride facilities and transit stations tied to new HCT service.
5. New and expanded frequent bus service on major arterials and 2040 corridors to support new HCT service, including new suburban-to-suburban connections and connections to employment areas (minimum 15-minute service most hours of the day).
6. Expanded streetcar system to complement HCT in the central city and regional centers.

See Figure 3 for a map of new transit connections assumed in Concept B.

Concept B Roadway Network Assumptions

Roadway projects in Concept B include the same as in the 2035 Base Case.

Concept B Transit Network Assumptions

Some of the major capital investments in addition to what was assumed in the 2035 base case include:

- Frequent Bus Service on all major arterials and reasonable connections to light-rail transit (LRT) stations
- Several new Light rail lines/extensions, including extensions to fulfill the 2040 Growth Concept policy of serving all Regional Centers (Oregon City and Washington Square), and many suburban to suburban connections, i.e. Milwaukie to Clackamas Regional Center via Highway 224
- Streetcar circulator in every regional center and downtown Milwaukie
- Streetcar extension to West Linn
- Commuter Rail extensions to Salem and Aurora *(The model only includes the boardings/alightings at stations within the region, it does not capture trips leaving the region)*
- Approximately 500 park-and-ride spaces per every 2.5 miles of new LRT
- Portland streetcar system plan fully incorporated
- Clark County HCT plan fully incorporated and assumed to operate as LRT

Key service-related assumptions include:

- New LRT connections to downtown are not interlined through downtown; a transfer is needed
- Assumed LRT transit speeds were averaged based on 2007 speeds for LRT with an added dwell time of 20 seconds to account for acceleration and deceleration
- US 26 tunnel and downtown speeds are not adjusted

A list of the Concept B (and all other Scenarios) transit service/headways is included in Appendix A.

Concept B TAZ Based Assumptions

(See Appendix B for a comparison of the TAZ assumptions for all Scenarios)

Concept B Intersection Density

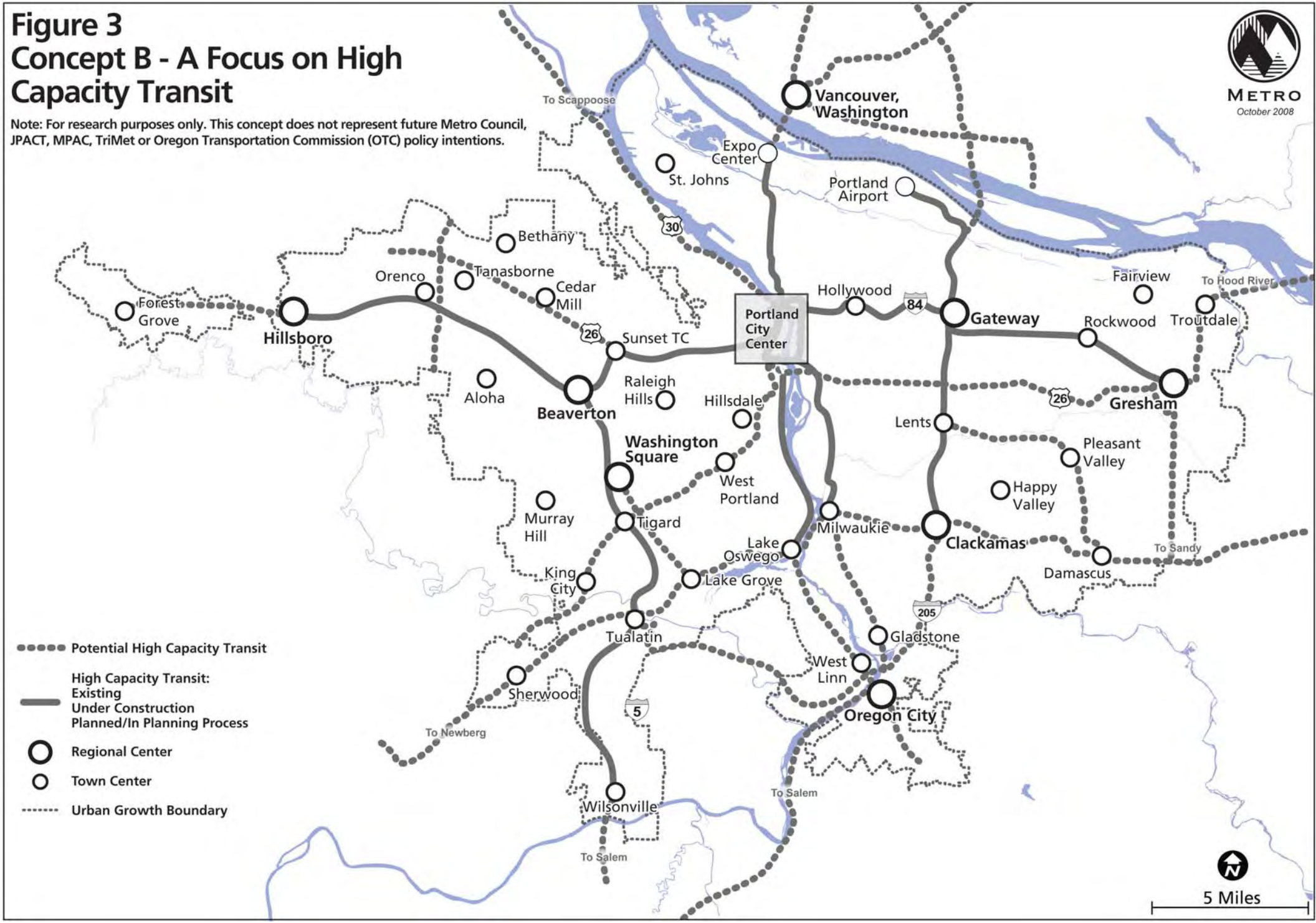
Same as 2035 Base Case, except that new streetcar zones were created along the proposed streetcar lines to capture the increased density of development. Concept B increased the minimum number of intersections per sq mile where the streetcar zones intersected areas with opportunities for greater street connectivity - Tier 2 Town Centers, Main Streets, Corridors, Inner neighborhoods, Outer Neighborhoods and Industrial/Employment areas.

Concept B Parking Factors
Same as 2035 Base Case, except that station communities were created with the TAZs surrounding stations for all of the new light rail lines assumed. Parking factors for these areas were adjusted accordingly.

Concept B Transit Pass Factor and Fareless Areas
Same as 2035 Base Case, except that for all of the new light rail lines assumed, new “station communities” were created with the TAZs surrounding the new stations. Transit Pass factors for these areas were adjusted accordingly.

Figure 3
Concept B - A Focus on High Capacity Transit

Note: For research purposes only. This concept does not represent future Metro Council, JPACT, MPAC, TriMet or Oregon Transportation Commission (OTC) policy intentions.



CONCEPT C – A FOCUS ON THROUGHWAYS

This section summarizes the assumptions in the 2035 Concept C scenario. The following policy variables are tested in this concept:

1. Throughways widened up to 10 through lanes as needed to address congestion and freight bottlenecks.
2. Interchange designs restructured as needed to accommodate additional throughway lanes.
3. New throughways connections up to 6 through lanes as needed (e.g., I-5/99W Connector, Sunrise Corridor, I-84/US 26 connector).
4. Throughway network assumptions to be informed by current status of corridor studies.
5. A "C2" version of this concept includes value pricing of new capacity on selected heavily traveled throughway corridors.

Concept C Roadway Network Assumptions
In addition to the projects assumed in the 2035 base case, this scenario added several major highway connections. The number of assumed lanes are tied to the extent of base case rush hour congestion. No tolling is assumed in this scenario. See Figure 4 for a map of new connections assumed in Concept C. Some examples include:

New Connections

- Camas, WA to Troutdale, OR (6 lanes)
- I-5 to 99W (4 lanes)
- I-205 to US 26 (6 lanes to Rock Creek Junction, 4 lanes from Rock Creek to US 26)
- I-84 to US 26 (6 lanes to Powell Valley Rd, 4 Lanes from Powell Valley to US 26
- US 26 to US 30 (4 lanes)
- US 26 to TV Hwy (4 lanes)

New Capacity Added to Existing Throughway

- Tualatin Valley Hwy (6 lanes)
- I-5 from Portland CBD to I-205 (10 lanes)
- I-5 from Portland CBD to Columbia Blvd. (8 lanes)
- I-5 Columbia Blvd. to SR 14 (10 lanes)
- I-205 from SR 14 to OR 213 (10 lanes)
- I-205 from I-5 to OR 213 (8 lanes)
- I-84 from I-5 to NE 182nd Avenue (8 lanes)
- OR 99E/224 from Portland CBD to I-205 (6 lanes)
- OR 217 (8 lanes)
- US 26 from Portland CBD to 185th Avenue (8 lanes)

Appendix C provides a more detailed summary of mainline capacity assumptions. All new facilities are assumed to be limited-access with speeds of 55 miles per hour, unless otherwise noted in Appendix C. Ramp metering is assumed for all interchanges, and ramp meter rates were adjusted proportional to new capacity added to the network.

Concept C Transit Network Assumptions
Transit projects in Concept C include the same as in the 2035 Base FC system.

A list of the Concept C (and all other Scenarios) transit service/headways is included in Appendix A.

Concept C TAZ Based Assumptions
(See Appendix B for a comparison of the TAZ assumptions for all Scenarios)

Concept C Intersection Density
Same as 2035 Base Case

Concept C Parking Factors
Same as 2035 Base Case

Concept C Transit Pass Factor and Fareless Areas
Same as 2035 Base Case

Concept C2 Roadway Network Pricing Assumptions
In addition to the capacity increases assumed in Concept C, this concept assumed variable pricing of a new lane of mainline highway capacity in the following corridors for the Oregon portion of the network:

- I-84 ($0.10/mile in PM 2-hour peak and $0.05/mile in mid-day 1-hour)
- I-205 mainline (($0.10/mile in PM 2-hour peak and $0.05/mile in mid-day 1-hour)
- I-5 mainline ($0.10/mile in PM 2-hour peak and $0.05/mile in mid-day 1-hour)
- US 26 mainline ($0.10/mile in PM 2-hour peak and $0.05/mile in mid-day 1-hour)
- OR 217 mainline ($0.10/mile in PM 2-hour peak and $0.05/mile in mid-day 1-hour)

The concept also assumed a variable rate for crossing the Columbia River:

- I-205 Bridge crossing ($1.25 Mid-day 1-hour and $2.00 PM 2-hour peak)
- I-5 Bridge crossing ($1.25 Mid-day 1-hour and $2.00 PM 2-hour peak)
- New Columbia River Crossing between Camas and Troutdale ($1.25 Mid-day 1-hour and $2.00 PM 2-hour peak)

Key operational-related assumptions include:

- Priced lanes operate as a high-occupancy toll (HOT) lanes,
- Pricing is variable by time of day as described above.

Figure 4

Concept C - A Focus on Throughways

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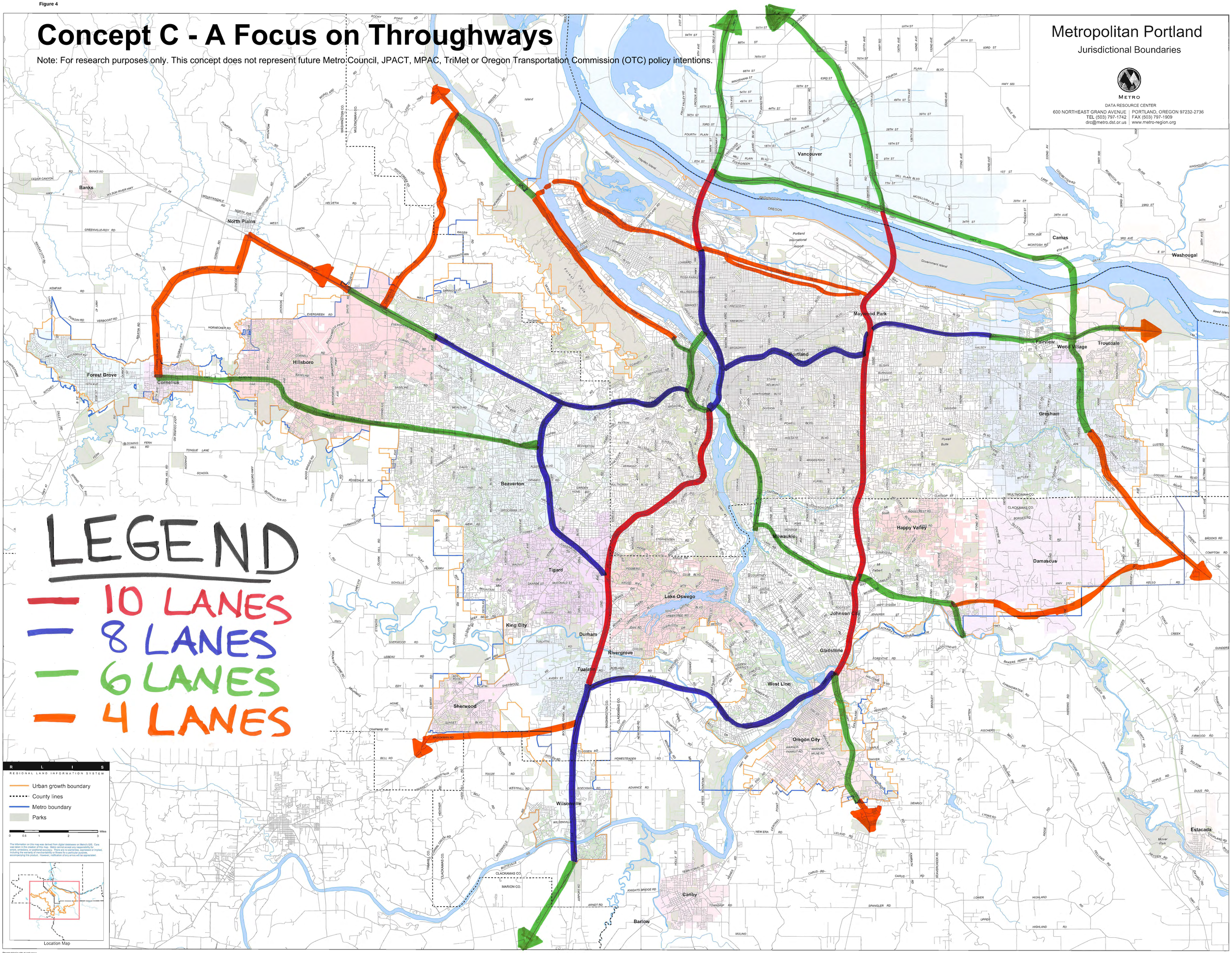

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CONCEPT D – A FOCUS ON SYSTEM MANAGEMENT AND PRICING

This section summarizes the assumptions in the 2035 Concept D scenario. The following policy variables are tested in this concept:

1. Value pricing on all lanes of selected heavily traveled throughway corridors to address congestion and freight bottlenecks.
2. Arterial corridor management strategies, including signal re-timing, adaptive signals and access management on major arterials.
3. Removal of throughway interchange access to meet Oregon Highway Plan (OHP) interchange spacing standards.
4. Expanded transit pass programs, including "reduced fare zones" in the central city and regional centers.
5. Expanded parking management programs in the central city, regional centers, town centers and employment areas.

Transit signal priority and other transit-related system management strategies were not included in this analysis due to model limitations. See Figure 5 for a map of facilities employing system management tools in Concept D.

Concept D Roadway Network Assumptions

Roadway projects in Concept D include the same as in the 2035 Base Case.

Concept D assumes advanced traffic management strategies applied to all RTP Principal Arterial Highways, Major Arterials, and Minor Arterials where projects have been identified. The model assumes a 10 percent increase in speed along managed corridors. See Appendix 3 for a full list of managed facilities.

Concept D assumes freeway ramp closures for general purpose travel based on Oregon Highway Plan (OHP) spacing standards of 1 mile taper to taper for urban freeways. These ramps would remain open for transit and emergency services use via transponder system. See Appendix D for a list of the ramps

Concept D assumes pricing on all lanes of Principal Arterial Freeways where congestion exceeds 0.9 V/C in the peak direction in 2035 for PM Peak and Mod-day. $0.10/mile in PM 2-hour Peak and $0.05 cent/mile in Mid-day 1 Hour, I-5 and I-205 bridges tolled at $1.25 Mid-day and $2 PM Peak.

Concept D Transit Network Assumptions

Transit projects in Concept D include the same as in the 2035 Base FC system.

A list of the Concept D (and all other Scenarios) transit service/headways is included in Appendix A.

Concept D TAZ Based Assumptions

(See Appendix B for a comparison of the TAZ assumptions for all Scenarios)

Concept D Intersection Density
Same as 2035 Base Case

Concept D Parking Factors
Concept D assumed an increase in parking costs for all areas that currently have parking charges. Additionally, Main Streets were assumed to have parking costs.

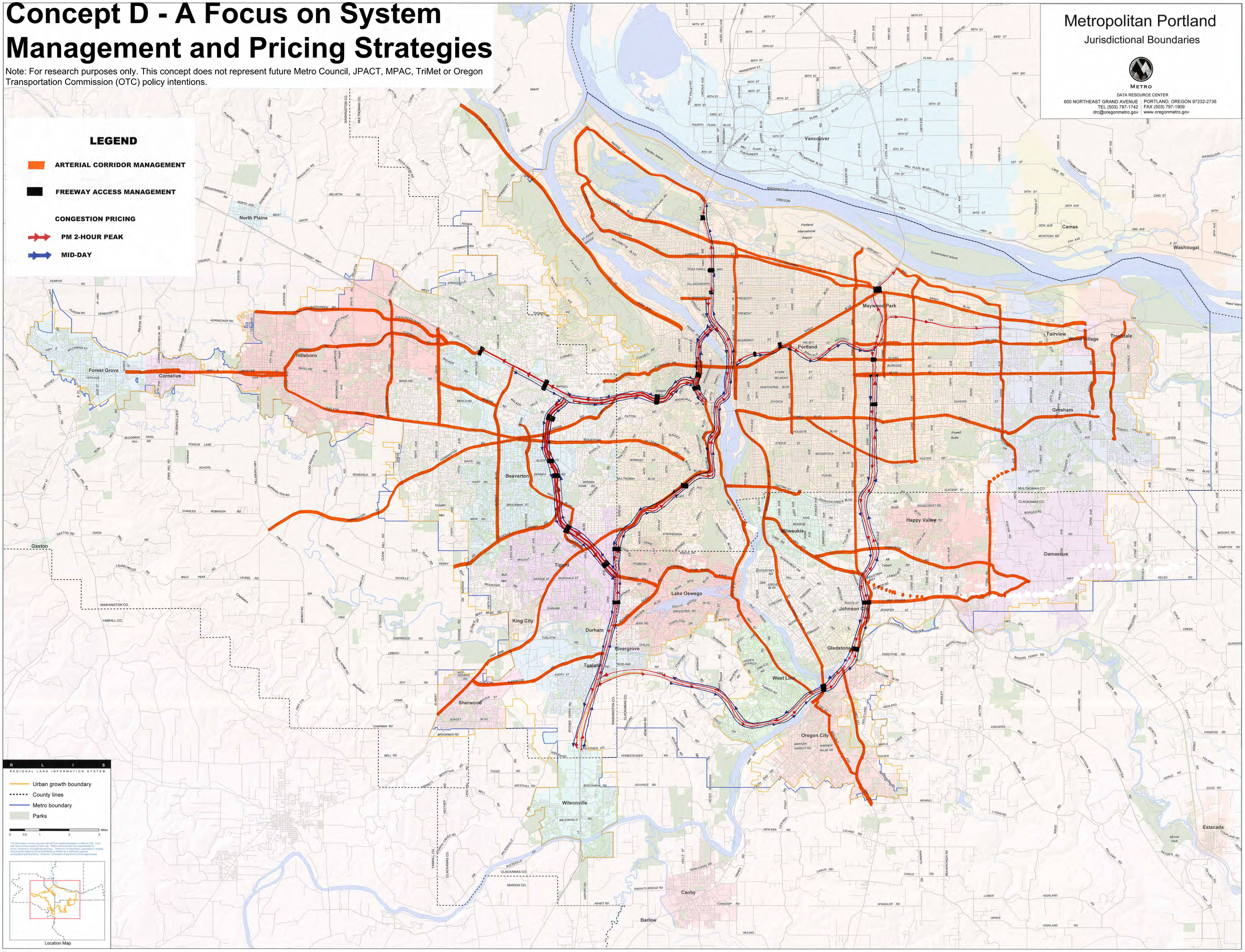
Concept D Transit Pass Factor and Fareless Areas
Concept D assumes a decrease in the percent of fare paid by the user for 2040 centers, main streets, station communities, and in areas that have TMAs. Additionally, new zones were created

– primarily around Hospitals and Colleges in which transit users are assumed to pay 70 percent of the fare. These areas include: Providence Hospital, Emanuel Legacy Hospital, St Vincent Hospital, Mt. Hood legacy Medical Center, Meridian Park Hospital, Willamette Falls Hospital, Portland Adventist, Lewis and Clark College, University of Portland, Reed College, Marylhurst University, Clackamas Community College, Mt. Hood Community College, PCC-Rock Creek, PCC-Sylvania.)

Figure 5

Concept D - A Focus on System Management and Pricing Strategies

Note: For research purposes only. This concept does not represent future Metro Council, JPACT, MPAC, TriMet or Oregon Transportation Commission (OTC) policy intentions.



Please recycle with mixed paper

N:\CounterMaps July 2008

Appendix A. RTP Scenarios Analysis Transit Headway Assumptions

Transit Line Listing		2005		2035 Base FC		Concept A		Concept B		Concept C		Concept D	
		peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway
HCT / Streetcar Service													
01CRBW	Commuter Rail (BTC-Wilsonville)	N/A	N/A	15	15	Same as Base	Same as Base	Same as Base	Same as Base	Same as Base	Same as Base	Same as Base	Same as Base
01CRWS	Commuter Rail (Wilsonville-Salem)	N/A	N/A	N/A	N/A	N/A	N/A	30	60	N/A	N/A	N/A	N/A
01OCAU	Commuter Rail (OTC – Aurora)	N/A	N/A	N/A	N/A	N/A	N/A	30	60	N/A	N/A	N/A	N/A
01AMTK	Amtrak – (Eugene – Vancouver)	N/A	N/A	N/A	N/A	N/A	N/A	30	60	N/A	N/A	N/A	N/A
01HGAP - Blue Line	LRT - (Hillsboro-Gresham) via cross-mall	7.5	10	6	10	Same as Base							
01FGTD – Blue Line	LRT – (Forest Grove – Troutdale via cross-mall	N/A	N/A	N/A	N/A	N/A	N/A	6	10	N/A	N/A	N/A	N/A
01I205 - Green Line	LRT - (PCBD/PSU-CTC) via mall	N/A	N/A	7.5	15	Same as Base		15	N/A	Same as Base			
01I205O – Green Line to OC	LRT – (PCBD/PSU-OC) via mall	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
01PDXX - Red Line	LRT - (PIA-158th) via cross-mall to	N/A	N/A	15	15	Same as Base							
01POEM - Yellow Line Mall	LRT - (PCBD/PSU-Expo) via mall	10	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01PMIL	LRT - (Milwaukie - Portland CBD) via mall	N/A	N/A	7.5	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01OVAN	LRT - (Oregon City - Vancouver CBD) via mall	N/A	N/A	N/A	N/A	N/A	N/A	7.5	15	N/A	N/A	N/A	N/A
01 MLLT	LRT (Milwaukie to Lombard via Water ave)	N/A	N/A	N/A	N/A	N/A	N/A	10	15	N/A	N/A	N/A	N/A
01V205	LRT - (Gateway to Clark College)	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
01S205	LRT – (Gateway to Salmon Park & Ride)	N/A	N/A	N/A	N/A	N/A	N/A	10	15	N/A	N/A	N/A	N/A
01VFPL	LRT – (4th Plain to 162nd)	N/A	N/A	N/A	N/A	N/A	N/A	10	15	N/A	N/A	N/A	N/A
01AGTB	LRT - (Amber Glen to Tanasbourne)	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
01POWG	LRT - (Portland to Gresham via Powell)	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A

Transit Line Listing		2005		2035 Base FC		Concept A		Concept B		Concept C		Concept D	
		peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway
01PSHR	LRT - (Portland to Sherwood via Barbur)	N/A	N/A	N/A	N/A	N/A	N/A	7.5	15	N/A	N/A	N/A	N/A
01LDAM	LRT - (Lents to Damascus) via Foster Rd	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
01MDAM	LRT - (Milwaukie - CTC - Damascus) via Hwy 224	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
01GDAM	LRT - (Gresham - Damascus) via 232nd/242nd Ave	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
01HISV	LRT - (Hillsboro - St Vincent) via Evergreen/US26	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
01MISH	LRT - (Milwaukie TC - Sherwood TC)	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
01OCCC	LRT - (Oregon City - Clac CC)	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
01WSCT	LRT - (Washington Square - CTC) via WES/I-205	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
01WSOC	LRT – (Washington Sq – Oregon City via WES/I-205)	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
01CTWS	LRT – (Washington SQ to CTC via LO, Miwalwuie, Hwy 224)	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
01PSCA	LRT - (Portland-Scappoose)	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
01 NEWT	LRT – (Newberg to Tualatin)	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
01SCLP	Streetcar (Riverplace - OMSI Loop)	N/A	N/A	12	12	Same as Base							
01SCLO	Streetcar (NW23rd-Lake Oswego	N/A	N/A	12	12	Same as Base							
01SCWL	Streetcar (NW23rd-West Linn)	N/A	N/A	N/A	N/A	N/A	N/A	12	12	N/A	N/A	N/A	N/A
31OBRT	Oregon City - 152nd BRT/Freq Bus	N/A	N/A	15	15	Same as Base							
FREQUENT BUS SERVICE													

Transit Line Listing		2005		2035 Base FC		Concept A		Concept B		Concept C		Concept D	
		peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway
FB01	loop via Hwy 47 and Thatcher Rd	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB02	Hillboro TC to Cornelius Pass Rd	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB03	TV Hwy to West Union	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB04	West Union Rd to US 30 via Cornell Rd	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB05	Baseline 198th	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB06	185th/175th FARM/SCH	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB07	BEEF BEND ROY TO 99W	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB08	GAARDE WALNUT to HAL	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB09	HALL TIG TC to WS TC	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB10	TU/SHER RD BOL TO SH	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB11	STAFRD WIL TC to LO	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB12	HWY 213 OCTC to THAY	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB13	JOHN CR MILTC to CTC	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB14	BORGES 172ND TO 272N	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB15	172ND FOSTER TO 212	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB16	190TH BORGES HIGH DR	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB17	222ND 212 to GRESH T	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A

Transit Line Listing		2005		2035 Base FC		Concept A		Concept B		Concept C		Concept D	
		peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway
FB18	TELFORD ROB 212 242n	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB19	TROUTDALE RD	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB20	302ND BLUFF to I-84	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB21	162ND POWELL SANDY	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB22	148TH POWELL TO SAND	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB23	COLUM 205 TO LOMBARD	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB24	CHILDS RD	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB25	THATCHER RD FG to KE (combined w/ FB01)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
FB26	THEISSEN RD MIL CTC	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB27	BULL ROGERS TO 172ND	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
FB29	OLESON WASHTC TO US2	N/A	N/A	N/A	N/A	N/A	N/A	15	15	N/A	N/A	N/A	N/A
BUS SERVICE													
02GREE	Greeley - (PCBD-UofP)	12	30	10	30	Same as Base							
02VCBJ	Vermont - (PCBD-Vermont/Shattuck) Columbia/Jefferson	N/A	N/A	10	15	Same as Base							
04DGTC	Division - (PCBD-Gresham TC) FB	12	12	5	12	Same as Base							
04F	Fessenden - (PCBD-St.Johns) FB	12	12	12	12	Same as Base							
06MLKJ	Collins/Jef-Col/Hawth/MLK/Lomb/Den/Hayd Isld/Vanc (PCBD-Vancouver) FB	N/A	N/A	10	10	Same as Base							
08JVA	Jackson Park/VA Hospital - (PCBD-VA Hospital) - FB	12	15	7.5	15	Same as Base							

Transit Line Listing		2005		2035 Base FC		Concept A		Concept B		Concept C		Concept D	
		peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway
08M15	NE 15th/MLK/Middlefield (PCBD-Middlefield) FB	7.5	15	7.5	15	Same as Base							
09BWY	Broadway - (PCBD-27th/Saratoga) - via Rose Quarter TC	12	15	10	15	Same as Base							
09P98T	Powell/Gresham to 98th Ave-(PCBD-98th)	30	30	30	30	Same as Base		N/A	N/A	Same as Base			
09PGL-New Limited, no local service	Powell/Gresham Limited all the way to Gresham- (PCBD-GreshamTC)	20	N/A	20	0	Same as Base		N/A	N/A	Same as Base			
09PGTC	Powell/Gresham TC - (PCBD-GreshamTC)FB	20	30	10	15	Same as Base		N/A	N/A	Same as Base			
10H	Harold - (PCBD-122nd/Foster)	12	20	7.5	20	Same as Base							
10T	NE 33rd - (PCBD-33rd/Sutherland)	15	20	12	15	Same as Base							
12BKC	Barbur/King City - (PCBD-KC) FB	30	30	N/A	N/A	Same as Base		N/A	N/A	Same as Base			
12BSHR (PCBD-Sherwood)	Barbur/Sherwood - (PCBD-Sherwood) FB	30	30	10	15	Same as Base		N/A	N/A	Same as Base			
12SG	Sandy - (PCBD-Gresham) FB	20	20	10	20	Same as Base							
12SP	Sandy - (PCBD-Parkrose) FB	15	20	15	20	Same as Base							
14H	Hawthorne Short - (PCBD-94th/Foster) FB	5	12	5	10	Same as Base							
14HX	Hawthorne Express - (PCBD-94th/Foster) FB	30	0	30	0	Same as Base							
152MCT	Milwaukie Shuttle - MTC - CTC	60	60	60	60	Same as Base							
154WLN	Willamette - (Willamette/W.Linn-Oregon City)	60	60	60	60	Same as Base							
155S	Sunnyside Rd.	60	60	60	60	Same as Base		N/A	N/A	Same as Base			
156MR	Mather Rd. - (147th/OregonTrail-CTC)	60	60	45	60	Same as Base		N/A	N/A	Same as Base			
157HV	Happy Valley - (147th/OregonTrail-CTC)	6	60	6	60	Same as Base							

Transit Line Listing		2005		2035 Base FC		Concept A		Concept B		Concept C		Concept D	
		peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway
15B60	Belmont/Mt.Tabor (PCBD-60th) FB	30	0	30	30	Same as Base							
15B92	Belmont/Mt.Tabor/92nd (PCBD-92nd) FB	30	0	30	60	Same as Base							
15BELP	Belmont/Mt.Tabor/Parkrose (PCBD-Parkrose) FB	7.5	12	7.5	12	Same as Base							
15THUR	NW 23rd/Thurman-Gordon - (PCBD-27th) FB	20	20	20	30	Same as Base							
15TMPK	NW 23rd/Montg. Park - (PCBD-27th/Mont.Park) FB	20	20	20	30	Same as Base							
16FA	Front Ave./St. Johns/Marine Dr-(PCBD-Middlefield) via Fess/Col	30	N/A	20	0	Same as Base							
17H136	Holgate - (PCBD-136th Powell)	10	15	10	15	Same as Base							
17SLIN	NW21st/St Johns - (PCBD - St Johns - Linnton)	30	30	10	20	Same as Base		N/A	N/A	Same as Base			
17SMPK	NW21st/Montg. Park - (PCBD-Montgomery Park)	30	30	10	20	Same as Base							
18HILL	Hillside - (PCBD-Maclay/Burnside) Off-Mall	60	60	60	0	Same as Base							
19G	Glisan - (PCBD-GatewayTC)	10	15	10	15	Same as Base							
19W	Woodstock - (PCBD-Mt.Scott/112th)	15	30	15	30	Same as Base							
19WR	Woodstock/Rex - (PCBD-Mt.Scott/112th)	20	30	20	30	Same as Base							
201BAR	SMART/Barbur TC	0	60	0	60	Same as Base							
201BTC	SMART/Barbur TC	30	0	30	0	Same as Base							
203COM	SMART/Commerce Circle	30	0	30	0	Same as Base							
204CRS	SMART/Wilsonville Crosstown	30	60	30	60	Same as Base							
205CAN	SMART/Canby	60	60	60	60	Same as Base							
20BSTB	Burnside/Beaverton TC - (BTC-Gresham)	12	30	15	20	Same as Base							
20BSTN	Burnside/23rd Beaverton TC - (BTC-Gresham)	0	30	0	60	Same as Base							
22ROSE	Parkrose - (Parkrose-GatewayTC)	30	30	30	30	Same as Base							

Transit Line Listing		2005		2035 Base FC		Concept A		Concept B		Concept C		Concept D	
		peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway
23SRAF	San Rafael - 148th (GatewayTC-GreshamTC)	30	30	60	60	Same as Base							
25G	Glisan/Rockwood - (GatewayTC-RockwoodTC)	60	60	60	60	Same as Base							
27M	Market/Main - (GatewayTC-RockwoodTC)	60	60	60	60	Same as Base							
28LINW	Linwood	30	60	60	60	Same as Base							
29LAKE	Lake-Webster	30	30	60	60	Same as Base							
300SES	SAM/Sandy-Estacada	60	60	60	60	Same as Base							
300SGR	SAM/Sandy-Gresham TC	30	60	30	60	Same as Base							
300SME	SAM/Sandy-Rhodedendron	60	60	60	60	Same as Base							
301COC	Canby - Oregon City	20	30	20	30	Same as Base							
302MCC	Molalla/CCC	60	60	60	60	Same as Base							
302MCN	Molalla/Canby	60	60	60	60	Same as Base							
31EM	Estacada Local (Milwaukie - Estcada)	0	30	30	30	Same as Base							
31MNH	Milw TC - ClackTC - New Hope	N/A	N/A	N/A	N/A	Same as Base		N/A	N/A	Same as Base			
32CCOC	Oatfield - (OC-CCC)	0	60	N/A	N/A	Same as Base		N/A	N/A	Same as Base			
32MOC	Oatfideld (Milwaukie - OC)	N/A	N/A	0	60	Same as Base							
32OCCC	Oatfield - (PCBD-CCC)	15	0	N/A	N/A	Same as Base		N/A	N/A	Same as Base			
32MCCC	Oatfield Milwaukie - CCC	N/A	N/A	15	0	Same as Base		N/A	N/A	Same as Base			
32OMIL	Oatfield - (OC-MTC)	0	60	0	60	Same as Base							
33FRE	Fremont - (PCBD-GTC)	15	20	12	20	Same as Base							
33MCCC	McLoughlin - (PCBD-CCC)	30	30	N/A	N/A	Same as Base		N/A	N/A	Same as Base			
33MMCC	McLoughlin - (Milwaukie - CCC)	N/A	N/A	0	0	Same as Base							
33MGLD	McLoughlin - (PCBD-OC)	0	30	N/A	N/A	Same as Base		N/A	N/A	Same as Base			
34CH	Clackmas Heights	60	60	0	60	Same as Base							
34RCBD	River Rd.	60	60	30	60	Same as Base							
35MAC	Macadam - (PCBD-OC) FB (no service to Canby)	15	30	5	15	Same as Base							
36TCBD	South Shore - (PCBD-LakeO-Tual-LakeO)	30	0	15	0	Same as Base							
36TULO	South Shore - (LakeO-Tual-LakeO)	0	60	0	60	Same as Base							
37NSHR	North Shore - (LakeO-TualPNR) via Cclub/LowerBoones	60	60	60	60	Same as Base		N/A	N/A	Same as Base			

Transit Line Listing		2005		2035 Base FC		Concept A		Concept B		Concept C		Concept D	
		peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway
38BKJC	Boones Ferry - (PCBD-Tigard TC) Via Kruse/72nd/Hunziker/Hall, Jefferson/Columbia	N/A	N/A	30	60	Same as Base							
39LT	Lewis and Clark - (L&C College-BurlingameTC -Terwilliger)	N/A	N/A	30	60	Same as Base							
40M	Mocks Crest - (PCBD-St.Johns)	20	30	15	15	Same as Base							
41TACJ	Tacoma - (PCBD-MTC) via McLoughlin (No Sellwood Bridge) Jefferson/Columbia	N/A	N/A	30	60	Same as Base		N/A	N/A	Same as Base			
43TFNJ	Taylors Ferry Nimbus - (PCBD-WashSq./Nimbus) Jefferson/Columbia	N/A	N/A	15	0	Same as Base							
43TFWJ	Taylors Ferry - (PCBD-WashSq.) Jefferson/Columbia	N/A	N/A	0	30	Same as Base	Same as Base	Same as Base	Same as Base	Same as Base	Same as Base	Same as Base	Same as Base
44CHWY	Capital Hwy. - (PCBD-PCC Sylvania)	15	15	10	15	Same as Base							
45G	Garden Home - (PCBD-Tigard)	30	30	0	0	Same as Base							
45GJ	Garden Home - (PCBD-Tigard)	N/A	N/A	20	30	Same as Base							
46NH	North Hillsboro - (WashCo Fairgrounds-Hillsboro)	30	60	30	30	Same as Base							
47BLEV	Baseline/Evergreen - (WillowCrk/185th-Hillsboro)	30	30	30	30	Same as Base							
48CORN	Cornell Rd. - (WillowCrk./185th-Hillsboro)	30	30	30	30	Same as Base							
51CCPL	Vista - (PCBD- Council Crest-Patrick Place)	60	60	60	60	Same as Base							
51CDHS	Vista - (PCBD-Council Crest-Dosch)	0	60	0	60	Same as Base							
51CDPD	Vista - (PCBD- Council Crest-Pat-Dosch)	60	0	60	0	Same as Base							
52O	Farmington-185th (BTC-PCC Rock Crk.)	15	15	15	15	Same as Base							
53ALLN	Artic/Allen - (BTC-Allen/Mercer Ind.)	30	N/A	30	0	Same as Base							
54B	B-H Hwy. (PCBD-BTC)	20	30	15	15	Same as Base							
55HAMJ	Hamilton - (PCBD-Scholls/Hamilton) Jefferson/Columbia	N/A	N/A	30	0	Same as Base							
55HAML	Hamilton - (PCBD-Scholls/Hamilton)	30	N/A	0	0	Same as Base		N/A	N/A	Same as Base			
56S	Scholls Ferry - (PCBD-WashSq.) FB	15	30	15	15	Same as Base							
57FFGV	Forest Grove - (BTC-Forest Gr.) FB	15	15	15	15	Same as Base		N/A	N/A	Same as Base			

Transit Line Listing		2005		2035 Base FC		Concept A		Concept B		Concept C		Concept D	
		peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway
58CANJ	Canyon Rd. - (PCBD-BTC) Jefferson/Columbia	N/A	N/A	15	30	Same as Base							
58CANY	Canyon Rd. - (PCBD-BTC)	15	30	0	0	Same as Base		N/A	N/A	Same as Base			
59WP	Walker/Parkway/Cedar Hills - (Willow Crk./185th-SunsetTC)	30	30	30	30	Same as Base							
60L	Leahy - (Cornell-SusetTC)	20	60	20	60	Same as Base							
61X	BTC-B-H Hwy. - (Marquam Hill/OHSU-BTC)	30	N/A	30	0	Same as Base							
62MURR	Murray Blvd - (WashSq.-Sunset TC)	15	20	15	20	Same as Base							
63WSYL	Washington Park (PCBD-Zoo)	60	60	60	60	Same as Base							
64MT	Tigard/Marquam Hill - (OHSU-Tigard)	30	N/A	30	0	Same as Base							
65MBAR	Barbur/Marquam Hill - (OHSU-Tigard)	30	N/A	30	0	Same as Base							
66MH	Hollywood/Marquam Hill - (OHSU-HollywoodTC)	30	N/A	30	0	Same as Base							
67J158	Jenkins/158th - (BTC-PCC Rock Crk.)	30	30	20	30	Same as Base							
68CMH	Collins Circle - (PCBD-OHSU/VA Hospital)	15	N/A	7.5	0	Same as Base							
70T13	12th Ave. - (RoseQtr.-MTC) via 13th	30	30	30	30	Same as Base							
70T17	12th Ave. - (RoseQtr.-MTC) via 17th	30	20	30	20	Same as Base							
71T122	60th/122nd - (Woodstock/94th-CTC) via Parkrose LRT	15	15	15	15	Same as Base							
72K82	82nd/Killingsworth - (Swan Is.-CTC) FB	10	10	10	10	Same as Base							
74X	SE Portland/Lloyd - (LloydCntr/RoseQtr-Woodstock/52nd)	30	N/A	30	0	Same as Base							
75TMTC	39th/Lombard - (St.Johns-MTC) FB	12	10	12	10	Same as Base							
76BVTU	Beaverton/Tualatin - (BTC-Tualatin TC) FB	30	30	12	15	Same as Base							
77BHTR	Broadway/Lovejoy - (Troutdale-Montgomery Park)	15	15	5	10	Same as Base							
78BVLO	Beaverton/LakeO - (TigardTC-Lake Oswego)	30	30	30	30	Same as Base							
79CROC	CTC/OC - (CTC-Or.City) via Gladstone - South End Loop	30	30	30	30	Same as Base							
80TTRT	Kane Rd. - (GreshamTC-Troutdale) via Troutdale Rd	60	60	60	60	Same as Base							
81T257	Hogan/257th - (GreshamTC-Troutdale)	60	60	60	60	Same as Base							
82E182	182nd/Eastman - (GreshamTC-RockwoodTC)	60	60	60	60	Same as Base							
84BOR	Kelso-Boring	60	N/A	60	0	Same as Base							
84KEL	Kelso-Boring	60	N/A	60	0	Same as Base							

Transit Line Listing		2005		2035 Base FC		Concept A		Concept B		Concept C		Concept D	
		peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway	peak headway	off-peak headway
85SG	Swan Island - Greeley	20	20	20	20	Same as Base							
86ALD	Alderwood	30	60	30	60	Same as Base							
87A181	181st Ave. - (Alderwood/Damascus) via Airport/181st/182nd - no Rockwood	30	30	30	30	Same as Base							
88H198	198th/Hart - (Willow Crk./185thTC-BTC)	30	30	30	30	Same as Base							
89TANB	Tanasbourne/North - (Tanasbourne-SunsetTC via Bronson)	30	60	30	60	Same as Base		N/A	N/A	Same as Base			
89TANC	Tanasbourne/South - (Tanasbourne-SunsetTC via Cornell)	30	60	30	60	Same as Base		N/A	N/A	Same as Base			
92JX	South Beaverton Express - (Murray Hill-WCCR -PCBD) Columbia/Jefferson	N/A	N/A	26	0	Same as Base							
92X	South Beaverton Express - (Murray Hill-PCBD)	30	N/A	N/A	N/A	Same as Base		N/A	N/A	Same as Base			
94X	Sherwood Express - (PCBD - Sherwood)	10	N/A	10	0	Same as Base		N/A	N/A	Same as Base			
95X	Tigard Express (PCBD - Tigard)	20	N/A	20	0	Same as Base		N/A	N/A	Same as Base			
96TCOJ	Tualatin/I-5 - (PCBD-N Wilsonville Commerce Cir) via Jeff/Col	N/A	N/A	20	60	Same as Base							
96TCOM	Tualatin/I-5 - (PCBD-N Wilsonville Commerce Cir)	20	60	N/A	N/A	Same as Base		N/A	N/A	Same as Base			
96TMOH	Tualatin/I-5 - (PCBD-Mohawk P&R)	20	60	N/A	N/A	Same as Base		N/A	N/A	Same as Base			
96TMOJ	Tualatin/I-5 - (PCBD-Mohawk P&R) via Jefferson/Columbia	N/A	N/A	20	60	Same as Base							
99PX	McLoughlin Express - (PCBD-OC/CCC)	12	N/A	N/A	N/A	Same as Base		N/A	N/A	Same as Base			
99TRAM	Tram (North Macadam-OHSU)	N/A	N/A	5	5	Same as Base							

Appendix B. RTP Scenarios Analysis - Transportation Analysis Zone Assumptions

2040 Grouping	Group Characteristics	Intersection Density (connections per mile)					Parking Factors (indexed to CBD in '94 dollars)						Transit Pass Factor (% of Full Fare paid by user)						Fareless Areas (for internal trips)					
		Base (2035 FC)	Concept A	Concept B	Concept C	Concept D	2005	Base (2035 FC)	Concept A	Concept B	Concept C	Concept D	2005	Base (2035 FC)	Concept A	Concept B	Concept C	Concept D	2005	Base (2035 FC)	Concept A	Concept B	Concept C	Concept D
Central City 1 Downtown Business District	Highest planned employment and housing density in the region, with highest level of access by all modes. LRT exists and current land uses reflect planned mix and densities.	20	Same as Base	Same as Base	Same as Base	Same as Base	5.71	8.93	Same as Base	Same as Base	Same as Base	Same as Base	100%	60%	Same as Base	Same as Base	Same as Base	50%	Yes	Yes	Same as Base	Same as Base	Same as Base	Same as Base
Central City 2 Lloyd District	Highest planned employment and housing density in the region, with highest level of access by all modes. LRT exists and current land uses reflect planned mix and densities.	20	Same as Base	Same as Base	Same as Base	Same as Base	2.81	5.98	Same as Base	Same as Base	Same as Base	8.93	100%	60%	Same as Base	Same as Base	Same as Base	50%	Yes	Yes	Same as Base	Same as Base	Same as Base	Same as Base
Central City 3 Central Eastside Industrial District	Planned high employment and housing density, with highest level of access by all modes. LRT exists. Current land uses do not reflect planned densities.	20	Same as Base	Same as Base	Same as Base	Same as Base	…..	5.98	Same as Base	Same as Base	Same as Base	8.93	100%	65%	Same as Base	Same as Base	Same as Base	50%	N/A	N/A	Same as Base	Same as Base	Same as Base	Same as Base
Central City 4 River District and Northwest	Planned high employment and housing density, with highest level of access by all modes. LRT exists and current land uses approach planned mix and densities.	20	Same as Base	Same as Base	Same as Base	Same as Base	4.36	7.9	Same as Base	Same as Base	Same as Base	8.93	100%	65%	Same as Base	Same as Base	Same as Base	50%	N/A	N/A	Same as Base	Same as Base	Same as Base	Same as Base
Central City 5 South Waterfront	Planned high employment and housing density, with highest level of access by all modes. LRT exists and current	18	Same as Base	Same as Base	Same as Base	Same as Base	…..	7.14	Same as Base	Same as Base	Same as Base	8.93	100%	65%	Same as Base	Same as Base	Same as Base	50%	N/A	N/A	Same as Base	Same as Base	Same as Base	Same as Base

2040 Grouping	Group Characteristics	Intersection Density (connections per mile)					Parking Factors (indexed to CBD in '94 dollars)						Transit Pass Factor (% of Full Fare paid by user)						Fareless Areas (for internal trips)					
		Base (2035 FC)	Concept A	Concept B	Concept C	Concept D	2005	Base (2035 FC)	Concept A	Concept B	Concept C	Concept D	2005	Base (2035 FC)	Concept A	Concept B	Concept C	Concept D	2005	Base (2035 FC)	Concept A	Concept B	Concept C	Concept D
	land uses approach planned mix and densities.																							
Regional Centers Gateway, Gresham, Beaverton, Hillsboro, Washington Square, Clackamas, Oregon City	Planned high employment and housing density, with highest level of access by all modes. LRT exists in some locations Current land uses do not reflect planned mix and densities.	>16	Same as Base	Same as Base	Same as Base	Same as Base	…..	0.89	Same as Base	Same as Base	Same as Base	5.98	100%	80%	Same as Base	Same as Base	Same as Base	70%	N/A	N/A	Same as Base	Same as Base	Same as Base	Same as Base
Station Communities Banfield Corridor, Westside Corridor, Interstate Corridor, I-205 Corridor, Milwaukie Corridor	Existing and planned high housing density mixed with commercial services; highest level of access for transit, bike and walk; existing and planned LRT. Current land uses do not reflect planned mix and densities.	>14	Same as Base	Same as Base	Same as Base	Same as Base	…..	0.89	Same as Base	Same as Base[3]	Same as Base	2.1	100%	80%	Same as Base	Same as Base[4]	Same as Base	70%	N/A	N/A	Same as Base	Same as Base	Same as Base	Same as Base

[3] Concept B added new TAZs that were defined as "station communities" for all of the light rail stations along the new light rail lines assumed in this scenario (LRT to Forest Grove, Oregon City, Vancouver, Tanasbourne, Gresham via Powell, Sherwood via Barbur, Damascus via Foster, Clakcamas TC and Damascus via OR 224, Damascus via 232nd/242nd, St Vincent via Evergreen/US 26, Sherwood (from Milwaukie, Clackamas Community College, Clackamas RC from Washington Square via WES/I-205, Scappoose

[4] Concept B added new TAZs that were defined as "station communities" for all of the light rail stations along the new light rail lines assumed in this scenario (LRT to Forest Grove, Oregon City, Vancouver,, Tanasbourne, Gresham via Powell, Sherwood via Barbur, Damascus via Foster, Clakcamas TC and Damascus via OR 224, Damascus via 232nd/242nd, St Vincent via Evergreen/US 26, Sherwood (from Milwaukie, Clackamas Community College, Clackamas RC from Washington Square via WES/I-205, Scappoose

2040 Grouping	Group Characteristics	Intersection Density (connections per mile)					Parking Factors (indexed to CBD in '94 dollars)						Transit Pass Factor (% of Full Fare paid by user)						Fareless Areas (for internal trips)					
		Base (2035 FC)	Concept A	Concept B	Concept C	Concept D	2005	Base (2035 FC)	Concept A	Concept B	Concept C	Concept D	2005	Base (2035 FC)	Concept A	Concept B	Concept C	Concept D	2005	Base (2035 FC)	Concept A	Concept B	Concept C	Concept D
Town Centers – Tier 1 Milwaukie, St. Johns, Hollywood, Lents, Rockwood, Lake Oswego, Tualatin, Forest Grove, West Portland, Raleigh Hills, Hillsdale, Gladstone, West Linn, Sherwood, Sunset,Wilsonville, Cornelius, Orenco, Fairview/Wood Village, Troutdale, Happy Valley, Lake Grove, Farmington, Cedar Mill, Tanasbourne	Moderate housing and employment density planned, with high level of access by all modes. Currently has good mix of uses, well connected street system in most locations and good transit.	>14	Same as Base	Same as Base	Same as Base	Same as Base	…..	0.62	Same as Base	Same as Base	Same as Base	0.89	100%	85%	Same as Base	Same as Base	Same as Base	75%	N/A	N/A	Same as Base	Same as Base	Same as Base	Same as Base
Town Centers - Tier 2 Pleasant Valley, Damascus, Bethany, Murrayhill	Moderate housing and employment density planned, with high level of access by all modes. Currently has some mix of uses, poorly connected street system and little or no transit. Existing topography or physical barriers may limit bike and pedestrian travel.	>12	14	Same as Base[5]	Same as Base	Same as Base	…..	0.27	Same as Base	Same as Base	Same as Base	0.62	100%	100%	Same as Base	Same as Base	Same as Base	75%	N/A	N/A	Same as Base	Same as Base	Same as Base	Same as Base
Mainstreets, Corridors and Inner Neighborhoods Full Region	Moderate housing and employment density planned, with high level of access by all modes. Currently has good mix of uses, well connected street system and good transit.	>10	Same as Base	Same as Base[6]	Same as Base	Same as Base	None	None	Same as Base	Same as Base	Same as Base	0.89	100%	100%	Same as Base	Same as Base	Same as Base	80%	N/A	N/A	Same as Base	Same as Base	Same as Base	Same as Base

[5] The exception to this is within "streetcar zones." Concept B increased intersection density along streets assumed to have new streetcar lines. Within Town Center 2 areas, it increased to a minimum of 14 connections per mile. This was done to respond to the increased density of development occurring around Streetcar lines.

[6] The exception to this is within "streetcar zones." Concept B increased intersection density along streets assumed to have new streetcar lines. Within Main Streets, Corridors and Inner Neighborhoods, it increased to a minimum of 12 connections per mile. This was done to respond to the increased density of development occurring around Streetcar lines.

2040 Grouping	Group Characteristics	Intersection Density (connections per mile)					Parking Factors (indexed to CBD in '94 dollars)						Transit Pass Factor (% of Full Fare paid by user)						Fareless Areas (for internal trips)					
		Base (2035 FC)	Concept A	Concept B	Concept C	Concept D	2005	Base (2035 FC)	Concept A	Concept B	Concept C	Concept D	2005	Base (2035 FC)	Concept A	Concept B	Concept C	Concept D	2005	Base (2035 FC)	Concept A	Concept B	Concept C	Concept D
Outer Neighborhoods Current urban areas and potential urban reserve areas	Low density housing planned, with moderate level of access by all modes. Currently has poorly connected street system and little transit.	>8	12	Same as Base[7]	Same as Base	Same as Base	None	None	Same as Base	Same as Base	Same as Base	Same as Base	100%	100%	Same as Base	Same as Base	Same as Base	90%	N/A	N/A	Same as Base	Same as Base	Same as Base	Same as Base
Industrial and Employment Areas Full Region	Low density employment planned, with moderate level of access by all modes. Currently has poorly connected street system and some transit.	>8	Same as Base	Same as Base[8]	Same as Base	Same as Base	None	None	Same as Base	Same as Base	Same as Base	Same as Base	100%	100%	Same as Base	Same as Base	Same as Base	90%	N/A	N/A	Same as Base	Same as Base	Same as Base	Same as Base
Open spaces and rural reserves Full Region	Urban uses are not planned in the foreseeable future Recreational, farm or forestry uses are planned, with moderate level of access by all modes	>6	Same as Base	Same as Base	Same as Base	Same as Base	None	None	Same as Base	Same as Base	Same as Base	Same as Base	100%	100%	Same as Base	Same as Base	Same as Base	100%	N/A	N/A	Same as Base	Same as Base	Same as Base	Same as Base

* Note: There are small areas with special characteristics within the City of Portland, with other TAZ assumptions – Portland Airport, OHSU, Zoo, Goose Hollow, Lower Albina, East CEID. Info for these areas is available upon request.

** Note: 2005 is not listed for Intersection Density – as it was generated in ArcView using a leaned TIGER file to establish current intersections. The 2035 Base Case and scenario assumptions were derived by applying minimum density values based on the 2040 design type.

[7] The exception to this is within "streetcar zones." Concept B increased intersection density along streets assumed to have new streetcar lines. Within Outer Neighborhoods, it increased to a minimum of 12 connections per mile. This was done to respond to the increased density of development occurring around Streetcar lines.

[8] The exception to this is within "streetcar zones." Concept B increased intersection density along streets assumed to have new streetcar lines. Within Industrial areas, it increased to 10 connections per mile. This was done to respond to the increased density of development occurring around Streetcar lines.

Appendix C. Concept C Mainline Assumptions Summary

#	Throughway Corridor	Summary of Assumption [9] (# of lanes and speed)
I-5 Corridor		
	I-5/Columbia River Crossing	• 10-lane bridge with tolling - consistent with RTP air quality analysis assumption (T-9 network with no HCT)
	I-5 North	• 10 lanes from CRC to Columbia Boulevard • 8 lanes from Columbia Boulevard to south end of I-405 loop
	I-5 South	• 10 lanes from south end of I-405 loop to I-205 • 8 lanes from I-205 to UGB south of Boones Bridge • 6 lanes south of UGB
I-405 Loop Corridor		
	I-405 Loop - west	• 6 lanes on western side of loop
	I-405 Loop - east	• 8 lanes on eastern side of loop
I-205 Corridor		
	I-205 North	• 10 lanes from SR 14 in Clark County to Highway 213
	I-205 South	• 8 lanes from Highway 213 to I-5
I-84 Corridor		
	I-84 west of I-205	• 8 lanes from I-84 to I-205
	I-84 east of I-205	• 8 lanes from I-205 to 181st Avenue • 6 lanes from 181st Avenue to Troutdale/UGB
Northeast Portland Highway (RTP designated Principal Arterial Route)		
	Rivergate to I-5	• 4 lanes with Columbia Blvd. having more limited access between MLK and I-205
	I-5 to I-205	• Grade separated intersections and railroad crossings and full interchange at eastern and western endpoints
New Columbia River Crossing		
		• 6 lanes from SR 14 to I-84/US 26 Connector via Lady Island
SR 14		
	I-5 to I-205	• 6 lanes from I-5 to Camas/New Columbia River Crossing
I-84 to US 26 Corridor		
		• 6 lanes from I-84 to US 26/Powell Boulevard in 242nd Avenue corridor

[9] All facilities assumed to be limited-access facilities with speeds of 55 mph, unless otherwise noted. Ramp metering is assumed for all interchanges.

#	Throughway Corridor	Summary of Assumption [9] (# of lanes and speed)
		• 4 lanes from Powell Boulevard to Rugg Road/Springwater area
US 26 East Corridor		
	Ross Island Bridge	• Interchange connection to I-5 and 99E southbound
	East of Rugg Road/Springwater area	• 4 lanes east of Springwater area
Sunrise Corridor		
	Sunrise Project	• 6 lanes from I-205 to Rock Creek plus 1 aux. lane to 172nd
	Sunrise Parkway	• 4 lanes from 172nd Avenue to US 26 following Damascus Concept Plan parkway location south of Highway 212
Highway 99E/224		
	Downtown Portland to I-205	• 6 lanes south of Ross Island Bridge with new interchange connection to I-5 from 99E/Ross Island bridge; grade separate or close minor intersections; grade separate Holgate St. • NB/SB connection
US 26 West Corridor		
	I-405 loop to 185th	• 8 lanes with improved interchange connection to I-405
	185th to Shute Road/UGB	• 6 lanes
	West of Shute Road	• 4 lanes
Tualatin Valley Highway		
	Highway 217 to River Road	• 6 lanes with grade separation
	River Road/10th to OR 47	• 6 lanes with parkway
I-5 to 99W Corridor		
	I-5 to 99W	• 4 lanes with grade separation and ramp access from I-205 to Connector and interchange at 124th Avenue
Highway 217 Corridor		
	Tualatin Valley Highway/Canyon Road to US 26	• 8 lanes
	I-5 to Tualatin Valley Highway/Canyon Road	• 8 lanes

#	Throughway Corridor	Summary of Assumption [9] (# of lanes and speed)
Cornelius Pass Road		
	US 26 to Rivergate	• 4 lanes from US 26 to US 30 with interchange at US 30
	US 30 to N. Rivergate Blvd.	• New 4-lane North Willamette River Crossing located north of St. John's Bridge
US 30		
	I-405 loop to new North Willamette Bridge crossing	• 4 lanes
	New North Willamette Bridge crossing to Cornelius Pass Road	• 6 lanes with interchange at US 30
OR 224		
	Highway 212 to Carver Bridge/UGB	• 6 lanes to bridge
OR 213		
	I-205 to UGB	• 6 lanes
	South of UGB	• 4 lanes
OR 47		
	OR 47 Bypass to Zion Church Road to US 26	• 4 lanes at 50 mph

Appendix D. Concept D Advanced Traffic Management Assumptions

Arterial Corridor Management

Facility	RTP Classification	Terminus 1	Terminus 2
US 30	Principal Arterial Highway	NW Nicolai	NW Cornelius Pass Road
US 30 Bypass (Columbia Blvd/Lombard)	Principal Arterial Highway	N Burgard	I-205 interchange
OR 99E	Principal Arterial Highway	Ross Is Bridge	OR 224
OR 224	Principal Arterial Highway	OR 99E	I-205 interchange
Sunrise Corridor	Principal Arterial Highway	I-205 interchange	OR 224
OR 213	Principal Arterial Highway	I-205 interchange	Henrici Rd
Tualatin Valley Hwy (Hwy 8)	Principal Arterial Highway/Major Arterial	Cedar Hills Blvd	OR 47
N Lombard	Major Arterial	N Philadelphia	N Marine Dr
N Marine Dr	Major Arterial	N Lombard	I-5 interchange
NE Columbia Blvd	Major Arterial	NE MLK Jr	NE Killingsworth
N Going	Major Arterial	Port Center Way	I-5 interchange
NE Sandy Blvd	Major Arterial	Burnside	NE 238th
NE Halsey (Weilder Couplet)	Major Arterial	NE 82nd	NE 242nd
NE Glisan	Major Arterial	NE 58th/I-84	NE 122nd
NE Stark (Washington Couplet)	Major Arterial	NE 82nd	NE Kane Rd
SE Powell Blvd	Major Arterial	Ross Is Bridge	US 26
SE Foster Rd (Woodstock Couplet)	Major Arterial	Powell Blvd	SE 122nd
SE Harmony/Sunnyside Rd	Major Arterial	OR 224	Sunrise Hwy
OR 212	Major Arterial	I-205 interchange	Sunnyside Rd
NE 257th/Kane Rd	Major Arterial	I-84 interchange	US 26
NE 238th/Hogan Rd	Major Arterial	NE Sandy	SE Powell
NE 181st/182nd/SE 172nd	Major Arterial	NE Airport Way	Hwy 212
NE 122nd	Major Arterial	NE Airport Way	SE Foster Rd
NE Airport Way	Major Arterial/Minor Arterial	NE 82nd	NE 181st
SE 102nd	Major Arterial	NE Sandy	SE Washington
SE 82nd Ave	Major Arterial	NE Airport Way	SE 82nd Drive
SE 82nd Drive/Washington St	Minor Arterial	SE 82nd Ave/Hwy 224	OR 213/I-205 interchange
NE/SE 39th	Major Arterial	NE Sandy	SE Holgate
NE MLK	Major Arterial	NE Columbia	SE Clay

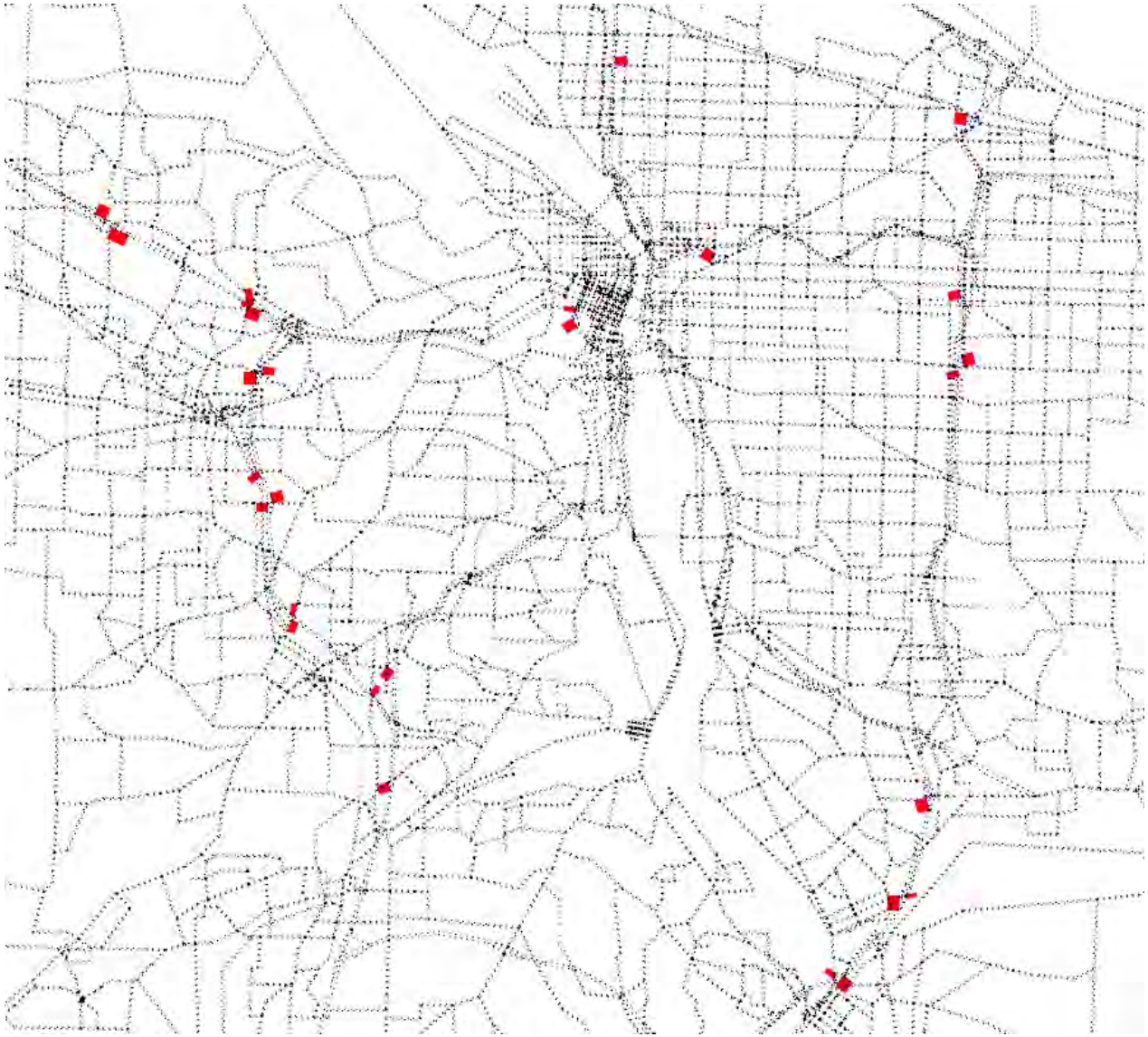
Facility	RTP Classification	Terminus 1	Terminus 2
NE Grand	Major Arterial	NE MLK Jr	SE Clay
SE McLoughlin Blvd	Major Arterial	OR 224	Main Street
Macadam/Hwy 43	Major Arterial	SW Bancroft	I-205 interchange
Washington St/7th Ave/Mollala	Major Arterial	McLoughlin Blvd	OR 213
A Avenue/Country Club Rd	Major Arterial	OR 43	Boones Ferry Rd
Boones Ferry Rd	Major Arterial	Country Club Rd	I-5 interchange
Kruse Way	Major Arterial	Boones Ferry Rd	Hwy 217 interchange
Barbur Blvd	Major Arterial	SW Caruthers	I-5 interchange/Capitol Hwy
99W	Major Arterial	I-5 interchange/Capitol Hwy	Sunset Blvd
SW Greenburg Rd	Major Arterial	SW Pacific Hwy	SW Hall Blvd
SW Hall Blvd (Watson Couplet)	Major Arterial	SW Oleson Rd	SW Cedar Hills Blvd
SW Scholls Ferry Blvd	Major Arterial	SW Hall Blvd	SW 175th Ave
SW Murray Blvd	Major Arterial	Scholls Ferry Blvd	US 26
SW Farmington Rd	Major Arterial	SW Cedar Hills Blvd	SW Hillsboro Hwy
SW Beaverton Hillsdale Hwy	Major Arterial	SW Cedar Hills Blvd	SW Capitol Hwy
SW Canyon Rd	Major Arterial	US 26	SW Cedar Hills Blvd
East/West Burnside	Major Arterial	SW Miller Rd	NE Sandy Blvd
NW 185th Ave	Major Arterial	SW Tualatin Valley Hwy	Sunset Hwy
NW Cornell Rd	Major Arterial	US 26	10th
NW Cornelius Pass Rd	Major Arterial	SW Tualatin Valley Hwy	US 26
SW Nyberg/Tualatin-Sherwood Rd	Minor Arterial	I-5	OR 99W
SW Jenkins Road	Minor Arterial	Murray Blvd	185th
SW Evergreen Parkway	Minor Arterial	Cornell	Glencoe
SW 13th	Minor Arterial	SW Alder	SW Montgomery
SW 14th	Minor Arterial	SW Columbia	NW Glisan
SW 15th/16th	Minor Arterial	NW Glisan	W Burnside
N Lombard	Minor Arterial	N Philadelphia	NE MLK Jr.
SE Tacoma	Minor Arterial	Sellwood Bridge	Johnson Creek Blvd

Freeway Access Mgmt

Facility	Interchange Cross Street	RTP Classification of Cross Street
I-5 NB	Delta Park/Denver	Local Street/Major Arterial
I-5 SB	Delta Park/Denver	Major Arterial
I-5 NB	Rosa Parks Way	Minor Arterial
I-5 SB	Rosa Parks Way	Minor Arterial
I-5 SB	Alberta St	Local Street
I-5 NB	Multnomah Blvd	Minor Arterial
I-5 SB	Multnomah Blvd	Minor Arterial
I-5 SB	Dartmouth Ave	Collector of Regional Significance
I-5 NB	Haines Ave	Collector of Regional Significance
I-5 NB	Carmen Rd	Collector of Regional Significance
I-5 SB	Carmen Rd	Collector of Regional Significance
I-205 NB	Hwy 30/Sandy	Principal Arterial/Major Arterial
I-205 SB	Hwy 30/Sandy	Principal Arterial/Major Arterial
I-205 NB	Glisan	Major Arterial
I-205 SB	Glisan	Major Arterial
I-205 SB	Division	Minor Arterial
I-205 NB	Division	Minor Arterial
I-205 NB	OR 212	Major Arterial
I-205 SB	OR 212	Major Arterial
I-205 NB	82nd Dr	Minor Arterial
I-205 SB	82nd Dr	Minor Arterial
I-205 NB	McLoughlin Blvd	Major Arterial
I-205 SB	McLoughlin Blvd	Major Arterial
OR 217 NB	Walker Rd	Minor Arterial
OR 217 SB	Walker Rd	Minor Arterial
OR 217 NB	Allen Blvd	Minor Arterial
OR 217 SB	Allen Blvd	Minor Arterial
OR 217 NB	Denney Rd	Collector of Regional Significance
OR 217 SB	Denney Rd	Collector of Regional Significance
OR 217 NB	Greenburg Rd	Major Arterial
OR 217 SB	Greenburg Rd	Major Arterial

Facility	Interchange Cross Street	RTP Classification of Cross Street
OR 217 NB	72nd	Minor Arterial
OR 217 SB	72nd	Minor Arterial
US 26 EB	Oregon Zoo Rd	Local Street
US 26 WB	Oregon Zoo Rd	Local Street
US 26 EB	Cedar Hills Blvd	Minor Arterial
US 26 WB	Cedar Hills Blvd	Minor Arterial
US 26 WB	Cornell Rd/ 158th	Minor Arterial
US 26 EB	Cornell Rd/ 158th	Minor Arterial
I-84 EB	16th	Collector of Regional Significance
I-84 EB	33rd	Minor Arterial
I-84 WB	33rd	Minor Arterial
I-405 SB	Montgomery	Local Street
I-405 NB	SW 12th	Local Street
I-405 NB	Salmon	Local Street
I-405 SB	Taylor	Local Street
Exceptions	*No access mgmt for the facilities listed below*	
I-5 NB/SB	Jantzen Beach	No alternative access to/from island
I-5 NB/SB	Nyberg Rd	Primary access to cities of Tualatin and Sherwood
I-205 NB/SB	Washington-Stark couplet	Primary access to Gateway RC - closed other freeway access to area
I-84 EB	MLK Jr	Only I-84 access from CEID

Concept D. Locations of ramp closures



Appendix E. RTP Scenarios Analysis - Ramp Metering Assumptions

	Ramp Metering Assumptions
2035 Base FC	Ramp metering rates were provided to Metro from ODOT. The rates were listed by 15 minute time increments. These were then averaged over the time periods for which auto assignments would be run. Clark County rates were borrowed from the Columbia River Crossing modeling work.
Concept A	Same as Base
Concept B	One meter change in Clark County
Concept C	Differences due to the I-5/99W Connector and I-84 to US 26 Connector projects added to the network. Also, ramp meter removed at Hwy 217 northbound to US 26 eastbound.
Concept D	28 ramps closed to adhere to the 1 mile interchange spacing requirements. The locations of the metered ramps that were closed are shown in the plot in Appendix D. No rate increases were made on any remaining ramps to compensate for these closures.