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## Memo

June 30, 2008

to: City of Portland City Council

cc: Julia Gisler, Bureau of Planning – Project Manager  
Kevin Cronin, AICP, Portland Development Commission

from: Courtney Duke, AICP  
Senior Transportation Planner

re: North Interstate Corridor Plan  
Transportation Analysis Summary and Technical Information

## EXHIBIT E – Transportation Memo and Analysis

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### Transportation Analysis Summary

#### Background

In coordination with the Bureau of Planning, the Transportation Planning Division of the Office of Transportation (PDOT) prepared a transportation analysis of the North Interstate Corridor Plan proposal. This analysis consisted of transportation modeling along with a policy assessment of the findings. In particular, this assessment is intended to address provisions of the State Transportation Planning Rule (OAR 660-012-0060), which requires a transportation analysis of any changes to land use policy, including changes to zoning and the comprehensive plan. The purpose of the summary is to provide citizens and decision-makers with information related to traffic impacts resulting from this land use proposal. This analysis is included in the technical section in Attachments A and B of this memo.

#### Model Summary

For the analysis, PDOT combined Metro's Regional Travel Forecasting 2005 Regional Transportation Plan Model and the 2030 Milwaukie Light Rail No-Build Draft Environmental Impact Statement (DEIS) Model, which is a macro level regional demand model used for regional projects. The city further refined the models to reflect the city's transportation analysis zones (TAZ). A TAZ is a data unit that helps traffic engineers and planners to analyze more specific geographic areas.

The "refined" model included household and employment data for the 2005 Base Year and 2030 Forecast year from the regional economic forecasting model. The numbers are allocated geographically in the model by transportation analysis zones (TAZs). The model already assumed a land use pattern in the City of Portland Comprehensive Plan designations based on the adopted *Albina Community Plan (1993)*. The Bureau of Planning calculated additional household and employment numbers for this project using Metro's Buildable Lands Inventory and calculated densities based on the City of Portland's Urban Growth Management Functional Plan Compliance Report methodology (February 1999). Refer to Attachment A for more details.

The city's future base model does not include the Columbia River Crossing (CRC) project, but there were valid questions raised on the relationship of the Interstate Zoning and CRC projects. Therefore, a comparison was made between the city's model and the CRC. It was determined that the city model did not discount CRC as there was no significant difference between the models and hence that the CRC model would not be used for modeling the Interstate project.

Refer to Attachment B for more information about the transportation network and assumptions in the model.

### **Model and Impacts Summary**

The regional and city transportation and economic forecasting models assumed the existing comprehensive plan map designations would be consistent with the proposed up-zoning and accompanying growth in the Interstate Corridor. These forecasts and models reflect the majority of the change expected in the Interstate Corridor by 2030. These assumptions included the influence of the MAX Yellow Line Light Rail as well as development and redevelopment potential in an urban renewal district (Interstate Corridor Urban Renewal Area). The adopted Transportation System Plan (TSP - updated 2007) and Regional Transportation Plan (2004 – State RTP) took into account these growth assumptions and include plans, programs and projects to accommodate this growth.

The transportation modeling analysis conducted by the Portland Office of Transportation indicated that the assumed growth would produce an additional 2,480 trips by 2030 throughout the study area. Due to the assumptions in the regional model, these trips would be generated regardless of the proposed zoning project. The TSP and RTP were developed and adopted to accommodate this growth.

For the fraction of the rezoning proposal that is not reflected in the existing models and forecasts, the Bureau of Planning calculated additional household and employment numbers in order to generate additional transportation modeling analysis to determine the impact of the additional zoning.

The portion of the revised zoning not already reflected in the model, generated an additional 214 trips in the entire study area, over the life of the plan. This low number along with an analysis of key interstate freeways system (ramps) that indicated there is no significant effect on the transportation facilities in the area. Any negligible impacts that the assumed growth and the additional trips generated by the zoning proposal are addressed by existing strategies in the TSP, RTP projects, programs and plans. Additional improvement will be achieved through the implementation of TDM and other transportation strategies incorporated into the North Interstate Corridor Plan and by the implementation of the *North Interstate Corridor Street Framework Plan, Criteria and Special Right of Way Standards*.

Although not required for adoption of the North Interstate Corridor Plan, needed capital projects identified through the public process could be vetted and added to an existing list of qualified projects in the Interstate URA Transportation Strategy. These projects and strategies further address these minor impacts and achieve the URA Plan principle of supporting transit-oriented development (TOD). The Interstate URA Transportation Strategy, originally approved in 2001, is a separate process led by the Portland Development Commission to identify projects in the Interstate URA for possible funding and construction over the next 10-12 years.

### **Transportation Findings**

Transportation Findings (State Goal 12, the Transportation Planning Rule (TPR), and City of Portland Comprehensive Plan Goal 6) are incorporated into the North Interstate Corridor Plan Findings.

### **Transportation Planning Rule (TPR) Findings**

The Office of Transportation determined that 214 additional trips along with interstate 5 facility analysis create “No Significant Effect” on ODOT facilities. Formal TPR findings are incorporated into the North Interstate Corridor Plan Findings.

### **Mode Split Assumptions**

The regional model produced the following mode split assumptions, based on the City model.

#### **2030 Mode Splits Assumed by the Model**

	Transit	Biking	Walking
Daily	10.5%	.70%	2.3%
Peak Hour	20%	1.0%	3.4%

The City of Portland currently has excellent transit/biking/walking mode splits throughout the city and along the Interstate corridor. Based on survey data after the Interstate Light Rail was built and after a individualized marketing campaign, residents indicated that they walked 13% of the time, rode bikes 5% of the time and public transit 9% of the time. Additional information and links to this document will be incorporated into the findings. The investment in light rail in the corridor, the existing local street grid, and the extensive bicycle and pedestrian facilities add to the City’s ability to meet the mode splits assumed in the model.

We have incorporated additional actions and programs into the Implementation Strategy of the North Interstate Corridor Plan to allow the city to continue to meet mode split assumptions and continue to improve the transportation system over the life of the planning period.

The actions and programs include, but are not limited to:

- Working with TriMet to increase headways of the MAX Yellow Line Light Rail (Interstate Line) as part of any increase in ridership and eventually as part of the CRC.
- Implementing new special right of way standards that will promote walking and bicycling in the area.
- Initiating another SmartTrips – an individualized transportation options marketing campaign - in the area.
- Improving on an already well connected bicycle and pedestrian network.
- Working to optimize all mode movements on a well connected grid system.
- Exploring the use of a Transportation Management Association (TMA) when employment in the area increases enough to support it.
- Reviewing off-street parking maximums in the Zoning Code mid-point during the planning period.

### **ROW Guidelines**

As part of this project, *North Interstate Corridor – Street Framework Plan, Criteria and Special Right-of-Way Standards* are being developed. These will be approved and issued under the authority of the City Engineer. Improvements as outlined in the standards will be implemented by the private sector as part of any future development approvals. The *Framework Plan and Street Standards* will increase opportunities for walking and bicycling in the area, as well as increasing the streetscape aesthetic of the area.

**Additional Traffic Analysis**

Based on the addition of only 241 trips in the study area over the life of the plan and the determination of No Significant Effect, additional intersection level of analysis is not needed at this planning and system-level for a legislative amendment.

Additional traffic analysis could be required as part of the City's review when specific development projects are proposed. The criteria and thresholds for traffic impact studies are in Title 33 – the Zoning Code and Title 17 – Public Improvements and will not be modified as part of the plan district or other actions taken as part of the Interstate Corridor project.

**ATTACHMENT A****Methodology for Modeling Housing/Employment Numbers for input into the Transportation Model**

Provided by Julia Gisler and Gary Odenthal, Bureau of Planning

June 27, 2008

The Transportation Model was run using the forecast results of *Metro's Regional Travel Forecasting 2005 RTP Model + 2030 Milwaukie Light Rail No-build Draft EIS Model*. The following describes the housing and employment assumptions for input into the transportation model based on the proposed zoning changes of the North Interstate Corridor Recommended Plan.

- 1. RTP Housing/Employment Numbers.** Housing and Employment Numbers are based on the 2005 Base Year and 2030 Forecast year from the Metro's regional economic forecasting model. This model is based on existing Portland Comprehensive Plan designations, which reflect a high density mixed use development pattern. Consequently, the model allocates increased housing and employment in the Interstate Corridor to account for the effects of light rail and urban renewal.

**Results:** For the project area, the base model assumes a growth of households by 105% and employment by 48% (an increase of 3,250 households and 1,220 jobs) by 2030.

- 2. Zoning Changes Proposed on Developable Lands.** In addition to the Metro's numbers above, potential changes in housing and employment as a result of proposed zone changes on land identified in Metro's Developable Lands Inventory were calculated. The Developable Lands Inventory in the study area included roughly 5 acres of vacant land and likely infill and redevelopable land. Assumptions for number of units and jobs per acre are from the City of Portland's Urban Growth Management Functional Plan compliance report methodology (February 1999). Although developable lands have been included in the TRP model, this additional step reflects the zone changes not included in the current model on land most likely to change by 2030.

**Results:** The potential changes in housing and employment on developable lands with proposed zone changes were found to add an additional 101 households and 168 jobs. This increases the households to 3,351 and jobs to 1,388.

**Housing/Employment Numbers**

Growth 2005-2030 (2005 City Base Sub Model)		Additional Growth due to Proposed Zoning Changes on Developable Lands (Metro 2040 Compliance Report)		2030 Total Growth	
HH	EMP	HH	EMP	HH	EMP
3,250	1,220	101	168	3,351	1,388

### Proposed Zoning Amendments and RTP Growth Forecast

The RTP model with additional housing and employment capacity factored in for zoning changes on developable lands models the likely growth in the corridor. It does not address maximum capacity for each zone since no zone in the city is ever completely redeveloped to its maximum density. Instead, the model addresses the likely growth for the corridor. While the overall modeled changes for 2030 growth are significant, the additional anticipated growth due to the proposed Comprehensive Plan Map amendments is less than the numbers forecasted in the Metroscope 2030 (see table below). is not a significant increase over the current designations.

The table below includes the existing number of housing and jobs forecasted in the Metroscope 2030. The proposed maximum number of housing and jobs based on the proposed zoning is multiplied by the market factor for each TAZ provided by Metro. The existing number of housing and jobs is then subtracted from the proposed numbers multiplied by the market factor. The last column shows the relative difference between the number of households and jobs forecasted in the Metroscope 2030 and the number of households and jobs anticipated with the proposed zoning. The proposed zoning will result in approximately 2,200 less households and 1,800 less jobs than forecasted in the Metroscope 2030.

TABLE ADDED AS PART OF AMENDMENT

TAZ	Existing 2030 HH*	Existing 2030 Jobs*	Proposed Max HH**	Proposed Max Jobs**	Metroscope Market Factor	Proposed Max HH x Market Factor*	Proposed Max Jobs x Market Factor*	Proposed minus Existing HH*	Proposed minus Existing Jobs*
224	277	1505	549	1969	0.44	242	866	-35	-639
229	454	101	743	412	0.41	305	169	-149	68
230	472	165	688	641	0.40	275	256	-197	91
231	626	317	1296	432	0.36	467	156	-159	-161
232	746	317	1110	668	0.36	400	240	-346	-77
233	913	173	1172	1035	0.40	469	414	-444	241
234	953	488	1264	1447	0.41	518	593	-435	105
275	357	435	1028	1631	0.36	370	587	13	152
276	404	544	882	622	0.44	388	274	-16	-270
277	1076	1834	1536	1082	0.44	676	476	-400	-1358
<b>total</b>								<b>-2169</b>	<b>-1847</b>

\*Numbers reflect market constraints derived from Metroscope

\*\* Numbers are the maximum allowed under the proposed zoning, without considering market constraints

The proposed zoning pattern refines the existing pattern to better support light rail by creating a better development framework in the corridor. The 2005-2030 growth in households and employment in RTP model factors in the proposed Comprehensive Plan amendments for the reasons listed below. (Refer to the matrix on the next page, *Zoning Proposals: Comprehensive Plan Designation Acreage Changes*, for more details of the zoning changes.)

1. The proposed amendments represent only 22% of the total study area.
  - Total project area: 900 acres
  - Comprehensive Plan amendments: 200 acres
2. The proposed amendments implement the RH Comprehensive Plan Map designation on 100 acres. The high density residential zoning has already been included in the RTP model.
3. The RTP model already assumes a significant level of growth in this corridor WITHOUT THE PROPOSED COMPREHENSIVE PLAN CHANGES. (The model assumes a growth of households by 105% and employment by 48% by 2030).
4. To increase development flexibility along Interstate Avenue, EX is proposed to replace RH in many areas; to protect the residential character of Neighborhood East south of Killingsworth Street, RH is proposed to replace EX. The net change is 18 additional acres of EX. Because both EX and RH are high-density, high trip generation land use designations, this change will not result in a significant trip generation change.
5. In order to create a transition from the high-density development along Interstate Avenue and the single-family neighborhood to the west, approximately 42 acres have been changed from R5 to R2 or R2.5. Because of the land use (single-family) and typical lot pattern (5,000 sq. ft. lots) in these areas, the small increase in density potential is not expected to result in significant redevelopment.
6. The most significant potential increase in trip generation would be the 32 acres that is proposed to change from CG to either EX or CX. However, replacing auto-oriented CG with transit-oriented EX and CX will encourage a development pattern that supports the use of the light rail. The 16 acres of CX (from CG) is proposed for the Lombard and Killingsworth Stations where the most active and compact development is planned to occur.
7. Metro's Developable Lands Inventory includes only 12 acres in the project area, which demonstrates a high level of existing development that will slow down the rate of infill.
8. Parcel sizes with existing development are relatively small, which means the resulting infill development will be incremental and dispersed, especially in the areas east and west of Interstate Avenue where the lot size is typically 5,000 sq. ft..

### Zoning Proposals: Comprehensive Plan Designation Acreage Changes

Category of Proposed Change	Comprehensive Plan Designation (Base Zoning)	Acres Subtracted w/ New Zoning	Acres Added w/ New Zoning	Total Change
<b>Group A: EX Along Interstate Avenue; RH in Neighborhood West</b>	High Density Residential (RH)	44.5 37 (EX) 7 (CS) .5 (CX)	23 19 (EX) 2 (R5) 2 (R2)	-21.5
	Central Employment (EX)	19 19 (RH)	71 37 (RH) 17 (CG) 7 (R5) 4 (IR) 2 (R2) 2 (CN2) 1 (R2.5) 1 (CM)	+52
<b>Group B: Reduce Auto-Oriented Zoning</b>	General Commercial (CG)	44 17 (EX) 15 (CX) 12 (CS)	0	-44
	Central Commercial (CX)	0	16 15 (CG) .5 (RH) .5 (R2.5)	+16
	Storefront Commercial (CS)	0	21 12 (CG) 2 (R2) 7 (RH)	+21
<b>Group C: Transition Zoning in Neighborhood West</b>	Single-Dwelling Residential 5,000 (R5)	54 30 (R2) 12 (R2.5) 2 (RH) 3 (R1) 7 (EX)	0	-54
	Low Density Residential 2,000 (R2)	4.5 2 (CS) 2 (RH) .5 (R1)	43 30 (R5) 13 (R2.5)	+38.5
	Attached Residential 2,500 (R2.5)	14.5 13 (R2) 1 (EX) .5 (CX)	12 12 (R5)	-2.5
<b>Group D: Miscellaneous Zoning Changes</b>	Mixed-Use Commercial (CM)	1 1 (EX)	0	-1
	Neighborhood Commercial (CN2)	2 2 (EX)	0	-2
	Medium Density Residential 1,000 (R1)	0	3.5 3 (R5) .5 (R2)	+3.5
	Institutional Residential (IR)	4 4 (EX)	0	-4



## **ATTACHMENT B**

### **Transportation Modeling Technical Analysis and Information**

Provided by Nivedita Doijde, Transportation Modeler  
Portland Office of Transportation  
*Revised May 27, 2008*

#### **Model Summary**

Based on the public reviews Bureau of Planning (BOP) has developed a proposal to amend existing zoning along the Interstate light rail corridor to support the transit supportive development. Main objective of this traffic impact study is to assess the Transportation Planning Rule (TPR) compliance of proposed rezoning on ODOT facilities. To support the traffic impact study, 2005 and 2030 Pm 2 hour Interstate sub-area models are generated from Central City Transportation Management Plan (CCTMP) 2007 base models.

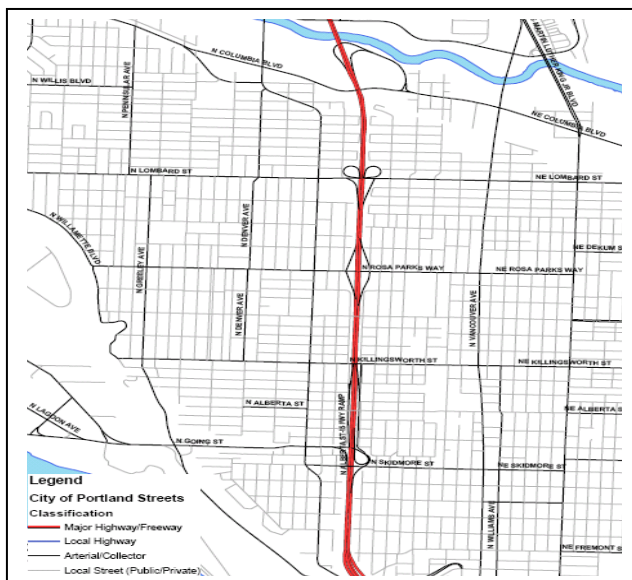
The CCTMP 2007 models are derived from Metro's regional 2005 RTP model and 2030 Milwaukie LRT NB DEIS model. The City models retained most of the modeling assumptions as in the regional models with the following refinements.

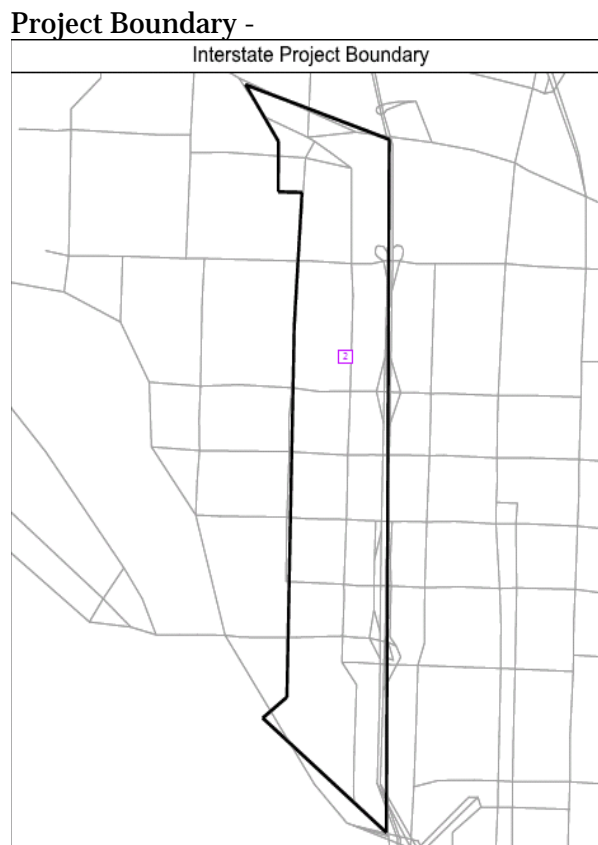
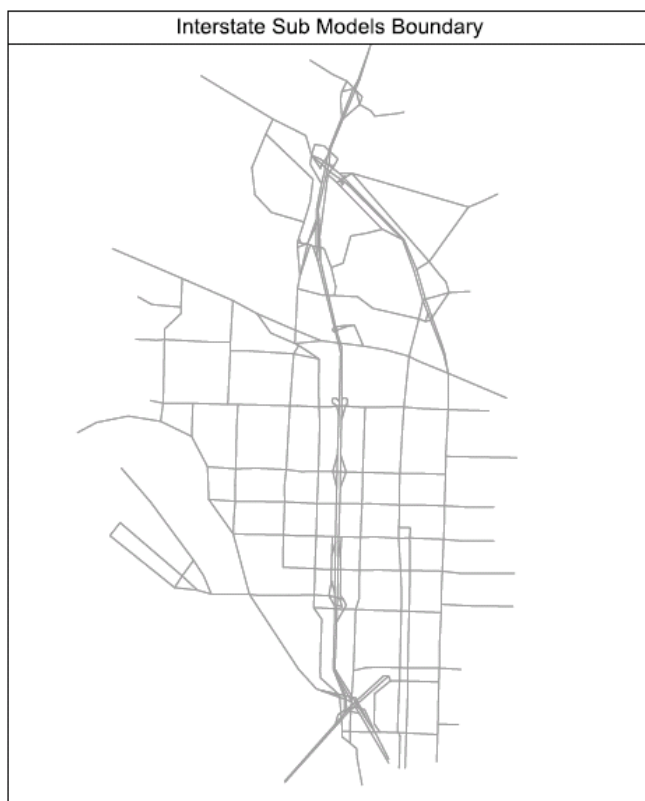
- Finer Travel Analysis Zones (TAZs) compared to regional models. For the Interstate area the model consists of 17 TAZs.
- Detailed local network with calibrated link/turn characteristics.
- Downtown links are given capacity constraints compared to unconstrained capacities in the regional models.

As the city's future base model does not include the Columbia River Crossing (CRC) project, there were concerns with the implications of the CRC project in the Interstate corridor. Therefore, a comparison of City base models and one of the CRC build models was carried out. It was concluded that for the modeling analysis CRC models will not be used and that there was no significant difference.

Following plots show street network classification, sub model and the project area boundaries:

#### Street Network Classification -





City TAZ map: attached  
 Metro TAZ map: attached

**Calibration**

The 2005 sub model was calibrated with 2005 pm2 hour traffic counts along with few of 2007 pm2 hour counts. Total of about 190 counts at major intersections and links are used and a correlation coefficient equal to 0.98 was achieved between assigned volumes and counts. Also, the network is refined for the actual conditions by updating the Travel Analysis Zone (TAZ) connections (connectors), links, turn capacities (derived from the available traffic signal timing sheets) and some demand adjustments. All of the updates and adjustments are carried over to the 2030 pm2 hour base model. A difference in the land use assumptions between iis noted due to the refinement of the City base models with finer TAZs than Metro’s TAZs.

**City Base Sub Model Assumptions:**

Land Use -

The following table shows the land use assumptions extracted from the City base sub models. In the project district the models assumes a growth of house holds by 105 % and employment by 48 % (an increase of 3250 house holds and 1220 employment) by 2030.

**Land Use Assumptions in City Base Sub Models**

	2005		2030		2030-2005 growth	
	HH	EMP	HH	EMP	HH	EMP
N Interstate	3080	2540	6330	3760	105%	48%
City	234700	442700	299500	603100	28%	36%
Region	766850	1031980	1134100	1691900	48%	64%

**Mode Split -**

Following table shows the daily and PM peak two hour mode split assumptions in the models. The data is derived from the metro models as the City converts only the PM peak two hour model for the City projects. Additional data related to Metro's analysis and mode split assumptions will be included in later documentation.

**Daily and PM2 Mode Split \***

		Auto		Transit		Bike		Walk		Total
		#	%	#	%	#	%	#	%	
Daily Trips Mode split	2005	54000	90.5	3900	6.5	400	0.7	1400	2.3	59700
	2030	70600	85.1	8700	10.5	800	1.0	2800	3.4	82900
PM2 Hour Mode split	2005	6900	87	1100	13					8000
	2030	8700	80	2200	20					10900

- Data retrieved from Regional models before converting to city base models.

**Traffic Growth-**

Following two table shows the trip percentage growth in the project district and control totals along the corridor. The model assumes a 37 % increase in the total trips from and to the project district by the year 2030.

**PM2 Traffic Growth in the Interstate LRT Corridor Project District\***

Base Models	2005		2030		Growth (O&D)	
	Origin	Destination	Origin	Destination	Trips	%
N Interstate	3550	3100	4600	4420	2480	37 %

\* Data from sub models

**Network screen-line traffic growth (No Freeway)**

	Line 1		Line 2		Line 3		Line 4		Line 5	
	OB/EB	IB/WB	OB/EB	IB/WB	OB/NB	IB/SB	OB/NB	IB/SB	OB/NB	IB/SB
2005	7340	6410	9290	7470	7680	5760	2790	2780	10930	8510
2030	8900	8720	11800	9200	8800	7240	3350	2970	14550	10900
Growth	21 %	36 %	27 %	23 %	14 %	26 %	20 %	7 %	33 %	28 %

Map showing the following screenlines are shown in the plot(attached)

Line 1 – W of I5- NS Columbia Blvd to Skidmore.

Line 2 – E of I5- NS Columbia Blvd to Skidmore.

Line 3 –S of Going- EW Greeley to MLK.

Line 4 – N of Columbia Blvd - EW Denver to MLK.

Line 5 – W of Denver – NS Columbia Blvd to Greeley.

**Zoning Changes Proposed on Developable Lots**

Following table shows proposed land use changes provided by BOP for the corridor. Potential changes in HH and Emp using Metroscope Developable Land - calculated densities based on city Urban Growth Management Functional Plan Compliance Report methodology.

City TAZ	Developable Acres	Existing CMP	Proposed Zone	<b>Change HH</b>	<b>Change Emp</b>
210	0.61	RH	EX	0	54
244	1.1	CG	CS	4	1
245	2.13	CG	EX	83	97
261	0.36	CG	EX	14	16
261	0.12	R2.5	R2	0	0
264	0.009	CG	CS	0	0
264	0.007	R5	R2	0	0
Total				101	168

**Trip Generation**

For the additional motor vehicle trips that will be generated from above proposed zoning amendments, trip rates were calculated from the base model assuming, proposed changes will not change the consistent travel behavior and the mode split in the project district considerably. To derive the PM peak 2 hour trip generation rates from the base models, first a generic trip generation formula is used to separate the residential and employment components of the total demand and then the trip generation rates were obtained by dividing the residential/household traffic with the total ouseholds/employments of the District. Based on the calculations, a rate of 0.73 per employment and 0.88 per household is used for the additional trip. Also, the origin–destination split percentage for the trips is obtained from the ITE Trip Generation handbook. As per the calculations for the proposed zoning changes, 214 additional trips (91 outbound and 122 inbound) would be added to the district that are further divided into respective TAZs. Following table shows the distribution of the trips.

CITY TAZ	2005 Base			2030 Base			Alt. 1		Additional Trips			Origin	Destination	Total
	HH	RET	OTH	HH	RET	OTH	HH	EMP	HH	EMP	Total			
210	58	13	117	374	16	199	0	54	0	39	39	19	21	39
211	303	95	234	700	97	561								0
244	366	72	313	404	88	456	4	1	4	1	4	2	3	4
245	187	279	51	357	339	96	83	97	75	71	146	61	85	146
246	138	0	0	495	0	0								0
247	204	10	24	253	12	33								0
252	303	51	120	373	61	165								0
253	40	7	244	251	8	309								0
254	249	0	9	730	0	18								0
255	229	19	47	271	24	59								0
258	176	19	47	201	24	59								0
259	3	0	80	183	1	154								0
260	0	68	137	286	90	165								0
261	198	9	47	260	12	38	14	16	13	12	24	10	14	24
264	176	9	45	194	12	39								0
265	255	41	79	667	55	178								0
266	196	2	250	224	3	391								0
<b>Total</b>	<b>3081</b>	<b>694</b>	<b>1844</b>	<b>6223</b>	<b>842</b>	<b>2920</b>	<b>101</b>	<b>168</b>	<b>91</b>	<b>123</b>	<b>214</b>	<b>91</b>	<b>122</b>	<b>214</b>

**Total Demand to/from the Interstate District**

Interstate Project District	2005 Base		2030Base		2030 Alt.	
	Origin	Destination	Origin	Destination	Origin	Destination
	3550	3100	4700	4400	4800	4530

**Comparison Details of City Model and CRC Model:**

With the CRC new bridge in planning horizon, it is a concern that the new bridge would result in a more traffic on I-5 freeway and the ramps. Consequently, these traffic might impose more traffic than 2030 non CRC model. To account this concern, data from one of the CRC build models, that assumes a tolled replacement bridge with 5 lanes and no high HCT is analyzed to determine if the CRC would add additional future traffic in the Interstate rezoning project area. Analysis compared the projected traffic growths between the CRC Built model and City model by the planning year in terms of control totals of the link and Ramp volumes, and found no significant difference there. Therefore, it is concluded that the City model did not discount the future traffic impacts possibly associated with the CRC new bridge, and its data is sufficient for the traffic analyses at this corridor planning stage and no additional CRC model exercise is needed. If a traffic operational analysis is considered in the later stage for individual intersections, volumes from the CRC Build models will be used along with the City base models.

**Analysis for TPR Compliance at ODOT facilities:**

Based on preliminary analysis, it is determined that the Interstate Rezoning Project would not impose a significant traffic impacts onto ODOT facilities. Also, it was identified that the traffic from the project district mainly use the I-5 ramps at the following locations and henceforth study will focused at these locations.

- Columbia Boulevard Interchanges
- Lombard St Interchanges
- Portland Boulevard Interchanges

- Alberta St Interchanges and
- Going Street Interchanges

Table 1 (on page 14) shows comparison of (select project district volumes) existing, future base and alternative traffic volumes to/from the project district on the I-5 ramps to total ramp volume on the respective ramps. Also shown are the respective volume to capacity ratios on the links and the Level - of -service indicators.

#### **Existing Conditions --**

- a. 2005 PM peak 2 hour volumes indicated that the traffic from/to this district mainly relay on I-5 Freeway and its ramps. District bound traffic mainly use the N Interstate Ave., N Denver Ave, via Lombard St, Portland Blvd and Going Street as access routes to the I-5 interchanges. About 9% of district's origin traffic and 8% of the destination traffic are freeway related traffic during PM peak 2-hours. I-5 NB/SB Off ramp to Going St. is the most heavily used by this district.
- b. District's traffic use about 5%-40% of the ramp capacities along I-5 at the project site. During PM peak 2-hours, the total ramp volumes reach 12360, about 18% of them are Interstate district related traffic.
- c. All the ramps except one seem to be working well below the acceptable standard from the Performance measure for Regionally Significant Street – Deficiency Thresholds and Operating Standards table (Table 11.1 in TSP) in Portland Transportation System plan. Only exception is the northbound on ramp from the NE Portland Boulevard, which is at LOS E at the acceptable standard (LOS E for VC = 0.91 – 1 ).

#### **2030 base model traffic condition –**

- a. The degree of project district traffic relying on I-5 mainline and its ramps reduces in the projected 2030 base model.
- b. Even though the traffic on I-5 mainline is projected to grow by 2030, the traffic on most of the associated ramps decrease during the pm peak 2 hour period along the project district. Based on the growth adopted in the regional models, a decrease in the I-5 ramp usage at few ramps like – Columbia Boulevard interchange, northbound off ramp to the N Lombard street, north bound off ramp to N Portland blvd is noticed. The reason for this could be the usage of mainline capacity by the through traffic making it a less attractive option for the local traffic.
- c. All other ramps would be operating well below the acceptable standards except three northbound on-ramps. The three on-ramps are metered by ODOT signals at the ramps. As the result, they will not cause any traffic impact to I-5 mainline traffic, but its queues might block City arterial streets.

The three on-ramps are:

- NB on ramp from NE Portland Blvd,
- NB on ramp from Alberta St and
- NB on ramp from N Going St..

#### **2030 Interstate Rezoning traffic impact –**

- a. 2030 future base model was run with the additional trips (214 trips in PM 2-hours) calculated from proposed rezoning,
- b. The assignment results show small changes from the 2030 base model, about 23 total trips are adding to I-5 Freeway ramps.
- c. The largest addition for an individual ramp is 16 cars at NB off ramp to the Portland Boulevard totaling the traffic on the link to 835 cars which is less than the existing numbers.(VC=0.46 and LOS = C).
- d. All ramps with added traffic are the ramps that have much bigger PM 2-hour traffic decreases in year 2030, from which it is safe to assume that their traffic conditions would not be worse than

today at corridor planning analysis level. For the three LOS F ramps from 2030 base model, a total of additional 4 auto traffic is projected during PM peak 2-hours, which is negligible. It is determined that Interstate Rezoning would not result in any significant traffic impacts to I-5 and its ramps.

**Table 1: Interstate LRT Corridor Rezoning Project District Traffic(2 hr) on ODOT facilities (Links):**

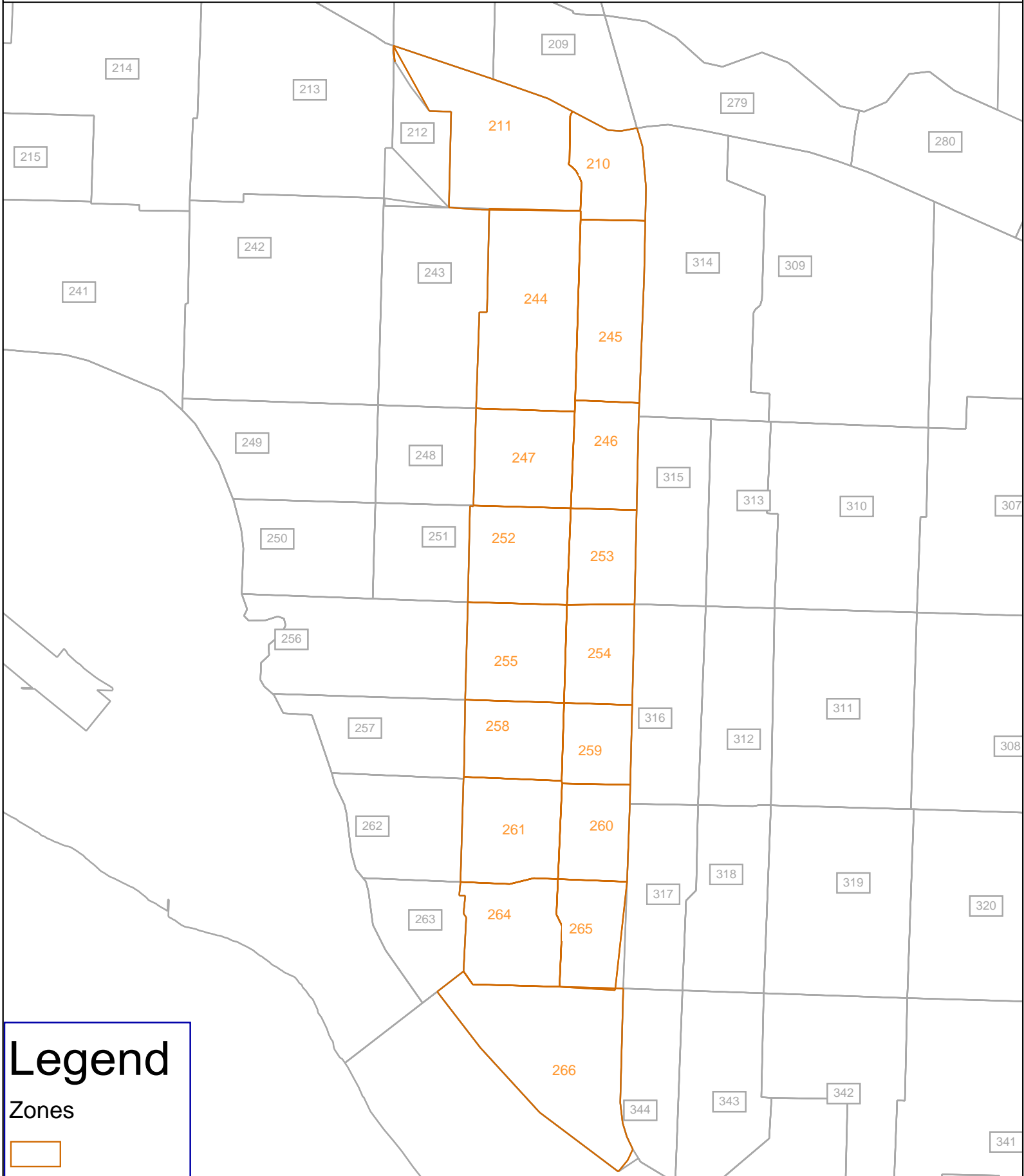
Location/Year	Interstate OD Traffic			District Total				%			V/C			LOS *			
	2005	2030	2030 Alt	2005	2030	2030 Alt.	Trips added	Total	2005	2030	2030 Alt.	2005	2030	2030 Alt.	2005	2030	2030 Alt.
N Columbia Blvd																	
NB Off Ramp	35	24	24	741	380	<b>0</b>	380	5%	6%	6%	41	21	21	C	C	C	
SB On Ramp	66	62	64	1361	1286	<b>1</b>	1287	5%	5%	5%	76	71	71	C	C	C	
N Lombard St																	
NB Off Ramp2	203	127	140	637	276	<b>-1</b>	275	32%	46%	51%	53	15	15	C	C	C	
SB On Ramp	188	363	378	486	835	<b>1</b>	836	39%	43%	45%	27	46	46	C	C	C	
N Portland Blvd																	
NB Off ramp	103	24	13	1039	819	<b>16</b>	835	10%	3%	2%	58	46	46	C	C	C	
NB On ramp	92	156	156	775	921(848)	<b>0</b>	921	12%	17%	17%	91	109	109	E	F	F	
SB On ramp	208	177	177	905	1027	<b>7</b>	1034	23%	17%	17%	50	57	57	C	C	C	
SB Off ramp	83	175	177	524	978	<b>-1</b>	977	16%	18%	18%	29	54	54	C	C	C	
N Alberta St																	
SB Off Ramp	108	109	111	829	854	<b>4</b>	858	13%	13%	13%	46	47	48	C	C	C	
NB On Ramp	129	59	57	484	630(600)	<b>1</b>	631	27%	9%	9%	81	105	105	D	F	F	
SB On Ramp	212	276	276	525	748	<b>1</b>	749	40%	37%	37%	29	42	42	C	C	C	
N Going St																	
NB Off Ramp	530	630	650	1822	2333	<b>-14</b>	2319	29%	27%	28%	38	49	48	C	C	C	
NB On Ramp	7	104	107	839	1139(1094)	<b>3</b>	1142	1%	9%	9%	77	104	104	C	F	F	
SB On Ramp	339	270	274	1389	1590	<b>5</b>	1595	24%	17%	17%	77	53	53	C	C	C	

\* - Performance Measure for regionally significant streets –Deficiency thresholds and operating conditions (Table 11.1) adopted as part of Comprehensive plan for regionally significant streets and for other city streets.

( ) - Existing Ramp Meter Rate.



# 2030 PM2 Network-- CITY TAZs

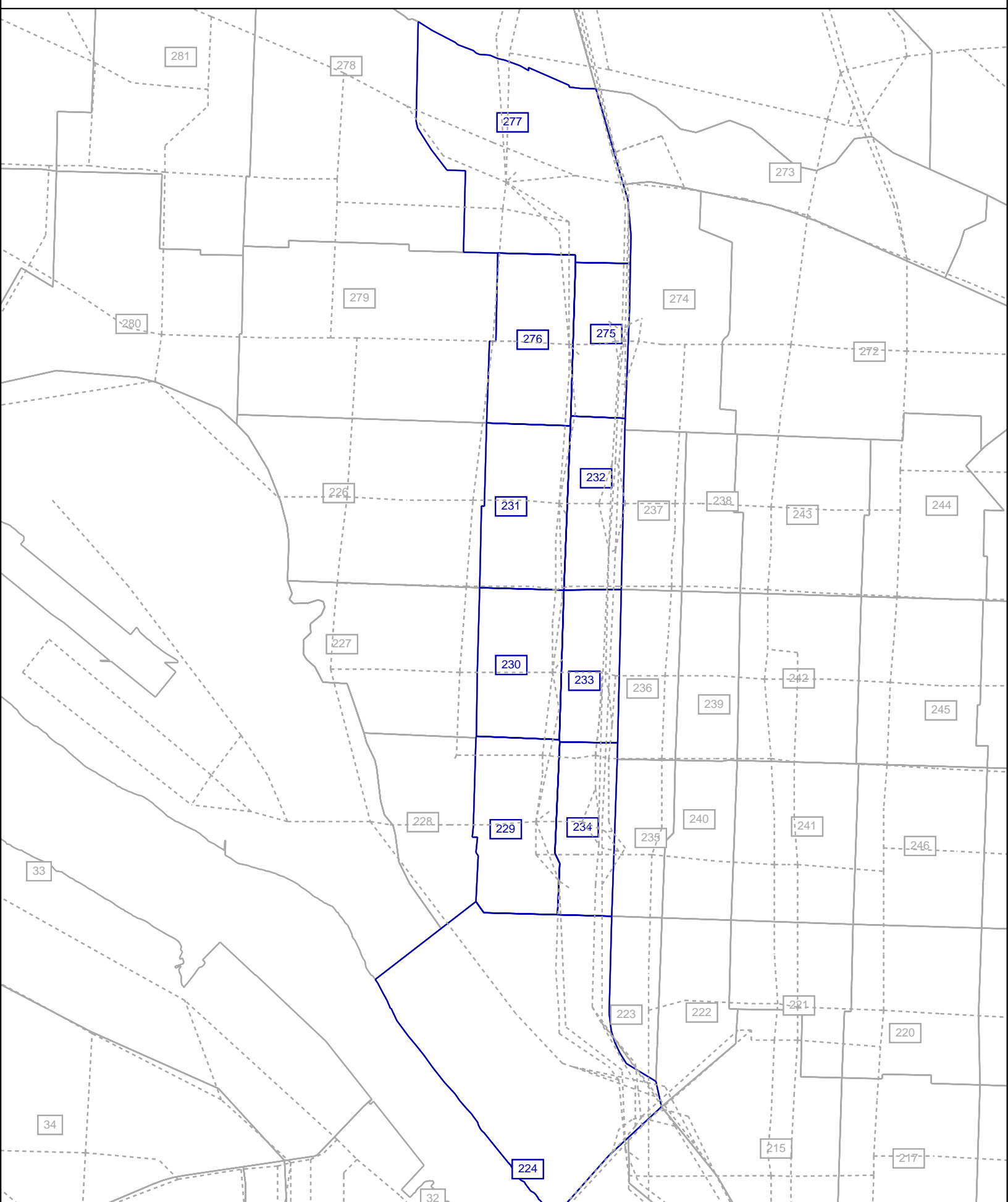


**Legend**

Zones

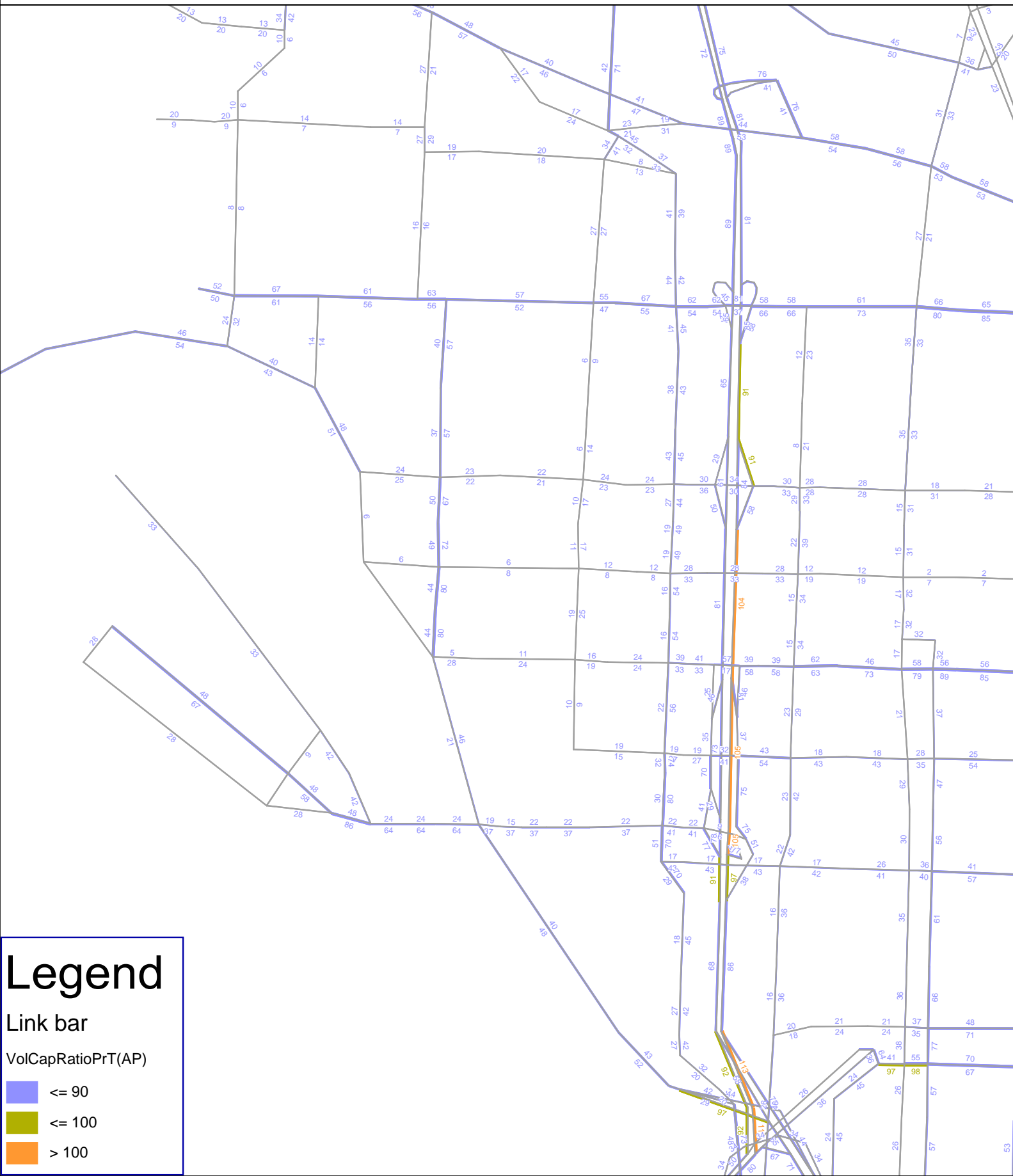
Interstate LRT Corridor Rezoning	2030pm2_Interstate_sub4.ver	27.05.2008/11:09:14
Office of Transportation, City Of Portland	Nivedita Dojjode	1:20087

# 2030 PM2 Network- Metro TAZ



Interstate LRT Corridor Rezoning	2030PM2_MilwNB_metro2.ver	27.05.2008/11:05:20
Office Of Transportation, City of portland	Nivedita Doijode	1:22684

# 2005 PM2 Network(Existing) -- V/C



## Legend

Link bar

VolCapRatioPrT(AP)

- <= 90
- <= 100
- > 100

# 2005 PM2 Network(Existing) -- Volume



## Legend

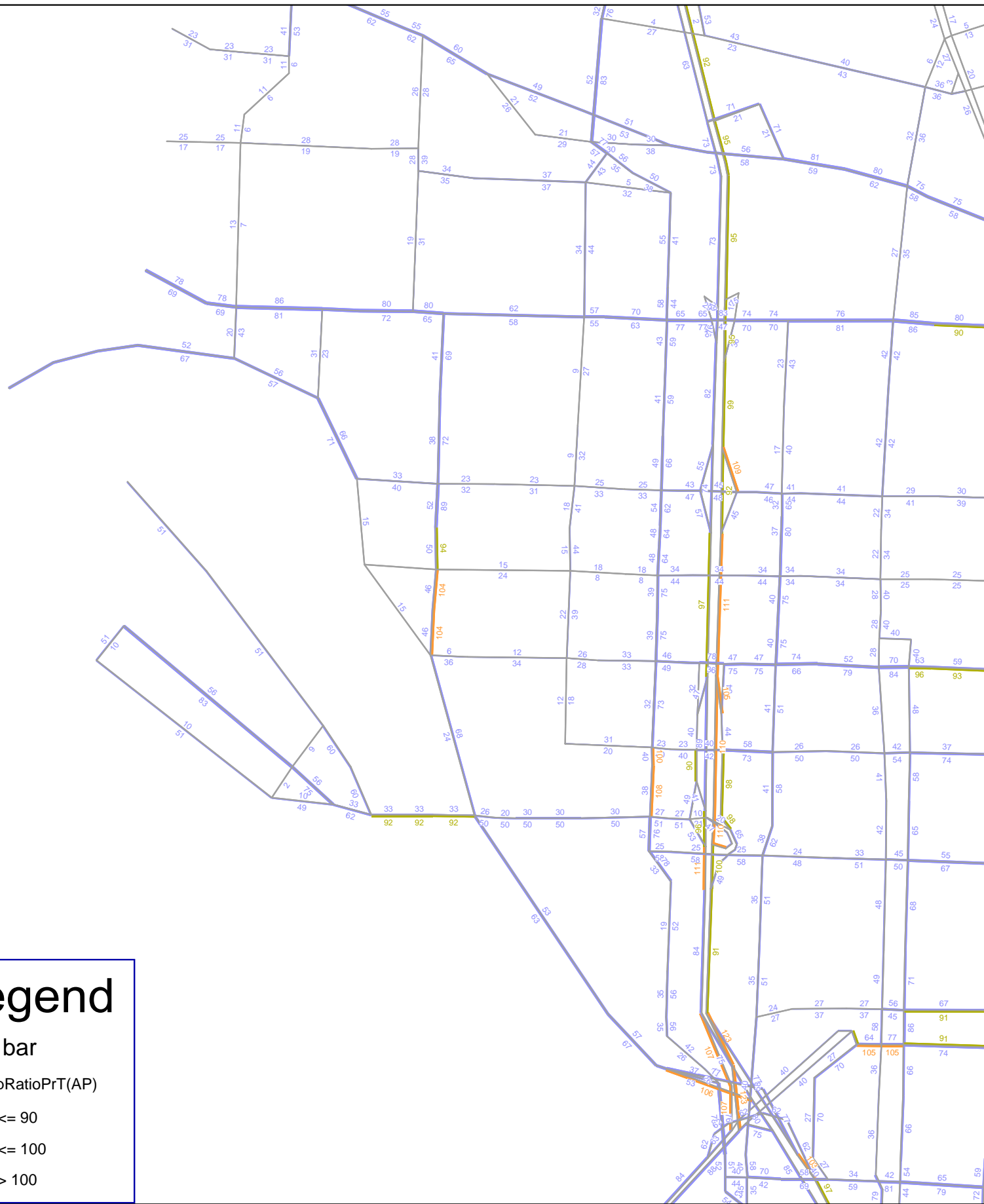
Link bar

VolVehPrT(AP)

VolCapRatioPrT(AP)

- <= 90
- <= 100
- > 100

# 2030 PM2 Network(Future Base) -- V/C



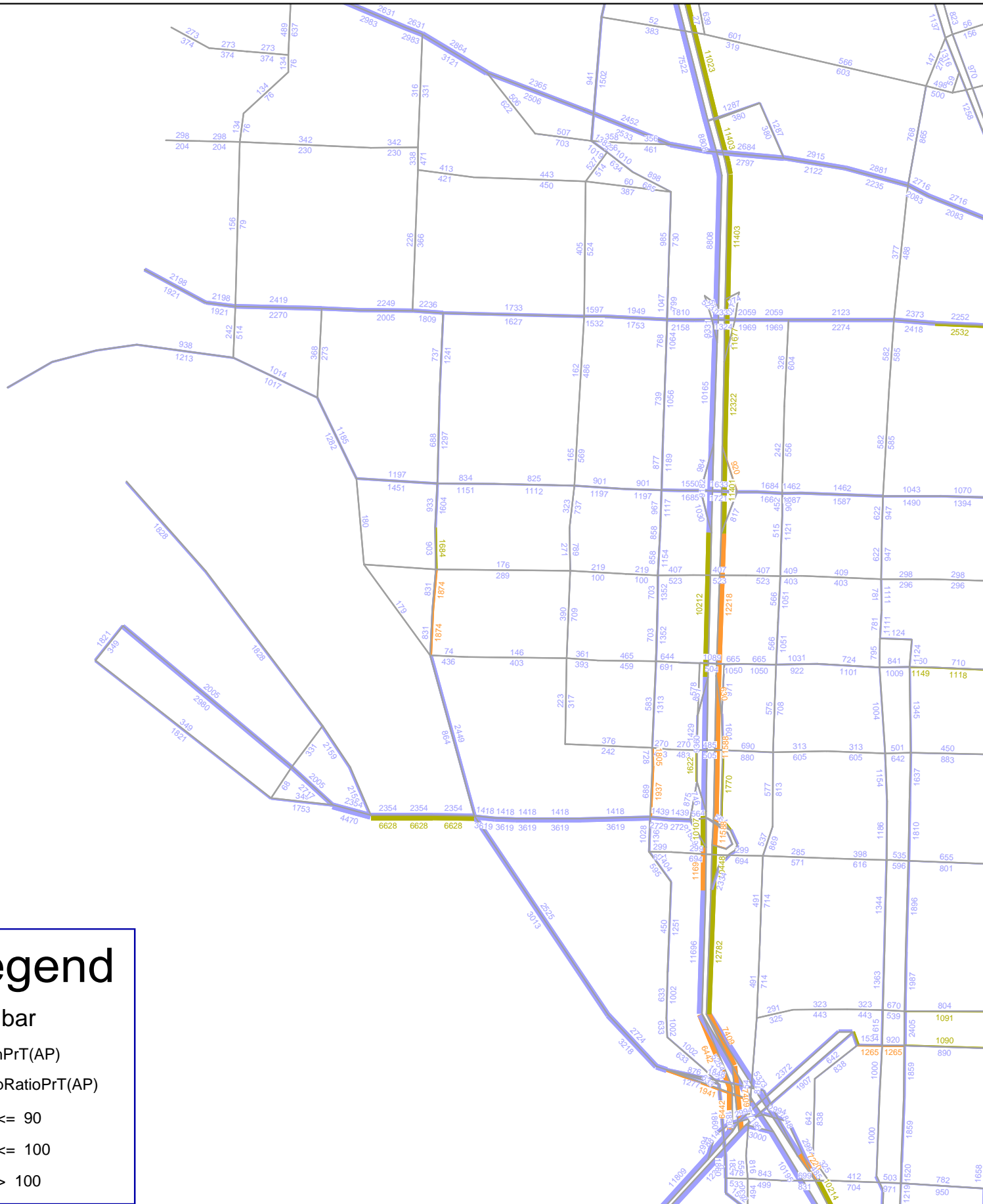
## Legend

Link bar

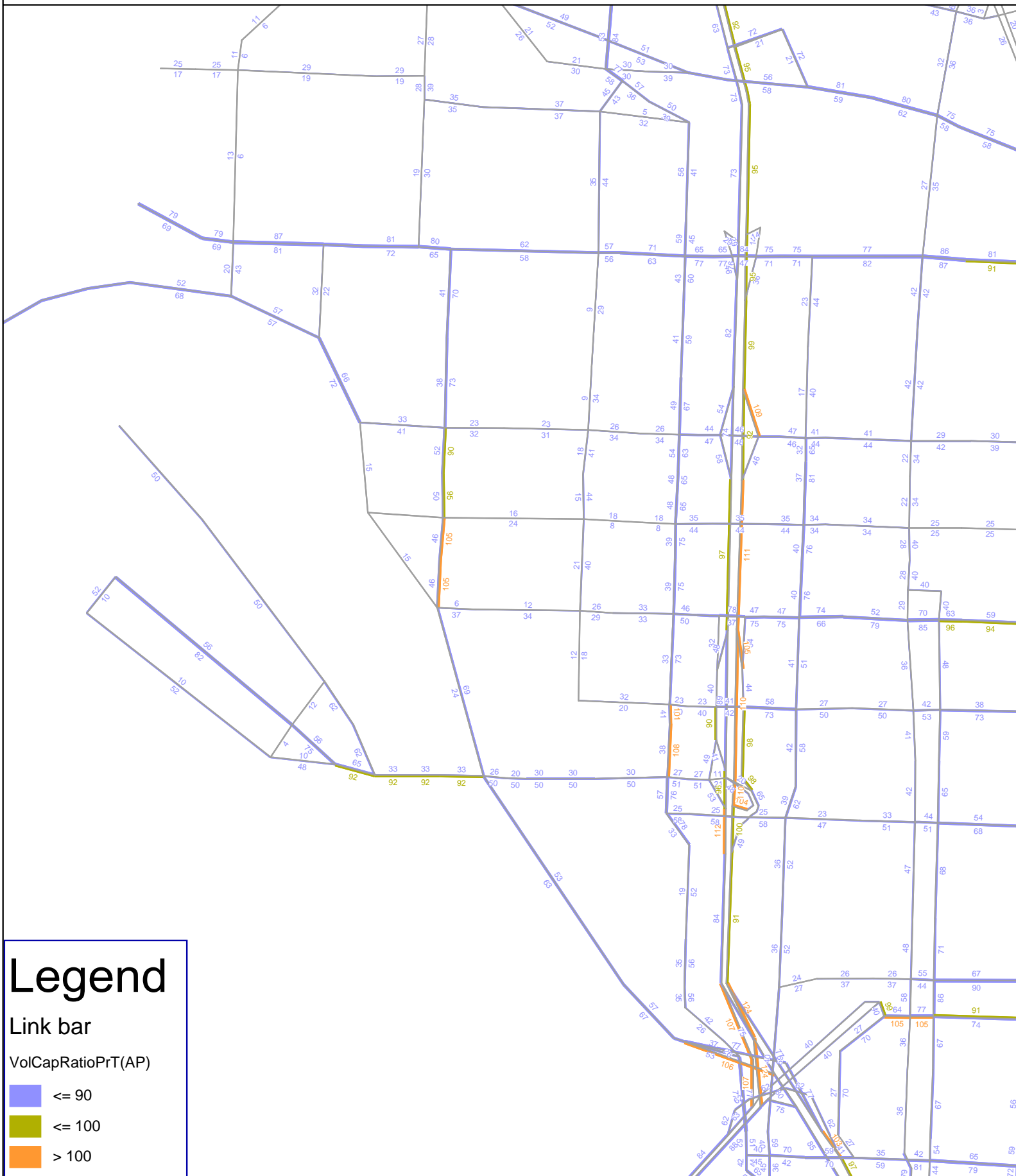
VolCapRatioPrT(AP)

- ≤ 90
- ≤ 100
- > 100

# 2030 PM2 Network(Future Base) -- Volume



# 2030 PM2 Network(Future Base)+Rezoning -- V/C



**Legend**

Link bar

VolCapRatioPrT(AP)

- <= 90
- <= 100
- > 100

Interstate LRT Corridor Rezoning

2030pm2\_Interstate\_sub4\_Alt.ver

22.05.2008/12:01:23

Office of Transportation, City Of Portland

Nivedita Doijode

1:21678

# 2030 PM2 Network(Future Base)+Rezoning -- Volumes



**Legend**

Link bar

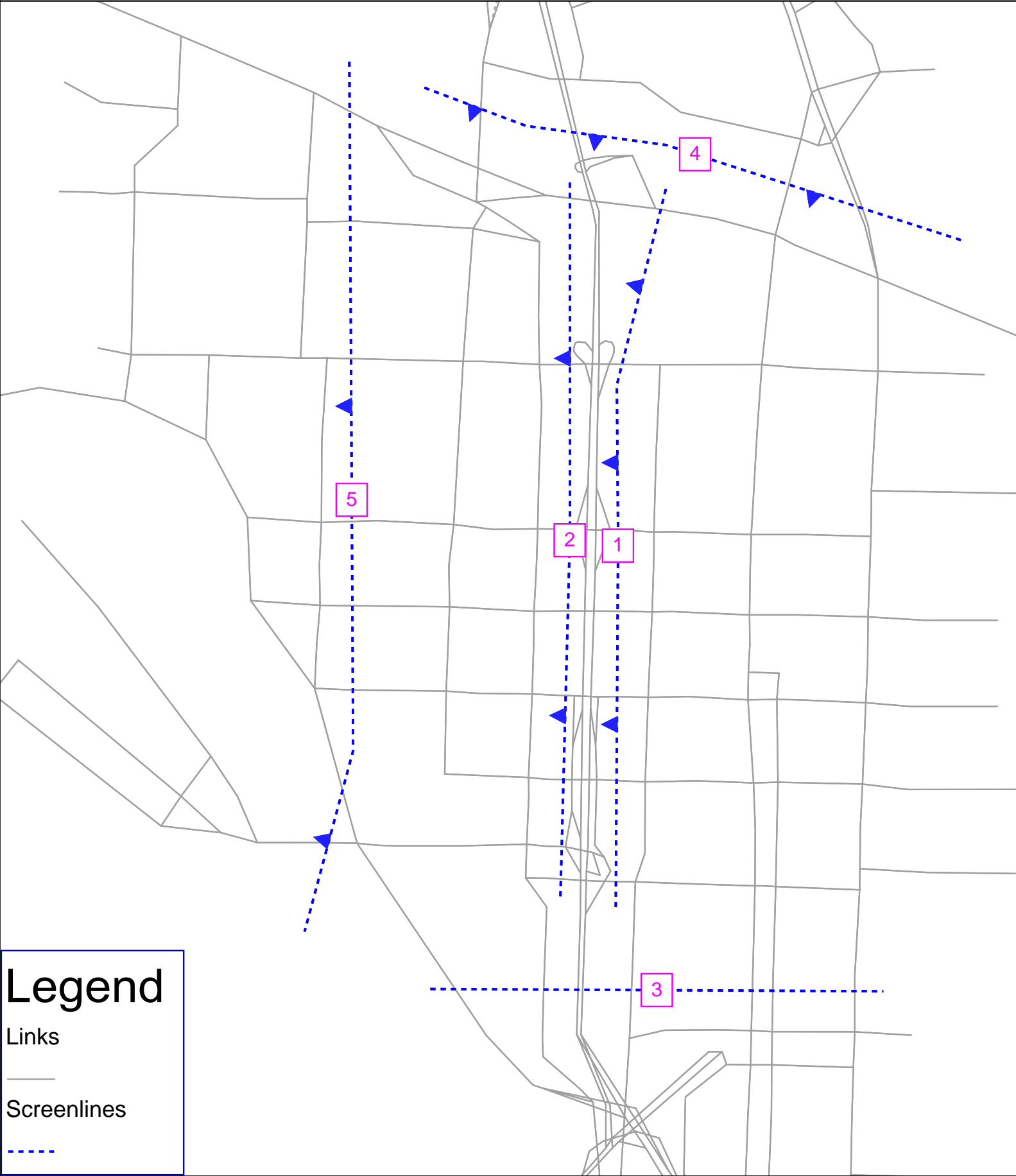
VolVehPrT(AP)

VolCapRatioPrT(AP)

- ≤ 90
- ≤ 100
- > 100



# Screenlines



**Legend**

Links  
—

Screenlines  
- - - -

Interstate LRT Corridor Rezoning	2005PM2_Interstate_sub4.ver	16.05.2008/13:56:58
Office of Transportation, City Of Portland	Nivedita Dojjode	1:14618