Portland Metro Area Value Pricing Feasibility Analysis

Final

Round 1 Concept Evaluation and Recommendations

Technical Memorandum #3

February 20, 2018

Portland Metro Area Value Pricing Feasibility Analysis

Final
Round 1 Concept Evaluation and Recommendations
Technical Memorandum #3

Prepared for

Oregon Department of Transportation
123 NW Flanders Street
Portland, OR 97209

Prepared by:

WSP USA, Inc.
851 SW Sixth Avenue, Suite 1600
Portland, OR, 97204

February 20, 2018

Table of Contents

Blank Page

1 INTRODUCTION

This memorandum presents the round 1 evaluation of seven initial pricing concepts and the baseline (no tolls) concept applied to I-5 and I-205 from the state line south to where the interstates intersect north of Wilsonville, Oregon, and project team recommendations for a set of congestion pricing concepts that warrant additional technical analysis and public review. The subsequent sections provide information about what value (or congestion) pricing is, information about how these initial pricing concepts perform, and recommended refined pricing concepts to move into round 2 evaluation. The round 2 evaluation process will include both additional technical analysis and public outreach. The round 1 evaluation of the initial pricing concepts and the development of round 2 evaluation pricing concepts is informed by:

1. Key findings from transportation modeling on relative performance;
2. Public outreach and input;
3. Application of professional judgment based on geometrics and traffic operations as well as knowledge of other pricing projects around the country; and
4. Ensuring that refined pricing concepts can be implemented as standalone congestion management systems.

The memorandum includes:

- Section 1 – Introduction
- Section 2 – Equity and Mitigation
- Section 3 – Round 1 Evaluation Results – Initial Pricing Concepts
- Section 4 – Round 1 Evaluation Results – Project Team Recommendations

1.1 Value Pricing Feasibility Analysis Context

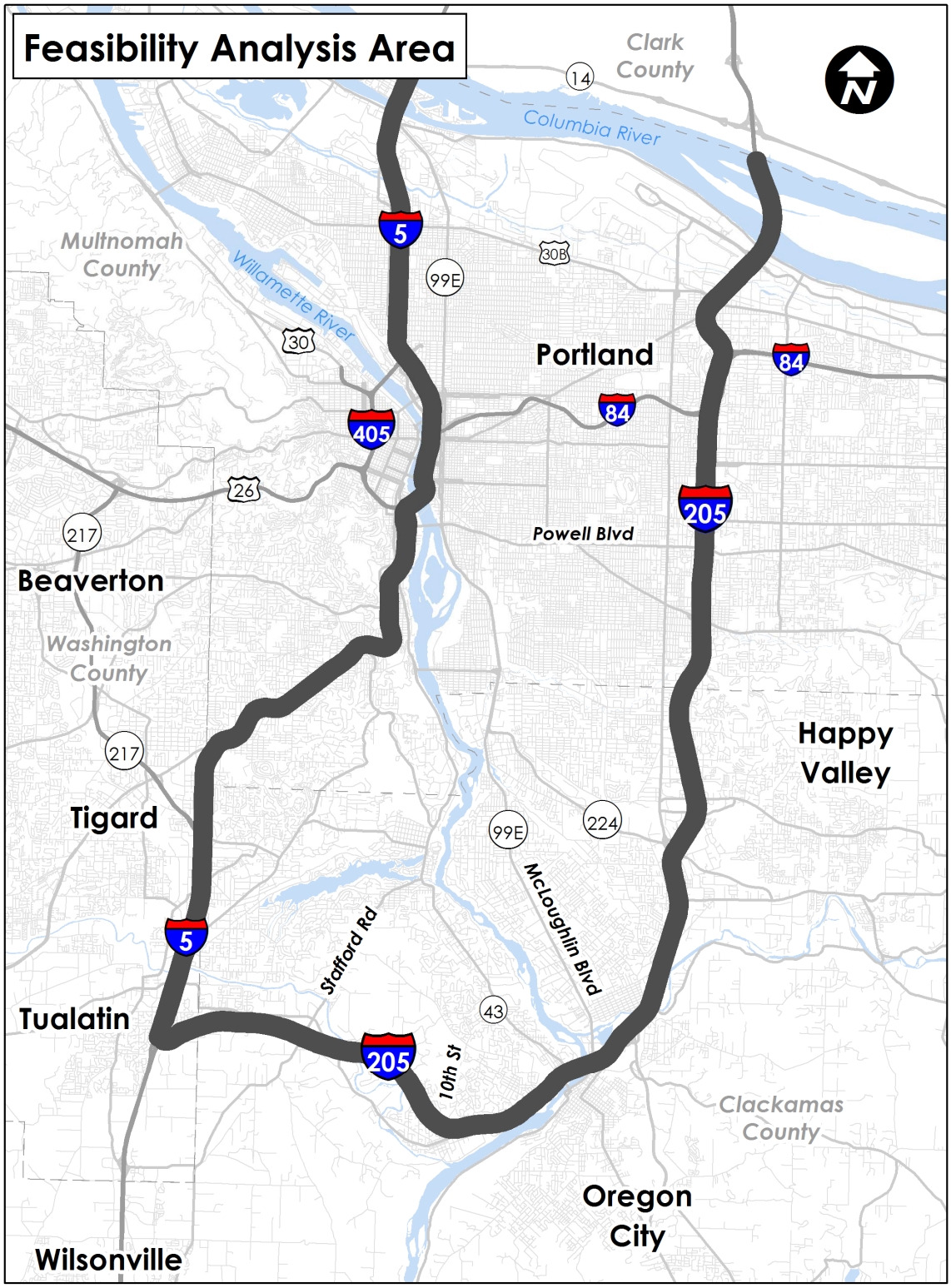
Oregon House Bill 2017 from the 2017 Legislative session directs the Oregon Transportation Commission (OTC) to seek federal approval from the Federal Highway Administration (FHWA) by December 31, 2018, to implement value pricing on the I-5 and I-205 corridors to address traffic congestion. The OTC convened a Policy Advisory Committee (PAC) to guide the pricing concepts and develop a recommendation for OTC consideration.

FHWA requirements for congestion pricing depend on the type(s) of pricing concept being pursued. After the OTC identifies the congestion pricing project(s) that it determines best fit the requirement of HB 2017, it will be able to engage with the FHWA to identify the federal policy that will guide project development. At that time, it will be necessary to identify more specific analysis that will be needed for detailed evaluation of traffic impacts, costs and revenue, environmental impacts, and mitigation strategies, along with the public and stakeholder engagement needed to inform the process.

Value pricing, also known as congestion pricing, sets a higher price for driving when demand is higher, which is typically during the morning and evening peak commuting periods. This creates an incentive for some drivers to not travel at all, shift travel to less congested periods of the day, or take alternate modes such as transit (some motorists will choose to take alternate routes). Those choosing to pay the toll have higher travel speeds and improved travel time reliability. As shown on Figure 1, the study corridors

include I-5 and I-205 from the state line south to where the interstates intersect north of Wilsonville, Oregon.

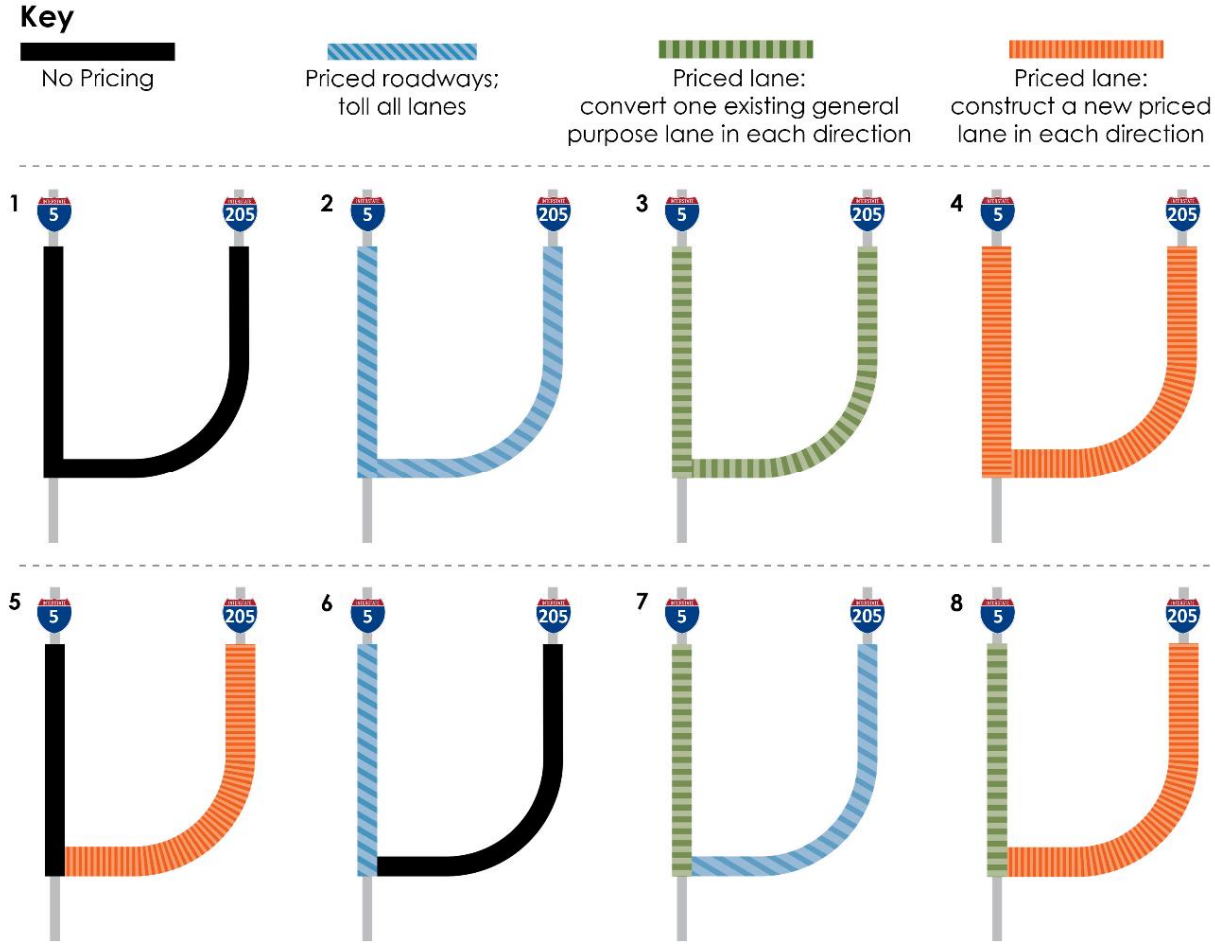
Figure 1. Study Corridors: I-5 and I-205



For the round 1 evaluation, eight initial pricing concepts were studied. These concepts are described in Technical Memo 2 – *Summary of Value Pricing Concepts*.[1] The initial pricing concepts are shown on Figure 2 and include:

- Concept 1 – Baseline: no tolls on any lanes or roadways
- Concept 2 – Priced Roadway: Toll All Lanes on I-5 and I-205
- Concept 3 – Priced Lane Conversion: convert one existing general purpose lane on I-5 and I-205 to a priced lane in each travel direction
- Concept 4 – Priced Lane Construction: construct a new priced lane on I-5 and I-205 in each travel direction
- Concept 5 – Baseline (no pricing) on I-5 with Priced Lane Construction on I-205
- Concept 6 – Priced Roadway on I-5 with Baseline (no pricing) on I-205
- Concept 7 – Priced Lane Conversion on I-5 with Priced Roadway on I-205
- Concept 8 – Priced Lane Conversion on I-5 with Priced Lane Construction on I-205

Figure 2: Initial Value Pricing Concepts for Preliminary Analysis



[1] ODOT. Value (Congestions) Pricing. January 23, 2018. *Technical Memo 2: Initial Concepts.* Accessed February 6, 2018. http://www.oregon.gov/ODOT/KOM/VP-TM2-InitialConcepts.PDF

1.2 Purpose of this Technical Approach

This technical memorandum presents findings from the round 1 evaluation of the initial pricing concepts. The round 1 evaluation was informed by transportation modeling, public outreach and expert application of professional judgement based on geometrics and traffic operations and knowledge of other pricing projects around the country. The performance measures the team sought to address are presented in Technical Memorandum 1 – *Objectives and Proposed Performance Measures*.[2]

The purpose of the round 1 evaluation of the eight initial pricing concepts is to:

- Understand the range of benefits and impacts from applying congestion pricing to the study corridors,
- Determine the relative performance of the initial concepts in order to differentiate those that have the most potential to achieve the project objectives, and
- Identify a set of recommended pricing concepts to move into round 2 evaluation and future public outreach.

As with the initial pricing concepts, the round 2 pricing concepts will be evaluated using a similar approach of transportation modeling, public outreach, and professional judgement based on knowledge of other pricing projects around the country. To accompany the round 2 evaluation, the team will work with the public and the Policy Advisory Committee (PAC) to identify a range of potential mitigation strategies to pursue further to address impacts of congestion pricing.

The results of the round 2 evaluation will result in a recommendation by the PAC to the OTC for the pricing option(s) it believes most feasible for the Portland metropolitan area. The OTC will consider the PAC recommendation and develop a request to the FHWA to be submitted by the end of 2018. Upon discussion or approval from FHWA (depending on the type of pricing application), the Oregon Department of Transportation (ODOT) would then conduct further study, likely to include environmental and additional traffic analysis, and additional public outreach.

2 EQUITY CONCERNS AND MITIGATION

Regardless of the specific pricing application, the concept of equity centers on how the benefits and impacts of public policy are distributed among members of society. From a pricing perspective, this means evaluating the potential impact (both positive and negative) of new tolls on drivers, adjacent communities, and transportation system stakeholders, and finding ways to mitigate negative impacts and better distribute positive impacts to underserved and vulnerable populations.

Title VI of the Federal Civil Rights Act of 1964 prohibits discrimination on the basis of race, color and national origin in programs and activities receiving Federal assistance. Executive Order #12898 (Environmental Justice) directs federal agencies to develop strategies to address disproportionately high and adverse human health or

[2] ODOT. Value (Congestion) Pricing. December 15, 2017. *Technical Memo 1: Objectives and Performance Measures.* Accessed February 6, 2018. http://www.oregon.gov/ODOT/KOM/VP-Objectives-Performance-Measures.pdf

environmental effects of their programs on minority populations and low-income populations. Executive Order #13166 (Limited-English-Proficiency) directs federal agencies to evaluate services provided and implement a system that ensures that limited English proficiency persons are able to meaningfully access the services provided consistent with and without unduly burdening the fundamental mission of each federal agency.

The most commonly encountered equity concerns with pricing include:

- Income – Pricing imposes additional direct, out-of-pocket costs on travelers using the priced lane. As such, a central concern is the impact of those costs on lower income drivers, for whom tolls would comprise a greater share of their total income. Furthermore, the concept of modal equity is tied with income equity, as lower income populations may not have access to the same modal options (access to transit or vehicles) as higher income populations and may therefore not be perceived as benefiting equally from tolling systems that improve travel performance for system users. Further, lower income individuals may not live in locations with adequate or frequent transit service options. Income and modal-related equity issues may be addressed through pricing policies and operational policies, as will be discussed later in this section. However, lower income drivers also value reduced travel times and improved travel time reliability due to the availability of a less congested highway alternative. As such, equity considerations should include opportunities for all segments of society to share in the benefits as well as mitigating negative impacts.
- Geography-specific – The implementation of tolling may have a disproportionate impact based on where drivers live and travel, depending on the availability of viable travel options, including non-tolled routes. Those residing or working near a tolled facility are more likely to be impacted through increased costs or traffic diversion to nearby alternative routes. However, they are also more likely to benefit from reduced travel times and improved travel time reliability due to the availability of a less congested highway alternative. Further, improved traffic flow would be expected to reduce emissions from congested traffic, which can be an important improvement for residents and businesses in close proximity to a freeway. Geographic concerns are often addressed through pricing policies and design considerations such as the placement of tolling, ingress and egress zones, as well as distribution of revenues to improvements within nearby communities from which the tolls are generated. In Oregon, toll revenues are constitutionally restricted to roadway improvements.

Robust and comprehensive equity assessments are generally conducted during the development phase of a project when details on the overall pricing configuration and geometric layout are well established. These detailed assessments will be required as part of a National Environmental Policy Act (NEPA) process. In the case of the current Portland Metro Area Value Pricing Feasibility Analysis, a NEPA process would be conducted after a pricing configuration for I-5 and/or I-205 has been proposed by the

OTC to the FHWA in December 2018. The requirements of that process will depend on FHWA's response.

2.1 Examples of Mitigation Strategies Used in Other States

There are numerous ways in which equity issues have been addressed in congestion pricing implementation. These strategies are independent of the pricing concepts discussed in this memorandum and may be applied to any configuration of priced lanes and priced roadways along I-5 and/or I-205. Examples of equity mitigation strategies employed with priced facilities in the United States include the following:

- Toll discount and subsidy programs
- Enhanced options for those lacking access to banks and/or credit cards, known as "unbanked"
- HOV incentives
- Enhanced multi-modal service and investment
- Transit-linked incentives and toll credit programs

Toll discount and subsidy programs

One method of addressing income equity concerns is to subsidize tolls for qualifying travelers. For example, the LA Metropolitan Transportation Authority's Low-Income Assistance Plan (LIAP) offers participants a one-time $25 toll credit and automatically waives the $1 monthly maintenance fee on toll accounts. LIAP account holders must be residents of Los Angeles County with an annual household income of less than twice the federal poverty level. In 2014, the North Central Texas Council of Governments (NCTCOG) proposed an alignment for the Chisholm Trail Parkway toll road in Fort Worth. The proposed alignment would cut off a major throughway for residents of a nearby retirement community with a large number of low income households, leaving them with only one available un-tolled option that would nearly double travel times. Changing the alignment of the road would be too costly, so NCTCOG implemented a program whereby the agency purchased prepaid toll tags for area residents. This mitigation measure reduced the cost to area residents accessing the new toll road.

Options for those lacking access to banks and/or credit cards, known as "unbanked"

In Oregon, any state highway tolling system is required to accommodate cash-based motorists.[3] Modern pricing applications rely on electronic toll collection (ETC) systems and do not accommodate cash payment at toll booths. Facility users are required to use tags or transponders in their vehicle that are linked to pre-established accounts. These accounts are generally linked to debit or credit card accounts for electronic payment when invoices become due. As such, ETC-based pricing systems may be more difficult to activate and access for populations that do not have a bank account or credit cards. Such concerns for these "unbanked" populations may be addressed by providing toll-related customer options at retail locations that allow users to obtain and

[3] Oregon State Legislature. Oregon Constitution 2017 Edition. Article IX, Section 3. https://www.oregonlegislature.gov/bills_laws/Pages/OrConst.aspx

replenish toll accounts with cash. For example, the Harris County Toll Road Authority (HCTRA) in Houston, Texas recently partnered with BancPass to provide a cash-based option for obtaining and managing EZ Tag transponders and accounts. BancPass EZ Tag customers can purchase a starter kit at certain area grocery stores and activate the tag via text message. Accounts can be replenished with cash at any number of convenient retail locations in the Houston area.

High Occupancy Vehicle Incentives

Implementing agencies may choose to allow High Occupancy Vehicles (HOV), such as carpools with two or three more occupants, to access priced facilities for free or at a discounted rate. This provides all travelers, including lower income individuals, the opportunity to benefit from pricing through the formation and maintenance of carpools or vanpools which increase person throughput and provide an important operational benefit.

Enhanced multi-modal service and investment

Pricing systems are often viewed as benefiting only those who own a vehicle and can afford to pay the toll. Lower income and vulnerable populations are less likely to own their own personal vehicles and tend to have a lower ability to pay. As such, a common strategy to ensure that benefits accrue to all travelers is to provide improved transit service within priced facilities. Transit vehicles are typically allowed to use these facilities for free, meaning that riders benefit from the reduced travel times and increased travel time reliability provided by pricing without having to pay the toll. Agencies may choose to implement express transit services featuring fewer stops than typical fixed route bus service. Such express routes often serve longer distance commuting trips and can provide enhanced travel time over traditional transit routes. For example, the Denver Regional Transportation District (RTD) operates the Flatiron Flyer, a bus rapid transit service running along the US 36 Managed Lanes Corridor. The service offers a limited number of stops and serves a large commuter population travelling between Boulder and downtown Denver. Stops along the US 36 managed lanes facility feature park-and-ride lots and direct access ramps to the managed lanes for transit vehicles. The success of enhanced transit service is dependent on the availability of transit routes within the corridor and access by underserved populations to those routes.

As previously noted, enhanced transit services on priced facilities can be successful in addressing equity concerns only to the extent that viable transit and bicycle and pedestrian infrastructure (multi-modal) options are present. As such, agencies may choose to invest in transit expansion and enhanced transit facilities within priced corridors. The Los Angeles County Metropolitan Transportation Authority (Metro), for example, used a significant portion of its $210 million federal Congestion Reduction Demonstration (CRD) program funding to implement numerous transit improvements as part of its conversion of the I-10 and I-110 High Occupancy Vehicle (HOV) lanes to tolling. The new High Occupancy Toll (HOT) lanes allow transit vehicles, motorcycles, and multiple-occupant private vehicles free access to the lanes. Transit and multi-modal enhancements to the HOT facility included acquiring new clean fuel expansion

buses, increasing service routes, completing security upgrades, constructing improvements along stations, and adding capacity at park-and-ride lots. Additionally, investments may be made in sidewalk and bicycle infrastructure along highly traveled regional routes and roadways. This is particularly important along arterials and other roadways where traffic diversion may occur.

Transit-linked incentives and toll credits

In addition to enhanced transit service and multi-modal service, pricing agencies are now exploring ways to foster incentives for transit use by offering toll credits. Such programs may be beneficial for lower income and underserved populations that frequently use transit within priced corridors but might also benefit from periodic use of the facility in a personal vehicle. For example, the Georgia State Road and Tollway Authority's (SRTA) "Ride Transit – Earn Toll Credits" is a transit incentive program that provides participants with a $2 toll credit for each trip taken on express transit routes within the I-85 Express Lanes corridor during peak hours in the Atlanta region. Participants can earn up to $10 in credits per month, with a maximum of $60 over a 6-month period. Credits can be used for trips on the priced I-85 Express Lanes in a personal vehicle. Similarly, the Los Angeles County Metropolitan Transportation Authority has the Transit Reward Program that allows frequent transit riders to earn toll credits for using transit within I-10 and I-110 ExpressLanes corridors. Program participants can earn a $5 toll credit by making 32 one-way trips during peak hours on select routes within the corridors.

3 ROUND 1 EVALUTION RESULTS: INITIAL PRICING CONCEPTS

The sections that follow present the results of the round 1 evaluation for the initial pricing concepts. Technical Memo 2 – *Summary of Value Pricing Concepts*,[4] describes how and why these initial pricing concepts were identified and moved into the round 1 evaluation. In summary, these concepts were developed for the purpose of learning about the relative performance of the congestion pricing tools in order to inform the selection of concepts that warrant round 2 evaluation as part of this feasibility analysis, as described in Section 4.

Some of the key findings about the individual pricing applications (the "building blocks" described in *Technical Memo 2*) are summarized below:

2027 Baseline Conditions

- At optimum vehicle throughput, just prior to congested conditions setting in, a freeway carries about 1,900 to 2,200 vehicles per hour per lane. Existing traffic data reveal that on I-5 between Portland and the Columbia River, the average vehicle throughput per lane during peak periods is about 960 vehicles per lane per hour – approximately 50 percent of what would be expected if the freeway were functioning efficiently. This condition is called "hyper-congestion". Similar

[4] ODOT. Value (Congestion) Pricing. December 15, 2017. *Technical Memo 1: Objectives and Performance Measures.* Accessed February 6, 2018. http://www.oregon.gov/ODOT/KOM/VP-Objectives-Performance-Measures.pdf

hyper-congested conditions exist on many of the I-5 and I-205 study segments under current conditions and in the 2027 baseline. It is likely that this will continue and worsen into the future.

Price Roadway – Toll All Lanes

In general, the priced roadway concept is the most effective and easiest to implement. Transitioning from an unpriced freeway to pricing all of the lanes may be challenging from the perspectives of public acceptance and federal policy; however, it can provide the most opportunity to improve traffic operations for all users, maintain a relatively lower toll price, and distribute benefits broadly.

- This concept is expected to provide the highest level of congestion relief of the initial pricing concepts examined.
- Application of a toll to all lanes can keep the individual toll amount lower, or could provide opportunities for more low-toll or unpriced hours. This can make the benefits more affordable on an individual basis than some other options.
- This concept recovers functional capacity during peak periods that is lost due to hyper-congestion, providing greater carrying volume with pricing than without. This means that diversion impacts may be minimal, but still warrants consideration and study.[5]
- The concept is significantly less expensive than concepts that include substantial physical improvements to the existing highway and bridge infrastructure.
- While there are numerous geometric constraints on both I-5 and I-205 identified in Concept 1 - Baseline, these constraints are unlikely to interfere with this concept.
- Vehicles 10,000 pounds and more (such as many freight trucks and transit vehicles) would benefit most from priced roadway concepts as compared to other concepts since all lanes would be tolled as opposed to a single left-most lane (convention for tolling a single general purpose lane is typically the left-most lane of a freeway to avoid ramp entrances and exits).[6]

Priced Lane – Conversion

The priced lane conversion concept has the benefits of maintaining unpriced lane options and relatively low capital cost and construction impacts. That said, because it does not add capacity, its effectiveness can be limited unless there is capacity within the system to absorb diverted demand (to unpriced lanes, other roadways, other times of day, or other travel modes). Also, priced lane concepts on facilities with only two lanes in each direction are not operationally feasible – at least two general purpose lanes must be maintained.

Further, most states (including Oregon) restrict heavy vehicles from using the left lanes of freeways. For these reasons, the best applications for priced lane conversion will be

[5] Definition of hyper-congestion: congested traffic conditions that significantly reduce vehicle throughput.
[6] Oregon Revised Statute 2017 Edition. Chapter 811.325: Failure to keep camper, trailer or truck in right lane. Applies to any vehicle with a trailer and any vehicle with a registration weight of 10,000 pounds or more; this includes transit vehicles. https://www.oregonlegislature.gov/bills_laws/ors/ors811.html. Accessed February 9, 2018.

in segments that meet specific conditions to ensure overall operational benefits can be achieved.

- Vehicle travel speeds do not increase as significantly in the priced lane as they do in a priced roadway concept as only one lane is managed. As the managed lane will carry more vehicles per lane than the unmanaged lane during peak conditions, converting the lane to a managed lane will likely remove some traffic from the unmanaged lane; however, vehicle demand that is currently unsatisfied on the overall network may move to the freeway and might remove any general purpose lane improvement.
- This concept will have similar operating costs to a priced roadway concept but will produce less revenue to compensate for costs or to provide for mitigations.
- There are significant geometric and physical constraints to converting a general purpose (non-tolled) lane to an express (tolled) lane on I-5 under existing conditions throughout the downtown segment between the I-5 and I-405 interchanges. The current configuration of the I-405 / I-5 interchanges are misaligned for continuous express (tolled) lane travel.
- Converting a lane to an express (tolled) lane on a facility with only two lanes in each direction is not operationally feasible. This configuration currently exists in the baseline on locations along I-5.
- Non-tolled general purpose lanes will be available for drivers to use instead of paying a toll, therefore the need for mitigation is not as significant as it is for a fully priced roadway concept.
- Vehicles 10,000 pounds and more (such as many freight and trucks transit vehicles) are currently prohibited from operating in the left-most travel lane. Because the tolled lane would be implemented in the left-most travel lane, many freight trucks and transit vehicles would not benefit from the traffic operations improvements associated with the priced lane options without ORS changes.[6]

Price Lane – Construction

The priced lane construction concept shows good results in traffic operations when compared to other concepts, in part due to the pricing but also due to the added lane capacity and the reduced travel demand per lane.

- Concepts with an added, constructed tolled lane are the most expensive and impactful options evaluated.
- Overall, vehicle speeds do not rise as significantly as they do in priced roadway concepts as there is nothing to prevent the general purpose lanes from becoming congested.
- This concept will have similar operating costs to a priced roadway concept but will produce less revenue to compensate for costs.
- Non-tolled general purpose lanes will be available; therefore, the need for mitigation is not as significant as it is for a priced roadway concept. Further, constructing a new tolled lane, as opposed to converting a general purpose lane to tolled, will provide more capacity which could potentially reduce the need to mitigate for traffic diversion. However, building a new lane would have sizable construction and private property impacts.

- Traffic operations for concepts where a new tolled lane would be constructed perform very well due to managing the added roadway capacity.
- The travel benefits of widening the roadway on the study corridors would be limited by downstream bottlenecks.
- Vehicles 10,000 pounds and more (such as many freight trucks and transit vehicles) are prohibited from operating in the left-most travel lane. Because the tolled lane would be implemented in the left-most travel lane, many freight trucks and transit vehicles would not benefit from the traffic operations improvements associated with the priced lane options without ORS changes.[6]

3.1 Overview of Analysis Methods

The intent of the round 1 evaluation is to gain a broad understanding of the range of impacts from applying congestion pricing on the study corridors relative to the baseline concept, and to inform recommendations for moving a set of pricing concepts forward to round 2 evaluation. As such, several methods briefly described here established a basis for initial pricing concepts. Appendix A – Evaluation Methodology, provides a description of the assumptions included and methods used to evaluate the relative performance of these initial concepts.

Analysis Year and Completed Projects

The initial pricing concepts, including Concept 1 – Baseline, were evaluated for the year 2027. The baseline conditions reflect projects in the adopted Regional Transportation Plan, including roadway, transit, and bicycle and pedestrian projects, that are identified for construction by 2027.[7] The year 2027 was selected due to the availability of modeling data, including anticipated population and employment growth with corresponding land use and travel demand, for that time horizon from Metro planners and modelers. This list also includes three high-priority projects that the Oregon Legislature identified in House Bill 2017 for project development and construction: OR 217 northbound and southbound widening, Interstate 205 Stafford Road to OR 213 widening and the Interstate 5 Rose Quarter Improvement Project. In total, the project list includes over 700 regional multimodal transportation investments that were submitted by transportation agencies in the region and have been approved by Metro Council.[8] The major capacity-related projects are listed in Table 1 below.

Table 1. Major Regional Projects Assumed to be Constructed by 2027

Project
I-5S: Lower Boones Ferry Exit to Lower Boones Ferry Entrance (Auxiliary Lane)
I-5S: Lower Boones Ferry to I-205 (Auxiliary Lane)
I-5 Rose Quarter (both directions)
I-205N: I-84 E entrance to Killingsworth Exit (Auxiliary Lane)

[7] Oregon Metro. 2018 Regional Transportation Plan. https://www.oregonmetro.gov/public-projects/2018-regional-transportation-plan/call-projects

[8] The March 2018 RTP update will include an adjustment moving the construction timeline for a project to expand I-205 and Abernethy Bridge between I-5 and Oregon City to the 2018-2027 period. The concepts were all analyzed with the assumption this project would be constructed by 2027.

Project
I-205S: I-84E entrance to Washington/Stark (Auxiliary Lane)
I-205N: Powell to I-84E Exit (Auxiliary Lane)
I-205N: Sunrise to Sunnybrook (Auxiliary Lane)
I-205 Abernethy Bridge Widening: OR43 to OR213 (both directions)
I-205 widening: Stafford to OR43 (both directions)
OR217N: OR99W to Scholls Ferry (Auxiliary Lane)
OR217S: Beaverton-Hillsdale to OR99W (Auxiliary Lane)
US26: Widen to 6 lanes from Cornelius Pass to 185th (both directions)
OR224 Milwaukie Expressway Improvements
Southwest Corridor Light-Rail Transit
Transit, bicycle and pedestrian projects

Corridor Segmentation

Traffic and roadway conditions vary significantly in different sections of the corridors. Segments were defined on I-5 and I-205 to differentiate the evaluation and analysis. The segments were defined by: (a) geographical boundaries, such as the Columbia River, (b) changes in the roadway geometry, for instance changing from a three-lane facility in each direction to a two-lane facility in each direction; or (c) locations of major interchanges on the freeways. While these segments are well defined, the beginning or end of a given segment might shift somewhat to allow analysis of conditions that exist near the segment boundaries. The corridor segmentation for the round 1 evaluation is presented in Figure 3.

Screening Assessment and Scoring

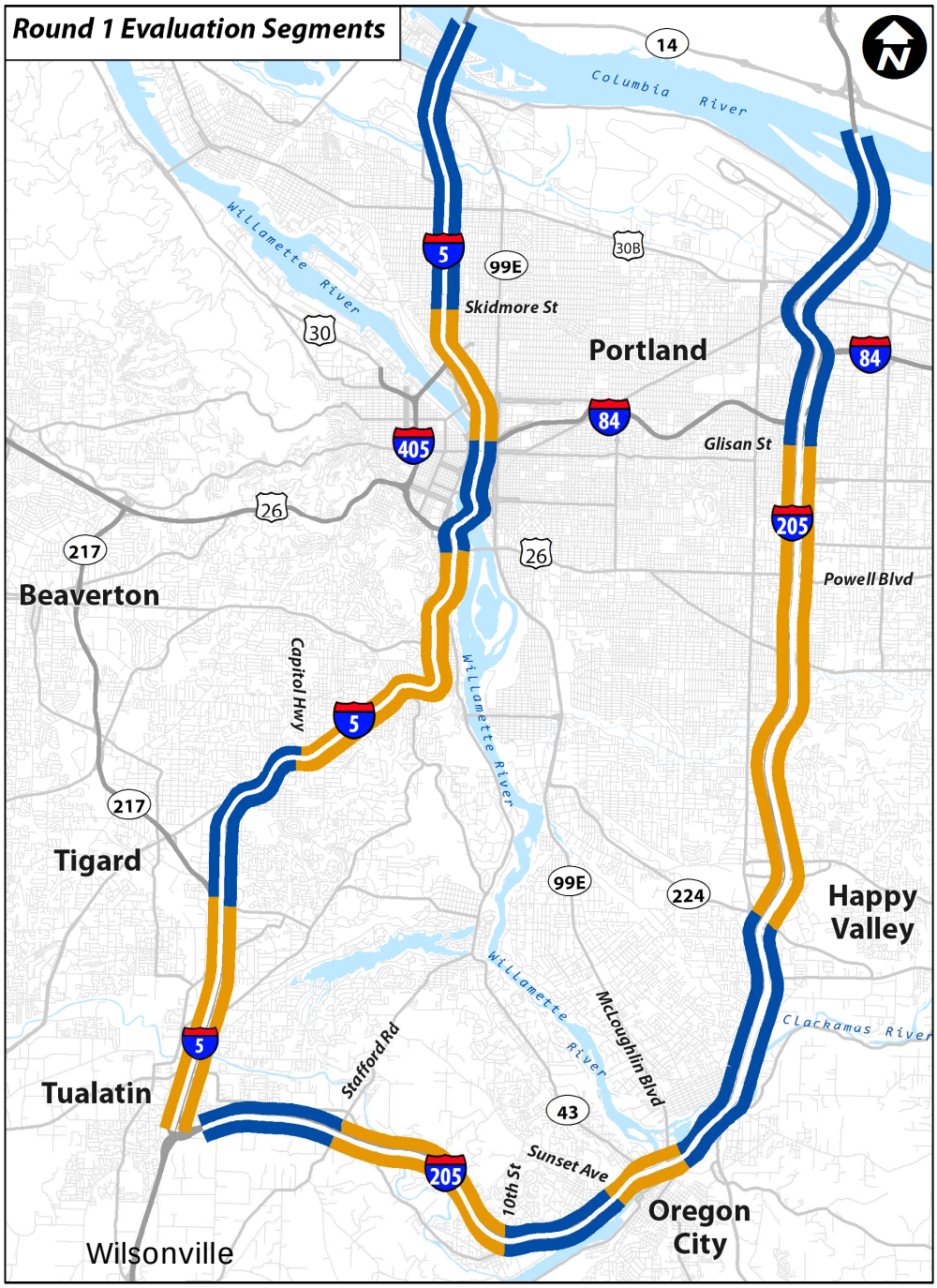
The assessment examined the following categories of information for the initial pricing concept screening, which was finalized with input from the Policy Advisory Committee. These are described in more detail in Appendix B: Performance Measures Summary Details.

- Current Day and Forecasted Traffic Operations – This included information reviewed and prepared to understand current and future traffic, including travel time and throughput for vehicles and freight trucks; mode share; adequacy of transit, bicycle and pedestrian infrastructure; and diversion and trip length distribution.
- Capital and Operating Costs – This analysis was an order of magnitude effort for the initial pricing concept evaluation. Considerations were given to the type of infrastructure investments need for each concept as well as costs to operate the tolling system.
- Geometric and Physical Constraints – The existing conditions of the roadway were reviewed for the geometric (such as lane width, on/off ramp travel lane lengths) and physical (such as bridge girder locations, shoulder widths, and adjacent infrastructure) conditions. Consideration was given to projects

anticipated to be constructed that would eliminate some of the geometric and physical constraints experienced today.

In addition, consideration was given to equity concerns that would likely arise with the initial concepts and the extent that mitigation may be required. Therefore, the assessment also identifies initial equity and mitigation considerations.

Figure 3. Round 1 Evaluation Segments



Blank Page

3.2 Concept 1 – Baseline: No Tolls on Any Lanes or Roadways Along I-5 or I-205

Overview

Under Concept 1 – Baseline, significant congestion will exist in 2027 on the I-5 and I-205 study corridors, even with all the improvements listed in the Regional Transportation Plan. This congestion impacts not only speed, but also the number of vehicles that the facility can accommodate (throughput), with consequential impacts upon quality of life, economic vitality, and vehicle emissions in the region.

Traffic Operations

- Hyper-congestion in the Concept 1 – Baseline is currently occurring on widespread areas of I-5, and on a significant number of areas on I-205 in the morning peak, the afternoon peak, or both depending on the location. This means that, especially on I-5, many highway segments on the study corridors do not operate near their optimum throughput today or in forecast year 2027. It is likely that this will continue and worsen into the future.
- At optimum throughput, just prior to congested conditions setting in, a freeway carries about 1,900 to 2,200 vehicles per hour per lane. For example, existing traffic data reveals that on I-5 between Portland and the Columbia River, the average vehicle throughput per lane during peak periods is about 960 vehicles per lane per hour – approximately 50 percent of what would be expected if the freeway were functioning efficiently.
- Hyper-congestion also impacts speeds, which are averaging approximately 60 mph during off peak periods and drops to approximately 10 mph during peak periods.
- In the PM peak about 21% of trips on I-5 and 25% of trips on I-205 are 3 miles or less in length. Short trips on I-5 and I-205 in the study corridors that have viable alternative travel routes contribute to congestion experienced within the study corridors.

Capital and Operating Costs

- The capital and operational costs associated with Concept 1 – Baseline are already accounted for in the Regional Transportation Plan.

Geometric and Physical Constraints

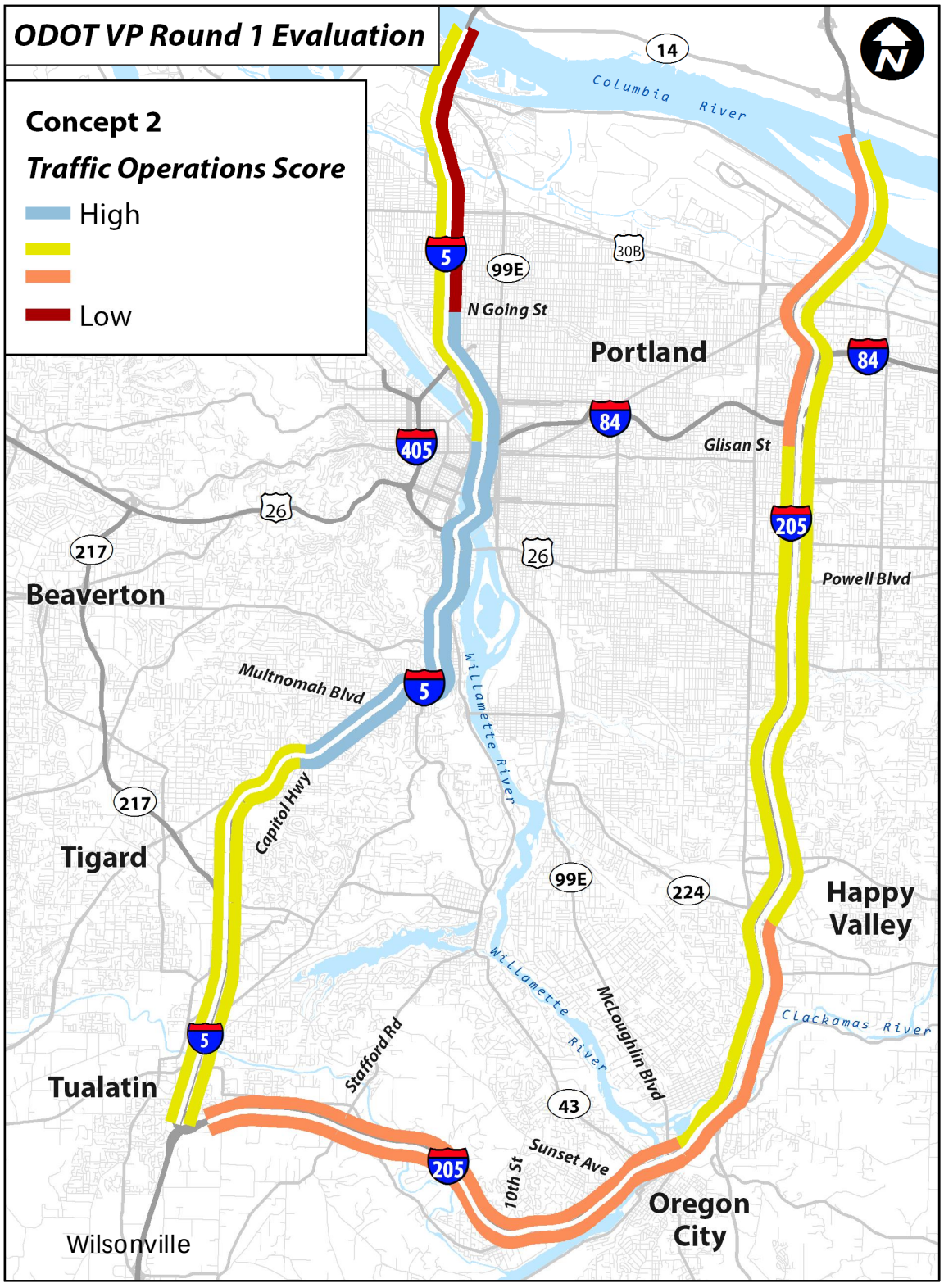
- Because Concept 1 – Baseline would not implement any pricing strategy, there are no new geometric or physical constraints. Geometric and physical constrains and challenges of implementation will be identified for the remaining concepts.

Equity and Mitigation

- Equity and mitigation are not considered for Concept 1 – Baseline. However, they will be considered for the remaining concepts for comparative purposes.

3.3 Concept 2 – Priced Roadway: Toll All Lanes on I-5 and I-205.

Figure 4. Concept 2 – Priced Roadway: Traffic Operations



Overview

Overall, Concept 2 – Priced Roadway, will reduce congestion for all travelers on the priced facility. This will produce overall improvement in travel time reliability and efficiency for all users of I-5 and I-205. The primary challenge, though, pertains to mandatory payment of the fee for all users of the facilities. That said, due to the high level of effectiveness, it may be possible to maintain lower toll rates and more non-tolled hours.

Traffic Operations

- Likely to provide the highest level of congestion relief of the initial pricing concepts examined.[9]
- Controls demand on all lanes and, therefore, allows the highest level of traffic management to maintain both relatively high speeds and relatively high throughput on both I-5 and I-205.
- Vehicles 10,000 pounds and more (such as many freight trucks and transit vehicles) would benefit from travel time improvements on the managed facilities.
- Pricing recovers lost functional capacity due to hyper-congestion, providing greater carrying volume with pricing than without. This means that diversion impacts may be minimal, but still warrant consideration and study.

Capital and Operating Costs

- This concept is relatively inexpensive to implement, and significantly less expensive than concepts that include substantial physical improvements to the pavement and bridge infrastructure. Capital cost would include the development of a back-office system to collect tolls as well as toll gantries along the tolled facilities.
- There will be additional ongoing operating costs necessary for collecting the tolls under this concept.
- Although this concept does not affect the overall corridor infrastructure footprint, some technology installations are required to properly assess and collect toll payments. Additionally, this concept is well suited to future infrastructure improvements, which would improve overall mobility.

Geometric and Physical Constraints

- Can be implemented without geometric and physical constraints being a factor.
- Will accommodate planned capital projects.

[9] Because of modeling limitations that became apparent during the round 1 evaluation, it is highly likely, based on experience in other areas of the country and existing counts on I-5 and I-205, that the significant congestion that exists today has significantly lowered vehicle throughput on significant portions of these facilities. This has resulted in a likely modeling overstatement of both diversion and reduction of vehicle throughput in the priced concepts. This has been considered in round 1 evaluation decisions, and will be modified in round 2. A further explanation of this phenomenon is given in the introduction to the Appendices.

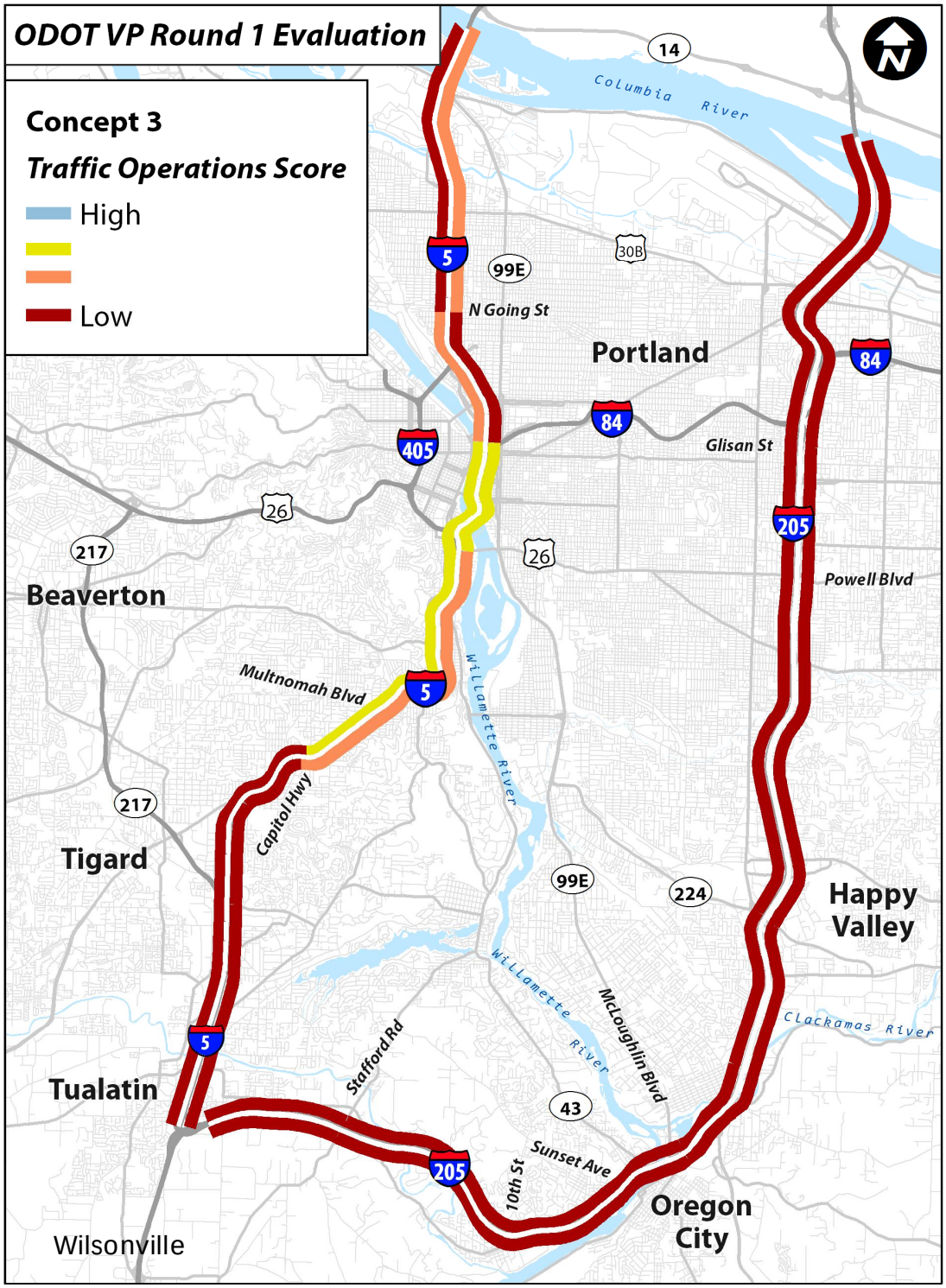
Equity and Mitigation

- There may be more opportunities for lower tolls or fewer tolled hours, thereby extending the benefits of congestion pricing more broadly.
- Because it does not include an unpriced lane option, priced roadways typically require significant mitigation efforts to mitigate impacts of increased out of pocket costs for low income populations.
- Although diversion may be minimal in aggregate, due to the recapture of lost functional capacity of the freeway system, localized level impacts could be significant.
- Would likely incur more revenues than other concepts; therefore, could potentially provide more funds to support mitigation strategies.

Blank Page

3.4 Concept 3 – Priced Lane Conversion: Convert One Existing General Purpose Lane on I-5 and I-205 to a Priced Lane in Each Travel Direction

Figure 5. Concept 3 – Priced Lane Conversion: Traffic Operations



Overview

Concept 3 – Priced Lane Conversion cannot be implemented in areas with fewer than three lanes. Access to only a single lane of a given type, priced or general purpose, would reduce capacity significantly as vehicles cannot freely maneuver between lanes. For a priced lane, this is offset by the ability to manage demand to maintain flow, which can usually be maintained between 1,400 to 1,500 vehicles per hour. This is higher than general purpose lanes under hyper-congested conditions and is, therefore, an improvement to the vehicle throughput of the overall facility. This is not true on the general purpose lanes where unmanaged demand, coupled with the reduced capacity of a single lane, can combine to produce extremely low flows even compared to existing hyper-congestion.

Traffic Operations

- Vehicle volumes on I-5 and I-205 decreased somewhat under this concept. Vehicle speeds increase in the converted priced lane.
- Vehicles 10,000 pounds and more (such as many freight trucks and transit vehicles) would not benefit from the mobility improvements because they are prohibited from operating in the left-most priced lane.[6]
- Person throughput may rise compared to the Baseline concept as the presence of a priced lane may attract carpools and increased transit use, depending upon pricing policies and use of revenue.
- Converting only one lane to a priced lane requires a lower overall throughput performance target, as the single lane is more sensitive to variations in traffic demand and must be able to absorb any shock from higher traffic volumes.

Capital and Operating Costs

- A single toll lane will have similar implementation costs to Concept 2 – Priced Roadway but will produce less revenue to compensate for costs. Capital cost would include the development of a back-office system to collect tolls, toll gantries along the tolled facilities, as well as lane restriping and signage improvements to delineate the tolled facilities.
- Capital expenditure compared to adding physical lanes will be relatively low.
- The capital expenditure may be somewhat less than the Priced Roadway concept as the gantries supporting the toll readers and their antennas for toll collection may not need to be as robust as when all lanes are tolled.
- Toll receipts from single lane express lanes tend to be significantly lower than those from facilities where two lanes are tolled.

Geometric and Physical Constraints

- The current configuration of the I-405 / I-5 interchanges are misaligned for continuous express (tolled) lane travel; therefore, this concept cannot be implemented in this segment without constructed changes to the roadway.
- Opportunities exist on I-205 for a single lane conversion in both directions without significant complication.

Equity and Mitigation

- As free general purpose lanes will be available the need for mitigation is not as significant as it is for the Priced Roadway concept. However, the need for mitigation still exists.
- Toll revenues available to supplement mitigation strategies would be considerably less than what may be available under Concept 2 – Priced Roadway.

Blank Page

3.5 Concept 4 – Priced Lane Construction: Construct a New Priced Lane on I-5 and I-205 in Each Travel Direction

Figure 6. Concept 4 – Priced Lane Construction: Traffic Operations

Overview

Concept 4 – Priced Lane Construct performs well from a traffic operations perspective because of the added third or fourth lane in each direction; however, it would be by far the most expensive to implement and in some cases the addition of a third or fourth lane would require considerable additional freeway and interchange construction, which could have a range of environmental or social impacts in some areas.

Traffic Operations

- From a traffic operations perspective, this option performs very well because the additional capacity provided by a new lane significant improves both vehicle throughput and travel speed. In addition, the ability to optimize traffic flow on the new lane due to pricing protects this capacity of the new lane from degrading over time.
- Vehicles 10,000 pounds and more (such as many freight trucks and transit vehicles) would not benefit from using the priced lane because they are prohibited from operating in the left-most priced lane.[6] However, all drivers would benefit from the added capacity overall, which would reduce demand for the general purpose lanes.
- While adding an additional lane could improve conditions on the study corridors, care must be taken that the facilities outside of the study corridors would not become significant bottlenecks due to the added lane being dropped at the study corridor boundaries. This is of particular concern for the Columbia River bridges, the I-84 interchanges with I-5 and I-205, and the junction of I-5 / I-205 south of Tigard.

Capital and Operating Costs

- Concept 4 – Priced Lane Construction is, by far, the most expensive. The capital expenditures to construct a new lane on I-5 and I-205 would be significant and would include the development of a back-office system to collect tolls, toll gantries along the tolled facilities, and lane restriping and signage improvements to delineate the tolled facilities.
- Experience from other areas of the country show that revenues from a single managed lane are traditionally low and would not be expected to repay the costs of all new construction required to build an additional lane.[10]

Geometric and Physical Constraints

- The physical constraints of adding a new lane are significant, particularly on I-5. Constraints primarily exist at interchanges, both with I-84 and I-405 as well as with arterial roadways where widening on a structure (overpass), or widening under the structure (underpass) becomes more difficult due to the physical constraints of existing infrastructure. While interchanges may have issues relating to exiting

[10] Note: Oregon Highway Plan Policy 6A states that "the use of tolling for financing the construction, operations and maintenance of new roads, bridges or dedicated lanes only if expected toll receipts will pay for an acceptable portion of the project costs." http://www.oregon.gov/ODOT/Planning/Documents/OHP.pdf

and entering traffic that can make the issue more complex, any overpass or underpass may present a physical constraint. This has implications for social and environmental impacts, and increases the cost of construction to a large degree.

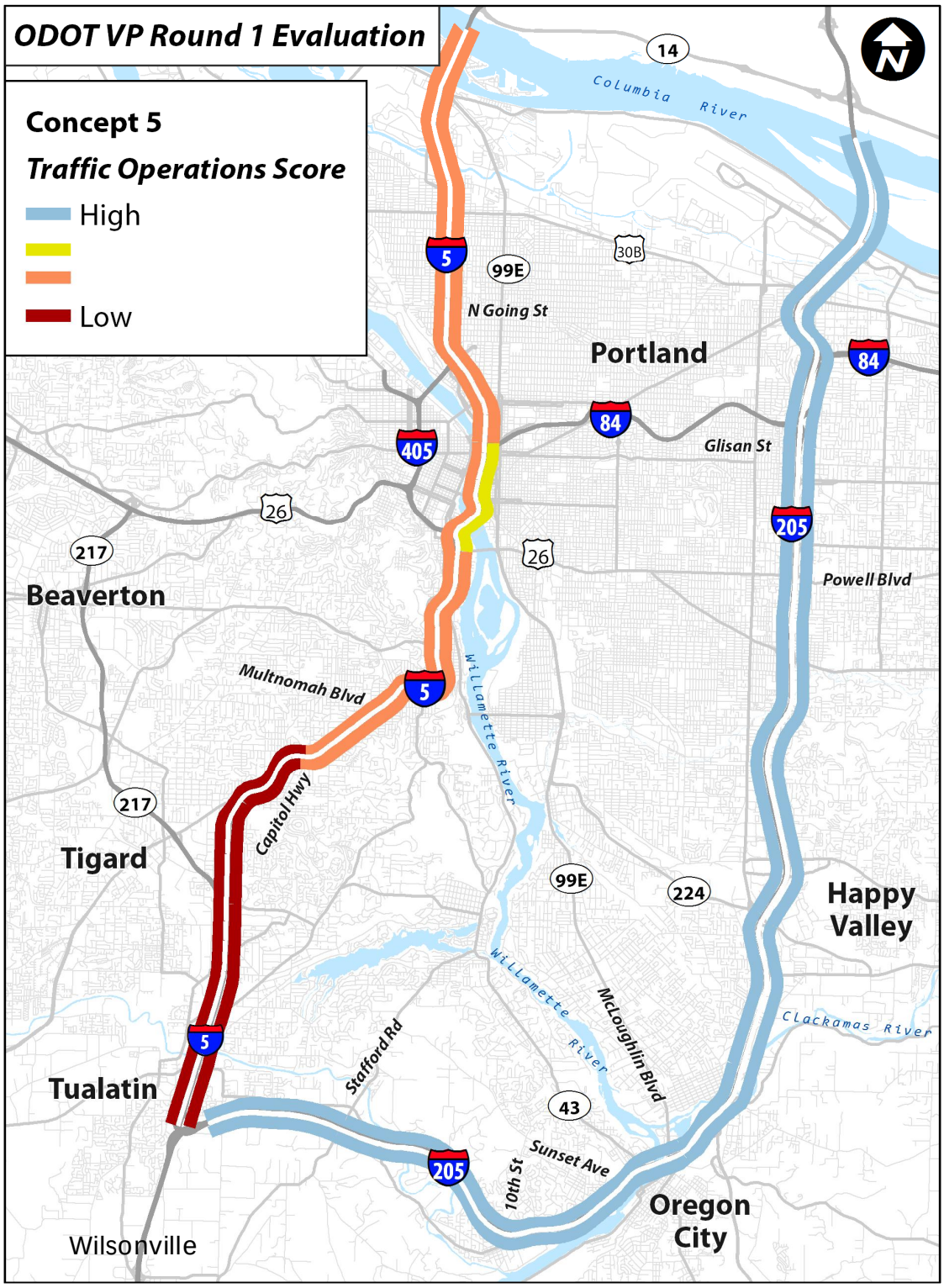
Equity and Mitigation

- Widening the freeways the entire length could have impacts on property and buildings in the urban areas, as well as potential impacts on community cohesion in particular areas. More detailed analysis of environmental and social impacts would occur in a future NEPA process (after December 2018).
- As all existing free general purpose lanes will remain available under this concept, the need for toll-related mitigation is substantially reduced. However, additional mitigation would be expected to address environmental and/or community impacts.

Blank Page

3.6 Concept 5 – Baseline (no pricing) on I-5 with Priced Lane Construction on I-205

Figure 7. Concept 5 – Traffic Operations



Overview

- Round 1 analysis shows significant improvements in both person/vehicle throughput and travel time on I-205. The additional throughput on I-205 does not appear to reduce traffic on I-5. Therefore, travel time savings on I-5 are minor.
- Traffic conditions on I-205 significantly improve due to the added capacity; however, the Round 1 analysis does not indicate a significant impact on I-5.
- Naturally, costs are significantly less compared with constructing lanes on both I-5 and I-205 but lane construction cost along all of I-205 would be very high.

Traffic Operations

- Vehicles 10,000 pounds and more (such as many freight trucks and transit vehicles) would not benefit from using the priced lane on I-205 because they are prohibited from operating in the left-most priced lane.[6] However, all drivers would benefit from the added capacity overall, which would reduce demand for the general purpose lanes.
- While adding an additional lane could improve conditions on I-205 within the study corridors, care must be taken that the facilities outside of the study corridors would not become significant bottlenecks due to the added lane being dropped at the study corridor boundaries.

Capital and Operations Costs

- While this concept is not as expensive to implement as Concept 4, it would have substantial costs. Capital costs include the development of a back-office system to collect tolls, toll gantries along the tolled facilities, and lane restriping and signage improvements to delineate the tolled facilities as well as capital expenditures to construct a new lane on I-205.[10]
- Revenue collection would be significantly less than would be experienced on the other concepts discussed previously.

Geometric and Physical constraints

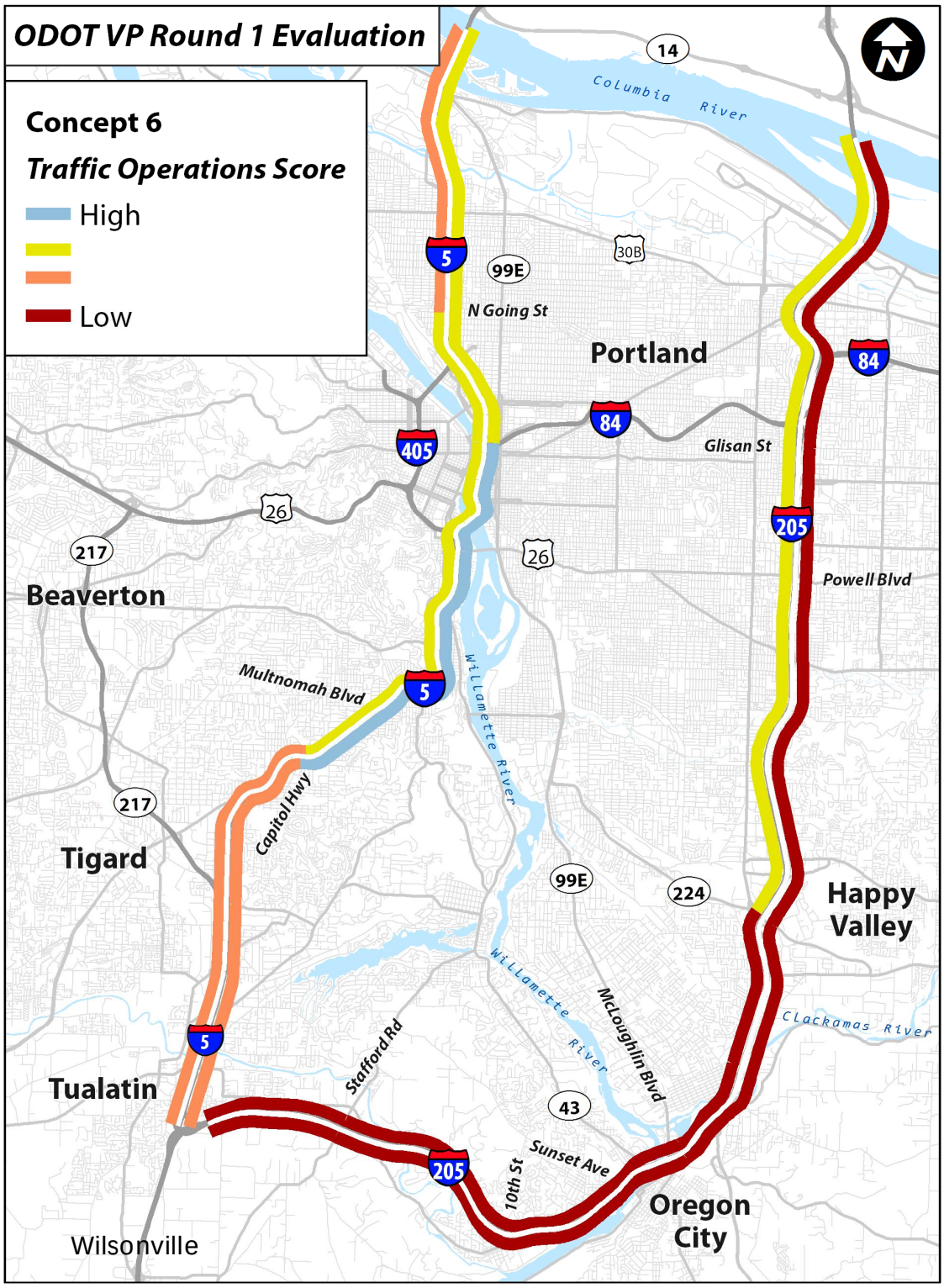
- Physical constraints are less on I-205 than on I-5; however, they do exist. Constraints primarily exist at interchanges, both with I-84 as well as with arterial roadways where widening on a structure (overpass), or widening under the structure (underpass) becomes more difficult due to the physical constraints of existing infrastructure. While interchanges may have issues relating to exiting and entering traffic that can make the issue more complex, any overpass or underpass may present a physical constraint.

Equity and Mitigation

- As all free general purpose lanes currently available on I-5 will remain, and only I-205 is impacted, the need for mitigation is reduced compared to options with tolling on two corridors. However, the need for mitigation still exists, and the mitigation is practically identical to that described under Concept 3 and Concept 4 on both I-5 and I-205.

3.7 Concept 6 – Priced Roadway on I-5 with Baseline (no pricing) on I-205

Figure 8. Concept 6 – Traffic Operations



Overview

- This likely is the lowest-cost concept considered and could effectively manage the most congested segments in the study corridor: I-5 through most of Portland.
- This is the only likely viable improvement through the downtown Portland area. Because of its effectiveness it is likely to bring significant congestion improvement to this area.
- The ability to manage traffic outside of the immediate downtown Portland area assists in overall improvement to the transportation system.
- Benefits would accrue to all users of I-5 including freight and transit.
- Mitigation will be needed because all lanes of I-5 will be tolled. That said, priced roadway concepts tend to generate significantly more revenue than priced lanes, providing more opportunity for other types of improvements or mitigations.

Traffic Operations

- The Round 1 analysis shows reduced throughput on I-5 during the peak period. The project team believes based on experience with tolled facilities around the country that I-5 would see traffic congestion relief. Overall, impacts and benefits on I-205 are expected to be relatively minor.
- Peak period travel time improves significantly on I-5. This is one of the indicators driving the relatively high performance of this concept on I-5.
- Benefits would accrue to all users of I-5 including freight and transit.

Capital and Operations Costs

- Implementing this concept is the least costly. Capital cost would include the development of a back-office system to collect tolls as well as toll gantries.

Geometric and Physical Constraints

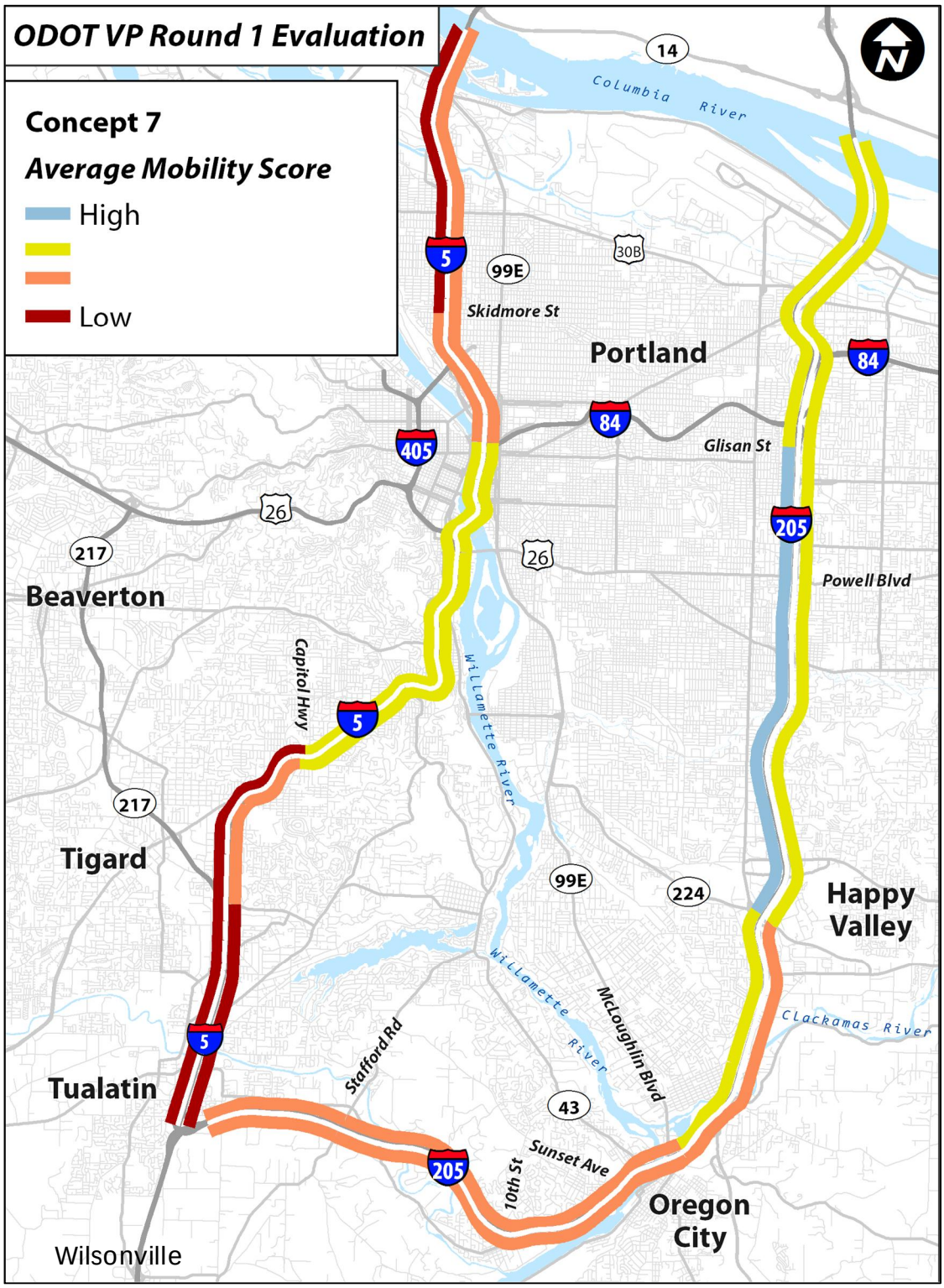
- The same conditions apply as that for Concept 2 - Priced Roadway. However, since I-205 would not be tolled under this concept, the already minor constraints to implementing the concept are less.

Equity and Mitigation

- While not all lanes on both I-5 and I-205 are tolled, tolling all lanes on I-5 will still require a significant level of mitigation as all drivers accessing I-5 in the Portland metropolitan area must pay a toll.
- As all lanes are tolled so all traffic on I-5 can be managed, the toll rates required to prevent congestion breakdown are less than they would be for vehicles paying a toll in a converted or single added lane concept.

3.8 Concept 7 – Priced Lane Conversion on I-5 with Priced Roadway on I-205

Figure 9. Concept 7 – Traffic Operations



Overview

- Converting a general purpose lane on some segments of I-5 is problematic due to geometrics and interactions with other area freeways.
- Round 1 analysis results show diversion from I-205 to multiple alternative routes.
- Capital expenditures would be relatively low under this initial pricing concept.

Traffic Operations

- As has been the pattern in a toll all lanes concept, during peak periods vehicle throughput on I-205 is reduced, but vehicle speeds increase.
- Vehicles 10,000 pounds and more (such as many freight trucks and transit vehicles) would not benefit from using the priced lane on I-5 because they are prohibited from operating in the left-most priced lane.[6] However, drivers of all vehicle types would benefit from the all lanes tolled concept element and travel speed increases on I-205.

Capital and Operations Costs

- For reasons previously discussed for the convert a lane and toll all lanes concepts, capital expenditures for this concept are relatively low. Capital cost would include the development of a back-office system to collect tolls, toll gantries along the tolled facilities, as well as lane restriping and signage improvements to delineate the tolled facilities.
- This concept would not collect as much revenue as an option that tolls both I-5 and I-205. The reduced toll collection would not offset the slight reduction of capital cost to implement the concept.

Geometric and Physical Constraints

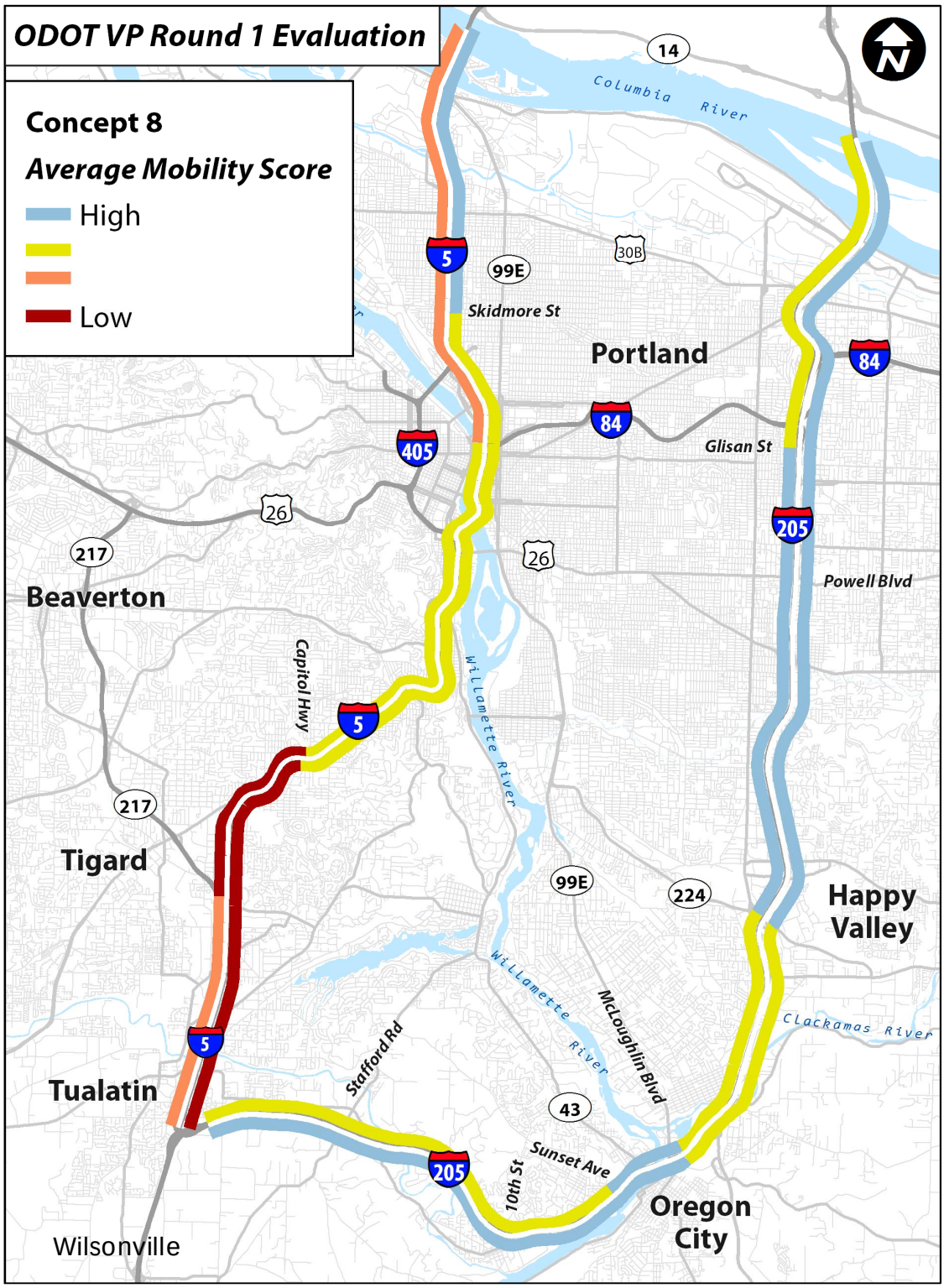
- Converting a general purpose lane on some segments of I-5 is problematic due to geometrics and interactions with other area freeways.
- Physical constraints do not have a significant effect on a toll all lanes concept on I-205.

Equity and Mitigation

- While not all lanes on I-5 and I-205 are tolled, tolling all lanes on I-205 will still require a significant level of mitigation as all drivers accessing I-205 in the Portland metropolitan area must pay a toll.

3.9 Concept 8 – Priced Lane Conversion on I-5 with Priced Lane Construction on I-205

Figure 10. Concept 8 – Traffic Operations



Overview

- Traffic conditions on I-205 significantly improve under this initial pricing concept.
- Converting a general purpose lane on some segments of I-5 is problematic due to geometrics and interactions with other area freeways.
- Costs are significantly less compared with constructing lanes on both I-5 and I-205.

Traffic Operations

- The improved performance on I-205 does not appear to reduce vehicle traffic on I-5. For this reason, travel time savings on I-5 are minor.
- While adding an additional lane could improve conditions on I-205 within the study corridor, care must be taken that the facilities outside of the study corridor would not become significant bottlenecks due to the added lane being dropped at the study corridor boundaries.
- Vehicles 10,000 pounds and more (such as many freight trucks and transit vehicles) would not benefit from using the priced lane on I-5 because they are prohibited from operating in the left-most priced lane.[6] However, all drivers would benefit from the added capacity on I-205, which would reduce demand for the general purpose lanes.

Capital and Operations Costs

- As a lane is only being added to I-205 under this initial pricing concept, the capital cost is less than if lanes were constructed on both I-5 and I-205 However, this will still result in a significant capital expense.
- Capital cost would include the construction of a lane, development of a back-office system to collect tolls, toll gantries along the tolled facilities, as well as lane restriping and signage improvements to delineate the tolled facilities.
- Revenue collection would be significantly less than would be experienced on the other concepts.

Geometric and Physical Constraints

- Physical constraints are less on I-205 than on I-5, though they exist near interchanges, overpasses, and in urban areas or where topography is steep.

Equity and Mitigation

- All toll-free general purpose lanes available currently on I-205 will remain available under this initial pricing concept. There is a general purpose lane converted to tolling on I-5, so the need for mitigation is again less than some concepts, but still exists. Mitigation findings are similar to Concept 4.
- Widening I-205 the entire length could have impacts on property and buildings in the urban areas, as well as potential impacts on community cohesion in particular areas. More detailed analysis of environmental and social impacts would occur in a future NEPA process (after December 2018).

4 ROUND 1 EVALUATION RESULTS: PROJECT TEAM RECOMMENDATIONS

Informed by the evaluation and public input on the initial concepts, as well as project team experience with congestion pricing systems throughout the US, the project team identified five pricing concepts to move forward into the round 2 technical evaluation and future public outreach. The concepts define the pricing strategy and the location. The project team chose these concepts for their ability to address congestion issues on I-5 and I-205 and their ability to examine differing types of strategies in addressing different congestion related issues. It is possible that other strategies may be implemented in the Portland metropolitan area in the future. The five concepts identified here provide the best look at the potential for tolling options to be developed in the Portland metropolitan area. The concepts below are not presented in any rank or order.

4.1 Round 2 Concept A: Northern I-5 Priced Lanes

Round 2 Concept A would place tolls on the existing HOV lane from south of the Martin Luther King Jr. Boulevard/Marine Drive/Delta Park interchange to the Going Street/Alberta Street interchange in north Portland to allow single-occupancy vehicles to access the HOV lane. It would also convert the leftmost southbound general purpose lane to a priced lane along the same segment. This project would allow this widely used strategy in the US to be examined in the Portland metropolitan area.

For evaluation purposes, this round 2 evaluation concept assumes that both the northbound and southbound priced lane projects would be completed. However, if this concept is recommended for implementation, future analysis may determine a two-phased project implementation approach.

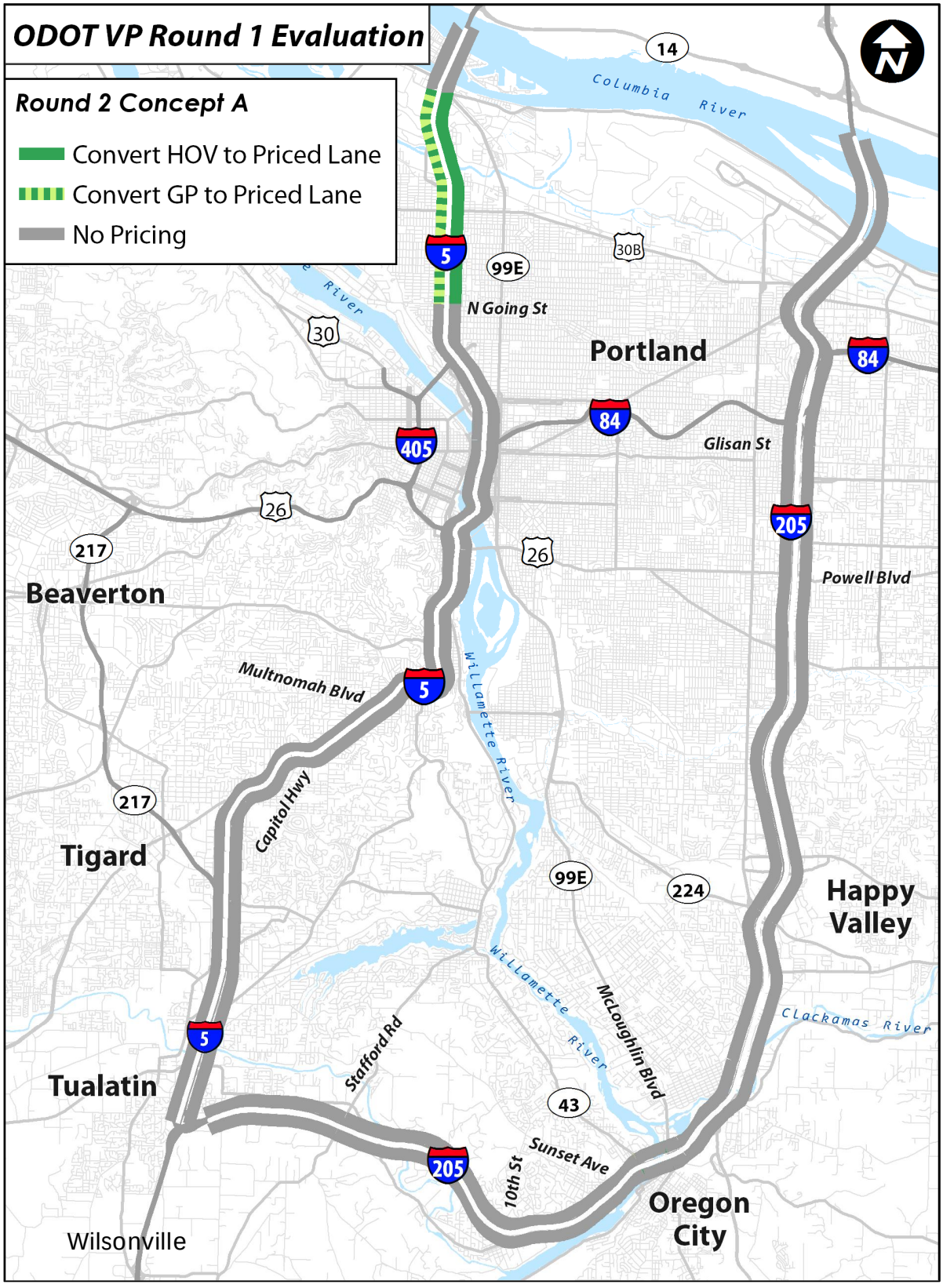
Key reasons this concept was chosen:

- The conversion of the northbound HOV lane can be implemented more quickly than any of the other round 2 evaluation concepts because it requires minimal federal approval (northbound HOV lane conversion only).
- Congestion on the segment of I-5 is significant.
- This would be the least expensive Round 2 concepts to implement.

Key topics to consider during the round 2 evaluation or later:

- Current HOV performance.
- Number of occupants to be allowed in the priced lane for free or reduced toll.
- Diversion to OR99E and other roadways adjacent to the tolled facility.
- Requirements of federal regulations and NEPA.

Figure 11. Round 2 Concept A: Northern I-5 Priced Lanes



4.2 Round 2 Concept B: I-5 Toll All Lanes between Going St./Alberta St. and Multnomah Blvd.

Round 2 Concept B would toll all lanes on I-5 in and near downtown Portland between the Going Street/Alberta Street interchange to the north and the Multnomah Boulevard interchange to the south. Traffic flow in this area is perhaps the most problematic of the corridors. Other priced lane options that were considered have significant viability and operational limitations, including cost prohibitive construction and limitations for freight benefits. This is also a relatively low cost type of project to implement. For these reasons, the roadway toll in this segment should be examined to address this major congested corridor.

Key reasons this concept was chosen:

- This is a key area of traffic concern, but it has a very limited number of potential solutions to improve traffic flow without significant and impactful capital construction.
- This round 2 concept provides the possibility of developing a revenue source for improvements in this section of freeway.
- Congestion in this area of I-5 is among the most severe in the Portland metropolitan area.

Key topics to consider during the round 2 evaluation or later:

- Diversion to the Lloyd District, I-405 and Grand Ave/Martin Luther King, Jr. Blvd.
- Mode shift to transit.
- Equity impacts and potential mitigation measures.
- Requirements of federal regulations and NEPA.

Figure 12. Round 2 Concept B: I-5 Toll All Lanes between Going St./Alberta St. and Multnomah Blvd.

4.3 Round 2 Concept C: Priced Roadway – Toll All Lanes

Round 2 Concept C would toll all lanes of I-5 and I-205 within the study corridors from the state line to the merge of I-5 and I-205.

Key reasons this concept was chosen:

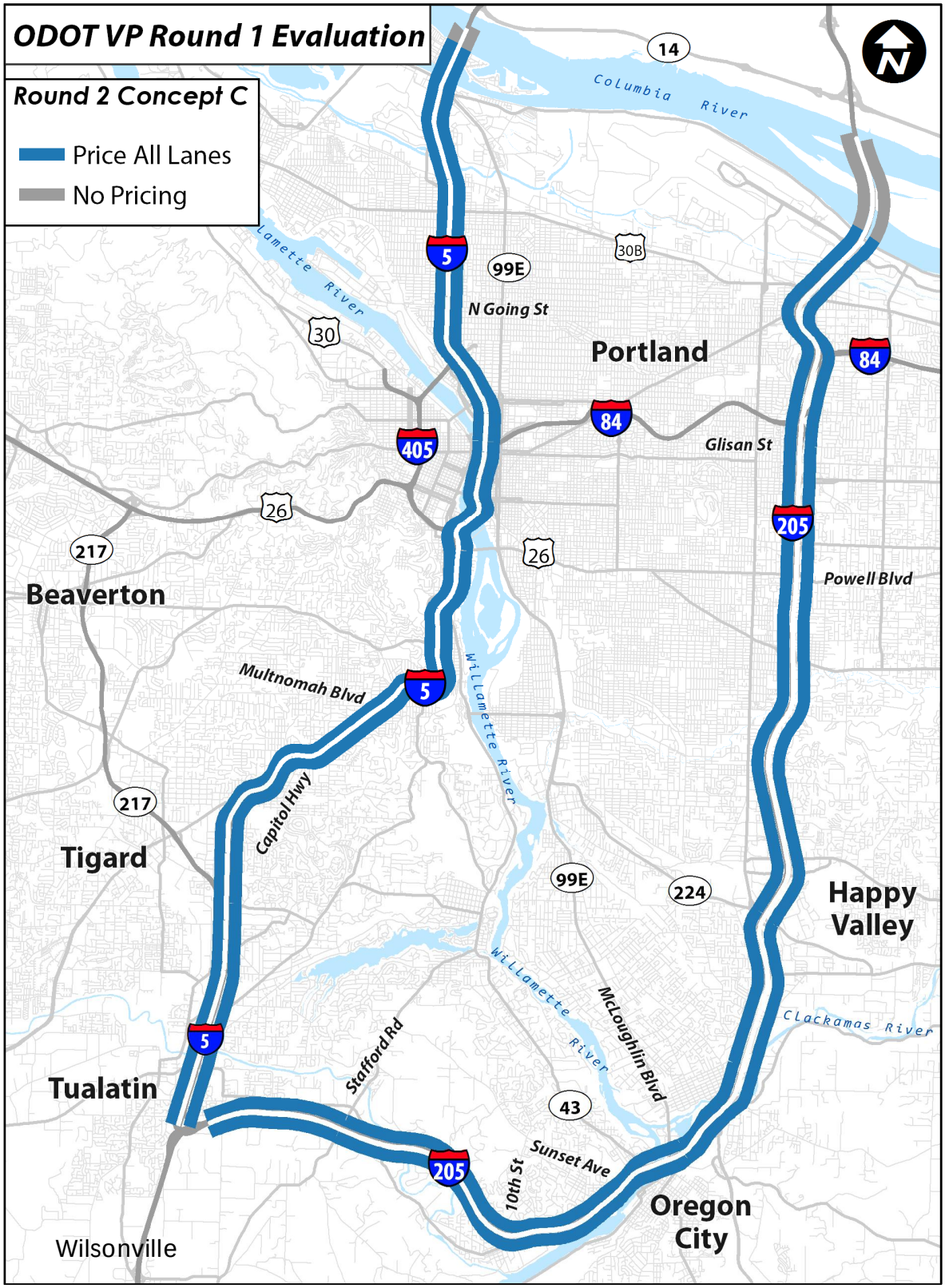
This alternative provides significant congestion relief as it maximizes the ability to manage traffic efficiency on north-south freeways the length of the entire region.

- This alternative is likely to raise the most revenue that could be used to improve geometric conditions on area roadways, and could provide capital revenue for transit projects on the roadways, or other mitigation measures.
- Compared to the expense of adding new roadway lanes, this alternative is relatively inexpensive to implement.
- As described in the evaluation, the Priced Roadway – Toll All Lanes initial concept was the most effective at reducing congestion. It also would likely result in the highest net revenue. As such this concept may have the most opportunity for tolling during congested times of the day while providing the most funding toward mitigation strategies.

Key topics to consider during the round 2 evaluation or later:

- Diversion to roadways adjacent to the tolled facilities.
- Impacts on I-84, I-405 and the Boone Bridge over the Willamette River in Wilsonville, Oregon.
- The option to only impose tolls during congested periods (allowing for un-tolled times).
- Requirements of federal regulations and NEPA.
- Equity impacts and potential mitigation measures.

Figure 13. Refined Concept C: Priced Roadway – Toll All Lanes



4.4 Round 2 Concept D: I-205 Priced Lane – OR99E to Stafford Rd.

Round 2 Concept D proposes that a third general purpose lane in each direction on I-205 between the OR99E interchange and the Stafford Road interchange be converted to a priced lane and that the new lane planned to be constructed by 2027 in both directions between Stafford Road through the Abernethy Bridge be constructed as this priced lane. This concept will examine the feasibility of accelerating planned project schedules by using toll revenue.

Key reasons this concept was chosen:

- It removes a two-lane bottleneck that has three-lane cross sections on both ends of the concept.
- It may provide additional revenue that may allow a needed infrastructure project to be significantly accelerated.
- It has the potential to resolve congestion issues that exist in the southern corridor.

Key topics to consider during the round 2 evaluation or later:

- Diversion to roadways adjacent to the tolled facilities.
- Requirements of federal regulations and NEPA.
- Operational effects on I-5.

Figure 14. Round 2 Concept D: I-205 Priced Lane – OR99E to Stafford Rd.

4.5 Round 2 Concept E: Abernethy Bridge Priced Roadway

This concept was identified to address a funding need for a planned congestion-relief project – a third lane on I-205 between Stafford Road and the Abernethy Bridge, including the Abernethy Bridge widening itself. The evaluation of the priced lane conversion concept in this location (Initial Concept 3) showed that the planned third lane is expected to achieve improved traffic operations. For this reason, a priced lane in this vicinity (Round 2 Concept D) is included for Round 2 analysis.

However, experience with other congestion pricing projects in the US has shown that a single priced lane of this length would not be expected to generate sufficient revenue to pay for the Stafford Road to Abernethy Bridge Widening project. Concept E was identified as a strategy to address this bottleneck by generating net revenues to fund construction. While the emphasis of the Value Pricing Feasibility Analysis has been congestion pricing, the inclusion of Concept E as a revenue strategy is consistent with the PAC Charter because it considers how to fund a congestion-relief project through pricing. It also is consistent with the direction of House Bill 2017, Section 120.

Round 2 Concept E was identified as a strategy to address the two-lane bottleneck on I-205 by tolling all lanes of I-205 on the Abernethy Bridge. This concept will examine the feasibility of providing funding for the Abernethy Bridge reconstruction project by using toll revenue.

Key reasons this concept was chosen:

- Without net funding from tolling, this known bottleneck and regional priority project could not be built. This concept will examine the viability of tolling as a funding source at this location for a planned project.
- This bridge toll project would enable the removal of a two-lane bottleneck at the Abernethy Bridge to improve traffic operations and reduce vehicle crashes.
- It could accelerate implementation of seismic upgrades to the Abernethy Bridge.
- It provides additional revenue that may allow a needed infrastructure project to be significantly accelerated.
- It has the potential to resolve congestion issues that exist in the southern corridor.

Key topics to consider in Round 2 evaluation or later:

- Diversion to roadways adjacent to the tolled facilities.
- Requirements of federal regulations and NEPA.
- Anticipated revenue potential to support the construction of the I-205 widening project.
- Operational effects on I-205.

Figure 15. Refined Concept E: Abernethy Bridge Priced Roadway

5 POTENTIAL REFINEMENT OF ROUND 2 CONCEPTS

As presented, the Round 2 evaluation concepts A through E are standalone congestion management strategies. However, the Policy Advisory Committee may wish to consider a recommendation to implement two or more of the concepts together as a larger strategy to address multiple congestion issues on I-5 and I-205. For instance, Concept A – Northern I-5 Priced Lanes could be implemented with Concept D – I-205 Priced Lane on I-205 between OR99E and Stafford Road. All the Round 2 concepts or any combination of them, aside from Concept C – Priced Roadway (I-5 and I-205), could be implemented as a regional approach to congestion management. If two or more concepts were implemented, the operational benefits and impacts would be different than if only one concept is implemented. Additional analysis would be required to determine whether the effect of combining multiple Round 2 concepts would be positive or negative.