

CITY COUNCIL MEETING MINUTES

Vancouver City Hall – Council Chambers – 415 W. 6th Street
PO Box 1995 – Vancouver, Washington 98668-1995

www.cityofvancouver.us

Anne McEnerny-Ogle, Mayor

Bart Hansen · Bill Turlay · Alishia Topper · Ty Stober · Linda Glover · Laurie Lebowsky

June 4, 2018

WORKSHOPS (City Council Chambers)

Councilmember Stober was absent from workshops.

5:00-5:45 p.m. JOINT TRANSPORTATION BENEFIT DISTRICT SESSION: 2019-2024 TRANSPORTATION IMPROVEMENT PROGRAM (TIP)

Council met with Chris Malone, Public Works Finance & Asset Management Manager.

Summary

Council, sitting jointly as the Vancouver Transportation Benefit District Board of Directors, received an overview of the proposed 2019-2024 Transportation Improvement Program. (Chris Malone, 487-7711)

COUNCIL DINNER/ADMINISTRATIVE UPDATES

Birch Conference Room – 5:45-7:00 p.m.

COUNCIL REGULAR MEETING (City Council Chambers)

PLEDGE OF ALLEGIANCE

CALL TO ORDER AND ROLL CALL

The regular meeting of the Vancouver City Council was called to order at 7 p.m. by Mayor Anne McEnerny-Ogle in the Council Chambers of City Hall, 415 W. 6th Street, Vancouver, Washington.

Present: Councilmembers Lebowsky, Glover, Stober, Topper, Turlay, Hansen, Mayor McEnerny-Ogle

Absent: None

APPROVAL OF MINUTES OF MAY 14, 2018

Motion by Councilmember Hansen, seconded by Councilmember Topper, and carried unanimously to approve the meeting minutes of May 14, 2018.

APPROVAL OF MINUTES OF MAY 21, 2018

Motion by Councilmember Stober, seconded by Councilmember Glover, and carried unanimously to approve the meeting minutes of May 21, 2018. Councilmembers Topper and Turlay abstained.

PROCLAMATION: GET OUTDOORS DAY & GREAT OUTDOORS MONTH

Mayor McEnerny-Ogle read and presented a proclamation to Tracy Fortmann, Superintendent of the Fort Vancouver National Historic Site, Tracie Calizon, representing the Gifford Pinchot National Forest, and Smokey Bear proclaiming June 9, 2018, as Get Outdoors Day and June 2018 as Great Outdoors Month.

CITIZEN COMMUNICATION (ITEMS 1-9)

Mayor McEnerny-Ogle opened Citizen Communication and received the following testimony:

- Mary Elkin, representing the Image Neighborhood Association, spoke in support of Item 4, thanking the City for its efforts in working toward lowering the speed limit in her neighborhood. She expressed concerns that the traffic calming grant the neighborhood association had been awarded from the Neighborhood Traffic Safety Alliance (NTSA) would need to be delayed in order to coordinate with the City's 2019 paving schedule.
- Peggy Anderson, representing the Evergreen Shores Neighborhood Association, spoke in support of Item 4 and the lowering of the speed limit along Evergreen Blvd.
- Sharie York, Battle Ground, Washington, expressed concerns about an item in the proposed supplemental budget under Item 7 that would transfer a parking enforcement position from the Parking program to the police department.

There being no further testimony, Mayor McEnerny-Ogle closed Citizen Communication. Mayor McEnerny-Ogle requested staff respond to the concerns expressed under Citizen Communication.

Ryan Lopossa, Streets & Transportation Manager, explained that there should have been better syncing of the City's paving schedule with the Image Neighborhood's traffic calming project, and stated he would explore how the actual speed reduction in that neighborhood could happen sooner before the traffic calming project is implemented.

Natasha Ramras, Chief Financial Officer, explained that the supplemental budget proposal includes the addition of a Police Service Technician, and that neighborhood parking enforcement would be a part of that position's duties. She explained that currently the parking program has never made enough revenue in order to fully support the position and that it has been supplemented by the General Budget even though it has historically been a part of an enterprise fund that is supposed to be self-supporting.

She noted that the parking program would not be losing a position, but rather the position would be redirected to support parking enforcement downtown instead of in the neighborhoods.

CONSENT AGENDA (ITEMS 1-9)

Motion by Councilmember Hansen, seconded by Councilmember Stober, and carried unanimously to approve the Consent Agenda.

1. BID AWARD FOR 2018 BONDED WEARING COURSE PROJECT, PER BID #18-11

(Staff Report 076-18)

Summary

On May 8, 2018, the City received two bids for the 2018 Bonded Wearing Course Project. The bids ranged from \$680,667.00 to \$899,899.00. The low bidder was responsive.

SUMMARY OF BIDS	
BIDDER	AMOUNT
Telfer Pavement Technologies, McClellan, CA	\$680,667.00
Granite Construction Company, Vancouver, WA	\$899,899.00
Engineers' Estimate	\$600,000 to \$700,000

An apprenticeship goal of 3% was required in the solicitation. Telfer Pavement Technologies indicated they would meet or exceed the goal, hiring at least one apprentice for each occupation on this project, including Construction Laborers, Equipment Operators, and Traffic Control Strippers.

Motion awarded a construction contract for the 2018 Bonded Wearing Course Project to the lowest responsive and responsible bidder, Telfer Pavement Technologies, of McClellan, California, at their bid price of \$680,667.00, which includes Washington State sales tax, and authorized the City Manager or designee to execute the same. *(Chris Sneider, Pavement Manager, 487-8239)*

2. BID AWARD FOR 2018 JOINT AGENCY SLURRY SEAL PROJECT, PER BID #18-7

(Staff Report 077-18)

Summary

City of Vancouver, Clark County, City of Camas, and City of Washougal have solicited a joint bid for each agency's 2018 slurry seal project. Each agency will execute a separate contract for their part of the work.

On April 3, 2018, the City received five bids for the 2018 Joint Agency Slurry Seal Project. The bids ranged from \$839,131.00 to \$1,263,000.00. The low bidder was responsive. The estimated 2018 City of Vancouver part of the work is \$412,180.00.

SUMMARY OF BIDS		
BIDDER	VANCOUVER'S BID	COMBINED BIDS
<i>Blackline, Inc., Vancouver, WA</i>	<i>\$412,180.00</i>	<i>\$839,131.00</i>
<i>Intermountain Slurry Seal, Vancouver, WA</i>	<i>\$464,186.00</i>	<i>\$948,948.00</i>
<i>California Pavement Maintenance Co, Sacramento, CA</i>	<i>\$453,820.00</i>	<i>\$979,245.00</i>
<i>Telfer Pavement Technologies, McClellan, CA</i>	<i>\$478,640.00</i>	<i>\$1,084,175.00</i>
<i>VSS International, W. Sacramento, CA</i>	<i>\$623,369.50</i>	<i>\$1,263,000.00</i>
<i>Engineers' Estimate</i>	<i>\$483,600.00</i>	<i>\$971,120.00</i>

The bid amount of \$412,180, which covers the City's portion of the cost, is below the \$500,000 threshold requirement set for apprenticeship utilization goals. No apprenticeship utilization goals are required for this project.

Motion awarded a construction contract for Vancouver's portion of the work of the 2018 Joint Agency Slurry Seal Project to the lowest responsive and responsible bidder, Blackline, Inc, of Vancouver, Washington, at their bid price of \$412,180.00, which includes Washington State sales tax, and authorized the City Manager or designee to execute the same. *(Chris Sneider, Pavement Manager, 487-8239)*

3. BID AWARD FOR 2018 RESURFACING PROJECT, PER BID #18-10 (Staff Report 078-18)

Summary

The 2018 Resurfacing Project is being constructed as part of the Pavement Management program. This project involves paving with hot mix asphalt on corridors and residential streets at various locations throughout the city. The attached vicinity map shows where streets will get paved. Corridors include NE 54th Street, 6th Street, and Evergreen Highway. Neighborhoods that have some residential streets that are getting paved include Lincoln, Hough, Arnada, Esther Short, Riverview, Burton Ridge, and Burton Evergreen.

On May 16, 2017 the City received two bids for the subject project. The bids ranged from \$3.6 to \$3.8 million dollars. The low bidder was responsive. The bids are as follows:

SUMMARY OF BIDS	
BIDDER	AMOUNT
<i>Tapani Inc., Battle Ground, WA</i>	<i>\$3,609,063.50</i>

Lakeside Industries Inc., Vancouver, WA	\$3,683,439.59
Granite Construction Company, Vancouver, WA	\$3,791,791.00
Engineers' Estimate	\$3,800,000.00

An apprenticeship goal of 5% was required in the solicitation with Tapani, Inc. indicating they would meet the goal through the use of Laborers from the Joint Apprenticeship and Training Committee and the Northwest College of Construction, which are Washington State approved apprenticeship programs.

Motion awarded a construction contract for the 2018 Resurfacing Project to the lowest responsive and responsible bidder, Tapani Inc, of Battle Ground, Washington, at their bid price of \$3,609,063.50, which includes Washington State sales tax, and authorized the City Manager or designee to execute the same. (Chris Sneider, Pavement Manager, 487-8239))

4. REDUCTION OF POSTED SPEED LIMITS ALONG SEGMENTS OF EAST EVERGREEN BLVD., SE SHOREWOOD DRIVE, SE EVERGREEN HIGHWAY, NE 39TH STREET, AND MAIN STREET
(Staff Report 079-18)

A RESOLUTION relating to traffic and establishing new speed limits along six sections of City streets including E Evergreen Boulevard, SE Shorewood Drive, SE Evergreen Highway, NE 39th Street, and Main Street.

Summary

E. Evergreen Boulevard/SE Shorewood Drive

Currently E. Evergreen Boulevard has a posted speed limit of 25 MPH from downtown Vancouver to approximately 470 feet east of N. Blandford Drive. From 470 feet east of N. Blandford Drive to SE Shorewood Drive it is posted 35 MPH. Currently SE Shorewood Drive from E. Evergreen Boulevard to Riverside Drive it is posted 35 MPH. These speed limits will be lowered to 25 MPH in an effort to provide consistency.

SE Evergreen Highway

The Evergreen Corridor Management Strategy (CMS) was adopted by the Vancouver City Council in October of 2016. The CMS was developed to provide guidance, direction and documentation for future decisions and actions along SE Evergreen Highway. The development of the strategy included an extensive public outreach process, roadway resurfacing options analysis, and a traffic safety analysis.

Following the resurfacing that occurred in 2017 and the resurfacing planned for 2018-2019, a majority of the corridor will have a resurfaced roadway. As identified in the CMS and subsequent public outreach process, improvements in the corridor roadway surface may lead to an increase in driver speed, which is already high in this corridor. To mitigate for this condition, the City will install traffic calming measures along the corridor and will lower the posted speed limit to 25 MPH (between SE Chelsea Avenue and SE Ellsworth Road) and 35 MPH (between SE Ellsworth Road and the east City Limits).

NE 39th Street

A project proposal was submitted through the City's 2017 Traffic Calming Program to reduce the speed limit on NE 39th Street. A petition process was completed per the program requirements and simple majority approval was met for the proposed speed reduction and traffic calming. Traffic calming will be installed to reduce driver speeds to the proposed speed limit of 25 MPH.

Main Street

Main Street is currently posted 25 MPH. There has been a notable increase in the level of business activity along this corridor, coupled with increases in vehicular traffic and pedestrian volumes. Staff have met with representatives of the Uptown Business Association and the Vancouver Downtown Association who concur with the proposal to lower the speed limit to 20 MPH. Main Street is within a business district, therefore it qualifies for a speed posting of 20 MPH.

Motion adopted Resolution M-3968 establishing of the following speed limits in the following areas:

- 25 MPH on E Evergreen Boulevard between 470 feet east of N Blandford Drive to SE Shorewood Drive
- 25 MPH on SE Shorewood Rive between E Evergreen Boulevard to SE Riverside Drive
- 25 MPH on SE Evergreen Highway between SE Chelsea Avenue and SE Ellsworth Road
- 30 MPH on SE Evergreen Highway between SE Ellsworth Road to the east Vancouver city limits
- 25 MPH on NE 39th Street between NE 122nd Avenue to NE 138th Avenue; and
- 20 MPH on Main Street between W 5th Street to Fourth Plain Boulevard.

(Chris Christofferson, Traffic Engineering Manager, 487-7716)

5. PARTIAL EASEMENT RELEASE FOR 192ND AVE. STATION

(Staff Report 080-18)

Summary

The portion of the water easement being requested for vacation was recorded with the site's Final Short Plat. A water main was never constructed in the portion of the easement being requested for vacation. This was due to a change in the site layout design prior to the beginning of any construction activity. Thus, the City has no need for this portion of the easement and staff recommends granting the release of the easement.

Motion authorized the City Manager or his designee to sign the easement release. *(Tracy Tuntland, Water Engineering Supervisor, 487-7166)*

6. SHORT-TERM LEASE WITH COMMUNITY SERVICES NORTHWEST

(Staff Report 081-18)

Summary

Community Services Northwest is currently building a facility to house the staff for their new programs; however, the building is not yet ready for occupancy. Their goal is to be able to move into the new

building and begin providing services in these new programs immediately. In order to get their staff trained for these new programs, they were in need of some temporary space to train 20 new staff members.

Because Community Services Northwest has a facility currently located at Town Plaza, it was determined that some adjacent space that was not currently being utilized would be a great fit to train their staff in these new programs. CSNW will be leasing an additional 1,461 square feet of space at Town Plaza for a period of 5.5 months. This will be at the same rate that they are paying for their current space at that location.

Motion approved the Lease Agreement between City of Vancouver and Community Services Northwest and authorized City Manager or his designee to execute the Lease document. *(Linda Carlson, Property Management Specialist, 487-8243)*

7. 2018 FIRST SUPPLEMENTAL BUDGET
(Staff Report 082-18)

Mayor McEnerny-Ogle read the title of the ordinance into the record.

AN ORDINANCE relating to the 2017-2018 Biennial Budget and making various appropriations in various funds; eliminating a fund that is no longer needed; declaring an emergency and providing an effective date.

Summary

Each year, budget adjustments must be made to reflect changes in revenues and expenses that occur after the budget is adopted by City Council. These adjustments can generally be categorized into the following areas:

- *Corrections or administrative updates to the adopted 2017-2018 Biennial Budget.*
- *Activities and expenditures associated with new external revenues.*
- *New items funded with unobligated and undesignated funds.*

Budget amendments are recommended for the City's various funds as detailed in Attachment A of the Ordinance. The recommended expenditure appropriation adjustments for the City's Operating and Capital funds included in the 2018 First Supplemental Budget total \$10.6 million. Of the \$10.6 million expenditure increase, \$9.8 million is related to the Operating budget, and the remaining appropriation increase of \$0.8 million relates to changes in the Capital budget and supporting transfers. The net impact on all City resources is an addition of \$5.0 million to fund balances; the net impact on the General Fund is a \$0.7 million decrease to the fund balance.

The total Operating budget appropriation change in the General, Street and Fire (GSF) funds represents an increase of \$4.6 million. The remaining \$5.2 million increase relates to changes in other funds.

Appropriation adjustments in the City's GSF funds total increase of \$4.6 million include the following major items:

- *New initiative requests of \$3.9 million include:*
 - *Appropriation of \$0.7 million for salary contingency.*
 - *Appropriation of \$0.6 million for the homeless day center improvements expected at the newly acquired Grand Blvd property, all of which is offset by revenue.*
 - *Increased appropriation of \$0.5 million related to a property purchase for the future Operations Center redevelopment project in which General Fund is 40% owner.*
 - *Increased appropriation of \$0.5 million set aside for expected property repair & maintenance for the Tower Mall facility.*
 - *Increased appropriation of \$0.3 million to fund the replacement of the police department's records management system.*
 - *Appropriation in Community & Economic Development of \$0.2 million for downtown entryway improvements and \$0.2 million for the Heights Subarea planning to replace the current Tower Mall location.*
 - *Streets increased appropriation of \$0.1 million for contracted services for homeless encampment clean-up efforts.*
- *Cost neutral requests totaling \$0.7 million and funded by \$0.8 million in new external revenues:*
 - *Numerous grants in Police totaling \$0.5 million and in Fire for \$0.2 million.*
- *Administrative adjustments include:*
 - *An alignment of appropriation between Street fund 102 and Street Initiative fund 103 in the Pavement Management construction budget for more efficient tracking by the department*
 - *Updated appropriation for utility tax revenue increases to the General Fund.*

A total of \$10.7 million in appropriation increase relates to other operating city funds. Some of the major changes are summarized below:

- *Budget adjustment of \$5.6 million in the Streets Initiative Operating fund 103 offset by a reduction in fund 102.*
- *Additional appropriation of \$1.5 million in the Self Insurance Benefits fund to support increased benefit costs.*
- *Adjustment to the Tennis Center fund of \$1.0 million to support the transition through new ownership of operations to UTSA.*
- *Adjustment in the Risk Management Fund of \$0.6 million to cover higher than originally anticipated actuarial costs and claims activity.*

The total Capital Budget appropriation of \$0.8 million (including internal transfer reduction of \$1.0 million) is included in the First Supplemental of 2018. Specific amendments by project are outlined in Attachment C to the ordinance. Following are some of major projects included by functional area:

- *General/Facilities major capital projects totaling \$1.7 million include the following:*

- o *Fire Station 11 land and design appropriation of \$0.6 million fully funded by Fire District 5.*
 - o *Petlock building demolition site conversion into a parking lot for \$0.3 million.*
 - o *An appropriation of \$0.3 million for HVAC and entryway stair replacement in the Historic Museum fully funded by a Department of Commerce grant.*
 - o *Firstenburg Community Center pool resurfacing repair for \$0.3 million.*
- *Parks of \$1.9 million for the Waterfront Park and plaza work offset by developer contribution of \$1.0 million.*
- *Transportation project reduction totaling \$3.1 million include:*
 - o *A reduction of \$3.5 million in appropriation for the SE 1st St – 164th to 192nd Ave project due to timing; will be budgeted in the next biennium.*
 - o *Multimodal Safety and Accessibility project of \$0.2 million.*
- *Airport capital of \$0.6 million for the Pearson Airport runway project offset with grant funding.*
- *Parking fund capital of \$0.4 million for the installation of pay stations at the Waterfront.*
- *Historic Reserve projects of \$0.2 million for Evergreen trail asphalt replacement, additional street lights for the Officer's Row alley, and land bridge irrigation system repairs.*
- *Increased appropriation of \$1.5 million from General Fund reserves to put aside for the new future Operations Center redevelopment project.*

Attachment B of the ordinance outlines changes to FTEs. An increase of 4.25 FTEs is recommended in the First Supplemental of 2018, all of which are supported by external revenue or existing budget and are outlined below:

- *1.0 new 3-year limited-term Communications Coordinator position in the City Manager's Office.*
- *1.0 new Senior Construction Inspector in the Streets Pavement Management program in which will replace work currently being contracted out.*
- *1.0 new Police Service Technician for neighborhood parking enforcement.*
- *0.5 new 3-year limited-term Support Specialist in Parking to administer the court appeals process offset with a reduction in district court expenses in the general fund.*
- *0.25 increase to an existing position in the Human Resources department.*
- *0.5 new Support Specialist for Code Compliance*

Motion approved ordinance on first reading, setting date of second reading and public hearing on Monday, June 18, 2018. *(Natasha Ramras, Chief Financial Officer, 487-8484)*

8. APPOINTMENT TO THE HISTORIC PRESERVATION COMMISSION

Motion appointed Michelle Kapitanovich and reappointed Sean Denniston to the Clark County Historic Preservation Commission, terms beginning July 1, 2018, and expiring July 1, 2021.

9. APPROVAL OF CLAIM VOUCHERS

Motion approved claim vouchers for June 4, 2018, in the amount of \$11,258,421.54.

PUBLIC HEARINGS (ITEMS 10-11)

10. AMENDMENTS TO CITY CENTER REDEVELOPMENT AUTHORITY (CCRA) CHARTER & BYLAWS
(Staff Report 073-18)

Chad Eiken, Community & Economic Development Director, provided staff comments.

Mayor McEnerny-Ogle read the title of the ordinance into the record.

AN ORDINANCE relating to the City Center Redevelopment Authority approving certain Charter amendments; providing for savings, severability and an effective date.

Summary

The City Center Redevelopment Authority was created by the City Council in 2006 to oversee the implementation of the Vancouver City Center Vision plan (VCCV) area with respect to new development, as outlined in their charter and bylaws. The CCRA, which was specifically created as a separate legal entity, consists of finance, real estate, business, and development professionals who are appointed to four year terms by City Council.

Since the CCRA's formation, City Council has asked the CCRA to provide advice on a variety of matters pertaining to new development in the VCCV area, including: the effectiveness of the City's multi-family tax abatement program; consistency of proposed development agreements with adopted plans; advisability of public participation in private development projects; and assessing the quality of major new developments, including architectural design and materials, particularly in the Waterfront redevelopment area. The CCRA Board voted unanimously at its February 15, 2018, meeting to recommend approval to Council of proposed amendments to its charter and bylaws that specifically outline these duties, which the board has been performing for a number of years.

Any changes to the CCRA's charter and bylaws must be approved by City Council by ordinance following a public hearing.

Mr. Eiken provided an overview of the proposed updates.

Mayor McEnerny-Ogle opened the public hearing and, receiving no testimony, closed the public hearing.

Councilmember Topper noted that during the workshop on this topic, she had expressed some concerns and asked some questions about the potential for these amendments to add more bureaucracy to the development review process, but stated that after further research she understands that is not the case and these amendments will better define the work that is being done by the CCRA already.

Mayor McEnerny-Ogle asked what the CCRA's boundaries of authority are. Mr. Eiken stated they are the area laid out in the Vancouver City Center Vision plan, essentially the river to Fourth Plain Blvd to the north, and the BNSF railroad on the west to I-5 on the east.

Councilmember Stober asked if multifamily housing tax abatement projects along the Fourth Plain corridor would be brought under the CCRA purview with this action. Mr. Eiken stated they would not review specific projects, but would look at the overall effectiveness of the program in general.

Motion by Councilmember Topper, seconded by Councilmember Turlay, and carried unanimously to approve Ordinance M-4232. (*Chad Eiken, 487-7882*)

11. SE 5TH STREET RIGHT-OF-WAY VACATION
(Staff Report 049-18)

Mr. Lopossa provided staff comments.

Mayor McEnerny-Ogle read the title of the ordinance into the record.

AN ORDINANCE vacating a portion of the right-of-way associated with SE 5th Street located within the Northeast Quarter of Section 36, Township 2 North, Range 2 East, Willamette Meridian, City of Vancouver, Clark County, Washington; providing for an effective date.

Summary

Staff has received a request from Fore Property Company to vacate a portion of SE 5th Street, located between SE 164th and SE 166th Avenues. The right-of-way is specifically located within the Northeast Quarter of Section 36, Township 2 North, Range 2 East, Willamette Meridian.

The SE 5th Street right-of-way currently provides property access and public street connectivity between SE 164th Avenue and SE 166th Avenue. The west segment of SE 5th Street provides access to a medical clinic and apartments on the north, and a self-storage facility on the south. This segment of SE 5th Street will not be vacated, and will remain unchanged.

The segment of SE 5th Street right-of-way to be vacated begins approximately 250 feet east of 164th Avenue and extends approximately 365 feet westward to 166th Avenue. This right-of-way contains approximately 22 feet of paved roadway surface, sidewalk on the north side only, an 8-inch water main, and various stormwater conveyance structures near the intersection of 166th Avenue.

Two parcels adjoin the right-of-way to be vacated. The parcel on the north is owned by PYF LLC, and the parcel to the south is owned by the applicant. Pursuant to VMC 11.05.130, the property associated with a vacated street shall belong to the abutting property owners, one-half to each. However, PYF LLC has signed an agreement with the applicant, waiving all claim of interest in the right-of-way to be vacated and stipulating that the entirety of the vacated right-of-way be transferred to the applicant.

The pending development of the applicant's parcel (known as Mill Plain Apartments, currently under review by City staff) will construct a barricade at the dead-end of SE 5th Street created by this street vacation. The pending development will also include dedication of right-of-way and completion of SE 6th Street from the existing signalized intersection at SE 164th Avenue westward to SE 166th Avenue, and SE 166th Avenue will be completed from the SE 5th Street intersection southward to intersect with the new

extension of SE 6th Street. This connection will provide equivalent or improved street connectivity compared to what is currently provided by SE 5th Street. Additionally, the Fire Department has verified that emergency access to the various affected properties will not be adversely impacted by the proposed right-of-way vacation and street connectivity changes. Further, staff has reviewed the City's Transportation Systems Plan and determined there is no future need for this right-of-way. Therefore, vacation of this portion of SE 5th Street right-of-way will not have an adverse impact on the City's assets.

Staff has contacted all utility owners with facilities potentially located within the subject area. The City of Vancouver has utilities within the area of the proposed vacation, including a domestic water main and various stormwater conveyance structures near the intersection of 166th Avenue. Further, the City requires that the existing sidewalk on the north side of SE 5th Street remain in place to accommodate continued pedestrian needs. Therefore, the City will retain a 17-foot public utility and access easement under and over the vacated area for the construction, repair and maintenance of these remaining public utilities and services.

RCW 35.79.030 and VMC 11.05.120 stipulate provisions for the City to collect compensation for the value of public right-of-way that is vacated. An analysis of the County Assessor's records for properties in the immediate vicinity of the proposed SE 5th Street vacation area resulted in an estimated property value equal to \$10.48 per square foot. The total area of the proposed vacation is 11,822 square feet, with a resulting total estimated property value equal to \$123,895.

As previously noted, the applicant has agreed to provide full-width right-of-way dedication and construct full-width street improvements of SE 6th Street from the existing signalized intersection at SE 164th Avenue westward to SE 166th Avenue. The right-of-way dedication for SE 6th Street will total 27,075 square feet, with an associated estimated property value equal to \$283,746. The value of the resulting net gain of right-of-way yields a final value of approximately \$159,851 in favor of the City. Based on these circumstances and the investment being made by the applicant to the City's transportation infrastructure, staff recommends that no monetary compensation be required for the right-of-way vacation. All improvements noted herein shall be completed and approved by the City prior to the right-of-way vacation becoming effective.

Mr. Lopossa provided background information about the proposed vacation.

Mayor McEnerny-Ogle opened the public hearing and received the following testimony:

- Steve Horenstein, representing the applicant, spoke in support of the right-of-way vacation and stated that the project is financed and ready for construction and this vacation is the last requirement before that can start.

There being no further testimony, Mayor McEnerny-Ogle closed the public hearing.

Councilmember Lebowsky stated that she appreciated the project would maintain the pedestrian connections even though the right-of-way was being vacated.

Motion by Councilmember Topper, seconded by Councilmember Lebowsky, and carried unanimously to approve Ordinance M-4233. *(Ryan Lopossa, 487-7706)*

COMMUNICATIONS

- A. From the Council
- B. From the Mayor
- C. From the City Manager
 - a. *WSDOT SR500 Project Update*
 - b. *2018 Lodging Tax Allocation Process*
 - c. *Clark County Corrections Facility Update*

ADJOURNMENT

8:41 P.M.

Anne McEnery-Ogle, Mayor

Attest:

Natasha Ramras, City Clerk
By: Carrie Lewellen, Deputy City Clerk

Meetings of the Vancouver City Council are electronically recorded on audio and videotapes. The audio tapes are kept on file in the office of the City Clerk for a period of six years.



To request other formats, please contact:
City Manager's Office
(360) 487-8600 | WA Relay: 711
Amanda.Delapena@cityofvancouver.us

MEMORANDUM

DATE: June 11, 2018
TO: Vancouver City Council
FROM: Tim Schauer and Tim Leavitt, Co-Chairs, Vancouver Strong Executive Sponsors Council
RE: **Executive Sponsors Council Workplan Update and Recommendation for Replacement Revenue Sources for VPD funding**

The Vancouver Strong Executive Sponsors Council (ESC) continues to make progress on its work to develop for your review and consideration a long term, sustainable funding strategy that will ensure the future health and prosperity of our city by maintaining quality City services, improving our economy and creating opportunities for all residents.

The purpose of this memo is to request a timeline extension for presenting our final funding strategy recommendation, to deliver a recommendation for replacement revenue sources for Vancouver Police Department funding, and to provide a brief review of the Vancouver Strong initiative, our progress to date and the path forward.

TIMELINE EXTENSION

In February 2018, when the Vancouver Strong Mid-Point Report was provided to City Council, our goal was to present a proposed funding package for City services and capital improvements to City Council by May 2018. Since then, we have determined that additional time is needed to allow for a broad-based community engagement process and to place any elements in the package that would require voter approval on a future election ballot.

We appreciate the Council's concurrence with an extended timeline to deliver our comprehensive funding package recommendation for City service enhancements, capital investments, and policy adjustments to December 2018.

REPLACEMENT REVENUE FOR POLICE FUNDING

There is one aspect of the funding strategy that requires attention well before the end of the year: A recommendation to replace \$6.1 million for police services from a new indoor space license fee surcharge, currently set to go into effect on January 1, 2019.

For Council's review and consideration, our recommendation for replacement sources of revenue is outlined below.

RECOMMENDATION FOR POLICE FUNDING REPLACEMENT REVENUE

During our discussions, we have gained an appreciation of the complexity of the City as a service organization as well as a corporate entity. We have also come to appreciate the extreme difficulty of crafting a funding approach that balances a wide spectrum of competing interests in the community.

The police revenue package adopted in February 2017, provided a multi-year staffing strategy for VPD and included revenue from several sources, including a new indoor space license fee surcharge on retail/commercial/ industrial spaces and multi-family units. This new surcharge is set to become effective as of January 1, 2019, but the police funding revenue package included a contingent clause that would repeal the indoor space surcharge if an equivalent and more preferable method of funding is developed and enacted by the end of 2018 as part of the larger, more comprehensive funding discussion.

The new indoor space surcharge is complex to administer and would require the City to hire additional staff in order to implement. We recommend the new indoor space surcharge be repealed and the \$6.1 million in funding for police services be replaced with the below revenue sources:

Revenue Sources	Dollars generated (\$ millions)	Tax rate increase
Savings due to ease of implementation and revenue collection	\$0.25	
Utility tax increase 2019	\$2.39	2.2%
Utility tax increase 2020	\$2.00	1.8%
Business license surcharge (remove cap on companies with more than 400 FTEs)	\$0.56	
Business license surcharge (apply to not-for-profit companies with four or more employees or with revenue greater than \$12,000 per year)	\$0.90	
TOTAL	\$6.10	

The ESC utilized the following rationale in developing this recommendation:

- **More effectively applies the current business license surcharge to capture the existing base without raising rates.** The current \$90 per employee per year business license surcharge (BLS) is dedicated exclusively to funding improvements to the City's street system and paying off transportation bonds (generating \$2.6 million annually) and increasing capacity in the City's police department (generating \$0.8 million annually). These two services are used – either directly or indirectly - by every citizen, employee and business in the city. Further, the ESC recognizes that the business license surcharge is currently the only broadly applied tax exclusive to business activity in the city.

By eliminating the current cap of 400 employees on large employers, the base to which the business license surcharge applies is expanded in a way that more accurately captures the footprint of larger employers, dedicating this revenue to City services that all employers use.

Approximately 11 employers are anticipated to be impacted by this change. These companies employ an estimated total of 9,685 FTEs, and removing the cap is anticipated to result in the surcharge applying to 1.3 percent of total employment within the city. The adjustment also captures revenue from a measurable segment of employment within the city – the nonprofit sector. There are approximately 10,186 full time equivalent jobs in the city associated with a total of 186 individual nonprofits. Of these, 123 have four or more employees. Notably, the largest of these, PeaceHealth, employs approximately 4,500 FTEs. The ESC recognizes that the nonprofit sector by its very nature endeavors to meet community needs that otherwise may not be met at all. However, as noted above, nonprofit entities contribute to demand for essential services that the BLS is designed to fund. Given recent feedback from stakeholders, Council may want to consider phasing in the new requirement for non-profits and large businesses.

- **Preserves exemptions for the smallest non-profits:** The recommendation preserves the exemption to obtain a business licenses for any business that earns less than \$12,000 per year and for nonprofits with less than four employees.
- **Maintains engagement with the business community in a constructive manner.** The ultimate success of the Vancouver Strong effort will depend in part on the support of the business community. Consequently, there is measurable value in listening to concerns raised by the business community with respect to the new indoor space surcharge.
- **Ease of implementation and administration.** As we looked to replace the adopted, but not yet implemented, ordinance for indoor space and multi-family unit business surcharges, we learned of its complexity for those who would pay it as well as for the City, who would administer and account for it. Because the BLS and the utility tax are currently administered by the City, the recommended adjustments to these will not increase administrative burden for either the payer or the City, minimizing administrative complexity and costs.
- **Avoids new fees/taxes on new construction and multi-family housing.** The recommendation acknowledges the near-term shortage in affordable housing and endeavors not to aggravate this situation in the context of this recommendation for replacement revenue. (However, the ESC notes that the comprehensive service package may contemplate revenue sources that impact the cost of housing in Vancouver.)
- **Preserves flexibility for future adjustments to this revenue.** As we develop a comprehensive service and revenue package, further adjustments and refinements to this revenue may be needed. Consequently, replacement revenue should preserve the maximum flexibility for

refinement in the context of future phases of the Vancouver Strong recommendation while continuing to maintain ease of administration.

VANCOUVER STRONG INITIATIVE

In early 2017, the City, working with a Community Resource Team completed a focused effort to identify service gaps at the Vancouver Police Department and develop a funding package to address them. This effort resulted in the City Council adopting a package of fees and taxes to address the gaps in police service. In response, business and community leaders issued a call for the City to commit to a broad-based community engagement process to develop a structural funding solution that will provide stability and predictability for businesses, residents and for City services.

As a result of that call for action, in March 2017, the City convened a group of business and community leaders to play a key role in developing this structural solution. This group is referred to as the Executive Sponsors Council (ESC) and the initiative as Vancouver Strong.

The ESC has been meeting since May 2017, and through a series of meetings we have gained a thorough understanding of the scope of City services, funding challenges and opportunities, and financial tools. The ESC has come to understand how limited and shallow the revenue tool box is for the City to address growing service needs.

We began our work with an understanding of the City's Strategic Plan and a collective vision for a strong Vancouver. Our challenge is to improve our city by taking action to prevent a state of decline and to make viable the community's aspirations for Vancouver. We believe that through a strategic approach to investing in City services, we can maintain safety and improve livability, vibrancy, and economic vitality for all.

The goal of Vancouver Strong is to develop a long-term, comprehensive, streamlined and sustainable funding package that will enable the City to invest in the capital improvements and services identified in the Strategic Plan and other adopted City plans to serve the Vancouver community. The ESC will be conducting a community engagement process to inform development of a funding package before presenting a proposed funding package to City Council by the end of 2018.

FUTURE GROWTH AND REVENUE CONSTRAINTS

Vancouver is currently experiencing population and economic growth which has increased demand for City resources and services. Since the end of the recession, Vancouver's population has increased by over 3,200 new residents per year and is urbanizing at the fastest pace in a generation. In response, the City has made great strides to address some of our most critical service needs through a disciplined approach to managing resources, including cost containment, efficiency improvements and service reductions as well as a series of focused efforts around core service areas such as fire and emergency

medical services, affordable housing, streets and police. The City provides services to nearly 25,000 more citizens and 3,000 new businesses than it did just 10 years ago – with 110 fewer City employees.

Despite incremental adjustments to the City's revenue structure and an ongoing focus on efficiencies and fiscal discipline, gaps persist in key areas of City services. These gaps are forecast to continue to widen each year due to ongoing demand from a growing population paired with the constraints in the basic revenue structure that funds general City services.

The intricacies of the revenue system in Washington State and the compounded impacts of the City's repeal of the business and occupation tax in the early 1990s, the statewide tax reform initiatives passed in the late 1990s and early 2000s, and the economic impacts of the great recession, have all resulted in the City's general revenues lagging behind inflation and not keeping pace with the growth in demand for services.

The largest three revenues for the City's general fund – property tax, sales tax and utility tax on city owned utilities – make up 73 percent of the total revenues. The City's largest and most stable general revenue – property taxes – is the most constrained, with the revenue base limited to the lower of 1 percent annual growth or inflationary index regardless of how strong or weak the economy is. Sales tax is highly volatile and susceptible to economic swings.

While the near-term forecast for the City indicates financial stability, the impact of the structural imbalance in how core City services are funded will become challenging, and if not proactively addressed now, we will start experiencing declining service levels across all general City services in the very near future.

THE PATH FORWARD

The ESC will continue to meet through November 2018 and has developed a work plan (attached) to develop a final recommendation. This summer City staff, in partnership with ESC members, will implement a public engagement effort to gain broader input on a draft recommendation.

We have identified the following decision-making considerations to use in developing our comprehensive recommendations for City services, capital investments and policy changes:

- Helps retain and/or attract talent to the local community and economy
- Serves as a catalyst to lead and promote private investment
- Prevents problems or proactively addresses cause
- Provides a tangible benefit to residents, especially those who are the most vulnerable or underserved
- Enhances relationships and connections among Vancouver residents
- Promotes social and geographic equity of service delivery and social benefits
- Focuses on services or responsibilities that rest solely or primarily with the City
- Provides opportunities for positive financial or community return on investment
- Reflects stewardship of what we already have
- Has potential to increase city revenue base

- Focused toward the long-term (sustainability and prevention)

Considerations for development of a revenue package to fund new or enhanced services include:

- Fair and holistic: Distributes revenue generation across sectors, users and customers
- Sustainable: Keeps pace with inflation over time to help Vancouver achieve its vision
- Simple: Helps simplify the taxing structure
- Scalable: Can grow with Vancouver
- Stable: Generates reliable and predictable revenue
- Equitable: Results in no disproportionate impacts on certain groups or populations.

Thank you for considering our recommendation for replacement revenue for Vancouver Police Department funding. We believe this recommendation provides a more streamlined and equitable approach to raising the revenues needed for police services.

We look forward to continuing our work on developing a comprehensive funding package for your consideration later this year. We also look forward to engaging with a broad group of community leaders and Vancouver residents to seek feedback as we develop this plan.

We are committed to helping make our community a better place. By developing a comprehensive funding strategy for city services today we can maintain the safety and improve the livability in our city for the future. We believe this work will help to ensure a strong future for Vancouver, a place people are proud to call home.

ATTACHMENT:

- Work plan

VANCOUVER STRONG
Executive Sponsors Council
Work Plan
DRAFT – May 13, 2018

	Meeting	Description	Public outreach
10	March 8	Topics: ESC workplan, revenue decision criteria, phase 1 recommendation Purpose: To move ahead with longer time frame and advance phase 1 recommendations Materials: Draft workplan, draft revenue criteria, revenue scenarios for phase one, calculator	Briefings with stakeholders Website
11	April 12	Topics: Phase 1 recommendation, revenue criteria, outreach plan Purpose: To finalize phase 1 recommendation and revenue criteria, to provide input on outreach and engagement plan Materials: Memo, revised phase 1 scenarios, draft revenue criteria, draft outreach and engagement plan	Website
12	May 24 (Operations center)	Topics: Formalize final initial phase recommendation, capital investments, decision-making framework for long-term investments Purpose: Consider scenarios for capital investments and how recommendations will be made Materials: Capital investment scenarios	Website Email update/social media
13	June 21 Note: 9am – 3pm (Tour of waterfront park)	Topics: Service package scenarios for operating investments, revenue scenarios Purpose: To advance package of investments and revenue package to present for broader public and stakeholder review Materials: Scenarios for operating investments	ESC led briefings with community groups and organizations (City staff provides tool kit of templates and materials) Enhance information sharing: - Newsletter/email - Factsheet - Website
14	July Date TBD (Added meeting)	Topics: Service package scenarios, revenue package scenarios and potential policy changes Purpose: To agree on public review package: operations, capital investments, revenue package and policy changes Materials: Scenarios for revenue enhancements and service enhancements	Information pop-ups and community awareness activities at farmer's market, park events, shopping center ESC led briefings with community groups and organizations (City staff provides tool kit of templates and materials)

	Meeting	Description	Public outreach
	July - Aug	Community Leaders Roundtable / Summit	Online feedback Information pop-ups and community awareness activities - Farmer's Market - Park events - Shopping center booth - information sharing: - Newsletter/email - Factsheet - Website, social media
14	Sept. 13	Topics: Public engagement results, refine recommendations for service package, revenue package and policy changes Purpose: To hear results of public engagement on capital investment package and operating package and refine for final consideration and recommendation to City Council Materials: Public comment report, preferred scenario, report outline	Information sharing: - Newsletter/email - Factsheet - Website, social media
15	Oct. 25	Topics: Recommendation to City Council Purpose: To advance the recommendation(s) and report to City Council Materials: Draft report with recommendations	Email update/social media Website
16	Nov. 7	Topics: Final recommendation to City Council Purpose: To adopt the final recommendation(s) and report to City Council and close out the ESC process Materials: Revised draft report with recommendations	Email update/social media Website
	December	n/a	
	January	ESC recommendations presented to City Council	

Vancouver Strong Executive Sponsors Council Update

VANCOUVER
CITY HALL



City Council Workshop
June 18, 2018

Tim Schauer & Jennifer Rhoads,
Vancouver Strong Executive Sponsors Council

Jeanette (Jan) Bader, Program & Policy
Development Manager

Presentation Overview

- Review of Vancouver Strong Initiative
- Interim Recommendations - February 2018
- Replacement Revenue for Police Funding
 - Recommendations - June 2018
 - Rationale
- Next Steps

Vancouver Strong Initiative

- Executive Sponsors Council appointed: May 2017
- Goal: Develop a long-term, comprehensive, streamlined & sustainable funding package enabling the City to invest in capital improvements and services.



Vancouver Strong Executive Sponsors Council

- Tim Leavitt, Former Mayor City of Vancouver (Co-Chair)
- Tim Schauer, President & CEO, Mackay & Sposito (Co-Chair)
- Heidi Johnson Bixby, Principal, Johnson Bixby & Associates
- Mark Mantei, CEO, The Vancouver Clinic
- Diana Perez, Immediate Past President, SW Washington League of United Latin American Citizens (LULAC)
- Jennifer Rhoads, President, Community Foundation for SW Washington
- Holly Williams, Commissioner, Vancouver Parks & Recreation Advisory Commission
- Casey Wyckoff, President, LSW Architects
- Eric Holmes, Vancouver City Manager (ad hoc non-voting member)
- Linda Glover, Vancouver City Councilmember (non-voting Council liaison)

Demand for Services

- Population is increasing by more than 3,000 new residents per year
- City provides services to nearly 25,000 more residents and 3,000 more businesses than 10 years ago with 110 fewer City employees



Revenue Constraints

Compound impacts of:

- City's phase-out of local B&O tax in early 1990's
- Statewide tax reform initiatives (MVET, property tax)
- Decline in shared revenues from State
- Sales tax leakage
- Great recession

Results: General fund revenues lag behind inflation and not keeping pace with growth in demand for services

The Challenge for Vancouver Strong

- Property tax, sales tax and utility tax make up 73% of general fund revenues
- Property tax is most constrained (1% annual growth)
- Sales tax is highly volatile
- Tax on City utilities is currently 24.9%
- City has current financial stability but the structural imbalance will impact service delivery in the near future

ESC Work Plan Update

- Extend timeline for delivery of comprehensive funding recommendation until December 2018
- Recommendation for replacement revenue for \$6.1 MM in police funding
- Develop a comprehensive funding package, including potential voted measure for 2019 ballot
- Launch community engagement process on potential funding package

VPD Staffing Plan: 2016-2020

2016

Pre-approved in 2016, pending CRT funding recommendation.

8 New Sworn

- 1 Lieutenant - Administration
- 7 Officers
 - 2 Property Detectives
 - 2 Traffic Officers
 - 1 Backgrounds Detective
 - 1 Intelligence Sergeant
 - 1 Intelligence Officer

4 New Civilian

- 3 Police Service Techs for Patrol
- 1 Support Specialist for Professional Standards Unit

2017

9 New Sworn

- 1 Corporal for Professional Standards Unit
- 1 Officers
 - 2 Training Officers
 - 2 Traffic Officers
 - 4 Bicycle Officers

5 New Civilian

- 2 Police Service Techs for Traffic
- 2 Police Service Techs for Patrol
- 1 Support Specialist for East Precinct

2018

11 New Sworn

- 1 Property Crimes Sergeant
- 10 Officers
 - 2 Traffic Officers
 - 2 Property Detectives
 - 4 Patrol Officers
 - 1 Drug Task Force Detective
 - 1 Gang Task Force Detective

7 New Civilian

- 2 Forensic Techs
- 1 Logistics Tech
- 2 Police Service Techs for Patrol
- 1 Evidence Tech
- 1 Finance Analyst

2019

8 New Sworn

- 1 Traffic Sergeant
- 7 Officers
 - 1 Traffic Officer
 - 4 Patrol Officers
 - 1 Drug Task Force Detective
 - 1 Gang Task Force Detective

3 New Civilian

- 2 Police Service Technicians for Traffic
- 1 Support Specialist for Major Crimes

2020

6 New Sworn

- 2 Patrol Sergeants
- 4 Officers
 - 4 Neighborhood Police Officers

0 New Civilian

**STAFFING
TOTALS**

TODAY

198 sworn
47.5 civilian

2021

232 sworn
62.5 civilian



**CITY OF
Vancouver**
WASHINGTON

Police Funding Initiative: February 2017

COPS Grant

Marijuana Tax
Revenue

Business
License
Surcharge
increase
\$20 per FTE

Utility tax
increase
3.4%

Multi-Family
per unit
surcharge
\$90 in 2019

Retail,
Commercial &
Industrial space
surcharge
2019

Revenue from
Van Mall North
Annexation

Police Funding

- New fees as of Jan. 1, 2019:
 - Multi-Family per unit surcharge and Retail/Commercial/Industrial per square foot surcharge
- Complex to administer for City and payers; additional staff required
- New fees automatically repealed if equivalent method enacted before December 31, 2018



Replacement Police Funding Recommendation

Repeal:

Multi-Family per
unit surcharge

Retail/ Commercial/
Industrial square
footage surcharge

Replace
with:

Utility tax increase

BLS applies to companies with
>400 FTEs

BLS applies to non-profits with
>4 FTEs and annual revenue
>\$12,000

Replacement Police Funding Recommendation

Revenue Source	Dollars Generated (\$ millions)	Tax rate increase
Savings due to ease of implementation & revenue collection	\$0.25	
Utility tax increase 2019	\$2.39	2.2%
Utility tax increase 2020	\$2.00	1.8%
Business License Surcharge (apply to companies with > 400 FTEs)	\$0.56	
Business License Surcharge (apply to not-for-profits with >4 FTEs and annual revenue of > \$12,000 per year)	\$0.90	
TOTAL	\$6.10	

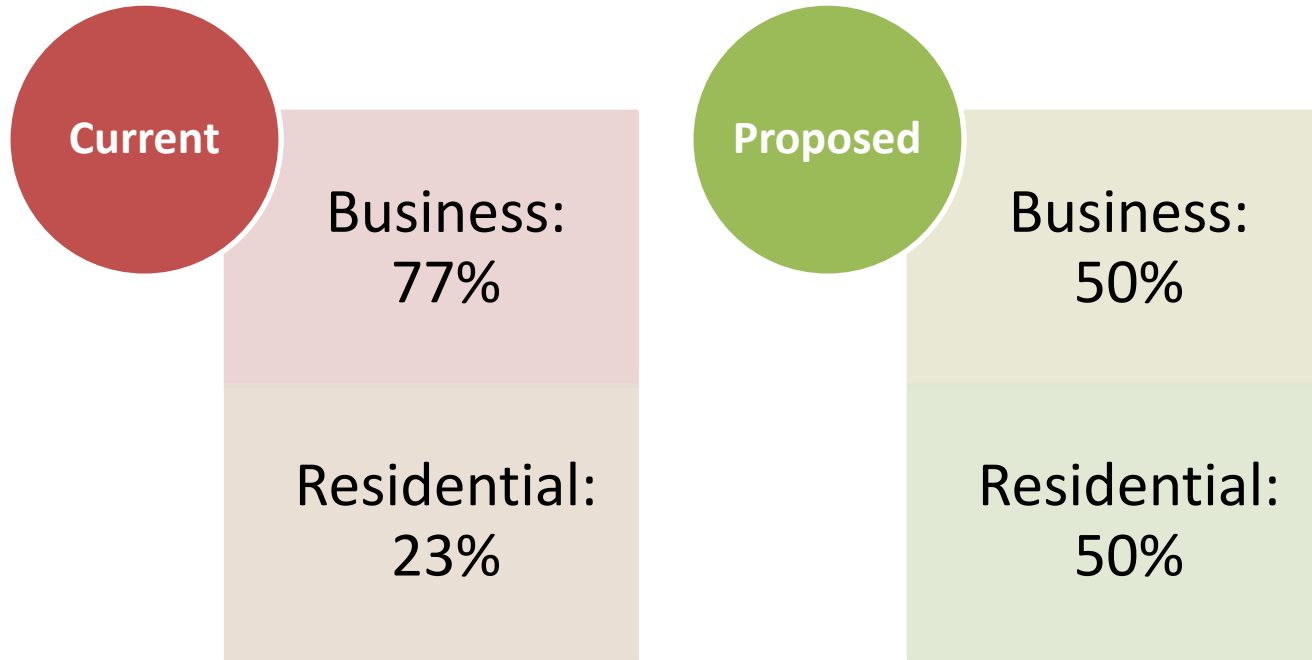
Replacement Police Funding Recommendation

Revenue Source	Current		Proposed
Business License	\$125 /year	→	\$125/ year
BLS per FTE	\$90 (<400 FTEs)	→	\$90 (no exemption)
BLS per Multi-Family Unit	\$90	→	\$0
BLS per square foot	Industrial: \$.05/\$.01 Retail: \$.10 / \$.20 Prof. Svcs \$.08 / \$.07	→	\$0 \$0 \$0
Utility Tax	24.9%	→	27.1% (2019) 28.9% (2020)

Rationale for Recommendations

- Applies current Business License Surcharge (BLS) to expanded base without raising rates
- Preserves exemption for smallest non-profits (<4 FTE)
- Maintains engagement with business community
- Easier to implement and administer
- Avoids new fees on multi-family housing construction
- Preserves flexibility for future adjustments

Replacement Revenue - Shift in “Payer Balance”



Detailed impact analysis underway

Non-Profits At-A-Glance

Number of non-profits in City of Vancouver:	186
Total employees:	8,600 – 10,000
Non-profits with 3 or less FTEs:	63 - 65
Non-profits with 200 or more FTEs:	5

Next Steps

ESC

Launch public engagement on draft capital recommendations

Refine service & policy recommendations

Council

Adopt ordinances revising BLS regulations & increasing utility tax (Aug. 6 & 20, 2018)

Vancouver Strong Council Retreat

Questions?

VANCOUVER
CITY HALL



Jeanette (Jan) Bader,
Program & Policy Development Manager

360-487-8606
jan.bader@cityofvancouver.us

Next
Design your future.



Workforce Southwest Washington
Miriam Martin & Melissa Boles

Workforce Southwest Washington (WSW), a nonprofit organization founded in 2002, is the Workforce Development Board for Clark, Cowlitz and Wahkiakum counties.

WSW contributes to regional economic growth by providing investments and resources to improve the skills and education of the workforce.

Since our founding, WSW has invested more than \$82.3 million in our community.

Problem

1

Challenge

Currently we have over 7,000 Opportunity Youth in Clark County

2

Current Impact

Our programs are reaching only about 700 Opportunity Youth in Clark County

3

Limited Access

Access to programs is fragmented, limiting youth access to needed resources

4

Inefficiencies

Program to program duplication and redundancies waste money and time

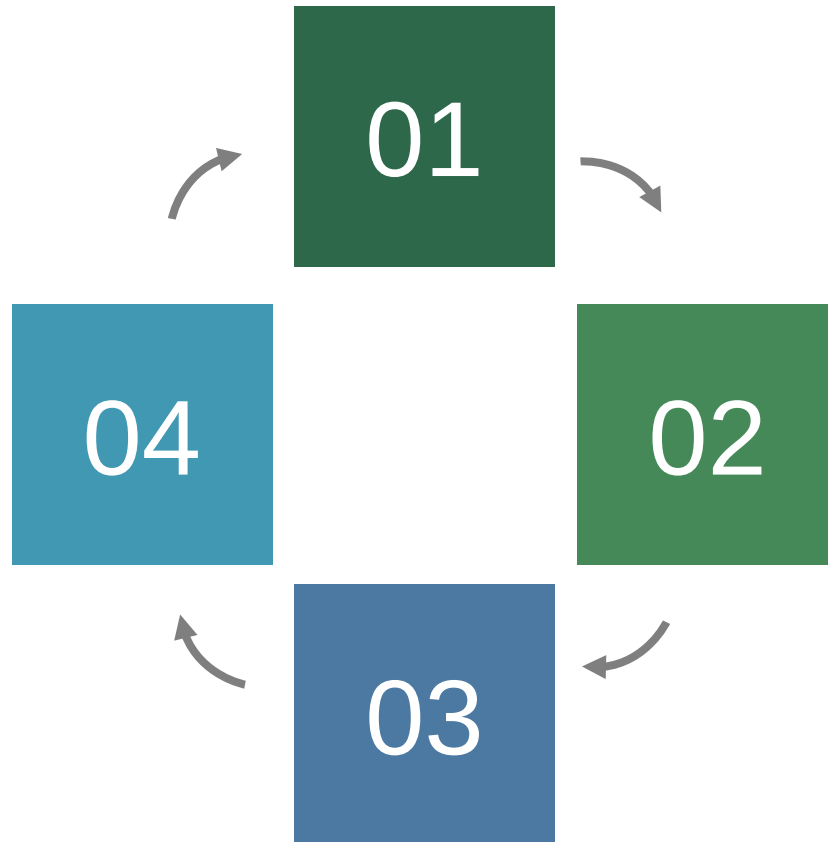
5

Limited Resources

Federal funds continue to shrink and is not the only answer



Challenge



**Correlation of
Education & Income**

—



**Correlation of
Education &
Homeownership**

—



**Social Costs of
Opportunity Youth**

—



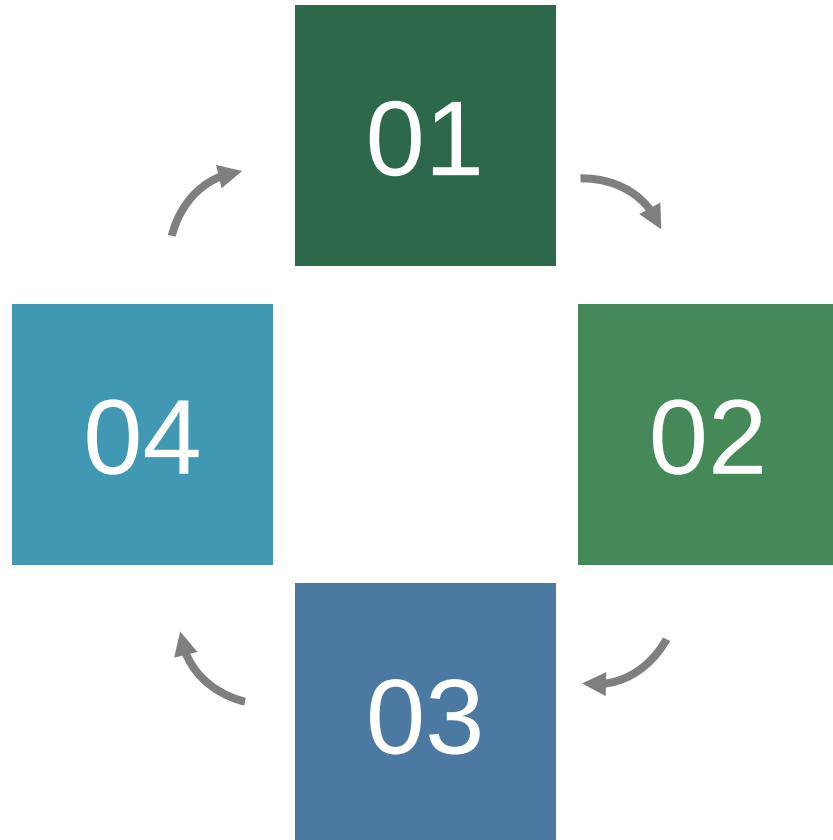
Lack of Equity

—



Today's to do list.

What's Next?



Integrated Funding & Programs



Sustainability



Alignment



Branding

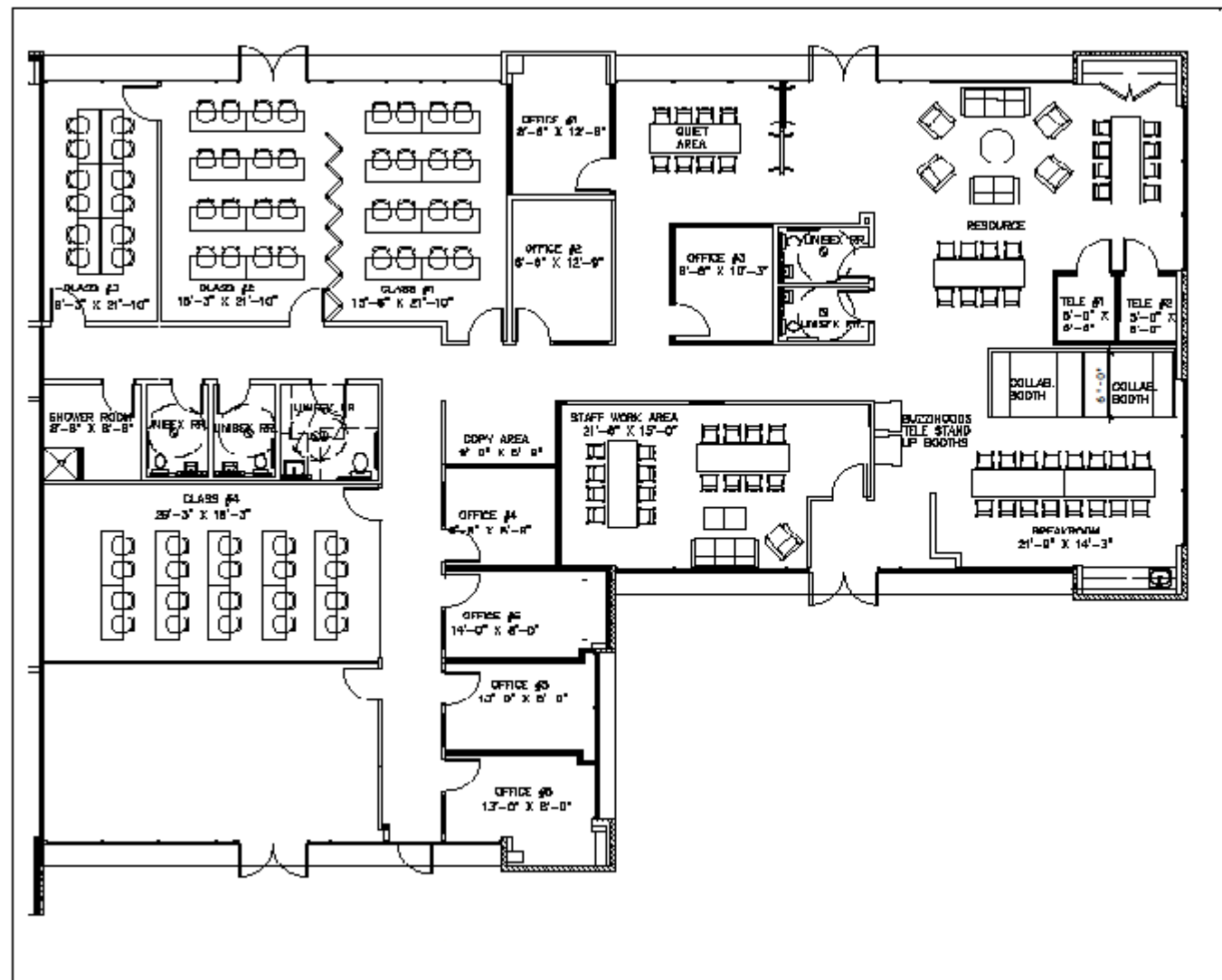
Operating Model: Key Partnerships

School of the Blind
Partners in
Careers
Silicon Forest
Vancouver Housing Authority
SW WA Stem Network
WSU Vancouver

Educational Service District 112
Vancouver Library
Clark County Food Bank
Regional School Districts
DSHS
Job Corps
WorkSource

Goodwill Industries
Juvenile Recovery Court
Clark County Public Health
Clark College
Dept of Vocational Rehab
Employment Security

Small Foot Print, Big Impact



Increased Capacity & Young Adults Served



700

—



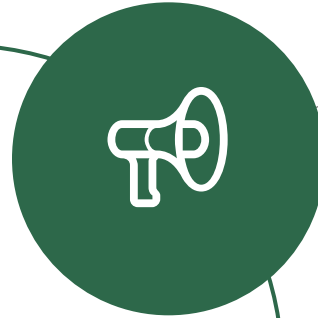
1,200

—

Operating Model: Key Activities

Workforce Academy

We work in partnership with the business community to provide career exploration opportunities for area youth.



Summer Works

- Work-Readiness Training
- Screening & Matching
- Ongoing Support
- Employer of Record Services

Work Experience

Our investments fund meaningful, paid work experience to help young people learn and develop skills necessary to succeed in today's world of work.

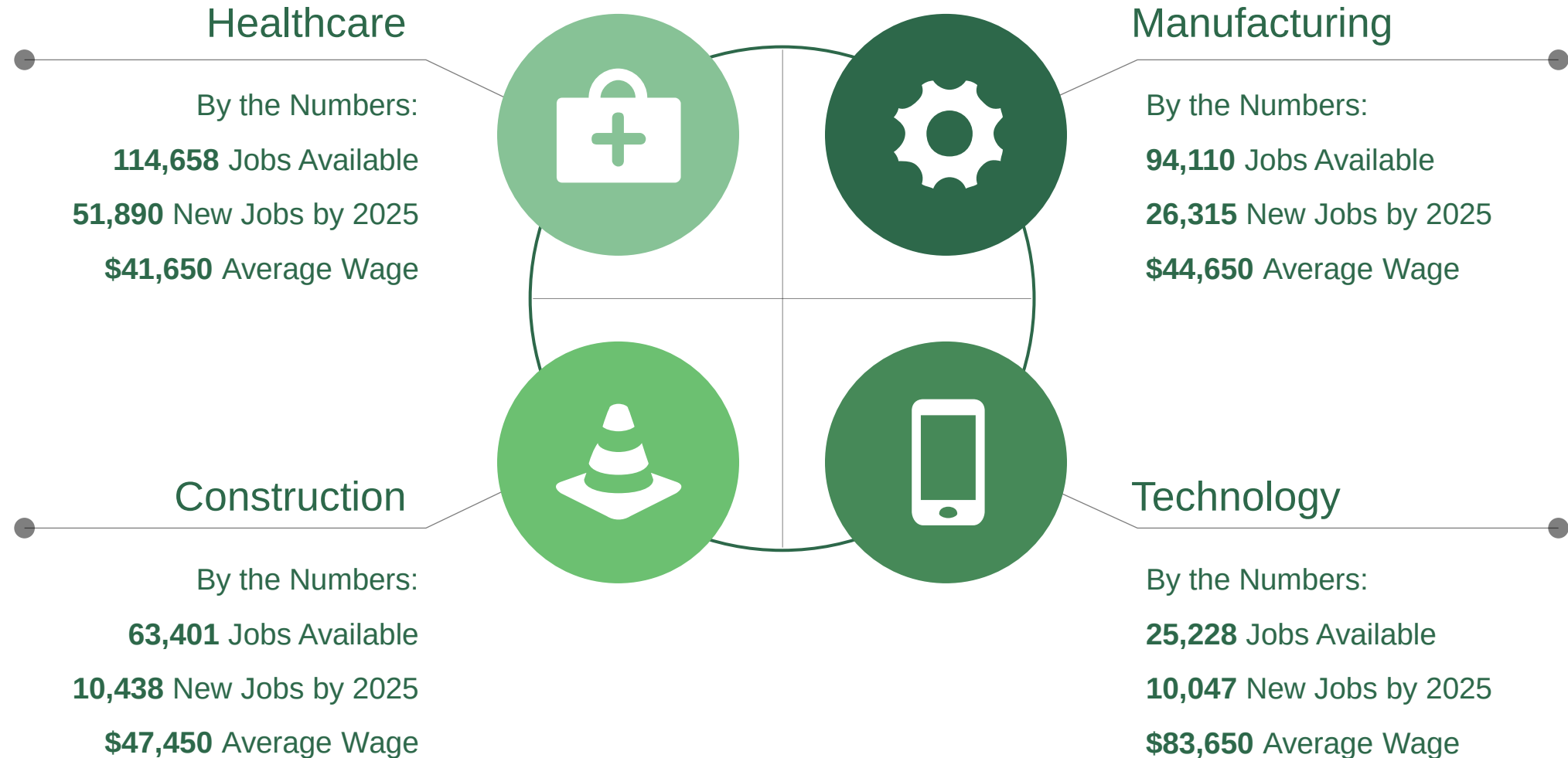


Apprenticeship & Highschool Diploma Completion

- Aerospace Joint Apprenticeship: Cowlitz County
- Industrial Apprenticeship: Next, Cowlitz County
- Washington Association of Community & Migrant Health Centers: Next, Clark County
- Construction Pre-Apprenticeship: Next & Cascadia Technical Academy

Key Sectors

Driving our Regional Economic Growth



Columbia Willamette Workforce Collaborative

Strategic Regional Sector Alignment

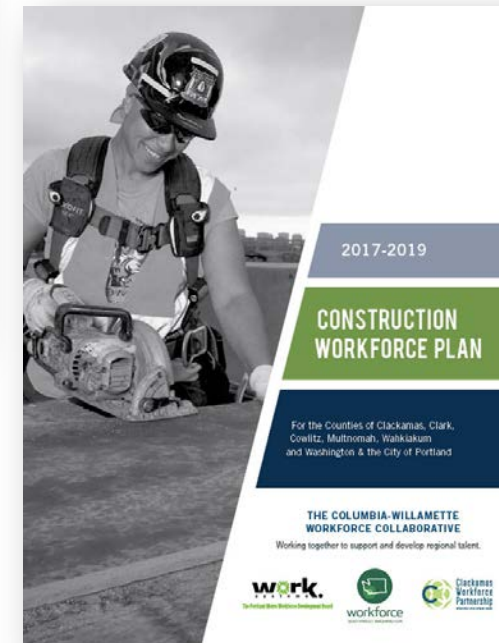


\$

Nearly **\$35M** Raised for the
Region Over the Past 8 Years

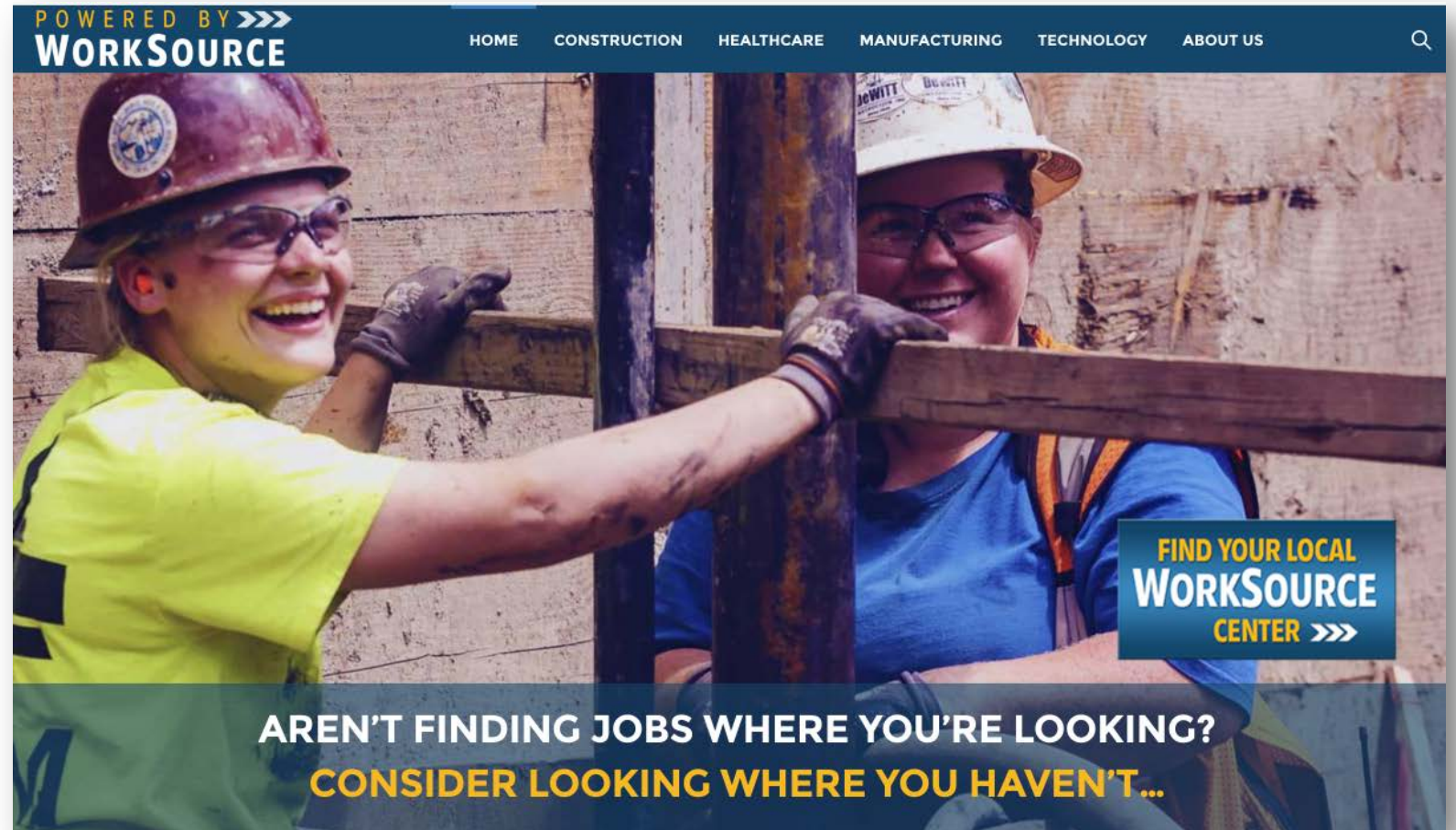
Columbia Willamette Workforce Collaborative

Strategic Regional Sector Alignment



Columbia Willamette Workforce Collaborative

Strategic Regional Sector Alignment



You're Invited: Next Open House



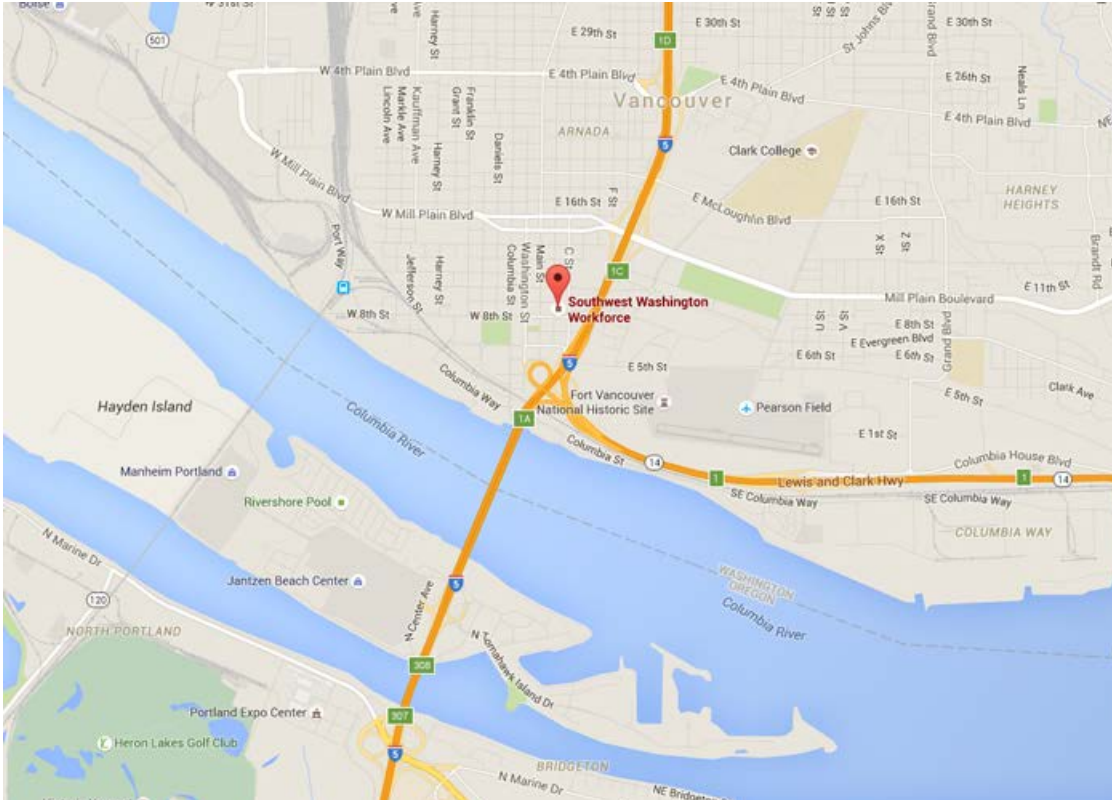
Location

Stonemill Center
120 NE 136th Avenue, Suite 130
Vancouver, WA 98684

Time

October 11th, 2018 4:30-6:00 PM

CONTACT US



Phone: 360.567.3183



Email: mmartin@workforcesw.org &
mboles@workforcesw.org



Office: 805 Broadway, Suite 412 Vancouver, WA 98660



Online: www.workforcesw.org



workforce
SOUTHWEST WASHINGTON

Report to the Community

July 1, 2016 – June 30, 2017

OUR MISSION: To prepare and promote a skilled and adaptive workforce
for a thriving economy in Southwest Washington.

A Message from the Chair and CEO

We are pleased to share the Workforce Southwest Washington (WSW) Annual Report.

As you will notice, we changed our name from the Southwest Washington Workforce Development Council to Workforce Southwest Washington and rebranded with a new logo and website, www.workforcesw.org.

Over the past year, we have worked to fully integrate changes outlined by the Workforce Innovation and Opportunity Act (WIOA), the 2014 federal legislation governing the national workforce development system. We are called upon to find new ways to serve businesses, the unemployed and underemployed and we are rising to the challenge.

For the key sectors that drive our regional economy, we provided labor market data and created workforce development plans. See page 3.

Our WorkSource centers brought employment and job training services into the community and even into the county jail. Read more on page 4.

Public-private partnerships are growing. Two are highlighted on pages 3 and 6. These collaborations where companies drive development of the training programs that will provide them skilled workers are the future of workforce development.

WSW is ready to help develop, foster and fund these partnerships and facilitate and convene workforce development activities throughout the region.

Another highlight this year was hosting 50 businesses at a Youth Employment Summit to help 200 young people learn about key industries and apply for summer jobs.

Through all of this change, WSW continues to be a leader by working alongside our local, state and national elected officials, advocating for policies that support business, job seekers and the growth of our local economy.

We hope our Annual Report inspires you to partner with us to develop innovative programs that support and provide opportunities for employers, job seekers and youth.

Sincerely,



John Vanderkin
WSW Board Chair



Jeanne Bennett
Chief Executive Officer



Sector Strategies to Serve Industry

The quality of the workforce is a primary driver of economic development and of the region's overall economic health. Businesses that effectively manage their talent are likely to be more competitive.

Together with industry and our partners in the Columbia-Willamette Workforce Collaborative, WSW developed plans to address the workforce opportunities and challenges of our region's high-growth, high-demand sectors: Construction, Health care, Manufacturing and Technology.

The plans are used by industry, education, economic development and training partners to align the

region's workforce goals. Our goals are to attract new workers, improve skills of current workers and draw non-traditional workers to the sectors.

Since 2011, sector-focused competitive grants awarded to the CWWC have brought more than \$6.75 million to the three-county Southwest Washington area to address workforce development needs.

The demand in our key sectors is larger than the supply of workers by relatively small margins. With several thousand baby boomers retiring in the next 10 years, however, employers will be in desperate need of workers.

	Manufacturers in the region will need to replace approximately 30,000 employees in the next several years as the aging workforce retires.
	Although Construction was one of the hardest hit industries during the recession, our region has seen substantial growth in recent years and companies do not have enough workers to take on all the projects.
	Regionally, Health care employers are keeping pace with extremely high national need for workers, which is growing at 23 percent, as our population increases and ages.
	Technological innovation and mounting demand is fueling this sector, where the number of jobs is expected to grow 33 percent by 2024.

Studying & Reporting on Regional Data



Our State of the Workforce report has demographic and economic data to help readers understand the workforce needs and opportunities in the six-county Portland-Southwest Washington metro area.

We also produced an Opportunity Youth report and reports on Advanced Manufacturing, Health care, Technology and Construction.

Reports can be viewed at www.workforcesw.org/about-workforce-sw-washington/reports-and-data.

Training Program Builds Worker Pipeline

A partnership of construction companies (Nutter, Tapani and Rotschy), WorkSource, Clark College's Economic & Community Development department and WSW trained candidates to company specifications and resulted in the companies gaining 13 new, trained employees.

Candidates recruited by WorkSource were interviewed by the companies. Selected candidates were trained in professional skills, trade math and construction trade.

WSW provided funds to WorkSource that paid 50 percent of training costs for eligible candidates; the companies paid the rest. Candidates that completed training and passed required tests were hired.

Construction companies interested in workforce development opportunities should contact **Industry Initiatives Manager Melissa Boles** at **360.567.3185** or mboles@workforcesw.org.

Job Seekers



12,179
job seekers
served by
WorkSource



6,224
received
in-person
services



59.5%
enrolled in
WorkSource
programs got jobs



9,136
job orders
placed with
WorkSource

WorkSource is a network of interagency partnerships that provides employment and job training services for businesses and job seekers, including workshops, hiring events and individual job seeker support.

WorkSource has locations in Kelso and Vancouver and at Clark College, Lower Columbia College and Wahkiakum Community Center.

WorkSourceWA.com provides online services such as job posting, candidate matching and labor market data for employers and resume builder, events calendar, career exploration and budgeting tools for job seekers.

WSW provides oversight and funds for WorkSource. A variety of partners within WorkSource provide support to employers and job seekers.

To better meet the needs of both businesses and job seekers, WorkSource is developing systems and processes to align sector workforce needs with job seeker training, thus providing companies with skilled workers and helping job seekers qualify for the jobs available in the area.

A LEAP to Training & Employment

Nearly 15,000 individuals are booked into the Clark County Jail annually. When they are released, many struggle to find work and approximately 53 percent return to jail within a year.

Linking to Employment Activities Pre-release (LEAP), is an innovative partnership with the Clark County Sheriff's Office Re-entry program that helps incarcerated individuals increase skills to ensure employability upon reentering the community and decrease their chances of returning to jail.

Since the program began in December 2016, 138 individuals have received services, including job search assistance, resumes and interviewing basics. At least eight have obtained jobs. The two-year pilot is funded through an \$800,000 U.S. Department of Labor grant.

The program is making a difference. As one LEAP participant said in an interview (edited for space):

"Before I was in LEAP and I was in jail, I felt a little lost. I didn't know what was going to happen when I got out.

I got a lot out of the class. I learned websites and interviewing skills. While incarcerated, I registered at

Clark College and now I am a full-time student. I worked with WorkSource and am getting my certificates to become an industrial hygienist.

The day I was released I had medical insurance, food stamps, all the things I needed to be successful. Without LEAP, I don't know where I would be. I wouldn't have school or WorkSource or a solid resume or a way to get around. This has changed everything for me.

The toughest part is still my criminal background. But after the program I have a lot more confidence in my ability to be hired. It will still be a challenge but I know there is a company out there that will hire me."

Video <https://www.youtube.com/watch?v=HNZoxLZHYN8>

**"Without LEAP,
I don't know where
I would be."**

– Clark County Jail LEAP Participant

Young Adults Ages 16-24

More than 8,000 young adults ages 16 to 24 in Clark, Cowlitz and Wahkiakum counties are not working and are not in school. Many face barriers such as having disabilities, being homeless, aging out of the foster system or having juvenile justice involvement. These young adults in transition represent opportunities for growing and strengthening the local workforce. Our

young adult programs (operated by Partners in Careers, Goodwill in Longview and Educational Service District 112) focus on reconnecting these “opportunity youth” to education and employment by matching each young person’s strengths, interests and values with the talent needs of our fastest-growing sectors, promoting both income mobility and economic prosperity in our region.

Youth Program Outcomes*

Served	403
Trained	140
Education Placements	7
Jobs & Internship Placements	80
Career-related Learning Activities (comprehensive career guidance)	10,712

*Numbers from Youth and Adult programs serving ages 16-24

Youth Build New Lives & Houses



The lives of 67 young adults and two families have been improved thanks to YouthBuild Vancouver, a consortium of Partners in Careers, Evergreen Habitat for Humanity, WSW, Second Step Housing and WorkSource.

YouthBuild helped at-risk youth ages 16-24 obtain high school diplomas or GEDs and learn construction and work skills. The program covered not only education and training, but addressed additional barriers such as the youth being homeless or not having food.

Through YouthBuild:

- ✖ 39 students earned a GED or high school diploma
- ✖ 42 individuals obtained jobs
- ✖ Two families have safe, new homes

Youth Employment Summit Connects Companies and Future Workforce

Fifty companies engaged with more than 200 teens from several school districts, the Washington State School for the Blind and other youth programs during the 2017 Youth Employment Summit.

The teens learned about industries, career pathways, skills and education and practiced interviewing. Several students applied for jobs and were hired.

Volunteers conducting the mock interviews included former Vancouver City Councilmember Larry Smith, Historic Trust President Mike True, Leadership Clark County alumni and individuals from Clark College, among others.

The event was a collaboration between WSW, Partners in Careers, WorkSource, the Greater Vancouver Chamber of Commerce, Columbia River Economic Development Council, SW WA STEM Network and the Boys & Girls Club.

Contact Youth Initiatives Manager Miriam Martin at mmartin@workforcesw.org or 360.567.3183.



Investments & Impact

\$4,663,288
WorkSource
Employment & Training
Programs
(67 Percent)

\$1,576,981
Youth
Employment
& Education Programs
(23 percent)

\$710,452
Administration
(10 percent)

Public-Private Training Program Leads to Candidate Pipeline and Jobs

When Goodwill's Tori Skinner approached Spencer Wiggins, owner of Longview-based Northwest Motor Sales & Service (NWMS), with an idea to address the local skills gap, the result was a new Industrial Training Program.

NWMS provides installation, repair, maintenance and sales of electric motors to pulp, paper and steel mills, oil and gas, marine, mining, power plants and other industries.

NWMS would provide its industry knowledge and high service and quality standards and Goodwill would enrich the experience with recruitment, training, case management and support services.

The collaboration paid off. The pilot resulted in NWMS hiring three new employees.

"Our business continues to expand and the additional volume presents a new set of challenges," said NWMS owner Spencer Wiggins. "One of our goals as an organization is to support the local economy and provide youth a chance to participate as we experience this growth, while allowing us to meet our increased staffing needs."

Goodwill recruited and screened applicants, receiving more than 70 applications.

NWMS selected three candidates for the 10-week internship. Wages for the interns were paid under a Workforce Innovation and Opportunity Act grant through Workforce Southwest Washington.

Participants spent four days a week at the worksite and one day a week at Goodwill learning from an industry-specific training. They completed the 17-volume EASA Mechanical Repair Fundamentals,

earned certifications in OSHA 10, Forklift and CPR/First Aid, attended courses in financial literacy and received career path coaching.

"My whole experience with Goodwill and Northwest has been life changing. The support, encouragement and how willing everyone has been to help and teach is unforgettable," said Jessica, one of the interns who was hired by NWMS as a Winder Helper.

Because of the pilot's success, Goodwill and NWMS will provide this training several times a year to area youth.

"The leadership and mentorship from Northwest Motor is incalculable," said Goodwill Business Development Manager Tori Skinner. "The NWMS team is inspiring a new generation to look at themselves in new ways, explore career options they never knew were in their community, receive critical feedback and build professional confidence," said Skinner.

"It is powerful to see how much impact can be achieved through complementary partnerships."

This program was featured in a Daily News article and reprinted in U.S. News & World Report.



Photo from Goodwill of the Olympics & Rainier Region.

Partners & Investors

We thank our funders, donors and partners for supporting our work to prepare and promote a skilled and adaptive workforce for a thriving economy in Southwest Washington.

A First Place
Aacres
Abernathy Tech Center
Advisicon
Airport Terminal Services
AmeriCorps
Analog Devices
Bake Works
BergerABAM Engineers
Biggs Insurance Services
Boys & Girls Club
Brighton Enterprises
Building for Youth
Building Industry Association
of Clark County
Cascade Inn
Cascadia Technology Academy
Cathlamet Dental
Cathlamet Fire Department
CCI
CDM Caregiving Services
Charter Communications
cheQitout
City of Kelso
City of Longview
City of Vancouver
Clackamas Workforce Partnership
Clark College
Clark County
Clark County Event Center
Clark County Parks & Recreation
Clark County Sheriff's Office
and Re-entry Program
Clark Public Utilities District
Clark Regional Emergency Services
Agency
College of Electronics Manufacturing
Columbia Machine
Columbia Ridge Senior Living
Columbia River Economic Development
Council
Columbia River Mental Health Services
Columbia-Willamette Workforce
Collaborative
Community Foundation for SW WA
Community Home Health and Hospice
Cowlitz County
Cowlitz Economic Development Council
Cowlitz County Habitat for Humanity
Cowlitz Indian Tribe
Crystal Creek Lodge
Currie & McLain CPAs
Educational Service District 112
Elkhart Plastics
Employers Overload

Evergreen Habitat for Humanity
FedEx Ground
Firestone Pacific Foods
Frito-Lay
GeoDesign
Goodwill Olympics & Rainier Region
Greater Portland, Inc.
Greater Vancouver Chamber
of Commerce
Heidi Heywood, PLLC
High Fidelity Entertainment
Home Instead Senior Care
Impact Washington
Interfor
International Brotherhood of Electrical
Workers
iQ Credit Union
JobCorps
Kaiser Permanente
Kalama Chamber of Commerce
Kelly Services
Kelso Longview Chamber of Commerce
Kiewit Infrastructure
Kyocera
Laborers Local 355 (LiUNA)
LaunchCode
League of United Latin American
Citizens
Lile Relocation Services
Lower Columbia College
Lower Columbia CAP
Macy's
Madden Industrial Craftsmen
Marine Resource Committee
Mount St. Helens Institute
nConnect
New Tradition Homes
nLight
North Pacific Paper Corp. (NORPAC)
Northwest Innovation Works
Northwest Permanente
Office of Superintendent of Public
Instruction
Pacific NW Manufacturing Partnership
Pacific Power Group
Pactera
Partners in Careers
Paytrace
Pearson Field Education Center
Port of Camas-Washougal
Port of Kalama
Port of Longview
Port of Ridgefield
Port of Vancouver
Port of Woodland

Prosper Portland
Red Leaf
Regional Economists in Washington
and Oregon
Renaissance Systems, LLC
ResCare Home Care
ResCare Workforce Services
RLA Engineering
School Districts in Clark, Cowlitz
and Wahkiakum Counties
Schrockco Auto Body
Second Step Housing
SEH America
Silicon Forest Electronics
Southwest Washington Contractors
Association
Southwest Washington STEM Network
State of Washington
Stream Team
Style Masters Academy
SunModo
SW WA Regional Airport
The Charlotte House
The Hampton & Ashley Inn
The Hampton at Salmon Creek
The Startup Brand
Tribeca Transport
U.S. Army
U.S. Department of Labor
U.S. Forest Service
Vancouver Housing Authority
Vancouver Watershed Alliance
Vigor Industrial
WA State Dept. of Services for the Blind
WA State Dept. of Social and Health
Services
WA State Division of Vocational
Rehabilitation
WA State Employment Security Department
Wahkiakum Amateur Radio Club
Wahkiakum Chamber of Commerce
Wahkiakum Community Center
Wahkiakum County
Wahkiakum County Sheriff's Department
Wahkiakum Public Utilities District
Wahkiakum School District
Washington State University Vancouver
Washington Workforce Association
Weyerhaeuser
Workforce Training and Education
Coordinating Board
WorkSource Cowlitz/Wahkiakum
WorkSource Vancouver
Worksystems, Inc.
YMCA of Columbia-Willamette

Council Members 2016-17

John Vanderkin, Chair
Employers Overload

Bill Skidmore, Vice Chair
General Sheet Metal

Jim Lucey, Treasurer
Analog Devices

Tina Ailinger
Department of Social and Health Services

Darcy Altizer
Southwest WA Contractors Association

Mike Backman
Wahkiakum County Commissioner

Ben Bagherpour
SEH America

Christopher Bailey
Lower Columbia College

Mike Bomar
Columbia River Economic Development Council

Mike Bridges
Cowlitz-Wahkiakum Central Labor Council

Bob Carroll
IBEW Local Union 48

Renny Christopher
Washington State University Vancouver

Kelley Foy
Columbia Machine

Robert Gaffney
Gaffney Counseling and Consulting

Anne Goranson
Employment Security Department

Bob Gustainis
Walgreens

Kristine Hammond
Department of Social & Health Services

Frank Hurtarte
Kaiser Permanente

Keath Huff
Utilize I.T.

Kathy Jennings
Washington Federation of State Employees

Mike Karnofski
Cowlitz County Commissioner

Ilona Kerby
Lower Columbia Community Action Program

Bob Knight
Clark College

Paige Lake
Wahkiakum Chamber of Commerce

Eddie Martin
Norpac/Weyerhaeuser

Keith McPhun
Cornell Pump

Diane McWithey
Share Vancouver

Julie Olson
Clark County Councilor

Angela Simmons
Aligned Lifestyle Concierge

Denise Smith
Rebound Orthopedics & Neurosurgery

Ted Sprague
Cowlitz Economic Development Council

Paige Spratt
Schwabe Williamson & Wyatt

Shannon Stull
LiUNA 335

About Workforce Southwest Washington

Workforce Southwest Washington (WSW) contributes to regional economic growth by providing investments and resources to improve the skills and education of the workforce in Clark, Cowlitz and Wahkiakum counties.

Established in 2002, WSW works with business, economic development, education, government, community-based organizations and labor to develop and deliver flexible and results-oriented services for employers and residents.

Workforce Southwest Washington is an equal opportunity employer/program. Auxiliary aids and services are available upon request to persons with disabilities. Washington Relay 711. Icons made by Freepik from www.flaticon.com

It focuses on building and maintaining strong relationships among these partners to leverage resources and expertise and to develop an agile and future-focused workforce system to meet employers' and individuals' needs.

This foundation enables WSW and its workforce partners to respond to emerging growth areas and address the workforce employment and training needs of industry and individuals.

Workforce Southwest Washington

805 Broadway, Suite 412, Vancouver, WA 98660 | 360.567.1070 | www.workforcesw.org | @WorkforceSWWA



OPPORTUNITY YOUTH REPORT

2018



THE COLUMBIA-WILLAMETTE
WORKFORCE COLLABORATIVE
Working together to support and develop regional talent.

ABOUT THE COLUMBIA-WILLAMETTE WORKFORCE COLLABORATIVE

The Columbia-Willamette Workforce Collaborative (CWWC) is a partnership between Clackamas Workforce Partnership, Workforce Southwest Washington, and Worksystems: the three Workforce Development Boards covering the Portland-Vancouver Metropolitan Area. The Collaborative delivers a unified approach to serving industry, supporting economic development, and guiding public workforce training investments to better address the needs of its combined labor shed.

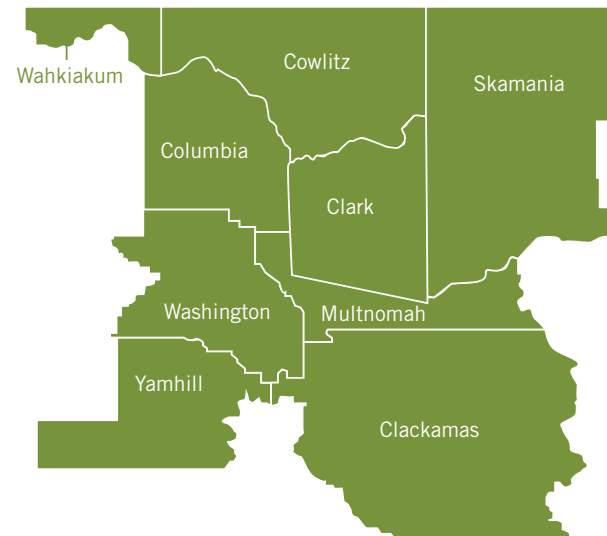


TABLE OF CONTENTS

2	Introduction
4	Analysis Overview
5	Who are Opportunity Youth?
6	Opportunity Youth Demographics
7	Nativity, Language, and Mobility
8	Parenting Youth
9	Opportunity Youth Households
10	Health Insurance Coverage and Disability
11	Education
13	Poverty, Employment, and Income
14	A Broader Look at Opportunity Youth
15	Appendix

INTRODUCTION

An estimated 29,130 16-to-24-year-olds in the Portland-Vancouver region served by the CWWC are neither in school nor working. This accounts for more than 11 percent of all youth in the region. Comparatively, approximately 12 percent of all youth throughout Oregon and Washington meet this definition. Twelve percent is roughly on par with national averages. These individuals who are disconnected from both educational environments and the workforce are known as opportunity youth.

Across the country, opportunity youth rates have been dropping consistently since peaking in the years following the Great Recession. Likewise, throughout Washington, Oregon, and the Portland-Vancouver region, rates have trended downwards in recent years. Since 2014, opportunity youth rates in the region have dropped three percentage points, from 14 to 11 percent. Despite the drop in share, the number of opportunity youth in the region has remained steady, with the 2016 estimate just 1,000 less than the 2014 estimate.¹ The current share of opportunity youth in the region compares to other metros such as Seattle, Los Angeles, Baltimore, and Indianapolis.

Assisting youth that exist in a state of transition between either the workforce or post-secondary education illustrates one of the most effective approaches to strengthening the local workforce. Past failures to improve outcomes for opportunity youth has resulted in significant losses in economic activity and mounting pressure on burdened social service programs.

The region faces staggering long-term economic costs if future prospects for these youth remain unchanged. For each year an opportunity youth remains out of the labor force, future earnings become reduced by two to three percent. Consequently, past the age of 25, opportunity youth often face higher rates of adult unemployment and poverty throughout their lives.² To put this perspective into numbers—the average opportunity youth in the United States costs nearly \$15,000 in annual taxpayer burden, \$184,000 in lifetime taxpayer burden, and an astonishing \$570,000 in lifetime social burden.³ Translating these costs to the Portland-Vancouver region's opportunity youth, this disconnection results in nearly \$22 billion in combined costs throughout their lifetimes.⁴

The analysis found in this report breaks down the over 29,000 opportunity youth present in the region, including demographic, educational, and family characteristics. The local data will provide community leaders and stakeholders a basis to improve the rate of reconnection by preventing disconnection prior to it occurring. Table 1 highlights the key summary statistics of opportunity youth found in the Portland-Vancouver region in 2016. Additional tables are available in the Appendix following this report. Some of the most noticeable data points and changes in the opportunity youth population since 2014 include:

- The overall opportunity youth population in the Portland-Vancouver region remains largely unchanged between 2014 and 2016.

1 2016 estimate is within the margin of error (MOE) of 2014 estimate and therefore not a statistically significant change.

2 John M. Bridgeland and Jessica A. Milano, "Opportunity Road: The Promise and Challenge of America's Forgotten Youth," Civic Enterprises, January 2012.

3 In 2016 dollars. Clive R. Bedfield, Henry M. Levin, Rachel Rosen, "The Economic Value of Opportunity Youth," Civic Enterprises, January 2012. Social burden includes lost earnings, additional health expenditures, crime costs, and welfare and social services not included in the taxpayer burden. Taxpayer burden is composed of lost taxes, additional healthcare directly paid by taxpayers, criminal justice systems and corrections expenditures, and welfare and social service payments directly transferred from taxpayers. See paper for more detail on methodology.

4 This assumes worst-case scenario. Some opportunity youth may be between school and work, stay-at-home parents or care givers, or in between jobs. Not all will maximize the estimated social and taxpayer burden over their lifetimes.

- Eighty-three percent of opportunity youth worked less than half the year or were unemployed entirely. Six in ten did not work at all in 2016.
- Opportunity youth are becoming more diverse. In 2014, 30 percent of opportunity youth were people of color. As of 2016, that share rose to 42 percent.
- Since 2014, the Hispanic opportunity youth population increased its share of all opportunity youth in the region by 12 percentage points, from 15 to 27 percent. Comparatively, Hispanics represent just 18 percent of the total youth population.
- Opportunity youth in 2016 are more likely to be foreign-born compared to 2014—the share jumped from 15 to 22 percent.
- The number of homeless youth present in the region remains largely unchanged since 2014, however, the share of unsheltered homeless youth decreased from 48 to 38 percent.
- Health insurance rates for opportunity youth in the region continue to increase—86 percent are now insured compared to just 58 percent in 2012. A gap between opportunity youth and all youth, however, remains.

TABLE 1. OPPORTUNITY YOUTH SUMMARY, 2016

Group	Total	Poverty*		Race/Ethnicity		Education		Gender	
		Living below 200% of Federal Poverty level	Living above 200% of Federal Poverty Level	People of Color	White (non-Hispanic)	Less than a HS Diploma/ Equivalent	HS Diploma/ Equivalent or More	Female	Male
Age 16-19	7,122	4,301	2,668	2,403	4,719	2,641	4,481	2,425	4,697
Age 20-24	22,009	10,501	10,723	9,940	12,069	3,957	18,052	12,880	9,129
All OY	29,131	14,802	13,391	12,343	16,788	6,598	22,533	15,305	13,826
Share of OY		51%	46%	42%	58%	23%	77%	53%	47%

* Poverty status not identified for all individuals

Source: ACS PUMS 2016 1-Year Data

ANALYSIS OVERVIEW

A vast majority of the analysis provided in this report stems from data available through the Census Bureau's American Community Survey (ACS)⁵. Extractable versions of the survey samples from the ACS allow researchers to break down demographics data beyond traditional tables provided by the Census, including determining an opportunity youth estimate and ultimately their characteristics, employment, and household data. The Census releases survey data annually, with the most recent being from 2016. The Census created statistical geographic areas called Public Use Microdata Areas (PUMAs) for disseminating ACS data. The six counties highlighted in Figure 1 reveal the counties within the CWWC that align with PUMAs. These six, along with Pacific County, were the counties used to perform the analysis seen throughout this report.

Table 2 shows the share and count of opportunity youth found in each PUMA region. Nationally, rural areas and urban centers tend to have higher shares of opportunity youth compared to other community types (suburbs, small-medium cities).⁶ Consequently, Clark, Multnomah, and the Cowlitz/Wahkiakum/Pacific County PUMAs have higher shares of opportunity youth compared to Oregon and Washington overall. In fact, all three of these regions—which represent 70 percent of the region—saw both an increase in the count and share of all youth that have become disconnected between 2014 and 2016. The decreased share and count in Clackamas and Washington, however, counteracted the rise seen in the remainder of the region.

⁵ As with any survey, applying samples to represent larger populations will result in margins of error (MOE), or the range of possible values for the estimate. Please see the appendix for additional information on margins of error and detailed tables of the data found in this report with MOE's provided.

⁶ Sarah Burd-Sharps and Kristen Lewis, "Promising Gains, Persistent Gaps: Youth Disconnection in America," Measure of America, March 2017

FIGURE 1. GEOGRAPHIC OVERVIEW MAP

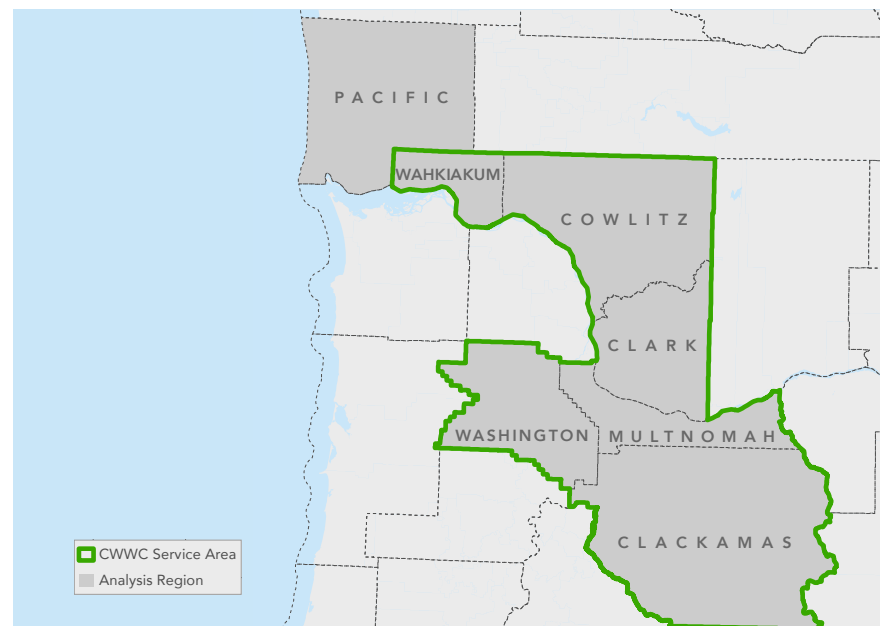


TABLE 2. OPPORTUNITY YOUTH BY ACS PUMA REGION

PUMA Region	Count of OY	OY share of all youth
Multnomah	10,268	12%
Clackamas	2,828	7%
Washington	5,996	10%
Clark	7,178	14%
Cowlitz, Wahkiakum, Pacific	2,861	19%
Total	29,131	11%

Source: ACS PUMS 2016 1-Year Data

WHO ARE OPPORTUNITY YOUTH

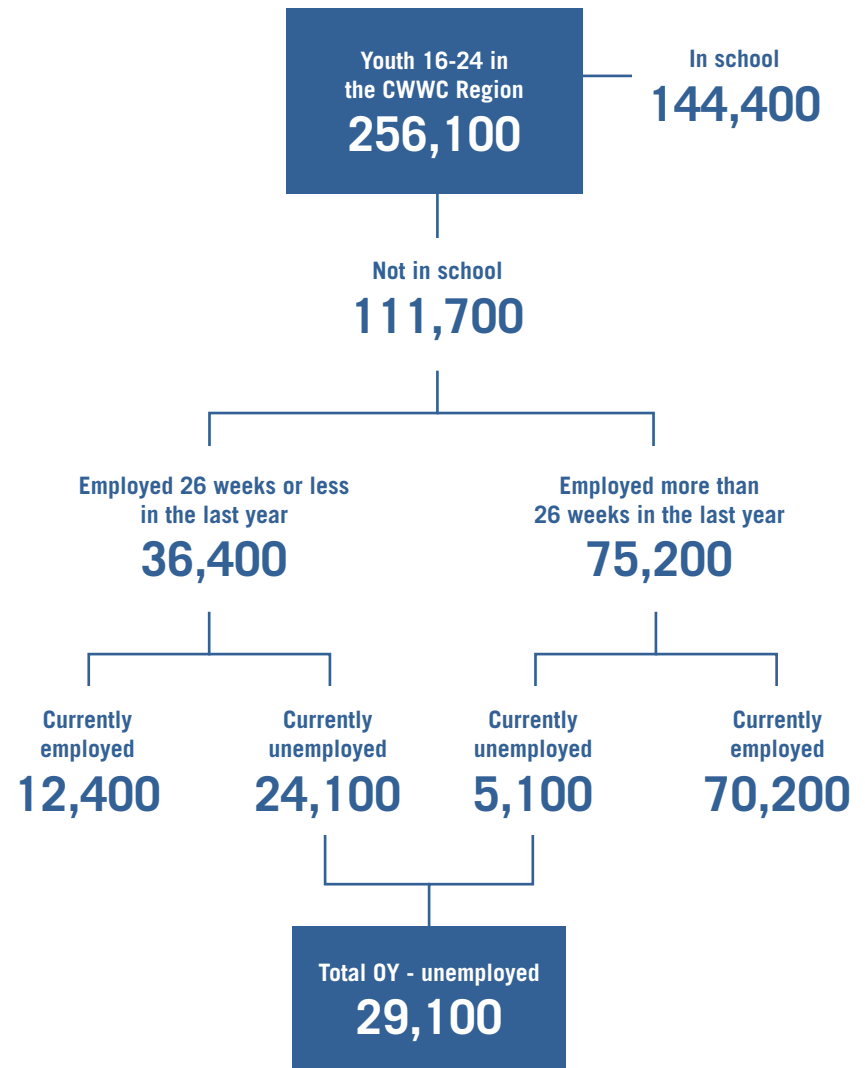
The term opportunity youth defines individuals between the ages of 16 and 24 who are neither working nor in school. Specifically, in the context of Census information, this means that:

1. Individuals who have not attended school in the last three months AND
2. Individuals who are not working, but are looking for work (unemployed) OR
3. Individuals who are not working, nor are they looking for work (not in the labor force)

As seen previously on table 1, opportunity youth have varying levels of education. Overall, one in four opportunity youth in the region do not have a high school degree or equivalent, severely limiting their employment prospects. Many would benefit immensely from workforce development programs that propel them into the labor force or advance their education.

Opportunity youth account for approximately 11 percent of all youth in the region and 26 percent of all youth not enrolled in school throughout the region. Over 24,000 (83 percent) of opportunity youth were employed for half or less of the last year (26 weeks) or were never employed. Of these 24,000, 17,250 (72 percent) did not work at all in 2016.

FIGURE 2. OPPORTUNITY YOUTH IN THE CWWC REGION, 2016



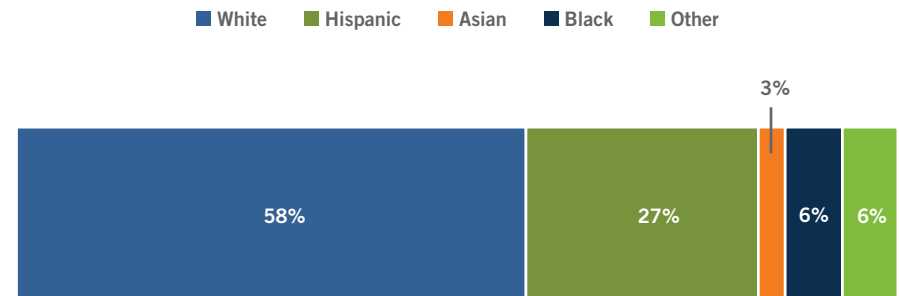
Source: ACS PUMS 2016 1-Year Data

OPPORTUNITY YOUTH DEMOGRAPHICS

An opportunity youth in the region is more likely to be a person of color compared to the overall population of youth aged 16 to 24. The combined Hispanic and non-white race populations accounts for 42 percent of opportunity youth, compared to 36 percent in total youth population. In 2014, just 30 percent of opportunity youth were people of color.

Since 2014, the Hispanic opportunity youth population increased its share of all opportunity youth in the region by 12 percentage points, from 15 to 27 percent. Comparatively, Hispanics represent just 18 percent of the total youth population. Over-representation also exists amongst black youth—despite representing just six percent of the opportunity youth population and three percent of the total youth population, nearly one in four black youth are considered opportunity youth.

FIGURE 3. RACE/ETHNICITY BREAKDOWN OF OPPORTUNITY YOUTH, 2016



Source: ACS PUMS 2016 1-Year Data

TABLE 3. OPPORTUNITY YOUTH BY RACE AND ETHNICITY, 2016

Race/Ethnicity	Count of OY	Share of OY	OY share of all youth
White, non-Hispanic	16,788	58%	10%
Hispanic	7,727	27%	17%
Asian, non-Hispanic	928	3%	4%
Black, non-Hispanic	1,868	6%	24%
Other, non-Hispanic	1,820	6%	10%
Total	29,131	100%	11%

Source: ACS PUMS 2016 1-Year Data

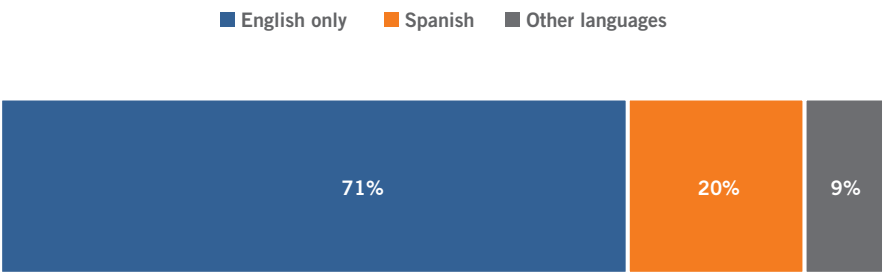
NATIVITY, LANGUAGE, AND MOBILITY

Approximately 8,400 opportunity youth (29 percent) speak a language other than English at home. Like demographics, this diversity in opportunity youth is an over-representation compared to the overall youth population. Meanwhile, opportunity youth are less likely to speak English only at home than all youth. As the share of the Hispanic share of opportunity youth has risen, so too has the share speaking Spanish at home—a five percentage point jump since 2014.

Additionally, the share of opportunity youth born outside the United States increased from 15 percent in 2014 to 22 percent in 2016. This indicates that over 6,300 opportunity youth were born in a foreign country. Roughly two-thirds of these youth moved to the U.S. after the age of 15.

Opportunity youth are just as likely to have moved in the past year compared to the overall youth population. About one in four youth in the region moved homes in 2016.

FIGURE 4. PRIMARY LANGUAGE SPOKEN AT HOME AMONG OPPORTUNITY YOUTH, 2016



Source: ACS PUMS 2016 1-Year Data

TABLE 4. LANGUAGE SPOKEN AT HOME AMONG OPPORTUNITY YOUTH, 2016

Language spoken at home	Count of OY	Share of OY	OY share of all youth
English only	20,758	71%	11%
Spanish	5,737	20%	18%
Other languages	2,636	9%	8%
Total	29,131	100%	11%

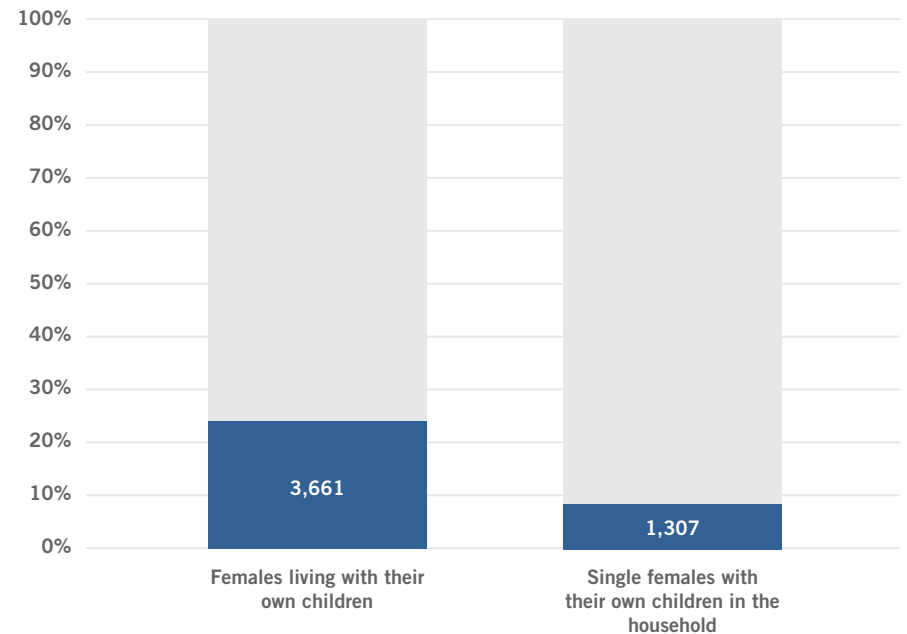
Source: ACS PUMS 2016 1-Year Data

PARENTING YOUTH

About 3,700, or 24 percent of opportunity youth females lived with their own children in 2016. This represented a decrease from the 33 percent (5,000) in 2014. Of those 3,700, an estimated 1,300 were single females living with their children. Additionally, about 2,200 or 57 percent of female youth age 16 to 24 who gave birth in the last year were also opportunity youth.

Based on Self-Sufficiency Standard and Census data, an estimated two-thirds of single mother households in Multnomah County do not earn enough to make ends meet, compared to one-third of all households.⁷ Targeting resources towards this population alleviates common burdens preventing single parents from re-entering the workforce or education system, such as limited child care options and extended gaps in employment or education.

FIGURE 5. OPPORTUNITY YOUTH FEMALES BY HOUSEHOLD TYPE AND OWN CHILDREN IN THE HOUSEHOLD, 2016



Source: ACS PUMS 2016 1-Year Data

⁷ For more information on the Self-Sufficiency Standard and to download/print a copy of the report, please visit <https://www.worksystems.org/research/self-sufficiency-standard-oregon-counties-2017>

OPPORTUNITY YOUTH HOUSEHOLDS

A vast majority of opportunity youth live in residential housing but do not rent or own their place of residence, as indicated by the lack of householders present in the population. An estimated 1,900 (7 percent) of opportunity youth were householders in 2016, meaning they were the person (or one of the people) in whose name the housing unit is owned or rented. Intuitively this makes sense since this population is neither working, and therefore unable to maintain regular, adequate income necessary to pay rent or mortgage, nor in school where potential grants or loans would subsidize the ability to live on their own. Consequently, 88 percent (25,800) of opportunity youth live in housing with someone else representing the householder status. The remaining five percent live in group quarters, with the majority living in institutional group quarters (correctional facilities, nursing facilities, psychiatric hospitals, and group homes or residential treatment centers for juveniles).

Homeless youth are another important population in the region to consider. Unfortunately, Census survey data does not cover this segment of the population. The most reliable source of estimates on homelessness come from point-in-time counts provided annually by the Department of Housing and Urban Development (HUD).⁸ Based on the 2017 count, there were 464 homeless youth ages 18 to 24.⁹ An estimated 20 percent of those youth lived in families with at least one child under the age of 18.

A more detailed table is provided in the appendix. These numbers and shares largely remain unchanged from 2014. Fortunately, the share of unsheltered youth across the region reduced from 48 percent in 2014 to most recently 38 percent in 2017.

⁸ For details on the HUD point-in-time homeless count methodology see: <https://www.hudexchange.info/resource/4036/point-in-time-count-methodology-guide/>

⁹ Does not include youth age 18 to 24 that have any form of temporary living arrangements, such as another household or non-shelter.

TABLE 5. COUNT OF OPPORTUNITY YOUTH BY HOUSEHOLD TYPE, 2016

Household type	Count of OY	Share of OY
Householder	1,916	7%
Non-householder	25,779	88%
Group quarters	1,436	5%
Total	29,131	100%

Source: ACS PUMS 2016 1-Year Data

HEALTH INSURANCE COVERAGE AND DISABILITY

Health insurance coverage rates for opportunity youth continue to see substantial improvements since 2012. An estimated 86 percent of opportunity youth now have health insurance—28 percentage points higher than the 58 percent in 2012. Despite the significant increase, a persistent gap between opportunity youth and all youth continues to exist. An estimated 93 percent of all youth in the region had health insurance in 2016, indicating a seven-percentage point gap.

While most of the region has experienced considerable expansion of coverage for opportunity youth, Clark County continues to struggle in this regard. The share of those insured increased to just 75 percent

from 72 percent between 2014 and 2016. Meanwhile, the entire region saw an eight-percentage point increase, from 78 to 86 percent.

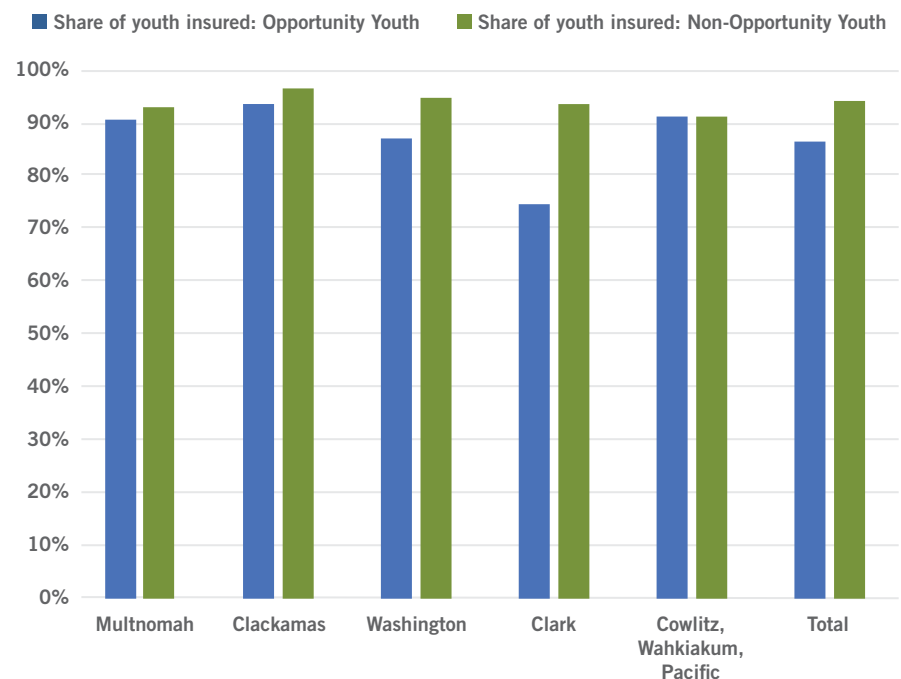
An estimated third of youth with disabilities (physical, mental, emotional) in the region are considered opportunity youth—a jump from just one quarter in 2014. These approximately 6,900 youth with disabilities now represent 24 percent of all opportunity youth, compared to 5,200 (17 percent share) in 2014. Just 21 percent of opportunity youth with disabilities reported being in the labor force, indicating that four in five were neither in school nor looking for work in 2016. Comparatively, roughly two in three opportunity youth without a disability reported the same.

TABLE 6. OPPORTUNITY YOUTH WITH HEALTH INSURANCE, BY PUMA, 2012 - 2016

PUMA region	Share of OY who are insured		
	2012	2014	2016
Multnomah	58%	81%	90%
Clackamas	68%	82%	94%
Washington	56%	79%	87%
Clark	55%	72%	75%
Cowlitz, Wahkiakum, Pacific	61%	72%	91%
Total	58%	78%	86%

Source: ACS PUMS 2016 1-Year Data

FIGURE 6. SHARE OF YOUTH WHO ARE INSURED, BY PUMA, 2016



Source: ACS PUMS 2016 1-Year Data

EDUCATION

With automation threatening low-skill workers and increasing demand for an educated, well-trained workforce in jobs that provide living wages, ensuring that youth complete high school is imperative in preparing them for future success. Regional school districts located in the state of Washington had four-year graduation rates at or above 80 percent, on average. On the Oregon side, the Clackamas and Washington county school districts also had four-year rates above 80 percent, however, the average school district in Multnomah County had just a 75 percent four-year graduation rate. These percentages have remained constant since 2014.

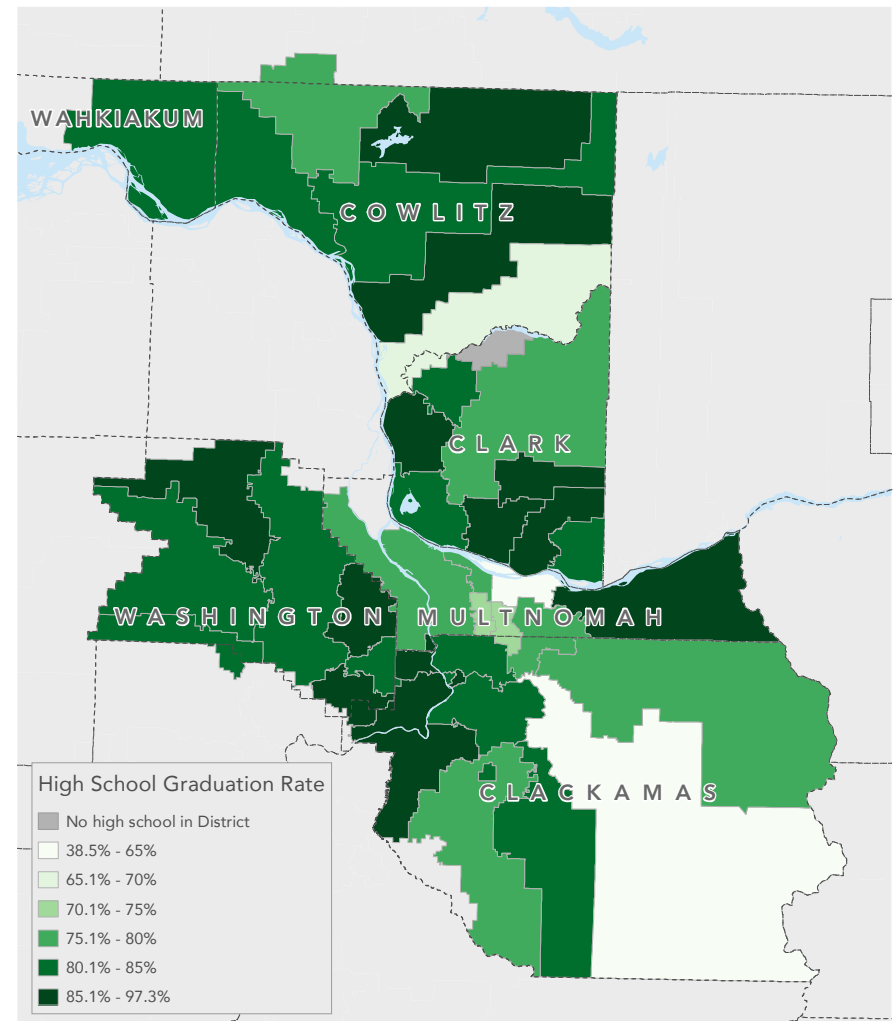
For five-year graduation rates, regional school districts from Oregon maintained an 80 percent rate while Washington districts experienced a two-percentage point uptick to 84 percent in 2016. Detailed district-level outcomes are provided in the appendix.

**TABLE 7. 2016-2017 PORTLAND-VANCOUVER REGION
GRADUATION RATES, BY STATE**

2016-2017 graduation year	4-year graduation rate (2013-2014 9th graders)	5-year graduation rate (2012-2013 9th graders)
Oregon school districts	77%	80%
Washington school districts	82%	84%

Source: Oregon Department of Education and Washington Office of the Superintendent of Public Instruction

FIGURE 7. 2016-2017 SCHOOL YEAR HIGH SCHOOL GRADUATION RATES



EDUCATION

Knowing the current level of education for opportunity youth can provide insight in to what extent schooling will be the primary focus in re-engagement assistance. Among teenage opportunity youth, an estimated 2,600 have less than a high school diploma. This specific sub-population of opportunity youth likely meet the necessary qualifications to re-integrate into the K-12 education system. The other two-thirds of opportunity youth aged 16-19 have a high school degree or equivalent.

Older opportunity youth, those aged 20-24, are more likely to have at least a high school degree. Just 18 percent have less than a high school degree or equivalent. Forty percent of older opportunity youth have education beyond high school, a seven-percentage point drop

TABLE 8. OPPORTUNITY YOUTH BY AGE GROUP AND LEVEL OF EDUCATION, 2016

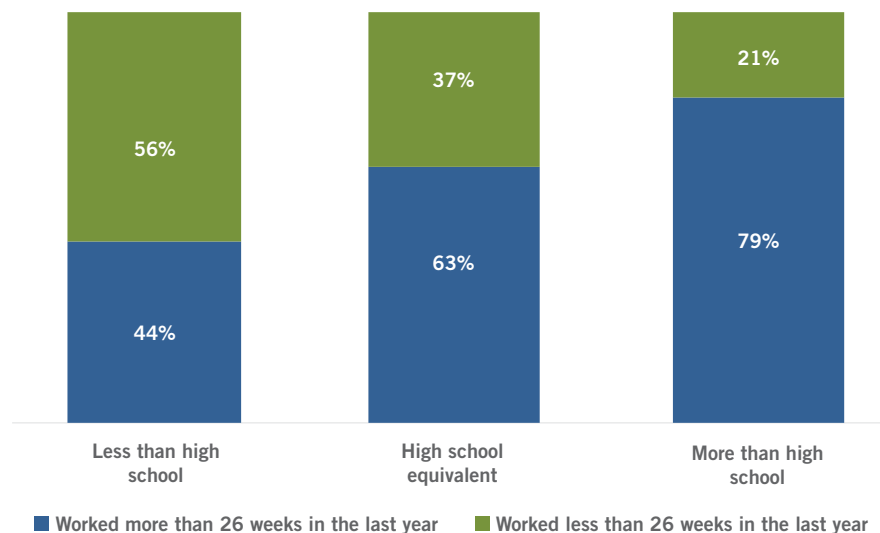
Opportunity youth age 16-19	Count of OY	Share of OY
Less than high school diploma	2,641	37%
High school diploma/equivalent or more	4,481	63%
Total OY age 16-19	7,122	100%

Opportunity youth age 20-24	Count of OY	Share of OY
Less than high school diploma	3,957	18%
High school diploma/equivalent	9,225	42%
More than a high school diploma	8,827	40%
Total OY age 20-24	22,009	100%

compared to 2014. Similar to 2014, roughly 6,700 older opportunity youth have some college education but have not formally completed an Associate's or higher.

Figure 8 demonstrates how crucial education can be for both opportunity and all youth. For all older youth in the region aged 20-24, education is a strong indicator of employment outcomes. A majority of those with less than a high school diploma worked less than 26 weeks in 2016. Thirty-four percent had no reported employment during 2016. On the other end of the spectrum, 79 percent of those with some form of post-secondary education had employment for at least half of 2016. Just eight percent had no employment.

FIGURE 8. SIGNIFICANT EMPLOYMENT BY EDUCATION LEVEL FOR YOUTH AGE 20-24 NOT IN SCHOOL, 2016



Source (Table 8 and Figure 8): ACS PUMS 2016 1-Year Data

POVERTY, EMPLOYMENT, AND INCOME

An estimated 71 percent of all opportunity youth had not looked for work in the four weeks prior to the survey and therefore were considered to be out of the labor force. This represented a ten-percentage point increase in share compared to 2014, where 61 percent of opportunity youth were estimated to be out of the labor force. This could indicate a concerning trend that the influence of chronic unemployment has expanded its reach in the opportunity youth population of the region.

When examining the 29 percent of opportunity youth who did participate in the labor force at some point in 2016, it becomes clear that their work opportunities were not equivalent to the broader youth population. The estimated 8,500 opportunity youth that worked at some point in 2016 had wages on par with the subset of all youth that worked 26 weeks or less. This indicates that a more broadly defined group of youth struggling with employment likely require support from the workforce development system.

TABLE 9. LABOR FORCE PARTICIPATION AMONG OPPORTUNITY YOUTH, 2016

Participation	Count of OY	Share of OY
In the labor force	8,524	29%
Not in the labor force	20,607	71%
All opportunity youth	29,131	100%

Source: ACS PUMS 2016 1-Year Data

TABLE 10. ANNUAL WAGES FOR YOUTH NOT IN SCHOOL, BY LEVEL OF EMPLOYMENT AND EMPLOYMENT STATUS, 2016

Employment Status	Count	Median Annual Wage	Average Annual Wage
Worked 26 weeks or less in the last year	19,193	\$2,950	\$4,556
Worked more than 26 weeks in the last year	75,214	\$19,000	\$22,135
Full year, full-time employment	35,277	\$28,000	\$30,940
Opportunity youth in the labor force	8,524	\$2,200	\$5,257
All youth not in school	111,658	\$12,000	\$15,801

Source: ACS PUMS 2016 1-Year Data

A BROADER LOOK AT OPPORTUNITY YOUTH

Table 11 provides information on a broader population of youth aged 16 to 24 that would likely equally benefit from support from the workforce development system. These youth, while not all defined in the traditional sense of opportunity youth, are not in school and potentially struggle with chronic unemployment and/or underemployment. This broader population includes all youth that were employed less than half of 2016 rather than just those who happened to be unemployed at the point-in-time of the survey. About 24,000 of these youth fit the standard definition of currently unemployed opportunity youth.

This population also has some important exclusions. The numbers in Table 11 do not include youth with post-secondary degrees because the adult workforce development system would better suit their employment preparation needs. Additionally, youth living in institutional group quarters are excluded since they likely require other steps before preparing to re-engage with the labor force. Three quarters of the original opportunity youth meet this alternative definition.

The standard and alternative opportunity youth definitions have similar rates regarding race/ethnicity makeup and poverty rates. The alternative definition skews younger, with 33 percent of the population aged 16-19, while the standard definition has roughly 25 percent in the younger age group.

TABLE 11. CHRONICALLY UNEMPLOYED YOUTH SUMMARY, 2016

	Count	Share of total
Age 16-19	10,492	33%
Age 20-24	21,586	67%
White	19,214	60%
Non-white	12,864	40%
Below 200% of FPL	16,164	50%
Above 200% of FPL	15,914	50%
Total	32,078	100%

Source: ACS PUMS 2016 1-Year Data

APPENDIX

Much of the data in this report comes from the Census Bureau's American Community Survey (ACS). As with any survey, applying samples to represent larger populations will result in margins of error (MOE), or the range of possible values for the estimate.

This appendix includes copies of the tables found throughout the report with MOE's included. In order to know the possible range of an estimate, add and subtract the MOE from the original estimate.

TABLE 1. OPPORTUNITY YOUTH SUMMARY, 2016

Group	Total	MOE +/-	Living below 200% of FPL	MOE +/-	Living above 200% of FPL	MOE +/-	POC	MOE +/-	White	MOE +/-	Less than HS	MOE +/-	HS or more	MOE +/-	Female	MOE +/-	Male	MOE +/-
Age 16-19	7,122	1,657	4,301	1,457	2,668	2,812	2,403	1,274	4,719	1,188	2,641	986	4,481	1,455	2,425	1,166	4,697	1,278
Age 20-24	22,009	3,271	10,501	2,742	10,723	999	9,940	2,390	12,069	2,111	3,957	1,358	18,052	3,137	12,880	3,025	9,129	2,019
All OY	29,131	3,793	14,802	3,007	13,391	2,258	12,343	2,821	16,788	2,388	6,598	1,887	22,533	3,696	15,305	3,101	13,826	2,667
Share of OY			51%		46%		42%		58%		23%		77%		53%		47%	

TABLE 2. OPPORTUNITY YOUTH BY ACS PUMA REGION

PUMA Region	Count of OY	MOE +/-	OY share of all youth
Multnomah	10,268	2,703	12%
Clackamas	2,828	1,290	7%
Washington	5,996	1,562	10%
Clark	7,178	1,708	14%
Cowlitz, Wahkiakum, Pacific	2,861	989	19%
Total	29,131	3,793	11%

Source for Table 1, Table 2, Figure 2: ACS PUMS 2016 1-Year Data

FIGURE 2. OPPORTUNITY YOUTH IN THE CWWC REGION, 2016

	Count	MOE +/-
Youth 16-24	256,097	
In school	144,439	5,926
Not in school	111,658	4,730
Employed 26 weeks or less in the last year	36,444	4,062
Currently employed	12,372	2,083
Currently unemployed	24,072	3,531
Employed more than 26 weeks in the last year	75,214	4,410
Currently employed	70,155	4,587
Currently unemployed	5,059	1,736
Total OY	29,131	3,793

TABLE 3/FIGURE 3. OPPORTUNITY YOUTH BY RACE AND ETHNICITY, 2016

Race/Ethnicity	Count of OY	MOE +/-	Share of OY	OY share of all youth	All youth	Share of all youth
White, non-Hispanic	16,788	2,388	58%	10%	164,082	64%
Hispanic	7,727	2,017	27%	17%	45,500	18%
Asian, non-Hispanic	928	650	3%	4%	21,318	8%
Black, non-Hispanic	1,868	1,363	6%	24%	7,703	3%
Other, non-Hispanic	1,820	854	6%	10%	17,494	7%
Total	29,131	3,793		11%	256,097	

Source: ACS PUMS 2016 1-Year Data

TABLE 4. LANGUAGE SPOKEN AT HOME AMONG OPPORTUNITY YOUTH, 2016

Language spoken at home	Count of OY	MOE +/-	Share of OY	OY share of all youth
English only	20,758	3,131	71%	11%
Spanish	5,737	1,876	20%	18%
Other languages	2,636	1,155	9%	8%
Total	29,131	3,793	100%	11%

Source: ACS PUMS 2016 1-Year Data

TABLE 5. COUNT OF OPPORTUNITY YOUTH BY HOUSEHOLD TYPE, 2016

Household type	Count of OY	MOE +/-	Share of OY
Householder	1,916	949	7%
Non-householder	25,779	3,645	88%
Group quarters	1,436	744	5%
Total	29,131	3,793	100%

Source: ACS PUMS 2016 1-Year Data

FIGURE 5. OPPORTUNITY YOUTH FEMALES BY HOUSEHOLD TYPE AND OWN CHILDREN IN THE HOUSEHOLD, 2016

	Count of OY Females	MOE +/-	Share of OY Females
Females living with own children	3,661	1,205	24%
Single females with own children	1,307	764	9%

Source: ACS PUMS 2016 1-Year Data

TABLE 6. OPPORTUNITY YOUTH WITH HEALTH INSURANCE, BY PUMA, 2012 - 2016

PUMA region	Share of OY who are insured		
	2012	2014	2016
Multnomah	58%	81%	90%
Clackamas	68%	82%	94%
Washington	56%	79%	87%
Clark	55%	72%	75%
Cowlitz, Wahkiakum, Pacific	61%	72%	91%
Total	58%	78%	86%

Source: ACS PUMS 2016 1-Year Data

FIGURE 6. SHARE OF YOUTH WHO ARE INSURED, BY PUMA, 2016

PUMA region	OY	Non-OY	MOE +/-
Multnomah	90%	93%	3,554
Clackamas	94%	96%	2,449
Washington	87%	95%	3,083
Clark	75%	94%	2,509
Cowlitz, Wahkiakum, Pacific	91%	91%	2,074
Total	86%	94%	5,705

Source: ACS PUMS 2016 1-Year Data

TABLE 7. 2016-2017 PORTLAND-VANCOUVER REGION GRADUATION RATES, BY STATE

2016-2017 graduation year	4-year graduation rate (2013-2014 9th graders)	5-year graduation rate (2012-2013 9th graders)
Oregon school districts	77%	80%
Washington school districts	82%	84%

Source: Oregon Department of Education and Washington Office of the Superintendent of Public Instruction

FIGURE 7. 2016-2017 SCHOOL YEAR HIGH SCHOOL GRADUATION RATES

County	School District	4-year completions (2013-14 9th graders)		5-year completions (2012-13 9th graders)	
		Share who completed with HS degree	Share who completed with GED or Alt Diploma	Share who completed with HS degree	Share who completed with GED or Alt Diploma
Washington		85%	88%	87%	90%
	Banks SD 13	91%	93%	92%	92%
	Beaverton SD 48J	86%	88%	87%	91%
	Forest Grove SD 15	80%	81%	84%	86%
	Gaston SD 511J	84%	88%	89%	89%
	Hillsboro SD 1J	84%	87%	84%	88%
	Sherwood SD 88J	95%	97%	97%	98%
	Tigard-Tualatin SD 23J	84%	86%	86%	90%
Multnomah		75%	77%	79%	82%
	Centennial SD 28J	74%	75%	79%	81%
	Corbett SD 39	93%	94%	96%	97%
	David Douglas SD 40	71%	73%	81%	84%
	Gresham-Barlow SD 10J	76%	77%	79%	82%
	Parkrose SD 3	76%	77%	79%	81%
	Portland SD 1J	77%	81%	80%	84%
	Reynolds SD 7	62%	66%	68%	72%
Clackamas	Riverdale SD 51J	89%	89%	92%	92%
		82%	85%	83%	87%
	Canby SD 86	88%	89%	90%	92%
	Colton SD 53	85%	87%	82%	83%
	Estacada SD 108	54%	66%	54%	67%
	Gladstone SD 115	86%	89%	81%	86%
	Lake Oswego SD 7J	92%	94%	94%	95%
	Molalla River SD 35	79%	80%	79%	80%
	North Clackamas SD 12	84%	86%	85%	87%

County	School District	4-year completions (2013-14 9th graders)		5-year completions (2012-13 9th graders)	
		Share who completed with HS degree	Share who completed with GED or Alt Diploma	Share who completed with HS degree	Share who completed with GED or Alt Diploma
	Oregon City SD 62	83%	85%	90%	93%
	Oregon Trail SD 46	79%	80%	74%	79%
	West Linn-Wilsonville SD 3J	93%	95%	94%	96%
Clark		82%	N/A	84%	N/A
	Battle Ground	77%	N/A	81%	N/A
	Camas SD	91%	N/A	91%	N/A
	Evergreen (Clark) SD	86%	N/A	86%	N/A
	Hockinson SD	95%	N/A	94%	N/A
	La Center SD	82%	N/A	89%	N/A
	Ridgefield SD	89%	N/A	94%	N/A
	Vancouver SD	82%	N/A	85%	N/A
	Washougal SD	83%	N/A	78%	N/A
Cowlitz		80%	N/A	82%	N/A
	Castle Rock	80%	N/A	76%	N/A
	Kalama	92%	N/A	92%	N/A
	Kelso	84%	N/A	88%	N/A
	Longview	81%	N/A	81%	N/A
	Toutle Lake	90%	N/A	88%	N/A
	Woodland	68%	N/A	79%	N/A
Wahkiakum		84%	N/A	89%	N/A
	Wahkiakum	84%	N/A	89%	N/A

Source: ACS PUMS 2016 1-Year Data

**TABLE 8. OPPORTUNITY YOUTH BY AGE GROUP
AND LEVEL OF EDUCATION, 2016**

Opportunity youth age 16-19	Count of OY	MOE +/-	Share of OY
Less than high school diploma	2,641	986	37%
High school diploma/ equivalent or more	4,481	1,455	63%
Total OY age 16-19	7,122	1,657	100%

Opportunity youth age 20-24	Count of OY	MOE +/-	Share of OY
Less than high school diploma	3,957	1,358	18%
High school diploma/ equivalent	9,225	2,403	42%
More than a high school diploma	8,827	2,119	40%
Total OY age 20-24	22,009	3,271	100%

Source: ACS PUMS 2016 1-Year Data

**TABLE 9. LABOR FORCE PARTICIPATION AMONG
OPPORTUNITY YOUTH, 2016**

Participation	Count of OY	MOE +/-	Share of OY
In the labor force	8,524	2,306	29%
Not in the labor force	20,607	2,965	71%
All opportunity youth	29,131	3,793	100%

Source: ACS PUMS 2016 1-Year Data

**FIGURE 8. SIGNIFICANT EMPLOYMENT BY EDUCATION LEVEL FOR YOUTH
AGE 20-24 NOT IN SCHOOL, 2016**

Employment by education level for youth 20-24 not in school	Worked more than 26 weeks in the last year	MOE +/-	Worked less than 26 weeks in the last year	MOE +/-
Less than HS	44%	272	56%	1,357
HS or equivalent	63%	737	37%	2,209
More than HS	79%	1,576	21%	1,465

Source: ACS PUMS 2016 1-Year Data

**TABLE 10. ANNUAL WAGES FOR YOUTH NOT IN SCHOOL,
BY LEVEL OF EMPLOYMENT AND EMPLOYMENT STATUS, 2016**

Employment Status	Count	MOE +/-	Median Annual Wage	Average Annual Wage
Worked 26 weeks or less in the last year	19,193	3,037	\$2,950	\$4,556
Worked more than 26 weeks in the last year	75,214	4,410	\$19,000	\$22,135
Full year, full-time employment	35,277	3,733	\$28,000	\$30,940
Opportunity youth in the labor force	8,524	2,306	\$2,200	\$5,257
All youth not in school	111,658	4,730	\$12,000	\$15,801

Source: ACS PUMS 2016 1-Year Data

TABLE 11. CHRONICALLY UNEMPLOYED YOUTH SUMMARY, 2016

	Count	MOE +/-	Share of total
Age 16-19	10,492	1,880	33%
Age 20-24	21,586	3,420	67%
White	19,214	2,578	60%
Non-white	12,864	2,909	40%
Below 200% of FPL	16,164	2,932	50%
Above 200% of FPL	15,914	3,246	50%
Total	32,078	3,985	100%

Source: ACS PUMS 2016 1-Year Data

TABLE 12. YOUTH AGE 16-24, NOT IN SCHOOL WITH NO POSTSECONDARY ATTAINMENTS, 2016

	Total	High school or equivalent	Less than high school	Share with less than HS
Not in school and employed 26 weeks or less	33,150	26,212	6,938	21%
Not in school and employed more than 26 weeks	59,163	53,651	5,512	9%
All youth age 16-24 not in school	92,313	79,863	12,450	13%

Source: ACS PUMS 2016 1-Year Data

TABLE 13. HOMELESS YOUTH 18-24, 2017

	In household without children			In household with at least 1 adult and 1 child				
County	Sheltered	Unsheltered	Total	Sheltered	Unsheltered	Total	Total homeless youth	Share unsheltered
Washington	8	29	37	10	0	10	47	62%
Multnomah	166	124	290	45	5	50	340	38%
Clackamas	12	8	20	14	0	14	34	24%
Clark	15	8	23	20	0	20	43	19%
Total	201	169	370	89	5	94	464	38%

Source: HUD Exchange, point-in-time count, 2017

THE COLUMBIA-WILLAMETTE WORKFORCE COLLABORATIVE



These programs funded in whole or part through the U.S. Department of Labor. We are equal opportunity employers/programs.
Auxiliary aids and services are available upon request to individuals with disabilities.

Portland Metro Area Value Pricing Feasibility Study Update

VANCOUVER
CITY HALL



June 18, 2018

Vancouver City Council Workshop

Rebecca Kennedy, Long Range Planning Manager,
City of Vancouver Community & Economic
Development

Presentation Overview

- Update on Portland Metro Area Value Pricing Feasibility Study
- Review Council's Value Pricing Policy Framework & Comments to be Submitted to the Oregon Transportation Commission
- Council Discussion

Council Action Requested

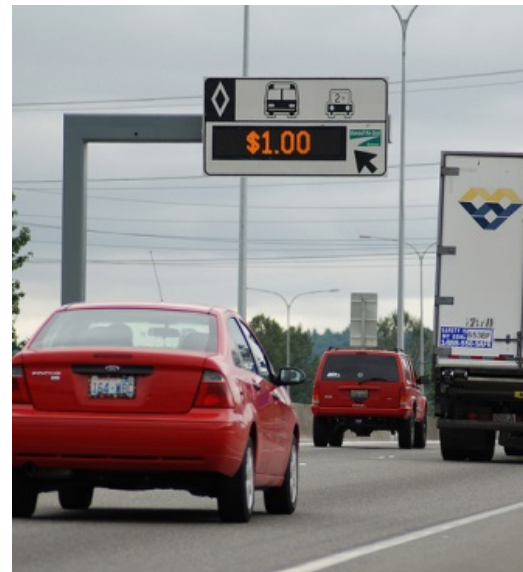
- Review and finalize key content of written comments, to be submitted by the Mayor on behalf of Council, as part of the final Portland Metro Area Value Pricing Study Feasibility Study report that will be sent to the Oregon Transportation Commission.

Previous Council Review

- November 6, 2017 worksession
- April 2, 2018 worksession

Congestion Pricing

- A toll system allows drivers to access a public or private roadway for a fee (or toll)
- Primary purpose is to reduce roadway congestion
- Can also support new road construction, maintenance or expansion projects



Portland Metro Area Value Pricing Study

- HB2017 passed by the Oregon Legislature in 2017
- Directed the Oregon Transportation Commission (OTC) to develop a proposal for congestion pricing on I-5 and I-205 from the state line to the junction of the two freeways just south of Tualatin, Oregon
- Oregon Department of Transportation (ODOT) is evaluating congestion pricing proposals through the Portland Metro Area Value Pricing Feasibility Study
- HB2017 requires the OTC to implement any proposal approved by the Federal Highway Administration (FHWA)

Value Pricing Policy Advisory Committee

In the fall of 2017, the Oregon Department of Transportation established a Policy Advisory Committee with the following objectives:

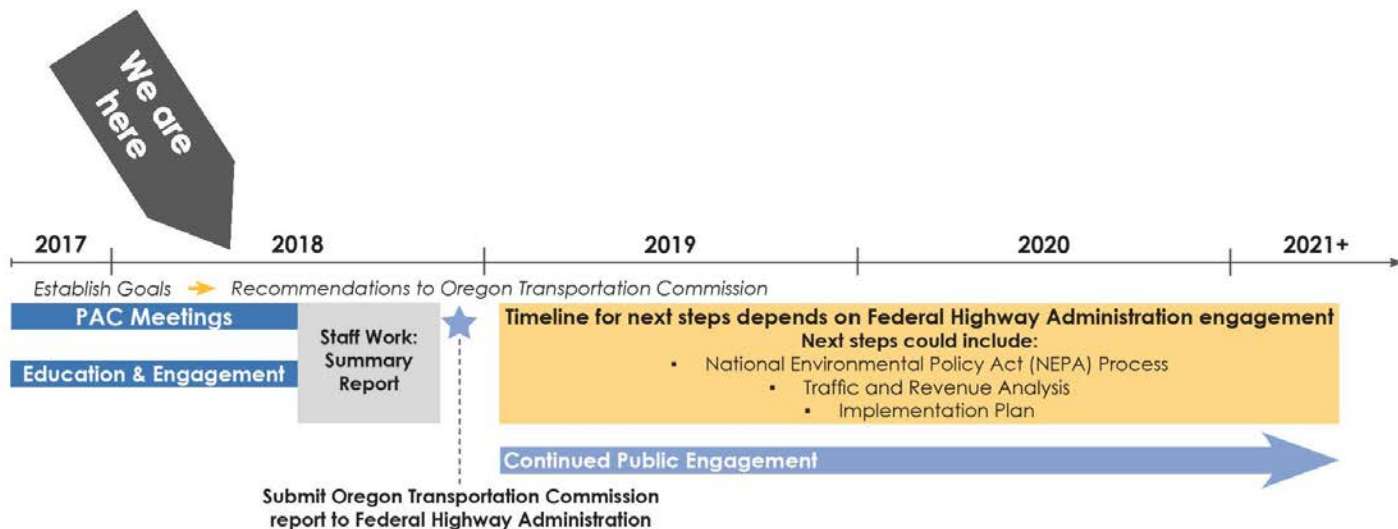
1. Evaluate options to implement value pricing to reduce congestion on I-5 and I-205
2. Consider public input for various options
3. Determine effects and potential mitigation strategies
4. Provide input and recommendations to the OTC

Value Pricing Study Process

- Initial Pricing Concepts
- Round 1 Concept Evaluation and Recommendations
- Round 2 Concept Evaluation and Recommendations
- Mitigation Strategies
- Public Outreach

Value Pricing Process

Future process



Vancouver City Council Value Pricing Policy Framework

1. Extend Timeline for the Value Pricing Study
2. User Equity
3. Interstate Equity
4. Infrastructure Funding
5. System-Wide Impact Analysis

Comment to Oregon Transportation Commission

- Every member of the Value Pricing Policy Advisory Committee will have the opportunity to submit written comments that will be included in the final report that is forwarded on to the Oregon Transportation Commission.
- Recommended comments will utilize the existing policy framework, and provide additional detail in certain areas.

Comment to Oregon Transportation Commission

In addition the policy framework previously affirmed by Council, the following comments are recommended to be submitted a part of Council's written comments:

- Mitigation strategies for low-income residents must be applicable in a bi-state context
- Transit alternatives, and the need for enhanced transit service levels resulting from congestion pricing, must be applicable in the bi-state context
- Impact analyses must address region and system-wide impacts

Next Steps/Timeline

- Last PAC Meeting: June 25, 2018
- July 12, 2018: Special Oregon Transportation Commission Meeting; opportunity for the public to provide comment on Value Pricing Study
- Late 2018: ODOT to present final Value Pricing Report to the Oregon Transportation Commission, including recommend value pricing concepts to be submitted to the Federal Highway Administration for consideration
- Update Council on an ongoing basis as appropriate

Council Action Requested

- Review and finalize key content of written comments, to be submitted by the Mayor on behalf of Council, as part of the final Portland Metro Area Value Pricing Study Feasibility Study report that will be sent to the Oregon Transportation Commission.

Questions and Discussion

Rebecca Kennedy, Planning Manager
(360) 487-7896
Rebecca.Kennedy@cityofvancouver.us

More information on Value Pricing:
hwww.oregon.gov/ODOT/Pages/Value-Pricing.aspx



Portland Metro Area Value Pricing Feasibility Analysis Update

DATE: June 18, 2018

TO: Mayor and City Council

FROM: Eric Holmes, City Manager
Rebecca Kennedy, Planning Manager, Community & Economic Development

RE: **Portland Metro Area Value Pricing Feasibility Analysis**

On June 18, 2018, the City Council will hold a workshop on the proposed Value Pricing initiative provided for in Oregon House Bill 2017. This will be the third workshop with Council on the study since it was initiated last year. In addition, the workshop will provide an opportunity for Council to review and finalize key concepts to be included in written comments that will be submitted by the Mayor, on behalf of the Council, as part of the final Value Pricing report that will be sent to the Oregon Transportation Commission (OTC) later this year. Proposed comments reflect the Policy Framework that Council affirmed at a previous workshop on April 2 of this year, which have guided the Mayor's engagement on the Value Pricing Policy Advisory Committee and Council's engagement with the Value Pricing Study overall.

This memorandum provides a high level overview of the issue as well as outlines the policy framework and key considerations for Council's review.

Overview of Congestion Pricing

Congestion pricing is a user fee system that allows drivers to access a public or private roadway for a fee (or toll), and is typically used as part of a strategy to reduce roadway congestion and/or support road construction, maintenance or expansion projects. Congestion pricing is one type of tolling strategy. It manages roadway demand by charging higher fees during peak travel or congested time periods, and can lead to reductions in demand on the system by encouraging drivers to travel less at peak periods or choose other modes of transportation. Common types of congestion pricing include the following:

- **Priced Lanes/High Occupancy Toll (HOT) Lanes:** Individual drivers can pay a fee to use a High Occupancy Vehicle (HOV) Lane to bypass congestion, or used an unpriced lane.

Portland Metro Area Value Pricing Feasibility Analysis

April 2, 2018

Page 2 of 5

- **Priced Roadways/Open Road Tolling (ORT):** System-wide tolls that where all lanes are priced and all users are required to pay.
- **Cordon Pricing:** Drivers pay a fee to enter a specified area such as a downtown or central business district.

Congestion Pricing in Washington State

Since 2007 the Washington State Department of Transportation (WSDOT) has implemented several projects that use a form of congestion pricing or tolls as a tool to help manage congestion, enhance mobility, and generate revenue. The four facilities include: SR 167 High Occupancy Toll lanes, I-405 Express lanes, SR 520 floating Bridge, and the Tacoma Narrows Bridge. All but the Narrows Bridge utilize congestion pricing that varies by time of day. An electronic toll collection system eliminates the delay associated with traditional toll booths.

Oregon State House Bill 2017

In 2017, the Oregon Legislature passed HB 2017, also known as “Keep Oregon Moving,” a comprehensive transportation package that addresses key infrastructure concerns, including roadway maintenance and expansion, freight mobility, public transit, multi-modal connectivity, and congestion reduction. It directed the Oregon Transportation Commission (OTC) to develop a proposal for congestion pricing (called Value Pricing in the bill) on I-5 and I-205 from the state line to the junction of the two freeways just south of Tualatin, in order to reduce traffic congestion in the Portland metropolitan region. In accordance with this direction, the Oregon Department of Transportation (ODOT) is currently evaluating congestion pricing proposals through the Portland Metro Area Value Pricing Feasibility Study. The bill requires the OTC to implement any proposal approved by the Federal Highway Administration (FHWA)

Portland Metro Area Value Pricing Advisory Committee

In order to develop a Value Pricing proposal to present to FHWA, the OTC established a Policy Advisory Committee (PAC) with the following objectives:

- Evaluate options to implement value pricing to reduce congestion on I-5 and I-205 in the Portland area.
- Consider public input for the various options.
- Determine effects and potential mitigation strategies for options.
- Provide input and recommendations on value pricing to the Commission prior to applying to the Federal Highway Administration.

Portland Metro Area Value Pricing Feasibility Analysis

April 2, 2018

Page 3 of 5

The Policy Advisory Committee (PAC) met on five occasions between November 2017 and May 2018, and the final PAC meeting is scheduled for June 25, 2018. The group is expected to approve and forward a recommendation to the Oregon Transportation Commission at their final meeting in June. Mayor Anne McEnerny-Ogle represents the City of Vancouver on the Policy Advisory Committee. Two other representatives from SW Washington sit on the PAC- Clark County Councilor Eileen Quiring and WSDOT Southwest Regional Administrator Kris Strickler.

Pricing Concepts Being Considered for Recommendation to the Oregon Transportation Commission:

After an initial analysis of several pricing concepts and review by the PAC, ODOT moved the following five value pricing concepts forward for additional analysis and potential recommendation to the Oregon Transportation Commission (OTC) and the Federal Highway Administration (FHWA):

- Concept A: One priced lane in each direction on I-5 from Going Street to the MLK/Marine Dr./Delta Park Interchange
- Concept B: Toll all lanes on I-5 from Going St./Alberta St. to Multnomah Blvd.
- Concept C: Priced Roadway- Toll all lanes on both I-5 and I-205 throughout the study area
- Concept D: One priced lane in each direction on I-205 from OR 99E to Stafford Rd.
- Concept E: Priced Roadway- Toll all lanes on Abernathy Bridge

Based on a second round of analysis, the Oregon Department of Transportation (ODOT) is recommending that the following concepts be moved forward to the Oregon Transportation Commission (OTC) for consideration, and eventual submittal the Federal Highway Administration (FHWA) for review and implementation. According to ODOT's analysis, the following concepts provide the best opportunity for congestion relief, and generate sufficient revenue to cover costs associated with tolling implementation, tolling operations, and mitigation of impacts on low-income and adjacent communities:

- Implementation of Concept B as a pilot priced roadway system
- Consider implementation of Concept E concurrent with implementation of Concept B
- Pending assessment of Concept B performance and assuming successful implementation, implement Concept E in phases, coupled with a more comprehensive system-wide analysis

City of Vancouver Value Pricing Policy Framework:

During a worksession on April 2, 2018 Council affirmed the following policy framework to inform their participation and engagement with the Value Pricing study going forward:

1. **Extend Timeline for Value Pricing Study:** The timeline for the Value Pricing Feasibility Analysis is insufficient. Given the significance of this project to the future of the entire region, the timeline for concept evaluation and recommendation should be extended to allow for more analysis and additional public input.
2. **User Equity:** Value pricing proposals should be designed to avoid or minimize impacts and distribute benefits in an equitable manner. Any revenue generated by congestion pricing should be spent on improvements within the area where it was generated, so that those paying the toll also receive the benefits of reduced peak-hour congestion, increased vehicle/person throughput, increased travel time reliability, expanded multimodal capacity, and/or improved operations on existing roadways.
3. **Interstate Equity:** The OTC should not seek approval for or implement any tolling plan that disproportionately impacts residents/commuters in Southwest Washington without providing commensurate benefits in reduced peak-hour congestion, increased vehicle/person throughput, increased travel time reliability, expanded multimodal capacity, and/or improved operations on existing roadways.
4. **Infrastructure Funding:** The five concepts moved forward for additional evaluation include both congestion management strategies and bottleneck relief strategies. If one of the aims of the value pricing discussion is to fund specific infrastructure projects that relieve existing bottlenecks within the region, it should include replacement of the Interstate 5 Bridge. *Under any scenario*, the OTC should not implement any congestion pricing strategy that negatively impacts a future Interstate 5 Bridge replacement project, which we assume will require tolling to implement. The Council is committed to continuing to work with the Oregon Transportation Commission to identify equitable solutions that address both congestion and bottleneck relief, in order to benefit the entire region.
5. **System-Wide Impact Analysis:** The diversion and impact analysis and recommended mitigation strategies for all tolling concepts should consider and address impacts to the entire regional transportation system, including all impacted local street systems, SR-14 and SR-500 in Vancouver, and I-84, US-26 and OR-217 in Oregon.

Additional Points of Emphasis to be Included in Written Comments Submitted to the OTC:

In alignment with the above Policy Framework, the below additional items should be included as part of the comments provided to the OTC in the final Value Pricing Report:

Portland Metro Area Value Pricing Feasibility Analysis

April 2, 2018

Page 5 of 5

- Mitigation strategies for low-income residents must be applicable in a bi-state context. The design of mitigation strategies should ensure that they are equally accessible to residents of both Oregon and Washington, and should not overly burden residents of one state as they seek to access mitigation programs.
- Transit alternatives, and the need for enhanced transit service levels resulting from congestion pricing, must be applicable in the bi-state context. Given that C-TRAN is the primary transit option for people traveling between Oregon and Washington, mitigations must be structured so that they can apply to impacted residents across the region, regardless of which state they live in and which transit provider they depend on.
- ODOT's analysis concludes that the proposed value pricing concepts will have impacts of the entire regional transportation system. Impact analyses must address region and system-wide impacts.

Attachments:

- HB 2017 Fact Sheet
- Value Pricing Fact Sheet
- Value Pricing – Round 1 Concept Evaluation and Recommendations Technical Memorandum (February 20, 2018)
- Value Pricing - Appendices to Round 1 Concept Evaluation (February 20, 2018)
- Value Pricing - Round 2 Concept Evaluation Technical Memorandum (May 7, 2018)
- March 22, 2018 Letter from WSDOT Regarding Oregon HB 5045 Budget Note
- March 23, 2018 Letter from ODOT in response to March 22, 2018 WSDOT Letter
- May 10, 2018 Letter from Mayor McEnerny-Ogle to ODOT Staff



To request other formats, please contact:
Rebecca Kennedy
(360) 487-7896 | WA Relay: 711
Rebecca.Kennedy@cityofvancouver.us



Portland Metro Area Value Pricing Feasibility Analysis

FACT SHEET

We have a congestion problem

It's not your imagination — more people and merchandise are sitting in Portland-area traffic longer. Buses, bicycles and pedestrians also are affected as the system slows. Regional growth has strained the Portland metro area's six major highways — including I-5 and I-205. Congestion and delays are increasing throughout all hours of the day creating unpredictability, costing people and businesses, and increasing crashes.

Not one single solution

In 2017, the Oregon Legislature authorized substantial funding to improve area highways, transit, biking and walking facilities, and use technology to make the system work better. The Legislature also directed the Oregon Transportation Commission (OTC) to seek federal approval to implement value pricing on I-5 and I-205 to address the congestion problem.

What is value pricing?

Pricing strategies have been used successfully for years by utilities, sporting events and movie theaters. The price is determined by how many users want to use a limited service.

Value pricing, also called congestion pricing or variable rate tolling, is a proven tool resulting in faster, more reliable and predictable trips. It has been successfully implemented in the U.S. and around the world.

Value pricing uses fees or tolls to manage

congestion. During more congested times of the day a higher fee is charged, encouraging some drivers to consider other travel options such as alternate routes, carpools, transit or travel at less congested times. This improves mobility for all drivers who pay the fee, and potentially for the entire system. Fees are collected electronically so drivers do not have to stop at toll booths.

The OTC will consider two main types of value pricing:

- **Priced lanes**, which give drivers a choice to pay to use the lane to save time or to use the adjacent, unpriced lanes.
- **Priced roadways**, a concept under which all lanes would be priced.

Implementation of priced lanes in the Portland metro area requires a decision about whether to construct new lanes or convert general travel lanes.

Both types of value pricing tools could be applied to the entire highway or to specific highway segments, which could include bridges.

+30,761
MORE PEOPLE

Portland area
population growth
2014 - 2015

+13.6%
MORE CONGESTION

Hours of weekday congestion growth
in the Portland area
2013 - 2015

+22.6%
MORE TRAFFIC DELAYS

In the Portland
area
2013 - 2015

BENEFITS OF VALUE PRICING

FOR SAFETY

Reducing congestion, particularly at bottlenecks, smooths and steadies traffic flow and reduces the opportunity for rear-end crashes.

FOR COMMUTERS

Improved travel time increases reliability and efficiency for priced lane users.

FOR FREIGHT

Congestion relief through value pricing makes travel time more predictable, which saves costs and reduces truck trips.

Value pricing: A tool to manage congestion in the Portland metro area

The Oregon Department of Transportation (ODOT) is conducting a feasibility analysis to explore the options available and determine how and where value pricing could help improve congestion on I-5 or I-205 during peak travel times. There are many ways value pricing could be applied.

Over the next several months, ODOT will engage the public on the potential value pricing concepts and their effects.

Any proposal will reflect our values

To make sure that any proposal reflects our values around fairness and equity, the Oregon Transportation Commission (OTC) created a Policy Advisory Committee (PAC) so diverse perspectives can inform a final proposal. The PAC will consider the benefits to congested corridors and effects to travelers and adjacent neighborhoods. The PAC will recommend to the OTC the best location(s) and

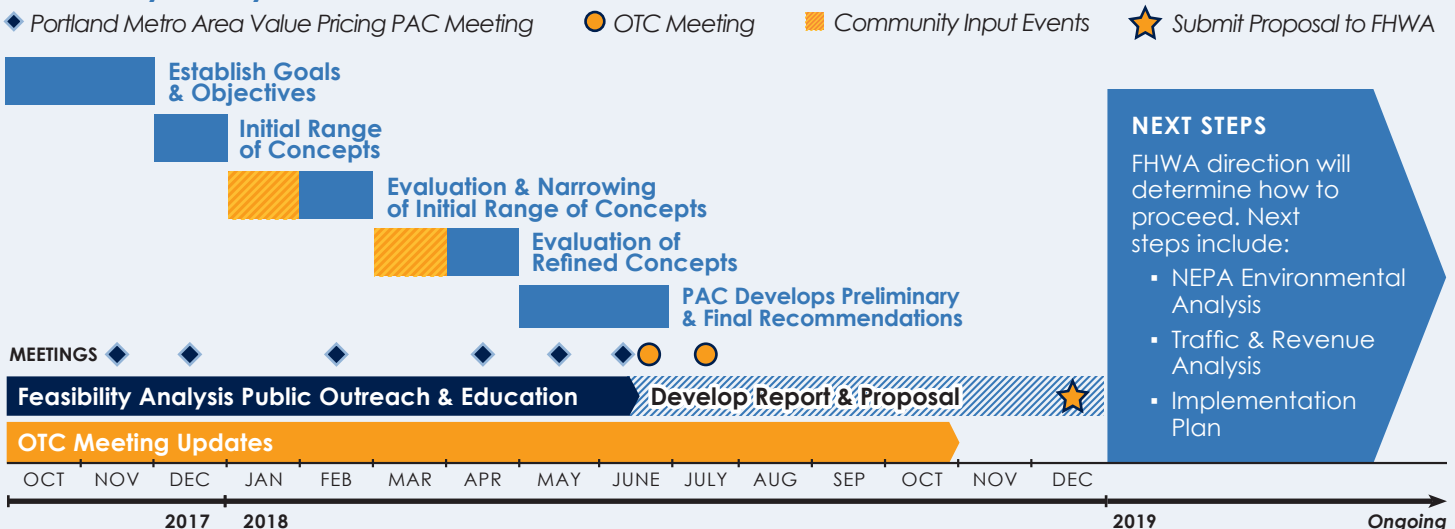
type(s) of value pricing for the metro area. The OTC is the tolling authority in the state and will submit its proposal to the Federal Highway Administration (FHWA) by the end of December 2018. After that, additional work will include public outreach; environmental, traffic, and revenue analysis; and a tolling agreement.

Make your voice heard

Public review and input is essential to help fully evaluate value pricing and determine the best option for our area.

- **Ask a question or provide a comment:**
ValuePricingInfo@odot.state.or.us
(503) 610-8595
- **Provide input to the Policy Advisory Committee:**
ValuePricingPAC@odot.state.or.us
- **Learn more:**
www.ODOTValuePricing.org

Feasibility Analysis Schedule



Transportation Investments

Roads & Bridges



Most of ODOT's funding will go to road maintenance and preservation for lasting fixes that keep Oregon's roads and bridges in good condition today and for future generations.

Local Control



Half of road funding will go to cities and counties to complete local communities' top priority road maintenance and improvements.

Reducing Congestion



Relieving congestion bottlenecks will help people get where they want to go

quickly and reliably. New lanes on I-5 at the Rose Quarter will save motorists 2.5 million hours wasted in gridlock each year, and widening sections of OR 217 and I-205 in Portland will improve reliability.

Better Public Transportation



Rural and urban bus service will provide choices to help people get around, while reducing air pollution and greenhouse gas emissions.

Safe Biking & Walking Options



Sidewalks, bike lanes, and crossings near schools will help kids get to school safely. Funding from a new bike tax will build

off-road paths that separate bikes and walkers from auto traffic.

Moving Freight



Improvements to rail and ports will get products from Oregon's farms, forests, and factories to markets across the world. New intermodal rail facilities will shift freight from truck to train, freeing up space on crowded freeways.

Electric Vehicle Incentives



Rebates for zero emission vehicle purchases will help Oregon transition to a sustainable transportation system.



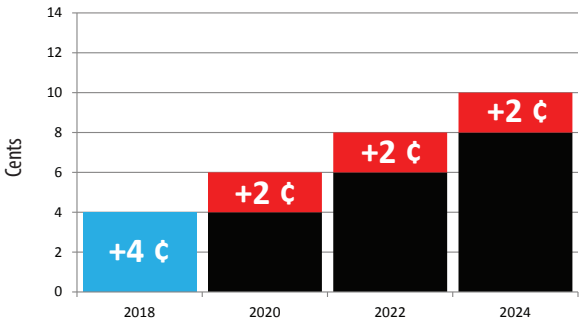
Accountability & Transparency

- Gas tax increases are tied to ODOT meeting accountability requirements.
- A website will show the status, cost, and whether ODOT completes a project on time and on budget.
- ODOT and local governments will report on the condition of roads and bridges.
- All gas tax funds must be spent on roads, so they can't be diverted to other purposes.
- Guarantees certainty under the Clean Fuels program with cost containment measures for consumer protection.

How Oregonians will Pay for Investments

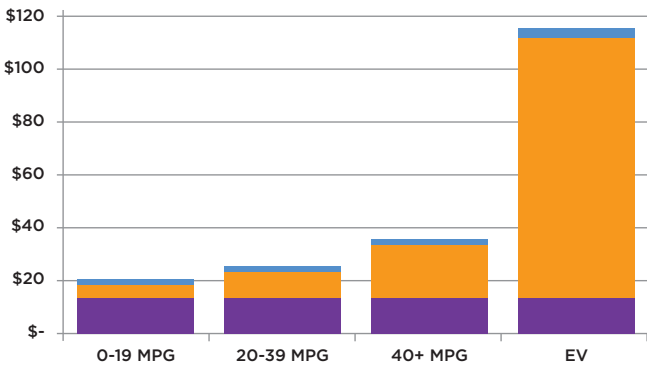
Gas tax, vehicle registration & title fees

Gas tax will increase 10 cents in four steps—with the last three increases conditioned on meeting accountability requirements.



Registration and title fees increase in three steps. Surcharges for electric vehicles and hybrids that pay little in gas tax ensure they pay their fair share for roads.

Light registration and title fees stepped and tiered
 Passenger registration annual increase (current rate \$43)
 2018 2020 2022



The average driver will pay about .8 cents per mile to get better roads that provide more reliable trips—less than people would pay to repair damaged vehicles if roads deteriorate.



Bicycle Tax

\$15 fee on new adult bicycles that cost \$200 or more will generate \$1.2 million a year for separated biking and walking paths.



New Light Vehicle Dealer Privilege Tax

0.5% dealer privilege tax on new light vehicles dedicated to electric vehicle rebates and multimodal transportation projects.



Public Transportation Payroll Tax

Less than \$1 a week for the average worker from a 1/10 of 1% tax on wages will generate \$115 million a year for better public transportation.





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

1	<u>INTRODUCTION.....</u>	<u>1</u>
1.1	VALUE PRICING FEASIBILITY ANALYSIS CONTEXT.....	1
1.2	PURPOSE OF THIS TECHNICAL APPROACH.....	4
2	<u>EQUITY CONCERNS AND MITIGATION.....</u>	<u>4</u>
2.1	EXAMPLES OF MITIGATION STRATEGIES USED IN OTHER STATES.....	6
3	<u>ROUND 1 EVALUTION RESULTS: INITIAL PRICING CONCEPTS</u>	<u>8</u>
3.1	OVERVIEW OF ANALYSIS METHODS.....	11
3.2	CONCEPT 1 – BASELINE: NO TOLLS ON ANY LANES OR ROADWAYS ALONG I-5 OR I-205	15
3.3	CONCEPT 2 – PRICED ROADWAY: TOLL ALL LANES ON I-5 AND I-205.....	16
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	20
3.5	CONCEPT 4 – PRICED LANE CONSTRUCTION: CONSTRUCT A NEW PRICED LANE ON I-5 AND I-205 IN EACH TRAVEL DIRECTION	24
3.6	CONCEPT 5 – BASELINE (NO PRICING) ON I-5 WITH PRICED LANE CONSTRUCTION ON I-205.....	28
3.7	CONCEPT 6 – PRICED ROADWAY ON I-5 WITH BASELINE (NO PRICING) ON I-205.....	30
3.8	CONCEPT 7 – PRICED LANE CONVERSION ON I-5 WITH PRICED ROADWAY ON I-205.....	32
3.9	CONCEPT 8 – PRICED LANE CONVERSION ON I-5 WITH PRICED LANE CONSTRUCTION ON I-205	34
4	<u>ROUND 1 EVALUATION RESULTS: PROJECT TEAM RECOMMENDATIONS.....</u>	<u>36</u>
4.1	ROUND 2 CONCEPT A: NORTHERN I-5 PRICED LANES	36
4.2	ROUND 2 CONCEPT B: I-5 TOLL ALL LANES BETWEEN GOING ST./ALBERTA ST. AND MULTNOMAH BLVD.....	38
4.3	ROUND 2 CONCEPT C: PRICED ROADWAY – TOLL ALL LANES.....	40
4.4	ROUND 2 CONCEPT D: I-205 PRICED LANE – OR99E TO STAFFORD RD.....	42
4.5	ROUND 2 CONCEPT E: ABERNETHY BRIDGE PRICED ROADWAY.....	44
5	<u>POTENTIAL REFINEMENT OF ROUND 2 CONCEPTS.....</u>	<u>46</u>

APPENDIX A: METHODOLOGY AND SCREENING DATA DEVELOPMENT

APPENDIX B: PERFORMANCE MEASURES SUMMARY DETAILS

APPENDIX C: INITIAL CONCEPT SCORING SHEETS



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.

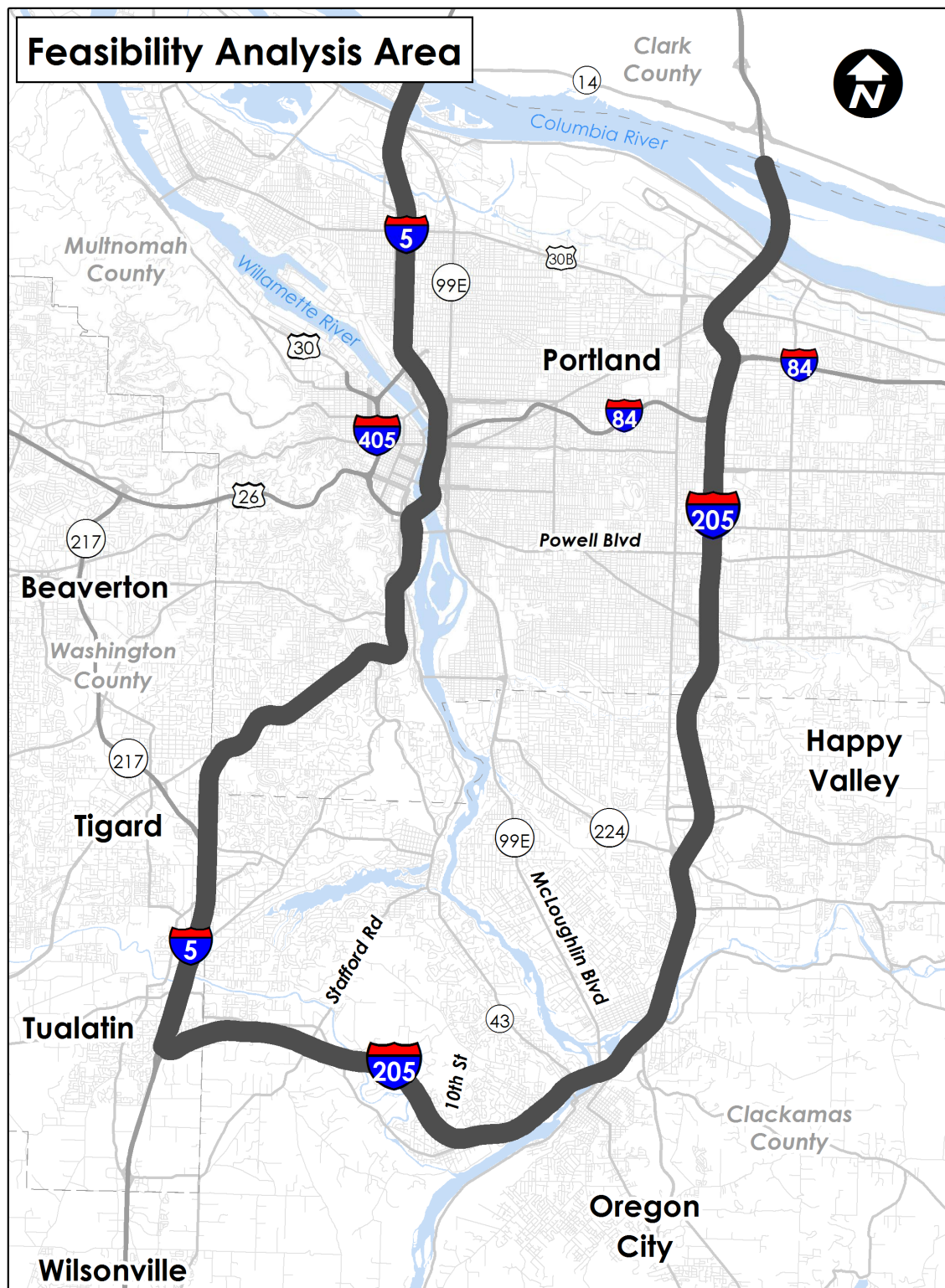
FHWA requirements for congestion pricing depend on the type(s) of pricing concept being pursued. After the OTC identifies the congestion pricing project(s) that it determines best fit the requirement of HB 2017, it will be able to engage with the FHWA to identify the federal policy that will guide project 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.

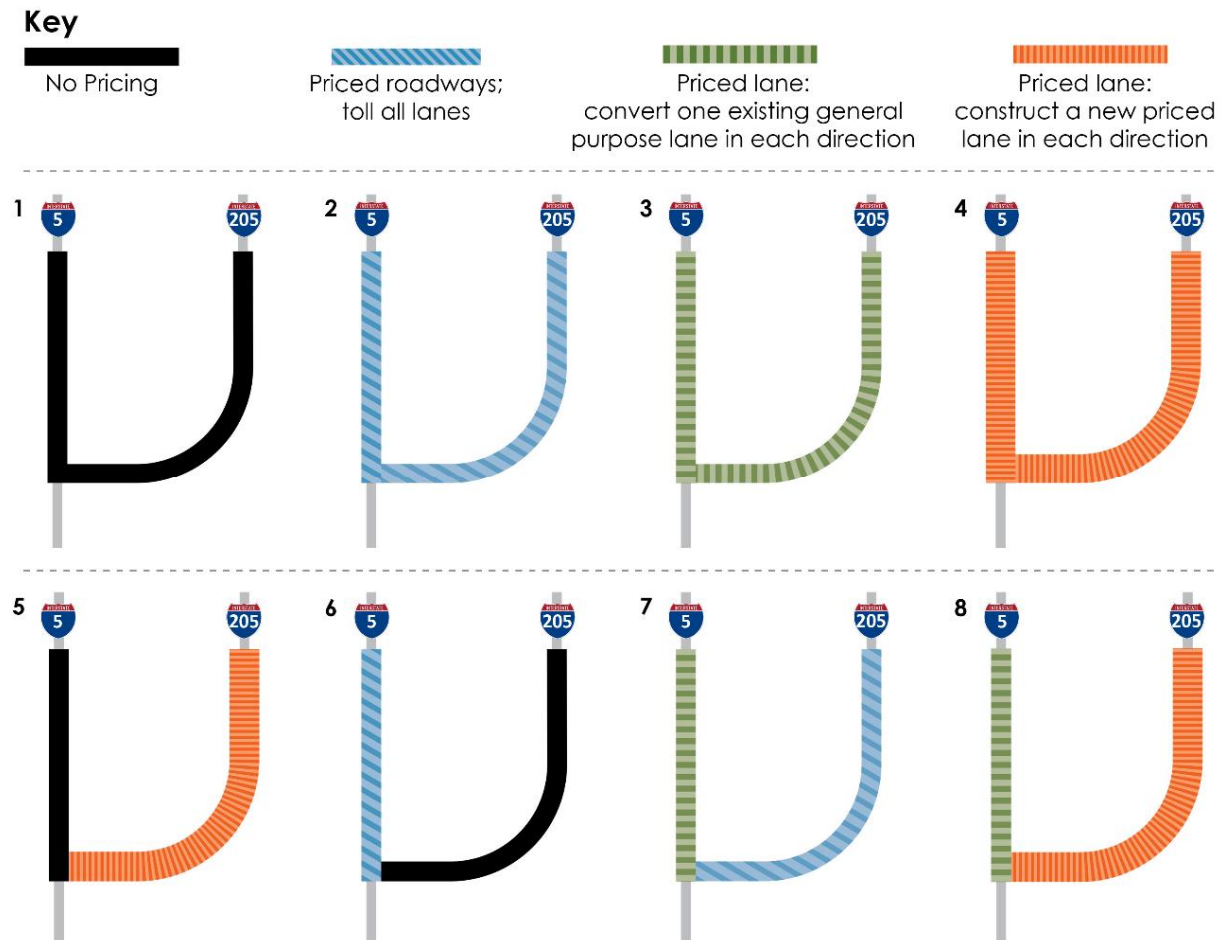
Figure 1. Study Corridors: I-5 and I-205



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 in each travel direction 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 EVALUATION 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 185 th (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 constraints 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.

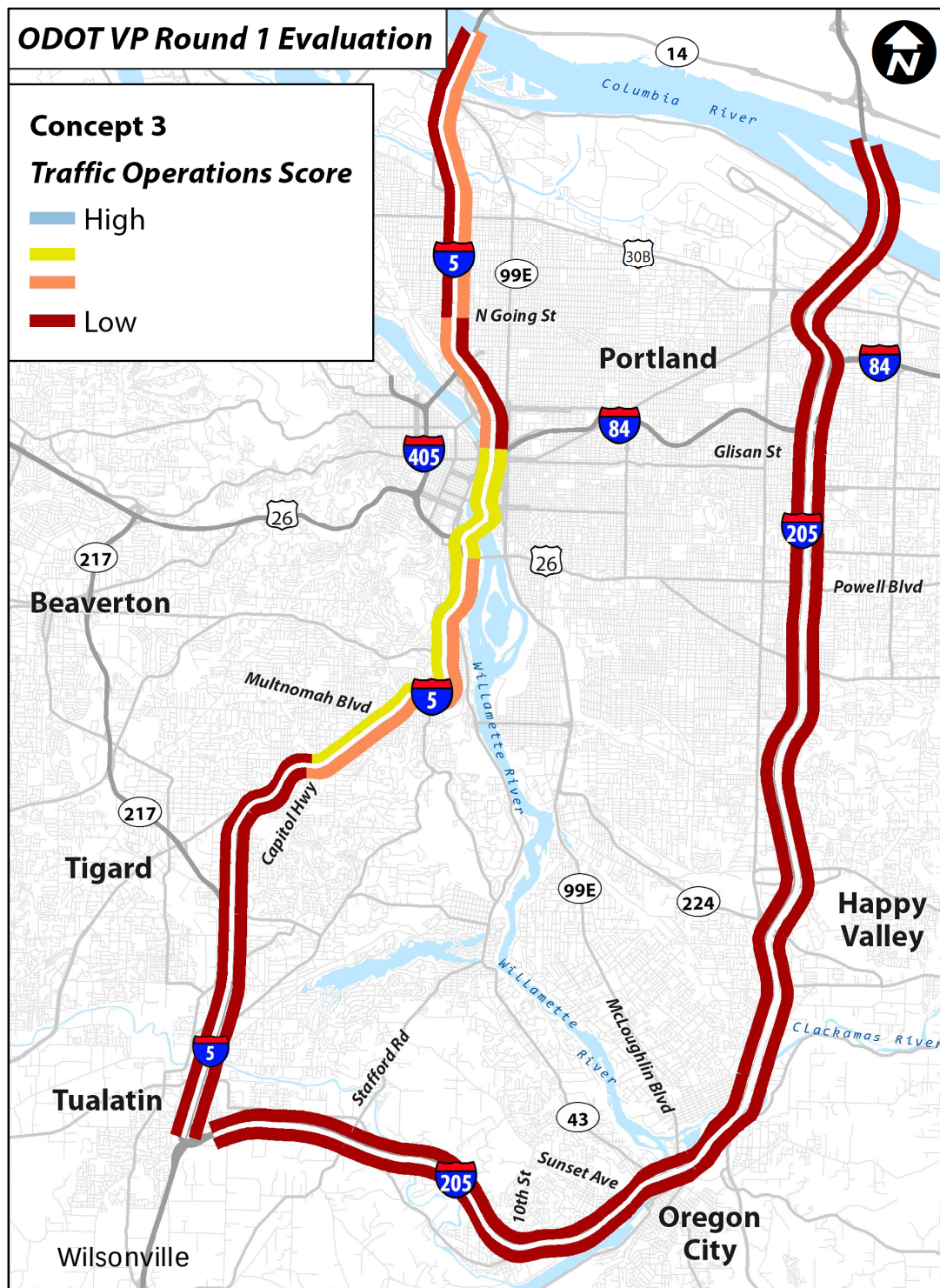


Blank Page



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.

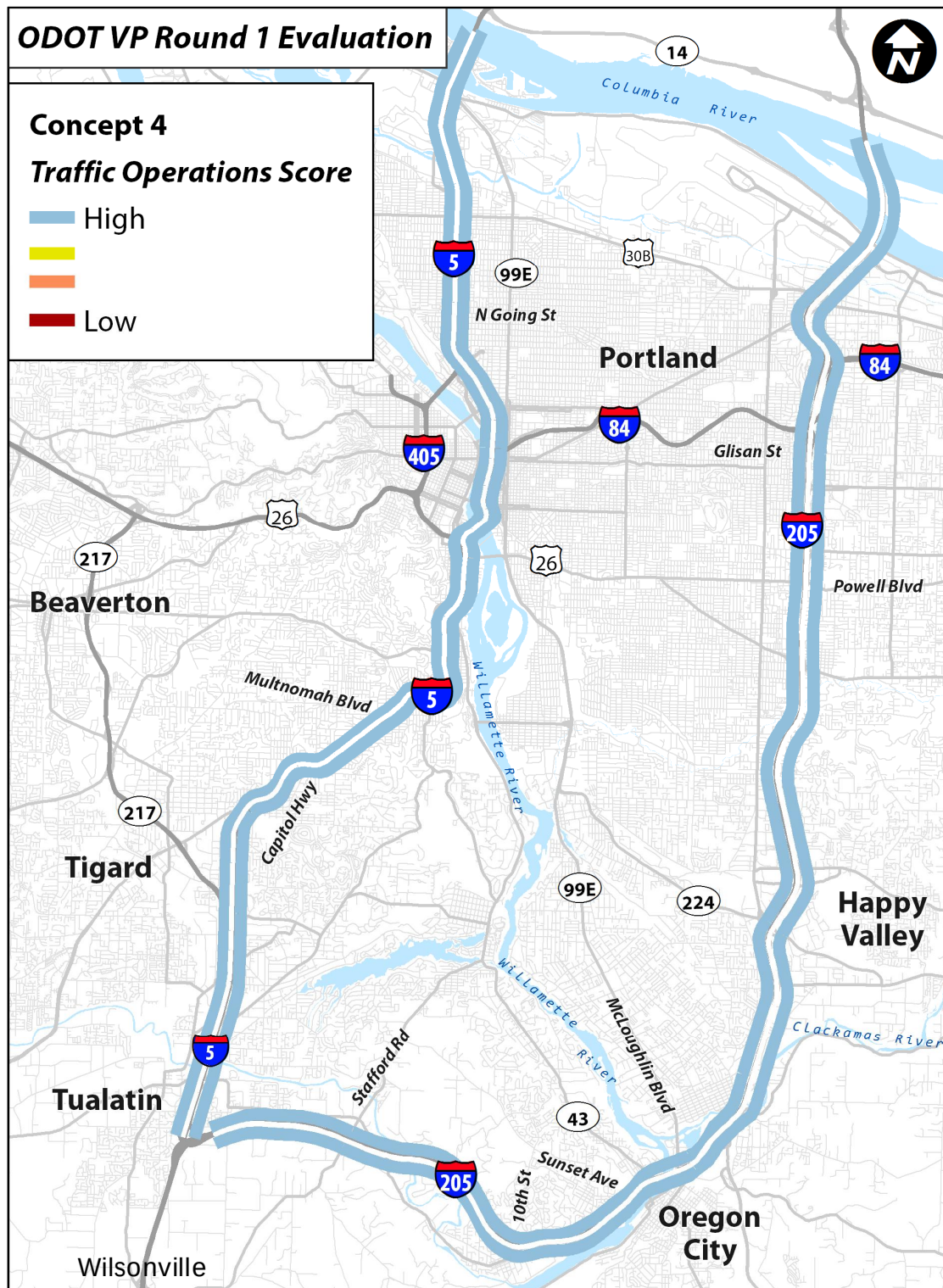


Blank Page



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 significantly 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.

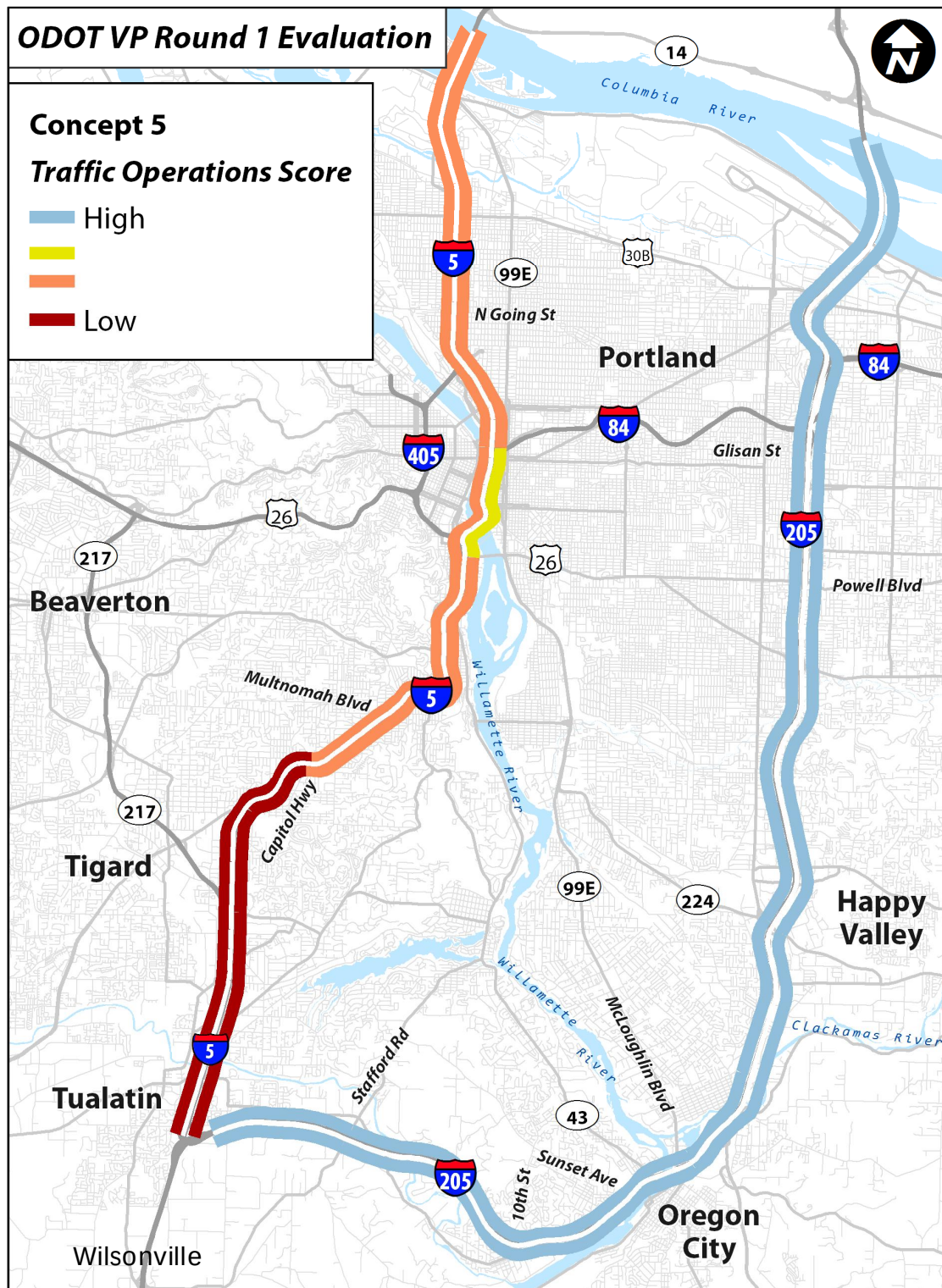


Blank Page



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.

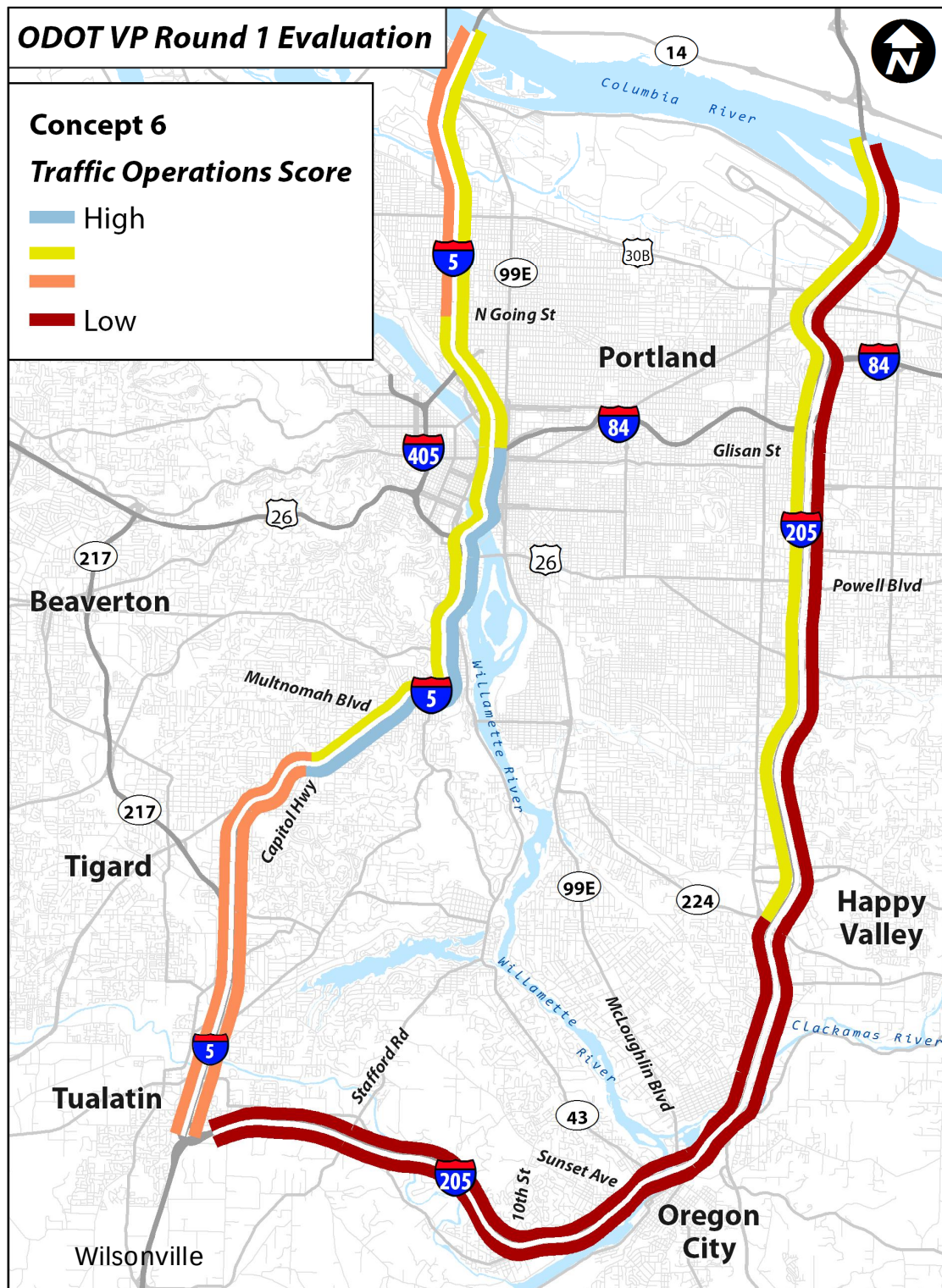
Equity and Mitigation

- § 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.

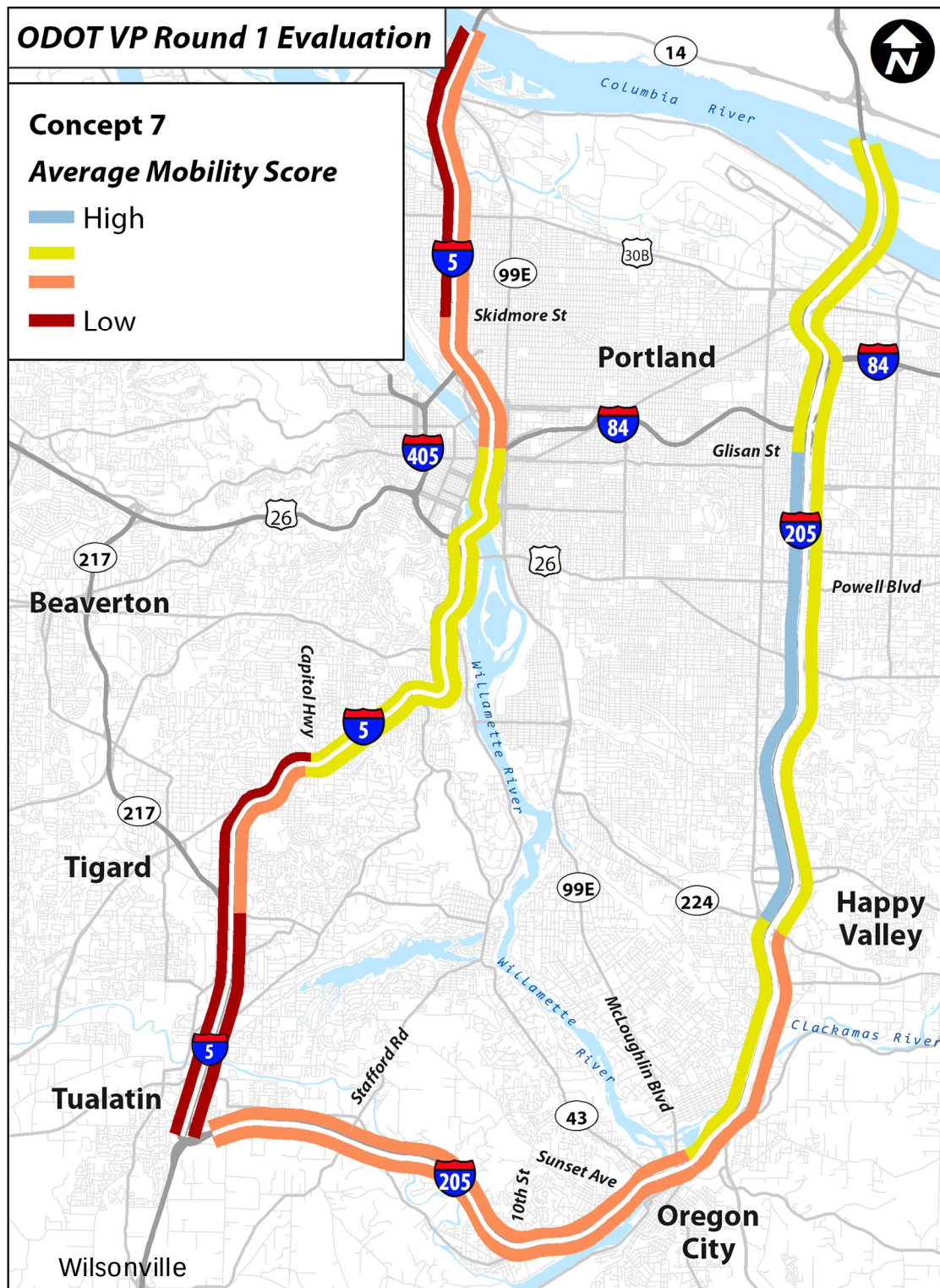
Equity and Mitigation

- § 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.

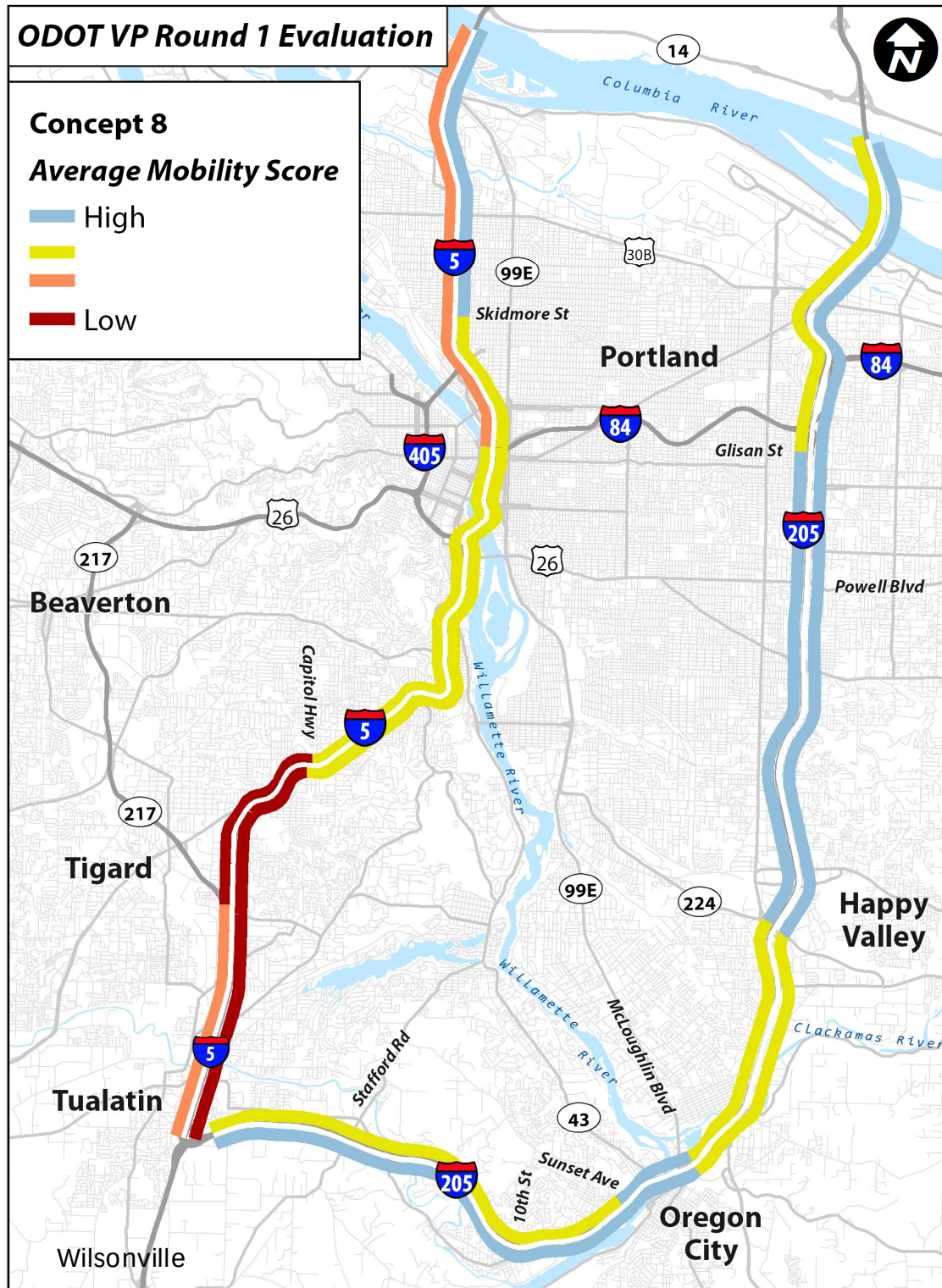
Equity and Mitigation

- 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:

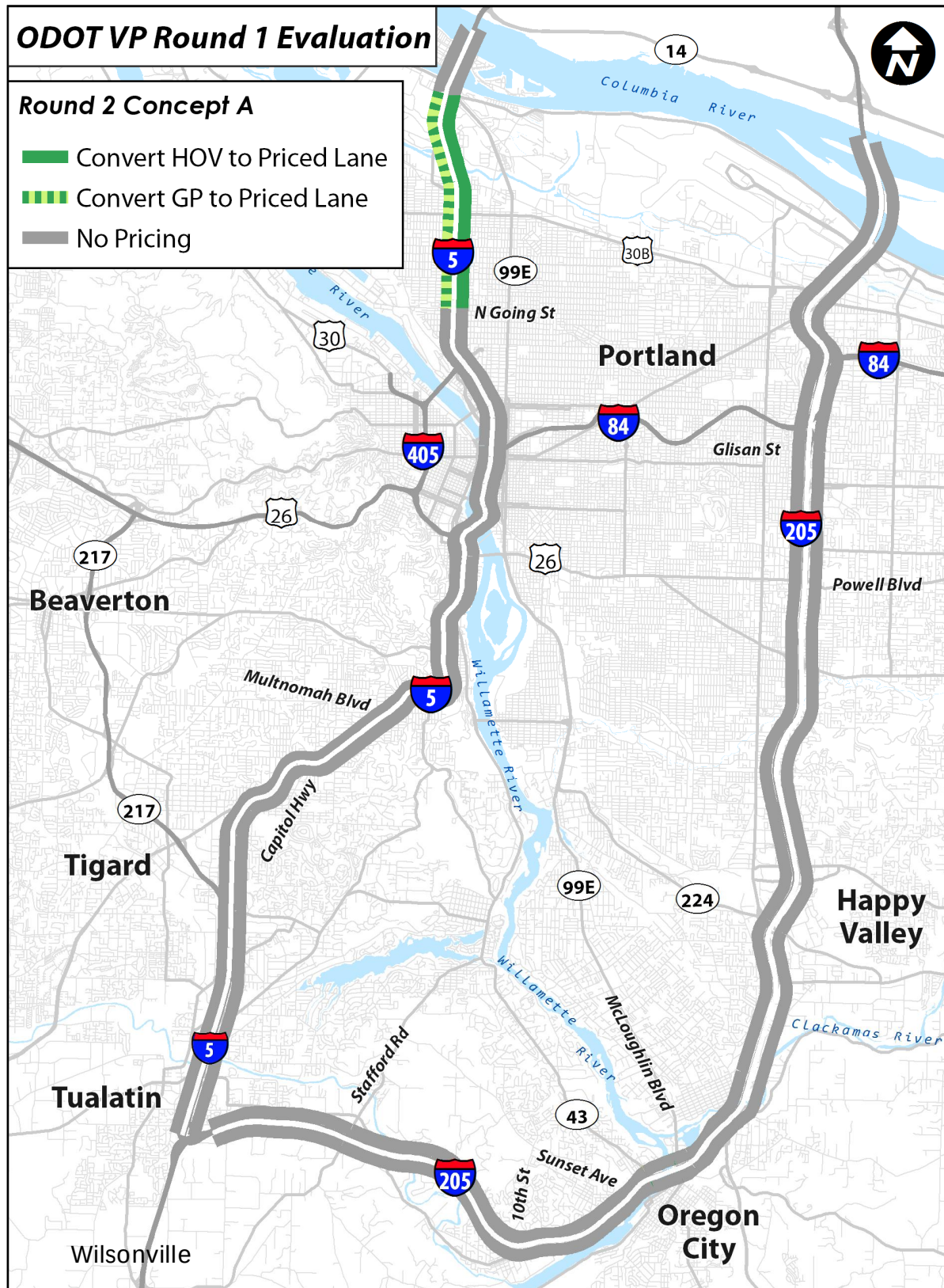
- § The conversion of the northbound HOV lane can be implemented more quickly than any of the other round 2 evaluation concepts because it requires minimal federal approval (northbound HOV lane conversion only).
- § Congestion on the segment of I-5 is significant.
- § This would be the least expensive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

INTRODUCTION TO THE APPENDICES:

Purpose of Round 1 Evaluation and the Use of Results

The purpose of analysis performed in Round 1 is to identify concepts that warrant additional evaluation and to screen out the concepts that are not viable or not advised. Methodologies chosen for use in Round 1 facilitated the analysis of many concepts such that project resources were used efficiently and subsequent phases of the project could focus on those concepts more likely to bring about the goals of the PAC in its charge. Round 1 analysis is not designed to be a final determination of the preferred method.

The technical analysis is used to inform an assessment of the relative performance of the value pricing building blocks when applied broadly. While these results provide a good indicator of relative performance, the final analysis and recommendation is informed by professional judgment and best practices. Concepts that move forward will need to reconsider the analysis assumptions and methods.

Existing Congestion

Congestion on urban freeways is of two types. As traffic demand increases, speeds on the freeway begin to drop. Speeds, which may be 65 mph or more under totally uncongested conditions, can drop into the 40 mph range. While this is not ideal, traffic flow remains continuous, and the facility's ability to move traffic volumes is not impacted. However, as demand increases even further, the facility becomes hyper-congested. Under hyper-

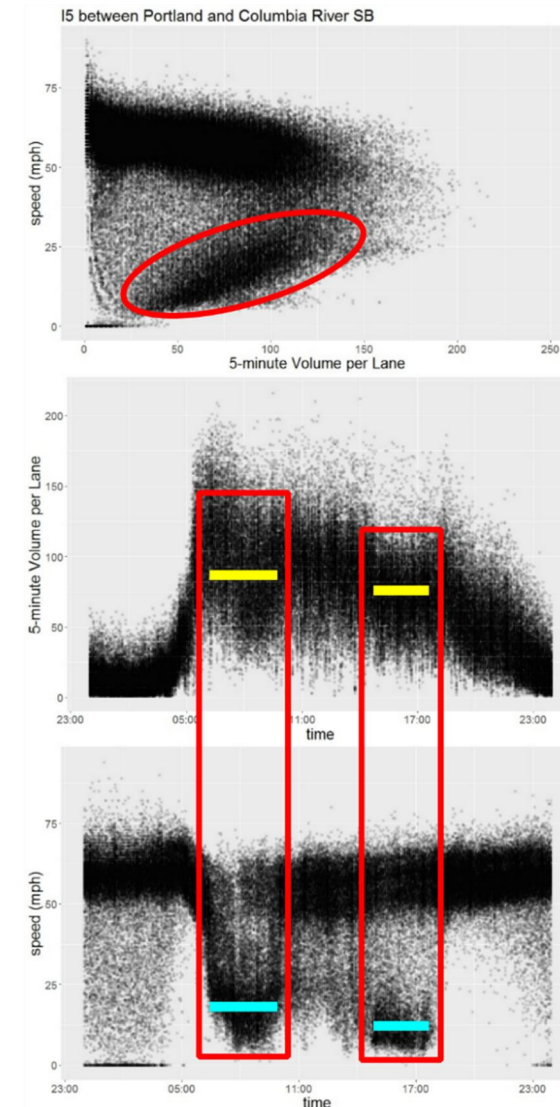


Figure A – Hyper Congestion



congested conditions, traffic speeds are not only significantly slowed (below 45 mph), but vehicle throughput is also reduced by the congestion itself. An example of existing hyper-congested conditions on I-5 south of the Columbia River is shown in Figure A above.

The three graphics shown in Figure A are simple scatter plots of actual volume and speed data from an existing automatic traffic count station on I-5. Each of these graphics are formed from a dot placed on the graph based on the speed versus the volume observed (top), or the traffic volume versus the time observed (middle), or the traffic speed versus the time observed over a large number of observations (bottom). While no attempt was made to form a pattern, the areas within the red shapes are showing the presence of hyper-congestion, the yellow bars show the approximate average throughput volumes, and the light blue bars show the approximate average speed during hyper-congestion. As such, I-5 in this area is not currently operating close to its optimum throughput during peak travel periods. Similar patterns are observed on other areas of I-5 and I-205.

The Impact of Hyper-Congestion

At optimum throughput, just prior to congested conditions setting in, this section of I-5 carries the equivalent of 1,900 – 2,200 vehicles per hour per lane. However, as shown in Figure A, average vehicle throughput per lane is approximately 80 vehicles per lane for a five-minute interval during peak periods. This equates to 960 vehicles per lane per hour - approximately 50% 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 drop to approximately 10 mph during peak periods.

Impact on Diversion and Throughput Results

The traffic performance reported in Round 1 was based, in part, on Metro's latest Trip-Based Travel Demand Model. Metro's Models are identified with names as they are updated, with Metro's "KATE" version used in this analysis. It was chosen to maintain consistency with other planning tools used in the region.

Models such as KATE are excellent planning tools and can produce a wide variety of information. Taking into account and reporting out changes under hyper-congested conditions is not, however, the model's strongest point. In fact, it is likely that the model is over reporting both diversion and throughput reduction compared to what would be expected under hyper-congested operating conditions. This happens because this type of model is based on total demand rather than total volume and therefore cannot predict likely roadway function under hyper-congested conditions. Modeling results were certainly not ignored in Round 1, and the results helped to inform many decisions. The team did, however, take into account the ways in which KATE might be over-reporting diversion and reduced throughput in its results.

Moving into Round 2, the modeling team is investigating ways that the KATE model can better address hyper-congested conditions.



APPENDIX A: ROUND 1 METHODOLOGY AND SCREENING DATA DEVELOPMENT

Appendix A presents the evaluation type and tools used to perform the analysis for each performance measure in Round 1. A description of the need for the performance measure and the scoring criteria also is provided. Scores range from 0 to 5. The higher the number, the better the strategy and roadway section performance ranked under that criterion. A brief discussion of likely differences between Round 1 and Round 2 analysis can be found at the end of Appendix A.

Factor	Performance Measures	Evaluation Type	Tool	Description	Scoring
Transit service and active transportation	§ Adequacy of transit service	Qualitative	Transit System Maps, Aerial Review	The ability of a pricing concept to increase the use of transit is dependent on the adequacy of transit services within the area. Drivers with little to no access to viable transit services will not be able to use transit as an alternative to travel in a personal vehicle. This metric assesses the availability of transit services, or planned transit service along segments of I-5 and I-205. Segments with frequent transit services running along the direct route with short headways (15-minute arrivals or better), segments with many transit stations and/or park-and-ride facilities will be scored higher.	0 – Low to Non-existent: Segments with no existing transit service, or only one route with long headways. 2.5 – Medium: Segments with one transit route with relatively short headways, or multiple routes with longer headways. Additionally, one park-and-ride lot or major transit station within a one mile radius. 5 – High: Segments with multiple routes with short headways running along its length and served by more than one park-and-ride lot or major transit station.



Factor	Performance Measures	Evaluation Type	Tool	Description	Scoring
Transit service and active transportation	§ Options for bicycle and pedestrian travel on routes with diverted traffic	Qualitative	RTP Existing Regional Bicycle Network and RTP Existing Regional Pedestrian Network	This metric assesses the availability and adequacy of bicycle and pedestrian infrastructure that might serve as a non-vehicular alternative mode to travel in a personal vehicle. Concepts with available bicycle and pedestrian options will be scored higher.	0 –Non-existent bicycle and pedestrian options. 2.5 – Medium: Segments with minimal bicycle and pedestrian options. 5 – High: Segments with multiple bicycle and pedestrian options.
Traffic operations improvement on I-5 and I-205	§ Vehicle and person throughput on I-5 and I-205 during the PM peak 2-hour period	Quantitative (vehicles and persons)	TOM	This metric describes the number of vehicles and the number of people moved in those vehicles along segments of I-5 and I-205. Pricing concepts that increase the number of vehicles and people moving along a segment of I-5 or I-205 during the PM peak 2-hour period will score higher than those pricing concepts that do not move as many vehicles and people or reduce overall throughput.	0 – Does not improve (or reduces) vehicular or person throughput 1- Results in marginal improvements in throughput (up to 5 percent improvement over the baseline)) 3 – Results in noticeable improvements to throughput (between 5 to 10 percent improvement over the baseline) 5 – Results in significant improvements to throughput (over 10 percent improvement over the baseline)



Factor	Performance Measures	Evaluation Type	Tool	Description	Scoring
Traffic operations improvement on I-5 and I-205	§ Freight truck throughput on I-5 and I-205 during the PM peak 2-hour period	Quantitative	TOM	This metric describes the number of commercial and other heavy freight vehicles that move along segments of I-5 and I-205. Pricing concepts and that increase the number of commercial vehicles moving along a segment of I-5 or I-205 during the PM peak 2 hour period will score higher than those pricing concepts that do not move as many vehicles or reduce overall throughput.	0 – Does not improve vehicular or person throughput 1- Results in marginal improvements in throughput (up to 5 percent improvement over the baseline)) 3 – Results in noticeable improvements to throughput (between 5 to 10 percent improvement over the baseline) 5 – Results in significant improvements to throughput (over 10 percent improvement over the baseline)
Traffic operations improvement on I-5 and I-205	§ Travel time on I-5 and I-205 (both priced managed lanes and general purpose lanes (if any in the strategy) during the PM peak 2-hour period	Quantitative (priced managed lanes and general purpose lanes (if any in the strategy) evaluated separately)	TOM	Pricing frees available freeway capacity and provides tools to better manage that capacity. As such, pricing should reduce the amount of time it takes to travel along a freeway on priced managed lanes, or (evaluated as a separate criterion) general purpose lanes, if there are any in the strategy. This metric describes the time it takes a passenger vehicle to travel along a segment of I-5 and I-205 during the PM peak 2-hour period. Pricing concepts that reduce travel time will receive a higher score than pricing concepts that do not improve travel time or increase travel times.	0 – Does not reduce travel times or results in increased travel times. 1- Results in marginal improvements to travel time (up to 5 percent reduction relative to the baseline)) 3 – Results in noticeable improvements to travel time (between 5 to 10 percent decrease relative to the baseline) 5 – Results in significant improvements to travel times (over 10 percent reduction relative to the baseline)



Factor	Performance Measures	Evaluation Type	Tool	Description	Scoring
Traffic operations improvement on I-5 and I-205	§ Travel time on Managed Lanes during the PM peak 2-hour period	Quantitative (on strategies without both managed and general purpose lanes, this is not ranked)	TOM	Managing congestion on a designated lane on a freeway maintains its free-flow travel conditions resulting in a reduced travel time compared with the general purpose lanes.	0 – Does not reduce travel times or results in increased travel times. 1- Results in marginal improvements to travel time (up to 20 percent reduction relative to the baseline)) 3 – Results in noticeable improvements to travel time (between 20 to 40 percent decrease relative to the baseline) 5 – Results in significant improvements to travel times (over 40 percent reduction relative to the baseline)



Factor	Performance Measures	Evaluation Type	Tool	Description	Scoring
Traffic operations improvement on I-5 and I-205	§ Freight truck travel time on I-5 and I-205 during the PM peak 2-hour period	Quantitative	TOM	Pricing frees available freeway capacity and provides tools to better manage that capacity. As such, pricing should reduce the amount of time it takes to travel along a freeway if traveling in a priced lane. Travel in general purpose lanes may or may not improve in strategies with both priced and general purpose lanes. In strategies with all lanes priced, all vehicles, including freight vehicles travel in price managed lanes. In strategies with both priced and general purpose lanes, freight vehicles were assumed to travel only in the general purpose lanes. This metric describes the time it takes a commercial or heavy freight vehicle to travel along a segment of I-5 and I-205 during the PM peak 2-hour period. Pricing concepts that reduce travel time for freight vehicles, regardless of whether they travel in priced lanes or general purpose lanes will receive a higher score than pricing concepts that do not improve travel time or increase travel times.	0 – Does not reduce travel times or results in increased travel times. 1- Results in marginal improvements to travel time (up to 5 percent reduction relative to the baseline)) 3 – Results in noticeable improvements to travel time (between 5 to 10 percent decrease relative to the baseline) 5 – Results in significant improvements to travel times (over 10 percent reduction relative to the baseline)



Factor	Performance Measures	Evaluation Type	Tool	Description	Scoring
Traffic operations improvement on I-5 and I-205	§ Trip length distribution	Quantitative, but moved to Round 2 as policy decisions related to strategies have a significant impact on results	SWIM (long trips)	Pricing may serve to discourage drivers from making short distance trips on the freeway or may provide an incentive to use alternate, toll free routes or other modes for short trips. This results on more freeway capacity for drivers making longer distance trips. This metric describes the change in the distribution of trip lengths along segments of I-5 and I-205. Pricing concepts will be scored higher if they result in trip distributions on the freeway with a higher mean/median trip length; indicating that fewer drivers are making short distance trips on the facility.	0 – Does not result in any change to trip length distribution or reduces the mean/median trip length along segments of I-5 or I-205. 1- Results in marginal increases in mean/median trip length (up to 10 percent increase relative to the baseline) 3 – Results in noticeable increases in mean/median trip length (between 10 and 25 percent increase relative to the baseline) 5 – Results in significant increases in mean/median trip length (over 25 percent increase relative to the baseline)



Factor	Performance Measures	Evaluation Type	Tool	Description	Scoring
Diversion of traffic	§ Level of diverted trips onto adjacent facilities	Qualitative	Graphics Developed from KATE Output	Pricing concepts may result in some level of vehicular diversion from the priced roadway onto adjacent arterials. While this may improve operations on the freeway it can place additional strain on nearby arterials and major surface street routes. This metric qualitatively assesses the amount of vehicular traffic that might divert to nearby arterials from I-5 and I-205 as a result of pricing. This will include both the impact of the strategy as well as the availability of reasonable diversion options. Pricing concepts that are not expected to result in high levels of diversion will be scored higher. The level of diversion will include trip length with longer trips assumed to have more impact.	0 – High: Pricing concept is expected to result in diversion such that operating conditions on adjacent facilities will be degraded significantly 2.5 – Medium: Pricing concept is expected to result in diversion but operational performance on those arterials should not be degraded significantly 5 – Low: Pricing concept is expected to have minimal diversion and operations on adjacent facilities will not be impacted.
Diversion of traffic	§ Regional impact to state highways outside of Metro area	Qualitative	SWIM	Pricing may incentivize drivers to not travel on I-5 and I-205 and travel instead on other regional highways. Furthermore, pricing of these two roads could lead to changes in what roadways drivers use traveling into and out of the Portland metro region. This metric provides an assessment of the impact of pricing concepts on state highways outside of the Metro area. Concepts that are not expected to negatively impact other regional highways outside of the Portland metro area will be scored higher. This metric is linked to the metric “Level of diverted trips onto adjacent facilities.”	The SWIM model indicated that the impacts of all strategies would have a negligible effect on state highways outside of the Metro Area. As this criterion will not have an impact on the selection of strategies to move into Round 2, diversion impacts in the analysis are based solely on impacts to adjacent facilities. As described above.



Factor	Performance Measures	Evaluation Type	Tool	Description	Scoring
Diversion of traffic	§ Mode share (HOV, SOV, light rail, and bus) <i>used for multiple objectives</i>	Qualitative	Based on the type of strategy developed and the availability of Transit, Bicycle, and Pedestrian facilities	Pricing may result in changes to modal use. Drivers may choose to carpool and share the cost of tolls or they may choose to use non-toll alternatives such as transit. Modal shift and, in particular, mode shifts that increase vehicular occupancy are beneficial in that it reduces congestion and can improve operations. This metric assesses the potential for pricing concepts to lead to changes in mode share. Concepts that result in a higher proportion of alternate mode use will be scored higher.	0 – Low: Pricing concept is not expected to change modal share or will increase the share of SOVs on segments of I-5 and I-205. 2.5 – Medium: Pricing concept may reduce SOV utilization by 5 percent or less along segments of I-5 and I-205. 5 – High: Pricing concept may reduce SOV utilization by 10 percent or more as a share of all modes on segments of I-5 and I-205
Diversion of traffic	§ Safety impacts to all modes of transportation on routes with diversion	Qualitative	Based on the level of trip diversion and the availability of bicycle and pedestrian facilities	The diversion of trips from a priced facility to adjacent arterials and other roadways may degrade operational performance on those facilities and could increase safety risks. This metric qualitatively assesses the potential of pricing concepts to increase safety risks on adjacent facilities due to diversion and is therefore linked to the metric "Level of diverted trips onto adjacent facilities." Concepts that do not result in high levels of diversion to adjacent facilities will therefore be scored higher.	0 – High: Pricing concept is expected to result in increased safety risks on adjacent facilities due to diversion of trips 2.5 – Medium: Pricing concept is expected to result in diversion to adjacent facilities but safety risks on those facilities will be minimal 5 – Low: Pricing concept is expected to have minimal diversion and will not result in any new safety risks for adjacent facilities



Factor	Performance Measures	Evaluation Type	Tool	Description	Scoring
Equity impacts	§ Changes in travel times comparing the lowest travel speeds from any given strategy (i.e. general purpose lanes instead of priced lanes on convert a lane strategies) to the baseline speed on the I-5 and I-205 facilities	Quantitative	KATE	Pricing is being considered on two key area highways: I-5 and I-205. These facilities are likely used disproportionately by Portland metro region drivers based on where they live and travel. Similarly, the pricing of these facilities may have disproportionate impacts to Portland metro region drivers again based on where they live and drive. This metric assesses the change in travel times and travel costs for drivers in key origin/destination points within the I-5 and I-205 corridors. Pricing concepts that decrease travel times and/or do not result in significant increased cost for drivers in the origin/destination points will receive higher scores.	0 – Pricing concept will increase travel times and will result in higher travel costs for drivers. 1 – Pricing concept will improve travel times but will impose significant additional travel costs 3 – Pricing concept will significantly improve travel times but with additional travel costs. 5 – Pricing concept will significantly improve travel times and with only marginal increases in overall travel costs.



Factor	Performance Measures	Evaluation Type	Tool	Description	Scoring
Impacts on the community, economy, and environment	§ Physical impacts to existing residences and businesses	Qualitative	Based on review of aerials with an understanding of the location of EJ communities	The implementation of pricing may require new construction or changes to existing operations that could potentially impact nearby residences and businesses. This metric assesses each concepts potential to require significant construction or changes to the current roadway footprint for segments of I-5 and I-205. Concepts that do not require new construction or would not require significant changes to the operation of nearby roadways will receive higher scores. This metric is linked to the metric "Capital expenditure on facility."	0 – High: Concept will require new construction or significant changes to current roadway footprint such that nearby residences and businesses can be expected to see significant impacts. Significant impacts to EJ communities will also result in a score of "High" 2.5 – Medium: Concept will require new construction, reconstruction, or changes to existing roadway footprints within the segment that will likely impact some nearby residences and businesses. EJ communities are impacted. 5 – Low to Non-existent: Concept will not require new construction or changes to existing roadway footprints within the segment



Factor	Performance Measures	Evaluation Type	Tool	Description	Scoring
Cost	§ Capital expenditure on facility	Qualitative	Based on the likely need for ROW, structures, or other elements that significantly impact price.	Different pricing concepts are likely to require differing levels of capital expenditures for implementation. Furthermore, many segments of the I-5 and I-205 corridors are physically constrained in terms of available right-of-way or the presence of other infrastructure such as bridges. This metric provides an assessment of potential capital expenditures based on the requirements of the concept itself and the presence of limiting factors (such as a lack of ROW) along key corridor segments. Concepts that will require minimal capital expenditures will be scored higher. This metric is linked to the performance metric "Physical impacts to existing residences and businesses."	0 – The concept can be accommodated within the segment but major construction and/or right of way procurement will be required 2.5 – The concept can be accommodated within the segment with moderate capital expenditure. 5 – The concept can be accommodated within the existing ROW of the segment with minimal capital expenditure.

Round 2 analysis will include all the Round 1 factors except for impacts to facilities outside of the Metro area, as these were found to be negligible. There will, however, be refinements and additions to the analysis. These include:

- Refined evaluation of throughput and local diversion
- Refined roadway costs with quantitative evaluation
- Order of magnitude revenue projections
- Refined Impacts to surrounding roadways
- Qualitative Air Quality Impacts
- Trip Length Distribution
- Refined analysis of Transit, Bicycle, and pedestrian effects



APPENDIX B: ROUND 1 PERFORMANCE MEASURES SUMMARY DETAILS

As there are many more criteria that can be developed for Traffic Operations than for Alternative Modes or Capital Expenditures, Traffic Operations would have dominated the analysis scoring in a non-weighted evaluation, even though these other metrics are of great importance. For that reason, much of the evaluation is based on “Roll Ups” of these three overarching criteria. In this way, they can receive equal importance in the analysis scoring. The purpose of Appendix B is to present these rolled up scores.

Scores range in each criterion from 0 to 5. The higher the number, the better the strategy and roadway section ranked under that criterion. This also applies to the rolled-up score. The criteria included in each rolled-up score in Appendix B are described below.

The Traffic Operations Score is based on 11 separate criteria. These include:

- § Peak-Period Vehicle Throughput
- § Peak-Period Person Throughput
- § Peak-Period Freight Truck Throughput
- § Peak-Period General Purpose Lane Travel Time
- § Peak-Period Managed (priced) Lane Travel Time
- § Peak-Period Freight Truck Travel Time
- § Trip Diversion (Adjacent Facilities)
- § Single Occupant Vehicle (SOV) Mode Shift
- § Safety Impacts on Routes Carrying Diverted Traffic
- § Key Destination Travel Time (placeholder only in Round 1)
- § Key Destination User Cost (placeholder only in Round 1)

The Alternatives Mode Score is based on two separate criteria. These include:

- § Adequacy of Transit Service
- § Bicycle & Pedestrian Options

The Capital Expenditure Score is also based on two separate criteria. These include:

- § Capital Cost (High-Level)
- § Physical Impacts (with special attention to EJ Populations)

Scores for each individual criterion are given in Appendix C.



Concept 2 - Priced Roadway: toll all lanes on I-5 and I-205

Table B. Concept 2 - Summary Round 1 Evaluation Scores

Corridor	Segment ID	Direction	From	To	Length (Miles)	Traffic Operations Score	Alternative Mode Score	Capital Cost Score
I-5	2	NB	I-205	OR-217	3.6	2.50	0.00	5.00
I-5	3	NB	OR-217	Capitol Hwy	2.7	2.50	0.00	5.00
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	3.00	1.25	5.00
I-5	5	NB	Ross Island Bridge	I-84	1.9	3.00	5.00	5.00
I-5	6	NB	I-84	N Skidmore St.	2.2	3.00	5.00	5.00
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	1.25	3.75	5.00
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	2.55	3.75	5.00
I-5	9	SB	N Skidmore St.	I-84	2.2	2.80	5.00	5.00
I-5	10	SB	I-84	Ross Island Bridge	1.9	3.00	5.00	5.00
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	3.00	1.25	5.00
I-5	12	SB	Capitol Hwy	OR-217	3.0	2.50	0.00	5.00
I-5	13	SB	OR-217	I-205	3.7	2.50	0.00	5.00
I-205	15	NB	I-5	Stafford Rd	2.0	2.00	0.00	5.00
I-205	16	NB	Stafford Rd	10th St	3.3	2.00	0.00	5.00
I-205	17	NB	10th St	Sunset Ave	1.9	2.00	0.00	5.00
I-205	18	NB	Sunset Ave	Main St	1.2	2.25	1.25	5.00
I-205	19	NB	Main St	SR-224	4.1	2.00	0.00	5.00
I-205	20	NB	SR-224	NE Glisan St	7.7	2.75	3.75	5.00
I-205	21	NB	NE Glisan St	Jackson Bridge	3.6	2.50	1.25	5.00
I-205	22	SB	Jackson Bridge	NE Glisan St	3.9	2.00	1.25	5.00
I-205	23	SB	NE Glisan St	SR-224	7.4	2.85	3.75	5.00
I-205	24	SB	SR-224	Main St	4.0	2.50	0.00	5.00
I-205	25	SB	Main St	Sunset Ave	1.3	2.25	1.25	5.00
I-205	26	SB	Sunset Ave	10th St	1.9	2.00	0.00	5.00
I-205	27	SB	10th St	Stafford Rd	3.3	2.00	0.00	5.00
I-205	28	SB	Stafford Rd	I-5	2.3	2.00	0.00	5.00

Scores range from 0 to 5 with higher scores representing higher performance.

Results Review

Traffic operations scores are lower than would be expected. This is likely due to the issues the KATE Model has in predicting diversion and throughput. It is likely that the traffic operations will perform significantly better than the model is predicting.

Alternative modes scores are low due to lack of options on some segments. Where alternative mode opportunities are available, the strategy performs well. Results may help inform future updates of transit, bicycle, and pedestrian plans.

This concept has among



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

Table C. Concept 3 - Summary Round 1 Evaluation Scores

Corridor	Segment ID	Direction	From	To	Length (Miles)	Traffic Operations Score	Alternative Mode Score	Capital Cost Score
I-5	2	NB	I-205	OR-217	3.6	1.45	0.00	5.00
I-5	3	NB	OR-217	Capitol Hwy	2.7	1.55	0.00	5.00
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	2.09	1.25	5.00
I-5	5	NB	Ross Island Bridge	I-84	1.9	2.36	5.00	5.00
I-5	6	NB	I-84	N Skidmore St.	2.2	1.91	5.00	5.00
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	2.05	3.75	5.00
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	1.50	3.75	5.00
I-5	9	SB	N Skidmore St.	I-84	2.2	2.09	5.00	5.00
I-5	10	SB	I-84	Ross Island Bridge	1.9	2.36	5.00	5.00
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	2.36	1.25	5.00
I-5	12	SB	Capitol Hwy	OR-217	3.0	1.45	0.00	5.00
I-5	13	SB	OR-217	I-205	3.7	1.91	0.00	5.00
I-205	15	NB	I-5	Stafford Rd	2.0	1.64	0.00	5.00
I-205	16	NB	Stafford Rd	10th St	3.3	1.64	0.00	5.00
I-205	17	NB	10th St	Sunset Ave	1.9	1.45	0.00	5.00
I-205	18	NB	Sunset Ave	Main St	1.2	1.68	1.25	5.00
I-205	19	NB	Main St	SR-224	4.1	1.23	0.00	5.00
I-205	20	NB	SR-224	NE Glisan St	7.7	1.68	3.75	5.00
I-205	21	NB	NE Glisan St	Jackson Bridge	3.6	1.45	1.25	5.00
I-205	22	SB	Jackson Bridge	NE Glisan St	3.9	1.45	1.25	5.00
I-205	23	SB	NE Glisan St	SR-224	7.4	1.77	3.75	5.00
I-205	24	SB	SR-224	Main St	4.0	1.27	0.00	5.00
I-205	25	SB	Main St	Sunset Ave	1.3	1.50	1.25	5.00
I-205	26	SB	Sunset Ave	10th St	1.9	1.36	0.00	5.00
I-205	27	SB	10th St	Stafford Rd	3.3	1.09	0.00	5.00
I-205	28	SB	Stafford Rd	I-5	2.3	1.27	0.00	5.00

Scores range from 0 to 5 with higher scores representing higher performance.

Results Review

Traffic operations scores are to some extent influenced by the model's treatment of diversion and throughput. However, the ability of this concept to reduce congestion is significantly less than Concept 1, so the lower scores are understandable.

Alternative modes scores are low due to lack of options on some segments. Where alternative mode opportunities are available, the strategy performs well. Results may help inform future updates of transit, bicycle, and pedestrian plans.

This concept has the lowest capital costs of the concepts studied for both I-5 and I-205.



Concept 4 - Priced Lane Construction: construct a new priced lane on I-5 and I-205 in each travel direction

Table D. Concept 4 - Summary Round 1 Evaluation Scores

Corridor	Segment ID	Direction	From	To	Length (Miles)	Traffic Operations Score	Alternative Mode Score	Capital Cost Score
I-5	2	NB	I-205	OR-217	3.6	3.91	0.00	3.75
I-5	3	NB	OR-217	Capitol Hwy	2.7	3.18	0.00	2.50
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	3.82	1.25	1.25
I-5	5	NB	Ross Island Bridge	I-84	1.9	4.05	5.00	1.25
I-5	6	NB	I-84	N Skidmore St.	2.2	4.41	5.00	0.00
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	4.77	3.75	0.00
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	4.41	3.75	0.00
I-5	9	SB	N Skidmore St.	I-84	2.2	3.50	5.00	0.00
I-5	10	SB	I-84	Ross Island Bridge	1.9	3.68	5.00	1.25
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	3.27	1.25	1.25
I-5	12	SB	Capitol Hwy	OR-217	3.0	3.36	0.00	2.50
I-5	13	SB	OR-217	I-205	3.7	3.36	0.00	3.75
I-205	15	NB	I-5	Stafford Rd	2.0	3.36	0.00	3.75
I-205	16	NB	Stafford Rd	10th St	3.3	3.55	0.00	3.75
I-205	17	NB	10th St	Sunset Ave	1.9	3.91	0.00	2.50
I-205	18	NB	Sunset Ave	Main St	1.2	3.77	1.25	2.50
I-205	19	NB	Main St	SR-224	4.1	3.91	0.00	2.50
I-205	20	NB	SR-224	NE Glisan St	7.7	3.86	3.75	3.75
I-205	21	NB	NE Glisan St	Jackson Bridge	3.6	4.00	1.25	3.75
I-205	22	SB	Jackson Bridge	NE Glisan St	3.9	3.00	1.25	3.75
I-205	23	SB	NE Glisan St	SR-224	7.4	4.05	3.75	3.75
I-205	24	SB	SR-224	Main St	4.0	3.91	0.00	2.50
I-205	25	SB	Main St	Sunset Ave	1.3	3.77	1.25	2.50
I-205	26	SB	Sunset Ave	10th St	1.9	3.55	0.00	3.75
I-205	27	SB	10th St	Stafford Rd	3.3	3.55	0.00	3.75
I-205	28	SB	Stafford Rd	I-5	2.3	3.36	0.00	3.75

Scores range from 0 to 5 with higher scores representing higher performance.

Results Review

Traffic operations scores are the highest of all concepts studied. This is due to the additional of new physical capacity on both I-5 and I-205, which reduces congestion and improves performance on both facilities. Also, the KATE model handles this type of analysis very well, so the results in terms of actual conditions are likely among the best.

Alternative modes scores are low for reasons previously discussed.

This concept has the highest capital costs of the concepts studied for both I-5 and I-205. There are some sections of I-205 where capital costs are lower. This is in areas where shoulders might be converted or new lanes could be added without significant impact to surrounding features. Regardless, this concept is significantly more costly than lane conversions.



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

Table E. Concept 5 - Summary Round 1 Evaluation Scores

Corridor	Segment ID	Direction	From	To	Length (Miles)	Traffic Operations Score	Alternative Mode Score	Capital Cost Score
I-5	2	NB	I-205	OR-217	3.6	1.40	0.00	5.00
I-5	3	NB	OR-217	Capitol Hwy	2.7	1.30	0.00	5.00
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	2.00	1.25	5.00
I-5	5	NB	Ross Island Bridge	I-84	1.9	2.35	5.00	5.00
I-5	6	NB	I-84	N Skidmore St.	2.2	2.05	5.00	5.00
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	2.15	3.75	5.00
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	2.25	3.75	5.00
I-5	9	SB	N Skidmore St.	I-84	2.2	2.25	5.00	5.00
I-5	10	SB	I-84	Ross Island Bridge	1.9	2.25	5.00	5.00
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	2.00	1.25	5.00
I-5	12	SB	Capitol Hwy	OR-217	3.0	1.50	0.00	5.00
I-5	13	SB	OR-217	I-205	3.7	1.50	0.00	5.00
I-205	15	NB	I-5	Stafford Rd	2.0	3.55	0.00	3.75
I-205	16	NB	Stafford Rd	10th St	3.3	3.73	0.00	3.75
I-205	17	NB	10th St	Sunset Ave	1.9	3.91	0.00	2.50
I-205	18	NB	Sunset Ave	Main St	1.2	3.95	1.25	2.50
I-205	19	NB	Main St	SR-224	4.1	3.36	0.00	2.50
I-205	20	NB	SR-224	NE Glisan St	7.7	3.32	3.75	3.75
I-205	21	NB	NE Glisan St	Jackson Bridge	3.6	4.18	1.25	3.75
I-205	22	SB	Jackson Bridge	NE Glisan St	3.9	3.09	1.25	3.75
I-205	23	SB	NE Glisan St	SR-224	7.4	3.50	3.75	3.75
I-205	24	SB	SR-224	Main St	4.0	3.36	0.00	2.50
I-205	25	SB	Main St	Sunset Ave	1.3	3.41	1.25	2.50
I-205	26	SB	Sunset Ave	10th St	1.9	3.73	0.00	3.75
I-205	27	SB	10th St	Stafford Rd	3.3	3.18	0.00	3.75
I-205	28	SB	Stafford Rd	I-5	2.3	3.18	0.00	3.75

Scores range from 0 to 5 with higher scores representing higher performance.

Results Review

As would be expected, the Traffic Operations scores are high on I-205 where a new lane would be constructed, but lower on I-5 with no new construction.

Alternative modes scores are low for reasons previously discussed.

This concept has the highest capital costs of the concepts studied for I-205. As previously discussed, there are some sections of I-205 where capital costs are lower.

This concept is still significantly more costly than lane conversions. The cost scores for I-5 reflect that there is no construction, and therefore no cost.



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

Table F. Concept 6 - Summary Round 1 Evaluation Scores

Corridor	Segment ID	Direction	From	To	Length (Miles)	Traffic Operations Score	Alternative Mode Score	Capital Cost Score
I-5	2	NB	I-205	OR-217	3.6	2.10	0.00	5.00
I-5	3	NB	OR-217	Capitol Hwy	2.7	2.00	0.00	5.00
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	3.00	1.25	5.00
I-5	5	NB	Ross Island Bridge	I-84	1.9	3.00	5.00	5.00
I-5	6	NB	I-84	N Skidmore St.	2.2	2.80	5.00	5.00
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	2.75	3.75	5.00
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	2.25	3.75	5.00
I-5	9	SB	N Skidmore St.	I-84	2.2	2.50	5.00	5.00
I-5	10	SB	I-84	Ross Island Bridge	1.9	2.80	5.00	5.00
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	2.60	1.25	5.00
I-5	12	SB	Capitol Hwy	OR-217	3.0	2.00	0.00	5.00
I-5	13	SB	OR-217	I-205	3.7	2.10	0.00	5.00
I-205	15	NB	I-5	Stafford Rd	2.0	1.60	0.00	5.00
I-205	16	NB	Stafford Rd	10th St	3.3	1.40	0.00	5.00
I-205	17	NB	10th St	Sunset Ave	1.9	1.20	0.00	5.00
I-205	18	NB	Sunset Ave	Main St	1.2	1.45	1.25	5.00
I-205	19	NB	Main St	SR-224	4.1	1.10	0.00	5.00
I-205	20	NB	SR-224	NE Glisan St	7.7	1.95	3.75	5.00
I-205	21	NB	NE Glisan St	Jackson Bridge	3.6	1.70	1.25	5.00
I-205	22	SB	Jackson Bridge	NE Glisan St	3.9	2.40	1.25	5.00
I-205	23	SB	NE Glisan St	SR-224	7.4	2.35	3.75	5.00
I-205	24	SB	SR-224	Main St	4.0	1.50	0.00	5.00
I-205	25	SB	Main St	Sunset Ave	1.3	1.85	1.25	5.00
I-205	26	SB	Sunset Ave	10th St	1.9	1.50	0.00	5.00
I-205	27	SB	10th St	Stafford Rd	3.3	1.80	0.00	5.00
I-205	28	SB	Stafford Rd	I-5	2.3	1.80	0.00	5.00

Scores range from 0 to 5 with higher scores representing higher performance.

Results Review

Traffic operations scores are lower than would be expected on I-5. This again is likely due to issues with the KATE Model. I-205 scores reflect diversion from I-5 that may or may not occur in actual practice.

Alternative modes scores are low for reasons previously discussed.

As only lane conversions are in this concept, it has a low capital cost with the resulting high score.



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

Table G. Concept 7 - Summary Round 1 Evaluation Scores

Corridor	Segment ID	Direction	From	To	Length (Miles)	Traffic Operations Score	Alternative Mode Score	Capital Cost Score
I-5	2	NB	I-205	OR-217	3.6	1.91	0.00	5.00
I-5	3	NB	OR-217	Capitol Hwy	2.7	2.00	0.00	5.00
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	2.36	1.25	5.00
I-5	5	NB	Ross Island Bridge	I-84	1.9	2.45	5.00	5.00
I-5	6	NB	I-84	N Skidmore St.	2.2	2.18	5.00	5.00
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	2.14	3.75	5.00
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	1.68	3.75	5.00
I-5	9	SB	N Skidmore St.	I-84	2.2	2.09	5.00	5.00
I-5	10	SB	I-84	Ross Island Bridge	1.9	2.36	5.00	5.00
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	2.36	1.25	5.00
I-5	12	SB	Capitol Hwy	OR-217	3.0	1.73	0.00	5.00
I-5	13	SB	OR-217	I-205	3.7	1.82	0.00	5.00
I-205	15	NB	I-5	Stafford Rd	2.0	2.00	0.00	5.00
I-205	16	NB	Stafford Rd	10th St	3.3	2.00	0.00	5.00
I-205	17	NB	10th St	Sunset Ave	1.9	2.00	0.00	5.00
I-205	18	NB	Sunset Ave	Main St	1.2	2.25	1.25	5.00
I-205	19	NB	Main St	SR-224	4.1	2.00	0.00	5.00
I-205	20	NB	SR-224	NE Glisan St	7.7	2.75	3.75	5.00
I-205	21	NB	NE Glisan St	Jackson Bridge	3.6	2.50	1.25	5.00
I-205	22	SB	Jackson Bridge	NE Glisan St	3.9	2.60	1.25	5.00
I-205	23	SB	NE Glisan St	SR-224	7.4	3.05	3.75	5.00
I-205	24	SB	SR-224	Main St	4.0	2.50	0.00	5.00
I-205	25	SB	Main St	Sunset Ave	1.3	2.25	1.25	5.00
I-205	26	SB	Sunset Ave	10th St	1.9	2.00	0.00	5.00
I-205	27	SB	10th St	Stafford Rd	3.3	2.00	0.00	5.00
I-205	28	SB	Stafford Rd	I-5	2.3	2.00	0.00	5.00

Scores range from 0 to 5 with higher scores representing higher performance

Results Review

Traffic operations scores are lower than would be expected on I-5. This again is likely due to issues with the KATE Model.

The operations scores are lower than for Concept 1, and from a relative standpoint, this is likely correct as this concept is not able to manage as much traffic as Concept 1

Alternative modes scores are low for reasons previously discussed.

As only lane conversions are in this concept, it has a low capital cost with the resulting high Capital Cost score.



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

Table H. Concept 8 - Summary Round 1 Evaluation Scores

Corridor	Segment ID	Direction	From	To	Length (Miles)	Traffic Operations Score	Alternative Mode Score	Capital Cost Score
I-5	2	NB	I-205	OR-217	3.6	1.91	0.00	5.00
I-5	3	NB	OR-217	Capitol Hwy	2.7	1.82	0.00	5.00
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	2.55	1.25	5.00
I-5	5	NB	Ross Island Bridge	I-84	1.9	2.82	5.00	5.00
I-5	6	NB	I-84	N Skidmore St.	2.2	2.36	5.00	5.00
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	3.59	3.75	5.00
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	2.05	3.75	5.00
I-5	9	SB	N Skidmore St.	I-84	2.2	2.09	5.00	5.00
I-5	10	SB	I-84	Ross Island Bridge	1.9	2.36	5.00	5.00
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	2.36	1.25	5.00
I-5	12	SB	Capitol Hwy	OR-217	3.0	1.64	0.00	5.00
I-5	13	SB	OR-217	I-205	3.7	2.00	0.00	5.00
I-205	15	NB	I-5	Stafford Rd	2.0	3.27	0.00	3.75
I-205	16	NB	Stafford Rd	10th St	3.3	3.27	0.00	3.75
I-205	17	NB	10th St	Sunset Ave	1.9	3.45	0.00	2.50
I-205	18	NB	Sunset Ave	Main St	1.2	2.95	1.25	2.50
I-205	19	NB	Main St	SR-224	4.1	2.91	0.00	2.50
I-205	20	NB	SR-224	NE Glisan St	7.7	3.05	3.75	3.75
I-205	21	NB	NE Glisan St	Jackson Bridge	3.6	3.36	1.25	3.75
I-205	22	SB	Jackson Bridge	NE Glisan St	3.9	2.64	1.25	3.75
I-205	23	SB	NE Glisan St	SR-224	7.4	3.05	3.75	3.75
I-205	24	SB	SR-224	Main St	4.0	2.64	0.00	2.50
I-205	25	SB	Main St	Sunset Ave	1.3	2.95	1.25	2.50
I-205	26	SB	Sunset Ave	10th St	1.9	2.73	0.00	3.75
I-205	27	SB	10th St	Stafford Rd	3.3	2.73	0.00	3.75
I-205	28	SB	Stafford Rd	I-5	2.3	2.73	0.00	3.75

Scores range from 0 to 5 with higher scores representing higher performance.

Results Review

Traffic Operations scores are not as high on either facility as they are in Concept 5, where no changes are made on I-5. Some of this change likely is due to model issues previously discussed.

Alternative modes scores are low for reasons previously discussed.

This concept has relatively high capital costs of the concept studied for I-205, and is significantly more costly than lane conversions. The cost scores for I-5 reflect that there is conversion of lanes only.



APPENDIX C: ROUND 1 INITIAL CONCEPT SCORING SHEETS

Appendix C shows the results of all criteria used in the analysis for each strategy on each roadway segment. Appendix C is designed for use when detailed results are sought.

Note on Concept 1

Concept 1 is the baseline condition in 2027, and not all criterion apply. As an example, there no construction costs, and impacts to surrounding land use does not change. Some other criteria are similar in nature, and are not included below. Also, as Concept 1 is a baseline condition, there are no rankings.

ODOT Value Pricing - Round 1 Analysis (I-5 & I-205)

Concept 1 - Baseline

Corridor	Segment ID	Direction	From	To	Length (Miles)	Traffic Operations					Alternative Modes	
						Peak-Period Vehicle Throughput (vehicles per hour)	Peak-Period Person Throughput (persons per hour)	Peak-Period Freight Truck Throughput (freight trucks per hour)	Peak-Period GP Travel Time (minutes)	Peak-Period Freight Truck Travel Time (minutes)	Adequacy of Transit Service (available options)	Bicycle & Ped Options (available options)
I-5	2	NB	I-205	OR-217	3.6	5,199	5,880	234	6.80	6.80	10	13
I-5	3	NB	OR-217	Capitol Hwy	2.7	4,281	4,763	230	3.94	3.94	9	15
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	4,238	4,837	198	8.99	8.99	18	22
I-5	5	NB	Ross Island Bridge	I-84	1.9	3,166	3,708	133	4.75	4.75	28	96
I-5	6	NB	I-84	N Skidmore St.	2.2	3,963	4,902	176	3.54	3.54	16	112
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	4,410	5,361	163	13.35	13.35	14	43
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	4,079	4,484	341	8.21	8.21	14	43
I-5	9	SB	N Skidmore St.	I-84	2.2	4,171	4,635	318	3.70	3.70	16	112
I-5	10	SB	I-84	Ross Island Bridge	1.9	3,059	3,396	236	5.05	5.05	28	96
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	4,379	4,845	326	9.23	9.23	18	22
I-5	12	SB	Capitol Hwy	OR-217	3.0	4,135	4,525	334	4.24	4.24	9	15
I-5	13	SB	OR-217	I-205	3.7	4,990	5,536	319	7.14	7.14	10	13
I-205	15	NB	I-5	Stafford Rd	2.0	4,527	5,001	299	2.32	2.32	0	16
I-205	16	NB	Stafford Rd	10th St	3.3	4,639	5,159	291	4.86	4.86	1	8
I-205	17	NB	10th St	Sunset Ave	1.9	4,675	5,221	289	4.29	4.29	1	23
I-205	18	NB	Sunset Ave	Main St	1.2	5,040	5,690	302	1.23	1.23	8	40
I-205	19	NB	Main St	SR-224	4.1	4,679	5,355	295	6.77	6.77	3	21
I-205	20	NB	SR-224	NE Glisan St	7.7	4,694	5,335	341	13.61	13.61	24	28
I-205	21	NB	NE Glisan St	Jackson Bridge	3.6	5,394	5,852	323	9.11	9.11	10	18
I-205	22	SB	Jackson Bridge	NE Glisan St	3.9	4,509	5,279	198	6.72	6.72	10	18
I-205	23	SB	NE Glisan St	SR-224	7.4	4,637	5,499	192	13.70	13.70	24	28
I-205	24	SB	SR-224	Main St	4.0	4,695	5,573	156	7.56	7.56	3	21
I-205	25	SB	Main St	Sunset Ave	1.3	4,804	5,610	177	1.12	1.12	8	40
I-205	26	SB	Sunset Ave	10th St	1.9	4,750	5,526	182	3.81	3.81	1	23
I-205	27	SB	10th St	Stafford Rd	3.3	4,476	5,174	186	4.05	4.05	1	8
I-205	28	SB	Stafford Rd	I-5	2.3	4,017	4,591	184	2.22	2.22	0	16



Notes on Concepts presented in Appendix C

Concepts 2, 6, and 7 illustrate the likely over-reporting of throughput reduction and diversion from the KATE model as discussed in the introduction to these appendices. Due to the known presence of hyper-congestion based on traffic data on I-5 and I-205, it is highly likely that throughput will be greater, and diversion less, than shown for these concepts.

The lower alternative modes scores for all concepts reflect the lack of alternative mode options in some segments rather than issues with the strategy. On segments where options are available, these scores tend to be higher (often significantly so).

Concept 2 - Tolling on all lanes (I-5 & I-205)

Corridor	Segment ID	Direction	From	To	Length (Miles)	Combined Score	Traffic Operations																				Traffic Operations Score	Alternative Modes					Alternative Mode Score	Capital Expenditure				
							Peak-Period Vehicle Throughput	Peak-Period Vehicle Throughput Score	Peak-Period Person Throughput	Peak-Period Person Throughput Score	Peak-Period Freight Truck Throughput	Peak-Period Freight Truck Throughput Score	Peak-Period GP Travel Time	Peak-Period GP Travel Time Score	Peak-Period ML Travel Time	Peak-Period ML Travel Time Score	Peak-Period Freight Truck Travel Time	Peak-Period Freight Truck Travel Time Score	Trip Diversion (Adjacent Facilities)	Trip Diversion Score	SOV Mode Shift	SOV Mode Shift Score	Safety Impact (Routes w/ Diversion)	Safety Impact Score (Routes w/ Diversion)	Key Destination Travel Time	Key Destination Travel Time Score		Key Destination User Cost	Key Destination User Cost Score	Adequacy of Transit Service	Adequacy of Transit Service Score	Bicycle & Ped Options		Bicycle & Ped Option Score	Capital Cost (High-Level)	Capital Cost (High-Level) Score	Physical Impacts (E) Population	Physical Impacts (E) Population Score
I-5	2	NB	I-205	OR-217	3.6	2.50	-1,082	0.0	-1,376	0.0	93	5.0	-2.22	5.0	NA	-2.22	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-2.22	5.0	Moderate	2.5	2.50	10	0.0	13	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-5	3	NB	OR-217	Capitol Hwy	2.7	2.50	-1,129	0.0	-1,387	0.0	84	5.0	-0.80	5.0	NA	-0.80	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-0.80	5.0	Moderate	2.5	2.50	9	0.0	15	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	3.08	-592	0.0	-795	0.0	118	5.0	-2.52	5.0	NA	-2.52	5.0	Moderate	2.5	Moderate	2.5	Moderate	2.5	-2.52	5.0	Moderate	2.5	3.00	18	2.5	22	0.0	1.25	Minor	5.0	Minor	5.0	5.00
I-5	5	NB	Ross Island Bridge	I-84	1.9	4.33	-163	0.0	-233	0.0	93	5.0	-1.19	5.0	NA	-1.19	5.0	Major	0.0	Major	5.0	Moderate	2.5	-1.19	5.0	Moderate	2.5	3.00	28	5.0	96	5.0	5.00	Minor	5.0	Minor	5.0	5.00
I-5	6	NB	I-84	N Skidmore St.	2.2	4.33	-411	0.0	-506	0.0	89	5.0	-0.48	5.0	NA	-0.48	5.0	Major	0.0	Major	5.0	Moderate	2.5	-0.48	5.0	Moderate	2.5	3.00	16	5.0	112	5.0	5.00	Minor	5.0	Minor	5.0	5.00
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	3.33	-1,361	0.0	-1,666	0.0	25	5.0	1.56	0.0	NA	1.56	0.0	Major	0.0	Major	5.0	Major	0.0	1.56	0.0	Moderate	2.5	1.25	14	5.0	43	2.5	3.75	Minor	5.0	Minor	5.0	5.00
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	3.77	-290	0.0	-333	0.0	22	3.0	-1.14	5.0	NA	-1.14	5.0	Major	0.0	Major	5.0	Major	0.0	-1.14	5.0	Moderate	2.5	2.55	14	5.0	43	2.5	3.75	Minor	5.0	Minor	5.0	5.00
I-5	9	SB	N Skidmore St.	I-84	2.2	4.27	-412	0.0	-497	0.0	31	3.0	-0.61	5.0	NA	-0.61	5.0	Major	0.0	Major	5.0	Moderate	2.5	-0.61	5.0	Moderate	2.5	2.80	16	5.0	112	5.0	5.00	Minor	5.0	Minor	5.0	5.00
I-5	10	SB	I-84	Ross Island Bridge	1.9	4.33	-25	0.0	-44	0.0	46	5.0	-0.96	5.0	NA	-0.96	5.0	Major	0.0	Major	5.0	Moderate	2.5	-0.96	5.0	Moderate	2.5	3.00	28	5.0	96	5.0	5.00	Minor	5.0	Minor	5.0	5.00
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	3.08	-355	0.0	-506	0.0	72	5.0	-2.36	5.0	NA	-2.36	5.0	Moderate	2.5	Moderate	2.5	Moderate	2.5	-2.36	5.0	Moderate	2.5	3.00	18	2.5	22	0.0	1.25	Minor	5.0	Minor	5.0	5.00
I-5	12	SB	Capitol Hwy	OR-217	3.0	2.50	-627	0.0	-814	0.0	54	5.0	-0.84	5.0	NA	-0.84	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-0.84	5.0	Moderate	2.5	2.50	9	0.0	15	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-5	13	SB	OR-217	I-205	3.7	2.50	-446	0.0	-630	0.0	73	5.0	-2.05	5.0	NA	-2.05	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-2.05	5.0	Moderate	2.5	2.50	10	0.0	13	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-205	15	NB	I-5	Stafford Rd	2.0	2.33	-857	0.0	-1,016	0.0	50	0.0	-0.52	5.0	NA	-0.52	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-0.52	5.0	Moderate	2.5	2.00	0	0.0	16	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-205	16	NB	Stafford Rd	10th St	3.3	2.33	-569	0.0	-670	0.0	39	0.0	-1.12	5.0	NA	-1.12	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-1.12	5.0	Moderate	2.5	2.00	1	0.0	8	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-205	17	NB	10th St	Sunset Ave	1.9	2.33	-485	0.0	-562	0.0	36	0.0	-1.02	5.0	NA	-1.02	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-1.02	5.0	Moderate	2.5	2.00	1	0.0	23	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-205	18	NB	Sunset Ave	Main St	1.2	2.83	-504	0.0	-552	0.0	54	0.0	-0.22	5.0	NA	-0.22	5.0	Moderate	2.5	Minor	0.0	Moderate	2.5	-0.22	5.0	Moderate	2.5	2.25	8	0.0	40	2.5	1.25	Minor	5.0	Minor	5.0	5.00
I-205	19	NB	Main St	SR-224	4.1	2.33	-395	0.0	-458	0.0	33	0.0	-1.37	5.0	NA	-1.37	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-1.37	5.0	Moderate	2.5	2.00	3	0.0	21	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-205	20	NB	SR-224	NE Glisan St	7.7	3.83	-368	0.0	-401	0.0	50	0.0	-1.95	5.0	NA	-1.95	5.0	Moderate	2.5	Major	5.0	Moderate	2.5	-1.95	5.0	Moderate	2.5	2.75	24	5.0	28	2.5	3.75	Minor	5.0	Minor	5.0	5.00
I-205	21	NB	NE Glisan St	Jackson Bridge	3.6	2.92	-325	0.0	-369	0.0	61	0.0	-1.02	5.0	NA	-1.02	5.0	Moderate	2.5	Moderate	2.5	Moderate	2.5	-1.02	5.0	Moderate	2.5	2.50	10	2.5	18	0.0	1.25	Minor	5.0	Minor	5.0	5.00
I-205	22	SB	Jackson Bridge	NE Glisan St	3.9	2.75	-506	0.0	-584	0.0	0	1.0	-0.49	3.0	NA	-0.49	3.0	Moderate	2.5	Moderate	2.5	Moderate	2.5	-0.49	3.0	Moderate	2.5	2.00	10	2.5	18	0.0	1.25	Minor	5.0	Minor	5.0	5.00
I-205	23	SB	NE Glisan St	SR-224	7.4	3.87	-456	0.0	-530	0.0	4	1.0	-2.27	5.0	NA	-2.27	5.0	Moderate	2.5	Major	5.0	Moderate	2.5	-2.27	5.0	Moderate	2.5	2.85	24	5.0	28	2.5	3.75	Minor	5.0	Minor	5.0	5.00
I-205	24	SB	SR-224	Main St	4.0	2.50	-295	0.0	-348	0.0	16	5.0	-1.80	5.0	NA	-1.80	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-1.80	5.0	Moderate	2.5	2.50	3	0.0	21	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-205	25	SB	Main St	Sunset Ave	1.3	2.83	-774	0.0	-901	0.0	12	0.0	-0.19	5.0	NA	-0.19	5.0	Moderate	2.5	Minor	0.0	Moderate	2.5	-0.19	5.0	Moderate	2.5	2.25	8	0.0	40	2.5	1.25	Minor	5.0	Minor	5.0	5.00
I-205	26	SB	Sunset Ave	10th St	1.9	2.33	-997	0.0	-1,188	0.0	13	0.0	-0.83	5.0	NA	-0.83	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-0.83	5.0	Moderate	2.5	2.00	1	0.0	23	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-205	27	SB	10th St	Stafford Rd	3.3	2.33	-1,173	0.0	-1,406	0.0	19	0.0	-0.74	5.0	NA	-0.74	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-0.74	5.0	Moderate	2.5	2.00	1	0.0	8	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-205	28	SB	Stafford Rd	I-5	2.3	2.33	-1,080	0.0	-1,302	0.0	18	0.0	-0.37	5.0	NA	-0.37	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-0.37	5.0	Moderate	2.5	2.00	0	0.0	16	0.0	0.00	Minor	5.0	Minor	5.0	5.00

Scores range from 0 to 5 with higher scores representing higher performance.

Concept 3 - Convert existing GP lane (I-5 & I-205)

Corridor	Segment ID	Direction	From	To	Length (Miles)	Combined Score	Traffic Operations																				Traffic Operations Score	Alternative Modes					Alternative Mode Score	Capital Expenditure					
							Peak-Period Vehicle Throughput	Peak-Period Vehicle Throughput Score	Peak-Period Person Throughput	Peak-Period Person Throughput Score	Peak-Period Freight Truck Throughput	Peak-Period Freight Truck Throughput Score	Peak-Period GP Travel Time	Peak-Period GP Travel Time Score	Peak-Period ML Travel Time	Peak-Period ML Travel Time Score	Peak-Period Freight Truck Travel Time	Peak-Period Freight Truck Travel Time Score	Trip Diversion (Adjacent Facilities)	Trip Diversion Score	SOV Mode Shift	SOV Mode Shift Score	Safety Impact (Routes w/ Diversion)	Safety Impact Score (Routes w/ Diversion)	Key Destination Travel Time	Key Destination Travel Time Score		Key Destination User Cost	Key Destination User Cost Score	Adequacy of Transit Service	Adequacy of Transit Service Score	Bicycle & Ped Options		Bicycle & Ped Option Score	Capital Cost (High-Level)	Capital Cost (High-Level) Score	Physical Impacts (E) Population	Physical Impacts (E) Population Score	Capital Cost Score
I-5	2	NB	I-205	OR-217	3.6	2.15	-2	0.0	508	3.0	-5	0.0	0.79	0.0	-0.40	3.0	0.79	0.0	Minor	5.0	Minor	0.0	Moderate	2.5	0.79	0.0	Moderate	2.5	1.45	10	0.0	13	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-5	3	NB	OR-217	Capitol Hwy	2.7	2.18	-92	0.0	240	3.0	3	1.0	0.15	0.0	-0.22	3.0	0.15	0.0	Minor	5.0	Minor	0.0	Moderate	2.5	0.15	0.0	Moderate	2.5	1.55	9	0.0	15	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	2.78	-6	0.0	530	5.0	-3	0.0	0.83	0.0	-0.39	3.0	0.83	0.0	Minor	5.0	Moderate	2.5	Minor	5.0	0.83	0.0	Moderate	2.5	2.09	18	2.5	22	0.0	1.25	Minor	5.0	Minor	5.0	5.00
I-5	5	NB	Ross Island Bridge	I-84	1.9	4.12	50	1.0	759	5.0	-13	0.0	0.67	0.0	-0.52	5.0	0.67	0.0	Moderate	2.5	Major	5.0	Minor	5.0	0.67	0.0	Moderate	2.5	2.36	28	5.0	96	5.0	5.00	Minor	5.0	Minor	5.0	5.00
I-5	6	NB	I-84	N Skidmore St.	2.2	3.97	-77	0.0	291	3.0	-15	0.0	0.39	0.0	-0.32	3.0	0.39	0.0	Moderate	2.5	Major	5.0	Minor	5.0	0.39	0.0	Moderate	2.5	1.91	16	5.0	112	5.0	5.00	Minor	5.0	Minor	5.0	5.00
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	3.60	7	1.0	118	1.0	15	3.0	0.05	0.0	-0.55	5.0	0.05	0.0	Moderate	2.5	Major	5.0	Moderate	2.5	0.05	0.0	Moderate	2.5	2.05	14	5.0	43	2.5	3.75	Minor	5.0	Minor	5.0	5.00
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	3.42	-104	0.0	177	1.0	-1	0.0	0.34	0.0	-0.30	3.0	0.34	0.0	Moderate	2.5	Major	5.0	Moderate	2.5	0.34	0.0	Moderate	2.5	1.50	14	5.0	43	2.5	3.75	Minor	5.0	Minor	5.0	5.00
I-5	9	SB	N Skidmore St.	I-84	2.2	4.03	-60	0.0	602	5.0	-84	0.0	0.16	0.0	-0.32	3.0	0.16	0.0	Moderate	2.5	Major	5.0	Minor	5.0	0.16	0.0	Moderate	2.5	2.09	16	5.0	112	5.0	5.00	Minor	5.0	Minor	5.0	5.00
I-5	10	SB	I-84	Ross Island Bridge	1.9	4.12	74	1.0	785	5.0	-75	0.0	0.54	0.0	-0.52	5.0	0.54	0.0	Moderate	2.5	Major	5.0	Minor	5.0	0.54	0.0	Moderate	2.5	2.36	28	5.0	96	5.0	5.00	Minor	5.0	Minor	5.0	5.00
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	2.87	2	1.0	668	5.0	-36	0.0	1.22	0.0	-0.43	5.0	1.22	0.0	Minor	5.0	Moderate	2.5	Minor	5.0	1.22	0.0	Moderate	2.5	2.36	18	2.5	22	0.0	1.25	Minor	5.0	Minor	5.0	5.00
I-5	12	SB	Capitol Hwy	OR-217	3.0	2.15	-27	0.0	440	3.0	-16	0.0	0.26	0.0	-0.29	3.0	0.26	0.0	Minor	5.0	Minor	0.0	Moderate	2.5	0.26	0.0	Moderate	2.5	1.45	9	0.0	15	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-5	13	SB	OR-217	I-205	3.7	2.30	12	1.0	559	5.0	-11	0.0	0.85	0.0	-0.43	5.0	0.85	0.0	Minor	5.0	Minor	0.0	Moderate	2.5	0.85	0.0	Moderate	2.5	1.91	10	0.0	13	0.0	0.00	Minor	5.0	Minor	5.0	5.00
F-205	15	NB	I-5	Stafford Rd	2.0	2.21	-83	0.0	519	5.0	-18	0.0	0.06	0.0	-0.21	3.0	0.06	0.0	Minor	5.0	Minor	0.0	Moderate	2.5	0.06	0.0	Moderate	2.5	1.64	0	0.0	16	0.0	0.00	Minor	5.0	Minor	5.0	5.00
F-205	16	NB	Stafford Rd	10th St	3.3	2.21	-46	0.0	518	5.0	-11	0.0	0.15	0.0	-0.26	3.0	0.15	0.0	Minor	5.0	Minor	0.0	Moderate	2.5	0.15	0.0	Moderate	2.5	1.64	1	0.0	8	0.0	0.00	Minor	5.0	Minor	5.0	5.00
F-205	17	NB	10th St	Sunset Ave	1.9	2.15	-42	0.0	452	3.0	-7	0.0	0.25	0.0	-0.34	3.0	0.25	0.0	Minor	5.0	Minor	0.0	Moderate	2.5	0.25	0.0	Moderate	2.5	1.45	1	0.0	23	0.0	0.00	Minor	5.0	Minor	5.0	5.00
F-205	18	NB	Sunset Ave	Main St	1.2	2.64	-52	0.0	374	3.0	-13	0.0	0.07	0.0	-0.29	3.0	0.07	0.0	Minor	5.0	Minor	0.0	Minor	5.0	0.07	0.0	Moderate	2.5	1.88	8	0.0	40	2.5	1.25	Minor	5.0	Minor	5.0	5.00
F-205	19	NB	Main St	SR-224	4.1	2.08	-16	0.0	422	3.0	-13	0.0	0.57	0.0	-0.34	3.0	0.57	0.0	Moderate	2.5	Minor	0.0	Moderate	2.5	0.57	0.0	Moderate	2.5	1.23	3	0.0	21	0.0	0.00	Minor	5.0	Minor	5.0	5.00
F-205	20	NB	SR-224	NE Gilsan St	7.7	3.48	-38	0.0	396	3.0	-16	0.0	1.11	0.0	-0.30	3.0	1.11	0.0	Moderate	2.5	Major	5.0	Moderate	2.5	1.11	0.0	Moderate	2.5	1.68	24	5.0	28	2.5	3.75	Minor	5.0	Minor	5.0	5.00
F-205	21	NB	NE Gilsan St	Jackson Bridge	3.6	2.57	-16	0.0	304	3.0	-12	0.0	0.71	0.0	-0.31	3.0	0.71	0.0	Moderate	2.5	Moderate	2.5	Moderate	2.5	0.71	0.0	Moderate	2.5	1.45	10	2.5	18	0.0	1.25	Minor	5.0	Minor	5.0	5.00
F-205	22	SB	Jackson Bridge	NE Gilsan St	3.9	2.57	133	1.0	339	3.0	6	1.0	0.46	0.0	-0.14	1.0	0.46	0.0	Moderate	2.5	Moderate	2.5	Moderate	2.5	0.46	0.0	Moderate	2.5	1.45	10	2.5	18	0.0	1.25	Minor	5.0	Minor	5.0	5.00
F-205	23	SB	NE Gilsan St	SR-224	7.4	3.51	-28	0.0	329	3.0	3	1.0	1.34	0.0	-0.31	3.0	1.34	0.0	Moderate	2.5	Major	5.0	Moderate	2.5	1.34	0.0	Moderate	2.5	1.77	24	5.0	28	2.5	3.75	Minor	5.0	Minor	5.0	5.00
F-205	24	SB	Main St	Main St	4.0	2.09	5	1.0	386	3.0	-1	0.0	0.94	0.0	-0.42	5.0	0.94	0.0	Moderate	2.5	Major	0.0	Major	0.0	0.94	0.0	Moderate	2.5	1.27	3	0.0	21	0.0	0.00	Minor	5.0	Minor	5.0	5.00
F-205	25	SB	Main St	Sunset Ave	1.3	2.58	-68	0.0	224	1.0	0	0.0	0.06	0.0	-0.24	3.0	0.06	0.0	Minor	5.0	Minor	0.0	Minor	5.0	0.06	0.0	Moderate	2.5	1.50	8	0.0	40	2.5	1.25	Minor	5.0	Minor	5.0	5.00
F-205	26	SB	Sunset Ave	10th St	1.9	2.12	-89	0.0	203	1.0	0	1.0	0.23	0.0	-0.26	3.0	0.23	0.0	Minor	5.0	Minor	0.0	Moderate	2.5	0.23	0.0	Moderate	2.5	1.36	1	0.0	23	0.0	0.00	Minor	5.0	Minor	5.0	5.00
F-205	27	SB	10th St	Stafford Rd	3.3	2.03	-83	0.0	251	1.0	-3	0.0	0.13	0.0	-0.15	1.0	0.13	0.0	Minor	5.0	Minor	0.0	Moderate	2.5	0.13	0.0	Moderate	2.5	1.09	1	0.0	8	0.0	0.00	Minor	5.0	Minor	5.0	5.00
F-205	28	SB	Stafford Rd	I-5	2.3	2.09	-79	0.0	262	3.0	-5	0.0	0.06	0.0	-0.14	1.0	0.06	0.0	Minor	5.0	Minor	0.0	Moderate	2.5	0.06	0.0	Moderate	2.5	1.27	0	0.0	16	0.0	0.00	Minor	5.0	Minor	5.0	5.00



Concept 4 - Construct new priced lane (I-5 & I-205)

Corridor	Segment ID	Direction	From	To	Length (Miles)	Combined Score	Traffic Operations																								Traffic Operations Score	Alternative Modes					Capital Expenditure				
							Peak-Period Vehicle Throughput	Peak-Period Vehicle Throughput Score	Peak-Period Person Throughput	Peak-Period Person Throughput Score	Peak-Period Freight Truck Throughput	Peak-Period Freight Truck Throughput Score	Peak-Period GP Travel Time	Peak-Period GP Travel Time Score	Peak-Period ML Travel Time	Peak-Period ML Travel Time Score	Peak-Period Freight Truck Travel Time	Peak-Period Freight Truck Travel Time Score	Trip Diversion (Adjacent Facilities)	Trip Diversion Score	SOV Mode Shift	SOV Mode Shift Score	Safety Impact (Routes w/ Diversion)	Safety Impact Score (Routes w/ Diversion)	Key Destination Travel Time	Key Destination Travel Time Score	Key Destination User Cost	Key Destination User Cost Score	Adequacy of Transit Service	Adequacy of Transit Service Score		Bicycle & Ped Options	Bicycle & Ped Option Score	Alternative Mode Score	Capital Cost (High-Level)	Capital Cost (High-Level) Score	Physical Impacts (E) Population	Physical Impacts (E) Population Score	Capital Cost Score		
I-5	2	NB	I-205	OR-217	3.6	2.55	1,270	5.0	1,725	5.0	42	5.0	-0.68	5.0	-0.27	3.0	-0.68	5.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.68	5.0	Moderate	2.5	3.91	10	0.0	13	0.0	0.00	Moderate	2.5	Minor	5.0	3.75		
I-5	3	NB	OR-217	Capitol Hwy	2.7	1.89	778	5.0	1,078	5.0	26	5.0	-0.34	3.0	-0.14	1.0	-0.34	3.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.34	3.0	Moderate	2.5	3.18	9	0.0	15	0.0	0.00	Moderate	2.5	Moderate	2.5	2.50		
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	2.11	1,333	5.0	1,824	5.0	48	5.0	-0.52	3.0	-0.30	3.0	-0.52	3.0	Minor	5.0	Moderate	2.5	Minor	5.0	-0.52	3.0	Moderate	2.5	3.82	18	2.5	22	0.0	1.25	Major	0.0	Moderate	2.5	1.25		
I-5	5	NB	Ross Island Bridge	I-84	1.9	3.43	1,415	5.0	2,010	5.0	45	5.0	-0.46	3.0	-0.39	3.0	-0.46	3.0	Minor	5.0	Major	5.0	Minor	5.0	-0.46	3.0	Moderate	2.5	4.05	28	5.0	96	5.0	5.00	Major	0.0	Moderate	2.5	1.25		
I-5	6	NB	I-84	N Skidmore St.	2.2	3.14	864	5.0	1,241	5.0	24	5.0	-0.42	5.0	-0.16	1.0	-0.42	5.0	Minor	5.0	Major	5.0	Minor	5.0	-0.42	5.0	Moderate	2.5	4.41	16	5.0	112	5.0	5.00	Major	0.0	Major	0.0	0.00		
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	2.84	499	5.0	635	5.0	18	5.0	-2.24	5.0	-0.46	5.0	-2.24	5.0	Minor	5.0	Major	5.0	Minor	5.0	-2.24	5.0	Moderate	2.5	4.77	14	5.0	43	2.5	3.75	Major	0.0	Major	0.0	0.00		
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	2.72	936	5.0	1,187	5.0	55	5.0	-0.97	5.0	-0.19	1.0	-0.97	5.0	Minor	5.0	Major	5.0	Minor	5.0	-0.97	5.0	Moderate	2.5	4.41	14	5.0	43	2.5	3.75	Major	0.0	Major	0.0	0.00		
I-5	9	SB	N Skidmore St.	I-84	2.2	2.83	1,213	5.0	1,695	5.0	59	5.0	-0.14	1.0	-0.27	3.0	-0.14	1.0	Minor	5.0	Major	5.0	Minor	5.0	-0.14	1.0	Moderate	2.5	3.50	16	5.0	112	5.0	5.00	Major	0.0	Major	0.0	0.00		
I-5	10	SB	I-84	Ross Island Bridge	1.9	3.31	1,393	5.0	1,942	5.0	66	5.0	-0.19	1.0	-0.45	5.0	-0.19	1.0	Minor	5.0	Major	5.0	Minor	5.0	-0.19	1.0	Moderate	2.5	3.68	28	5.0	96	5.0	5.00	Major	0.0	Moderate	2.5	1.25		
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	1.92	1,395	5.0	1,982	5.0	47	5.0	-0.31	1.0	-0.34	3.0	-0.31	1.0	Minor	5.0	Moderate	2.5	Minor	5.0	-0.31	1.0	Moderate	2.5	3.27	18	2.5	22	0.0	1.25	Major	0.0	Moderate	2.5	1.25		
I-5	12	SB	Capitol Hwy	OR-217	3.0	1.96	1,067	5.0	1,514	5.0	43	5.0	-0.29	3.0	-0.20	3.0	-0.29	3.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.29	3.0	Moderate	2.5	3.36	9	0.0	15	0.0	0.00	Moderate	2.5	Moderate	2.5	2.50		
I-5	13	SB	OR-217	I-205	3.7	2.37	1,379	5.0	1,880	5.0	54	5.0	-0.60	3.0	-0.32	3.0	-0.60	3.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.60	3.0	Moderate	2.5	3.36	10	0.0	13	0.0	0.00	Moderate	2.5	Minor	5.0	3.75		
I-205	15	NB	I-5	Stafford Rd	2.0	2.37	950	5.0	1,405	5.0	11	1.0	-0.29	5.0	-0.12	1.0	-0.29	5.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.29	5.0	Moderate	2.5	3.36	0	0.0	16	0.0	0.00	Moderate	2.5	Minor	5.0	3.75		
I-205	16	NB	Stafford Rd	10th St	3.3	2.43	1,153	5.0	1,602	5.0	25	3.0	-0.62	5.0	-0.16	1.0	-0.62	5.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.62	5.0	Moderate	2.5	3.55	1	0.0	8	0.0	0.00	Moderate	2.5	Minor	5.0	3.75		
I-205	17	NB	10th St	Sunset Ave	1.9	2.14	1,168	5.0	1,576	5.0	31	5.0	-0.57	5.0	-0.21	3.0	-0.57	5.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.57	5.0	Moderate	2.5	3.91	1	0.0	23	0.0	0.00	Major	0.0	Minor	5.0	2.50		
I-205	18	NB	Sunset Ave	Main St	1.2	2.51	899	5.0	1,253	5.0	19	3.0	-0.16	5.0	-0.16	1.0	-0.16	5.0	Minor	5.0	Minor	0.0	Minor	5.0	-0.16	5.0	Moderate	2.5	3.77	8	0.0	40	2.5	1.25	Major	0.0	Minor	5.0	2.50		
I-205	19	NB	Main St	SR-224	4.1	2.14	1,131	5.0	1,538	5.0	31	5.0	-0.73	5.0	-0.21	3.0	-0.73	5.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.73	5.0	Moderate	2.5	3.91	3	0.0	21	0.0	0.00	Moderate	2.5	Moderate	2.5	2.50		
I-205	20	NB	SR-224	NE Glisan St	7.7	3.79	1,067	5.0	1,455	5.0	21	3.0	-0.99	3.0	-0.20	3.0	-0.99	3.0	Minor	5.0	Major	5.0	Minor	5.0	-0.99	3.0	Moderate	2.5	3.86	24	5.0	28	2.5	3.75	Moderate	2.5	Minor	5.0	3.75		
I-205	21	NB	NE Glisan St	Jackson Bridge	3.6	3.00	946	5.0	1,229	5.0	24	3.0	-1.47	5.0	-0.16	1.0	-1.47	5.0	Minor	5.0	Moderate	2.5	Minor	5.0	-1.47	5.0	Moderate	2.5	4.00	10	2.5	18	0.0	1.25	Moderate	2.5	Minor	5.0	3.75		
I-205	22	SB	Jackson Bridge	NE Glisan St	3.9	2.67	374	3.0	565	5.0	-2	0.0	-0.49	3.0	-0.06	1.0	-0.49	3.0	Minor	5.0	Moderate	2.5	Minor	5.0	-0.49	3.0	Moderate	2.5	3.00	10	2.5	18	0.0	1.25	Moderate	2.5	Minor	5.0	3.75		
I-205	23	SB	NE Glisan St	SR-224	7.4	3.85	1,064	5.0	1,412	5.0	19	5.0	-1.10	3.0	-0.20	3.0	-1.10	3.0	Minor	5.0	Major	5.0	Minor	5.0	-1.10	3.0	Moderate	2.5	4.05	24	5.0	28	2.5	3.75	Moderate	2.5	Minor	5.0	3.75		
I-205	24	SB	SR-224	Main St	4.0	2.14	1,307	5.0	1,701	5.0	32	5.0	-0.81	5.0	-0.28	3.0	-0.81	5.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.81	5.0	Moderate	2.5	3.91	3	0.0	21	0.0	0.00	Moderate	2.5	Moderate	2.5	2.50		
I-205	25	SB	Main St	Sunset Ave	1.3	2.51	680	5.0	917	5.0	16	3.0	-0.14	5.0	-0.12	1.0	-0.14	5.0	Minor	5.0	Minor	0.0	Minor	5.0	-0.14	5.0	Moderate	2.5	3.77	8	0.0	40	2.5	1.25	Major	0.0	Minor	5.0	2.50		
I-205	26	SB	Sunset Ave	10th St	1.9	2.43	674	5.0	886	5.0	16	3.0	-0.57	5.0	-0.12	1.0	-0.57	5.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.57	5.0	Moderate	2.5	3.55	1	0.0	23	0.0	0.00	Moderate	2.5	Minor	5.0	3.75		
I-205	27	SB	10th St	Stafford Rd	3.3	2.43	560	5.0	800	5.0	11	3.0	-0.46	5.0	-0.08	1.0	-0.46	5.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.46	5.0	Moderate	2.5	3.55	1	0.0	8	0.0	0.00	Moderate	2.5	Minor	5.0	3.75		
I-205	28	SB	Stafford Rd	I-5	2.3	2.37	511	5.0	753	5.0	5	1.0	-0.24	5.0	-0.07	1.0	-0.24	5.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.24	5.0	Moderate	2.5	3.36	0	0.0	16	0.0	0.00	Moderate	2.5	Minor	5.0	3.75		

Scores range from 0 to 5 with higher scores representing higher performance.

Concept 5 - Construct new priced lane on I-205 (No pricing on I-5)

Corridor	Segment ID	Direction	From	To	Length (Miles)	Combined Score	Traffic Operations																								Traffic Operations Score	Alternative Modes					Alternative Mode Score	Capital Expenditure					Physical Impacts (E) Population	Physical Impacts (E) Population	Capital Cost Score
							Peak-Period Vehicle Throughput	Peak-Period Vehicle Throughput Score	Peak-Period Person Throughput	Peak-Period Person Throughput Score	Peak-Period Freight Truck Throughput	Peak-Period Freight Truck Throughput Score	Peak-Period GP Travel Time	Peak-Period GP Travel Time Score	Peak-Period ML Travel Time	Peak-Period ML Travel Time Score	Peak-Period Freight Truck Travel Time	Peak-Period Freight Truck Travel Time Score	Trip Diversion (Adjacent Facilities)	Trip Diversion Score	SOV Mode Shift	SOV Mode Shift Score	Safety Impact (Routes w/ Diversion)	Safety Impact Score (Routes w/ Diversion)	Key Destination Travel Time	Key Destination Travel Time Score	Key Destination User Cost	Key Destination User Cost Score	Adequacy of Transit Service	Adequacy of Transit Service Score		Bicycle & Ped Options	Bicycle & Ped Option Score	Capital Cost (High-Level)	Capital Cost (High-Level) Score	Physical Impacts (E) Population									
I-5	2	NB	I-205	OR-217	3.6	2.13	-38	0.0	29	1.0	-3	0.0	-0.15	1.0	NA		-0.15	1.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.15	1.0	Moderate	2.5	1.40	10	0.0	13	0.0	0.00	Minor	5.0	Minor	5.0	5.00						
I-5	3	NB	OR-217	Capitol Hwy	2.7	2.10	-144	0.0	-162	0.0	-5	0.0	-0.16	1.0	NA		-0.16	1.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.16	1.0	Moderate	2.5	1.30	9	0.0	15	0.0	0.00	Minor	5.0	Minor	5.0	5.00						
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	2.75	0	1.0	-1	0.0	5	1.0	-0.27	1.0	NA		-0.27	1.0	Minor	5.0	Moderate	2.5	Minor	5.0	-0.27	1.0	Moderate	2.5	2.00	18	2.5	22	0.0	1.25	Minor	5.0	Minor	5.0	5.00						
I-5	5	NB	Ross Island Bridge	I-84	1.9	4.12	3	1.0	14	1.0	1	1.0	-0.18	1.0	NA		-0.18	1.0	Minor	5.0	Major	5.0	Minor	5.0	-0.18	1.0	Moderate	2.5	2.35	28	5.0	96	5.0	5.00	Minor	5.0	Minor	5.0	5.00						
I-5	6	NB	I-84	N Skidmore St.	2.2	4.02	-49	0.0	-80	0.0	-1	0.0	-0.11	1.0	NA		-0.11	1.0	Minor	5.0	Major	5.0	Minor	5.0	-0.11	1.0	Moderate	2.5	2.05	16	5.0	112	5.0	5.00	Minor	5.0	Minor	5.0	5.00						
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	3.63	0	0.0	-57	0.0	2	1.0	-0.64	1.0	NA		-0.64	1.0	Minor	5.0	Major	5.0	Minor	5.0	-0.64	1.0	Moderate	2.5	2.15	14	5.0	43	2.5	3.75	Minor	5.0	Minor	5.0	5.00						
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	3.67	24	1.0	96	1.0	-73	0.0	-0.21	1.0	NA		-0.21	1.0	Minor	5.0	Major	5.0	Minor	5.0	-0.21	1.0	Moderate	2.5	2.25	14	5.0	43	2.5	3.75	Minor	5.0	Minor	5.0	5.00						
I-5	9	SB	N Skidmore St.	I-84	2.2	4.08	37	1.0	126	1.0	-74	0.0	-0.06	1.0	NA		-0.06	1.0	Minor	5.0	Major	5.0	Minor	5.0	-0.06	1.0	Moderate	2.5	2.25	16	5.0	112	5.0	5.00	Minor	5.0	Minor	5.0	5.00						
I-5	10	SB	I-84	Ross Island Bridge	1.9	4.08	47	1.0	120	1.0	-56	0.0	-0.12	1.0	NA		-0.12	1.0	Minor	5.0	Major	5.0	Minor	5.0	-0.12	1.0	Moderate	2.5	2.25	28	5.0	96	5.0	5.00	Minor	5.0	Minor	5.0	5.00						
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	2.75	49	1.0	137	1.0	-71	0.0	-0.24	1.0	NA		-0.24	1.0	Minor	5.0	Moderate	2.5	Minor	5.0	-0.24	1.0	Moderate	2.5	2.00	18	2.5	22	0.0	1.25	Minor	5.0	Minor	5.0	5.00						
I-5	12	SB	Capitol Hwy	OR-217	3.0	2.17	30	1.0	97	1.0	-74	0.0	-0.14	1.0	NA		-0.14	1.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.14	1.0	Moderate	2.5	1.50	9	0.0	15	0.0	0.00	Minor	5.0	Minor	5.0	5.00						
I-5	13	SB	OR-217	I-205	3.7	2.17	8	1.0	199	1.0	-72	0.0	-0.06	1.0	NA		-0.06	1.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.06	1.0	Moderate	2.5	1.50	10	0.0	13	0.0	0.00	Minor	5.0	Minor	5.0	5.00						
F-205	15	NB	I-5	Stafford Rd	2.0	2.43	985	5.0	1,343	5.0	28	3.0	-0.27	5.0	-0.13	1.0	-0.27	5.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.27	5.0	Moderate	2.5	3.55	0	0.0	16	0.0	0.00	Moderate	2.5	Minor	5.0	3.75						
F-205	16	NB	Stafford Rd	10th St	3.3	2.49	1,185	5.0	1,564	5.0	40	5.0	-0.56	5.0	-0.17	1.0	-0.56	5.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.56	5.0	Moderate	2.5	3.73	1	0.0	8	0.0	0.00	Moderate	2.5	Minor	5.0	3.75						
F-205	17	NB	10th St	Sunset Ave	1.9	2.14	1,240	5.0	1,620	5.0	44	5.0	-0.46	5.0	-0.23	3.0	-0.46	5.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.46	5.0	Moderate	2.5	3.91	1	0.0	23	0.0	0.00	Major	0.0	Minor	5.0	2.50						
F-205	18	NB	Sunset Ave	Main St	1.2	2.57	1,050	5.0	1,395	5.0	34	5.0	-0.12	5.0	-0.18	1.0	-0.12	5.0	Minor	5.0	Minor	0.0	Minor	5.0	-0.12	5.0	Moderate	2.5	3.95	8	0.0	40	2.5	1.25	Major	0.0	Minor	5.0	2.50						
F-205	19	NB	Main St	SR-224	4.1	1.95	1,246	5.0	1,664	5.0	40	5.0	-0.45	3.0	-0.24	3.0	-0.45	3.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.45	3.0	Moderate	2.5	3.36	3	0.0	21	0.0	0.00	Moderate	2.5	Moderate	2.5	2.50						
F-205	20	NB	SR-224	NE Gilisan St	7.7	3.61	1,199	5.0	1,614	5.0	33	3.0	-0.49	1.0	-0.23	3.0	-0.49	1.0	Minor	5.0	Major	5.0	Minor	5.0	-0.49	1.0	Moderate	2.5	3.32	24	5.0	28	2.5	3.75	Moderate	2.5	Minor	5.0	3.75						
F-205	21	NB	NE Gilisan St	Jackson Bridge	3.6	3.06	1,160	5.0	1,513	5.0	34	3.0	-1.04	5.0	-0.19	1.0	-1.04	5.0	Minor	5.0	Moderate	2.5	Minor	5.0	-1.04	5.0	Moderate	2.5	4.18	10	2.5	18	0.0	1.25	Moderate	2.5	Minor	5.0	3.75						
F-205	22	SB	Jackson Bridge	NE Gilisan St	3.9	2.70	611	5.0	775	5.0	96	5.0	-0.30	1.0	-0.07	1.0	-0.30	1.0	Minor	5.0	Moderate	2.5	Minor	5.0	-0.30	1.0	Moderate	2.5	3.09	10	2.5	18	0.0	1.25	Moderate	2.5	Minor	5.0	3.75						
F-205	23	SB	NE Gilisan St	SR-224	7.4	3.67	1,142	5.0	1,454	5.0	105	5.0	-0.57	1.0	-0.23	3.0	-0.57	1.0	Minor	5.0	Major	5.0	Minor	5.0	-0.57	1.0	Moderate	2.5	3.50	24	5.0	28	2.5	3.75	Moderate	2.5	Minor	5.0	3.75						
F-205	24	SB	SR-224	Main St	4.0	1.95	1,330	5.0	1,677	5.0	109	5.0	-0.48	3.0	-0.31	3.0	-0.48	3.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.48	3.0	Moderate	2.5	3.36	3	0.0	21	0.0	0.00	Moderate	2.5	Moderate	2.5	2.50						
F-205	25	SB	Main St	Sunset Ave	1.3	2.39	836	5.0	1,039	5.0	106	5.0	-0.10	3.0	-0.14	1.0	-0.10	3.0	Minor	5.0	Minor	0.0	Minor	5.0	-0.10	3.0	Moderate	2.5	3.41	8	0.0	40	2.5	1.25	Major	0.0	Minor	5.0	2.50						
F-205	26	SB	Sunset Ave	10th St	1.9	2.49	811	5.0	980	5.0	107	5.0	-0.45	5.0	-0.14	1.0	-0.45	5.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.45	5.0	Moderate	2.5	3.73	1	0.0	23	0.0	0.00	Moderate	2.5	Minor	5.0	3.75						
F-205	27	SB	10th St	Stafford Rd	3.3	2.31	642	5.0	795	5.0	102	5.0	-0.39	3.0	-0.08	1.0	-0.39	3.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.39	3.0	Moderate	2.5	3.18	1	0.0	8	0.0	0.00	Moderate	2.5	Minor	5.0	3.75						
F-205	28	SB	Stafford Rd	I-5	2.3	2.31	590	5.0	700	5.0	101	5.0	-0.21	3.0	-0.07	1.0	-0.21	3.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.21	3.0	Moderate	2.5	3.18	0	0.0	16	0.0	0.00	Moderate	2.5	Minor	5.0	3.75						



Concept 6 - Toll all lanes on I-5 (No pricing on I-205)

Corridor	Segment ID	Direction	From	To	Length (Miles)	Combined Score	Traffic Operations																						Traffic Operations Score	Alternative Modes					Capital Expenditure				
							Peak-Period Vehicle Throughput	Peak-Period Vehicle Throughput Score	Peak-Period Person Throughput	Peak-Period Person Throughput Score	Peak-Period Freight Truck Throughput	Peak-Period Freight Truck Throughput Score	Peak-Period GP Travel Time	Peak-Period GP Travel Time Score	Peak-Period ML Travel Time	Peak-Period ML Travel Time Score	Peak-Period Freight Truck Travel Time	Peak-Period Freight Truck Travel Time Score	Trip Diversion (Adjacent Facilities)	Trip Diversion Score	SOV Mode Shift	SOV Mode Shift Score	Safety Impact (Routes w/ Diversion)	Safety Impact Score (Routes w/ Diversion)	Key Destination Travel Time	Key Destination Travel Time Score	Key Destination User Cost	Key Destination User Cost Score		Adequacy of Transit Service	Adequacy of Transit Service Score	Bicycle & Ped Options	Bicycle & Ped Option Score	Alternative Mode Score	Capital Cost (High-Level)	Capital Cost (High-Level) Score	Physical Impacts (E) Population	Physical Impacts (E) Population Score	Capital Cost Score
I-5	2	NB	I-205	OR-217	3.6	2.37	-1,098	0.0	-1,282	0.0	10	1.0	-2.21	5.0	NA		-2.21	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-2.21	5.0	Moderate	2.5	2.10	10	0.0	13	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-5	3	NB	OR-217	Capitol Hwy	2.7	2.33	-1,447	0.0	-1,651	0.0	-5	0.0	-0.91	5.0	NA		-0.91	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-0.91	5.0	Moderate	2.5	2.00	9	0.0	15	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	3.08	-815	0.0	-959	0.0	41	5.0	-2.81	5.0	NA		-2.81	5.0	Moderate	2.5	Moderate	2.5	Moderate	2.5	-2.81	5.0	Moderate	2.5	3.00	18	2.5	22	0.0	1.25	Minor	5.0	Minor	5.0	5.00
I-5	5	NB	Ross Island Bridge	I-84	1.9	4.33	-218	0.0	-225	0.0	30	5.0	-1.38	5.0	NA		-1.38	5.0	Major	0.0	Major	5.0	Moderate	2.5	-1.38	5.0	Moderate	2.5	3.00	28	5.0	96	5.0	5.00	Minor	5.0	Minor	5.0	5.00
I-5	6	NB	I-84	N Skidmore St.	2.2	4.27	-541	0.0	-612	0.0	15	3.0	-0.58	5.0	NA		-0.58	5.0	Major	0.0	Major	5.0	Moderate	2.5	-0.58	5.0	Moderate	2.5	2.80	16	5.0	112	5.0	5.00	Minor	5.0	Minor	5.0	5.00
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	3.83	-277	0.0	-236	0.0	30	5.0	-4.72	5.0	NA		-4.72	5.0	Major	0.0	Major	5.0	Major	0.0	-4.72	5.0	Moderate	2.5	2.75	14	5.0	43	2.5	3.75	Minor	5.0	Minor	5.0	5.00
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	3.67	-452	0.0	-422	0.0	-29	0.0	-1.56	5.0	NA		-1.56	5.0	Major	0.0	Major	5.0	Major	0.0	-1.56	5.0	Moderate	2.5	2.25	14	5.0	43	2.5	3.75	Minor	5.0	Minor	5.0	5.00
I-5	9	SB	N Skidmore St.	I-84	2.2	4.17	-450	0.0	-454	0.0	-22	0.0	-0.71	5.0	NA		-0.71	5.0	Major	0.0	Major	5.0	Moderate	2.5	-0.71	5.0	Moderate	2.5	2.50	16	5.0	112	5.0	5.00	Minor	5.0	Minor	5.0	5.00
I-5	10	SB	I-84	Ross Island Bridge	1.9	4.27	4	1.0	78	1.0	1	1.0	-1.18	5.0	NA		-1.18	5.0	Major	0.0	Major	5.0	Moderate	2.5	-1.18	5.0	Moderate	2.5	2.80	28	5.0	96	5.0	5.00	Minor	5.0	Minor	5.0	5.00
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	2.95	-617	0.0	-698	0.0	11	1.0	-2.82	5.0	NA		-2.82	5.0	Moderate	2.5	Moderate	2.5	Moderate	2.5	-2.82	5.0	Moderate	2.5	2.60	18	2.5	22	0.0	1.25	Minor	5.0	Minor	5.0	5.00
I-5	12	SB	Capitol Hwy	OR-217	3.0	2.33	-978	0.0	-1,110	0.0	-13	0.0	-1.05	5.0	NA		-1.05	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-1.05	5.0	Moderate	2.5	2.00	9	0.0	15	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-5	13	SB	OR-217	I-205	3.7	2.37	-534	0.0	-609	0.0	2	1.0	-2.18	5.0	NA		-2.18	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-2.18	5.0	Moderate	2.5	2.10	10	0.0	13	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-205	15	NB	I-5	Stafford Rd	2.0	2.20	-26	0.0	-129	0.0	24	3.0	-0.04	1.0	NA		-0.04	1.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.04	1.0	Moderate	2.5	1.60	0	0.0	16	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-205	16	NB	Stafford Rd	10th St	3.3	2.13	-13	0.0	-89	0.0	13	1.0	-0.04	1.0	NA		-0.04	1.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.04	1.0	Moderate	2.5	1.40	1	0.0	8	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-205	17	NB	10th St	Sunset Ave	1.9	2.07	2	1.0	-51	0.0	6	1.0	0.10	0.0	NA		0.10	0.0	Minor	5.0	Minor	0.0	Moderate	2.5	0.10	0.0	Moderate	2.5	1.20	1	0.0	23	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-205	18	NB	Sunset Ave	Main St	1.2	2.57	42	1.0	-1	0.0	4	1.0	0.07	0.0	NA		0.07	0.0	Minor	5.0	Minor	0.0	Minor	5.0	0.07	0.0	Moderate	2.5	1.45	8	0.0	40	2.5	1.25	Minor	5.0	Minor	5.0	5.00
I-205	19	NB	Main St	SR-224	4.1	2.03	24	1.0	-22	0.0	-3	0.0	0.30	0.0	NA		0.30	0.0	Minor	5.0	Minor	0.0	Moderate	2.5	0.30	0.0	Moderate	2.5	1.10	3	0.0	21	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-205	20	NB	SR-224	NE Glisan St	7.7	3.57	70	1.0	27	1.0	-3	0.0	0.62	0.0	NA		0.62	0.0	Minor	5.0	Major	5.0	Minor	5.0	0.62	0.0	Moderate	2.5	1.95	24	5.0	28	2.5	3.75	Minor	5.0	Minor	5.0	5.00
I-205	21	NB	NE Glisan St	Jackson Bridge	3.6	2.65	39	1.0	6	1.0	-10	0.0	0.84	0.0	NA		0.84	0.0	Minor	5.0	Moderate	2.5	Minor	5.0	0.84	0.0	Moderate	2.5	1.70	10	2.5	18	0.0	1.25	Minor	5.0	Minor	5.0	5.00
I-205	22	SB	Jackson Bridge	NE Glisan St	3.9	2.88	228	3.0	160	1.0	58	5.0	0.29	0.0	NA		0.29	0.0	Minor	5.0	Moderate	2.5	Minor	5.0	0.29	0.0	Moderate	2.5	2.40	10	2.5	18	0.0	1.25	Minor	5.0	Minor	5.0	5.00
I-205	23	SB	NE Glisan St	SR-224	7.4	3.70	22	1.0	-90	0.0	48	5.0	0.53	0.0	NA		0.53	0.0	Minor	5.0	Major	5.0	Minor	5.0	0.53	0.0	Moderate	2.5	2.35	24	5.0	28	2.5	3.75	Minor	5.0	Minor	5.0	5.00
I-205	24	SB	SR-224	Main St	4.0	2.17	-40	0.0	-145	0.0	41	5.0	0.23	0.0	NA		0.23	0.0	Minor	5.0	Minor	0.0	Moderate	2.5	0.23	0.0	Moderate	2.5	1.50	3	0.0	21	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-205	25	SB	Main St	Sunset Ave	1.3	2.70	8	1.0	-98	0.0	53	5.0	0.01	0.0	NA		0.01	0.0	Minor	5.0	Minor	0.0	Minor	5.0	0.01	0.0	Moderate	2.5	1.85	8	0.0	40	2.5	1.25	Minor	5.0	Minor	5.0	5.00
I-205	26	SB	Sunset Ave	10th St	1.9	2.17	-27	0.0	-146	0.0	55	5.0	0.05	0.0	NA		0.05	0.0	Minor	5.0	Minor	0.0	Moderate	2.5	0.05	0.0	Moderate	2.5	1.90	1	0.0	23	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-205	27	SB	10th St	Stafford Rd	3.3	2.27	-63	0.0	-197	0.0	58	5.0	-0.01	1.0	NA		-0.01	1.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.01	1.0	Moderate	2.5	1.80	1	0.0	8	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-205	28	SB	Stafford Rd	I-5	2.3	2.27	-109	0.0	-259	0.0	57	5.0	-0.03	1.0	NA		-0.03	1.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.03	1.0	Moderate	2.5	1.80	0	0.0	16	0.0	0.00	Minor	5.0	Minor	5.0	5.00

Scores range from 0 to 5 with higher scores representing higher performance.

Concept 7 - Toll all lanes on I-205 (Convert GP lane I-5)

Corridor	Segment ID	Direction	From	To	Length (Miles)	Combined Score	Traffic Operations																						Traffic Operations Score	Alternative Modes					Capital Expenditure				
							Peak-Period Vehicle Throughput	Peak-Period Vehicle Throughput Score	Peak-Period Person Throughput	Peak-Period Person Throughput Score	Peak-Period Freight Truck Throughput	Peak-Period Freight Truck Throughput Score	Peak-Period GP Travel Time	Peak-Period GP Travel Time Score	Peak-Period ML Travel Time	Peak-Period ML Travel Time Score	Peak-Period Freight Truck Travel Time	Peak-Period Freight Truck Travel Time Score	Trip Diversion (Adjacent Facilities)	Trip Diversion Score	SOV Mode Shift	SOV Mode Shift Score	Safety Impact (Routes w/ Diversion)	Safety Impact Score (Routes w/ Diversion)	Key Destination Travel Time	Key Destination Travel Time Score	Key Destination User Cost	Key Destination User Cost Score		Adequacy of Transit Service	Adequacy of Transit Service Score	Bicycle & Ped Options	Bicycle & Ped Option Score	Alternative Mode Score	Capital Cost (High-Level)	Capital Cost (High-Level) Score	Physical Impacts (E) Population	Physical Impacts (E) Population Score	Capital Cost Score
I-5	2	NB	I-205	OR-217	3.6	2.30	-12	0.0	428	3.0	30	5.0	0.58	0.0	-0.38	3.0	0.58	0.0	Minor	5.0	Minor	0.0	Moderate	2.5	0.58	0.0	Moderate	2.5	1.91	10	0.0	13	0.0	0.00	Minimal	5.0	Minor	5.0	5.00
I-5	3	NB	OR-217	Capitol Hwy	2.7	2.33	15	1.0	437	3.0	25	5.0	0.36	0.0	-0.25	3.0	0.36	0.0	Minor	5.0	Minor	0.0	Moderate	2.5	0.36	0.0	Moderate	2.5	2.00	9	0.0	15	0.0	0.00	Minimal	5.0	Minor	5.0	5.00
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	2.87	-11	0.0	579	5.0	9	1.0	1.30	0.0	-0.42	5.0	1.30	0.0	Minor	5.0	Moderate	2.5	Minor	5.0	1.30	0.0	Moderate	2.5	2.36	18	2.5	22	0.0	1.25	Minimal	5.0	Minor	5.0	5.00
I-5	5	NB	Ross Island Bridge	I-84	1.9	4.15	36	1.0	764	5.0	6	1.0	1.00	0.0	-0.54	5.0	1.00	0.0	Moderate	2.5	Major	5.0	Minor	5.0	1.00	0.0	Moderate	2.5	2.45	28	5.0	96	5.0	5.00	Minimal	5.0	Minor	5.0	5.00
I-5	6	NB	I-84	N Skidmore St.	2.2	4.06	-41	0.0	407	3.0	10	3.0	0.60	0.0	-0.35	3.0	0.60	0.0	Moderate	2.5	Major	5.0	Minor	5.0	0.60	0.0	Moderate	2.5	2.18	16	5.0	112	5.0	5.00	Minimal	5.0	Minor	5.0	5.00
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	3.63	-4	0.0	190	1.0	31	5.0	0.87	0.0	-0.57	5.0	0.87	0.0	Moderate	2.5	Major	5.0	Moderate	2.5	0.87	0.0	Moderate	2.5	2.14	14	5.0	43	2.5	3.75	Minimal	5.0	Minor	5.0	5.00
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	3.48	-71	0.0	244	3.0	-2	0.0	0.57	0.0	-0.32	3.0	0.57	0.0	Moderate	2.5	Major	5.0	Moderate	2.5	0.57	0.0	Moderate	2.5	1.68	14	5.0	43	2.5	3.75	Minimal	5.0	Minor	5.0	5.00
I-5	9	SB	N Skidmore St.	I-84	2.2	4.03	-55	0.0	646	5.0	-89	0.0	0.22	0.0	-0.33	3.0	0.22	0.0	Moderate	2.5	Major	5.0	Minor	5.0	0.22	0.0	Moderate	2.5	2.09	16	5.0	112	5.0	5.00	Minimal	5.0	Minor	5.0	5.00
I-5	10	SB	I-84	Ross Island Bridge	1.9	4.12	71	1.0	811	5.0	-81	0.0	0.70	0.0	-0.53	5.0	0.70	0.0	Moderate	2.5	Major	5.0	Minor	5.0	0.70	0.0	Moderate	2.5	2.38	28	5.0	96	5.0	5.00	Minimal	5.0	Minor	5.0	5.00
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	2.87	13	1.0	730	5.0	-46	0.0	1.66	0.0	-0.45	5.0	1.66	0.0	Minor	5.0	Moderate	2.5	Minor	5.0	1.66	0.0	Moderate	2.5	2.36	18	2.5	22	0.0	1.25	Minimal	5.0	Minor	5.0	5.00
I-5	12	SB	Capitol Hwy	OR-217	3.0	2.24	5	1.0	522	5.0	-18	0.0	0.96	0.0	-0.30	3.0	0.96	0.0	Minor	5.0	Minor	0.0	Moderate	2.5	0.40	0.0	Moderate	2.5	1.73	9	0.0	15	0.0	0.00	Minimal	5.0	Minor	5.0	5.00
I-5	13	SB	OR-217	I-205	3.7	2.27	23	1.0	492	3.0	3	1.0	0.58	0.0	-0.41	5.0	0.58	0.0	Minor	5.0	Minor	0.0	Moderate	2.5	0.58	0.0	Moderate	2.5	1.92	10	0.0	13	0.0	0.00	Minimal	5.0	Minor	5.0	5.00
F-205	15	NB	I-5	Stafford Rd	2.0	2.33	-818	0.0	-727	0.0	-31	0.0	-0.65	5.0	NA	-0.65	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-0.65	5.0	Moderate	2.5	2.00	0	0.0	16	0.0	0.00	Minimal	5.0	Minor	5.0	5.00	
F-205	16	NB	Stafford Rd	10th St	3.3	2.33	-571	0.0	-526	0.0	-14	0.0	-1.50	5.0	Major	-1.50	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-1.50	5.0	Moderate	2.5	2.00	1	0.0	8	0.0	0.00	Minimal	5.0	Minor	5.0	5.00	
F-205	17	NB	10th St	Sunset Ave	1.9	2.33	-620	0.0	-660	0.0	-9	0.0	-1.41	5.0	NA	-1.41	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-1.41	5.0	Moderate	2.5	2.00	1	0.0	23	0.0	0.00	Minimal	5.0	Minor	5.0	5.00	
F-205	18	NB	Sunset Ave	Main St	1.2	2.83	-678	0.0	-737	0.0	-25	0.0	-0.35	5.0	Moderate	-0.35	5.0	Moderate	2.5	Minor	0.0	Moderate	2.5	-0.35	5.0	Moderate	2.5	2.25	8	0.0	40	2.5	1.25	Minimal	5.0	Minor	5.0	5.00	
F-205	19	NB	Main St	SR-224	4.1	2.33	-619	0.0	-741	0.0	-1	0.0	-2.13	5.0	NA	-2.13	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-2.13	5.0	Moderate	2.5	2.00	3	0.0	21	0.0	0.00	Minimal	5.0	Minor	5.0	5.00	
F-205	20	NB	NE Glisan St	NE Glisan St	7.7	3.83	-562	0.0	-669	0.0	-14	0.0	-3.60	5.0	Major	-3.60	5.0	Moderate	2.5	Major	5.0	Moderate	2.5	-3.60	5.0	Moderate	2.5	2.75	24	5.0	28	2.5	3.75	Minimal	5.0	Minor	5.0	5.00	
F-205	21	NB	NE Glisan St	Jackson Bridge	3.6	2.92	-311	0.0	-488	0.0	-7	0.0	-2.17	5.0	NA	-2.17	5.0	Moderate	2.5	Moderate	2.5	Major	0.0	-2.17	5.0	Moderate	2.5	2.50	10	2.5	18	0.0	1.25	Minimal	5.0	Minor	5.0	5.00	
F-205	22	SB	Jackson Bridge	NE Glisan St	3.9	2.95	-584	0.0	-774	0.0	7	1.0	-0.85	5.0	Major	-0.85	5.0	Moderate	2.5	Moderate	2.5	Moderate	2.5	-0.85	5.0	Moderate	2.5	2.60	10	2.5	18	0.0	1.25	Minimal	5.0	Minor	5.0	5.00	
F-205	23	SB	NE Glisan St	SR-224	7.4	3.93	-464	0.0	-593	0.0	18	3.0	-3.70	5.0	NA	-3.70	5.0	Moderate	2.5	Major	5.0	Moderate	2.5	-3.70	5.0	Moderate	2.5	3.05	24	5.0	28	2.5	3.75	Minimal	5.0	Minor	5.0	5.00	
F-205	24	SB	SR-224	Main St	4.0	2.50	-155	0.0	-232	0.0	35	5.0	-2.65	5.0	Major	-2.65	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-2.65	5.0	Moderate	2.5	2.50	3	0.0	21	0.0	0.00	Minimal	5.0	Minor	5.0	5.00	
F-205	25	SB	Main St	Sunset Ave	1.3	2.83	-774	0.0	-926	0.0	-1	0.0	-0.27	5.0	NA	-0.27	5.0	Moderate	2.5	Minor	0.0	Moderate	2.5	-0.27	5.0	Moderate	2.5	2.25	8	0.0	40	2.5	1.25	Minimal	5.0	Minor	5.0	5.00	
F-205	26	SB	Sunset Ave	10th St	1.9	2.33	-942	0.0	-1,110	0.0	-2	0.0	-1.03	5.0	NA	-1.03	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-1.03	5.0	Moderate	2.5	2.00	1	0.0	23	0.0	0.00	Minimal	5.0	Minor	5.0	5.00	
F-205	27	SB	10th St	Stafford Rd	3.3	2.33	-997	0.0	-1,134	0.0	-9	0.0	-0.86	5.0	Major	-0.86	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-0.86	5.0	Moderate	2.5	2.00	1	0.0	8	0.0	0.00	Minimal	5.0	Minor	5.0	5.00	
F-205	28	SB	Stafford Rd	I-5	2.3	2.33	-764	0.0	-788	0.0	-8	0.0	-0.42	5.0	NA	-0.42	5.0	Moderate	2.5	Minor	0.0	Major	0.0	-0.42	5.0	Moderate	2.5	2.00	0	0.0	16	0.0	0.00	Minimal	5.0	Minor	5.0	5.00	



Concept 8 - Construct new priced lane on I-205 (Convert GP lane I-5)

Corridor	Segment ID	Direction	From	To	Length (Miles)	Combined Score	Traffic Operations																				Traffic Operations Score	Alternative Modes				Alternative Mode Score	Capital Expenditure				Physical Impacts (E) Population	Capital Cost Score	
							Peak-Period Vehicle Throughput	Peak-Period Vehicle Throughput Score	Peak-Period Person Throughput	Peak-Period Person Throughput Score	Peak-Period Freight Truck Throughput	Peak-Period Freight Truck Throughput Score	Peak-Period GP Travel Time	Peak-Period GP Travel Time Score	Peak-Period ML Travel Time	Peak-Period ML Travel Time Score	Peak-Period Freight Truck Travel Time	Peak-Period Freight Truck Travel Time Score	Trip Diversion (Adjacent Facilities)	Trip Diversion Score	SOV Mode Shift	SOV Mode Shift Score	Safety Impact (Routes w/ Diversion)	Safety Impact Score (Routes w/ Diversion)	Key Destination Travel Time	Key Destination Travel Time Score		Key Destination User Cost	Key Destination User Cost Score	Adequacy of Transit Service	Adequacy of Transit Service Score		Bicycle & Ped Options	Bicycle & Ped Option Score	Capital Cost (High-Level)	Capital Cost (High-Level) Score			Physical Impacts (E) Population
I-5	2	NB	I-205	OR-217	3.6	2.30	-43	0.0	465	3.0	113	5.0	0.53	0.0	-0.38	3.0	0.53	0.0	Minor	5.0	Minor	0.0	Moderate	2.5	0.53	0.0	Moderate	2.5	1.91	10	0.0	13	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-5	3	NB	OR-217	Capitol Hwy	2.7	2.27	-243	0.0	103	1.0	101	5.0	-0.07	1.0	-0.18	1.0	-0.07	1.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.07	1.0	Moderate	2.5	1.82	9	0.0	15	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	2.93	-5	0.0	546	5.0	52	5.0	0.47	0.0	-0.37	3.0	0.47	0.0	Minor	5.0	Moderate	2.5	Minor	5.0	0.47	0.0	Moderate	2.5	2.55	18	2.5	22	0.0	1.25	Minor	5.0	Minor	5.0	5.00
I-5	5	NB	Ross Island Bridge	I-84	1.9	4.27	43	1.0	748	5.0	51	5.0	0.50	0.0	-0.50	5.0	0.50	0.0	Moderate	2.5	Major	5.0	Minor	5.0	0.50	0.0	Moderate	2.5	2.82	28	5.0	96	5.0	5.00	Minor	5.0	Minor	5.0	5.00
I-5	6	NB	I-84	N Skidmore St.	2.2	4.12	-108	0.0	279	3.0	64	5.0	0.27	0.0	-0.30	3.0	0.27	0.0	Moderate	2.5	Major	5.0	Minor	5.0	0.27	0.0	Moderate	2.5	2.36	16	5.0	112	5.0	5.00	Minor	5.0	Minor	5.0	5.00
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	4.11	10	1.0	156	1.0	72	5.0	-1.44	5.0	-0.50	5.0	-1.44	5.0	Moderate	2.5	Major	5.0	Moderate	2.5	-1.44	5.0	Moderate	2.5	3.59	14	5.0	43	2.5	3.75	Minor	5.0	Minor	5.0	5.00
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	3.60	-84	0.0	339	3.0	3	1.0	-0.06	1.0	-0.27	3.0	-0.06	1.0	Moderate	2.5	Major	5.0	Moderate	2.5	-0.06	1.0	Moderate	2.5	2.05	14	5.0	43	2.5	3.75	Minor	5.0	Minor	5.0	5.00
I-5	9	SB	N Skidmore St.	I-84	2.2	4.03	-35	0.0	687	5.0	-89	0.0	0.07	0.0	-0.31	3.0	0.07	0.0	Moderate	2.5	Major	5.0	Minor	5.0	0.07	0.0	Moderate	2.5	2.09	16	5.0	112	5.0	5.00	Minor	5.0	Minor	5.0	5.00
I-5	10	SB	I-84	Ross Island Bridge	1.9	4.12	100	1.0	866	5.0	-81	0.0	0.41	0.0	-0.51	5.0	0.41	0.0	Moderate	2.5	Major	5.0	Minor	5.0	0.41	0.0	Moderate	2.5	2.36	28	5.0	96	5.0	5.00	Minor	5.0	Minor	5.0	5.00
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	2.87	53	1.0	825	5.0	-51	0.0	0.71	0.0	-0.41	5.0	0.71	0.0	Minor	5.0	Moderate	2.5	Minor	5.0	0.71	0.0	Moderate	2.5	2.36	18	2.5	22	0.0	1.25	Minor	5.0	Minor	5.0	5.00
I-5	12	SB	Capitol Hwy	OR-217	3.0	2.21	-35	0.0	572	5.0	-18	0.0	0.01	0.0	-0.25	3.0	0.01	0.0	Minor	5.0	Minor	0.0	Moderate	2.5	0.01	0.0	Moderate	2.5	1.84	9	0.0	15	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-5	13	SB	OR-217	I-205	3.7	2.33	56	1.0	711	5.0	6	1.0	0.54	0.0	-0.41	5.0	0.54	0.0	Minor	5.0	Minor	0.0	Moderate	2.5	0.54	0.0	Moderate	2.5	2.00	10	0.0	13	0.0	0.00	Minor	5.0	Minor	5.0	5.00
I-205	15	NB	I-5	Stafford Rd	2.0	2.34	1,025	5.0	1,502	5.0	-162	0.0	-0.25	5.0	-0.13	1.0	-0.25	5.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.25	5.0	Moderate	2.5	3.27	0	0.0	16	0.0	0.00	Moderate	2.5	Minor	5.0	3.75
I-205	16	NB	Stafford Rd	10th St	3.3	2.34	1,203	5.0	1,662	5.0	-147	0.0	-0.53	5.0	-0.17	1.0	-0.53	5.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.53	5.0	Moderate	2.5	3.27	1	0.0	8	0.0	0.00	Moderate	2.5	Minor	5.0	3.75
I-205	17	NB	10th St	Sunset Ave	1.9	1.98	1,253	5.0	1,654	5.0	-143	0.0	-0.43	5.0	-0.24	3.0	-0.43	5.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.43	5.0	Moderate	2.5	3.45	1	0.0	23	0.0	0.00	Major	0.0	Minor	5.0	2.50
I-205	18	NB	Sunset Ave	Main St	1.2	2.23	1,066	5.0	1,412	5.0	-159	0.0	-0.12	3.0	-0.19	1.0	-0.12	3.0	Minor	5.0	Minor	0.0	Minor	5.0	-0.12	3.0	Moderate	2.5	2.95	8	0.0	40	2.5	1.25	Major	0.0	Minor	5.0	2.50
I-205	19	NB	Main St	SR-224	4.1	1.80	1,243	5.0	1,628	5.0	-138	0.0	-0.45	3.0	-0.24	3.0	-0.45	3.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.45	3.0	Moderate	2.5	2.91	3	0.0	21	0.0	0.00	Moderate	2.5	Moderate	2.5	2.50
I-205	20	NB	SR-224	NE Gilean St	7.7	3.52	1,180	5.0	1,545	5.0	-155	0.0	-0.55	1.0	-0.22	3.0	-0.55	1.0	Minor	5.0	Major	5.0	Minor	5.0	-0.55	1.0	Moderate	2.5	3.05	24	5.0	28	2.5	3.75	Moderate	2.5	Minor	5.0	3.75
I-205	21	NB	NE Gilean St	Jackson Bridge	3.6	2.79	1,189	5.0	1,417	5.0	-124	0.0	-0.91	3.0	-0.20	3.0	-0.91	3.0	Minor	5.0	Moderate	2.5	Minor	5.0	-0.91	3.0	Moderate	2.5	3.36	10	2.5	18	0.0	1.25	Moderate	2.5	Minor	5.0	3.75
I-205	22	SB	Jackson Bridge	NE Gilean St	3.9	2.55	838	5.0	864	5.0	-4	0.0	-0.10	1.0	-0.09	1.0	-0.10	1.0	Minor	5.0	Moderate	2.5	Minor	5.0	-0.10	1.0	Moderate	2.5	2.64	10	2.5	18	0.0	1.25	Moderate	2.5	Minor	5.0	3.75
I-205	23	SB	NE Gilean St	SR-224	7.4	3.52	1,166	5.0	1,360	5.0	-10	0.0	-0.28	1.0	-0.24	3.0	-0.28	1.0	Minor	5.0	Major	5.0	Minor	5.0	-0.28	1.0	Moderate	2.5	3.05	24	5.0	28	2.5	3.75	Moderate	2.5	Minor	5.0	3.75
I-205	24	SB	SR-224	Main St	4.0	1.71	1,325	5.0	1,576	5.0	8	3.0	-0.30	1.0	-0.33	3.0	-0.30	1.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.30	1.0	Moderate	2.5	2.64	3	0.0	21	0.0	0.00	Moderate	2.5	Moderate	2.5	2.50
I-205	25	SB	Main St	Sunset Ave	1.3	2.23	935	5.0	1,049	5.0	-27	0.0	-0.07	3.0	-0.16	1.0	-0.07	3.0	Minor	5.0	Minor	0.0	Minor	5.0	-0.07	3.0	Moderate	2.5	2.95	8	0.0	40	2.5	1.25	Major	0.0	Minor	5.0	2.50
I-205	26	SB	Sunset Ave	10th St	1.9	2.16	918	5.0	1,007	5.0	-28	0.0	-0.34	3.0	-0.16	1.0	-0.34	3.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.34	3.0	Moderate	2.5	2.73	1	0.0	23	0.0	0.00	Moderate	2.5	Minor	5.0	3.75
I-205	27	SB	10th St	Stafford Rd	3.3	2.16	806	5.0	932	5.0	-35	0.0	-0.28	3.0	-0.10	1.0	-0.28	3.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.28	3.0	Moderate	2.5	2.73	1	0.0	8	0.0	0.00	Moderate	2.5	Minor	5.0	3.75
I-205	28	SB	Stafford Rd	I-5	2.3	2.16	767	5.0	898	5.0	-34	0.0	-0.14	3.0	-0.09	1.0	-0.14	3.0	Minor	5.0	Minor	0.0	Moderate	2.5	-0.14	3.0	Moderate	2.5	2.73	0	0.0	16	0.0	0.00	Moderate	2.5	Minor	5.0	3.75

Scores range from 0 to 5 with higher scores representing higher performance.



Portland Metro Area Value Pricing Feasibility Analysis

Final

Round 2 Concept Evaluation

Technical Memorandum 4



May 7, 2018



Portland Metro Area Value Pricing Feasibility Analysis

Final
Final

Technical Memorandum 4

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



720 SW Washington St., Suite 500
Portland, OR 97205

May 7, 2018



Table of Contents

EXECUTIVE SUMMARY.....	I
1 INTRODUCTION	1
1.1 Project context and purpose of this report.....	1
1.2 Technical approach.....	2
1.3 Round 2 concepts	3
1.4 Equity and diversion mitigation strategies	5
1.5 Revenue generation considerations.....	6
2 ROUND 2 EVALUATION APPROACH	8
2.1 Round 2 performance measures.....	8
2.2 Round 2 performance measure evaluation approach	10
3 ROUND 2 EVALUATION SUMMARY BY CONCEPT	11
3.1 Concept A: Northern I-5 Priced Lanes.....	11
3.1.1 Traffic operations improvement on I-5 and I-205	13
3.1.2 Diversion of traffic	15
3.1.3 Transit service and active transportation	15
3.1.4 Equity benefits and impacts	17
3.1.5 Benefits and impacts for the community, economy and environment.....	18
3.1.6 Revenue and costs	19
3.1.7 Implementation	20
3.2 Concept B: I-5 Priced Lanes: Toll All Lanes between Going Street/Alberta Street and Multnomah Boulevard.....	23
3.2.1 Traffic operations improvement on I-5 and I-205	25
3.2.2 Diversion of traffic	26
3.2.3 Transit service and active transportation	28
3.2.4 Equity benefits and impacts	29
3.2.5 Benefits and impacts for the community, economy and environment.....	30
3.2.6 Revenue and costs	31
3.2.7 Implementation	32
3.3 Concept C: I-5 and I-205 Priced Roadway – Toll All Lanes.....	35
3.3.1 Traffic operations improvement on I-5 and I-205	37
3.3.2 Diversion of traffic	39
3.3.3 Transit service and active transportation	40
3.3.4 Equity benefits and impacts	42
3.3.5 Benefits and impacts for the community, economy and environment.....	43
3.3.6 Revenue and costs	44
3.3.7 Implementation	45
3.4 Concept D: I-205 Priced Lane – OR99E to Stafford Road	47
3.4.1 Traffic operations improvement on I-5 and I-205	49
3.4.2 Diversion of traffic	51
3.4.3 Transit service and active transportation	51
3.4.4 Equity benefits and impacts	53
3.4.5 Benefits and impacts for the community, economy and environment.....	54
3.4.6 Revenue and costs	55
3.4.7 Implementation	56
3.5 Concept E: Abernethy Bridge Priced Roadway.....	59
3.5.1 Traffic operations improvement on I-5 and I-205	61



3.5.2	Diversion of traffic	63
3.5.3	Revenue and costs and implementation	64
4	RECOMMENDATION AND NEXT STEPS.....	67
4.1	Implications for congestion pricing implementation	67
4.2	Consultant team recommendation.....	68
4.3	Next Steps	68

List of Figures

Figure 1-1.	Study Corridors: I-5 and I-205.....	1
Figure 3-1.	Round 2 Concept A: Northern I-5 Priced Lanes	12
Figure 3-2.	Round 2 Concept B: I-5 Toll All Lanes between Going Street/Alberta Street and Multnomah Boulevard	24
Figure 3-3.	Round 2 Concept C: Priced Roadway – Toll All Lanes.....	36
Figure 3-4.	Round 2 Concept D: I-205 Priced Lane – OR99E to Stafford Road.....	48
Figure 3-5.	Round 2 Concept E: Abernethy Bridge Priced Roadway.....	60

List of Appendices

Appendix A:	Evaluation methods and assumptions
Appendix B:	Performance measure evaluation scoring
Appendix C:	Regional transportation demand modeling findings
Appendix D:	Toll Optimization Model (TOM) inputs and assumptions
Appendix E:	Discussion on revenue and cost metrics
Appendix F:	Discussion on state and regional laws and policies



EXECUTIVE SUMMARY

Project summary

Technical Memorandum 4 presents findings from the round 2 evaluation of five pricing concepts for I-5 and I-205 from the Oregon/ Washington state line south to the I-5/I-205 interchange near Tualatin, Oregon. The purpose of this evaluation is to examine the benefits and impacts of different pricing concepts to inform a recommendation by the study's Policy Advisory Committee (PAC) to the Oregon Transportation Commission (OTC), based on application of a series of performance measures to the five concepts.

Background

In 2017, the Oregon Legislature authorized substantial funding to improve highways, transit, biking and walking facilities, and use technology to make the state's transportation system work better. The Legislature also directed the OTC to seek federal approval to implement value pricing on I-5 and I-205 in the Portland metro area to address congestion.

The Oregon Department of Transportation (ODOT) initiated the Portland Metro Area Value Pricing Feasibility Analysis to explore the options available and determine how and where congestion pricing could help improve congestion on I-5 or I-205 during peak travel times.

The feasibility analysis included two rounds of evaluation. The first round of evaluation assessed the opportunities and issues associated with the primary types of highway congestion pricing applications. Following the round 1 evaluation, a total of five round 2 concepts, referred to as Concepts A through E, were developed based on technical evaluation results, input from the PAC and the public on the initial concepts, and project team experience with congestion pricing systems throughout the U.S. These refined concepts allowed for a more detailed assessment of potential impacts and benefits for defined pricing strategies and locations.

- Concept A – Northern I-5 Priced Lanes
- Concept B – I-5 Priced Lanes: Toll all lanes between Going Street/Alberta Street and Multnomah Boulevard
- Concept C – I-5 and I-205 Priced Roadway: Toll all lanes
- Concept D – I-205 Priced Lane – OR99E to Stafford Road
- Concept E – Abernethy Bridge Priced Roadway

Equity and diversion mitigation strategies

The Oregon Transportation Commission has established that considerations of equity and diversion to surrounding communities are priorities in evaluating potential congestion pricing concepts. The PAC Charter includes both equity impacts and diversion of traffic as factors to be considered in the evaluation of congestion pricing options. The Charter also requests that the PAC identify potential mitigation strategies with a potential to reduce the impact on Title VI and/or Environmental Justice communities and adjacent communities.

Some mitigation strategies that were identified by the project team, the PAC and solicited from the public during outreach events include the following:



- Many diversion impacts can be addressed through design of the system and rate structure. Appropriate rate setting through dynamic pricing could maximize flow on the priced portion of the facility and reduce the incidence of diversion; it should be noted that for Concept E, this could reduce revenue substantially.
- A strategy that combines pricing concepts on I-5 and I-205 could improve overall flow and help to manage diversion between the two freeways.
- Transit, bicycle, and pedestrian improvements or introduction of transit service as well as traffic calming strategies could address local diversion concerns.
- Where diversion increases traffic on surface streets, improvements to walking and bicycling facilities may be needed to mitigate potential safety impacts.
- Discounting programs, such as free, reduced or pre-paid toll tags for Title VI and Environmental Justice communities may be considered. Such programs may also be considered for area residents who do not have viable, toll free alternatives. For example, the residents of Hayden Island must use I-5 to get off the island and may therefore require such mitigation programs if I-5 is to be tolled in the future.
- Lane pricing, as opposed to roadway pricing may result in relatively higher tolls for use of the priced lanes. As such, additional consideration of toll discounting policies for low income users may be needed for approaches where only certain lanes are to be priced.
- Freight vehicles are restricted by Oregon statute from using the left inside lane of highways. In general, when a lane pricing (as opposed to roadway pricing) approach is adopted, it is the inside left lane(s) that is priced. If such an approach were used in Portland, freight vehicles would therefore be restricted from using the facility and thus would not benefit from pricing. As such, revisiting and refining Oregon statutes in relation to tolling on the use of the inside left lane by freight vehicles might be considered as a freight-oriented mitigation measure if lane pricing is implemented.
- A monitoring program with key performance measures could be established to evaluate effectiveness at addressing regional goals.

Round 2 evaluation measures

The round 2 pricing concepts were evaluated using performance measures to demonstrate the range of positive and negative impacts of pricing. This evaluation will inform a project team recommendation for the PAC so it can in turn develop a recommendation for the OTC. Performance metrics were organized based on the following policy considerations, which are identified in the PAC Charter:

- Traffic operations improvement on I-5 and I-205
- Diversion of traffic
- Transit service and active transportation
- Equity benefits and impacts
- Benefits and impacts for the community, economy and environment
- Revenue and costs
- Implementation
 - Consistency with state and regional law and policy
 - Federal feasibility
 - Project delivery schedule



Concepts were assessed as to how they generally performed against each performance metric, with concepts that provide positive impacts or reduce negative impacts performing “well” and concepts that reduce positive benefits or increase negative impacts performing “poorly.”

Round 2 evaluation results

Table 1.1-1 is the performance evaluation summary of Concepts A through D, which were developed with the primary intent to minimize congestion. Results are explained in greater detail in the next section. Concept E results are included separately in the next section because the intent of the Concept E analysis was to evaluate its revenue generation potential as opposed to minimizing congestion.

Table 1.1-1. Concepts A through D: performance evaluation summary

Policy consideration	Metric	Concept			
		A	B	C	D
Traffic operations improvement	Vehicle and person throughput on I-5 and I-205				
	Freight truck throughput on I-5 and I-205				
	Passenger vehicle travel time on I-5 and I-205				
	Passenger vehicle travel time on managed lanes		N/A	N/A	
	Freight truck travel time on I-5 and I-205				
	Assessment of change in duration of peak vehicle traffic conditions				
	Delay on priced facility				
	Safety impacts				
	Trip length distribution				
Diversion of traffic	Diversion impacts on non-tolled facilities				
	Safety impacts to all modes of transportation (including bicyclists and pedestrians) on routes with diversion				



Policy consideration	Metric	Concept			
		A	B	C	D
Transit service and active transportation	Adequacy of transit service				
	Bus transit travel time				
	Mode share shift (high-occupancy vehicle [HOV], single occupancy vehicle [SOV], transit, walk, bike)				
	Availability of bicycle travel on alternative routes				
	Completeness of pedestrian network				
Equity	Value or travel time savings for Title VI and/or Environmental Justice communities (regional)				
	Changes in travel time based on geographic zones				
	Access to jobs				
Community, economy and the environment	Physical impacts to existing residences and businesses				
	Regional travel time savings				
	Regional vehicle miles traveled (VMT) (including non-freeway)				
	Change in air pollution				
	Value of travel time savings				
Cost and revenue	Capital expenditure on facility				
	Estimated gross toll revenue potential from tolled facility				
Implementation	State law & policy				
	Regional law & policy				
	Federal feasibility				
	Project delivery schedule				
Legend:		Performs well 	Performs moderately 	Performs poorly 	

Concept A: Northern I-5 Priced Lanes

In Concept A, a single lane in each direction would be converted to a tolled managed lane. The concept would convert an existing general purpose lane in the southbound direction, and the existing HOV lane in the northbound direction.

Concept A has limited congestion relief benefits, which are generally restricted to the tolled lanes during peak hour. Conditions on the unpriced lanes are mostly unchanged, and diversion would be limited. Both revenue and capital costs would be relatively low. This concept would likely cover its own tolling infrastructure operating costs but would not offset all roadway rehabilitation and reconstruction costs. Tolling authority for the southbound segment could come under FHWA's Value Pricing Pilot Program and the northbound segment would qualify under FHWA's HOV/High-Occupancy Toll (HOT) Lane Program.





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

Concept B converts all lanes between NE Going Street/Alberta Street and SW Multnomah Boulevard to a priced roadway. Concept B has strong potential to reduce congestion along I-5 with modest diversion to I-205 and adjacent facilities. This concept also has a much denser network of transit and multi-modal facilities that can serve as a toll-free travel alternative to minimize impacts. This concept generates more revenue than single-lane concepts and would cover all toll collection and operating costs, as well as routine and periodic roadway operations and maintenance. The beginning and end points of the corridor segments where this concept would be implemented would need to be examined as part of the future environmental analysis process. Tolling authority for this concept could come under FHWA's Value Pricing Pilot Program.





Concept C: Priced Roadway – Toll All Lanes

Concept C would implement pricing on all lanes of I-5 and I-205 from the Washington/Oregon state line to the I-5/I205 interchange near Tualatin. Concept C has the greatest potential for reducing congestion and generating travel time savings for the widest possible range of users. Because of the scale of this concept, it could be considered as part of a broader regional pricing application in the future, pending success of a pilot pricing program. While diversion can be expected, it could be minimized through dynamic tolling. This concept would by far generate the largest amount of revenue compared to the other concepts. Tolling authority for this concept could come under FHWA's Value Pricing Pilot Program.

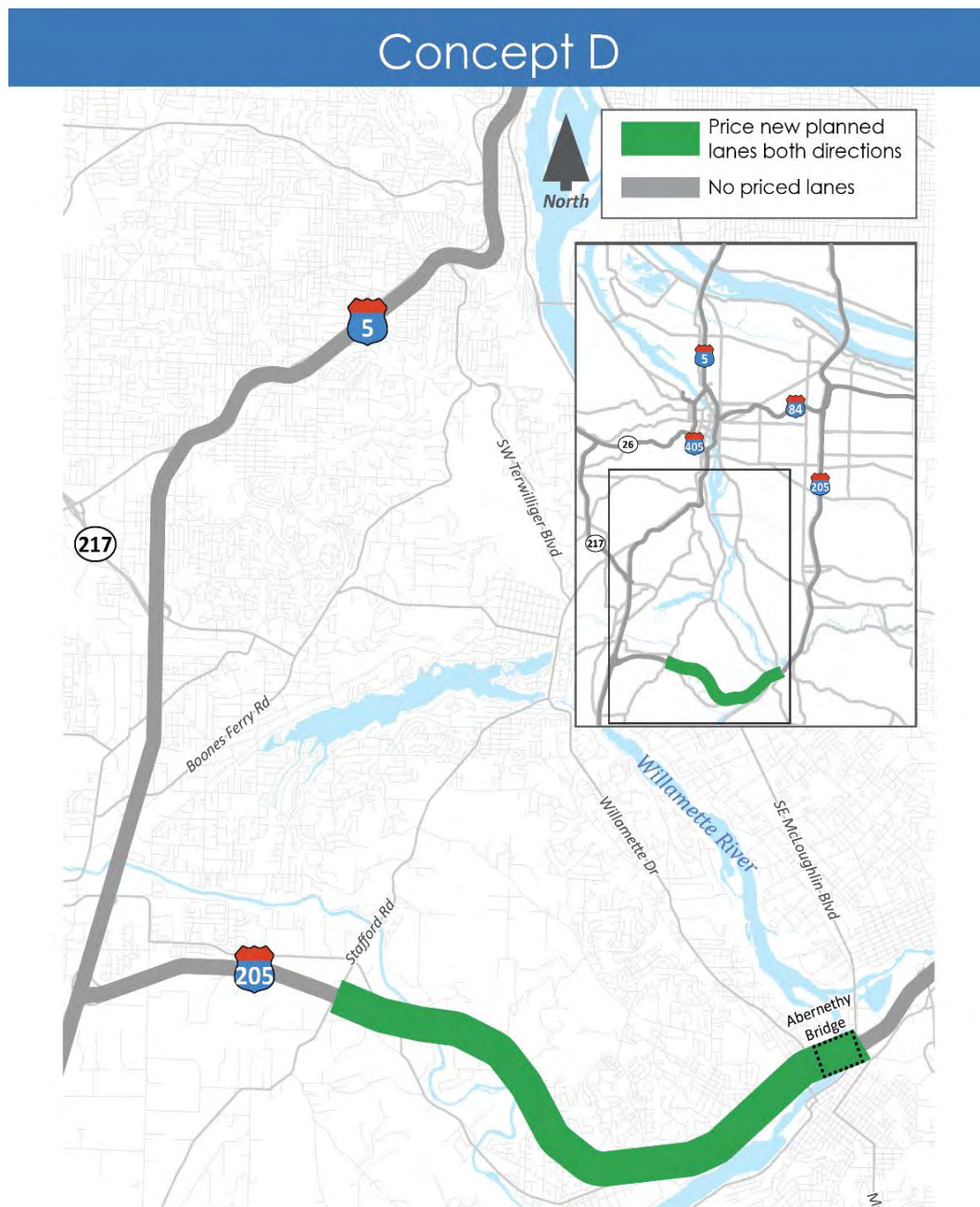




Concept D: I-205 Priced Lane – OR99E to Stafford Rd.

Concept D would price the third lane in each direction, currently planned on I-205 from OR99E to Stafford Road, including widening of the Abernethy Bridge. Existing general purpose lanes in each direction would remain unpriced. The future planned project was considered part of the 2027 baseline for all concepts in the evaluation.

Concept D shows some congestion relief benefit with minimal traffic diversion and provides some benefit to I-205. The pricing concept is not expected to generate significant revenue to contribute toward the construction of the planned lanes and bridge widening project. Concept D would qualify for implementation under Section 129 of U.S. Title 23 if the planned additional lanes were constructed as priced lanes.

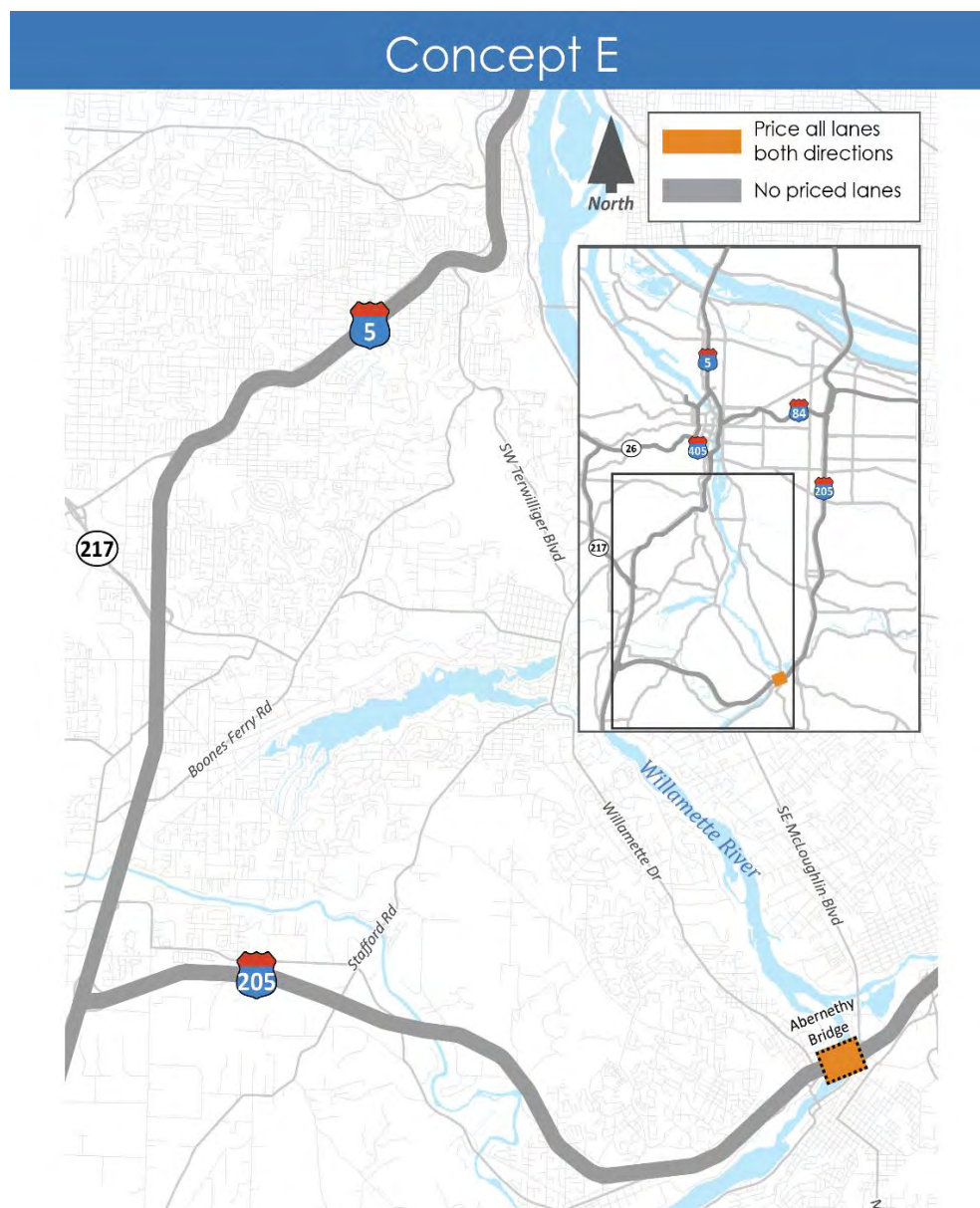




Concept E: Abernethy Bridge Priced Roadway

Concept E applies pricing on all existing lanes of the Abernethy Bridge as well as additional lanes to be constructed as part of the planned bridge widening. While this Concept assumes a variable rate structure, with highest rates during peak hours, it was evaluated to determine its potential to help fund the planned addition of a lane on I-205 from OR99E to Stafford Road and reconstruction of the Abernethy Bridge.

Concept E shows promise to raise revenue and reduce congestion on I-205. This concept, or a variant, could pair with a pilot program to balance the travel choice between the I-5 and I-205 corridors. Mitigation strategies would likely be needed to address potential diversion to OR99E and the Arch Bridge. The beginning and end points of the corridor segments where this concept would be implemented would need to be examined as part of the future environmental analysis process.





Key findings

The evaluation of the five round 2 concepts has shown that congestion pricing on I-5 and I-205 has potential benefits to people living and traveling through the Portland metro area and would be effective in addressing traffic congestion on these facilities. Key findings to help support the recommendation are provided on the following pages. Additionally, general findings and considerations include:

- Any concepts considered further should be paired with policies or programs that address potential impact on lower-income and adjacent communities.
- The analysis indicates that all five concepts would likely generate sufficient revenue to pay for tolling operations. However, there is less certainty regarding whether revenue from Concepts A and D (both single-lane concepts) would also cover capital costs of tolling implementation.
- Concepts B, C and E all indicate they would provide revenue to support mitigation and/or planned transportation projects in the Portland metro area.
- A phased approach—implementing a smaller-scale application as a pilot program and following up with monitoring and scheduled reporting—may ensure that the pricing application meets state and regional goals, and may also lay the foundation for a more comprehensive pricing approach for the Portland metro area.
- Key performance measures could be established to gauge success during future monitoring.

Consultant team recommendation

Based on the key findings from the evaluation, the consultant team recommends a phased approach to implementation of congestion pricing on I-5 and I-205:

- Initial implementation of Concept B as a pilot pricing program, coupled with a sunset or trigger to evaluate success.
 - *Rationale:* Strong potential at congestion reduction along I-5 with minimal diversion to I-205 and adjacent facilities; has a much denser network of transit and multi-modal facilities that can serve as a toll free alternative; significant improvements in facility efficiency and vehicular throughput, meaning that more vehicles can be moved and diversion to free facilities can be managed.
- Consider implementation of Concept E concurrent with implementation of Concept B.
 - *Rationale:* Provides the benefits of Concept B while generating funding to advance the addition of new lanes on I-205 where only two lanes in each direction currently exist as well as retrofitting and adding a lane in each direction to the Abernethy Bridge.
- After assessment of the performance of the initial pricing project, and assuming successful evaluation, implementation of Concept C in phases with more comprehensive system analysis.
 - *Rationale:* Greatest potential for reducing congestion and generating travel time savings for the widest possible range of users; significant improvements in



facility efficiency and vehicular throughput, meaning that more vehicles can be moved and diversion to free facilities can be managed.

- Do not implement Concept A or D.
 - *Rationale:* Little congestion relief benefit; would not provide a reasonable test for the potential for pricing to provide congestion relief.

Next steps

At the fifth PAC meeting on May 14, 2018, the PAC will review and consider the evaluation presented in this technical memorandum as well as the public comment received over the past six months. In May and June 2018, the PAC will develop a recommendation(s) to advise the OTC. The OTC will submit a report to FHWA by December 2018. After coordination with FHWA, the OTC will provide direction about next steps such as an environmental analysis, which would include additional public involvement, Title VI and Environmental Justice analysis, traffic analysis, and other analysis of potential benefits and impacts.



Blank Page



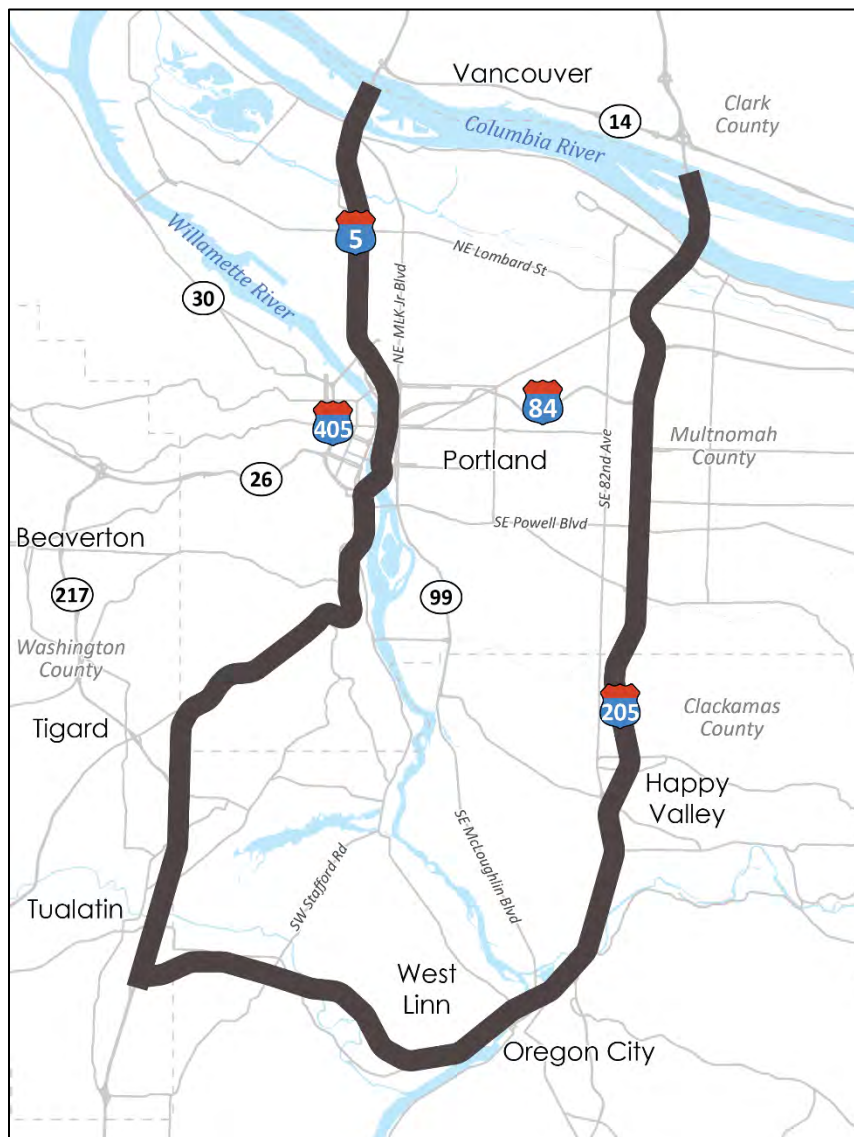
1 INTRODUCTION

1.1 Project context and purpose of this report

In 2017, the Oregon Legislature authorized substantial funding to improve highways, transit, biking and walking facilities, and use technology to make the state's transportation system work better. The Legislature also directed the Oregon Transportation Commission (OTC) to seek federal approval to implement value pricing on I-5 and I-205 in the Portland metro area to address congestion.

The Oregon Department of Transportation (ODOT) initiated the Portland Metro Area Value Pricing Feasibility Analysis to explore the options available and determine how and where congestion pricing could help improve congestion on I-5 or I-205 during peak travel times. The feasibility analysis corridors are depicted on Figure 1-1.

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





Value pricing, also known as congestion pricing, has been successfully implemented in the U.S. and around the world, resulting in faster, more reliable and predictable trips. It does this using variable rate toll pricing to manage traffic flow during peak travel times, which is typically during the morning and evening peak commuting periods. This creates an incentive for some drivers to reduce the number of trips made, shift travel to less congested periods of the day or use alternate modes such as transit. Some drivers will choose to take alternate routes. Those choosing to pay the toll have higher travel speeds and improved travel time reliability. Pricing may also benefit users of nearby and adjacent non-tolled facilities and lanes by improving traffic flow on the priced lanes and thus reducing the potential for drivers to divert off the freeway to avoid congestion. Pricing can also benefit the users of other modes, and in particular transit, as tolling systems are often implemented with transit improvements such as express bus service and dedicated lanes or access points to the tolled facility. Enhanced transit service is common with newer pricing applications and help all transportation system users benefit from the improved traffic operations provided by pricing.

This memorandum presents findings from the round 2 evaluation of five pricing concepts for I-5 and I-205 from the Oregon/Washington state line south to the I-5/I-205 interchange near Tualatin, Oregon. The purpose of this evaluation is to examine the benefits and impacts of different pricing concepts to inform a recommendation by the study's Policy Advisory Committee (PAC) to the OTC, based on application of a series of performance measures to the five concepts. The PAC recommendation will also be informed by public outreach and input, experience from other pricing projects around the country, and PAC policy discussion to date. The Congestion Pricing Mitigation and Related Policy Considerations memorandum, dated May 2018, reports on PAC discussion and public input about mitigation and should be reviewed concurrent with this memorandum.

The OTC will consider PAC recommendation(s), public input, and technical findings, and develop a report to the Federal Highway Administration (FHWA) to be submitted by the end of 2018. Upon discussion or approval from FHWA (depending on the type of pricing application), ODOT would then conduct further study, which is likely to include environmental analysis, including additional traffic analysis and public involvement.

This memorandum includes the following:

- Section 1 – Introduction
- Section 2 – Round 2 evaluation approach
- Section 3 – Round 2 evaluation summary by concept
- Section 4 – Project team recommendation and next steps

1.2 Technical approach

The feasibility analysis included two rounds of evaluation. The first round of evaluation assessed the opportunities and issues associated with the primary types of highway congestion pricing applications. The analysis identified a broad range of impacts that could be experienced by implementation of value pricing on the study corridors. These



findings are summarized in *Technical Memorandum 3 – Round 1 Concept Evaluation and Recommendations*.¹ Overall, the following conclusions were drawn from round 1:

- An assessment of current and baseline conditions through 2027 found that portions of I-5 and I-205 are currently experiencing “hyper-congestion,” a traffic condition characterized by exceptionally high traffic volumes and travel speeds below 40 miles per hour, often causing stop-and-go conditions. Round 1 modeling showed that these conditions are likely to worsen through 2027.
- In general, concepts that priced the entire roadway, as opposed to single-lane pricing concepts, would be the most effective at managing congestion. Pricing all lanes could result in more traffic diversion. Priced roadways are also more likely to generate net revenues that could fund mitigation strategies.
- Concepts involving the conversion of a general purpose lane to pricing had the advantage of maintaining some unpriced lane options but were found to be less effective at addressing the goal of reducing congestion. Priced lane concepts on facilities with only two lanes in each direction, as is the case on locations along I-5, are not operationally feasible without a major interchange reconstruction because at least two general purpose through lanes must be maintained for facility operations.
- Concepts involving the construction of a new priced lane performed well in terms of improved traffic operations due to added capacity but, in addition to being the costliest to implement, the benefits are somewhat limited by downstream bottlenecks. This was particularly true on I-5 approaching the Columbia River Bridge, and on I-205 as well as I-5 at the southern end approaching the Boone Bridge. Constructing new lanes would be the most expensive option and also would likely have the most significant environmental and community impacts. Furthermore, there is evidence that Portland area drivers are already avoiding I-5 and I-205 due to congestion. Additional detail on the results of the round 1 evaluation is provided in *Technical Memorandum 3 – Round 1 Concept Evaluation and Recommendations*.² Following the round 1 evaluation, a total of five round 2 concepts were developed based on evaluation results, public input on the initial concepts, and project team experience with congestion pricing systems throughout the U.S. These refined concepts define the pricing strategy and the location where it is to be applied, allowing for a more detailed assessment of potential impacts and benefits. The next section describes the round 2 concepts.

1.3 Round 2 concepts

For the round 2 evaluation, five concepts were studied. The primary goal of each concept is to mitigate congestion on I-5 and I-205, except for Concept E, which was evaluated as a potential strategy to help fund a congestion-relief project that adds a lane in each direction on I-205 from OR99E to Stafford Road and on the Abernethy

¹ Technical Memorandum 3 is available on ODOT's Value (Congestion) Pricing website: <http://www.oregon.gov/ODOT/Pages/VP-Feasibility-Analysis.aspx>

² Technical Memorandum 3 is available on ODOT's Value (Congestion) Pricing website: <http://www.oregon.gov/ODOT/Pages/VP-Feasibility-Analysis.aspx>



Bridge. These concepts are described in more detail in Technical Memorandum 3 and are as follows:

- Concept A – Northern I-5 Priced Lanes
- Concept B – I-5 Priced Lanes: Toll all lanes between Going Street/Alberta Street and Multnomah Boulevard
- Concept C – I-5 and I-205 Priced Roadway: Toll all lanes
- Concept D – I-205 Priced Lane – OR99E to Stafford Road
- Concept E – Abernethy Bridge Priced Roadway

These five concepts represent a range of potential congestion pricing applications. The concepts include: conversion of an existing high-occupancy vehicle (HOV) lane in Concept A (northbound); conversion of general lanes in Concept A (southbound), Concept B and Concept C as allowed under the FHWA Value Pricing Pilot Program (VPPP); added freeway capacity with the third lane assumed under Concepts D and E; and a tolled bridge as a funding strategy in Concept E).

These concepts were identified to respond to public comment received during the PAC meetings and the winter outreach as well as the technical evaluation of the round 1 concepts. Key themes heard during the winter outreach and how they informed the concepts is provided in Table 1.3-1.

Table 1.3-1. Developing the round 2 concepts

Issue	Concept development
Round 1 public involvement: what we heard (key themes)	
Congestion is a problem	Congestion pricing concepts were identified to address locations along I-5 and I-205 that experience the worst traffic congestion.
How and where revenue will be spent	Concept E – toll all lanes of the Abernethy Bridge was identified as a potential funding strategy for the planned third lane and bridge reconstruction.
Fairness of value pricing	A variety of congestion pricing concept types were identified for round 2 consideration and evaluation, including different geographic locations and a combination of concepts that toll all lanes and concepts that toll one lane.
Transit accessibility and potential transit investments	All round 2 concepts are evaluated within this technical memo for their ability to provide mobility options for all users.
Highway capacity	A variety of congestion pricing concept types were identified for round 2 consideration and evaluation, including those that did and did not provide new capacity.
Round 1 technical evaluation	
Addresses most substantial hyper-congestion	All concepts (A through E) were selected such that each covers a segment or segments of I-5 and/or I-205 that is currently experiencing hyper-congested conditions.
Multimodal transportation options	Concepts A and B were selected in part because there are transit and multi-modal facilities that can serve as an alternative to freeway travel.



Issue	Concept development
Round 1 public involvement: what we heard (key themes)	
Comprehensive approach to congestion management on I-5 and I-205	Concept C was selected and evaluated as an approach to addressing congestion on the entirety of the I-5 and I-205 corridors within the Portland metro area.
Federal feasibility	The concepts selected and evaluated in round 2 would each have unique implementation issues from a federal perspective and would be authorized under different federal tolling authorization programs (HOV to high-occupancy toll [HOT] conversion for Concept A, mainstream tolling for Concept D and Value Pricing Pilot Program for concepts A, B, C and E)
Revenue generation	Concept E was selected and evaluated to examine its ability to generate revenue for further congestion relief strategies.

1.4 Equity and diversion mitigation strategies

The Oregon Transportation Commission has established that considerations of equity and diversion to surrounding communities are priorities in evaluating potential congestion pricing concepts. The PAC Charter includes both *equity impacts* and *diversion of traffic* as factors to be considered in the evaluation of congestion pricing options. The Charter also requests that the PAC identify potential mitigation strategies with a potential to reduce the impact on Title VI and/or Environmental Justice communities and adjacent communities.

In evaluating potential impacts of congestion pricing to Title VI and Environmental Justice communities, a recommendation should consider ways to share benefits as well as strategies to offset negative impacts. Reflecting this objective, many strategies should be considered as trade-offs. For example, pricing all lanes of a roadway is more effective at managing congestion than pricing a single lane. With this increased effectiveness, the amount of the toll can be set at a lower rate when compared to single-lane pricing concepts; also, it is possible to operate more hours with very low or no tolls. The opportunity to maintain lower toll amounts makes the benefits of congestion pricing available to more people at a lower cost.

However, a trade-off with priced roadways, from a low-income impact perspective, is that they do not provide general purpose (unpriced) lanes; drivers who choose to use the freeway during tolled periods would have to pay a toll. For this reason, it is especially important that strategies are considered -- such as increased transit service, low-income toll discounts, or incentives to use transit or carpools -- that can help offset negative impacts and distribute benefits more broadly.

Development of mitigation strategies will depend to a large degree on the type and location of any pricing concept(s) that moves forward. The PAC recommendation will be informed in part by information presented and committee deliberations from the April PAC meeting (PAC meeting #4), which was largely dedicated to a workshop on mitigation strategies. Final identification and development of mitigation strategies will be required as part of the National Environmental Protection Act (NEPA) process, which is required for all federal projects.



Several mitigation strategies and related policy considerations were identified by the project team, the PAC and solicited from the public during outreach events. A monitoring program with key performance measures could be established to evaluate effectiveness at addressing these strategies. Mitigation strategies identified include the following:

- Many diversion impacts can be addressed through design of the system and rate structure. Appropriate rate setting through dynamic pricing could maximize flow on the priced portion of the facility and reduce the incidence of diversion; it should be noted that for Concept E, this could reduce revenue substantially.
- A strategy that combines pricing concepts on I-5 and I-205 could improve overall flow and help to manage diversion between the two freeways.
- Transit, bicycle, and pedestrian improvements or introduction of transit service as well as traffic calming strategies could address local diversion concerns. Improvements in multimodal options also can provide alternatives for drivers who want to avoid paying a toll.
- Where diversion increases traffic on surface streets, improvements to walking and bicycling facilities may be needed to mitigate potential safety impacts.
- Discounting programs, such as free, reduced or pre-paid toll tags for Title VI and Environmental Justice communities may be considered. Such programs may also be considered for area residents who do not have viable, toll free alternatives. For example, the residents of Hayden Island must use I-5 to get off the island and may therefore require such mitigation programs if the northern section of I-5 is to be tolled.
- Lane pricing, as opposed to roadway pricing, may result in relatively higher tolls for use of the priced lanes. As such, additional consideration of toll discounting policies for low-income users may be needed for approaches where only certain lanes are to be priced.
- Freight vehicles are restricted by Oregon statute from using the left inside lane of highways. In general, when a lane pricing (as opposed to roadway pricing) approach is adopted, it is the inside left lane(s) that is priced. If such an approach were used in Portland, freight vehicles would therefore be restricted from using the facility and thus would not benefit from pricing. As such, revisiting and refining Oregon statutes in relation to tolling on the use of the inside left lane by freight vehicles might be considered as a freight-oriented mitigation measure if lane pricing is implemented.

1.5 Revenue generation considerations

As value pricing involves the use of tolling, revenue will be generated from the users of the priced facilities. Understanding how the revenue will be accounted for is vital towards understanding its contribution to funding improvements over time. For the calculation of revenue, the U.S. Department of Transportation (USDOT) developed a hierarchy of accounting and payments that yields a flow of funds. In general, toll revenues first account for uncollectable toll transactions (called “leakage”), followed by operations and maintenance expenditures, senior debt, rehabilitation and reconstruction funds, investment obligations, and finally equity (excess net revenues).



However, most agencies also account for hedging costs (for managing debt and income over time), reserve funds, and periodic roadway capital maintenance.

In short, the flow of funds puts operating uses as first priority and capital uses last. In terms of forecasting revenues, operations and maintenance costs are regular, recurring, and predictable; whereas, rehabilitation and reconstruction costs are periodic, they do not occur within the first few years of operations, but they need to be annualized in some manner in order to be accounted for within one forecast year revenue estimate.³

This memo provides a cursory examination of revenue generation potential for each of the five concepts. For the purposes of this analysis, the project team used a 3-stage assessment:

Stage One – gross toll revenues, minus:

- Leakage, which may include uncollectable transactions
- Routine annual toll collection operations and maintenance expenditures
- Routine annual roadway operations and maintenance expenditures

Stage Two – net toll revenues (remaining revenue after Stage One deductions), minus:

- Debt service on potentially borrowed funds for capital investment
- Contributions to rehabilitation and reconstruction for toll collection systems
- Contributions to rehabilitation and reconstruction for periodic roadway capital, if appropriate

Stage Three – excess net revenues (remaining revenue after deductions from both Stage One and Stage Two) which may be used for other uses, including incentives and policy-based mitigations.

All five concepts have positive net revenues at Stage 2. Stage 3 uses of revenue will depend on policy and project decisions made during a later phase.

For the following concept evaluation, with the exception of Concept E, the project team poses two primary questions regarding net revenues:

1. Is there sufficient toll revenue generated to cover toll and roadway operations and maintenance costs?
2. If yes, meaning positive net revenues, then what is the range/order of magnitude of annual net revenue remaining that could contribute toward capital investments, which may include capital funding, rehabilitation and reconstruction expenditures.

³ A detailed description of revenue estimation and funding analysis for toll facilities can be found at USDOT's Center for Innovative Finance Support website: <https://www.fhwa.dot.gov/ipd/>



2 ROUND 2 EVALUATION APPROACH

2.1 Round 2 performance measures

Concepts were evaluated according to the following performance measures identified with the PAC and documented in *Technical Memorandum 1 – Objectives and Performance Measures*.⁴ The list of measures below also includes the description of the key considerations as contained in the PAC charter. Some performance measures apply to more than one consideration. For example, “adequacy of transit service” is both a transit service and equity measure. In addition, there will be a need to look at multiple performance measures in later stages of concept project planning. Some measures will be better captured at later stages. Many factors can be addressed through design and ongoing performance management. If a measure shows poor performance in the feasibility analysis, it can be identified as an objective to incorporate in design.

Consideration: traffic operations improvement on I-5 and I-205

Charter description: To what extent the option will improve the traffic operations of the priced facility, including but not limited to increasing reliability and mitigating congestion.

- Vehicle and person throughput on I-5 and I-205
- Freight truck throughput on I-5 and I-205
- Passenger vehicle travel time on I-5 and I-205
- Passenger vehicle travel time on managed lanes
- Freight truck travel time on I-5 and I-205
- Assessment of change in duration of peak vehicle traffic conditions
- Delay on priced facility
- Safety impacts
- Trip length distribution

Consideration: diversion of traffic

Charter description: To what extent the option will cause diversion to other routes and modes that will impact the performance and operations of other transportation facilities, including both roads and transit service.

- Diversion impacts on non-tolled facilities
- Safety impacts to all modes of transportation (including bicyclists and pedestrians) on routes with diversion

Consideration: transit service and active transportation

Charter description: To what extent public transportation service is available to serve as an alternative, non-tolled mode of travel.

- Adequacy of transit service
- Transit travel time

⁴ Technical Memorandum 1 is available on ODOT's Value (Congestion) Pricing website:
<http://www.oregon.gov/ODOT/Pages/VP-Feasibility-Analysis.aspx>



- Mode share shift (HOV, single-occupancy vehicle [SOV], transit, walk, bike)
- Availability of bicycle travel on alternative routes
- Completeness of pedestrian network

Consideration: equity benefits and impacts

Charter description: Whether the option will disproportionately impact environmental justice households or communities and to what extent mitigation strategies could reduce the impact.

- Value or travel time savings for Title VI and/or Environmental Justice communities (regional)
- Changes in travel time based on geographic zones
- Access to jobs

Consideration: benefits and impacts for the community, economy and environment

Charter description: Whether and how the option will impact the surrounding community, economy, and/or environment and the economy of the state in general.

- Physical impacts to existing residences and businesses
- Regional travel time savings
- Regional VMT (vehicle miles traveled) (including non-freeway)
- Change in air pollution
- Value of travel time savings

Consideration: revenue and cost

Charter description: To what extent the option will raise sufficient revenue to cover the cost of implementing value pricing as well as the ongoing operational expenses, including the costs of maintenance and repairs of the facility.⁵

- Capital expenditure on facility
- Estimated gross toll revenue potential from tolled facility

Consideration: implementation

Charter description: Whether the option will comply with existing Oregon Transportation Commission policies, state laws, and regional planning regulations.

- Consistency with state law and policy
- Consistency with regional law and policy

Charter description: Whether the option is allowable under federal tolling laws or will require a waiver under the Value Pricing Pilot Program or some other authority.

- Feasibility under federal law

Charter description: Whether a value pricing option has the potential to alter the expected delivery schedule for a project on the corridor.

- Project delivery schedule

⁵ Note, as described in Section 1.5 above, gross revenue will first be allocated to ongoing operations and maintenance expenditures for the value pricing program, followed by debt service or state repayment of capital costs for implementing the system.



2.2 Round 2 performance measure evaluation approach

As with the round 1 evaluation, performance of each concept was evaluated against a 2027 baseline. Baseline conditions included all projects in the constrained 2027 Regional Transportation Plan and assumed no pricing. More information on the baseline conditions is provided in *Technical Memorandum 3*.

To evaluate each concept, the performance metrics were assigned a score based on professional assessment and, in some cases, analysis of modeling data. The team then converted the score to ranking symbols based on the extent to which the concept generated additional benefits or reduced negative impacts. More information on the evaluation methods and assumptions used is provided in Appendix A. Concepts providing positive impacts or reducing negative impacts were scored as “performs well,” while those that reduce positive benefits or increase negative impacts were scored as “performs poorly.”

The ranking is displayed throughout as follows:

Concept performs well:



Concept performs moderately:



Concept performs poorly:





3 ROUND 2 EVALUATION SUMMARY BY CONCEPT

This section provides a summary of the round 2 evaluation for the performance measures listed in section 2.1.⁶ Concepts A through D were evaluated based on how well they performed for each performance metric. Concept E was evaluated against a smaller subset of performance measures, since the purpose of Concept E was to test revenue generation. While each concept is composed of numerous individual roadway segments, each concept was evaluated as a whole. As such, individual segments may perform relatively better or relatively worse than other segments composing the concept, but the overall evaluation is reflective of the concept in its entirety. Detailed scoring of performance metrics and associated data for each performance metric is provided in an evaluation metric matrix attached as Appendix B. A summary of regional data and associated findings generated through the round 2 evaluation is provided in Appendix C.

3.1 Concept A: Northern I-5 Priced Lanes

In Concept A, a single lane in each direction would be converted to a tolled managed lane. The concept would convert an existing general purpose lane in the southbound direction, and the existing HOV lane in the northbound direction. The following are key findings from the assessment of Concept A:

- Concept A has limited congestion relief benefits, which are generally restricted to tolled lanes during the peak hour.
- Conditions on the unpriced lanes are mostly unchanged, and diversion would be limited.
- Both revenue and capital costs would be relatively low. Revenue will cover toll system operations and maintenance costs, but may not be enough to offset all roadway rehabilitation and reconstruction costs that would be incurred regardless of whether the lanes are priced. It is not likely to substantially support other capital improvements.
- Mitigation strategies particularly may be needed for Hayden Island, which is only accessible via this section of I-5. Impacts to Title VI and/or Environmental Justice communities are likely to be minimal.
- Regarding user costs, this concept maintains two unpriced lanes in each direction; at the same time, the toll amount per user would be higher, which is consistent among single-lane pricing concepts.
- The northbound segment would qualify under FHWA's HOV/HOT Lane Program. The southbound segment may qualify under the FHWA Value Pricing Pilot Program.

⁶ As with the round 1 evaluation, data for quantifying the evaluation metrics and conducting the assessment were supplied by Metro's regional travel demand model. Much of the travel demand model data were processed through ECONorthwest's Toll Optimization Model (TOM), which supplies a refined assessment of changes in traveler behavior, traffic volumes and other metrics associated with the implementation of pricing concepts (see Appendix D for assumptions used in the TOM model). Metro's Multi-criteria Evaluation (MCE) tool, also based on the regional travel demand model results, was used to assess regional and community impacts for measures not traditionally produced directly from regional demand modeling.



Figure 3-1. Round 2 Concept A: Northern I-5 Priced Lanes





3.1.1 Traffic operations improvement on I-5 and I-205

Concept A would improve travel for users of the priced lanes but would not generate much travel time savings for users of the general purpose lanes or the remainder of the area network. Overall, the probability of encountering congestion is slightly reduced and minimal diversion would occur with this concept. Additional detail on this group of performance metrics is included in the evaluation methods and assumptions matrix in Appendix A.

Table 3.1-1. Concept A evaluation: traffic operations improvement

Performance measure	Concept A evaluation	Findings
Vehicle and person throughput on I-5 and I-205		Both an increase and decrease in vehicle and person throughput. Little net impact.
Freight truck throughput on I-5 and I-205		Change in freight truck throughput is relatively minor, but there is an overall trend on I-5 of reduced throughput as well as evidence of diversion to I-205. Trucks are also assumed to be prohibited from accessing the managed lane based on current state law and practice around the country.
Passenger vehicle travel time on I-5 and I-205		Improved travel time on the managed lanes themselves, and no evidence of negative impacts to the general purpose lanes.
Passenger vehicle travel time on managed lanes		Improved travel time on the managed lanes.
Freight truck travel time on I-5 and I-205		No significant improvement or detriment to freight truck travel times.
Assessment of change in duration of peak vehicle traffic conditions		Decrease in the potential for encountering hyper-congested conditions in the vicinity of the managed lanes. This impact extends to some extent away from the managed lanes, and there are no detrimental impacts in other areas on either I-5 or I-205.
Delay on priced facility		Reduced delay on the priced managed lanes with no detrimental effects elsewhere.
Safety impacts		Some limited potential to decrease the frequency and severity of crashes in the region.
Trip length distribution		No significant changes to freeway trip lengths are expected.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Vehicle and person throughput on I-5 and I-205

Concept A would result in daily vehicle throughput comparable to the baseline with daily vehicle volumes remaining essentially unchanged. Slight increases in vehicle throughput were seen on I-5 in the southbound direction during the AM and PM peak hours.



Daily person throughput was also comparable to the baseline, with slight increases on I-5 in the southbound direction and slight decreases on I-5 in the northbound direction.

Freight truck throughput on I-5 and I-205

This concept shows modest shifts in daily truck volumes from I-5, with its priced managed lane, to the unpriced I-205 corridor. This shift occurs because trucks over 10,000 pounds cannot access the managed lane under current Oregon law,⁷ and general purpose capacity is limited to two lanes rather than three general purpose lanes in the baseline.

Passenger vehicle travel time on I-5 and I-205

Passenger vehicle travel times, relative to the baseline, change modestly in the general purpose lanes.

Passenger vehicle travel time on managed lanes

The tolled lanes on the northern portion of I-5 in Concept A provide moderate travel time savings to the users of those lanes. These savings occur primarily during the peak hours and are concentrated in those areas where the lanes exist. Travel time savings do not extend much beyond the priced lane, but there is also no observable reduction in travel times in the general purpose lanes.

Freight truck travel time on I-5 and I-205

Freight vehicles over 10,000 pounds are barred by state law from accessing the (leftmost) priced lanes in Concept A. As such, the travel time for freight vehicles in the general purpose lanes for this concept are the same for passenger vehicles in the general purpose lanes, which are generally not affected by the implementation of pricing.

Assessment of change in duration of congested traffic conditions

Concept A results in slight reductions in congested conditions on I-5 where the priced managed lane option is offered. During the 7 AM peak hour, the chance of hyper-congestion on I-5 is reduced from the baseline condition (from 36 to 38 percent in both directions). During the 5 PM peak hour, the chance of encountering hyper-congestion on I-5 is reduced only in the southbound direction, from 34 percent in the baseline to 33 percent for Concept A.

Delay on priced facilities

Concept A reduces delay in the parts of the corridor where pricing is applied (the priced lanes). These results are more pronounced during the AM and PM peak hours than off-peak times of travel.

⁷ 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 except in the HOV lane. https://www.oregonlegislature.gov/bills_laws/ors/ors811.html. Accessed February 9, 2018.



Safety

Concept A provides limited potential for reducing roadway crashes in the region. Reduction in crashes on the priced lanes may be offset in part by increased crashes on the general purpose lanes. According to researchers, "HOV-to-[priced lane] conversion does not significantly affect the safety performance of the roadway segments as a whole."⁸

Trip length distribution

No significant changes to trip length distribution are expected to result from Concept A.

3.1.2 Diversion of traffic

Diversion in Concept A is anticipated to be minimal, but some changes to traffic circulation patterns could occur. While these changes are anticipated to be small, potential locations where increases in roadway volumes could occur include the following:

- Martin Luther King Boulevard (OR 99E) [Lombard Street to Marine Drive]
- Interstate Avenue (OR 99W) [Alberta Street to Columbia Boulevard]
- Columbia Boulevard [I-5 to Martin Luther King Boulevard (OR 99E)]
- I-205

As such, the impact to road users, including vehicular traffic as well as bicyclists and pedestrians, is expected to be minimal. Additional detail on the diversion performance metric is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.1-2. Concept A evaluation: diversion of traffic

Performance measure	Concept A evaluation	Findings
Diversion impacts on non-tolled facilities		No substantial traffic diversion impacts.
Safety impacts to all modes of transportation (including bicyclists and pedestrians) on routes with diversion		No substantial increase in the frequency or severity of crashes is expected.
Legend:	Performs well:  Performs moderately:  Performs poorly: 	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

3.1.3 Transit service and active transportation

Concept A scores moderately well in this category of performance metrics. There is viable transit service in the area with numerous routes parallel to I-5. However, there is a lack of supporting infrastructure, in particular park-and-ride lots. Furthermore, there are

⁸ Abuzwidah, M. and M. Abdel-Aty. "Effects of Using High Occupancy Vehicle Lanes on Safety Performance of Freeways". Presented at the 96th Annual Meeting of the Transportation Research Board, Paper No. 17-06894, Washington, D.C., (2017).



relatively few frequent service lines. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.1-3. Concept A evaluation: transit service and active transportation

Performance measure	Concept A evaluation	Findings
Adequacy of transit service		Eight total transit lines, two TriMet, both frequent service, and six C-Tran. Two park and ride lots and one transit center.
Bus transit travel time		Time savings for AM peak and PM peak (northbound/southbound). Six C-Tran express bus routes would benefit.
Mode share shift (HOV, SOV, transit, walk, bike)		Minimal impacts on regional mode share. Slight potential to shift some trips from SOV to HOV.
Availability of bicycle travel on alternative routes		About 50 miles of bike lanes within a 1-mile buffer of the corridor. Five roadways with bike lanes run mostly parallel to the freeway and another two are somewhat parallel. Gaps are noticeable in the network, however.
Completeness of pedestrian network		66 total street miles of sidewalks. 16.5 miles of sidewalk/mile of corridor length within a half mile buffer.
Legend:	Performs well Performs moderately Performs poorly	

Source: Metro Regional Travel Demand Model, WSP

Adequacy of transit service

Concept A performed well in terms of parallel transit lines running near the corridor as well as lines that run a significant length of the corridor. Altogether C-Tran has six lines that run from Vancouver to downtown Portland (the Lloyd Center, and/or the Delta Park MAX Station), facilitating inter-state travel via transit. TriMet service offers two lines that run the length of this concept's corridor, and both are high frequency. The MAX Yellow line runs near the I-5 Corridor and allows for transfers to C-Tran at the Delta Park MAX Station.

Bus transit travel time

Concept A provides a modest amount of potential travel time savings along I-5. Six C-Tran routes currently use this section of the freeway for their express bus service between downtown Portland and Lloyd Center to Vancouver. TriMet currently operates no bus service along this section of the freeway, and the modest travel time savings potential along with the presence of the MAX Yellow line may not be enough to result in new TriMet service being added.



Mode share shift

The regional model results indicate that there would likely be minimal shifts in mode share, with some limited potential shift from SOV to HOV. No significant change was identified for transit or bicycle/pedestrian mode share.

Availability of bicycle travel

Five routes run parallel to Concept A, providing options for people riding bikes. A path extends across the Columbia River providing access to those traveling to and from Vancouver. However, there are noticeable gaps in the bicycle network, particularly in northern areas where there are fewer bike facilities overall. Some bike lanes also start and end abruptly, limiting connectivity to destinations within the area.

Completeness of pedestrian network

In the southern half of the concept corridor there is a tight, complete pedestrian network. However, north of Columbia Boulevard, the pedestrian network is severely limited with few, if any, sidewalks. Furthermore, pedestrians desiring to walk to Delta Park, the Columbia River or any of the recreational areas in that northern area face obstacles in terms of available infrastructure. Overall, 66 miles of sidewalks are present with 16.5 miles per mile of corridor length.

3.1.4 Equity benefits and impacts

Concept A does not result in any significant travel time benefits for Title VI or Environmental Justice communities (low-income, people of color, and low English proficiency communities), but it also does not result in any substantive negative impacts. Performance measures in other categories also relate to equity, although they are not specifically categorized as such. Additional detail on this and other performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Regarding user costs, this concept maintains two unpriced lanes in each direction, so area drivers would have toll free alternatives to travelling in the tolled lane. However, those using the tolled lane would be subject to a higher toll rate relative to other concepts that price all lanes. This is consistent with other experience with single-lane pricing projects.



Table 3.1-4. Concept A evaluation: equity benefits and impacts

Performance measure	Concept A evaluation	Findings
Value or travel time savings for Title VI and/or Environmental Justice communities (regional)		Small travel time benefit for Title VI and Environmental Justice communities.
Changes in travel time based on geographic zones		Small travel time benefit for the region.
Access to jobs		No significant impact on job access for Title VI or Environmental Justice communities.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Value of travel time savings for Title VI and/or Environmental Justice communities

A small benefit in terms of overall travel time can be expected with this concept for Title VI and Environmental Justice communities in the region. However, the scale of those travel time benefits is small—less than any of the other value pricing concepts.

Travel time savings by geographic area

Concept A would result in a small improvement in vehicle travel time for Title VI and Environmental Justice communities, but the scale of the improvement is the smallest of any value pricing concept. Furthermore, benefits to the region are limited. Trips to and from central Portland, north Portland and in areas between Columbia Boulevard and the Columbia River (between I-5 and I-205) would benefit most.

Access to jobs

Concept A does not result in any significant change in access to jobs within a 30-minute drive for Title VI and Environmental Justice communities.

3.1.5 Benefits and impacts for the community, economy and environment

The positive and negative impacts to the community, economy and environment are mixed for Concept A. The concept shows the potential to increase overall system efficiency by slightly reducing total motor vehicle hours traveled (VHT), VMT, and regional vehicle emissions. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.



Table 3.1-5. Concept A evaluation: benefits and impacts for the community, economy and environment

Performance measure	Concept A evaluation	Findings
Physical impacts to existing residences and businesses		No physical impacts expected.
Regional travel time savings		Minimal impact on overall Regional VHT. Potential for reduction to regional VHT is highest during the AM peak hour.
Regional VMT (including non-freeway)		No significant change on Regional VMT.
Change in air pollution		No significant change expected. Some potential to slightly reduce regional vehicle emissions.
Value of travel time savings		Potential to provide a small regional travel time benefit for motor vehicles. Has the smallest benefit of all concepts evaluated.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Overall, the regional transportation system shows some potential to operate more efficiently under Concept A, as system-wide impacts show the potential to slightly reduce total motor VHT, VMT and vehicle emissions.

This concept does not include construction of new lanes along tolled segments and, therefore, would not have significant physical impacts to residents or businesses adjacent to the corridor.

3.1.6 Revenue and costs

As a single priced lane in each direction of travel with adjacent, toll-free general-purpose lanes, Concept A is not anticipated to generate significant revenue. Revenues would cover toll collection and operating costs, but may not cover all roadway rehabilitation and reconstruction costs of the facility; however, these costs would be incurred regardless of the lanes being priced. Significant revenue for other capital programs is unlikely. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.



Table 3.1-6. Concept A evaluation: revenue and cost

Performance measure	Concept A evaluation	Findings
Capital expenditure on facility	●	Low capital costs as tolling is only anticipated for a relatively short distance in a single lane (each direction).
Estimated toll revenue potential from tolled facility	○	Low total annual revenue but moderate daily revenue per centerline mile. Sufficient revenue for capital investments would likely not be available.
Legend:	Performs well ●	Performs moderately ◐
		Performs poorly ○

Source: WSP, Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Capital expenditure on facility

Concept A would convert an existing northbound HOV lane and would require the conversion of another general purpose lane in the southbound direction. It would likely have low capital costs as tolling is only anticipated for a relatively short distance in these lanes. Capital costs for Concept A are much less than if additional lanes were added, and are less than many major highway capital project costs.

Gross toll revenue potential

The potential annual gross toll revenue estimate for Concept A is \$20 million (in 2017 dollars), one of the two lowest of the five concepts. The revenue estimates were calculated based on toll rates that vary for each segment and time of day based on traffic conditions. The modeling analysis adjusted the toll rates for each hour of the day to the level that maintains free flow traffic conditions on the tolled lanes throughout the day and during peak periods. The toll rates range between \$0.34 per mile during non-peak hours to a high of \$1.45 per mile during the peak. Estimated revenue would be sufficient to cover routine costs associated with toll collection and operations, roadway operations and maintenance, and periodic costs associated with rehabilitation and reconstruction of toll equipment. However, estimated revenues may not be sufficient to cover all periodic roadway rehabilitation and reconstruction costs that would be incurred whether or not the lanes are priced. Excess revenue would likely not be available for significant contributions to capital improvements particularly for underwriting revenue bonds. Appendix E includes additional information about revenue and cost assumptions.

3.1.7 Implementation

Concept A complies with state and regional policy. The conversion of the northbound HOV lane would qualify under FHWA's Section 166 HOV/HOT Lane Program; the southbound conversion could qualify under FHWA's Value Pricing Pilot Program. Concept A could be deployed within a relatively quick timeframe with no impact to



other regional project schedules. Additional detail on all performance metrics are provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.1-7. Concept A evaluation: implementation

Performance measure	Concept A evaluation	Findings
Consistency with state law and policy		Consistent with state law and policy. Any tolling proposal would need to meet additional legal requirements.
Consistency with regional law and policy		Complies with regional law and policy; tolling proposals would need coordination with Metro.
Feasibility under federal law		Operationally similar in the northbound direction to many other congestion pricing projects in the U.S. Southbound conversion of a general purpose lane would have some federal requirements.
Project delivery schedule		No negative impacts to the delivery schedules of other projects.
Legend:	 Performs well  Performs moderately  Performs poorly	Please see summaries below for additional assessment detail.

Source: WSP

Consistency with state and regional law and policy

Concept A generally conforms to guidance and requirements found in state and regional laws and policies. Descriptions of state and regional laws and policies are provided in Appendix F.

Feasibility under federal law

The northbound conversion of the existing HOV lane would be operationally feasible from a federal perspective and would qualify under FHWA's Section 166 HOV/HOT Lane Program. Under Section 166 the implementing agency is required to consult with the local metropolitan planning organization (MPO) regarding the placement and amount of tolls on the converted lanes. The implementing agency is also required to demonstrate that the conversion has not and does not (upon implementation) degrade service for HOV vehicles. Annual reporting is required. The conversion of the southbound general purpose lane may qualify under FHWA's Value Pricing Pilot Program.

Project delivery schedule

Concept A can be developed and implemented relatively quickly. There are no negative impacts to other projects.



Blank Page



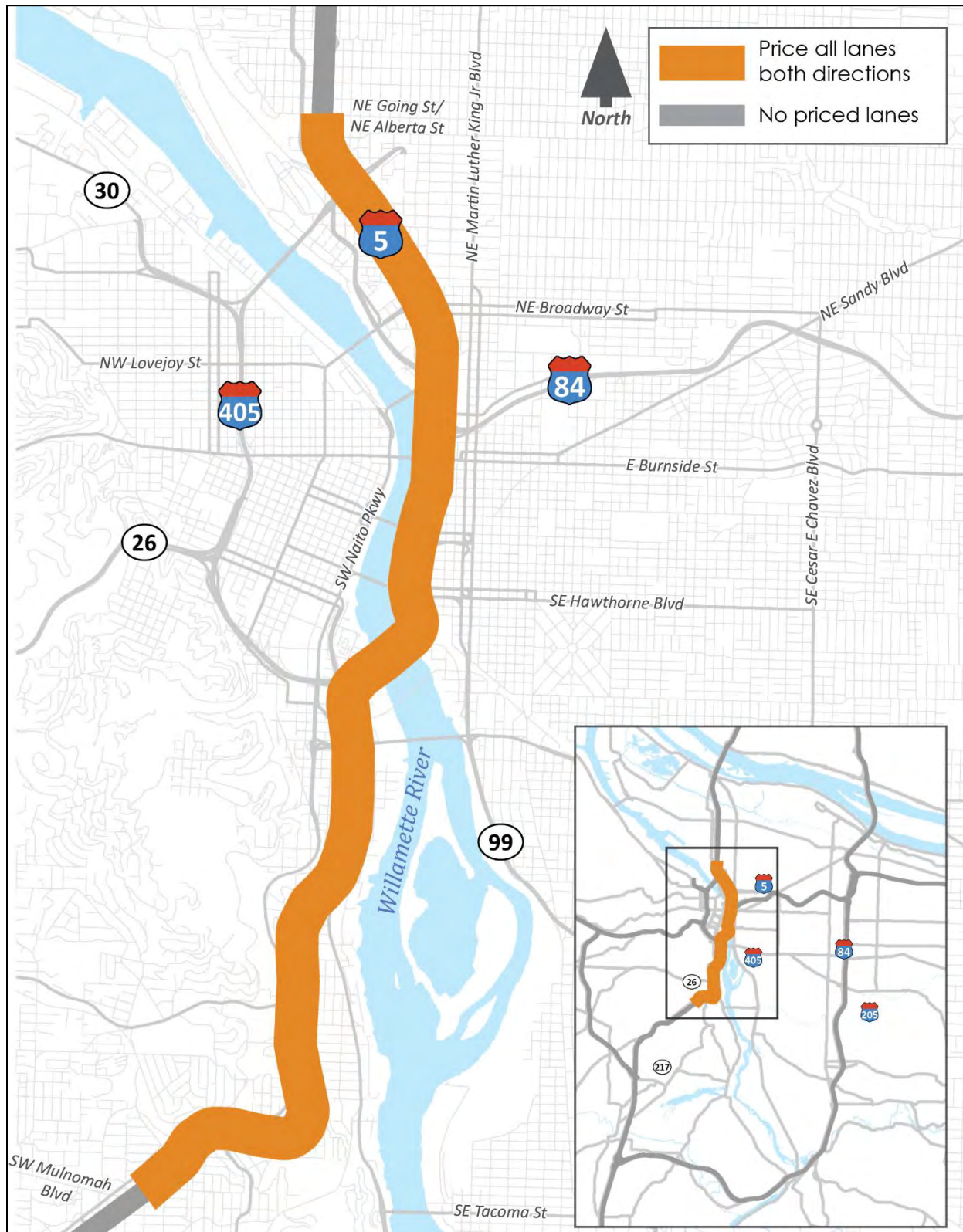
3.2 Concept B: I-5 Priced Lanes: Toll All Lanes between Going Street/Alberta Street and Multnomah Boulevard

Concept B converts all lanes between NE Going Street/Alberta Street and SW Multnomah Boulevard to a priced roadway. The following are key findings from the assessment of Concept B.

- There are noticeable congestion reduction and time savings for users of the facility, particularly during peak periods.
- Concept B provides travel time savings to area Title VI and Environmental Justice communities.
- The concept moves vehicles more efficiently in terms of vehicles per lane per hour relative to the baseline and, as a result, diversion from the tolled facility to I-205 and nearby roads is modest.
- The concept's context features a dense network of transit and multi-modal facilities.
- Because it does not maintain any general purpose (unpriced) freeway lanes, there may be a need to provide mitigations such as increased transit service, low income toll rates, or other strategies.
- Tolling authority for this concept would come under FHWA's Value Pricing Pilot Program.



Figure 3-2. Round 2 Concept B: I-5 Toll All Lanes between Going Street/Alberta Street and Multnomah Boulevard





3.2.1 Traffic operations improvement on I-5 and I-205

Concept B would improve travel for users, with benefits in travel time and delay reductions. Other metrics generally show moderate benefits or limited impacts. It is important to note that traffic operations results should be examined holistically instead of examination of just one or two performance measures to understand the full breadth of implications. Additional detail on this group of performance metrics is included in the evaluation methods and assumptions matrix in Appendix A.

Table 3.2-1. Concept B evaluation: traffic operations improvement

Performance measure	Concept B evaluation	Findings
Vehicle and person throughput on I-5 and I-205		Some evidence of increased vehicle throughput during the peak hours. It is not, however, consistent for all segments. There does not appear to be substantial overall diversion to I-205.
Freight truck throughput on I-5 and I-205		Diversion of truck traffic from I-5 to I-205, which results in less freight truck throughput on I-5. However, freight throughput can be managed with pricing policies post implementation to reduce diversion and maintain throughput.
Passenger vehicle travel time on I-5 and I-205		Improved travel times on I-5 with no significant negative impacts on I-205.
Passenger vehicle travel time on managed lanes	N/A	Not applicable.
Freight truck travel time on I-5 and I-205		Freight trucks travel at the same speeds as passenger vehicles.
Assessment of change in duration of peak vehicle traffic conditions		Conditions moderately improve on I-5, but this is offset to some extent by moderate deterioration on I-205.
Delay on priced facility		Reduced delay on the priced portions of I-5.
Safety impacts		Some limited potential to decrease the frequency and severity of crashes in the region.
Trip length distribution		Trip length distribution is not impacted by this concept.
Legend:	Performs well 	Performs moderately  Performs poorly 

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Vehicle and person throughput on I-5 and I-205

Overall, Concept B does not result in significant changes in daily vehicle and person throughput relative to the baseline (no tolls), but there are potential increases in throughput during the peak hours on some segments. While the modeling results indicate that pricing could lower vehicle volumes during off-peak periods, dynamic pricing of all lanes in this concept allows for toll rates to be adjusted and volumes managed in response to travel conditions.



Freight truck throughput on I-5 and I-205

Concept B results in a shift in daily truck volumes from I-5 (the tolled facility) to I-205 (where no pricing is present). This shift occurs during the peak hours as well as over the course of the day. However, the magnitude of the shift is greater during the peak periods. The model shows that overall throughput on both corridors combined is slightly less than baseline conditions. Freight throughput can be managed post implementation through changes to the tolling schedule if needed to minimize diversion and maintain throughput.

Passenger vehicle travel time on I-5 and I-205

Concept B results in passenger travel time savings on I-5 with some modest increase in travel time on I-205. This is expected given potential for traffic shifts from I-5 to I-205. However, the average increase in travel times on I-205 across all the hours of the day is about 1 percent, or less than a minute, over the 27-mile corridor.

Freight truck travel time on I-5 and I-205

Freight vehicles receive the same travel time improvement benefits on I-5 as passenger vehicles. Furthermore, freight vehicles would see a similar increase in travel times on I-205 (approximately 1 percent) as passenger vehicles.

Assessment of change in duration of congested traffic conditions

Concept B reduces congested conditions on I-5 while only very modestly increasing the incidence of these conditions on I-205. During the 7 AM peak hour, the chance of hyper-congestion on I-5 is reduced from the baseline condition (38 percent in the northbound and southbound directions) to 30 percent in the northbound and 32 percent in the southbound. Further, during the 5 PM peak hour, the chance of hyper-congestion on I-5 is reduced relative to the baseline condition (35 percent in the northbound and 34 percent in the southbound) to 28 percent in the northbound and 30 percent in the southbound.

Delay on priced facilities

The pattern in changes in vehicular volume leads to a similar pattern in delay, as Concept B reduces hours of delay on I-5 and slightly increases delay on I-205.

Safety

No significant change in the overall frequency and severity of crashes is expected to result from this concept, although it may result in a small reduction in the overall frequency and severity of crashes based on Portland Metro's MCE tool that analyzes safety impacts on the overall regional transportation system.

Trip length distribution

No significant changes to trip length distribution are expected to result from this concept.

3.2.2 Diversion of traffic

As all lanes are priced in Concept B, there is a chance of diversion that could negatively impact safety on adjacent and regional toll-free facilities. Additional detail



on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.2-2. Concept B evaluation: diversion of traffic

Performance measure	Concept B evaluation	Findings
Diversion impacts on non-tolled facilities		No substantial diversion impacts are expected when freeway throughput is increased during peak hours. Diversion to non-tolled facilities may occur in off-peak periods.
Safety impacts to all modes of transportation (including bicyclists and pedestrians) on routes with diversion		The diversion of trips in off-peak periods from a priced facility to adjacent arterials and other roadways could increase need for safety mitigation on those facilities.
Legend:	 Performs well  Performs moderately  Performs poorly	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Diversion impacts during peak conditions are expected to be minimal, as I-5 may be able to move more traffic. The application of tolls during off-peak conditions could divert vehicles off the freeway during those times, but tolling through dynamic pricing could minimize this effect.

While the scale of diversion is expected to be small overall, potential locations where increases in roadway volumes could occur include the following:

- I-205
- I-405
- Lewis and Clark Highway (SR-14) [I-5 to I-205]
- Martin Luther King Boulevard (OR 99E) [Broadway Street to Marine Drive]
- Interstate Avenue (OR 99W) [Broadway Avenue to Going Street]
- Greeley Avenue [Going Street to Interstate Avenue]
- McAdam Avenue/Riverside Drive (OR 43) [I-5 to A Avenue]
- Boones Ferry Road [Kruse Way to Terwilliger Boulevard]
- Taylors Ferry Road [McAdam Avenue (OR 43) to I-5]
- Terwilliger Boulevard [Boones Ferry Road to I-5]
- Barbur Boulevard (OR 99W) [I-405 to I-5]
- Minnesota Avenue/Missouri Avenue [Alberta Street I-5 Ramps to Going Street I-5 Ramps] – this potential use of ramps to bypass a short tolled segment is dependent on how tolling is structured

Diversion from freeways in off-peak periods may increase the likelihood of motor vehicle crashes on the potentially impacted roadways and at intersections. Additionally, non-vehicular travel (e.g., bicyclists and pedestrians) on diversion routes could experience increased conflicts with motor vehicles during off-peak periods, which could increase crash frequency.



It should be noted that surface streets (non-freeway roadways) with higher levels of congestion generally exhibit lower serious crash rates per mile than uncongested surface streets.⁹

3.2.3 Transit service and active transportation

Concept B scores well overall in this category of performance as it features good bicycle and pedestrian access and sufficient transit service - including all current and future MAX light rail lines - running in and parallel to the corridor. However, there are no park-and-ride lots and only one transit center adjacent to the corridor. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.2-3. Concept B evaluation: transit service and active transportation

Performance measure	Concept B evaluation	Findings
Adequacy of transit service		26 total transit line options. 19 transit lines by TriMet, five transit lines by C-Tran. No park and ride lots and one transit center.
Bus transit travel time		Time savings for the AM peak and PM peak (northbound/southbound). Five C-Tran express bus routes and one TriMet route would benefit.
Mode share shift (HOV, SOV, transit, walk, bike)		Minimal impact on regional mode share. Some potential to discourage SOV trips, with shifts to HOV, transit, and active modes.
Availability of bicycle travel on alternative routes		Nearly 110 miles of bike lanes within a 1 mile buffer, 17 of which run parallel to the corridor and another 4 that run in a near-parallel fashion. Some gaps are found in the southern area, but options still exist.
Completeness of pedestrian network		138 total street miles of sidewalks. 20 miles of sidewalk/mile of corridor length within a half-mile buffer.
Legend:	 Performs well  Performs moderately  Performs poorly	

Source: Metro Regional Travel Demand Model, WSP

Adequacy of transit service

Concept B performed very well with a total of 21 bus routes, three current and future MAX lines, and two streetcar lines offering parallel service along its route, 19 of which are run by TriMet with 9 of those being frequent service. This provides numerous transit options into and out of the downtown Portland area. C-Tran also has five lines running the length of the I-5 corridor into either downtown Portland or the Lloyd District. However, none of these lines provide frequent service, and they do not run the length

⁹ Metro State of Safety Report, April 2012.



of the corridor. A lack of transit centers and park-and-ride facilities creates further issues for those who want to drive for at least a portion of their trip.

Bus transit travel time

Concept B provides a modest amount of potential travel time savings along I-5. Five C-Tran bus routes currently use this section of the freeway for express bus service between downtown Portland and Lloyd Center to Vancouver. TriMet currently operates one bus route along this section heading into and out of downtown Portland. There is the potential for a new express bus service serving the corridor; however, with the current Yellow Line MAX train and the planned SW Corridor high-capacity transit line, this would need examination.

Mode share shift

Concept B is anticipated to have a minimal impact on regional mode share. However, some potential to discourage SOV trips in favor of HOV, transit, and active modes such as bicycling and pedestrian would be expected due to the application of tolling costs.

Availability of bicycle travel

Concept B has numerous bike facilities running parallel to the corridor giving cyclists multiple options. This concept also benefits from being near downtown Portland, which has multiple planned routes, including the upcoming Green Loop. While some gaps do exist in the southern area of the concept, overall the corridor provides options regardless of where a cyclist travels.

Completeness of pedestrian network

A complete and consistent pedestrian network exists within the concept corridor. Few gaps exist that do not have some type of natural barrier (river, steep hills). This corridor segment also has the highest number of sidewalks per mile of corridor. Overall, aside from the very southern tip of the corridor, the pedestrian network is complete and provides good options for pedestrians.

3.2.4 Equity benefits and impacts

Concept B offers some limited travel time benefits for Title VI and/or Environmental Justice communities in the region. Performance measures in other categories also relate to equity, although they are not specifically categorized as such. Additional detail on this and other performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Because this concept does not maintain any general purpose (unpriced) freeway lanes, there may be a need to provide mitigations such as increased transit service, low income toll rates, or other strategies.



Table 3.2-4. Concept B evaluation: equity benefits and impacts

Performance measure	Concept B evaluation	Findings
Value or travel time savings for Title VI and/or Environmental Justice communities (regional)		Potential travel time benefit for Title VI and Environmental Justice communities.
Changes in travel time based on geographic zones		Potential for vehicle travel time reduction for the region, particularly along the I-5 corridor.
Access to jobs		Potential for some improved access to jobs for Title VI and Environmental Justice communities. Low wage job access shows slightly higher improvements than the overall average.
Legend:	 Performs well  Performs moderately  Performs poorly	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Value of travel time savings for Title VI and/or Environmental Justice communities

An improvement in overall travel time can be expected with this concept for Title VI and Environmental Justice communities in the region (low-income, people of color, and low English proficiency communities). The scale of travel time benefit is smaller than for Concept C but more than would be expected with Concepts A, D or E.

Travel time savings by geographic area

A reduction in vehicle travel time can be expected with this concept and the benefits would be experienced throughout the region. Trips to and from areas along the I-5 corridor (between the I-5 junction with I-205 and the Columbia River) would benefit most, including parts of Tigard, Tualatin, Lake Oswego, and central, north and northeast Portland.

Access to jobs

Concept B offers some potential improvement to the percent of regional jobs accessible within a 30-minute drive for Title VI and/or Environmental Justice communities. On average, approximately 1 percent more (from 32 percent to 33 percent) of all regional jobs would be accessible within a 30-minute drive during the morning peak hour. Access to low wage jobs would be expected to have slightly higher improvements than access to all jobs.

3.2.5 Benefits and impacts for the community, economy and environment

By pricing all lanes, Concept B would improve overall system efficiency, which yields moderate benefits in terms of time savings, reduction in regional vehicle miles traveled and reduction in air pollution. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.



Table 3.2-5. Concept B evaluation: benefits and impacts for the community, economy and environment

Performance measure	Concept B evaluation	Findings
Physical impacts to existing residences and businesses		No physical impacts expected.
Regional travel time savings		Potential for minor reduction in regional VHT. Benefit consistent throughout the day and highest in the AM peak hour.
Regional vehicle miles traveled (VMT) (including non-freeway)		Greater potential for reducing VMT than Concepts A or D or E, minor impacts anticipated.
Change in air pollution		No significant change expected. Some potential to slightly reduce regional vehicle emissions.
Value of travel time savings		Potential to provide travel time savings for the region as a whole. Has the second-highest benefit of all concepts evaluated.
Legend:	 Performs well  Performs moderately  Performs poorly	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Overall, the regional transportation system is expected to operate more efficiently as system-wide impacts show the potential to reduce total motor VHT, VMT and vehicle emissions.

This concept does not include building new lanes and, therefore, would not have any physical impacts to residents or businesses that run adjacent to the corridor.

3.2.6 Revenue and costs

Concept B would generate more revenue than single-lane concepts and would cover all toll collection and operating costs, as well as routine and periodic roadway operations and maintenance that would be incurred regardless of whether the lanes were priced. At this level of analysis, there are too many unknowns to determine how much funding for other capital projects would be generated, and whether it is significant enough to contribute to long-term rehabilitation and reconstruction of the corridor's infrastructure. This concept is relatively inexpensive to deploy. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.



Table 3.2-6. Concept B evaluation: revenue and cost

Performance measure	Concept B evaluation	Findings
Capital expenditure on facility		Higher than costs associated with concepts that only toll a single lane; not as costly as many highway capital projects.
Estimated gross toll revenue potential from tolled facility		Low-to-moderate total annual revenue and revenue per centerline mile. Likely provides excess revenue to designate to other capital projects, but at an unknown level of contribution.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: WSP, Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Capital expenditure on facility

Capital costs for converting general purpose lanes on I-5 for Concept B are higher than the costs associated with concepts that only toll a single lane, but not as costly as many major highway capital projects.

Gross toll revenue potential

The potential annual gross toll revenue estimate for Concept B is \$50 million (in 2017 dollars). The revenue estimates are calculated based on toll rates that vary for each segment and time of day based on traffic conditions. The modeling analysis adjusted the toll rates for each hour of the day to the level that maintains free flow traffic conditions on the tolled lanes throughout the day and during peak periods. The toll rates range between \$0.10 per mile during non-peak hours of the day and up to \$0.26 per mile during the peak. Estimated revenue would be sufficient to cover routine costs associated with toll collection and operations, roadway operations and maintenance, and periodic costs associated with rehabilitation and reconstruction of toll equipment. Estimated revenues hold the potential for excess revenue to be available to support capital investments and/or mitigation solutions. Appendix E includes additional information about revenue and cost assumptions.

3.2.7 Implementation

Concept B complies with applicable state and regional law and policy. The concept may qualify under the FHWA Value Pricing Project Program (VPPP) but would not qualify under the FHWA's Mainstream Tolling or HOV/HOT Lane Program. The concept could be deployed relatively quickly with minimal impact to other regional projects. Additional detail on all performance metrics are provided in the evaluation methods and assumptions matrix in Appendix A.



Table 3.2-7. Concept B evaluation: implementation

Performance measure	Concept B evaluation	Findings
Consistency with state law and policy		Consistent with state law and policy. Any tolling proposal would need to meet additional legal requirements.
Consistency with regional law and policy		Consistent with regional law and policy; likely coordination with Metro.
Feasibility under federal law		May qualify under FHWA VPPP program.
Project delivery schedule		No negative impacts to the delivery schedules of other projects.
Legend:	Please see summaries below for additional assessment detail.	
	Performs well 	Performs moderately 
	Performs poorly 	

Source: WSP

Consistency with state and regional law and policy

Concept B is consistent with guidance and requirements found in state and regional laws and policies. Information on state and regional laws and policies is provided in Appendix F.

Feasibility under federal law

Concept B may qualify for FHWA's Value Pricing Pilot Program (Oregon has a slot), which may allow tolling of all existing general purpose lanes in the absence of reconstruction activities.

Project delivery schedule

Concept B can be developed relatively quickly without significant impact to other projects in the area. Discussion on state and local laws and policies is provided in Appendix F.



Blank Page



3.3 Concept C: I-5 and I-205 Priced Roadway – Toll All Lanes

Concept C would implement pricing on all lanes of I-5 and I-205 from the Washington/Oregon state line to the I-5/I205 interchange near Tualatin. The following are key findings from the assessment of Concept C:

- Concept C generates the greatest overall benefit in terms of regional congestion reduction and travel time savings.
- Route diversion can be expected, which could be minimized through dynamic tolling.
- The concept would provide travel time savings and enhanced access to jobs for Title VI and Environmental Justice communities.
- Transit and multi-modal facilities can serve as travel alternatives though accessibility of these options varies over the I-5 and I-205 corridors.
- Because it does not maintain any general purpose (unpriced) freeway lanes, there may be a need to provide mitigations such as increased transit service, low income toll rates, or other strategies.
- Concept C would generate the largest amount of revenue compared to other concepts.



Figure 3-3. Round 2 Concept C: Priced Roadway – Toll All Lanes





3.3.1 Traffic operations improvement on I-5 and I-205

Concept C would result in the largest overall benefits for the region in terms of congestion reduction and improvement in travel times. However, diversion to the regional arterial network and other non-priced freeways is likely without mitigation. It is important to note that traffic operations results should be examined holistically instead of examination of just one or two performance measures to understand the full breadth of implications. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.3-1. Concept C evaluation: traffic operations improvement

Performance measure	Concept C evaluation	Findings
Vehicle and person throughput on I-5 and I-205		Modeling results indicate that there would be a reduction in vehicle and person throughput on I-5 and I-205, particularly during off-peak periods. It may be possible to minimize or eliminate this in practice through toll adjustments.
Freight truck throughput on I-5 and I-205		Modeling results indicate that freight truck throughput would be reduced. However, freight throughput can be managed with pricing policies post implementation to minimize diversion and maintain throughput.
Passenger vehicle travel time on I-5 and I-205		Major improvements in travel times on all segments of I-5 and I-205.
Passenger vehicle travel time on managed lanes	N/A	Not applicable.
Freight truck travel time on I-5 and I-205		Freight travel times mirror passenger vehicle travel times in this concept.
Assessment of change in duration of peak vehicle traffic conditions		All segments of I-5 and I-205 indicate reductions in the possibility of encountering hyper-congested conditions, indicating a reduction in the duration of congested travel. This is confirmed by the reduction in peak hour VHT for the region as a whole.
Delay on priced facility		Reduced delay on all segments of both I-5 and I-205.
Safety impacts		Some limited potential to decrease the frequency and severity of overall crashes in the region.
Trip length distribution		No significant changes are expected. Some limited potential to reduce overall freeway trip lengths as users seek to limit payments under assumed distance-based toll.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Vehicle and person throughput on I-5 and I-205

The modeling results show that Concept C could reduce vehicle volumes, particularly during off-peak periods. The use of dynamic pricing would allow volumes to be



managed in response to traffic conditions. This would allow for more efficient traffic flow overall. Overall regional VMT and VHT are reduced with Concept C, an indication the network is performing more efficiently overall.

As noted, Concept C could reduce daily vehicle and person throughput on both facilities when compared to the baseline. However, the reduction is smaller during the peak periods, and may explain why the overall network performance shows increased efficiency. Some segments of I-5 and I-205 have higher throughput than the baseline during the peak hour, but the trend overall is moderately lower.

The model used in this analysis applied off-peak toll rates that may have been higher than required and resulted in more vehicle diversion than would be desired in these off-peak travel hours. It is also possible that the toll rates modeled during the peak travel hours had the same effect. Toll rates could be managed to balance freeway performance and vehicle diversion.

Freight truck throughput on I-5 and I-205

Concept C results in lower daily truck throughput on both facilities relative to the baseline. The magnitude of this reduction is greater during the peak hours. Freight throughput can be managed post implementation through changes to the tolling schedule if needed to minimize diversion and maintain throughput.

Passenger vehicle travel time on I-5 and I-205

Concept C results in the largest travel time savings of all the tolling concepts. Travel time savings during the peak hours range from 5 to 9 minutes depending on the corridor and direction of travel. In some cases, this represents a more than a 20 percent reduction in travel time. During off-peak hours, the travel time savings are more modest.

Passenger vehicle travel time on managed lanes.

Concept C has no priced managed lanes in operation.

Freight truck travel time on I-5 and I-205.

Freight vehicles travel in the general purpose lane of I-5 and I-205. As such, the travel time for freight vehicles shows the same improvement as passenger cars.

Assessment of change in duration of congested traffic conditions

Concept C does the most to reduce the probability of experiencing congested conditions compared to other concepts analyzed. During the 7 AM peak hour, the probability of hyper-congestion is reduced by 25 to 50 percent. During the 5 PM peak hour, it is reduced by between 33 to 66 percent.

Delay on priced facilities

Concept C significantly reduces hours of delay during peak periods on both I-5 and I-205 by between 25 to 50 percent depending on the location and time.

Safety

Hyper-congested freeways can create high variances in motor vehicle speeds, especially when approaching a queue, which can result in crashes. Removing hyper-



congestion reduces speed differentials and can therefore reduce the opportunity for crashes on freeways. The freeway performance improvements described above for Concept C, paired with overall region-wide reductions in VMT, would be expected to improve overall safety in the region.

Trip length distribution

No substantial changes to trip length distribution are expected to result from this concept. There is some limited potential to reduce overall freeway trip lengths as users seek to limit payments under an assumed distance-based toll.

3.3.2 Diversion of traffic

The application of pricing to all lanes of I-5 and I-205 within the overall study area is anticipated to result in diversion to arterials and surface streets under Concept C. This could negatively impact safety for bicyclists and pedestrians, as well as drivers on these roads without mitigation. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.3-2. Concept C evaluation: diversion of traffic

Performance measure	Concept C evaluation	Findings
Safety impacts to all modes of transportation (including bicyclists and pedestrians) on routes with diversion		The diversion of trips from a priced facility to adjacent arterials and other roadways could increase the need for safety mitigation on those facilities.
Diversion impacts on non-tolled facilities		Potential for diversion impacts is higher than other concepts. Potential impacts have a wide geographic spread between I-5 and I-205.
Legend:	 Performs well  Performs moderately  Performs poorly	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Concept C analysis showed high potential for diversion impacts without mitigation. The analysis produced mixed results for changes in freeway volumes, with some freeway segments showing increased throughput during peak demand periods (when hyper-congestion could be relieved) and others showing decreased volume. The impacts vary by time of day, direction and highway. Overall daily impacts show an average decrease of 150 to 250 vehicles per hour on I-5 (each direction) and 250 to 350 fewer vehicles per hour on I-205 (each direction).

The impact of diversion away from freeways is expected to be distributed over many major roadways in the region, particularly north-south routes that are alternatives to I-5 and I-205. Model results indicate most diversion would occur in off-peak periods.

Where diversion from freeways could increase demand on other roadways, the likelihood of motor vehicle crashes could increase. Additionally, non-vehicular travel mode road users (e.g., bicyclists and pedestrians) on diversion routes could experience



increased conflicts with motor vehicles during off-peak periods, which could increase crash frequency.

Safety impacts could occur along segments and at intersections on the diversion routes, as increased motor vehicle volume is an indicator of increased crash potential. It should be noted that surface streets (non-freeway roadways) with higher levels of congestion generally exhibit lower serious crash rates per mile than uncongested surface streets.¹⁰

3.3.3 Transit service and active transportation

Concept C performs well in some aspects of transit service and active transportation but not as well in other areas. This is primarily due to the size of the concept relative to the others. The primary benefits to transit occur around downtown Portland and the inner core of I-205 near the Gateway Transit Center and at the intersection of I-84 and I-205. However, the southern areas of the concept lack transit service and, in particular, frequent service lines (e.g. in Clackamas County). Furthermore, bicycle and pedestrian infrastructure is almost non-existent in the southern areas of the concept. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.3-3. Concept C evaluation: transit service and active transportation

Performance measure	Concept C evaluation	Findings
Adequacy of transit service		36 total transit lines running. 26 lines from TriMet, eight from C-Tran, and 1 from SMART. A total of 11 frequent service lines, four of which are MAX trains. 12 park-and-ride and seven transit centers exist directly along this concept corridor.
Bus transit travel time		Time savings for AM peak and PM Peak (northbound/southbound). Eight C-Tran express bus routes and two TriMet routes would benefit.
Mode share shift (HOV, SOV, transit, walk, bike)		Could produce changes in regional mode share. Potential to discourage SOV trips, with shifts to HOV, transit, and active modes. Overall shift away from SOV travel would be less than 1% of regional trips.
Availability of bicycle travel on alternative routes		335 total miles of bike lanes within a 1-mile buffer. Dozens of parallel paths depending on the location. Gaps exist, especially in the southern and eastern parts of the concept corridor.
Completeness of pedestrian network		416 total street miles of sidewalks. 9 miles of sidewalk per mile of corridor length within a half-mile buffer.
Legend:	 Performs well  Performs moderately  Performs poorly	

Source: Metro Regional Travel Demand Model, WSP

¹⁰ Metro State of Safety Report, April 2012



Adequacy of transit service

Concept C features the most transit options with 28 bus routes, five current and future MAX lines, two streetcar lines, and the WES commuter rail line, but it is also the largest concept in terms of geographic area. This limits its effectiveness in terms of transit service evaluation. Through downtown Portland and inner east Portland areas, transit options are plentiful and provide frequent service. There are also large numbers of park-and-ride lots (12) and seven transit centers. However, the southern areas of both corridors lack service as few lines run parallel to either I-5 or especially I-205. The few lines that do run parallel to these corridors either do not run a sufficient length and/or do not offer frequent service.

Bus transit travel time

Concept C provides the highest amount of potential travel time savings along I-5 and I-205. Eight C-Tran routes currently use the concept corridor for express bus service between downtown Portland, Lloyd Center, and Delta Park MAX station to Vancouver. TriMet currently operates two bus routes along this concept corridor. SMART has one route that travels from Wilsonville to the Barbur Transit Station on I-5. Given the potential savings, there is also the possibility to add express bus service along either I-5 or I-205. I-205 along the southern corridor and near the Abernethy Bridge may benefit the most from a new service as it is currently the only section of highway that does not have a current or planned MAX/high-capacity transit line.

Mode share shift

By pricing all lanes of I-5 and I-205 within the study corridor, Concept C has the largest potential mode shift. The pricing of the entire corridor for both facilities would create an incentive to form carpools to reduce the individual burden of tolls or to use transit, bikes or walking to avoid tolls altogether. However, when analyzed over the entire region, the cumulative shift away from SOV travel is anticipated to be less than 1 percent of all regional trips.

Availability of bicycle travel

Concept C has the most bicycle infrastructure with 335 total miles, but this is unequally distributed among the 45 centerline miles of the corridors. As such, some segments of the concept's corridors perform very well. Portland central city and the I-205 east Portland sections have adequate bicycle travel options with multiple parallel bike lanes and paths. I-205 is also home to the I-205 trail, which runs directly parallel to the corridor concept from Abernethy Bridge to Vancouver. However, gaps persist in the overall network. The southern end of the corridor has very few bike facilities, and entire sections of the corridor often have no parallel bike paths. This provides cyclists with few, if any, options to travel the entire length of I-5 or I-205.

Completeness of pedestrian network

Concept C covers the most geographic area and, therefore, is the most challenging to assess in terms of pedestrian network completeness. This is primarily because of the large gaps in the far north segment of I-5 north of Columbia Boulevard, the far south segments of I-5 and I-205, and the general spottiness of the pedestrian network in the



eastern side of the corridor. Pedestrians are likely to encounter at least some gaps unless they are in inner Portland.

3.3.4 Equity benefits and impacts

Concept C offers travel time benefits for Title VI and Environmental Justice communities in the region. Performance measures in other categories also relate to equity, although they are not specifically categorized as such. Additional detail on this and other performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Because this concept does not maintain any general purpose (unpriced) freeway lanes, there may be a need to provide mitigations such as increased transit service, low income toll rates, or other strategies.

Table 3.3-4. Concept C evaluation: equity benefits and impacts

Performance measure	Concept C evaluation	Findings
Value or travel time savings for Title VI and/or Environmental Justice communities (regional)	●	Highest potential travel time benefit for Title VI and Environmental Justice communities.
Changes in travel time based on geographic zones	●	Highest potential vehicle travel time reductions for the region. Benefits would be experienced region-wide.
Access to jobs	●	Greatest potential to improve access to jobs for Title VI and Environmental Justice communities. Low wage jobs have slightly higher improvements than the overall average.
Legend:	Performs well ● Performs moderately ◐ Performs poorly ○	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Value of travel time savings for Title VI and/or Environmental Justice communities

A benefit in overall travel time can be expected with this concept for Title VI and Environmental Justice communities in the region (low-income, people of color, and low English proficiency communities). The scale of travel time benefit is larger than for any other concept.

Travel time savings by geographic area

A reduction in vehicle travel time can be expected with this concept, and the benefits would be experienced throughout the region and into southern Washington. Trips to and from areas along the I-5 and I-205 corridors would benefit most, including parts of Wilsonville, Tualatin, Tigard, Beaverton, Lake Oswego, Portland, West Linn, and Oregon City.



Access to jobs

Concept C offers potential improvement to the percent of regional jobs accessible within a 30-minute drive for Title VI and/or Environmental Justice communities. On average, approximately 3 percent more (from 32 percent to 35 percent) of all regional jobs would be accessible within a 30-minute drive during the morning peak hour. The benefits are more evident for low-wage jobs, as approximately 5 percent more of regional low-wage jobs would be accessible in the morning peak hour. The off-peak period also shows potential for improving the share of regional jobs that can be accessed within a 30-minute drive by approximately 2 percent.

3.3.5 Benefits and impacts for the community, economy and environment

Concept C is anticipated to generate the largest travel time savings for the region and could decrease regional vehicle miles traveled. The benefits of travel time savings are likely to be distributed across the entire regional network. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.3-5. Concept C evaluation: benefits and impacts for the community, economy and environment

Performance measure	Concept C evaluation	Findings
Physical impacts to existing residences and businesses		No physical impacts expected.
Regional travel time savings		Highest potential to decrease regional VHT, with a daily decrease of up to 5%.
Regional vehicle miles traveled (VMT) (including non-freeway)		Could decrease regional VMT, up to 2% across all time periods.
Change in air pollution		Some potential to reduce regional vehicle emissions.
Value of travel time savings		Highest potential to provide regional travel time benefit for motor vehicles.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Overall, the regional transportation system is expected to operate more efficiently as system-wide impacts show the potential to reduce total motor VHT and VMT.

Air pollution impacts (vehicle emissions) of Concept C are challenging to estimate at the regional level because of the scale of potential changes and the dynamics that influence vehicle emissions. While model results indicate a potential exists to reduce regional vehicle emissions if Concept C were implemented, the ultimate outcome is not definitive.

This concept does not include construction of any additional new lanes (beyond the baseline 2027 assumptions) and, therefore, would not have any physical impacts to residents or businesses that run adjacent to the corridor.



3.3.6 Revenue and costs

Concept C generates the greatest amount of revenue of the concepts analyzed, which may cover all routine and periodic roadway facility operation and maintenance costs. The concept would require the largest capital expenditure in terms of tolling equipment. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.3-6. Concept C evaluation: revenue and cost

Performance measure	Concept C evaluation	Findings
Capital expenditure on facility		Requires the largest capital expenditure for toll equipment but not as costly as many highway capital projects.
Estimated gross toll revenue potential from tolled facility		Highest total annual revenue, moderate-to-high daily revenue per centerline mile. Results in excess revenue to designate to other capital projects, but at an unknown level of contribution.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: WSP, Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Capital expenditure on facility

Concept C requires the largest capital expenditure for toll equipment as the concept covers the entirety of I-5 and I-205 within the study area. Capital costs would be less than many major highway capital projects.

Gross toll revenue potential

The potential annual gross toll revenue estimate for Concept C is approximately \$300 million (in 2017 dollars), the highest of all five concepts. About 55 percent of this revenue will be generated by I-5 and 45 percent generated by I-205. The revenue estimates were calculated based on toll rates that vary for each segment and time of day based on traffic conditions. The modeling analysis adjusted the toll rates for each hour of the day to the level that maintains free flow traffic conditions on I-5 and I-205 throughout the day and during peak periods. The toll rates range from \$0.17 per mile during off-peak hours to \$0.38 per mile during peak hours. In addition to covering routine toll collection and operations as well as roadway operations and maintenance costs, Concept C revenues would likely be sufficient to cover periodic toll system rehabilitation and reconstruction costs, roadway rehabilitation and reconstruction costs, and support capital investments and/or mitigation solutions. Appendix E includes additional information about revenue and cost assumptions.



3.3.7 Implementation

Concept C is consistent with state and regional laws and policies. The concept could qualify under the FHWA Value Pricing Pilot Program but would not qualify under FHWA's Mainstream Tolling or HOV/HOT Lane Program. The system would be deployed slower than concepts A and B, given its geographic size, but construction costs and construction timing would be far shorter than that required to add lanes to a facility. Development and implementation would not negatively impact regional project schedules. Additional detail on all performance metrics are provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.3-7. Concept C evaluation: implementation

Performance measure	Concept C evaluation	Findings
Consistency with state law and policy		Consistent with state law and policy. Any tolling proposal would need to meet additional legal requirements.
Consistency with regional law and policy		Consistent with regional law and policy; likely coordination with Metro.
Feasibility under federal law		May qualify for VPPP (Oregon has a slot).
Project delivery schedule		No negative impacts to the delivery schedules of other projects.
Legend:	Performs well  Performs moderately  Performs poorly 	Please see summaries below for additional assessment detail.

Source: WSP

Consistency with state and regional law and policy

Concept C is consistent with state and regional laws and policies. Information on state and regional laws and policies is provided in Appendix F.

Feasibility under federal law

Concept C may qualify for FHWA's Value Pricing Pilot Program (Oregon has a slot), which allows for the tolling of pre-existing general purpose that are not being reconstructed using toll revenues.

Project delivery schedule

Concept C would not require construction of new roadway lanes; however, because it is being implemented over the entirety of the I-5 and I-205 corridors, it would take longer to develop than the smaller-scale concepts. It is not expected to impact regional project delivery schedules.



Blank Page



3.4 Concept D: I-205 Priced Lane – OR99E to Stafford Road

Concept D would price future additional third lanes in each direction currently planned but not funded for construction on I-205 from OR99E to Stafford Road, including widening of the Abernethy Bridge. Existing general purpose lanes in each direction would remain unpriced. The future planned project was considered part of the 2027 baseline for all concepts in the evaluation. Key findings from the assessment of Concept D are as follows:

- Congestion reduction is minimal, though the concept slightly reduces congestion along the priced portion of I-205.
- Diversion may occur but it is likely to be minimal.
- The concept area provides very few travel alternatives such as transit and active modes.
- Regarding user costs, this concept maintains two unpriced lanes in each direction; at the same time, the toll amount per user would be higher than all-tolled corridor options, which is consistent among single-lane pricing concepts.
- Concept D may be the quickest to implement from a federal perspective.

Legend:

- Price new planned lanes both directions (Green shaded area)
- No priced lanes (Grey shaded area)

Map Labels:

- North
- SW Terwilliger Blvd
- Boones Ferry Rd
- Stafford Rd
- Willamette River
- Willamette Dr
- SE McLoughlin Blvd
- Abernethy Bridge
- Mollala Ave

Highway Markers:

- Interstate 5 (I-5)
- Interstate 205 (I-205)
- State Route 217 (SR-217)
- State Route 26 (SR-26)
- State Route 84 (SR-84)
- State Route 405 (SR-405)



3.4.1 Traffic operations improvement on I-5 and I-205

Concept D results in travel time improvements for users of the priced lanes. Diversion is minimal. Additional detail on this group of performance metrics can be found in the evaluation methods and assumptions matrix in Appendix E.

Table 3.4-1. Concept D evaluation: traffic operations improvement

Performance measure	Concept D evaluation	Findings	
Vehicle and person throughput on I-5 and I-205		Moderate increases in person throughput during the peak hour on I-205. This is likely because this is a managed lane scenario and higher occupancy vehicles have a preference. Vehicle throughput is changed to a far lesser degree.	
Freight truck throughput on I-5 and I-205		Moderate increases in truck throughput on I-5, but these are offset by decreases on I-205. Trucks are also assumed to not be able to access the managed lane based on current state law and practice around the country. Freight vehicles will receive some benefit from minor decreases in travel time in the general purpose lanes on I-205 in the vicinity of the improvement.	
Passenger vehicle travel time on I-5 and I-205		No significant impacts to travel time on I-5 or I-205. There are improvements in travel time on the managed lanes themselves.	
Passenger vehicle travel time on managed lanes		For vehicles using the managed lanes, there are improvements in travel time.	
Freight truck travel time on I-5 and I-205		No differences in travel time compared with the baseline for trucks on I-5 or I-205.	
Assessment of change in duration of peak vehicle traffic conditions		Moderate improvement on I-205 for the duration of congested travel. This does not translate to I-5.	
Delay on priced facility		Moderate improvements in delay on the priced facility.	
Safety impacts		Potential to decrease the frequency and severity of crashes in the priced section of corridor.	
Trip length distribution		No significant changes to freeway trip lengths are expected overall. Some longer-distance trips may switch from I-5 to I-205 to take advantage of performance improvements on the tolled segment.	
Legend:	Performs well 	Performs moderately 	Performs poorly 

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Vehicle and person throughput on I-5 and I-205

Concept D results in little change in daily vehicle throughput relative to the baseline. All-day vehicle volumes are essentially unchanged but, during the peak hours and in the peak direction, vehicle volumes could increase slightly on I-205 relative to the baseline condition.



All-day person throughput is relatively unchanged compared to the baseline with peak hour, peak direction person throughput on I-205 increasing slightly (about 5 percent in the northbound direction in the 5 PM hour and 7 percent in the southbound direction during the 7 AM peak hour).

Freight truck throughput on I-5 and I-205

Concept D results in modest shifts in daily truck volumes from I-205 (with the priced lane) to I-5 (the facility without the priced lane) with shifts during the peak periods being higher. In Concept D, a single lane in each direction is converted from a general purpose lane to a toll managed lane. Since trucks cannot access the managed lanes, and since general purpose capacity is lower when compared with the baseline, this change in truck routing from I-205 to I-5 is expected. However, freight vehicles should receive some benefit from minor decreases in travel time in the general purpose lanes on I-205 in the vicinity of the improvement.

Passenger vehicle travel time on I-5 and I-205

Concept D results in only modest changes in travel times in the general purpose lanes when compared with the baseline. During peak hours, travel times in the general purpose lanes increase slightly on the segments of I-205 where the priced managed lane is implemented, but total corridor travel times increase very modestly.

Passenger vehicle travel time on managed lanes

Concept D provides a toll managed lane alternative to the general purpose lanes on the southern portion of I-205. As such, users experience travel time savings for the entire corridor of between 7 and 9 percent during peak hours. For the specific segment where the priced managed lanes are operating, the time savings are greater on a percent basis (between 13 and 34 percent).

Freight truck travel time on I-5 and I-205

Freight vehicles travel in the general purpose lanes of I-5 and I-205 in this concept, not the priced lanes. As such, the travel time for freight vehicles is the same as corresponding travel times for passenger vehicles in the general purpose lanes.

Assessment of change in duration of congested traffic conditions

Concept D results in modest reductions in congested conditions on I-205 where the priced managed lane is offered. During the 7 AM peak hour, the chance of encountering hyper-congestion on I-205 is reduced from the baseline condition (28 percent in the northbound and 36 percent in the southbound) to 24 percent for the northbound direction and 31 percent for the southbound. Furthermore, during the 5 PM hour, the chance of hyper-congestion on I-205 is reduced from the baseline condition (30 percent for the northbound and 21 percent for the southbound) to 25 percent in the northbound direction and 19 percent in the southbound.

Delay on priced facilities

Concept D reduces delay in the parts of the corridors where managed lanes are operational. This reduction is more pronounced (up to 10 percent) during peak hours.



Safety

Concept D could potentially reduce crashes within the priced lanes by improving traffic flows. However, there is the potential for these benefits to be offset in part by increased crashes in the general purpose lanes.

Trip length distribution

No significant changes to trip length distribution are expected to result from this concept.

3.4.2 Diversion of traffic

Concept D is not anticipated to generate levels of diversion that may negatively impact safety. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.4-2. Concept D evaluation: diversion of traffic

Performance measure	Concept D evaluation	Findings
Safety impacts to all modes of transportation (including bicyclists and pedestrians) on routes with diversion		No substantial diversion impacts are expected.
Diversion impacts on non-tolled facilities		No substantial traffic diversion impacts.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Overall, diversion is expected to be minimal. However, some changes to traffic circulation patterns may occur. While the scale of diversion is expected to be small, potential locations where increases in roadway volumes could occur include the following:

- Borland Road/Willamette Falls Drive [Stafford Road to Willamette Drive]
- McLoughlin Boulevard [I-205 to Roethe Road]
- Pacific Highway (OR 99E) [I-205 to south of Metro area]
- Trails End Highway (OR 213) [I-205 to south of Metro area]

This concept would likely not result in significant diversion of vehicular traffic from the freeway to arterials or other roads. Therefore, effects to road users (vehicular, bicyclists or pedestrians) are expected to be minimal.

3.4.3 Transit service and active transportation

Concept D performs the worst of any of the concepts in terms of transit service and active transportation. There are no parallel running transit lines, very few bicycle facilities and the pedestrian network is almost non-existent. What pedestrian infrastructure there is has little to no connectivity. Additional detail on this group of



performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.4-3. Concept D evaluation: transit service and active transportation

Performance measure	Concept D evaluation	Findings
Adequacy of transit service		A total of three transit lines, all run by TriMet. Only a single frequent service line, and only a single transit center. No park-and-rides exist in the area.
Bus transit travel time		Minimal time savings for AM peak and PM peak (northbound/southbound). One TriMet route would marginally benefit.
Mode share shift (HOV, SOV, transit, walk, bike)		Minimal impacts on regional mode share. Slight potential to shift SOV to HOV.
Availability of bicycle travel on alternative routes		Just over 28 miles of bike lanes within a 1-mile buffer. Zero parallel paths that run the distance of the concept corridor. Gaps exist along every part of the corridor.
Completeness of pedestrian network		37 total street miles of sidewalks. 6 miles of sidewalk/mile of corridor length within a half-mile buffer.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: Metro Regional Travel Demand Model, WSP

Adequacy of transit service

Concept D performs poorly from a transit perspective. Only three bus routes intersect the Concept D corridor. Only a single bus route runs parallel to the concept corridor for any meaningful length and it does not provide frequent service. For much of the day, bus headways are one hour. The other two bus routes run only slightly parallel to the corridor length but not enough to make them reasonable alternatives. A single transit center exists along the concept corridor and no park-and-rides exist in the area.

Bus transit travel time

Concept D provides only a modest amount of potential travel time savings along I-205. TriMet currently operates one bus route along this section of the freeway, but only over the Abernethy Bridge. Furthermore, there is unlikely to be any incentive for adding a new TriMet express freeway service.

Mode share shift

Concept D is anticipated to have minimal to no impact on regional mode share. What little mode shift may occur would likely be from SOV to HOV modes.



Availability of bicycle travel

Concept D performed poorly for bicycle travel options. While some bike lanes exist near the corridor, only few sections are parallel, and those run for only a small segment to the east. No paths run parallel to the full length of this concept corridor. Cyclists have no alternative options to ride for the length of the concept corridor. Finally, this concept area has severe gaps in the existing bicycle network. What bicycle lanes do exist only run for a few hundred feet before ending.

Completeness of pedestrian network

Concept D performed poorly for pedestrian network completeness. The pedestrian networks that exist are fragmented and end in many cul-de-sacs. A very small, tight sidewalk network is located near the Abernethy Bridge, but it is much too small to be of use to those who live in the western areas of the network.

3.4.4 Equity benefits and impacts

Concept D offers some minimal travel time benefits to the region, but it does not provide much travel time benefits for Title VI and Environmental Justice communities. Performance measures in other categories also relate to equity, although they are not specifically categorized as such. Additional detail on this and other performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Regarding user costs, this concept maintains two unpriced lanes in each direction. At the same time, the toll amount per user would be higher, which is consistent among single-lane pricing concepts.

Table 3.4-4. Concept D evaluation: equity benefits and impacts

Performance measure	Concept D evaluation	Findings
Value or travel time savings for Title VI and/or Environmental Justice communities (regional)		Small travel time benefit for Title VI and Environmental Justice communities.
Changes in travel time based on geographic zones		Small travel time benefit for the region.
Access to jobs		No significant impact on job access for Title VI and/or Environmental Justice communities.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Value of travel time savings for Title VI and/or Environmental Justice communities

A small benefit in overall travel time can be expected with this concept for Title VI and Environmental Justice communities in the region (low-income, people of color, and low English proficiency communities). The scale of the travel time benefit is relatively small, but greater than in Concept A.



Travel time savings by geographic area

A small improvement in vehicle travel time can be expected with this concept. Benefits to the region are focused on the south side of the Portland Metro area. Trips to and from West Linn, Oregon City, Tualatin, Tigard, Wilsonville, and parts of Portland would benefit most.

Access to jobs

Concept D offers no significant change to the percent of regional jobs accessible within a 30-minute drive for Title VI or Environmental Justice communities.

3.4.5 Benefits and impacts for the community, economy and environment

Concept D analysis shows minimal impact on travel time savings or regional vehicle miles traveled. The construction of new capacity could impact nearby residences and businesses. However, the new lanes are already planned for the corridor (and considered part of the baseline for all concepts analyzed). Construction will have impacts regardless of whether they are constructed as general purpose lanes or as priced lanes. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.4-5. Concept D evaluation: benefits and impacts for the community, economy and environment

Performance measure	Concept D evaluation	Findings
Physical impacts to existing residences and businesses		Limited physical impacts might be expected (the additional lane and bridge widening are considered part of the baseline for all concepts).
Regional travel time savings		Minimal impact on overall regional VHT. Potential for reduction of regional VHT is highest during the AM peak period.
Regional vehicle miles traveled (VMT) (including non-freeway)		No significant change in regional VMT.
Change in air pollution		No significant change expected. Some potential to slightly reduce regional vehicle emissions.
Value of travel time savings		Potential to provide a small regional travel time benefit for motor vehicles. Has the second-smallest benefit of all concepts evaluated.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Overall, the regional transportation system shows some potential to operate more efficiently as system-wide impacts show the potential to slightly reduce total motor VHT. There is potential for a small increase (less than 0.1%) in overall VMT due to out-of-



direction travel to the southern portion of I-205, which would benefit from improved performance during peak hours.

Though this concept is anticipated to toll new lanes, the new lanes are planned and included in the baseline for this study. It should be noted that the planned project could have limited physical impacts to adjacent residences and businesses (with or without pricing in place).

3.4.6 Revenue and costs

Concept D generates relatively little revenue, though shows low capital costs as tolling is anticipated for a relatively short distance in a single lane each direction. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.4-6. Concept D evaluation: revenue and cost

Performance measure	Concept D evaluation	Findings
Capital expenditure on facility		Low capital costs as tolling is only anticipated for a relatively short distance in a single lane (each direction). ^a
Estimated gross toll revenue potential from tolled facility		Lowest total annual revenue and daily revenue per centerline mile. Sufficient revenue for capital investments would likely not be available.
Legend:	Performs well  Performs moderately  Performs poorly 	

Note: All concepts assume construction of a third lane on I-205 between Stafford Road and OR99E will be operational by 2027. However, if construction of the third lane were to be funded through toll revenues, this assessment would be poor.
Source: WSP, Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Capital expenditures on facility

For this feasibility analysis, the roadway improvement project to add a lane to I-205 along this concept's corridor (including Abernethy Bridge widening) was assumed to be independent of tolling the new lane. As a result, Concept D would likely have low capital costs as tolling is only anticipated for a relatively short distance in these lanes. If tolling revenue is identified as a funding source for the project, the capital cost of constructing the new planned lanes would not be fully covered by the anticipated revenues from this concept.

Gross toll revenue potential

The potential annual gross toll revenue estimate for Concept D is \$20 million (in 2017 dollars), one of the two lowest of the five concepts. The revenue estimates were calculated based on toll rates that vary for each segment and time of day based on traffic conditions. The modeling analysis adjusted the toll rates for each hour of the day to the level that maintains free flow traffic conditions on the tolled lanes throughout the



day and during peak periods. The toll rates range between \$0.16 per mile during non-peak hours to a high of \$1.05 per mile during the peak. Estimated revenue would be sufficient to cover routine costs associated with toll collection and operations, roadway operations and maintenance, and periodic costs associated with rehabilitation and reconstruction of toll equipment. However, estimated revenues may not be sufficient to cover roadway rehabilitation and reconstruction costs that would be required regardless of the lane being tolled. Excess revenue would likely not be available for significant contributions to capital improvements. Appendix E includes additional information about revenue and cost assumptions.

3.4.7 Implementation

Concept D is consistent with state and regional law and policy. The concept qualifies under FHWA's Mainstream Tolling program if the planned new lanes on I-205 are constructed as priced facilities. However, if new lanes were to be constructed and then converted to priced lanes, the authority would be granted under the Value Pricing Pilot Program. The implementation of this concept would not impact other projects, but could require additional design time for the planned project due to the need to address tolling facility design considerations. Developing the new lanes as priced lanes could accelerate their construction. Additional detail on this group of performance metrics is provided in the evaluation matrix in Appendix A.

Table 3.4-7. Concept D evaluation: implementation

Performance measure	Concept D evaluation	Findings
Consistency with state law and policy		Consistent with state law and policy. Any tolling proposal would need to meet additional legal requirements.
Consistency with regional law and policy		Consistent with regional law and policy; likely coordination with Metro.
Feasibility under federal law		Qualifies under Section 129 of U.S. Title 23 for tolling if implemented at time of construction. Otherwise VPPP.
Project delivery schedule		Potential for construction acceleration; may need additional design time to reflect tolling.
Legend:	 Performs well  Performs moderately  Performs poorly	Please see summaries below for additional assessment detail.

Source: WSP

Consistency with state and regional law and policy

Concept D is consistent with guidance and requirements found in state and regional laws and policies. Discussion on state and regional laws and policies is provided in Appendix F.



Feasibility under federal law

Concept D would qualify for implementation under Section 129 of U.S. Title 23 if the planned additional lanes were constructed as priced lanes. However, if the new lanes were to be constructed as general purpose lanes and then converted to priced lanes, then the Value Pricing Pilot Program applies.

Project delivery schedule

It is possible, but not likely, that revenues from Concept D could accelerate construction of the planned additional lane between Stafford Road and OR 99E. There is risk of a need to modify existing design work to reflect tolling design considerations (e.g. buffer between managed lane and general purpose lane).



Blank Page



3.5 Concept E: Abernethy Bridge Priced Roadway

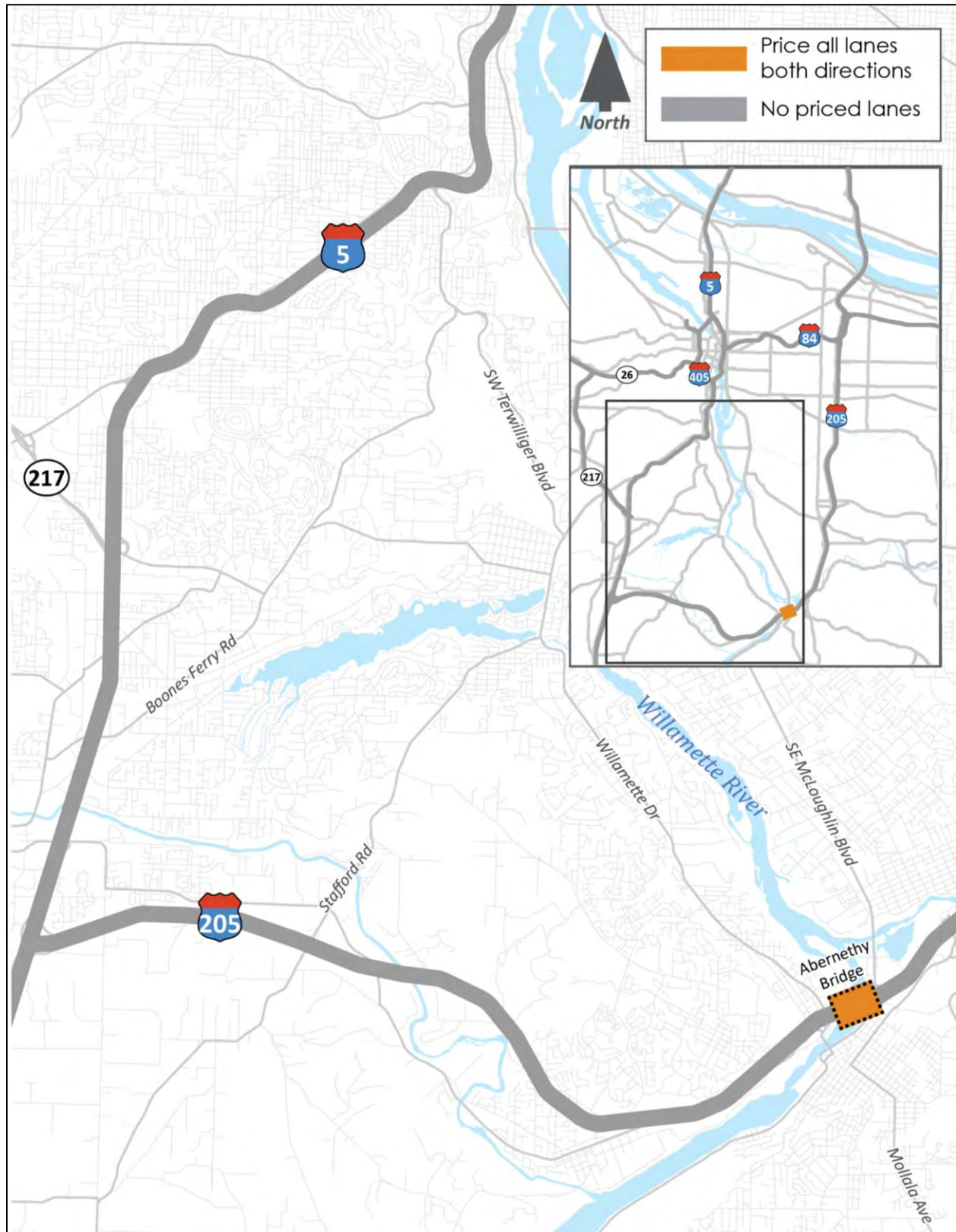
Concept E (Figure 12) applies pricing on all existing lanes of the Abernethy Bridge as well as additional lanes to be constructed as part of the planned bridge widening. This Concept has a different primary objective than Concepts A through D. Rather than pricing to relieve congestion, Concept E was evaluated as a strategy to help reduce congestion by funding a bottleneck relief project that would add a third lane in each direction on I-205 from OR99E to Stafford Road and widening of the Abernethy Bridge. Therefore, revenue generation was the primary objective of this Concept.

The following are key findings from the assessment of Concept E.

- Congestion reduction and travel time savings would occur for drivers on I-205; particularly near the Abernethy Bridge.
- Some traffic, particularly freight traffic, would be diverted to I-5, with longer distance trips attracted to I-5, slightly increasing I-5 travel times.
- There is a high probability of diversion to other facilities as some vehicles seek to avoid the toll (although some trips may also be diverted to different modes or times of day). Strategies to minimize traffic diversion onto the local street network would need to be examined as part of the future NEPA process if this concept is pursued further.
- Because it does not maintain any general purpose (unpriced) freeway lanes, there may be a need to provide mitigations such as increased transit service, low income toll rates, or other strategies.
- Pricing all lanes on the Abernethy Bridge would likely generate sufficient revenue over time to fund bridge expansion, as well as all or a portion of the additional lane in both directions on I-205 from the bridge to Stafford Road (as well as covering tolling operations and freeway operation and maintenance costs).



Figure 3-5. Round 2 Concept E: Abernethy Bridge Priced Roadway





While the primary objective of Concept E is revenue generation in support of constructing congestion relief projects, the use of variable toll rates that are highest during peak conditions on the bridge would also provide congestion relief on I-205. The sections that follow detail findings from key performance measures to help understand the effect of this concept: traffic operations, diversion, revenue and cost, and implementation. Not all the performance measures used for Concepts A through D are relevant to evaluation of Concept E, or in some cases, the results from Concept D are the same.

3.5.1 Traffic operations improvement on I-5 and I-205

Concept E shows reductions in delay on I-205. Concept E would result in some diversion of vehicles away from I-205. Some freight vehicles would be impacted as many long-distance trips would likely shift from I-205 to I-5. As a result of this increased demand on I-5, travel times would likely be slightly increased on I-5. The volume reductions on I-205 would result in travel time improvements, most notably near the Abernethy Bridge. It is important to note that traffic operations results should be examined holistically instead of examination of just one or two performance measures to understand the full breadth of implications. As discussed earlier in this memorandum, reductions in throughput can indicate benefits for other performance measures such as reduced delay or travel time.

Table 3.5-1. Concept E evaluation: traffic operations improvement

Performance measure	Concept E evaluation	Findings
Vehicle and person throughput on I-5 and I-205		Decreased throughput on I-205 with slightly increased throughput on I-5.
Freight truck throughput on I-5 and I-205		Decreased throughput on I-205 with slightly increased throughput on I-5. Freight throughput can be managed post implementation. This ability will be contingent to some extent on potential bonding requirements.
Passenger vehicle travel time on I-5 and I-205		Reduced travel times on I-205 and modestly increased travel times on I-5.
Passenger vehicle travel time on managed lanes	NA	Not applicable.
Freight truck travel time on I-5 and I-205		Reduced travel times on I-205 and increased travel times on I-5.
Assessment of change in duration of peak vehicle traffic conditions		Reduction in duration of peak vehicle traffic conditions on I-205 and a slight increase on I-5.
Delay on priced facility		Substantial delay reductions on I-205, particularly in the area near the Abernethy Bridge.
Legend:	Performs well Performs moderately Performs poorly	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool



Vehicle and person throughput on I-5 and I-205

Concept E results in relatively large reductions in daily passenger vehicle throughput, and therefore likely diversion to other facilities, travel modes, of time of travel on I-205 relative to the Baseline in 2027; approximately 1,000 fewer vehicles per hour (up to 25% during the peak hours) would cross the Abernethy Bridge in each direction. Concept E would likely lower vehicle volumes during the peak periods on both I-5 and I-205. This amount of diversion is significant, and the project team recognizes that mitigation measures and other efforts to minimize impacts on local facilities would need to be identified in future planning phases. The concept would result in slight increases in passenger vehicle throughput on I-205 in the southbound direction in some segments during the AM peak hour as speeds increase and the volume of trucks decline to avoid the peak tolls at the Abernethy Bridge. Daily person throughput follows a similar pattern relative to the baseline as passenger vehicle volumes.

Freight truck throughput on I-5 and I-205

Concept E results in sizable shifts in daily truck volumes from I-205 to I-5. This shift is even more pronounced during peak hours. This shift would occur because trucks are making longer trips than passenger vehicles and have an increased opportunity to avoid the Abernethy Bridge toll by taking I-5 through the Portland metro area. This finding is dependent on the assumption that trucks would pay a multiple of the passenger vehicle toll based on the number of axles, but could be offset to some extent based on the actual toll charged freight vehicles.

Passenger vehicle travel time on I-5 and I-205

Passenger vehicle travel times increase modestly on I-5 (relative to the baseline) due to the diversion of traffic (especially longer distance trips made by trucks) from I-205. However, travel times on I-205 improve as a result of the lower volume of vehicles. Travel times during peak hours decrease by about 10 percent, while off-peak travel time decreases are more modest.

Passenger vehicle travel time on managed lanes

The tolls on the Abernethy Bridge would apply to all lanes, not just a managed lanes subset, so managed lanes travel times are not applicable for this tolling concept.

Freight truck travel time on I-5 and I-205

Because Concept E prices all lanes of travel on the Abernethy Bridge, the travel time for freight vehicles would be the same as for passenger vehicles. Travel time would be reduced on I-205, with modest increases on I-5. However, since a sizable share of freight vehicles divert from I-205 to I-5, a large number of freight vehicles would experience longer travel times on I-5 while a smaller share of freight vehicles would benefit from the reduced travel times on I-205.

Assessment of change in duration of congested traffic conditions

Congested conditions on I-205 would be virtually eliminated at the Abernethy Bridge, with congestion reduction improvements gradually diminishing with distance away from the bridge as a result of the Concept E tolling. However, modest increases in congested



conditions would be expected on I-5 due to longer trip, through traffic diverted from tolling on I-205. During the morning peak hour the chance of hyper-congestion in the I-205 corridor would be reduced from the Baseline condition; from 28 to 14 percent in the northbound direction and from 36 to 23 percent in the southbound direction. During the evening peak the chance of encountering hyper-congestion in the I-205 corridor would also be reduced; from 30 to 12 percent in the northbound direction and from 21 to 9 percent in the southbound direction.

Delay on priced facilities

Concept E would reduce delay in the I-205 corridor, especially near the Abernethy Bridge. This improvement would be more pronounced during the peak hours. Daily hours of delay in the I-205 corridor would be reduced by 38 percent in the northbound direction of travel and by 37 percent in the southbound direction.

3.5.2 Diversion of traffic

All lanes would be priced in Concept E with the primary intention of raising revenue (rather than the primary intention of relieving congestion). As such, there is a high probability of diversion to other facilities as some vehicles seek to avoid the toll (although some trips may also be diverted to different modes or times of day). This diversion could negatively impact safety on adjacent and regional toll-free facilities without mitigation. Additional detail on this group of performance metrics can be found in the evaluation methods and assumptions matrix in Appendix A.

Table 3.5-2. Concept E evaluation: diversion of traffic

Performance measure	Concept E evaluation	Findings
Diversion impacts on non-tolled facilities		Potential for diversion impacts on non-tolled facilities is high.
Safety impacts to all modes of transportation (including bicyclists and pedestrians) on routes with diversion		The diversion of trips from the priced bridge facility to adjacent arterials and other roadways could increase the need for safety mitigation on those facilities.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Overall diversion is expected to be substantial based on the expected change in vehicle throughput on the tolled segments of I-205. Diversion from the Abernethy Bridge is expected to average approximately 1,000 vehicles per hour (about 25% during peak hours) in each direction. Diversion can occur to different modes, to travel times with lower tolls, or to other roadways. The diversion to other roadways may potentially impact locations including:

- I-5
- OR 224 [OR 99E to OR 212]



- Sellwood Bridge/Tacoma Street [Macadam Avenue (OR 43) to McLoughlin Boulevard (OR 99E)]
- McLoughlin Boulevard (OR 99E) [Tacoma Street to OR 224]
- OR 43 [Taylors Ferry Road to A Avenue]
- Stafford Road/McVey Ave [OR 43 to Borland Road]
- Willamette Falls Drive
- Downtown Oregon City
- Pacific Highway (OR 99E) [I-205 to south of Metro area]

Because this concept does not maintain any general purpose (unpriced) freeway lanes, there may be a need to provide mitigations such as increased transit service, low income toll rates, or other strategies.

3.5.3 Revenue and costs and implementation

Concept E has potential to generate more revenue than all other concepts except for Concept C. Net revenue projections over a 30-year period appears to support \$350 to \$550 million in up-front capital investments through toll-backed financing. Revenue could be available to support the planned additional lane on I-205 (Stafford to OR99E) including the Abernethy Bridge, while funding the tolling and maintenance and operations of the facility.

Table 3.5-3. Concept E evaluation: revenue and cost and implementation

Performance measure	Concept E evaluation	Findings
Capital expenditure on facility		Revenue would be sufficient to cover funding the estimated \$250 million required for the bridge lane expansion, and may be sufficient to cover part, and possibly all, the cost of additional lanes on I-205 between OR99E and Stafford Road.
Estimated gross toll revenue potential from tolled facility		Moderate total annual revenue; highest daily revenue per centerline mile due to a single point toll at the Abernethy Bridge.
Estimated revenue leakage		Primarily leakage attributed to vehicles without an account / pass diverting to alternative facilities or using the facility as a violator, which may be partially mitigated by allowing for image based toll collection and by roadside cameras and visual enforcement.
Estimated toll collection operation and maintenance and periodic rehabilitation and reconstruction costs including toll vendor(s) procurement costs		Relatively low toll transaction volumes will result in higher fixed costs per transaction, or higher costs attributed to contracting with an existing back office system operated by another agency/vendor(s). However, these are offset by high revenue per transaction. Lane-side equipment costs would still be directly incurred along with agency staff and transactional costs. Revenues after leakage adjustments are anticipated to be sufficient to cover toll operating and maintenance costs and contribute toward facility operation and maintenance costs, rehabilitation and reconstruction costs, and / or debt service costs if capital financing is assumed.



Performance measure	Concept E evaluation	Findings
Project delivery schedule		Potential for construction acceleration; may need additional design time to reflect tolling.
Legend:	 Performs well  Performs moderately  Performs poorly	

Source: WSP, Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Capital expenditure on facility

Preliminary costs for identified improvements are estimated at approximately \$250 million for the bridge widening and seismic retrofit project, as well as another \$250 million for adding a lane in each direction from OR99E to SW Stafford Road. Revenue is anticipated to be sufficient to cover bonding for the estimated \$250 million required for the bridge lane expansion, and may be sufficient to cover part, and possibly all of the cost of additional lanes on I-205 between OR99E and Stafford Road.

Gross toll revenue potential

The potential annual gross toll revenue estimate for Concept E is around \$53 million (in 2017 dollars). Concept E differs from the other concepts in that a single point (the Abernethy Bridge) is tolled for an emphasis on revenue generation. Toll rates vary with the level of traffic congestion; the modeling analysis estimated the highest tolls during the peak periods (\$3.50) and no toll between 11 pm and 5 am. Weekend tolls were not modeled but were assumed to have a midday peak toll, with weekend tolls generally lower value than weekdays. In addition to covering routine toll collection and operations, roadway operations and maintenance costs, Concept E revenues would likely be sufficient to cover periodic toll system rehabilitation and reconstruction costs, roadway rehabilitation and reconstruction costs, and support capital investments and/or mitigation solutions. Appendix E includes additional information about revenue and cost assumptions.

Revenue leakage often refers to potential revenue that is not collected from users and may be associated with policy decisions such as available toll payment methods and enforcement strategies. In Concept E, it is assumed that all users must have a tag/transponder in their vehicle that is linked to a pre-established customer account to use the tolled lanes. This analysis did not account for tag/transponder penetration rates or the percentage of through-trips and out of state/country trips that likely would not have a registered transponder account in the state of Oregon. As such, the leakage or revenue loss factors provided assume that a certain number of vehicles would divert to alternative routes to avoid fines and fees associated to being a violator.

In Concept E, HOV and carpool vehicles are assumed to pay tolls; therefore, no leakage associated with false carpool declaration is assumed. Revenue leakage is assumed to occur in the following ways:

- *No Account:* drivers without a valid account who choose an alternate route is estimated between 10 to 20 percent. This could be mitigated if an alternative payment method was offered for infrequent users.



- *Violations:* drivers using the lanes without a transponder are expected to be in the range of 5-10 percent. This, too, could be mitigated with the implementation of an alternative payment method for infrequent users. Depending on that method, there will still likely be some leakage arising from delayed violations due to unpaid toll bills.
- *Equipment error:* equipment read errors of transponders is assumed to be less than 0.5 percent.
- *Account status:* transponder accounts linked to expired credit and debit cards and accounts with insufficient balances are assumed to be 4 percent, some of which may ultimately be recovered depending on business rules implemented.

Routine annual toll collection operations and maintenance costs, as well as periodic rehabilitation and reconstruction costs for Concept E are based on toll agency experience for other comparable toll facilities in the U.S. Concept E includes routine annual costs for credit card banking fees, state/agency management and oversight, back office customer service center vendor systems and operations contract(s), lane-side equipment and vendor operations, and enforcement costs for state highway patrol. Periodic rehabilitation and reconstruction costs include lane-side toll equipment and the procurement of back office and lane-side toll vendor multi-year contracts.

Concept E revenues are based on toll rates that emphasize revenue-generation while still alleviating congestion, and are expected to produce gross toll revenues in the range of \$66 million in year of collection dollars for 2027. This level of revenue, after factoring in leakage, should be sufficient to cover routine toll collection costs, routine facility maintenance costs, and banking fees, with the remaining net revenues available to support the financing of capital investments and contribute to periodic toll collection and roadway facility rehabilitation and capital reconstruction costs.

Under very preliminary, conceptual net revenue and financing assumptions, the Concept E net revenue projections over a 30-year period would appear to support \$350 to 550 million in up-front capital investments through toll bond financing.

The revenues available from pricing could potentially allow the expansion to be accelerated. There is risk of a need to modify existing design work to reflect tolling design considerations.



4 RECOMMENDATION AND NEXT STEPS

The technical analysis identified the following key findings from the evaluation of congestion pricing on I-5 and I-205:

- Concept A in north Portland exhibits little congestion relief benefit and the potential for minimal benefits may harm successful implementation of congestion pricing in the area.
- Concept B near the Portland city center has strong potential to reduce congestion along I-5 with minimal diversion to I-205 and adjacent roadways. This concept also has a dense network of transit and multi-modal facilities in the downtown/Rose Quarter/Swan Island area that can serve as a toll free travel alternative to minimize impacts. Concept termini would need to be examined as part of the future NEPA process.
- Concept B would generate revenue to cover operations and associated costs with excess revenue being available for capital investment and/or mitigation.
- Concept C has the greatest potential for reducing congestion on both I-5 and I-205 and generating travel time savings for the widest possible range of users, and could be considered as part of a future broader regional pricing application pending success of a pilot pricing program.
- Concept C has the greatest revenue potential and would cover toll collection costs, toll system replacement and rehabilitation costs, and provide revenue for capital investment and/or mitigation.
- Concept D in the southern end of I-205 shows little congestion relief benefit with minimal traffic diversion and provides some benefit to I-205.
- Concepts A and D would likely generate sufficient funding to cover toll operations but not replacement and rehabilitation costs, roadway maintenance and would not support capital investments and/or mitigation.
- Concept E centered at the Abernethy Bridge shows promise to raise revenue and reduce congestion on I-205. This concept, or a variant, could pair with a pilot program to balance the travel choice between the I-5 and I-205 corridors. Concept termini would need to be examined as part of the future NEPA process.

4.1 Implications for congestion pricing implementation

Congestion pricing on I-5 and I-205 shows benefits to people living and traveling in the Portland metro area. Pricing would be effective in addressing traffic congestion on these corridors, based on the technical analysis and evaluation. Consideration should be given to the following if any pricing concept is implemented.

- Any concepts considered further should be paired with policy or programs that address potential impacts on lower-income and adjacent communities as part of an equitable strategy to ensure benefits are shared broadly.
- A phased approach – implementing a smaller-scale application as a pilot program and following up with monitoring and scheduled reporting – may ensure that the pricing application meets state and regional goals. Such a program would also lay the foundation for a more comprehensive pricing approach for the metro area by illustrating to the public how pricing has



positively impacted congestion where implemented. A smaller-scale application as a pilot program followed up with monitoring and scheduled reporting based on key performance measures could be established to gauge success. A sunset or benchmark paired with the pilot program could provide a predictable schedule for re-assessment of pricing as a tool for congestion minimization.

4.2 Consultant team recommendation

Based on the key findings from the evaluation, the consultant team recommends a phased approach to implementation of congestion pricing on I-5 and I-205:

- Initial implementation of Concept B as a pilot pricing program, coupled with a sunset or trigger to evaluate success.
 - *Rationale:* Strong potential at congestion reduction along I-5 with minimal diversion to I-205 and adjacent facilities; has a much denser network of transit and multi-modal facilities that can serve as a toll free alternative; significant improvements in facility efficiency and vehicular throughput, meaning that more vehicles can be moved and diversion to free facilities can be managed.
- Consider implementation of Concept E concurrent with implementation of Concept B.
 - *Rationale:* Provides the benefits of Concept B while generating funding to advance the addition of new lanes on I-205 where only two lanes in each direction currently exist as well as retrofitting and adding a lane in each direction to the Abernethy Bridge.
- After assessment of the performance of the initial pricing project, and assuming successful evaluation, implementation of Concept C in phases with more comprehensive system analysis.
 - *Rationale:* Greatest potential for reducing congestion and generating travel time savings for the widest possible range of users; significant improvements in facility efficiency and vehicular throughput, meaning that more vehicles can be moved and diversion to free facilities can be managed.
- Do not implement Concept A or D.
 - *Rationale:* Little congestion relief benefit; would not provide a reasonable test for the potential for pricing to provide congestion relief.

4.3 Next Steps

At the fifth PAC meeting on May 14, 2018, the PAC will review and consider the evaluation presented in this technical memorandum as well as the public comment received over the past six months. In May and June 2018, the PAC will develop a recommendation(s) to advise the OTC. The OTC will submit a report to FHWA by December 2018. After coordination with FHWA, the OTC will provide direction about next steps such as an environmental analysis, which would include additional public involvement, Title VI and Environmental Justice analysis, traffic analysis, and other analysis of potential benefits and impacts.



Appendix A Evaluation methods and assumptions



ROUND 2 METHODOLOGY AND SCREENING DATA DEVELOPMENT

***NOTE:** Scoring is generally 0, 2.5, 5 for qualitative measures, and 0, 1, 3, 5 for quantitative measures. They are different scales to indicate the finer level of detail for the quantitative analysis.

Performance Measure	Evaluation Type	Tool	Description	Scoring*
Traffic operations improvement on I-5 and I-205				
▪ Vehicle and person throughput on I-5 and I-205	Quantitative (vehicles and persons)	TOM	This metric describes the number of vehicles and the number of people moved in those vehicles along the I-5 and I-205 corridors. Concepts that increase the number of vehicles and people moving along I-5 and I-205 during the AM (7am – 8am) and PM (5pm – 6pm) peak hours as well as on a daily basis will score higher. <i>Likely will be based on assessment of average volume per lane mile within the concept, but first the team needs to see the data.</i>	0 – Does not improve (or reduces) vehicular or person throughput. 1 – Results in marginal improvements in throughput (0 to 5 percent improvement over the baseline). 3 – Results in noticeable improvements to throughput (between 5 to 10 percent improvement over the baseline). 5 – Results in significant improvements to throughput (over 10 percent improvement over the baseline).
▪ Freight truck throughput on I-5 and I-205	Quantitative	TOM	This metric describes the number of commercial and other heavy freight vehicles that move along the I-5 and I-205 corridors. Concepts that increase the amount of freight moving along I-5 and I-205 during the AM (7am – 8am) and PM (5pm – 6pm) peak hours as well as on a daily basis will score higher. <i>Likely will be based on assessment of average volume per lane mile within the concept, but first the team needs to see the data.</i>	0 – Does not improve (or reduces) freight throughput. 1 – Results in marginal improvements in throughput (0 to 5 percent improvement over the baseline). 3 – Results in noticeable improvements to throughput (between 5 to 10 percent improvement over the baseline). 5 – Results in significant improvements to throughput (over 10 percent improvement over the baseline).



Performance Measure	Evaluation Type	Tool	Description	Scoring*
Passenger vehicle travel time on I-5 and I-205	Quantitative (for all concepts)	TOM	Pricing frees available freeway capacity and provides tools to better manage that capacity. As such, pricing should reduce the amount of time it takes to travel along I-5 or I-205. This metric describes the time it takes a passenger vehicle to travel along I-5 and I-205 during the AM (7am – 8am) and PM (5pm – 6pm) peak hours as well as on a daily basis. Concepts that reduce travel time will receive a higher score than pricing concepts that do not improve travel time or increase travel times. For priced lanes concepts (Concepts A and D), this metric reflects both travel time in the priced lane and the general-purpose lanes. A different performance measure captures travel time for priced lanes only. A different performance measure captures travel time for freight vehicles.	0 – Does not reduce travel times or results in increased travel times. 1 – Results in marginal improvements to travel time (0 to 5 percent reduction relative to the baseline). 3 – Results in noticeable improvements to travel time (between 5 to 10 percent decrease relative to the baseline). 5 – Results in significant improvements to travel times (over 10 percent reduction relative to the baseline).
Passenger vehicle travel time on managed lanes	Quantitative (for priced lanes concepts only – Concepts A and D)	TOM	Managing congestion on a designated lane on a freeway maintains its free-flow travel conditions and should result in a reduced travel time compared with the general-purpose lanes. For priced lanes concepts only (Concepts A and D), this metric describes the time it takes a passenger vehicle to travel along I-5 and I-205 during the AM (7am – 8am) and PM (5pm – 6pm) peak hours on as well as on a daily basis on the priced lanes only. This is to disaggregate results that combine the travel time for priced lanes and general-purpose lanes. Concepts that reduce travel time as compared to baseline will receive a higher score than pricing concepts that do not improve travel time or increase travel times.	0 – Does not reduce travel times or results in increased travel times. 1 – Results in marginal improvements to travel time (0 to 10 percent reduction relative to the baseline). 3 – Results in noticeable improvements to travel time (between 10 to 25 percent decrease relative to the baseline). 5 – Results in significant improvements to travel times (over 25 percent reduction relative to the baseline).



Performance Measure	Evaluation Type	Tool	Description	Scoring*
Freight truck travel time on I-5 and I-205	Quantitative	TOM	This metric describes the time it takes a commercial or heavy freight vehicle to travel along I-5 and I-205 during the AM (7am – 8am) and PM (5pm – 6pm) peak hours as well as on a daily basis. Pricing concepts that reduce travel time for freight vehicles, regardless of whether they travel in priced lanes or general-purpose lanes, will receive a higher score than pricing concepts that do not improve travel time or increase travel times. Travel in general purpose lanes may or may not improve in concepts with both priced and general-purpose lanes. In concepts with all lanes priced, all vehicles, including freight vehicles, travel in priced lanes. In concepts with both priced and general-purpose lanes, freight vehicles were assumed to travel only in the general-purpose lanes due to the state restriction on heavy vehicles in the left lane (single priced lanes are designed to be in the left lane so that they are safer and more efficient by avoiding ingress and egress conflicts).	0 – Does not reduce travel times or results in increased travel times. 1 – Results in marginal improvements to travel time (0 to 5 percent reduction relative to the baseline). 3 – Results in noticeable improvements to travel time (between 5 to 10 percent decrease relative to the baseline). 5 – Results in significant improvements to travel times (over 10 percent reduction relative to the baseline).



Performance Measure	Evaluation Type	Tool	Description	Scoring*
Assessment of change in duration of peak vehicle traffic conditions	Qualitative	TOM	Both the severity of congestion and the length of time congestion exists describes the overall impacts of congestion on a facility. Because travel conditions vary substantially from day to day, this metric will look at the probability of encountering congested conditions during any given hour of peak demand. Congestion is generally defined on a freeway as when travel speeds drop below 40 mph, though this can vary based on number of lanes, geometric configuration, and posted speed. Observing the decreasing probability of congestion as the time measured moves farther from the peak hour allows for a determination of the likely length of congested conditions. This is a relative measure for the assessed concepts that will show the probability that congestion is encountered.	0 – Longer congested periods likely. 2.5 – Congestion periods somewhat reduced. 5 – Significant congestion reduction.
Delay on priced facility	Qualitative	TOM	This metric describes the continued impact to travel time from congestion after implementation of pricing. This will be developed for both priced and unpriced lanes when appropriate for the concept. It is generated by subtracting the free flow travel time on the segment from the travel time on the segment with the concept in place.	0 – Longer travel time impacts likely. 2.5 – Travel time impacts somewhat reduced. 5 – Significant reduction in travel time impacts.



Performance Measure	Evaluation Type	Tool	Description	Scoring*
▪ Safety impacts	Qualitative	Informed by MCE	This measure assesses the potential to improve regional safety by reducing number of total crashes and/or crash severity. Concepts that increase freeway throughput and reduce probability of congested conditions will score well as freeways are generally safer on a per vehicle mile basis than arterial roadways, particularly when operating at consistent speeds. This measure is informed by regional outputs from Metro Multi-criteria Evaluation Tool that consider overall system impacts on both freeways and non-freeways.	0 – Expected to have no significant impact on number or severity of crashes in the region. 2.5 – Some limited potential to decrease number or severity of crashes in the region. 5 – Significant potential to decrease number or severity of crashes in the region.
▪ Trip length distribution	Qualitative	Informed by SWIM & KATE	Pricing may serve to discourage drivers from making short distance trips on the freeway or may provide an incentive to use alternative, toll free routes or other modes for short trips. This could result in more freeway capacity available for drivers making longer distance trips. This metric describes the likely change in the distribution of trip lengths along segments of I-5 and I-205. Concepts will be scored higher if they result in trip distributions on the freeway with a higher mean trip length; indicating that fewer drivers are making short distance trips on the facility.	0 – Does not result in any significant change to trip length distribution or reduces the mean trip length along segments of I-5 or I-205. 2.5 – Results in noticeable increases in mean trip length (between 10 and 25 percent increase relative to the baseline). 5 – Results in significant increases in mean trip length (over 25 percent increase relative to the baseline).



Performance Measure	Evaluation Type	Tool	Description	Scoring*
Diversion of traffic				
▪ Diversion impacts on non-tolled facilities	Qualitative	Informed by KATE	Pricing provides incentives for drivers to change the time they travel, the mode they use or the routes they take. Regarding route choice, there is a chance that pricing will shift travel to non-tolled routes, potentially increasing congestion and increasing travel times on those routes. This metric will assess the potential of pricing to adjacent, non-tolled facilities. Concepts that may result in significant diversion to adjacent toll-free facilities and increase congestion on those facilities will be rated lower.	0 – Significant potential to cause diversion away from freeways to the arterial system. Scale is extensive in volume and/or in geographic impact. 2.5 – Moderate potential to cause diversion away from freeways to the arterial system. Scale is relatively minor in volume and/or geographic impact. 5 – Limited potential to cause significant diversion away from freeways to the arterial system. The scale is expected to be negligible or limited to parallel routes in the immediate vicinity.
▪ Safety impacts to all modes of transportation (including bicyclists and pedestrians) on routes with diversion	Qualitative	Based on the level of trip diversion and the location of bicycle and pedestrian facilities (bike/ped maps); Informed by MCE	The diversion of trips from a priced facility to adjacent arterials and other roadways may degrade those facilities and could increase safety risks. This metric qualitatively assesses the potential of pricing concepts to increase safety risks on adjacent facilities due to diversion. Concepts that do not result in high levels of diversion to adjacent facilities will therefore be scored higher.	0 – High diversion: Pricing concept is expected to result in increased safety risks on adjacent facilities due to diversion of trips 2.5 – Medium diversion: Pricing concept is expected to result in diversion to adjacent facilities but safety risks on those facilities will be minimal 5 – Low diversion: Pricing concept is expected to have minimal diversion and will not result in any new safety risks for adjacent facilities



Performance Measure	Evaluation Type	Tool	Description	Scoring*
Transit service and active transportation				
▪ Adequacy of transit service	Qualitative	Transit System Maps (TriMet, CTRAN, SMART), Aerial Review	This performance measure assesses the availability of existing or planned transit service along I-5 and I-205 or parallel routes in the vicinity of the concept. Drivers with little to no access to viable transit services will not be able to use transit as an alternative to travel in a personal vehicle. Concepts with existing or planned frequent transit service running along a direct route with short headways (15-minute arrivals or better) and concepts with many transit stations and/or park-and-ride facilities in the area near the concept will be scored higher.	0 – Concepts with no or minimum existing and planned transit service, or only one route with long headways near the concept. 2.5 – Concepts with one transit route with relatively short headways, or multiple routes with longer headways in the concept area; and one park-and-ride lot or major transit station within a one-mile buffer. OR concepts with low or non-existent existing services with planned service. 5 – Concepts with multiple routes with short headways in the area and served by more than one park-and-ride lot or major transit station (within a one-mile buffer). OR concepts with moderate transit services with planned service.
▪ Transit travel time	Qualitative	Transit System Maps (TriMet, CTRAN, SMART), and informed by travel speed information from TOM and/or KATE	This performance measure assesses potential improvements in transit travel time on I-5 and/or I-205. Concepts with more freeway transit service, or that can reasonably encourage additional rubber tired transit options would score higher. Transit routes will be cross-referenced with freeway travel times.	0 – Transit routes with little to no freeway interaction and no opportunity for beneficial freeway interaction – this includes almost all local service. 2.5 – 1-2 existing or planned transit routes with modest freeway mileage OR The concept can encourage development of express service in an area without rail alternatives. 5 – Two+ existing or planned transit routes with freeway mileage and the concept will benefit transit travel time OR The concept has some existing or planned routes and the concept can encourage development of express service in an area without rail alternatives.



Performance Measure	Evaluation Type	Tool	Description	Scoring*
Mode share shift (HOV, SOV, transit, walk, bike)	Qualitative	KATE	This metric considers potential changes in the share of daily person trips by mode. It is based on results from the regional travel demand model with a focus on the ability of a concept to encourage shifts away from SOV travel. This allows consideration of potential changes to transit service on managed facilities beyond that assumed in baseline modeling.	0 – Expected to increase share of regional SOV trips while reducing share from HOV, transit, or active modes. 2.5 – Some limited potential to decrease share of regional SOV trips while increasing share for HOV, transit, or active modes. 5 – Significant potential to decrease share of regional SOV trips while increasing share for HOV, transit, or active modes.
Availability of bicycle travel on alternative routes	Qualitative	RTP Existing Regional Bicycle Network maps	This metric assesses the availability of bicycle infrastructure that might serve as a non-vehicular option to travel in a personal vehicle along alternative and parallel routes. Concepts with available bicycle options within approximately 1-mile buffer of the concept will be scored higher. The analysis was conducted based on the amount of bike lanes per mile of concept length to standardize the assessment across the concepts.	0 – Non-existent bicycle options. 2.5 – Concepts with minimal bicycle options. 5 – Concepts with multiple bicycle options.
Completeness of pedestrian network	Qualitative	RTP Existing Regional Pedestrian Network maps	This metric assesses the consistency of the pedestrian network in a concept area that might serve as a non-vehicular option to travel in a personal vehicle or provide access to transit. Concepts with connected pedestrian networks within approximately 0.5-mile buffer of the concept will be scored higher. The analysis was conducted based on the amount of pedestrian facilities per mile of concept length to standardize the assessment across the concepts.	0 – Non-existent to minimal pedestrian connections (lots of pedestrian system gaps). 2.5 – Concepts with average pedestrian network (minimal gaps). 5 – Concepts with highly connected pedestrian network (few to no gaps).



Performance Measure	Evaluation Type	Tool	Description	Scoring*
Equity impacts				
Value of travel time savings for Title VI and/or Environmental Justice communities (regional)	Quantitative	MCE	Pricing may disproportionately impact Portland metro region drivers based on where they live and travel with regard to I-5 and I-205. This metric assesses travel time benefit by Title VI and/or Environmental Justice communities. Title VI/Environmental Justice communities include low income, low English proficiency (LEP), or communities of color in the region. This measure reflects a regional annualized benefit of travel time savings from the Metro Multi-criteria Evaluation Tool that considers overall system impacts on both freeways and non-freeways. Pricing concepts that decrease travel times and/or do not result in significant increases in travel time for Title VI and/or Environmental Justice communities will receive higher scores.	0 – Concept will increase travel times for Title VI and/or Environmental Justice communities. 1 – Concept will improve travel times but will impose significant travel costs Title VI and/or Environmental Justice communities. 3 – Concept will significantly improve travel times but with additional travel costs. 5 – Concept will significantly improve travel times and with marginal to no increases in overall travel costs.
Changes in travel times based on geographic area	Qualitative (map)	MCE	This criterion reflects the relative change in total vehicle travel time by geographic area (based on Transportation Analysis Zones). It will show the locations where the most vehicle travel time benefit is expected to be experienced by drivers). The measure does not include changes in travel time for trucks. Pricing concepts that decrease total vehicle travel time and offer benefits across the region will receive higher scores.	0 – Significantly increases vehicle travel times across the region. 2.5 – Has relatively little effect on vehicle travel time across the region. 5 – Significantly reduces vehicle travel time across the region. *NOTE – will be displayed in "heat" map format to inform about areas of greatest benefit



Performance Measure	Evaluation Type	Tool	Description	Scoring*
▪ Access to Jobs	Qualitative	KATE	This measure describes the share of regional jobs accessible by mode within a 30-minute drive for Title VI and/or Environmental Justice communities (aggregate changes for TAZs that have these communities, and based on census data). Concepts that increase access will be scored higher.	0 – Significantly increases travel time to employment for areas with significant concentrations of Title VI and/or Environmental Justice communities. 2.5 – Has relatively little effect on travel time to employment for areas with significant concentrations of Title VI and/or Environmental Justice communities. 5 – Significantly reduces travel times to employment for areas with significant concentrations of Title VI and/or Environmental Justice communities.
Impacts on the community, economy, and environment				
▪ Physical impacts to existing residences and businesses	Qualitative	Based on review of aerials (with an understanding of the location of concentrations of Title VI and/or Environmental Justice communities)	This metric assesses each concept's potential to require significant construction or changes to the current roadway footprint. Concepts that do not require new construction or would not require significant changes to the operation of nearby roadways will receive higher scores.	0 – High: Concept will require new construction or significant changes to current roadway footprint such that nearby residences and businesses can be expected to see significant impacts. Significant impacts to concentrations of Title VI and/or Environmental Justice communities. 2.5 – Medium: Concept will require new construction, reconstruction, or changes to existing roadway footprints that will likely impact some nearby residences and businesses. Concentrations of Title VI and/or Environmental Justice communities are impacted. 5 – Low to Non-existent: Concept will not require new construction or changes to existing roadway footprints.



Performance Measure	Evaluation Type	Tool	Description	Scoring*
Regional travel time savings	Quantitative	KATE	This metric examines total vehicle hours of travel (VHT) on the Metro area roadway network, based on the regional travel demand model. The model considers the number of vehicle trips being made, the routing of vehicle trips through the network, and the vehicle travel time required from origin to destination. While most changes are expected to occur near the concept location, changes are often felt throughout the system. This metric compares the total regional travel time between the baseline and the concept.	0 – Pricing concept will increase VHT. 1 – Pricing concept will have only a small effect on VHT 3 – Pricing concept will somewhat reduce VHT. 5 – Pricing concept will significantly reduce VHT.
Regional vehicle miles traveled (VMT) (including non-freeway)	Quantitative	KATE	This metric assesses the change in total vehicle miles of travel on the Portland Metro area roadway network due to pricing, based on the regional travel demand model. The model considers the number of vehicle trips being made and the routing of trips through the network from origin to destination. While most changes are expected to occur near the project location, changes are often felt throughout the system. This metric compares total region VMT between the baseline and the concept. Lower VMT is usually associated with a more efficient system and will be scored higher.	0 – Significant increase in Regional VMT. 2.5 – No significant change in Regional VMT. 5 – Significant reduction in Regional VMT.
Change in air pollution	Qualitative	MCE	This measure examines the potential change in vehicle emissions in the region. The measure is informed by MOVES emissions model application to the regional travel demand modeling results.	0 – Expected to potentially increase regional vehicle emissions. 2.5 – No significant change expected. Some potential to slightly reduce regional vehicle emissions. 5 – Expected to potentially reduce regional vehicle emissions.



Performance Measure	Evaluation Type	Tool	Description	Scoring*
Value of travel time savings	Quantitative	MCE	Travelers tend to use priced lanes because there is value associated with their time and they will often pay to reduce their travel time. This measure monetizes travel time savings generated by the pricing concepts across all modes of travel. It will be determined by the regional travel demand model and multi-criteria evaluation tool (MCE) using an average value of time appropriate to the Portland metro area.	0 – Travel time savings value is negative. 1 – Travel time savings is less than \$20M annual benefit (2010 dollars). 3 – Travel time savings is between \$20M and \$50M annual benefit (2010 dollars). 5 – Travel time savings is greater than \$50M annual benefit (2010 dollars).
Revenue and Costs				
Capital expenditure on facility	Quantitative based on Order of Magnitude Costs	Based on estimates supplied by ODOT, or order of magnitude estimates from similar deployments in other areas.	This metric provides an assessment of potential capital expenditures based on the requirements of the concept itself and the presence of limiting factors (such as a lack of ROW) along key corridor segments. Concepts that will require minimal capital expenditures will be scored higher.	0 – The concept can be accommodated within the segment but major capital expenditures for construction and/or right of way procurement will be required. 2.5 – The concept can be accommodated within the segment with moderate capital expenditure. 5 – The concept can be accommodated within the existing ROW of the segment with minimal capital expenditure.



Performance Measure	Evaluation Type	Tool	Description	Scoring*
Estimated gross toll revenue potential from tolled facility	Quantitative	Modeling Outputs and Traffic and Revenue Annualization Model	This metric relates to forecasted annual gross toll revenue potential. It will be generated by modeled daily toll trips, toll rates, and existing day of week traffic data. There will be consideration of policy and operational assumptions on tolling periods, payment options available to customers and potential differences in rates by payment method. Revenue is provided prior to adjustments for potential revenue leakage due to occupancy violations, unidentified trips or non-payment of toll bills.	1 – Likely does not result in excess revenue. 2.5 – Likely results in some excess revenue. 5 – Results in substantial excess revenue.
Implementation				
Consistency with state and regional law and policy	Quantitative	Review of applicable laws and policies	This metric identifies and confirms compliance with existing OTC policies, state laws, and regional planning regulations.	0 – No. 5 – Yes.
Feasibility under federal law	Quantitative	Seek input from FHWA for specific alternatives being considered	This metric verifies that an option is allowable under federal tolling laws. In some cases options may require Federal concurrence under the Value Pricing Pilot Program or some other authority.	0 – Option is not allowable under current Federal Law. 2.5 – Option is potentially allowable if Federal concurrence is obtained. 5 – Option is allowable under Federal law without additional concurrence.
Project delivery schedules	Quantitative	Comparison of concepts with planned projects	Concepts can potentially affect the schedule of other projects planned in the Portland metro area. Concepts that can accelerate project delivery are rated higher than those that might slow project delivery.	0 – Project could slow the delivery of other projects. 2.5 – Project is not likely to affect the delivery of other projects. 5 – Project may speed up delivery of other projects.



Appendix B Performance measure evaluation scoring

The following ratings summarize the scores for Concepts A-D for all performance metrics, and are intended for this analysis only. Traffic operations scores vary by segment within a concept because traffic impacts change depending on context or interaction with the regional transportation system. Non-traffic operations scores, however, are more localized (such as active transportation) or apply to the concept overall (such as federal feasibility). The project team used professional judgment and technical analysis, and converted these scores to symbols for ease of reporting. Supporting documentation is available upon request.



Summary Sheet – Concepts A through D

		Concept			
		A	B	C	D
Traffic operations improvement	Vehicle and person throughput on I-5 and I-205				
	Freight truck throughput on I-5 and I-205				
	Passenger vehicle travel time on I-5 and I-205				
	Passenger vehicle travel time on managed lanes		N/A	N/A	
	Freight truck travel time on I-5 and I-205				
	Assessment of change in duration of peak vehicle traffic conditions				
	Delay on priced facility				
	Safety impacts				
	Trip length distribution				
Diversion of traffic	Diversion impacts on non-tolled facilities				
	Safety impacts to all modes of transportation (including bicyclists and pedestrians) on routes with diversion				
Transit service and active transportation	Adequacy of transit service				
	Bus transit travel time				
	Mode share shift (HOV, SOV, transit, walk, bike)				
	Availability of bicycle travel on alternative routes				
	Completeness of pedestrian network				
Equity	Value or travel time savings for Title VI and/or Environmental Justice communities (regional)				
	Changes in travel time based on geographic zones				
	Access to jobs				



		Concept			
		A	B	C	D
Community, economy and the environment	Physical impacts to existing residences and businesses	●	●	●	●
	Regional travel time savings	◐	◐	●	◐
	Regional VMT (including non-freeway)	◐	◐	●	◐
	Change in air pollution	◐	◐	◐	◐
	Value of travel time savings	◐	◐	●	◐
Cost and revenue	Capital expenditure on facility	●	●	●	●
	Estimated gross toll revenue potential from tolled facility	○	◐	●	○
Implementation	State law & policy	●	●	●	●
	Regional law & policy	●	●	●	●
	Federal feasibility	◐	◐	◐	●
	Project delivery schedule	●	●	◐	◐
Legend:		Performs well ●	Performs moderately ◐	Performs poorly ○	



		5 4 3 2 1 ← → Most Favorable Least Favorable					
Non-Traffic Scores							
Impacts to the Community, Economy, and Environment		Impacts to the Community, Economy, and Environment					
		Physical Impacts Score	Regional Travel Time Savings Score	Diversion Impact Scores	Regional VMT Score	Change in Air Quality Score	Value of Travel Time Savings Score
Concept A	HOV/GP to Priced Lane (I-5)	5.0	1.0	5.0	2.5	2.5	1.0
Concept B	Price All Lanes (I-5: Downtown)	5.0	3.0	2.5	2.5	2.5	3.0
Concept C	Price All Lanes (I-5 & I-205)	5.0	5.0	0.0	5.0	2.5	5.0
Concept D	Price New Planned Lane (I-205)	5.0	1.0	5.0	2.5	2.5	1.0
Equity Impacts		Equity Impacts					
		Safety Impact Score (Routes w/ Diversion)	Access to Jobs Score	Geo Zone Travel Time Change Score	Value of Travel Time Savings Score (Regional)		
Concept A	HOV/GP to Priced Lane (I-5)	5.0	2.5	2.5	1.0		
Concept B	Price All Lanes (I-5: Downtown)	2.5	2.5	5.0	3.0		
Concept C	Price All Lanes (I-5 & I-205)	0.0	5.0	5.0	5.0		
Concept D	Price New Planned Lane (I-205)	5.0	2.5	2.5	1.0		
Transit Service & Active Transportation		Transit Service & Active Transportation					
		Adequacy of Transit Service Score	Transit Travel Time Score	SOV Mode Shift Score	Bicycle & Ped Option Score	Ped Network Consistency Score	
Concept A	HOV/GP to Priced Lane (I-5)	2.5	2.5	2.5	2.5	2.5	
Concept B	Price All Lanes (I-5: Downtown)	5.0	5.0	2.5	5.0	5.0	
Concept C	Price All Lanes (I-5 & I-205)	2.5	5.0	5.0	2.5	2.5	
Concept D	Price New Planned Lane (I-205)	0.0	0.0	2.5	0.0	0.0	
Cost & Revenue		Cost & Revenue					
		Capital Cost (High-Level) Score	Estimated Revenue Score				
Concept A	HOV/GP to Priced Lane (I-5)	5.0	1.0				
Concept B	Price All Lanes (I-5: Downtown)	5.0	2.5				
Concept C	Price All Lanes (I-5 & I-205)	5.0	5.0				
Concept D	Price New Planned Lane (I-205)	5.0	1.0				
Law & Policy		Law & Policy					
		State Law & Policy Score	Regional Law & Policy Score	Federal Feasibility Score	Project Delivery Schedule Score		
Concept A	HOV/GP to Priced Lane (I-5)	2.5	5.0	2.5	5.0		
Concept B	Price All Lanes (I-5: Downtown)	2.5	5.0	2.5	5.0		
Concept C	Price All Lanes (I-5 & I-205)	5.0	5.0	2.5	2.5		
Concept D	Price New Planned Lane (I-205)	5.0	5.0	5.0	2.5		



Baseline Traffic Performance

Corridor	Segment ID	Direction	From	To	Length (Miles)	Peak Hour	Traffic Operations on I-5 & I-205							
							Peak-Hour Vehicle Throughput	Peak-Hour Person Throughput	Peak-Hour Freight Truck Throughput	Peak-Hour GP Travel Time	Peak-Hour ML Travel Time	Peak-Hour Freight Truck Travel Time	Chance of Hyper-Congestion	Hours of Delay on Priced Facility
I-5	2	NB	I-205	OR-217	3.6	AM	3,891	4,447	356	7.52	0.00	7.52	0.44	253.7
						PM	4,998	5,899	198	6.81	0.00	6.81	0.44	255.2
I-5	3	NB	OR-217	Capitol Hwy	2.7	AM	3,440	3,917	430	4.11	0.00	4.11	0.20	78.1
						PM	4,075	4,773	192	4.00	0.00	4.00	0.10	77.8
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	AM	3,418	3,920	308	10.16	0.00	10.16	0.48	310.6
						PM	4,092	4,884	167	9.03	0.00	9.03	0.38	275.7
I-5	5	NB	Ross Island Bridge	I-84	1.9	AM	2,503	2,873	260	4.67	0.00	4.67	0.48	109.0
						PM	3,078	3,752	111	4.76	0.00	4.76	0.49	130.9
I-5	6	NB	I-84	N Skidmore St.	2.2	AM	3,255	3,714	348	3.98	0.00	3.98	0.38	103.8
						PM	3,803	4,911	151	3.54	0.00	3.54	0.26	85.6
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	AM	3,305	4,781	408	8.29	7.23	8.29	0.31	172.8
						PM	4,256	5,357	134	13.34	7.86	13.34	0.41	510.1
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	AM	3,398	3,845	208	11.67	0.00	11.67	0.53	370.3
						PM	3,750	4,486	301	8.02	0.00	8.02	0.27	190.3
I-5	9	SB	N Skidmore St.	I-84	2.2	AM	3,337	3,888	315	3.67	0.00	3.67	0.35	87.1
						PM	3,860	4,626	277	3.69	0.00	3.69	0.33	102.6
I-5	10	SB	I-84	Ross Island Bridge	1.9	AM	2,620	3,006	212	5.05	0.00	5.05	0.36	128.3
						PM	2,877	3,448	204	5.07	0.00	5.07	0.35	140.4
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	AM	3,531	4,002	302	8.93	0.00	8.93	0.39	248.5
						PM	4,088	4,873	282	9.31	0.00	9.31	0.40	313.7
I-5	12	SB	Capitol Hwy	OR-217	3.0	AM	3,621	4,062	312	4.32	0.00	4.32	0.27	94.8
						PM	3,832	4,550	289	4.27	0.00	4.27	0.25	95.9
I-5	13	SB	OR-217	I-205	3.7	AM	4,200	4,746	337	6.18	0.00	6.18	0.35	174.3
						PM	4,681	5,529	273	7.22	0.00	7.22	0.46	276.3
I-205	15	NB	I-5	Stafford Rd	2.0	AM	3,713	4,216	216	2.09	0.00	2.09	0.19	16.1
						PM	4,292	5,060	262	2.38	0.00	2.38	0.26	40.4
I-205	16	NB	Stafford Rd	10th St	3.3	AM	3,908	4,450	210	4.34	0.00	4.34	0.22	52.1
						PM	4,387	5,187	253	4.97	0.00	4.97	0.31	106.9
I-205	17	NB	10th St	Sunset Ave	1.9	AM	3,918	4,452	193	4.09	0.00	4.09	0.32	102.4
						PM	4,416	5,238	251	4.39	0.00	4.39	0.38	139.6
I-205	18	NB	Sunset Ave	Main St	1.2	AM	4,337	4,946	195	1.26	0.00	1.26	0.34	34.4
						PM	4,790	5,736	264	1.26	0.00	1.26	0.27	38.0
I-205	19	NB	Main St	SR-224	4.1	AM	3,887	4,512	164	7.92	0.00	7.92	0.44	246.3
						PM	4,440	5,408	263	6.78	0.00	6.78	0.30	199.4
I-205	20	NB	SR-224	NE Glisan St	7.7	AM	4,055	4,744	226	14.35	0.00	14.35	0.31	371.5
						PM	4,355	5,321	302	13.59	0.00	13.59	0.25	350.6
I-205	21	NB	NE Glisan St	Jackson Bridge	3.6	AM	3,726	4,386	234	6.90	0.00	6.90	0.15	61.0
						PM	5,092	5,844	284	9.14	0.00	9.14	0.33	287.2
I-205	22	SB	Jackson Bridge	NE Glisan St	3.9	AM	4,463	5,031	257	10.59	0.00	10.59	0.40	375.2
						PM	4,240	5,183	173	6.63	0.00	6.63	0.09	55.7
I-205	23	SB	NE Glisan St	SR-224	7.4	AM	3,805	4,401	310	14.04	0.00	14.04	0.30	336.1
						PM	4,453	5,488	165	13.81	0.00	13.81	0.29	363.3
I-205	24	SB	SR-224	Main St	4.0	AM	3,413	3,922	241	7.14	0.00	7.14	0.38	171.9
						PM	4,536	5,548	132	7.70	0.00	7.70	0.38	264.1
I-205	25	SB	Main St	Sunset Ave	1.3	AM	3,974	4,515	262	1.27	0.00	1.27	0.36	33.3
						PM	4,699	5,680	154	1.14	0.00	1.14	0.23	27.9
I-205	26	SB	Sunset Ave	10th St	1.9	AM	3,840	4,353	250	4.52	0.00	4.52	0.39	130.0
						PM	4,609	5,559	157	3.87	0.00	3.87	0.19	100.3
I-205	27	SB	10th St	Stafford Rd	3.3	AM	3,843	4,358	247	5.35	0.00	5.35	0.37	117.7
						PM	4,342	5,221	161	4.09	0.00	4.09	0.17	36.1
I-205	28	SB	Stafford Rd	I-5	2.3	AM	3,797	4,299	266	2.77	0.00	2.77	0.37	49.8
						PM	3,881	4,637	160	2.24	0.00	2.24	0.14	13.7



Blank Page



Round 2 Concept A: HOV/GP to Priced Lane (I-5)						Traffic Operations on I-5 & I-205																				
Corridor	Segment ID	Direction	From	To	Length (Miles)	Peak Hour	Most Favorable ← 5 4 3 2 1 → Least Favorable																			
							Peak-Hour Vehicle Throughput	Peak-Hour Vehicle Throughput Score	Peak-Hour Person Throughput	Peak-Hour Person Throughput Score	Peak-Hour Freight Truck Throughput	Peak-Hour Freight Truck Throughput Score	Peak-Hour GP Travel Time	Peak-Hour GP Travel Time Score	Peak-Hour ML Travel Time	Peak-Hour ML Travel Time Score	Peak-Hour Freight Truck Travel Time	Peak-Hour Freight Truck Travel Time Score	Chance of Hyper-Congestion	Chance of Hyper-Congestion Score	Hours of Delay on Priced Facility	Hours of Delay on Priced Facility Score	Safety Impacts	Safety Impact Score	Trip Length Distribution	Trip Length Distribution Score
I-5	2	NB	I-205	OR-217	3.6	AM	2	1.0	6	1.0	0	0.0	-0.01	1.0	0.00		-0.01	1.0	0.00	2.5	-0.77	2.5	Moderate	2.5	Moderate	2.5
						PM	-2	0.0	-2	0.0	2	1.0	0.01	0.0	0.00		0.01	0.0	0.00	0.0	0.48	0.0	Moderate	2.5	Moderate	2.5
I-5	3	NB	OR-217	Capitol Hwy	2.7	AM	1	1.0	6	1.0	-1	0.0	0.00	1.0	0.00		0.00	1.0	0.00	0.0	-0.28	2.5	Moderate	2.5	Moderate	2.5
						PM	-4	0.0	-3	0.0	2	1.0	0.00	1.0	0.00		0.00	1.0	0.00	0.0	-0.19	2.5	Moderate	2.5	Moderate	2.5
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	AM	2	1.0	4	1.0	-1	0.0	0.00	1.0	0.00		0.00	1.0	0.00	2.5	-0.14	2.5	Moderate	2.5	Moderate	2.5
						PM	-2	0.0	0	0.0	2	1.0	0.02	0.0	0.00		0.02	0.0	0.00	0.0	0.97	0.0	Moderate	2.5	Moderate	2.5
I-5	5	NB	Ross Island Bridge	I-84	1.9	AM	17	1.0	47	1.0	-10	0.0	-0.02	1.0	0.00		-0.02	1.0	0.00	2.5	-0.69	2.5	Moderate	2.5	Moderate	2.5
						PM	-2	0.0	3	1.0	2	1.0	-0.01	1.0	0.00		-0.01	1.0	0.00	2.5	-0.27	2.5	Moderate	2.5	Moderate	2.5
I-5	6	NB	I-84	N Skidmore St.	2.2	AM	2	1.0	179	1.0	-3	0.0	-0.24	3.0	0.00		-0.24	3.0	-0.05	5.0	-14.05	2.5	Moderate	2.5	Moderate	2.5
						PM	-3	0.0	5	1.0	2	1.0	0.00	0.0	0.00		0.00	0.0	0.00	0.0	0.14	0.0	Moderate	2.5	Moderate	2.5
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	AM	-111	0.0	-909	0.0	-1	0.0	-0.44	3.0	-1.34	3.0	-0.44	3.0	-0.09	5.0	-31.99	2.5	Moderate	2.5	Moderate	2.5
						PM	-3	0.0	9	1.0	2	1.0	-1.80	5.0	-3.20	5.0	-1.80	5.0	0.00	0.0	-116.45	2.5	Moderate	2.5	Moderate	2.5
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	AM	155	1.0	558	5.0	-45	0.0	0.05	0.0	-3.05	5.0	0.05	0.0	-0.07	5.0	-48.30	2.5	Moderate	2.5	Moderate	2.5
						PM	-47	0.0	124	1.0	-4	0.0	0.16	0.0	-1.47	3.0	0.16	0.0	-0.04	5.0	-20.51	2.5	Moderate	2.5	Moderate	2.5
I-5	9	SB	N Skidmore St.	I-84	2.2	AM	92	1.0	392	5.0	-56	0.0	-0.06	1.0	0.00		-0.06	1.0	-0.02	2.5	-2.54	2.5	Moderate	2.5	Moderate	2.5
						PM	6	1.0	135	1.0	-5	0.0	-0.03	1.0	0.00		-0.03	1.0	-0.01	2.5	-2.10	2.5	Moderate	2.5	Moderate	2.5
I-5	10	SB	I-84	Ross Island Bridge	1.9	AM	61	1.0	93	1.0	-36	0.0	-0.03	1.0	0.00		-0.03	1.0	-0.01	2.5	-0.06	2.5	Moderate	2.5	Moderate	2.5
						PM	2	1.0	13	1.0	-2	0.0	-0.01	1.0	0.00		-0.01	1.0	0.00	2.5	-0.37	2.5	Moderate	2.5	Moderate	2.5
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	AM	68	1.0	86	1.0	-39	0.0	-0.04	1.0	0.00		-0.04	1.0	0.00	2.5	-0.74	2.5	Moderate	2.5	Moderate	2.5
						PM	0	1.0	3	1.0	0	0.0	0.00	1.0	0.00		0.00	1.0	0.00	0.0	-0.24	2.5	Moderate	2.5	Moderate	2.5
I-5	12	SB	Capitol Hwy	OR-217	3.0	AM	70	1.0	89	1.0	-44	0.0	-0.02	1.0	0.00		-0.02	1.0	0.00	0.0	-0.77	2.5	Moderate	2.5	Moderate	2.5
						PM	0	1.0	5	1.0	0	0.0	0.00	1.0	0.00		0.00	1.0	0.00	0.0	-0.13	2.5	Moderate	2.5	Moderate	2.5
I-5	13	SB	OR-217	I-205	3.7	AM	68	1.0	87	1.0	-43	0.0	-0.04	1.0	0.00		-0.04	1.0	-0.01	2.5	-2.29	2.5	Moderate	2.5	Moderate	2.5
						PM	-1	0.0	4	1.0	0	0.0	-0.01	1.0	0.00		-0.01	1.0	0.00	2.5	-1.10	2.5	Moderate	2.5	Moderate	2.5
I-205	15	NB	I-5	Stafford Rd	2.0	AM	3	1.0	1	1.0	2	1.0	0.01	0.0	0.00		0.01	0.0	0.01	0.0	0.50	0.0	Moderate	2.5	Moderate	2.5
						PM	4	1.0	4	1.0	-2	0.0	0.00	0.0	0.00		0.00	0.0	0.00	0.0	0.11	0.0	Moderate	2.5	Moderate	2.5
I-205	16	NB	Stafford Rd	10th St	3.3	AM	0	1.0	-3	0.0	2	1.0	0.02	0.0	0.00		0.02	0.0	0.00	0.0	1.08	0.0	Moderate	2.5	Moderate	2.5
						PM	2	1.0	3	1.0	-1	0.0	0.00	0.0	0.00		0.00	0.0	0.00	0.0	0.13	0.0	Moderate	2.5	Moderate	2.5
I-205	17	NB	10th St	Sunset Ave	1.9	AM	-3	0.0	-9	0.0	2	1.0	0.01	0.0	0.00		0.01	0.0	0.00	0.0	0.55	0.0	Moderate	2.5	Moderate	2.5
						PM	2	1.0	3	1.0	-1	0.0	0.00	1.0	0.00		0.00	1.0	0.00	0.0	-0.17	2.5	Moderate	2.5	Moderate	2.5
I-205	18	NB	Sunset Ave	Main St	1.2	AM	-3	0.0	-9	0.0	2	1.0	0.00	0.0	0.00		0.00	0.0	0.00	0.0	0.17	0.0	Moderate	2.5	Moderate	2.5
						PM	2	1.0	3	1.0	-1	0.0	0.00	1.0	0.00		0.00	1.0	0.00	0.0	-0.03	2.5	Moderate	2.5	Moderate	2.5
I-205	19	NB	Main St	SR-224	4.1	AM	-2	0.0	-10	0.0	1	1.0	0.01	0.0	0.00		0.01	0.0	0.00	0.0	0.34	0.0	Moderate	2.5	Moderate	2.5
						PM	2	1.0	3	1.0	-1	0.0	0.00	1.0	0.00		0.00	1.0	0.00	0.0	-0.25	2.5	Moderate	2.5	Moderate	2.5
I-205	20	NB	SR-224	NE Glisan St	7.7	AM	-1	0.0	-12	0.0	1	1.0	0.00	0.0	0.00		0.00	0.0	0.00	0.0	0.08	0.0	Moderate	2.5	Moderate	2.5
						PM	3	1.0	4	1.0	-2	0.0	0.00	1.0	0.00		0.00	1.0	0.00	0.0	-0.22	2.5	Moderate	2.5	Moderate	2.5
I-205	21	NB	NE Glisan St	Jackson Bridge	3.6	AM	74	1.0	40	1.0	5	1.0	0.07	0.0	0.00		0.07	0.0	0.02	0.0	3.93	0.0	Moderate	2.5	Moderate	2.5
						PM	1	1.0	4	1.0	-1	0.0	-0.03	1.0	0.00		-0.03	1.0	0.00	2.5	-2.47	2.5	Moderate	2.5	Moderate	2.5
I-205	22	SB	Jackson Bridge	NE Glisan St	3.9	AM	-81	0.0	-243	0.0	37	5.0	0.17	0.0	0.00		0.17	0.0	0.01	0.0	9.87	0.0	Moderate	2.5	Moderate	2.5
						PM	26	1.0	-14	0.0	2	1.0	0.03	0.0	0.00		0.03	0.0	-0.01	5.0	2.36	0.0	Moderate	2.5	Moderate	2.5
I-205	23	SB	NE Glisan St	SR-224	7.4	AM	-75	0.0	-110	0.0	46	5.0	0.04	0.0	0.00		0.04	0.0	0.00	0.0	0.14	0.0	Moderate	2.5	Moderate	2.5
						PM	0	1.0	-9	0.0	1	1.0	0.02	0.0	0.00		0.02	0.0	0.00	0.0	1.18	0.0	Moderate	2.5	Moderate	2.5
I-205	24	SB	SR-224	Main St	4.0	AM	-65	0.0	-86	0.0	37	5.0	0.03	0.0	0.00		0.03	0.0	0.00	0.0	0.30	0.0	Moderate	2.5	Moderate	2.5
						PM	-1	0.0	-6	0.0	0	1.0	0.01	0.0	0.00		0.01	0.0	0.00	0.0	0.42	0.0	Moderate	2.5	Moderate	2.5
I-205	25	SB	Main St	Sunset Ave	1.3	AM	-74	0.0	-95	0.0	43	5.0	0.00	0.0	0.00		0.00	0.0	0.00	0.0	-0.13	2.5	Moderate	2.5	Moderate	2.5
						PM	0	1.0	-4	0.0	1	1.0	0.00	0.0	0.00		0.00	0.0	0.00	0.0	0.08	0.0	Moderate	2.5	Moderate	2.5
I-205	26	SB	Sunset Ave	10th St	1.9	AM	-72	0.0	-91	0.0	40	5.0	0.02	0.0	0.00		0.02	0.0	0.00	0.0	0.41	0.0	Moderate	2.5	Moderate	2.5
						PM	1	1.0	-2	0.0	1	1.0	0.01	0.0	0.00		0.01	0.0	0.00	0.0	0.57	0.0	Moderate	2.5	Moderate	2.5
I-205	27	SB	10th St	Stafford Rd	3.3	AM	-72	0.0	-91	0.0	40	5.0	0.03	0.0	0.00		0.03	0.0	0.00	0.0	1.36	0.0	Moderate	2.5	Moderate	2.5
						PM	2	1.0	-1	0.0	1	1.0	0.00	0.0	0.00		0.00	0.0	0.00	0.0	0.35	0.0	Moderate	2.5	Moderate	2.5
I-205	28	SB	Stafford Rd	I-5	2.3	AM	-76	0.0	-93	0.0	44	5.0	0.03	0.0	0.00		0.03	0.0	0.00	0.0	1.38	0.0	Moderate	2.5	Moderate	2.5
						PM	2	1.0	0	0.0	0	1.0	0.00	0.0	0.00		0.00	0.0	0.02	0.0	0.20	0.0	Moderate	2.5	Moderate	2.5

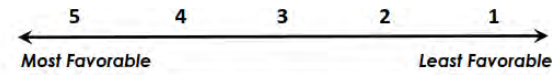


Round 2 Concept 8: Price All Lanes (I-5: Downtown)						Traffic Operations on I-5 & I-205																				
Corridor	Segment ID	Direction	From	To	Length (Miles)	Peak Hour	Most Favorable ← 5 4 3 2 1 → Least Favorable																			
							Peak-Hour Vehicle Throughput	Peak-Hour Vehicle Throughput Score	Peak-Hour Person Throughput	Peak-Hour Person Throughput Score	Peak-Hour Freight Truck Throughput	Peak-Hour Freight Truck Throughput Score	Peak- Hour GP Travel Time	Peak-Hour GP Travel Time Score	Peak- Hour ML Travel Time	Peak-Hour ML Travel Time Score	Peak-Hour Freight Truck Travel Time	Peak-Hour Freight Truck Travel Time Score	Chance of Hyper-Congestion	Chance of Hyper-Congestion Score	Hours of Delay on Priced Facility	Hours of Delay on Priced Facility Score	Safety Impacts	Safety Impact Score	Trip Length Distribution	Trip Length Distribution Score
I-5	2	NB	I-205	OR-217	3.6	AM	130	1.0	153	1.0	-85	0.0	-0.22	1.0			-0.22	1.0	0.47	0.0	-10.76	2.5	Moderate	2.5	Moderate	2.5
						PM	-13	0.0	-5	0.0	-10	0.0	-0.10	1.0			-0.10	1.0	0.43	2.5	-8.66	2.5	Moderate	2.5	Moderate	2.5
I-5	3	NB	OR-217	Capitol Hwy	2.7	AM	229	3.0	273	3.0	-329	0.0	-0.57	5.0			-0.57	5.0	0.11	2.5	-36.23	5.0	Moderate	2.5	Moderate	2.5
						PM	-129	0.0	-141	0.0	-122	0.0	-0.46	5.0			-0.46	5.0	0.08	2.5	-33.51	5.0	Moderate	2.5	Moderate	2.5
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	AM	650	5.0	772	5.0	-308	0.0	-1.70	5.0			-1.70	5.0	0.34	5.0	-86.41	5.0	Moderate	2.5	Moderate	2.5
						PM	187	1.0	238	1.0	-144	0.0	-1.32	5.0			-1.32	5.0	0.24	5.0	-92.11	5.0	Moderate	2.5	Moderate	2.5
I-5	5	NB	Ross Island Bridge	I-84	1.9	AM	424	5.0	506	5.0	-244	0.0	-0.53	5.0			-0.53	5.0	0.41	2.5	-16.44	2.5	Moderate	2.5	Moderate	2.5
						PM	129	1.0	163	1.0	-76	0.0	-0.75	5.0			-0.75	5.0	0.37	5.0	-33.63	5.0	Moderate	2.5	Moderate	2.5
I-5	6	NB	I-84	N Skidmore St.	2.2	AM	302	3.0	358	3.0	-231	0.0	-0.58	5.0			-0.58	5.0	0.25	5.0	-31.88	5.0	Moderate	2.5	Moderate	2.5
						PM	-123	0.0	-172	0.0	-64	0.0	-0.39	5.0			-0.39	5.0	0.17	2.5	-27.49	5.0	Moderate	2.5	Moderate	2.5
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	AM	135	1.0	145	1.0	-106	0.0	-0.64	3.0			-0.64	3.0	0.24	2.5	-25.32	2.5	Moderate	2.5	Moderate	2.5
						PM	22	1.0	11	1.0	-11	0.0	-0.49	1.0			-0.49	1.0	0.39	2.5	-25.54	2.5	Moderate	2.5	Moderate	2.5
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	AM	181	3.0	207	3.0	-80	0.0	-0.55	1.0			-0.55	1.0	0.49	2.5	-26.78	2.5	Moderate	2.5	Moderate	2.5
						PM	21	1.0	30	1.0	-30	0.0	-0.29	1.0			-0.29	1.0	0.24	2.5	-19.59	2.5	Moderate	2.5	Moderate	2.5
I-5	9	SB	N Skidmore St.	I-84	2.2	AM	60	1.0	71	1.0	-120	0.0	-0.41	5.0			-0.41	5.0	0.25	2.5	-25.31	5.0	Moderate	2.5	Moderate	2.5
						PM	77	1.0	99	1.0	-130	0.0	-0.34	3.0			-0.34	3.0	0.29	2.5	-23.60	2.5	Moderate	2.5	Moderate	2.5
I-5	10	SB	I-84	Ross Island Bridge	1.9	AM	253	3.0	308	5.0	-139	0.0	-0.54	5.0			-0.54	5.0	0.39	0.0	-17.72	2.5	Moderate	2.5	Moderate	2.5
						PM	255	3.0	321	3.0	-138	0.0	-0.51	5.0			-0.51	5.0	0.38	0.0	-18.72	2.5	Moderate	2.5	Moderate	2.5
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	AM	315	3.0	381	3.0	-169	0.0	-1.10	5.0			-1.10	5.0	0.29	5.0	-63.22	5.0	Moderate	2.5	Moderate	2.5
						PM	165	1.0	210	1.0	-105	0.0	-1.08	5.0			-1.08	5.0	0.30	5.0	-75.05	2.5	Moderate	2.5	Moderate	2.5
I-5	12	SB	Capitol Hwy	OR-217	3.0	AM	131	1.0	160	1.0	-138	0.0	-0.51	5.0			-0.51	5.0	0.18	2.5	-32.19	5.0	Moderate	2.5	Moderate	2.5
						PM	-11	0.0	-19	0.0	-73	0.0	-0.44	5.0			-0.44	5.0	0.16	2.5	-30.64	5.0	Moderate	2.5	Moderate	2.5
I-5	13	SB	OR-217	I-205	3.7	AM	119	1.0	142	1.0	-88	0.0	-0.19	1.0			-0.19	1.0	0.32	2.5	-12.66	2.5	Moderate	2.5	Moderate	2.5
						PM	40	1.0	46	1.0	-33	0.0	-0.12	1.0			-0.12	1.0	0.44	2.5	-8.30	2.5	Moderate	2.5	Moderate	2.5
I-205	15	NB	I-5	Stafford Rd	2.0	AM	-130	0.0	-149	0.0	105	5.0	0.06	0.0			0.06	0.0	0.21	0.0	3.64	0.0	Moderate	2.5	Moderate	2.5
						PM	11	1.0	6	1.0	4	1.0	0.03	0.0			0.03	0.0	0.27	0.0	2.77	0.0	Moderate	2.5	Moderate	2.5
I-205	16	NB	Stafford Rd	10th St	3.3	AM	-143	0.0	-165	0.0	99	5.0	0.11	0.0			0.11	0.0	0.23	0.0	6.96	0.0	Moderate	2.5	Moderate	2.5
						PM	-2	0.0	-9	0.0	3	1.0	0.07	0.0			0.07	0.0	0.32	0.0	5.28	0.0	Moderate	2.5	Moderate	2.5
I-205	17	NB	10th St	Sunset Ave	1.9	AM	-157	0.0	-178	0.0	89	5.0	0.13	0.0			0.13	0.0	0.36	0.0	6.91	0.0	Moderate	2.5	Moderate	2.5
						PM	-7	0.0	-14	0.0	3	1.0	0.06	0.0			0.06	0.0	0.38	0.0	4.86	0.0	Moderate	2.5	Moderate	2.5
I-205	18	NB	Sunset Ave	Main St	1.2	AM	-160	0.0	-181	0.0	91	5.0	0.04	0.0			0.04	0.0	0.37	0.0	2.40	0.0	Moderate	2.5	Moderate	2.5
						PM	12	1.0	7	1.0	4	1.0	0.02	0.0			0.02	0.0	0.30	0.0	2.17	0.0	Moderate	2.5	Moderate	2.5
I-205	19	NB	Main St	SR-224	4.1	AM	-144	0.0	-166	0.0	75	5.0	0.14	0.0			0.14	0.0	0.45	0.0	5.21	0.0	Moderate	2.5	Moderate	2.5
						PM	4	1.0	-3	0.0	3	1.0	0.10	0.0			0.10	0.0	0.31	0.0	8.25	0.0	Moderate	2.5	Moderate	2.5
I-205	20	NB	SR-224	NE Glisan St	7.7	AM	-147	0.0	-171	0.0	91	5.0	0.19	0.0			0.19	0.0	0.32	0.0	8.05	0.0	Moderate	2.5	Moderate	2.5
						PM	9	1.0	3	1.0	3	1.0	0.10	0.0			0.10	0.0	0.26	0.0	8.31	0.0	Moderate	2.5	Moderate	2.5
I-205	21	NB	NE Glisan St	Jackson Bridge	3.6	AM	-92	0.0	-105	0.0	117	5.0	0.12	0.0			0.12	0.0	0.15	2.5	6.64	0.0	Moderate	2.5	Moderate	2.5
						PM	2	1.0	4	1.0	4	1.0	0.04	0.0			0.04	0.0	0.34	0.0	3.68	0.0	Moderate	2.5	Moderate	2.5
I-205	22	SB	Jackson Bridge	NE Glisan St	3.9	AM	-124	0.0	-141	0.0	72	5.0	0.08	0.0			0.08	0.0	0.40	0.0	1.90	0.0	Moderate	2.5	Moderate	2.5
						PM	-9	0.0	-10	0.0	35	5.0	0.05	0.0			0.05	0.0	0.09	2.5	4.39	0.0	Moderate	2.5	Moderate	2.5
I-205	23	SB	NE Glisan St	SR-224	7.4	AM	-141	0.0	-163	0.0	87	5.0	0.16	0.0			0.16	0.0	0.31	0.0	6.20	0.0	Moderate	2.5	Moderate	2.5
						PM	-42	0.0	-54	0.0	31	5.0	0.09	0.0			0.09	0.0	0.30	0.0	5.41	0.0	Moderate	2.5	Moderate	2.5
I-205	24	SB	SR-224	Main St	4.0	AM	-127	0.0	-146	0.0	69	5.0	0.10	0.0			0.10	0.0	0.38	0.0	3.59	0.0	Moderate	2.5	Moderate	2.5
						PM	-47	0.0	-58	0.0	27	5.0	0.07	0.0			0.07	0.0	0.39	0.0	4.24	0.0	Moderate	2.5	Moderate	2.5
I-205	25	SB	Main St	Sunset Ave	1.3	AM	-143	0.0	-163	0.0	79	5.0	0.02	0.0			0.02	0.0	0.38	0.0	1.17	0.0	Moderate	2.5	Moderate	2.5
						PM	-34	0.0	-40	0.0	32	5.0	0.01	0.0			0.01	0.0	0.25	0.0	1.10	0.0	Moderate	2.5	Moderate	2.5
I-205	26	SB	Sunset Ave	10th St	1.9	AM	-144	0.0	-164	0.0	75	5.0	0.08	0.0			0.08	0.0	0.39	0.0	3.14	0.0	Moderate	2.5	Moderate	2.5
						PM	-35	0.0	-41	0.0	32	5.0	0.05	0.0			0.05	0.0	0.20	0.0	4.06	0.0	Moderate	2.5	Moderate	2.5
I-205	27	SB	10th St	Stafford Rd	3.3	AM	-143	0.0	-165	0.0	75	5.0	0.09	0.0			0.09	0.0	0.37	0.0	4.21	0.0	Moderate	2.5	Moderate	2.5
						PM	-25	0.0	-29	0.0	34	5.0	0.05	0.0			0.05	0.0	0.10	2.5	3.64	0.0	Moderate	2.5	Moderate	2.5
I-205	28	SB	Stafford Rd	I-5	2.3	AM	-143	0.0	-165	0.0	81	5.0	0.08	0.0			0.08	0.0	0.38	0.0	4.51	0.0	Moderate	2.5	Moderate	2.5
						PM	-28	0.0	-32	0.0	32	5.0	0.02	0.0			0.02	0.0	0.18	0.0	1.61	0.0	Moderate	2.5	Moderate	2.5



Round 2 Concept C: Price All Lanes (I-5 & I-205)						Traffic Operations on I-5 & I-205																				
Corridor	Segment ID	Direction	From	To	Length (Miles)	Peak Hour	Most Favorable ← 5 4 3 2 1 → Least Favorable																			
							Peak-Hour Vehicle Throughput	Peak-Hour Vehicle Throughput Score	Peak-Hour Person Throughput	Peak-Hour Person Throughput Score	Peak-Hour Freight Truck Throughput	Peak-Hour Freight Truck Throughput Score	Peak-Hour GP Travel Time	Peak-Hour GP Travel Time Score	Peak-Hour ML Travel Time	Peak-Hour ML Travel Time Score	Peak-Hour Freight Truck Travel Time	Peak-Hour Freight Truck Travel Time Score	Chance of Hyper-Congestion	Chance of Hyper-Congestion Score	Hours of Delay on Priced Facility	Hours of Delay on Priced Facility Score	Safety Impacts	Safety Impact Score	Trip Length Distribution	Trip Length Distribution Score
I-5	2	NB	I-205	OR-217	3.6	AM	0	1.0	32	1.0	66	5.0	-1.18	5.0	0.00		-1.18	5.0	0.33	5.0	-77.37	5.0	Moderate	2.5	Moderate	2.5
						PM	-319	0.0	-383	0.0	-63	0.0	-1.68	5.0	0.00		-1.68	5.0	0.13	5.0	-154.51	5.0	Moderate	2.5	Moderate	2.5
I-5	3	NB	OR-217	Capitol Hwy	2.7	AM	-193	0.0	-197	0.0	54	5.0	-0.26	3.0	0.00		-0.26	3.0	0.14	2.5	-18.53	2.5	Moderate	2.5	Moderate	2.5
						PM	-385	0.0	-437	0.0	-115	0.0	-0.61	5.0	0.00		-0.61	5.0	0.17	0.0	-45.09	5.0	Moderate	2.5	Moderate	2.5
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	AM	26	1.0	59	1.0	56	5.0	-1.27	5.0	0.00		-1.27	5.0	0.39	2.5	-73.59	2.5	Moderate	2.5	Moderate	2.5
						PM	46	1.0	80	1.0	-166	0.0	-2.05	5.0	0.00		-2.05	5.0	0.15	5.0	-149.20	5.0	Moderate	2.5	Moderate	2.5
I-5	5	NB	Ross Island Bridge	I-84	1.9	AM	-31	0.0	-12	0.0	31	5.0	-0.33	3.0	0.00		-0.33	3.0	0.45	2.5	-13.97	2.5	Moderate	2.5	Moderate	2.5
						PM	119	1.0	131	1.0	-80	0.0	-1.03	5.0	0.00		-1.03	5.0	0.33	5.0	-47.20	5.0	Moderate	2.5	Moderate	2.5
I-5	6	NB	I-84	N Skidmore St.	2.2	AM	-91	0.0	-83	0.0	43	5.0	-0.30	3.0	0.00		-0.30	3.0	0.31	2.5	-18.79	2.5	Moderate	2.5	Moderate	2.5
						PM	-140	0.0	-479	0.0	-59	0.0	-0.38	5.0	0.00		-0.38	5.0	0.21	2.5	-26.74	5.0	Moderate	2.5	Moderate	2.5
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	AM	-237	0.0	-1,227	0.0	54	5.0	-1.09	5.0	-7.23		-1.09	5.0	0.20	5.0	-45.86	5.0	Moderate	2.5	Moderate	2.5
						PM	-75	0.0	-429	0.0	18	5.0	-4.00	5.0	-7.86		-4.00	5.0	0.34	2.5	-201.27	5.0	Moderate	2.5	Moderate	2.5
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	AM	411	5.0	533	5.0	-164	0.0	-2.45	5.0	0.00		-2.45	5.0	0.35	5.0	-128.37	5.0	Moderate	2.5	Moderate	2.5
						PM	-278	0.0	-308	0.0	-54	0.0	-1.25	5.0	0.00		-1.25	5.0	0.15	5.0	-91.26	5.0	Moderate	2.5	Moderate	2.5
I-5	9	SB	N Skidmore St.	I-84	2.2	AM	50	1.0	110	1.0	-192	0.0	-0.59	5.0	0.00		-0.59	5.0	0.19	5.0	-36.21	5.0	Moderate	2.5	Moderate	2.5
						PM	-11	0.0	15	1.0	-168	0.0	-0.52	5.0	0.00		-0.52	5.0	0.24	2.5	-38.04	5.0	Moderate	2.5	Moderate	2.5
I-5	10	SB	I-84	Ross Island Bridge	1.9	AM	381	5.0	482	5.0	-195	0.0	-1.24	5.0	0.00		-1.24	5.0	0.23	5.0	-47.99	5.0	Moderate	2.5	Moderate	2.5
						PM	340	5.0	433	5.0	-182	0.0	-1.03	5.0	0.00		-1.03	3.0	0.48	0.0	-42.72	5.0	Moderate	2.5	Moderate	2.5
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	AM	337	3.0	436	5.0	-302	0.0	-2.19	5.0	0.00		-2.19	5.0	0.14	5.0	-138.27	5.0	Moderate	2.5	Moderate	2.5
						PM	241	3.0	310	3.0	-282	0.0	-2.34	5.0	0.00		-2.34	5.0	0.13	5.0	-172.19	5.0	Moderate	2.5	Moderate	2.5
I-5	12	SB	Capitol Hwy	OR-217	3.0	AM	-52	0.0	-23	0.0	-205	0.0	-0.85	5.0	0.00		-0.85	5.0	0.08	5.0	-56.44	5.0	Moderate	2.5	Moderate	2.5
						PM	-159	0.0	-181	0.0	-174	0.0	-0.79	5.0	0.00		-0.79	5.0	0.07	5.0	-56.31	5.0	Moderate	2.5	Moderate	2.5
I-5	13	SB	OR-217	I-205	3.7	AM	-212	0.0	-210	0.0	-111	0.0	-1.28	5.0	0.00		-1.28	5.0	0.14	5.0	-100.60	5.0	Moderate	2.5	Moderate	2.5
						PM	14	1.0	26	1.0	-133	0.0	-1.83	5.0	0.00		-1.83	5.0	0.23	5.0	-151.04	5.0	Moderate	2.5	Moderate	2.5
I-205	15	NB	I-5	Stafford Rd	2.0	AM	-606	0.0	-666	0.0	-82	0.0	-0.34	5.0	0.00		-0.34	5.0	0.00	5.0	-16.10	5.0	Moderate	2.5	Moderate	2.5
						PM	-418	0.0	-478	0.0	-106	0.0	-0.47	5.0	0.00		-0.47	5.0	0.02	5.0	-36.37	5.0	Moderate	2.5	Moderate	2.5
I-205	16	NB	Stafford Rd	10th St	3.3	AM	-430	0.0	-461	0.0	-64	0.0	-0.76	5.0	0.00		-0.76	5.0	0.04	5.0	-48.81	5.0	Moderate	2.5	Moderate	2.5
						PM	-204	0.0	-211	0.0	-100	0.0	-1.03	5.0	0.00		-1.03	5.0	0.13	5.0	-80.46	5.0	Moderate	2.5	Moderate	2.5
I-205	17	NB	10th St	Sunset Ave	1.9	AM	-164	0.0	-154	0.0	-56	0.0	-0.78	5.0	0.00		-0.78	5.0	0.12	5.0	-55.95	5.0	Moderate	2.5	Moderate	2.5
						PM	-142	0.0	-128	0.0	-116	0.0	-0.99	5.0	0.00		-0.99	5.0	0.11	5.0	-80.04	5.0	Moderate	2.5	Moderate	2.5
I-205	18	NB	Sunset Ave	Main St	1.2	AM	-177	0.0	-163	0.0	-56	0.0	-0.22	5.0	0.00		-0.22	5.0	0.17	5.0	-17.01	5.0	Moderate	2.5	Moderate	2.5
						PM	-274	0.0	-276	0.0	-99	0.0	-0.21	5.0	0.00		-0.21	5.0	0.18	2.5	-19.28	5.0	Moderate	2.5	Moderate	2.5
I-205	19	NB	Main St	SR-224	4.1	AM	270	3.0	372	3.0	-113	0.0	-1.85	5.0	0.00		-1.85	5.0	0.24	5.0	-117.80	5.0	Moderate	2.5	Moderate	2.5
						PM	-214	0.0	-203	0.0	-84	0.0	-1.29	5.0	0.00		-1.29	5.0	0.12	5.0	-107.04	5.0	Moderate	2.5	Moderate	2.5
I-205	20	NB	SR-224	NE Glisan St	7.7	AM	-71	0.0	-29	0.0	-47	0.0	-1.83	5.0	0.00		-1.83	5.0	0.22	2.5	-129.85	5.0	Moderate	2.5	Moderate	2.5
						PM	-189	0.0	-147	0.0	-85	0.0	-1.80	5.0	0.00		-1.80	5.0	0.16	2.5	-146.72	5.0	Moderate	2.5	Moderate	2.5
I-205	21	NB	NE Glisan St	Jackson Bridge	3.6	AM	-483	0.0	-512	0.0	-56	0.0	-0.64	3.0	0.00		-0.64	3.0	0.03	5.0	-36.96	5.0	Moderate	2.5	Moderate	2.5
						PM	-563	0.0	-409	0.0	-80	0.0	-2.17	5.0	0.00		-2.17	5.0	0.10	5.0	-203.45	5.0	Moderate	2.5	Moderate	2.5
I-205	22	SB	Jackson Bridge	NE Glisan St	3.9	AM	-34	0.0	84	1.0	21	3.0	-2.01	5.0	0.00		-2.01	5.0	0.20	5.0	-150.92	5.0	Moderate	2.5	Moderate	2.5
						PM	-552	0.0	-606	0.0	55	5.0	-0.43	3.0	0.00		-0.43	3.0	0.01	2.5	-34.63	5.0	Moderate	2.5	Moderate	2.5
I-205	23	SB	NE Glisan St	SR-224	7.4	AM	-131	0.0	-75	0.0	26	3.0	-1.30	3.0	0.00		-1.30	3.0	0.21	2.5	-91.82	5.0	Moderate	2.5	Moderate	2.5
						PM	-304	0.0	-328	0.0	29	5.0	-1.75	5.0	0.00		-1.75	5.0	0.17	5.0	-144.36	5.0	Moderate	2.5	Moderate	2.5
I-205	24	SB	SR-224	Main St	4.0	AM	-1	0.0	50	1.0	24	5.0	-0.86	5.0	0.00		-0.86	5.0	0.28	2.5	-50.75	5.0	Moderate	2.5	Moderate	2.5
						PM	-59	0.0	-35	0.0	-39	0.0	-1.71	5.0	0.00		-1.71	5.0	0.22	5.0	-132.62	5.0	Moderate	2.5	Moderate	2.5
I-205	25	SB	Main St	Sunset Ave	1.3	AM	-21	0.0	27	1.0	-30	0.0	-0.17	5.0	0.00		-0.17	5.0	0.25	5.0	-12.00	5.0	Moderate	2.5	Moderate	2.5
						PM	-503	0.0	-578	0.0	22	5.0	-0.15	5.0	0.00		-0.15	5.0	0.13	2.5	-13.82	5.0	Moderate	2.5	Moderate	2.5
I-205	26	SB	Sunset Ave	10th St	1.9	AM	41	1.0	89	1.0	-15	0.0	-0.75	5.0	0.00		-0.75	5.0	0.25	5.0	-50.43	5.0	Moderate	2.5	Moderate	2.5
						PM	-575	0.0	-679	0.0	19	5.0	-0.66	5.0	0.00		-0.66	5.0	0.06	5.0	-58.15	5.0	Moderate	2.5	Moderate	2.5
I-205	27	SB	10th St	Stafford Rd	3.3	AM	39	1.0	90	1.0	-5	0.0	-0.78	5.0	0.00		-0.78	5.0	0.25	5.0	-51.98	5.0	Moderate	2.5	Moderate	2.5
						PM	-665	0.0	-787	0.0	14	3.0	-0.54	5.0	0.00		-0.54	5.0	0.01	5.0	-36.09	5.0	Moderate	2.5	Moderate	2.5
I-205	28	SB	Stafford Rd	I-5	2.3	AM	-74	0.0	-46	0.0	-1	0.0	-0.34	5.0	0.00		-0.34	5.0	0.22	5.0	-23.71	5.0	Moderate	2.5	Moderate	2.5
						PM	-607	0.0	-725	0.0	27	5.0	-0.27	5.0	0.00		-0.27	5.0	0.00	5.0	-13.75	5.0	Moderate	2.5	Moderate	2.5

Round 2 Concept D: Price New Planned Lane (I-205)



Corridor	Segment ID	Direction	From	To	Length (Miles)	Peak Hour	Traffic Operations on I-5 & I-205																			
							Peak-Hour Vehicle Throughput	Peak-Hour Vehicle Throughput Score	Peak-Hour Person Throughput	Peak-Hour Person Throughput Score	Peak-Hour Freight Truck Throughput	Peak-Hour Freight Truck Throughput Score	Peak- Hour GP Travel Time	Peak-Hour GP Travel Time Score	Peak- Hour ML Travel Time	Peak-Hour ML Travel Time Score	Peak-Hour Freight Truck Travel Time	Peak-Hour Freight Truck Travel Time Score	Chance of Hyper- Congestion	Chance of Hyper- Congestion Score	Hours of Delay on Priced Facility	Hours of Delay on Priced Facility Score	Safety Impacts	Safety Impact Score	Trip Length Distribution	Trip Length Distribution Score
I-5	2	NB	I-205	OR-217	3.6	AM	4	1.0	123	1.0	1	1.0	-0.01	1.0			-0.01	1.0	0.44	0.0	-0.36	2.5	Moderate	2.5	Moderate	2.5
						PM	-74	0.0	-45	0.0	50	5.0	0.08	0.0			0.08	0.0	0.45	0.0	5.21	0.0	Moderate	2.5	Moderate	2.5
I-5	3	NB	OR-217	Capitol Hwy	2.7	AM	11	1.0	6	1.0	1	1.0	0.05	0.0			0.05	0.0	0.21	0.0	3.22	0.0	Moderate	2.5	Moderate	2.5
						PM	-58	0.0	-116	0.0	55	5.0	0.05	0.0			0.05	0.0	0.11	0.0	2.99	0.0	Moderate	2.5	Moderate	2.5
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	AM	-6	0.0	-22	0.0	-2	0.0	0.08	0.0			0.08	0.0	0.49	0.0	4.42	0.0	Moderate	2.5	Moderate	2.5
						PM	-81	0.0	-144	0.0	47	5.0	0.08	0.0			0.08	0.0	0.38	0.0	3.58	0.0	Moderate	2.5	Moderate	2.5
I-5	5	NB	Ross Island Bridge	I-84	1.9	AM	-6	0.0	-19	0.0	3	1.0	0.01	0.0			0.01	0.0	0.48	0.0	0.43	0.0	Moderate	2.5	Moderate	2.5
						PM	-77	0.0	-119	0.0	44	5.0	0.04	0.0			0.04	0.0	0.50	0.0	0.70	0.0	Moderate	2.5	Moderate	2.5
I-5	6	NB	I-84	N Skidmore St.	2.2	AM	-6	0.0	-13	0.0	3	1.0	0.01	0.0			0.01	0.0	0.38	0.0	0.26	0.0	Moderate	2.5	Moderate	2.5
						PM	-89	0.0	-120	0.0	56	5.0	0.01	0.0			0.01	0.0	0.26	0.0	0.17	0.0	Moderate	2.5	Moderate	2.5
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	AM	1	1.0	-1	0.0	0	1.0	0.03	0.0			0.03	0.0	0.31	0.0	1.40	0.0	Moderate	2.5	Moderate	2.5
						PM	-86	0.0	-97	0.0	49	5.0	0.09	0.0			0.09	0.0	0.41	0.0	1.46	0.0	Moderate	2.5	Moderate	2.5
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	AM	-94	0.0	-114	0.0	52	5.0	0.05	0.0			0.05	0.0	0.54	0.0	-1.21	2.5	Moderate	2.5	Moderate	2.5
						PM	-1	0.0	-5	0.0	1	1.0	0.01	0.0			0.01	0.0	0.27	0.0	0.49	0.0	Moderate	2.5	Moderate	2.5
I-5	9	SB	N Skidmore St.	I-84	2.2	AM	-118	0.0	-147	0.0	71	5.0	0.01	0.0			0.01	0.0	0.35	0.0	-0.38	2.5	Moderate	2.5	Moderate	2.5
						PM	-1	0.0	-6	0.0	1	1.0	0.00	0.0			0.00	0.0	0.33	0.0	0.26	0.0	Moderate	2.5	Moderate	2.5
I-5	10	SB	I-84	Ross Island Bridge	1.9	AM	-97	0.0	-138	0.0	54	5.0	0.05	0.0			0.05	0.0	0.38	0.0	0.09	0.0	Moderate	2.5	Moderate	2.5
						PM	-4	0.0	-18	0.0	2	1.0	0.01	0.0			0.01	0.0	0.35	0.0	0.49	0.0	Moderate	2.5	Moderate	2.5
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	AM	-112	0.0	-183	0.0	59	5.0	0.15	0.0			0.15	0.0	0.40	0.0	5.85	0.0	Moderate	2.5	Moderate	2.5
						PM	-4	0.0	-21	0.0	2	1.0	0.02	0.0			0.02	0.0	0.40	0.0	1.57	0.0	Moderate	2.5	Moderate	2.5
I-5	12	SB	Capitol Hwy	OR-217	3.0	AM	-103	0.0	-165	0.0	68	5.0	0.09	0.0			0.09	0.0	0.30	0.0	4.63	0.0	Moderate	2.5	Moderate	2.5
						PM	0	0.0	0	0.0	2	1.0	0.01	0.0			0.01	0.0	0.25	0.0	0.91	0.0	Moderate	2.5	Moderate	2.5
I-5	13	SB	OR-217	I-205	3.7	AM	-110	0.0	-78	0.0	69	5.0	0.04	0.0			0.04	0.0	0.35	0.0	1.24	0.0	Moderate	2.5	Moderate	2.5
						PM	1	1.0	113	1.0	1	1.0	0.00	1.0			0.00	1.0	0.46	0.0	-0.22	2.5	Moderate	2.5	Moderate	2.5
I-205	15	NB	I-5	Stafford Rd	2.0	AM	-159	0.0	29	1.0	-8	0.0	-0.13	3.0			-0.13	3.0	0.11	2.5	-9.04	5.0	Moderate	2.5	Moderate	2.5
						PM	7	1.0	393	3.0	-59	0.0	-0.14	3.0			-0.14	3.0	0.19	2.5	-11.25	5.0	Moderate	2.5	Moderate	2.5
I-205	16	NB	Stafford Rd	10th St	3.3	AM	-112	0.0	107	1.0	-5	0.0	-0.08	1.0	-0.75	3.0	-0.08	1.0	0.14	2.5	-20.27	5.0	Moderate	2.5	Moderate	2.5
						PM	36	1.0	471	3.0	-52	0.0	0.09	0.0	-1.33	5.0	0.09	0.0	0.24	2.5	-24.33	2.5	Moderate	2.5	Moderate	2.5
I-205	17	NB	10th St	Sunset Ave	1.9	AM	-26	0.0	205	1.0	-1	0.0	0.08	0.0	-1.25	5.0	0.08	0.0	0.26	2.5	-19.92	2.5	Moderate	2.5	Moderate	2.5
						PM	35	1.0	459	3.0	-47	0.0	0.16	0.0	-1.56	5.0	0.16	0.0	0.28	5.0	-21.75	2.5	Moderate	2.5	Moderate	2.5
I-205	18	NB	Sunset Ave	Main St	1.2	AM	-33	0.0	210	1.0	-5	0.0	0.04	0.0	-0.39	5.0	0.04	0.0	0.27	2.5	-5.20	2.5	Moderate	2.5	Moderate	2.5
						PM	16	1.0	379	3.0	-55	0.0	0.06	0.0	-0.39	5.0	0.06	0.0	0.22	2.5	-3.68	2.5	Moderate	2.5	Moderate	2.5
I-205	19	NB	Main St	SR-224	4.1	AM	22	1.0	125	1.0	-2	0.0	-0.15	1.0	-0.14	1.0	-0.15	1.0	0.42	2.5	-11.36	2.5	Moderate	2.5	Moderate	2.5
						PM	68	1.0	248	1.0	-53	0.0	-0.13	1.0	-0.11	1.0	-0.13	1.0	0.28	2.5	-12.02	2.5	Moderate	2.5	Moderate	2.5
I-205	20	NB	SR-224	NE Glisan St	7.7	AM	-1	0.0	33	1.0	-2	0.0	-0.08	1.0	-0.08	1.0	0.31	2.5	-5.65	2.5	Moderate	2.5	Moderate	2.5		
						PM	69	1.0	143	1.0	-55	0.0	-0.15	1.0			-0.15	1.0	0.24	2.5	-9.66	2.5	Moderate	2.5	Moderate	2.5
I-205	21	NB	NE Glisan St	Jackson Bridge	3.6	AM	-10	0.0	0	0.0	-3	0.0	-0.02	1.0	-0.02	1.0	0.18	0.0	-0.97	2.5	Moderate	2.5	Moderate	2.5		
						PM	75	1.0	98	1.0	-55	0.0	-0.05	1.0			-0.05	1.0	0.33	2.5	-2.69	2.5	Moderate	2.5	Moderate	2.5
I-205	22	SB	Jackson Bridge	NE Glisan St	3.9	AM	104	1.0	132	1.0	-60	0.0	-0.05	1.0	-0.05	1.0	0.39	2.5	-0.61	2.5	Moderate	2.5	Moderate	2.5		
						PM	-4	0.0	2	1.0	-2	0.0	-0.01	1.0			-0.01	1.0	0.12	0.0	-0.75	2.5	Moderate	2.5	Moderate	2.5
I-205	23	SB	NE Glisan St	SR-224	7.4	AM	108	1.0	191	1.0	-71	0.0	-0.21	1.0			-0.21	1.0	0.28	2.5	-11.08	2.5	Moderate	2.5	Moderate	2.5
						PM	1	1.0	30	1.0	-3	0.0	-0.03	1.0			-0.03	1.0	0.29	2.5	-2.44	2.5	Moderate	2.5	Moderate	2.5
I-205	24	SB	SR-224	Main St	4.0	AM	115	1.0	282	3.0	-59	0.0	-0.18	1.0	-0.14	1.0	0.35	2.5	-11.03	2.5	Moderate	2.5	Moderate	2.5		
						PM	1	1.0	80	1.0	-2	0.0	-0.04	1.0	-0.10	1.0	-0.04	1.0	0.37	2.5	-5.30	2.5	Moderate	2.5	Moderate	2.5
I-205	25	SB	Main St	Sunset Ave	1.3	AM	93	1.0	422	3.0	-67	0.0	0.00	1.0	-0.37	5.0	0.00	1.0	0.29	2.5	-7.07	2.5	Moderate	2.5	Moderate	2.5
						PM	-57	0.0	156	1.0	-6	0.0	0.07	0.0	-0.30	5.0	0.07	0.0	0.19	2.5	-1.33	2.5	Moderate	2.5	Moderate	2.5
I-205	26	SB	Sunset Ave	10th St	1.9	AM	140	1.0	588	5.0	-59	0.0	0.01	0.0	-1.57	5.0	0.01	0.0	0.29	5.0	-28.43	2.5	Moderate	2.5	Moderate	2.5
						PM	-87	0.0	126	1.0	-5	0.0	0.21	0.0	-1.09	5.0	0.21	0.0	0.14	2.5	-9.24	2.5	Moderate	2.5	Moderate	2.5
I-205	27	SB	10th St	Stafford Rd	3.3	AM	145	1.0	621	5.0	-60	0.0	-0.07	1.0	-1.56	5.0	-0.07	1.0	0.27	2.5	-36.38	5.0	Moderate	2.5	Moderate	2.5
						PM	-93	0.0	105	1.0	-7	0.0	0.10	0.0	-0.64	3.0	0.10	0.0	0.13	2.5	-5.85	2.5	Moderate	2.5	Moderate	2.5
I-205	28	SB	Stafford Rd	I-5	2.3	AM	104	1.0	520	5.0	-71	0.0	-0.18	3.0			-0.18	3.0	0.31	2.5	-11.58	2.5	Moderate	2.5	Moderate	2.5
						PM	-86	0.0	65	1.0	-6	0.0	-0.06	1.0			-0.06	1.0	0.09	2.5	-4.50	5.0	Moderate	2.5	Moderate	2.5



Appendix C Regional transportation demand model findings

Metro's regional travel demand model plays a key role in concept evaluations. One of the benefits of a regional model is its ability to show regional impacts on the overall transportation system, including freeways and surface streets. These include the following:

- Vehicle hours of travel (VHT), which totals the travel time of all vehicle trips made within the model area. VHT can be a good indicator of network efficiency and the impact of a particular alternative.
- Vehicle miles of travel (VMT), which is the total of all vehicle miles driven in the model area. VMT is also a measure of network efficiency. A reduction in VMT when the number of trips is held constant, as it is in the regional model, can indicate a more efficient network.
- Mode share, which is the breakdown of daily person trips by mode (single-occupant vehicle [SOV], high-occupancy vehicle [HOV], public transportation, bicycle, pedestrian) and how the share of any particular mode choice changes under each concept. Reported percentage changes may not appear to be high but can still represent a large number of total trips changed.

These regional impacts had a significant bearing on the evaluation and implications for the recommendations contained within this technical memorandum. Key data points are summarized in subsequent sections.

VHT summary

Observations and conclusions:

- All tolling concepts indicate a net reduction in regional VHT.
- Concepts A and D have minimal impact on regional VHT. The most significant impact is seen in the AM peak hour.
- Concept B has a small impact on regional VHT. The benefit is relatively consistent throughout the day, though also highest in the AM peak hour.
- Concept C would produce the most significant decreases in regional VHT, a daily decrease of ~5.0 percent.

Table B1. Vehicle Hours Traveled (VHT) by time period by concept – difference from baseline

Reporting Period	Concept A	Concept B	Concept C	Concept D
AM Peak Hour	(1,600)	(3,200)	(16,100)	(2,100)
PM Peak Hour	(100)	(1,500)	(8,600)	(700)
Morning	(2,600)	(6,400)	(34,200)	(3,600)
Midday	(600)	(3,700)	(17,200)	(700)
Afternoon	(400)	(4,600)	(23,500)	(1,900)
24 hour Total	(3,600)	(15,500)	(79,000)	(6,400)

Source: Metro regional travel demand model



Table B2. Vehicle Hours Traveled (VHT) by time period by concept – percent difference

Reporting Period	Concept A	Concept B	Concept C	Concept D
AM Peak Hour	-1.2%	-2.3%	-11.4%	-1.5%
PM Peak Hour	-0.1%	-1.2%	-6.9%	-0.6%
Morning	-0.6%	-1.6%	-8.5%	-0.9%
Midday	-0.1%	-0.8%	-3.5%	-0.2%
Afternoon	-0.1%	-1.0%	-5.3%	-0.4%
24 hour Total	-0.2%	-1.0%	-5.0%	-0.4%

Source: Metro regional travel demand model

VHT sensitivity testing

Model sensitivity testing with less perceived benefit of improved freeway travel time indicated lower overall benefits in daily VHT savings. These results indicate smaller reductions in daily VHT for Concept A (0.0%), Concept B (-0.6%), and Concept C (-3.1%), and a small increase in VHT for Concept D (+0.1%)

Observations and conclusions:

- Concepts A and D would have minimal impact on regional VHT. There is some potential for a small increase or decrease, depending on model sensitivity assumptions.
- Concept B also has a small impact on regional VHT but shows consistent savings throughout the day. Reduction in VHT is between 0.5 and 1 percent depending on model capacity assumptions/methods.
- Concept C would produce most significant decreases to regional VHT, between 3 and 5 percent depending on model sensitivity assumptions.
- The greatest VHT benefits are generally experienced in the AM peak period.

VMT summary

Observations and conclusions:

- Overall, concepts A and D have minimal impact on regional VMT. Concept A model results indicate small decreases in VMT, while Concept D results indicate small increases in VMT. Neither concept would be expected to produce a significant change in total VMT.
- The potential increases in Concept D are likely due to the out-of-direction travel necessary to use the southern section of I-205.
- Concept B has a greater impact on VMT than Concept A or D but the reduction is also a small percentage of total VMT.
- Concept C could produce significant decreases to regional VMT, a daily decrease of 2 percent.
- Changes to VMT are generally consistent for all time periods.



Table B3. Vehicle Miles Traveled by time period by concept – difference from baseline

Reporting Period	Concept A	Concept B	Concept C	Concept D
AM Peak Hour	(1,000)	(9,200)	(79,400)	3,100
PM Peak Hour	(600)	(8,300)	(77,200)	2,300
Morning	(2,200)	(28,300)	(249,300)	5,600
Midday	(5,700)	(21,100)	(385,800)	1,200
Afternoon	(2,800)	(30,300)	(286,000)	5,300
24 hour Total	(14,800)	(98,400)	(1,091,100)	10,100

Source: Metro regional travel demand model

Table B4. Vehicle Miles Traveled by time period by concept – percent difference

Reporting Period	Concept A	Concept B	Concept C	Concept D
AM Peak Hour	0.0%	-0.3%	-2.2%	0.1%
PM Peak Hour	0.0%	-0.2%	-2.1%	0.1%
Morning	0.0%	-0.2%	-2.1%	0.0%
Midday	0.0%	-0.1%	-2.2%	0.0%
Afternoon	0.0%	-0.2%	-2.1%	0.0%
24 hour Total	0.0%	-0.2%	-2.1%	0.0%

Source: Metro regional travel demand model

VMT sensitivity testing

Model sensitivity testing with less perceived benefit of improved freeway travel time indicated similar overall benefits in daily VMT changes. These results indicate potential reductions in daily VMT, as follows: Concept A (0.0%), Concept B (-0.2%), Concept C (-2.2%), and Concept D (-0.1%)

Observations and conclusions:

- Concept A shows small daily VMT reduction with a similar overall daily impact, regardless of model sensitivity assumptions.
- Concept D shows a potential to slightly increase or decrease VMT, depending on model sensitivity assumptions. This is most likely due the out-of-direction travel associated with using the southern segment of I-205 and how attractive the freeway is to travelers. In either approach, the overall change to VMT is small.
- Concept B shows similar VMT savings, regardless of model sensitivity assumptions.
- Concept C would produce the most significant decreases to regional VMT. The daily decrease in VMT is very similar regardless of model sensitivity assumptions.

Mode share summary

Observations and conclusions:

- Concepts A and D have minimal impact on regional mode share. There is some potential to shift SOV to HOV trips.
- Concept B has minimal impact on regional mode share. There is some potential to discourage some SOV trips, with shifts to HOV primarily but also active transportation modes.
- Concept C could produce significant changes to regional mode share, although the total change still reflects less than half of one percent of regional trips. There is potential to discourage some SOV trips, with shifts to HOV primarily but also active transportation modes.



Table B5. Mode share shift relative to 2027 baseline (Daily Person Trips)

Reporting Period	Concept A	Concept B	Concept C	Concept D
SOV	0.0%	-0.1%	-0.5%	0.0%
HOV	0.0%	0.0%	0.3%	0.0%
Transit /Bus	0.0%	0.0%	0.1%	0.0%
Bike/Walk	0.0%	0.0%	0.0%	0.0%

Source: Metro regional travel demand model

Table B6. Change in daily person trips

Reporting Period	Concept A	Concept B	Concept C	Concept D
SOV	-2,000	-7,000	-50,000	-2,000
HOV	2,000	4,000	31,000	2,000
Transit/Bus	0	2,000	11,000	0
Bike/Walk	0	1,000	8,000	0

Source: Metro regional travel demand model

Note: Values rounded to nearest 1,000.

Note: Mode share changes may be overstated to some degree due to limitations of the analysis approach in fully accounting for potential freeway travel time savings in the model's mode choice estimation.



Appendix D Toll Optimization Model (TOM) inputs and assumptions

Toll Optimization Modeling

Inputs, Policy Assumptions, and Options

Portland Value Pricing
Feasibility Analysis

Modeling Coordination

March 8, 2018

- ECONorthwest's Toll Optimization Model© (TOM) is a special suite of models designed to determine equilibrium lane volumes, toll levels, revenues, and associated travel times for tolled highway facilities.
- ECONorthwest has been operating traffic and revenue models with benefit-cost features for over two decades.
- These tools allow “pivoting” or “extrapolating” performance of an existing project to a much wider range of conditions and business rules.
- The tools are supplied with demand forecasts to test future performance of toll facilities.
- Tolls, traffic and revenues can be optimized under a variety of tolling objectives. The models also can be used to evaluate non-tolled (HOV) managed lane facilities.
- In complex modeling settings (e.g. dynamic pricing) the models provide over 150 output variables per facility segment or link.

- Efficient pricing requires variability in prices at various times and under various circumstances. This is because the costs imposed by a user's vehicle vary with the nature of and conditions on the roadway, and the characteristics of the vehicles using of the roadway.
- Policy makers benefit from having a means that allows them to quickly determine whether or not a project offers the prospect of meaningful net benefits and revenues that support toll operations.
- This exercise is made complex by the number of factors that contribute to a successful managed lanes facility design and operation.
- Many of these factors are explicitly represented in the TOM model as policy assumptions that can be established by the end user.

■ Corridor Volumes

- Some express lanes have been developed in relatively lightly-used corridors, while others have been developed in corridors that have heavy corridor volumes.
- While not strictly a policy assumption, the demand volumes provided to the TOM model may have some uncertainty associated with them. Test can be performed using variations in volume to determine the influence on project feasibility

- **Demographic Conditions**
- Express Lanes have generally, but not always, been implemented in settings where incomes and values of time are high. Others are in corridors with a high share of recreational or other on-work traffic.
- Again modeling tests can be made regarding uncertainty associated with demographics and growth.

■ Value of Time

- Different users of potential managed lanes will have levels of willingness to pay for travel time savings. This is known as a user's value of time (VOT) savings.
- The TOM model typically makes use of any locally available information on VOT, such as mean values from a travel demand model. The TOM model then applies a distribution (log-normal distribution) around those mean values.
- Modeling tests can be made with alternative VOT in order to help determine project financial risk and feasibility.

- **Traffic Composition**

- Corridors can differ in the share of traffic comprised by SOVs, HOVs, and trucks. This affects the ease of traffic movements between the express and general-purpose lanes, and the value of travel time savings or losses.
- The TOM model typically inherits the composition of traffic from a validated travel demand model.

■ Facility Geometry

- Facilities with express lanes vary in the number of express lanes and their share of total cross-sectional capacity. They also differ in the number of ingress and egress points and whether "hard" or "soft" barriers separate express from general purpose lanes.
- The nature of the planned project determines the characterization of lanes and any limits on express lane access. In the case of limited access special procedures are implemented in the TOM model to properly represent the demand for express lane usage.

- **Hours of Operation**

- Some express lanes operate only in the AM and/or PM peak periods of workdays while others operate 'round the clock and on weekends.
- The TOM model can represent every five minutes of the day and hours of operation can be set to meet desired operating rules.

- **Carpool Policies**

- In some express lane implementations policy makers have seen fit to continue allowing 2+ person carpools to travel free in the tolled lanes, while other projects have raised the carpool occupancy requirement. In other settings all vehicles pay for access to the managed lanes.
- The TOM model permits the selection of which vehicle classes pay a toll for express lane use and which are exempt. These assumptions can also be varied by time of day.

■ Tolling Objectives

- The tolling objective is manifest in the procedures used to vary tolls. In some cases, the toll is varied with the sole purpose of maintaining a **minimum level of service** in the express lane, while in other cases, the objective is to **minimize the costs** to users of the corridor or, alternatively, to **maximize the revenue** generated by the facility.
- In a typical TOM model run both **cost min.** and **rev. max.** are analyzed. These objectives can also be subject to other policy constraints. More below...

- **Minimum and Maximum Tolls**
- Some facility operators will impose constraints on a toll objective such as minimum or maximum toll rates. Minimum tolls may ensure that toll transaction costs are recovered. Maximum tolls may provide users a price guarantee.
- Minimum and maximum constraints can be impose on any other toll objective. Each will have implications for both revenue and facility performance.

■ Toll Discounts

- It is sometimes desired to offer toll discounts to certain vehicle classes such as HOV2+ vehicles or electric vehicles.
- The TOM model allows any vehicle class that is modeled to be provided a discount toll rate. Discounts can vary by time of day and can be combined with any other toll objective. Toll discounts will influence both revenue and facility performance.

- **Level of Service Violations**
- Some facilities are required to maintain a minimum level-of-service, often this is a minimum speed (45 m.p.h.) during much of the facilities operation.
- The TOM model permits the establishment of a minimum level-of-service. In this case when the express lane speeds drop below this threshold the lane reverts to HOV operations and no tolls are imposed until speeds recover.

- Pricing Frequency
 - Some facilities implement variable pricing via a table of fixed rates that varies by day of week and time of day. Others employ so-called dynamic pricing, wherein the toll varies in real time with the facility volume.
 - The TOM model can represent either “static” or “dynamic” toll rate setting. Dynamic pricing allows for re-pricing every five minutes and draws from traffic distributions across many days of “operation”.

- **Feedback to Regional Model**
- Express toll lanes are a lane choice for users of a corridor. Typically these facilities will not significantly influence the choice of travel mode. But conversion from HOV operations can have some influence of carpool formation.
- The TOM model is a micro-assignment model and inherits demand from a regional model. To test mode choice implications of toll policy a feedback step must be implemented between TOM and the regional model.

- **Treatment of Hyper-Congestion**
- Many corridors with express lanes experience hyper-congestion during some point during one or both peak periods of operations. These conditions present unique challenges in modeling facility performance and toll implementations.
- The TOM model has special features to properly handle the hyper-congested state. TOM makes use of high frequency and high resolution data on historical corridor performance (when available) to customize the implementation of these procedures.

- **Modeling of the Spreading of the Peak**
- As demand in a corridor grows the peak period of operations typically expands. Conversely, as capacity is added to a corridor the peaks may shorten.
- The TOM model has an optional feature that models the lengthening/shortening of the peak. This feature makes use of high frequency and high resolution data on current traffic volumes (when available), and changes in future demand and facility capacity.



Blank Page



Appendix E Discussion on revenue and cost metrics

Estimated revenue leakage

For all of the evaluated concepts, facility users are assumed to be required to have a tag/transponder in their vehicle that is linked to a pre-established account to use the tolled lanes. The use of photo toll equipment for image capture and toll bill processing is not assumed in any of the concepts, although photo enforcement equipment may be installed to deter people from avoiding toll equipment by switching lanes before and after toll gantries or in shoulder lanes, as well as for identification of vehicles traveling in the toll lanes without a valid transponder.

The modeled transaction and revenue values do not account for penetration rates for transponder accounts or the percentage of through trips and out of state/country trips that likely would not be associated to a registered transponder account in the state of Oregon. As adjustments for transponder usage rates were not made in the traffic modeling, the leakage or revenue loss factors provided assume that a certain number of transactions will divert to alternative routes or general purpose lanes, in the case of express toll lanes or HOT lanes, to avoid fines and fees associated with violation.

Additional leakage attributed to equipment read errors of transponders is assumed to be less than 0.5 percent and consistent across concepts. Transponder accounts linked to expired credit and debit cards and accounts with insufficient balances are assumed to be 4 percent and consistent across concepts.

Estimated toll collection operations and maintenance / rehabilitation and reconstruction costs

For all concepts, routine operations and maintenance costs and periodic rehabilitation and reconstruction costs are assumed and estimated using existing toll agency experience on other comparable toll facilities in the U.S. All concepts assume costs associated to credit card fees, state/agency costs, back office customer service center vendor contract(s), lane-side equipment and vendor costs, enforcement costs for state highway patrol, and periodic replacement of lane-side toll equipment and procurement of back office and lane-side toll vendors.

- Credit card fees are anticipated to be comprised of a fixed base cost and percentage cost based on the value of the transaction. The overall percentage rate is assumed to be 2.3 percent consistent with typical credit card fee processing rates, including a factor for account refunds.
- The state or toll agency is assumed to be responsible for general management, vendor oversight, marketing, information technology, accounting and finance, and enforcement/violations. In addition to administrative costs attributed to rent, computer equipment and other general overhead, other agency costs also include items for consultant fees, including personal services contracts and forecasting activities
- The customer service center vendor(s) is (are) responsible for processing toll transactions, collecting toll revenue, maintaining customer accounts, interfacing with customers via telephone and potential retail walk-in centers and providing



software applications to enable these functions. Either a single vendor or multiple vendors will be responsible for providing both the software systems that process electronic toll transactions for payment and the operations to provide customer service. Expenditures for vendor services are incurred on a contract basis that can be based on either a fixed monthly amount, a transactional fee, or combination of the two.

- Roadway toll systems costs include all lane equipment, hardware and software required to identify a toll transaction and transmit data about that transaction to the customer service center for payment processing. Sometimes referred to as "lane systems," this equipment includes transponder readers, cameras, and communications network equipment that need regular maintenance and/or replacement to ensure the system is functioning properly. For all of the concepts, it is assumed the toll systems vendor operate under a 10-year fixed-fee contract that is procured under the same timeline with a full set of equipment replacement at the beginning of each vendor contract cycle. Lane side equipment costs primarily cover transponder readers and cameras used for video enforcement.
- Enforcement costs are assumed to be incurred through interagency agreements with law enforcement, typically state patrol, for both HOV occupancy declaration enforcement and to confirm vehicles are traveling through the facility with a valid and correctly installed transponder. In all concepts, enforcement is budgeted during toll service hours with additional enforcement during peak travel times. Current methods of enforcement are not foolproof and there are still challenges in enforcing the entire length of the facility as well as accurately determining occupancy levels in backseats of passenger vehicles. Typically, enforcement officers will be able to identify carpool declaration through a beacon signal on the gantry when a vehicle declared as a HOV passes through or through the back of a switchable transponder set to carpool declaration mode, which is identified by a red background on the back of the transponder facing the windshield. Similar to vehicle occupancy detection, a gantry beacon may alert enforcement officers to vehicles without valid transponders.

The following assumptions relate to specific concepts:



Concept A

The following cost factors, based on industry best practices and the judgment of the evaluation team, were accounted for in the generation of revenue estimates for Concept A:

- Concepts facility users are assumed to be required to have a tag/transponder in their vehicle that is linked to a pre-established account to use the tolled lanes.
- Carpools (HOV 3+) are assumed to be exempt from paying tolls. These vehicles would self-declare using a switchable transponder that allows them to switch to HOV status, which tend to be more expensive than a sticker tag. False carpool declaration is estimated to be more than 25 percent of declared carpool trips on U.S. express lane toll facilities. However, rates decline with the presence of law enforcement. This evaluation assumed enforcement levels are adequate for coverage during operating hours, with higher levels during peak periods, with revenue loss of 20 percent.
- The use of photo toll equipment for image capture and toll bill processing is not assumed in any of the concepts.
- The modeling assumes that 30 percent potential transactions will divert to the general purpose lanes or alternative routes to avoid fines and fees associated to being a violator.
- Drivers using the lanes without a transponder is expected to be 5 percent, the lowest of the tolling concepts. Lower rates are expected due to the presence of law enforcement to monitor HOV declaration.
- Equipment read errors of transponders were assumed to account for less than 0.5 percent, which was consistent across all concepts.
- Transponder accounts linked to expired credit and debit cards and accounts with insufficient balances are assumed to be 4 percent, and consistent across concepts.
- Credit card fees are anticipated to be comprised of a fixed base cost and percentage cost based on the value of the transaction. The overall percentage rate is assumed to be 2.3 percent consistent with typical credit card fee processing rates including a factor for account refunds. With lower revenue generation in comparison to the other concepts, Concept A is expected to incur low overall costs attributed to credit card fees.
- The state or toll agency is assumed to be responsible for general management, vendor oversight, marketing, information technology, accounting and finance, and enforcement/violations. In addition to administrative costs attributed to rent, computer equipment, and other general overhead, other agency costs also include items for consultant fees, including personal services contracts and forecasting activities.
- The customer service center vendor(s) is (are) responsible for processing toll transactions, collecting toll revenue, maintaining customer accounts, interfacing with customers via telephone and potential retail walk-in centers and providing software applications to enable these functions. For Concept A it was assumed, due to the limited number of transactions and reduced potential for economies of scale in procuring a back-office vendor(s) directly, that back functions would be contracted through another agency at a cost premium to account for



periodic vendor procurement. Periodic costs associated to vendor procurement, implementation, and testing are not assumed in Concept A.

- Roadway toll systems costs include all lane equipment, hardware, and software required to identify a toll transaction and transmit data about that transaction to the customer service center for payment processing. For all of the concepts it is assumed the toll systems vendor operate under a 10-year fixed fee contract that is procured under the same timeline with a full set of equipment replacement at the beginning of each vendor contract cycle. In Concept A multiple single lane toll points are assumed in both the north and south travel directions.
- Enforcement costs are assumed to be incurred through interagency agreements with law enforcement, typically state patrol, for both HOV occupancy declaration enforcement and to confirm vehicles are traveling through the facility with a valid and correctly installed transponder. In all concepts enforcement is budgeted during toll service hours with additional enforcement during peak travel times. Concept A assumes higher levels of enforcement for both occupancy and registered transponder detection.

Concept B

The following cost factors, based on industry best practices and the judgment of the evaluation team, were accounted for in the generation of revenue estimates for Concept B:

- Concepts facility users are assumed to be required to have a tag/transponder in their vehicle that is linked to a pre-established account to use the tolled lanes.
- Carpools (HOV 3+) are assumed to pay tolls. As such, there is no revenue loss associated with false HOV declaration.
- The use of photo toll equipment for image capture and toll bill processing is not assumed in any of the concepts.
- The modeling assumes that 20 percent potential transactions will divert to the general purpose lanes or alternative routes to avoid fines and fees associated to being a violator.
- Drivers using the lanes without a transponder is expected to be 10 percent.
- Equipment read errors of transponders were assumed to account for less than 0.5 percent, which was consistent across all concepts.
- Transponder accounts linked to expired credit and debit cards and accounts with insufficient balances are assumed to be 4 percent, and consistent across concepts.
- Credit card fees are anticipated to be comprised of a fixed base cost and percentage cost based on the value of the transaction. The overall percentage rate is assumed to be 2.3 percent consistent with typical credit card fee processing rates including a factor for account refunds. With lower revenue generation in comparison to the other concepts, Concept B, with the lowest average toll rates is expected to incur lower overall costs attributed to credit card fees.
- The state or toll agency is assumed to be responsible for general management, vendor oversight, marketing, information technology, accounting and finance, and enforcement/violations. In addition to administrative costs attributed to rent, computer equipment, and other general overhead, other agency costs also



include items for consultant fees, including personal services contracts and forecasting activities.

- The customer service center vendor(s) is (are) responsible for processing toll transactions, collecting toll revenue, maintaining customer accounts, interfacing with customers via telephone and potential retail walk-in centers and providing software applications to enable these functions. Concept B it is assumed that customer service center vendor(s) will be procured to process tolls and manage customer accounts and walk-in centers. Periodic costs associated to vendor procurement, implementation, and testing are typically contracted for 6-10 year periods for systems functions and 3-8 years for operations functions (assuming bifurcated vendor contracts), in Concept B vendors are assumed to be procured on 8 year cycles.
- Roadway toll systems costs include all lane equipment, hardware, and software required to identify a toll transaction and transmit data about that transaction to the customer service center for payment processing. For all of the concepts it is assumed the toll systems vendor operate under a 10-year fixed fee contract that is procured under the same timeline with a full set of equipment replacement at the beginning of each vendor contract cycle. In Concept B a single toll point is assumed in all lanes and shoulders in both the north and south travel directions and entry ramps.
- Enforcement costs are assumed to be incurred through interagency agreements with law enforcement, typically state patrol, to confirm vehicles are traveling through the facility with a valid and correctly installed transponder. In all concepts enforcement is budgeted during toll service hours with additional enforcement during peak travel times. Concept B assumes base levels of enforcement for registered transponder detection.

Concept C

The following cost factors, based on industry best practices and the judgment of the evaluation team, were accounted for in the generation of revenue estimates for Concept C:

- Concepts facility users are assumed to be required to have a tag/transponder in their vehicle that is linked to a pre-established account to use the tolled lanes.
- Carpools (HOV 3+) are assumed to pay tolls. As such, there is no revenue loss associated with false HOV declaration.
- The use of photo toll equipment for image capture and toll bill processing is not assumed in any of the concepts.
- The modeling assumes that 20 percent potential transactions will divert to the general purpose lanes or alternative routes to avoid fines and fees associated to being a violator.
- Drivers using the lanes without a transponder is expected to be 15 percent.
- Equipment read errors of transponders were assumed to account for less than 0.5 percent, which was consistent across all concepts.
- Transponder accounts linked to expired credit and debit cards and accounts with insufficient balances are assumed to be 4 percent, and consistent across concepts.



- Credit card fees are anticipated to be comprised of a fixed base cost and percentage cost based on the value of the transaction. The overall percentage rate is assumed to be 2.3 percent consistent with typical credit card fee processing rates including a factor for account refunds. With lower revenue generation in comparison to the other concepts, Concept B, with the lowest average toll rates is expected to incur lower overall costs attributed to credit card fees.
- The state or toll agency is assumed to be responsible for general management, vendor oversight, marketing, information technology, accounting and finance, and enforcement/violations. In addition to administrative costs attributed to rent, computer equipment, and other general overhead, other agency costs also include items for consultant fees, including personal services contracts and forecasting activities. Concept C would generate enough annual toll trips to assume that Oregon would establish their own toll agency and back office systems and operations with benefits from economies of scale in regards to state administrative costs per toll transactions.
- The customer service center vendor(s) is (are) responsible for processing toll transactions, collecting toll revenue, maintaining customer accounts, interfacing with customers via telephone and potential retail walk-in centers and providing software applications to enable these functions. For Concept C it was assumed that customer service center vendor(s) will be procured to process tolls and manage customer accounts and walk-in centers. Periodic costs associated to vendor procurement, implementation, and testing are typically contracted for 6-10 year periods for systems functions and 3-8 years for operations functions (assuming bi-furcated vendor contracts), in Concept C vendors are assumed to be procured on 8 year cycles.
- Roadway toll systems costs include all lane equipment, hardware, and software required to identify a toll transaction and transmit data about that transaction to the customer service center for payment processing. For all of the concepts it is assumed the toll systems vendor operate under a 10-year fixed fee contract that is procured under the same timeline with a full set of equipment replacement at the beginning of each vendor contract cycle. In Concept C multiple toll points are assumed in all lanes and shoulders in both the north and south travel directions and entry ramps on both I-5 and I-205, providing significant operations and maintenance and rehabilitation and reconstruction costs.
- Enforcement costs are assumed to be incurred through interagency agreements with law enforcement, typically state patrol, to confirm vehicles are traveling through the facility with a valid and correctly installed transponder. In all concepts enforcement is budgeted during toll service hours with additional enforcement during peak travel times. Concept C assumes base levels of enforcement for registered transponder detection.

Concept D

The following cost factors, based on industry best practices and the judgment of the evaluation team, were accounted for in the generation of revenue estimates for Concept D:



- Concepts facility users are assumed to be required to have a tag/transponder in their vehicle that is linked to a pre-established account to use the tolled lanes.
- Carpools (HOV 3+) are assumed to be exempt from paying tolls. These vehicles would self-declare using a switchable transponder that allows them to switch to HOV status, which tend to be more expensive than a sticker tag. False carpool declaration is estimated to be more than 25 percent of declared carpool trips on U.S. express lane toll facilities. However, rates decline with the presence of law enforcement. This evaluation assumed enforcement levels are adequate for coverage during operating hours, with higher levels during peak periods, with revenue loss of 20 percent.
- The use of photo toll equipment for image capture and toll bill processing is not assumed in any of the concepts.
- The modeling assumes that 30 percent potential transactions will divert to the general purpose lanes or alternative routes to avoid fines and fees associated to being a violator.
- Drivers using the lanes without a transponder are expected to be 5 percent.
- Equipment read errors of transponders were assumed to account for less than 0.5 percent, which was consistent across all concepts.
- Transponder accounts linked to expired credit and debit cards and accounts with insufficient balances are assumed to be 4 percent, and consistent across concepts.
- Credit card fees are anticipated to be comprised of a fixed base cost and percentage cost based on the value of the transaction. The overall percentage rate is assumed to be 2.3 percent consistent with typical credit card fee processing rates including a factor for account refunds. With lower revenue generation in comparison to the other concepts, Concept B, with the lowest average toll rates is expected to incur lower overall costs attributed to credit card fees.
- The state or toll agency is assumed to be responsible for general management, vendor oversight, marketing, information technology, accounting and finance, and enforcement/violations. In addition to administrative costs attributed to rent, computer equipment, and other general overhead, other agency costs also include items for consultant fees, including personal services contracts and forecasting activities. For Concept D it is assumed that, due to the limited number of transactions and reduced potential for economies of scale in procuring a back-office vendor(s) directly, back office functions are assumed to be contracted through another agency at a cost premium to account for periodic vendor procurement.
- The customer service center vendor(s) is (are) responsible for processing toll transactions, collecting toll revenue, maintaining customer accounts, interfacing with customers via telephone and potential retail walk-in centers and providing software applications to enable these functions. For Concept D it was assumed, due to the limited number of transactions and reduced potential for economies of scale in procuring a back-office vendor(s) directly, that back functions would be contracted through another agency at a cost premium to account for periodic vendor procurement. Periodic costs associated to vendor procurement, implementation, and testing are not assumed in Concept D.



- Roadway toll systems costs include all lane equipment, hardware, and software required to identify a toll transaction and transmit data about that transaction to the customer service center for payment processing. For all of the concepts it is assumed the toll systems vendor operate under a 10-year fixed fee contract that is procured under the same timeline with a full set of equipment replacement at the beginning of each vendor contract cycle. In Concept D multiple toll points are assumed in both the east and west travel directions.
- Enforcement costs are assumed to be incurred through interagency agreements with law enforcement, typically state patrol, for both HOV occupancy declaration enforcement and to confirm vehicles are traveling through the facility with a valid and correctly installed transponder. In all concepts enforcement is budgeted during toll service hours with additional enforcement during peak travel times. Concept D assumes higher levels of enforcement for both occupancy and registered transponder detection.



Appendix F Discussion on state and regional laws and policies

The analysis presented in this technical memorandum regarding concept consistency with state and regional laws and policies was conducted using the following documents:

- Oregon Highway Plan (OHP)
- Oregon Transportation Plan (OTP)
- Oregon Revised Statutes (ORS)
- Oregon Constitution
- Oregon Administrative Rules (OAR)
- Metro Regional Transportation Plan (RTP)

It is important to note that this analysis was conducted by applying the methodology that if a concept does not specifically violate applicable state or regional law or policy (i.e., if a concept is not specifically illegal), then the concept receives a top score. State and regional laws and policies contain some standards that any proposed future tolling project must meet. For example, OAR 731-040-0050 – Evaluation and Authorization requires that the OTC cannot “consider authorizing a proposed tollway project for construction until the tollway project has been included as a tollway in the local or regional transportation system plan of jurisdictions in which the project would be located.”¹¹ This means that some level of detail on the proposed tollway would likely need to be included in the Metro RTP at some point.

Other regulations require that the tolling proposal meet certain revenue and cost requirements at a level of detail that is not knowable at the feasibility analysis stage. Still other regulations require that proposed tollways meet certain unspecified parameters that dictate policy considerations (such as traffic operations, diversion of traffic and other considerations similar to those included in this feasibility analysis). This analysis assumes that the specific parameters of the Portland Metro Area Value Pricing Feasibility Analysis, and/or parameters included in future analysis that will be conducted before any tolling proposal is actually implemented, will be accepted as parameters.¹²

Also worth noting is that ORS 383.150 – Traffic congestion relief program, which was established by House Bill 2017, stipulates the following:

- (1) The Oregon Transportation Commission shall establish a traffic congestion relief program.
- (2) No later than December 31, 2018, the commission shall seek approval from the Federal Highway Administration, if required by federal law, to implement value pricing as described in this section.

¹¹ OAR 731-040-0050 (7).

¹² For example, the OHP stipulates that “ODOT will only consider those toll projects ranked ‘medium to high’ under tolling parameters considered by ODOT” and then refers to a 2009 white paper that provided similar parameters to this feasibility analysis (OHP Action 6.A.2). This feasibility analysis assumes that the specific parameters of this feasibility analysis are acceptable and/or that future analysis of an actual tolling proposal will include acceptable parameters. This analysis assumes that the parameters identified in the 2009 white paper are not the only parameters that may be determined acceptable.



- (3) After seeking and receiving approval from the Federal Highway Administration, the commission shall implement value pricing to reduce traffic congestion. Value pricing may include, but is not limited to, variable time-of-day pricing. The commission shall implement value pricing in the following locations:
- (a) On Interstate 205, beginning at the Washington state line and ending where it intersects with Interstate 5 in this state.
 - (b) On Interstate 5, beginning at the Washington state line and ending where it intersects with Interstate 205.

Portland Metro Area Value Pricing – Summary of Relevant Policies

The information below provides a summary of relevant federal, state, and regional plans and policies in support of the Portland Metro Area Value Pricing Feasibility Analysis.

This is not intended to provide a comprehensive history of all tolling or value pricing efforts in Oregon. Further information about these topics can be found at ODOT's website, <http://www.oregon.gov/ODOT/Pages/Value-Pricing.aspx>. Questions about the content of this document can be directed to valuepricinginfo@odot.state.or.us.

Background

In 2017, the legislature made a significant commitment to Oregon's multimodal transportation system by passing House Bill 2017, also known as Keep Oregon Moving. The legislation committed \$5.3 billion for projects aimed at freeway bottlenecks, active transportation needs, and funding for transit operations.

Section 120 of HB 2017 creates the Traffic Congestion Relief Program and directs the Oregon Transportation Commission (OTC) to request approval from the Federal Highway Administration (FHWA) to implement value pricing on Interstate 5 and Interstate 205 in the Portland metropolitan area. The OTC has until December 31, 2018 to seek FHWA's approval. Once Oregon receives that authority, HB 2017 compels the OTC to move forward with value pricing implementation to relieve congestion.

The OTC directed the Oregon Department of Transportation (ODOT) to conduct a feasibility analysis, working with local government officials and stakeholders and seeking public input so that the voice of all those who may be affected can be heard. A Policy Advisory Committee (PAC) was convened to advise the OTC on implementing Section 120, making recommendation(s) regarding:

- Based on the considerations described under Committee Responsibilities, what location(s) on I-5 and/or I-205 are best suited to implement value pricing?
- For the recommended location(s), what type of value pricing should be applied?
- What mitigation strategies should be pursued based on their potential to reduce the impact of value pricing on environmental justice communities or adjacent communities?

The PAC is asked to consider the following factors in evaluating pricing options:

- Revenue and cost



- Traffic operations improvements
- Diversion of traffic
- Adequacy of transit service
- Equity impacts
- Impacts on the community, economy, and environment
- Public input
- Consistency with state and regional law and policy
- Feasibility under federal law
- Project delivery schedules

Oregon plans and policies

HB 2017 and its value pricing directive are not Oregon's first legislative experience with tolling. The Oregon Department of Transportation's (ODOT's) deliberate approach to modern tolling and value pricing policy began in 1995 with the passage of Senate Bill 626. That legislation resulted in much of Oregon Revised Statutes (ORS) Chapter 383 as it exists today, governing tollway project authority, agreements, funding and fee collection. Although lawmakers and ODOT did not move forward any tolling projects at the time, the Traffic Congestion Relief Program provisions of HB 2017 augment this existing statute in ORS Chapter 383.

Oregon Highway Plan Goal 6

Starting in 2006, the OTC adopted policies to support the consideration of tolling in Oregon as a means to improve the capacity and operational efficiency of the state highway system. Following the commission of a series of white papers that investigated many facets of tolling and value pricing, ODOT updated the Oregon Highway Plan (OHP) in 2009 with Goal 6: Tolling and Congestion Pricing. These amendments set the policy for ODOT and the OTC to follow on future value pricing projects. The white papers and resulting policy identified that tolling can accomplish more than just revenue generation. Additional objectives include congestion relief, greenhouse gas/emission reduction, and economic development. OHP Goal 6 also established policies that stipulate tolling project requirements, public engagement and education, and tolling technology and system interoperability (<http://www.oregon.gov/ODOT/Planning/Documents/OHP-Tolling-Pricing-Policy-Amendments.pdf>).

Statewide tolling policy work continued in 2012, with the adoption of many additions to Oregon Administrative Rule (OAR) Chapter 731, Division 40. These rules implement the provisions of ORS Chapter 383 that direct ODOT and OTC to further clarify statute and set the parameters OTC will use when considering toll project proposals. These rules also create a process for reviewing and approving toll rates, reinforce Oregon's commitment to interoperability, establish civil penalties for failure to pay a toll, and set up processes specific to interstate bridge toll projects.

Oregon policy on uses of revenue

HB 2017 dedicates net revenue from value pricing to a newly created Congestion Relief Fund. As a tax or excise levied on the operation or use of a motor vehicle, revenue from value pricing would be subject to the same limitations as the State Highway Fund. The State Highway Fund is bound by the restrictions of Article IX, Section 3a of the Oregon



Constitution, which specifies that funds “shall be used exclusively for the construction, reconstruction, improvement, repair, maintenance, operation and use of public highways, roads, streets and roadside rest areas in this state.”

The Oregon Supreme Court has interpreted this to mean that these funds “must be limited exclusively to expenditures on highways, roads, streets and roadside rest areas themselves and for other projects or purposes within or adjacent to a highway, road, street or roadside rest area right-of-way that primarily and directly facilitate motorized vehicle travel.”

The Oregon Department of Justice (DOJ) has not completed a full analysis of what activities that support public transportation or active transportation may be eligible under Article IX, Section 3a. However, DOJ has provided informal and formal opinions on a range of potential eligible uses of State Highway Fund dollars that may help inform the OTC considerations:

- Park-and-ride lots that connect auto users to bus systems: these must be in or adjacent to the right-of-way and must serve bus routes (and could not solely serve light rail, for example, as it is not “motorized vehicle travel”).
- Construction of shared-purpose lanes that include light rail—although the cost of light rail-only improvements within the lane (such as the rail itself) would not be eligible to be paid with State Highway Fund dollars.
- Bus malls: former public streets that will be closed to all motor vehicle traffic except buses are eligible.
- Bus pullouts on the highway.
- Bicycle and pedestrian facilities that are within the highway, road or street right-of-way are eligible. Off-system paths and trails are not.

The newly created Congestion Relief Fund is a dedicated account to finance congestion relief efforts on the identified tollways, including value pricing administrative and operating costs, new or expanded facilities and ongoing maintenance of the tollways.

While the Congestion Relief Fund is established in statute as a distinct account from the previously established State Tollway Account, the latter may provide insights into future rules for use for the newly created fund. ORS 383.009(2) provides that State Tollway Account funds may be used to finance preliminary studies, acquire right of way, construct, improve or maintain the tollway, operate and administer applicable toll systems, and finance any bonds or other obligations used for such expenses.

Upon passage of HB 2017, the legislature included a “budget note” directing ODOT to dedicate value pricing revenue for funding congestion relief efforts along I-205, particularly the I-205 Stafford Road to Abernethy Bridge projects. The note attached to ODOT's 2017-2019 budget is in effect through the duration of the budgetary biennium, which ends June 30, 2019. Beyond the period of time covered by the budget note, the Oregon Transportation Commission will set policy for where revenue from value pricing should be directed, subject to further direction from the Legislature. The Policy Advisory Committee may choose to make recommendations to the Commission on this topic.



Federal tolling programs

Federal laws pertaining to the collection of tolls on Interstate highways, and the use of federal funds for tolling projects, largely predate the Interstate system itself. Initially, provisions in Title 23 of United State Code (U.S.C.) prohibited the use of federal money for tolling projects on federal-aid highway fund facilities. In 1991, however, the Intermodal Surface Transportation Efficiency Act (ISTEA) opened the door for federally funded tolling projects. ISTEA required that tolling of any existing roads or bridges may only occur after the facility is reconstructed, expanded or otherwise improved. Subsequent congressional action allowed tolling of high-occupancy vehicle lanes and established a pilot project for jurisdictions to experiment with congestion pricing. The following is an overview of relevant tolling regulations and their applicability to the various concepts under consideration by the Portland Metro Area Value Pricing Policy Advisory Committee (PAC).

23 U.S.C. Section 129 – Mainstream Tolling

Title 23 U.S.C. Section 129 provides authority for tolling Federal-aid highways in conjunction with new construction or other improvements to those highways. Public agencies may impose new tolls on federal-aid highways in the following cases:

- Initial construction of a new highway, bridge, or tunnel
- Initial construction of new lanes on highways, bridges, and tunnels (including Interstates), as long as the number of toll-free lanes is not reduced
- Reconstruction or replacement of a bridge or tunnel
- Reconstruction of a highway (other than an Interstate)
- Reconstruction, restoration, or rehabilitation of an Interstate highway, as long as the number of toll-free lanes is not reduced

Prior to October 1, 2012, public authorities were required to execute a tolling agreement with FHWA to impose tolls on a federal-aid highway, but this requirement is no longer required. Although tolling agreements are no longer required under the mainstream tolling programs, State departments of transportation and other public agencies responsible for toll facilities are strongly encouraged to execute a memorandum of understanding (MOU) with their FHWA Division Offices, particularly considering the new requirements for audits and the potential consequences of noncompliance (including the discontinuation of toll collection).

Of the pricing concepts advanced for Round 2 analysis, Concepts D (adding capacity to the southern section of I-205 and pricing those lanes) and E (replacement of the Abernethy Bridge) fall under the jurisdiction of the Title 23 U.S.C. Section 129 provisions.

23 U.S.C. Section 166 – HOV/HOT Lane Program

Under Section 166 of Title 23, existing HOV lanes may be converted to tolled operation provided that tolls are variably priced and collected electronically in order to manage travel demand. The program includes consultation the local metropolitan planning organization (MPO) regarding the placement and amount of tolls on the converted lanes. To implement tolls on an existing high-occupancy vehicle (HOV) lane, project sponsors must demonstrate that the presence of paying vehicles will not cause conditions on the facility to become degraded. Ongoing annual reporting



documenting conditions on the converted lanes is also required, and if the HOV facility becomes degraded the sponsor must bring the facility into compliance either by increasing HOV occupancy requirements, increasing tolls, increasing capacity, or eliminating access to paying motorists.

The following certification provisions apply whenever an HOV lane is converted to HOT operations under Section 166:

- States must certify annual to FHWA that they meet the operational requirements stipulated in Section 166, including vehicle eligibility; enforcement, and operational performance monitoring, evaluation and reporting. The annual certifications must demonstrate that the presence of paying vehicles in the high-occupancy toll (HOT) lane has not cause traffic service to become degraded.
- States must demonstrate that programs are in place to inform motorists how they may enroll and use the managed lane, either in a non-paying HOV vehicle or a paying HOT vehicle.
- States must indicate that they have or will have an automated electronic toll collection system in place on the managed lanes.

While Oregon has only minimally utilized HOV lanes, one option under consideration in Round 2, Concept A, involves conversion of the existing HOV lane on the northbound portion of I-5. Accordingly, Oregon could avail itself to the provisions of 23 U.S.C. Section 166 should this concept continue to move forward.

Value Pricing Pilot Program

The Value Pricing Pilot Program (VPPP) is designed to assess the potential of different value pricing approaches for reducing congestion. Under this program, tolls may be imposed on existing toll-free highways, bridges, and tunnels, so long as variable pricing is used to manage demand. Congress has authorized up to 15 slots under the VPPP, which are allocated to State or local agencies. Seven of these slots have been permanently allocated to States that have executed agreements for tolling projects under the program.

Oregon currently has a VPPP slot, which was used in the past to evaluate tolling on Highway 217 as well as a project by Portland State University regarding peer-to-peer car sharing in Portland. This VPPP could be used for other congestion pricing projects in Oregon. Once an agency holds a slot in the program, it may be used for multiple value pricing projects.

Round 2 Concepts A (southbound I-5 managed lane), B (pricing all lanes of I-5 from Going St. at the northern end to Multnomah Blvd. at the southern end) and C (pricing all lanes of I-5 and I-205, from the Washington state line to the southern terminus of I-205 at I-5) would likely use the VPPP tolling program.

Regional plans and policies

In 2000, the Metro Council and the Joint Policy Advisory Committee on Transportation (JPACT) adopted a peak period pricing policy and policy direction for future corridor refinement plans and studies, as recommended by the Traffic Relief Options (TRO) study led by ODOT and Metro. This action was reflected in a new RTP policy on peak period pricing and specific provisions for pricing to be considered as part of several upcoming



corridor studies, including the Sunrise Highway, I-5-99W Connector, Sunset Highway, I-5, I-205, Highway 99E/224 and Highway 217.

The Transportation System Management and Operations (TSMO) Strategic Plan, which was adopted as part of the RTP in 2010, also identifies value pricing as a potential strategy for future traffic management and calls for the study and implementation of congestion pricing/high occupancy lanes.

The 2014 RTP also made value pricing an objective within the plan's Goal 4, "Emphasize Effective and Efficient Management of the Transportation System." The RTP advances value pricing as one possible strategy to help the region optimize capacity of existing facilities, improve travel conditions for system users, and address complementary goals such as improving air quality and meeting greenhouse gas emission reduction targets.

Chapter 2 of the 2014 RTP includes the following language:

"Value pricing—sometimes called congestion pricing—involves the application of market pricing (through variable tolls, variable priced lanes, area-wide charges or cordon charges) to the use of roadways at different times of day. While this tool has been successfully applied in other parts of the U.S. and internationally, it has not been applied in the Portland metropolitan region to date. In 2008, the Oregon Department of Transportation (ODOT) researched the potential effects of tolling/pricing to determine if and how tolling could be applied in Oregon. ODOT will research the application of this tool in the Portland metropolitan region and identify a pilot project to further test this strategy in response to House Bill 2001, which was adopted by the 2009 Legislature.

"As applied elsewhere, this strategy manages peak use on limited roadway infrastructure by providing an incentive for drivers to select other modes, routes, destinations or times of day for their travels. Reducing discretionary peak hour travel helps the system operate more efficiently improving mobility and reliability of the transportation system while limiting vehicle miles traveled and congestion-related auto emissions. In addition, those drivers who choose to pay tolls can benefit from significant savings in time. Similar variable charges have been utilized for pricing airline tickets, telephone rates and electricity rates to allocate resources during peak usage. In addition, value pricing may generate revenues to help with needed transportation improvements. More work is needed to gain public support for this tool." (2014 RTP, pages 2-86 and 2-87).

Chapter 6 of the RTP, "Implementation," identifies several corridors and facilities that should consider pricing strategies as part of future rehabilitation or capacity expansion projects. Specifically, Tigard to Wilsonville (Mobility Corridor #3, centered on I-5 South), Clark County to I-5 via Gateway, Oregon City and Tualatin (Mobility Corridors # 7, 8, and 9, centered on I-205) and Portland Central City Loop (Mobility Corridor # 4, centered on I-5 and I-405) are all targets of opportunity for future pricing efforts.



Portland Metro Area Value Pricing Feasibility Analysis

Final

Round 2 Concept Evaluation

Technical Memorandum 4



May 7, 2018



Portland Metro Area Value Pricing Feasibility Analysis

Final
Final

Technical Memorandum 4

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



720 SW Washington St., Suite 500
Portland, OR 97205

May 7, 2018



Table of Contents

EXECUTIVE SUMMARY.....	I
1 INTRODUCTION	1
1.1 Project context and purpose of this report.....	1
1.2 Technical approach.....	2
1.3 Round 2 concepts	3
1.4 Equity and diversion mitigation strategies	5
1.5 Revenue generation considerations.....	6
2 ROUND 2 EVALUATION APPROACH	8
2.1 Round 2 performance measures.....	8
2.2 Round 2 performance measure evaluation approach	10
3 ROUND 2 EVALUATION SUMMARY BY CONCEPT	11
3.1 Concept A: Northern I-5 Priced Lanes.....	11
3.1.1 Traffic operations improvement on I-5 and I-205.....	13
3.1.2 Diversion of traffic.....	15
3.1.3 Transit service and active transportation	15
3.1.4 Equity benefits and impacts	17
3.1.5 Benefits and impacts for the community, economy and environment.....	18
3.1.6 Revenue and costs.....	19
3.1.7 Implementation	20
3.2 Concept B: I-5 Priced Lanes: Toll All Lanes between Going Street/Alberta Street and Multnomah Boulevard.....	23
3.2.1 Traffic operations improvement on I-5 and I-205.....	25
3.2.2 Diversion of traffic.....	26
3.2.3 Transit service and active transportation	28
3.2.4 Equity benefits and impacts	29
3.2.5 Benefits and impacts for the community, economy and environment.....	30
3.2.6 Revenue and costs.....	31
3.2.7 Implementation	32
3.3 Concept C: I-5 and I-205 Priced Roadway – Toll All Lanes.....	35
3.3.1 Traffic operations improvement on I-5 and I-205.....	37
3.3.2 Diversion of traffic.....	39
3.3.3 Transit service and active transportation	40
3.3.4 Equity benefits and impacts	42
3.3.5 Benefits and impacts for the community, economy and environment.....	43
3.3.6 Revenue and costs.....	44
3.3.7 Implementation	45
3.4 Concept D: I-205 Priced Lane – OR99E to Stafford Road	47
3.4.1 Traffic operations improvement on I-5 and I-205.....	49
3.4.2 Diversion of traffic.....	51
3.4.3 Transit service and active transportation	51
3.4.4 Equity benefits and impacts	53
3.4.5 Benefits and impacts for the community, economy and environment.....	54
3.4.6 Revenue and costs.....	55
3.4.7 Implementation	56
3.5 Concept E: Abernethy Bridge Priced Roadway.....	59
3.5.1 Traffic operations improvement on I-5 and I-205.....	61



3.5.2	Diversion of traffic	63
3.5.3	Revenue and costs and implementation	64
4	RECOMMENDATION AND NEXT STEPS.....	67
4.1	Implications for congestion pricing implementation	67
4.2	Consultant team recommendation.....	68
4.3	Next Steps	68

List of Figures

Figure 1-1.	Study Corridors: I-5 and I-205.....	1
Figure 3-1.	Round 2 Concept A: Northern I-5 Priced Lanes	12
Figure 3-2.	Round 2 Concept B: I-5 Toll All Lanes between Going Street/Alberta Street and Multnomah Boulevard	24
Figure 3-3.	Round 2 Concept C: Priced Roadway – Toll All Lanes.....	36
Figure 3-4.	Round 2 Concept D: I-205 Priced Lane – OR99E to Stafford Road.....	48
Figure 3-5.	Round 2 Concept E: Abernethy Bridge Priced Roadway.....	60

List of Appendices

Appendix A:	Evaluation methods and assumptions
Appendix B:	Performance measure evaluation scoring
Appendix C:	Regional transportation demand modeling findings
Appendix D:	Toll Optimization Model (TOM) inputs and assumptions
Appendix E:	Discussion on revenue and cost metrics
Appendix F:	Discussion on state and regional laws and policies



EXECUTIVE SUMMARY

Project summary

Technical Memorandum 4 presents findings from the round 2 evaluation of five pricing concepts for I-5 and I-205 from the Oregon/ Washington state line south to the I-5/I-205 interchange near Tualatin, Oregon. The purpose of this evaluation is to examine the benefits and impacts of different pricing concepts to inform a recommendation by the study's Policy Advisory Committee (PAC) to the Oregon Transportation Commission (OTC), based on application of a series of performance measures to the five concepts.

Background

In 2017, the Oregon Legislature authorized substantial funding to improve highways, transit, biking and walking facilities, and use technology to make the state's transportation system work better. The Legislature also directed the OTC to seek federal approval to implement value pricing on I-5 and I-205 in the Portland metro area to address congestion.

The Oregon Department of Transportation (ODOT) initiated the Portland Metro Area Value Pricing Feasibility Analysis to explore the options available and determine how and where congestion pricing could help improve congestion on I-5 or I-205 during peak travel times.

The feasibility analysis included two rounds of evaluation. The first round of evaluation assessed the opportunities and issues associated with the primary types of highway congestion pricing applications. Following the round 1 evaluation, a total of five round 2 concepts, referred to as Concepts A through E, were developed based on technical evaluation results, input from the PAC and the public on the initial concepts, and project team experience with congestion pricing systems throughout the U.S. These refined concepts allowed for a more detailed assessment of potential impacts and benefits for defined pricing strategies and locations.

- Concept A – Northern I-5 Priced Lanes
- Concept B – I-5 Priced Lanes: Toll all lanes between Going Street/Alberta Street and Multnomah Boulevard
- Concept C – I-5 and I-205 Priced Roadway: Toll all lanes
- Concept D – I-205 Priced Lane – OR99E to Stafford Road
- Concept E – Abernethy Bridge Priced Roadway

Equity and diversion mitigation strategies

The Oregon Transportation Commission has established that considerations of equity and diversion to surrounding communities are priorities in evaluating potential congestion pricing concepts. The PAC Charter includes both equity impacts and diversion of traffic as factors to be considered in the evaluation of congestion pricing options. The Charter also requests that the PAC identify potential mitigation strategies with a potential to reduce the impact on Title VI and/or Environmental Justice communities and adjacent communities.

Some mitigation strategies that were identified by the project team, the PAC and solicited from the public during outreach events include the following:



- Many diversion impacts can be addressed through design of the system and rate structure. Appropriate rate setting through dynamic pricing could maximize flow on the priced portion of the facility and reduce the incidence of diversion; it should be noted that for Concept E, this could reduce revenue substantially.
- A strategy that combines pricing concepts on I-5 and I-205 could improve overall flow and help to manage diversion between the two freeways.
- Transit, bicycle, and pedestrian improvements or introduction of transit service as well as traffic calming strategies could address local diversion concerns.
- Where diversion increases traffic on surface streets, improvements to walking and bicycling facilities may be needed to mitigate potential safety impacts.
- Discounting programs, such as free, reduced or pre-paid toll tags for Title VI and Environmental Justice communities may be considered. Such programs may also be considered for area residents who do not have viable, toll free alternatives. For example, the residents of Hayden Island must use I-5 to get off the island and may therefore require such mitigation programs if I-5 is to be tolled in the future.
- Lane pricing, as opposed to roadway pricing may result in relatively higher tolls for use of the priced lanes. As such, additional consideration of toll discounting policies for low income users may be needed for approaches where only certain lanes are to be priced.
- Freight vehicles are restricted by Oregon statute from using the left inside lane of highways. In general, when a lane pricing (as opposed to roadway pricing) approach is adopted, it is the inside left lane(s) that is priced. If such an approach were used in Portland, freight vehicles would therefore be restricted from using the facility and thus would not benefit from pricing. As such, revisiting and refining Oregon statutes in relation to tolling on the use of the inside left lane by freight vehicles might be considered as a freight-oriented mitigation measure if lane pricing is implemented.
- A monitoring program with key performance measures could be established to evaluate effectiveness at addressing regional goals.

Round 2 evaluation measures

The round 2 pricing concepts were evaluated using performance measures to demonstrate the range of positive and negative impacts of pricing. This evaluation will inform a project team recommendation for the PAC so it can in turn develop a recommendation for the OTC. Performance metrics were organized based on the following policy considerations, which are identified in the PAC Charter:

- Traffic operations improvement on I-5 and I-205
- Diversion of traffic
- Transit service and active transportation
- Equity benefits and impacts
- Benefits and impacts for the community, economy and environment
- Revenue and costs
- Implementation
 - Consistency with state and regional law and policy
 - Federal feasibility
 - Project delivery schedule



Concepts were assessed as to how they generally performed against each performance metric, with concepts that provide positive impacts or reduce negative impacts performing “well” and concepts that reduce positive benefits or increase negative impacts performing “poorly.”

Round 2 evaluation results

Table 1.1-1 is the performance evaluation summary of Concepts A through D, which were developed with the primary intent to minimize congestion. Results are explained in greater detail in the next section. Concept E results are included separately in the next section because the intent of the Concept E analysis was to evaluate its revenue generation potential as opposed to minimizing congestion.

Table 1.1-1. Concepts A through D: performance evaluation summary

Policy consideration	Metric	Concept			
		A	B	C	D
Traffic operations improvement	Vehicle and person throughput on I-5 and I-205				
	Freight truck throughput on I-5 and I-205				
	Passenger vehicle travel time on I-5 and I-205				
	Passenger vehicle travel time on managed lanes		N/A	N/A	
	Freight truck travel time on I-5 and I-205				
	Assessment of change in duration of peak vehicle traffic conditions				
	Delay on priced facility				
	Safety impacts				
	Trip length distribution				
Diversion of traffic	Diversion impacts on non-tolled facilities				
	Safety impacts to all modes of transportation (including bicyclists and pedestrians) on routes with diversion				



Policy consideration	Metric	Concept			
		A	B	C	D
Transit service and active transportation	Adequacy of transit service				
	Bus transit travel time				
	Mode share shift (high-occupancy vehicle [HOV], single occupancy vehicle [SOV], transit, walk, bike)				
	Availability of bicycle travel on alternative routes				
	Completeness of pedestrian network				
Equity	Value or travel time savings for Title VI and/or Environmental Justice communities (regional)				
	Changes in travel time based on geographic zones				
	Access to jobs				
Community, economy and the environment	Physical impacts to existing residences and businesses				
	Regional travel time savings				
	Regional vehicle miles traveled (VMT) (including non-freeway)				
	Change in air pollution				
	Value of travel time savings				
Cost and revenue	Capital expenditure on facility				
	Estimated gross toll revenue potential from tolled facility				
Implementation	State law & policy				
	Regional law & policy				
	Federal feasibility				
	Project delivery schedule				
Legend:		Performs well 	Performs moderately 	Performs poorly 	



Concept A: Northern I-5 Priced Lanes

In Concept A, a single lane in each direction would be converted to a tolled managed lane. The concept would convert an existing general purpose lane in the southbound direction, and the existing HOV lane in the northbound direction.

Concept A has limited congestion relief benefits, which are generally restricted to the tolled lanes during peak hour. Conditions on the unpriced lanes are mostly unchanged, and diversion would be limited. Both revenue and capital costs would be relatively low. This concept would likely cover its own tolling infrastructure operating costs but would not offset all roadway rehabilitation and reconstruction costs. Tolling authority for the southbound segment could come under FHWA's Value Pricing Pilot Program and the northbound segment would qualify under FHWA's HOV/High-Occupancy Toll (HOT) Lane Program.





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

Concept B converts all lanes between NE Going Street/Alberta Street and SW Multnomah Boulevard to a priced roadway. Concept B has strong potential to reduce congestion along I-5 with modest diversion to I-205 and adjacent facilities. This concept also has a much denser network of transit and multi-modal facilities that can serve as a toll-free travel alternative to minimize impacts. This concept generates more revenue than single-lane concepts and would cover all toll collection and operating costs, as well as routine and periodic roadway operations and maintenance. The beginning and end points of the corridor segments where this concept would be implemented would need to be examined as part of the future environmental analysis process. Tolling authority for this concept could come under FHWA's Value Pricing Pilot Program.



Concept C: Priced Roadway – Toll All Lanes

Concept C would implement pricing on all lanes of I-5 and I-205 from the Washington/Oregon state line to the I-5/I205 interchange near Tualatin. Concept C has the greatest potential for reducing congestion and generating travel time savings for the widest possible range of users. Because of the scale of this concept, it could be considered as part of a broader regional pricing application in the future, pending success of a pilot pricing program. While diversion can be expected, it could be minimized through dynamic tolling. This concept would by far generate the largest amount of revenue compared to the other concepts. Tolling authority for this concept could come under FHWA's Value Pricing Pilot Program.

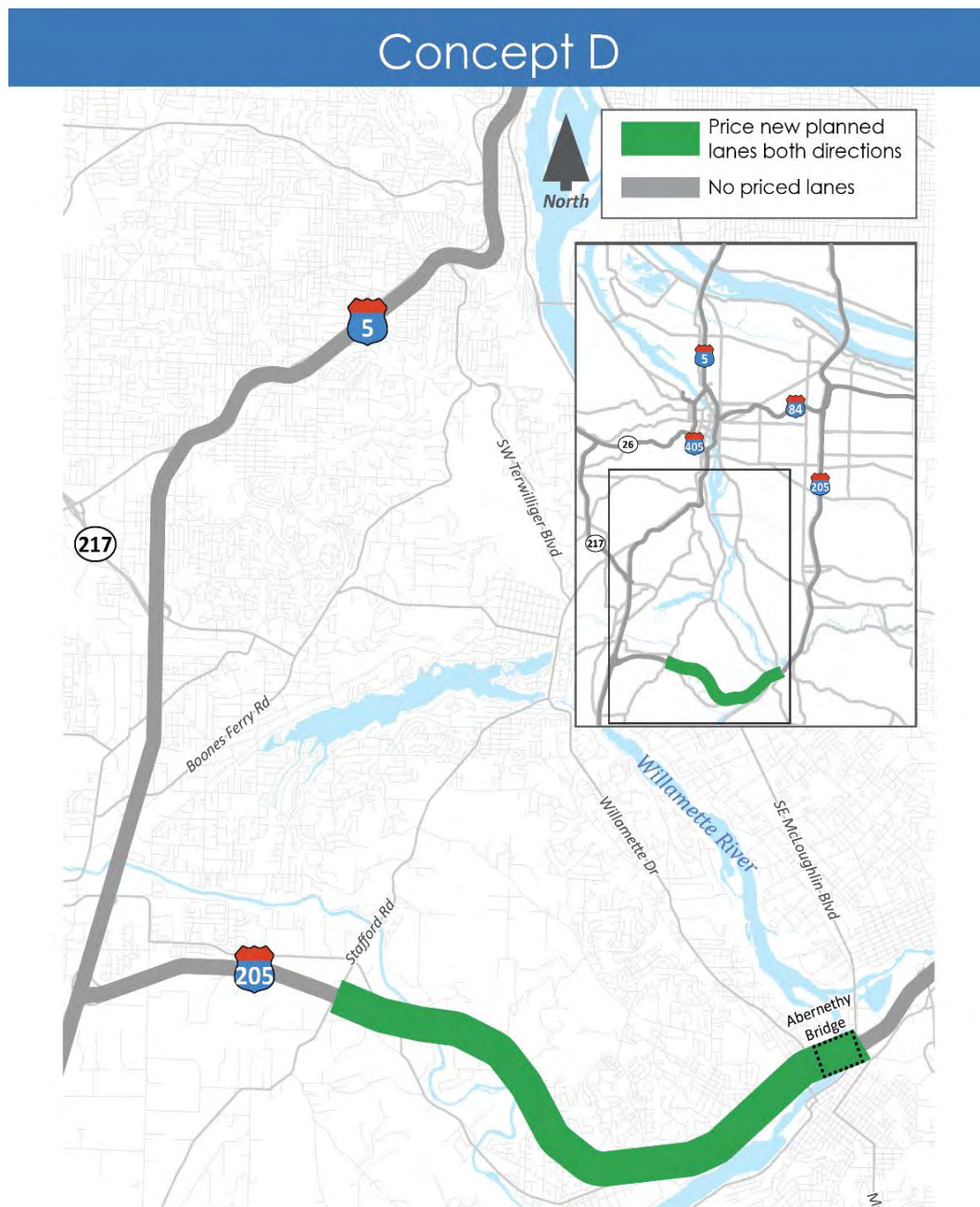




Concept D: I-205 Priced Lane – OR99E to Stafford Rd.

Concept D would price the third lane in each direction, currently planned on I-205 from OR99E to Stafford Road, including widening of the Abernethy Bridge. Existing general purpose lanes in each direction would remain unpriced. The future planned project was considered part of the 2027 baseline for all concepts in the evaluation.

Concept D shows some congestion relief benefit with minimal traffic diversion and provides some benefit to I-205. The pricing concept is not expected to generate significant revenue to contribute toward the construction of the planned lanes and bridge widening project. Concept D would qualify for implementation under Section 129 of U.S. Title 23 if the planned additional lanes were constructed as priced lanes.

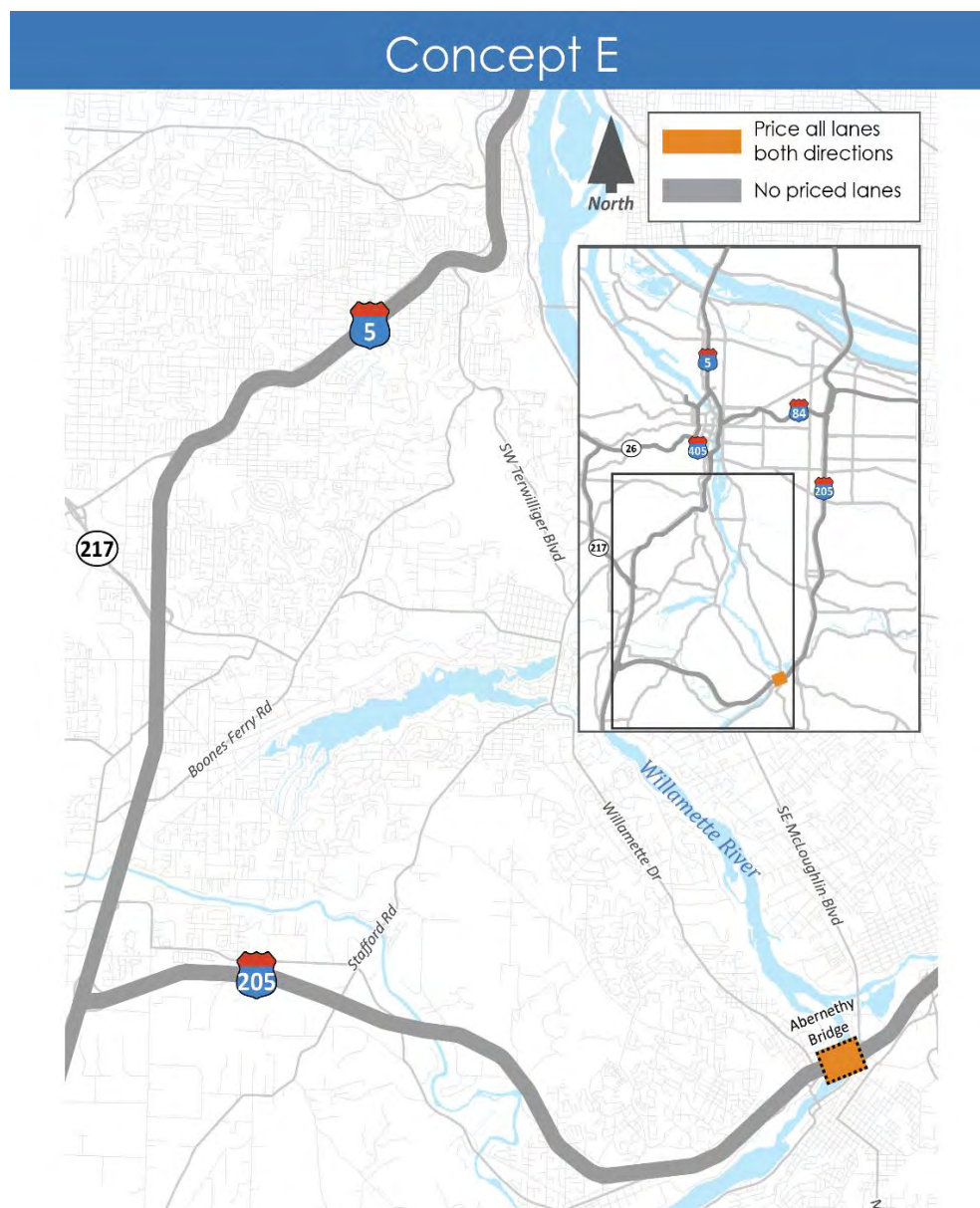




Concept E: Abernethy Bridge Priced Roadway

Concept E applies pricing on all existing lanes of the Abernethy Bridge as well as additional lanes to be constructed as part of the planned bridge widening. While this Concept assumes a variable rate structure, with highest rates during peak hours, it was evaluated to determine its potential to help fund the planned addition of a lane on I-205 from OR99E to Stafford Road and reconstruction of the Abernethy Bridge.

Concept E shows promise to raise revenue and reduce congestion on I-205. This concept, or a variant, could pair with a pilot program to balance the travel choice between the I-5 and I-205 corridors. Mitigation strategies would likely be needed to address potential diversion to OR99E and the Arch Bridge. The beginning and end points of the corridor segments where this concept would be implemented would need to be examined as part of the future environmental analysis process.





Key findings

The evaluation of the five round 2 concepts has shown that congestion pricing on I-5 and I-205 has potential benefits to people living and traveling through the Portland metro area and would be effective in addressing traffic congestion on these facilities. Key findings to help support the recommendation are provided on the following pages. Additionally, general findings and considerations include:

- Any concepts considered further should be paired with policies or programs that address potential impact on lower-income and adjacent communities.
- The analysis indicates that all five concepts would likely generate sufficient revenue to pay for tolling operations. However, there is less certainty regarding whether revenue from Concepts A and D (both single-lane concepts) would also cover capital costs of tolling implementation.
- Concepts B, C and E all indicate they would provide revenue to support mitigation and/or planned transportation projects in the Portland metro area.
- A phased approach—implementing a smaller-scale application as a pilot program and following up with monitoring and scheduled reporting—may ensure that the pricing application meets state and regional goals, and may also lay the foundation for a more comprehensive pricing approach for the Portland metro area.
- Key performance measures could be established to gauge success during future monitoring.

Consultant team recommendation

Based on the key findings from the evaluation, the consultant team recommends a phased approach to implementation of congestion pricing on I-5 and I-205:

- Initial implementation of Concept B as a pilot pricing program, coupled with a sunset or trigger to evaluate success.
 - *Rationale:* Strong potential at congestion reduction along I-5 with minimal diversion to I-205 and adjacent facilities; has a much denser network of transit and multi-modal facilities that can serve as a toll free alternative; significant improvements in facility efficiency and vehicular throughput, meaning that more vehicles can be moved and diversion to free facilities can be managed.
- Consider implementation of Concept E concurrent with implementation of Concept B.
 - *Rationale:* Provides the benefits of Concept B while generating funding to advance the addition of new lanes on I-205 where only two lanes in each direction currently exist as well as retrofitting and adding a lane in each direction to the Abernethy Bridge.
- After assessment of the performance of the initial pricing project, and assuming successful evaluation, implementation of Concept C in phases with more comprehensive system analysis.
 - *Rationale:* Greatest potential for reducing congestion and generating travel time savings for the widest possible range of users; significant improvements in



facility efficiency and vehicular throughput, meaning that more vehicles can be moved and diversion to free facilities can be managed.

- Do not implement Concept A or D.
 - *Rationale:* Little congestion relief benefit; would not provide a reasonable test for the potential for pricing to provide congestion relief.

Next steps

At the fifth PAC meeting on May 14, 2018, the PAC will review and consider the evaluation presented in this technical memorandum as well as the public comment received over the past six months. In May and June 2018, the PAC will develop a recommendation(s) to advise the OTC. The OTC will submit a report to FHWA by December 2018. After coordination with FHWA, the OTC will provide direction about next steps such as an environmental analysis, which would include additional public involvement, Title VI and Environmental Justice analysis, traffic analysis, and other analysis of potential benefits and impacts.



Blank Page



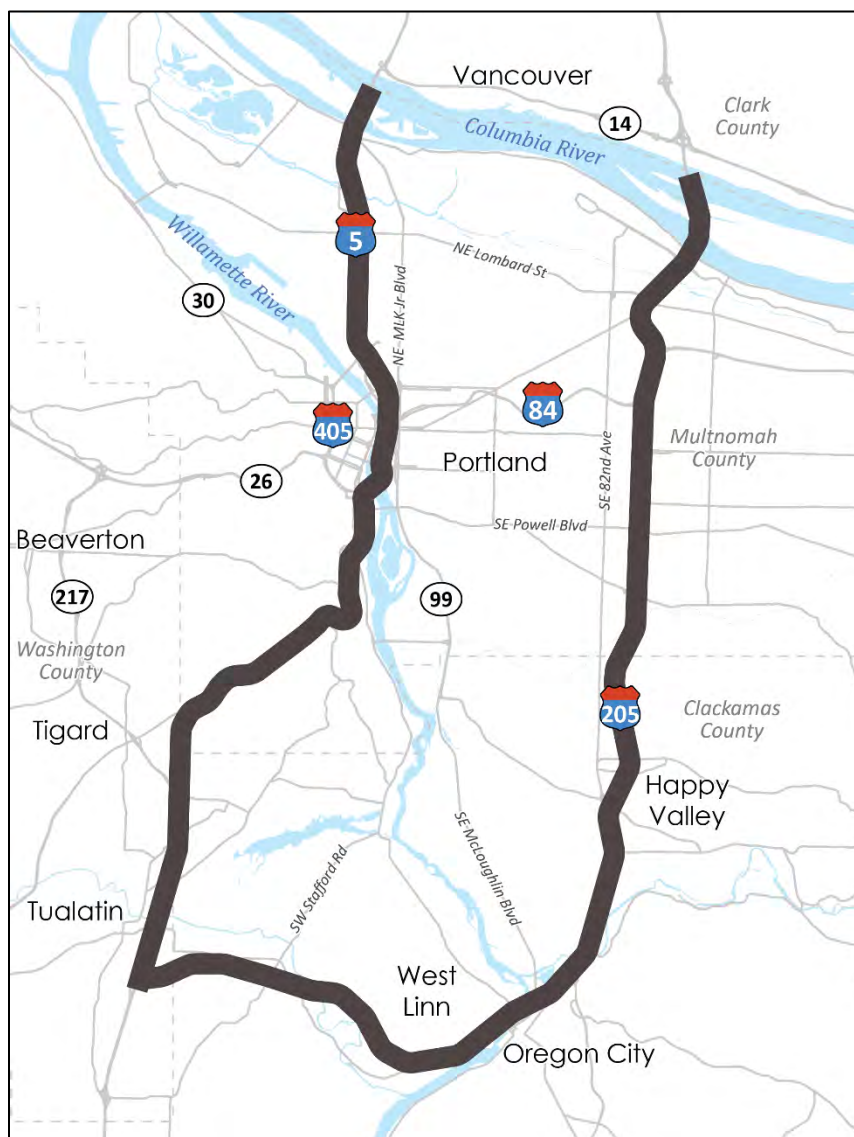
1 INTRODUCTION

1.1 Project context and purpose of this report

In 2017, the Oregon Legislature authorized substantial funding to improve highways, transit, biking and walking facilities, and use technology to make the state's transportation system work better. The Legislature also directed the Oregon Transportation Commission (OTC) to seek federal approval to implement value pricing on I-5 and I-205 in the Portland metro area to address congestion.

The Oregon Department of Transportation (ODOT) initiated the Portland Metro Area Value Pricing Feasibility Analysis to explore the options available and determine how and where congestion pricing could help improve congestion on I-5 or I-205 during peak travel times. The feasibility analysis corridors are depicted on Figure 1-1.

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





Value pricing, also known as congestion pricing, has been successfully implemented in the U.S. and around the world, resulting in faster, more reliable and predictable trips. It does this using variable rate toll pricing to manage traffic flow during peak travel times, which is typically during the morning and evening peak commuting periods. This creates an incentive for some drivers to reduce the number of trips made, shift travel to less congested periods of the day or use alternate modes such as transit. Some drivers will choose to take alternate routes. Those choosing to pay the toll have higher travel speeds and improved travel time reliability. Pricing may also benefit users of nearby and adjacent non-tolled facilities and lanes by improving traffic flow on the priced lanes and thus reducing the potential for drivers to divert off the freeway to avoid congestion. Pricing can also benefit the users of other modes, and in particular transit, as tolling systems are often implemented with transit improvements such as express bus service and dedicated lanes or access points to the tolled facility. Enhanced transit service is common with newer pricing applications and help all transportation system users benefit from the improved traffic operations provided by pricing.

This memorandum presents findings from the round 2 evaluation of five pricing concepts for I-5 and I-205 from the Oregon/Washington state line south to the I-5/I-205 interchange near Tualatin, Oregon. The purpose of this evaluation is to examine the benefits and impacts of different pricing concepts to inform a recommendation by the study's Policy Advisory Committee (PAC) to the OTC, based on application of a series of performance measures to the five concepts. The PAC recommendation will also be informed by public outreach and input, experience from other pricing projects around the country, and PAC policy discussion to date. The Congestion Pricing Mitigation and Related Policy Considerations memorandum, dated May 2018, reports on PAC discussion and public input about mitigation and should be reviewed concurrent with this memorandum.

The OTC will consider PAC recommendation(s), public input, and technical findings, and develop a report to the Federal Highway Administration (FHWA) to be submitted by the end of 2018. Upon discussion or approval from FHWA (depending on the type of pricing application), ODOT would then conduct further study, which is likely to include environmental analysis, including additional traffic analysis and public involvement.

This memorandum includes the following:

- Section 1 – Introduction
- Section 2 – Round 2 evaluation approach
- Section 3 – Round 2 evaluation summary by concept
- Section 4 – Project team recommendation and next steps

1.2 Technical approach

The feasibility analysis included two rounds of evaluation. The first round of evaluation assessed the opportunities and issues associated with the primary types of highway congestion pricing applications. The analysis identified a broad range of impacts that could be experienced by implementation of value pricing on the study corridors. These



findings are summarized in *Technical Memorandum 3 – Round 1 Concept Evaluation and Recommendations*.¹ Overall, the following conclusions were drawn from round 1:

- An assessment of current and baseline conditions through 2027 found that portions of I-5 and I-205 are currently experiencing “hyper-congestion,” a traffic condition characterized by exceptionally high traffic volumes and travel speeds below 40 miles per hour, often causing stop-and-go conditions. Round 1 modeling showed that these conditions are likely to worsen through 2027.
- In general, concepts that priced the entire roadway, as opposed to single-lane pricing concepts, would be the most effective at managing congestion. Pricing all lanes could result in more traffic diversion. Priced roadways are also more likely to generate net revenues that could fund mitigation strategies.
- Concepts involving the conversion of a general purpose lane to pricing had the advantage of maintaining some unpriced lane options but were found to be less effective at addressing the goal of reducing congestion. Priced lane concepts on facilities with only two lanes in each direction, as is the case on locations along I-5, are not operationally feasible without a major interchange reconstruction because at least two general purpose through lanes must be maintained for facility operations.
- Concepts involving the construction of a new priced lane performed well in terms of improved traffic operations due to added capacity but, in addition to being the costliest to implement, the benefits are somewhat limited by downstream bottlenecks. This was particularly true on I-5 approaching the Columbia River Bridge, and on I-205 as well as I-5 at the southern end approaching the Boone Bridge. Constructing new lanes would be the most expensive option and also would likely have the most significant environmental and community impacts. Furthermore, there is evidence that Portland area drivers are already avoiding I-5 and I-205 due to congestion. Additional detail on the results of the round 1 evaluation is provided in *Technical Memorandum 3 – Round 1 Concept Evaluation and Recommendations*.² Following the round 1 evaluation, a total of five round 2 concepts were developed based on evaluation results, public input on the initial concepts, and project team experience with congestion pricing systems throughout the U.S. These refined concepts define the pricing strategy and the location where it is to be applied, allowing for a more detailed assessment of potential impacts and benefits. The next section describes the round 2 concepts.

1.3 Round 2 concepts

For the round 2 evaluation, five concepts were studied. The primary goal of each concept is to mitigate congestion on I-5 and I-205, except for Concept E, which was evaluated as a potential strategy to help fund a congestion-relief project that adds a lane in each direction on I-205 from OR99E to Stafford Road and on the Abernethy

¹ Technical Memorandum 3 is available on ODOT's Value (Congestion) Pricing website: <http://www.oregon.gov/ODOT/Pages/VP-Feasibility-Analysis.aspx>

² Technical Memorandum 3 is available on ODOT's Value (Congestion) Pricing website: <http://www.oregon.gov/ODOT/Pages/VP-Feasibility-Analysis.aspx>



Bridge. These concepts are described in more detail in Technical Memorandum 3 and are as follows:

- Concept A – Northern I-5 Priced Lanes
- Concept B – I-5 Priced Lanes: Toll all lanes between Going Street/Alberta Street and Multnomah Boulevard
- Concept C – I-5 and I-205 Priced Roadway: Toll all lanes
- Concept D – I-205 Priced Lane – OR99E to Stafford Road
- Concept E – Abernethy Bridge Priced Roadway

These five concepts represent a range of potential congestion pricing applications. The concepts include: conversion of an existing high-occupancy vehicle (HOV) lane in Concept A (northbound); conversion of general lanes in Concept A (southbound), Concept B and Concept C as allowed under the FHWA Value Pricing Pilot Program (VPPP); added freeway capacity with the third lane assumed under Concepts D and E; and a tolled bridge as a funding strategy in Concept E).

These concepts were identified to respond to public comment received during the PAC meetings and the winter outreach as well as the technical evaluation of the round 1 concepts. Key themes heard during the winter outreach and how they informed the concepts is provided in Table 1.3-1.

Table 1.3-1. Developing the round 2 concepts

Issue	Concept development
Round 1 public involvement: what we heard (key themes)	
Congestion is a problem	Congestion pricing concepts were identified to address locations along I-5 and I-205 that experience the worst traffic congestion.
How and where revenue will be spent	Concept E – toll all lanes of the Abernethy Bridge was identified as a potential funding strategy for the planned third lane and bridge reconstruction.
Fairness of value pricing	A variety of congestion pricing concept types were identified for round 2 consideration and evaluation, including different geographic locations and a combination of concepts that toll all lanes and concepts that toll one lane.
Transit accessibility and potential transit investments	All round 2 concepts are evaluated within this technical memo for their ability to provide mobility options for all users.
Highway capacity	A variety of congestion pricing concept types were identified for round 2 consideration and evaluation, including those that did and did not provide new capacity.
Round 1 technical evaluation	
Addresses most substantial hyper-congestion	All concepts (A through E) were selected such that each covers a segment or segments of I-5 and/or I-205 that is currently experiencing hyper-congested conditions.
Multimodal transportation options	Concepts A and B were selected in part because there are transit and multi-modal facilities that can serve as an alternative to freeway travel.



Issue	Concept development
Round 1 public involvement: what we heard (key themes)	
Comprehensive approach to congestion management on I-5 and I-205	Concept C was selected and evaluated as an approach to addressing congestion on the entirety of the I-5 and I-205 corridors within the Portland metro area.
Federal feasibility	The concepts selected and evaluated in round 2 would each have unique implementation issues from a federal perspective and would be authorized under different federal tolling authorization programs (HOV to high-occupancy toll [HOT] conversion for Concept A, mainstream tolling for Concept D and Value Pricing Pilot Program for concepts A, B, C and E)
Revenue generation	Concept E was selected and evaluated to examine its ability to generate revenue for further congestion relief strategies.

1.4 Equity and diversion mitigation strategies

The Oregon Transportation Commission has established that considerations of equity and diversion to surrounding communities are priorities in evaluating potential congestion pricing concepts. The PAC Charter includes both *equity impacts* and *diversion of traffic* as factors to be considered in the evaluation of congestion pricing options. The Charter also requests that the PAC identify potential mitigation strategies with a potential to reduce the impact on Title VI and/or Environmental Justice communities and adjacent communities.

In evaluating potential impacts of congestion pricing to Title VI and Environmental Justice communities, a recommendation should consider ways to share benefits as well as strategies to offset negative impacts. Reflecting this objective, many strategies should be considered as trade-offs. For example, pricing all lanes of a roadway is more effective at managing congestion than pricing a single lane. With this increased effectiveness, the amount of the toll can be set at a lower rate when compared to single-lane pricing concepts; also, it is possible to operate more hours with very low or no tolls. The opportunity to maintain lower toll amounts makes the benefits of congestion pricing available to more people at a lower cost.

However, a trade-off with priced roadways, from a low-income impact perspective, is that they do not provide general purpose (unpriced) lanes; drivers who choose to use the freeway during tolled periods would have to pay a toll. For this reason, it is especially important that strategies are considered -- such as increased transit service, low-income toll discounts, or incentives to use transit or carpools -- that can help offset negative impacts and distribute benefits more broadly.

Development of mitigation strategies will depend to a large degree on the type and location of any pricing concept(s) that moves forward. The PAC recommendation will be informed in part by information presented and committee deliberations from the April PAC meeting (PAC meeting #4), which was largely dedicated to a workshop on mitigation strategies. Final identification and development of mitigation strategies will be required as part of the National Environmental Protection Act (NEPA) process, which is required for all federal projects.



Several mitigation strategies and related policy considerations were identified by the project team, the PAC and solicited from the public during outreach events. A monitoring program with key performance measures could be established to evaluate effectiveness at addressing these strategies. Mitigation strategies identified include the following:

- Many diversion impacts can be addressed through design of the system and rate structure. Appropriate rate setting through dynamic pricing could maximize flow on the priced portion of the facility and reduce the incidence of diversion; it should be noted that for Concept E, this could reduce revenue substantially.
- A strategy that combines pricing concepts on I-5 and I-205 could improve overall flow and help to manage diversion between the two freeways.
- Transit, bicycle, and pedestrian improvements or introduction of transit service as well as traffic calming strategies could address local diversion concerns. Improvements in multimodal options also can provide alternatives for drivers who want to avoid paying a toll.
- Where diversion increases traffic on surface streets, improvements to walking and bicycling facilities may be needed to mitigate potential safety impacts.
- Discounting programs, such as free, reduced or pre-paid toll tags for Title VI and Environmental Justice communities may be considered. Such programs may also be considered for area residents who do not have viable, toll free alternatives. For example, the residents of Hayden Island must use I-5 to get off the island and may therefore require such mitigation programs if the northern section of I-5 is to be tolled.
- Lane pricing, as opposed to roadway pricing, may result in relatively higher tolls for use of the priced lanes. As such, additional consideration of toll discounting policies for low-income users may be needed for approaches where only certain lanes are to be priced.
- Freight vehicles are restricted by Oregon statute from using the left inside lane of highways. In general, when a lane pricing (as opposed to roadway pricing) approach is adopted, it is the inside left lane(s) that is priced. If such an approach were used in Portland, freight vehicles would therefore be restricted from using the facility and thus would not benefit from pricing. As such, revisiting and refining Oregon statutes in relation to tolling on the use of the inside left lane by freight vehicles might be considered as a freight-oriented mitigation measure if lane pricing is implemented.

1.5 Revenue generation considerations

As value pricing involves the use of tolling, revenue will be generated from the users of the priced facilities. Understanding how the revenue will be accounted for is vital towards understanding its contribution to funding improvements over time. For the calculation of revenue, the U.S. Department of Transportation (USDOT) developed a hierarchy of accounting and payments that yields a flow of funds. In general, toll revenues first account for uncollectable toll transactions (called “leakage”), followed by operations and maintenance expenditures, senior debt, rehabilitation and reconstruction funds, investment obligations, and finally equity (excess net revenues).



However, most agencies also account for hedging costs (for managing debt and income over time), reserve funds, and periodic roadway capital maintenance.

In short, the flow of funds puts operating uses as first priority and capital uses last. In terms of forecasting revenues, operations and maintenance costs are regular, recurring, and predictable; whereas, rehabilitation and reconstruction costs are periodic, they do not occur within the first few years of operations, but they need to be annualized in some manner in order to be accounted for within one forecast year revenue estimate.³

This memo provides a cursory examination of revenue generation potential for each of the five concepts. For the purposes of this analysis, the project team used a 3-stage assessment:

Stage One – gross toll revenues, minus:

- Leakage, which may include uncollectable transactions
- Routine annual toll collection operations and maintenance expenditures
- Routine annual roadway operations and maintenance expenditures

Stage Two – net toll revenues (remaining revenue after Stage One deductions), minus:

- Debt service on potentially borrowed funds for capital investment
- Contributions to rehabilitation and reconstruction for toll collection systems
- Contributions to rehabilitation and reconstruction for periodic roadway capital, if appropriate

Stage Three – excess net revenues (remaining revenue after deductions from both Stage One and Stage Two) which may be used for other uses, including incentives and policy-based mitigations.

All five concepts have positive net revenues at Stage 2. Stage 3 uses of revenue will depend on policy and project decisions made during a later phase.

For the following concept evaluation, with the exception of Concept E, the project team poses two primary questions regarding net revenues:

1. Is there sufficient toll revenue generated to cover toll and roadway operations and maintenance costs?
2. If yes, meaning positive net revenues, then what is the range/order of magnitude of annual net revenue remaining that could contribute toward capital investments, which may include capital funding, rehabilitation and reconstruction expenditures.

³ A detailed description of revenue estimation and funding analysis for toll facilities can be found at USDOT's Center for Innovative Finance Support website: <https://www.fhwa.dot.gov/ipd/>



2 ROUND 2 EVALUATION APPROACH

2.1 Round 2 performance measures

Concepts were evaluated according to the following performance measures identified with the PAC and documented in *Technical Memorandum 1 – Objectives and Performance Measures*.⁴ The list of measures below also includes the description of the key considerations as contained in the PAC charter. Some performance measures apply to more than one consideration. For example, “adequacy of transit service” is both a transit service and equity measure. In addition, there will be a need to look at multiple performance measures in later stages of concept project planning. Some measures will be better captured at later stages. Many factors can be addressed through design and ongoing performance management. If a measure shows poor performance in the feasibility analysis, it can be identified as an objective to incorporate in design.

Consideration: traffic operations improvement on I-5 and I-205

Charter description: To what extent the option will improve the traffic operations of the priced facility, including but not limited to increasing reliability and mitigating congestion.

- Vehicle and person throughput on I-5 and I-205
- Freight truck throughput on I-5 and I-205
- Passenger vehicle travel time on I-5 and I-205
- Passenger vehicle travel time on managed lanes
- Freight truck travel time on I-5 and I-205
- Assessment of change in duration of peak vehicle traffic conditions
- Delay on priced facility
- Safety impacts
- Trip length distribution

Consideration: diversion of traffic

Charter description: To what extent the option will cause diversion to other routes and modes that will impact the performance and operations of other transportation facilities, including both roads and transit service.

- Diversion impacts on non-tolled facilities
- Safety impacts to all modes of transportation (including bicyclists and pedestrians) on routes with diversion

Consideration: transit service and active transportation

Charter description: To what extent public transportation service is available to serve as an alternative, non-tolled mode of travel.

- Adequacy of transit service
- Transit travel time

⁴ Technical Memorandum 1 is available on ODOT's Value (Congestion) Pricing website:
<http://www.oregon.gov/ODOT/Pages/VP-Feasibility-Analysis.aspx>



- Mode share shift (HOV, single-occupancy vehicle [SOV], transit, walk, bike)
- Availability of bicycle travel on alternative routes
- Completeness of pedestrian network

Consideration: equity benefits and impacts

Charter description: Whether the option will disproportionately impact environmental justice households or communities and to what extent mitigation strategies could reduce the impact.

- Value or travel time savings for Title VI and/or Environmental Justice communities (regional)
- Changes in travel time based on geographic zones
- Access to jobs

Consideration: benefits and impacts for the community, economy and environment

Charter description: Whether and how the option will impact the surrounding community, economy, and/or environment and the economy of the state in general.

- Physical impacts to existing residences and businesses
- Regional travel time savings
- Regional VMT (vehicle miles traveled) (including non-freeway)
- Change in air pollution
- Value of travel time savings

Consideration: revenue and cost

Charter description: To what extent the option will raise sufficient revenue to cover the cost of implementing value pricing as well as the ongoing operational expenses, including the costs of maintenance and repairs of the facility.⁵

- Capital expenditure on facility
- Estimated gross toll revenue potential from tolled facility

Consideration: implementation

Charter description: Whether the option will comply with existing Oregon Transportation Commission policies, state laws, and regional planning regulations.

- Consistency with state law and policy
- Consistency with regional law and policy

Charter description: Whether the option is allowable under federal tolling laws or will require a waiver under the Value Pricing Pilot Program or some other authority.

- Feasibility under federal law

Charter description: Whether a value pricing option has the potential to alter the expected delivery schedule for a project on the corridor.

- Project delivery schedule

⁵ Note, as described in Section 1.5 above, gross revenue will first be allocated to ongoing operations and maintenance expenditures for the value pricing program, followed by debt service or state repayment of capital costs for implementing the system.



2.2 Round 2 performance measure evaluation approach

As with the round 1 evaluation, performance of each concept was evaluated against a 2027 baseline. Baseline conditions included all projects in the constrained 2027 Regional Transportation Plan and assumed no pricing. More information on the baseline conditions is provided in *Technical Memorandum 3*.

To evaluate each concept, the performance metrics were assigned a score based on professional assessment and, in some cases, analysis of modeling data. The team then converted the score to ranking symbols based on the extent to which the concept generated additional benefits or reduced negative impacts. More information on the evaluation methods and assumptions used is provided in Appendix A. Concepts providing positive impacts or reducing negative impacts were scored as “performs well,” while those that reduce positive benefits or increase negative impacts were scored as “performs poorly.”

The ranking is displayed throughout as follows:

Concept performs well:



Concept performs moderately:



Concept performs poorly:





3 ROUND 2 EVALUATION SUMMARY BY CONCEPT

This section provides a summary of the round 2 evaluation for the performance measures listed in section 2.1.⁶ Concepts A through D were evaluated based on how well they performed for each performance metric. Concept E was evaluated against a smaller subset of performance measures, since the purpose of Concept E was to test revenue generation. While each concept is composed of numerous individual roadway segments, each concept was evaluated as a whole. As such, individual segments may perform relatively better or relatively worse than other segments composing the concept, but the overall evaluation is reflective of the concept in its entirety. Detailed scoring of performance metrics and associated data for each performance metric is provided in an evaluation metric matrix attached as Appendix B. A summary of regional data and associated findings generated through the round 2 evaluation is provided in Appendix C.

3.1 Concept A: Northern I-5 Priced Lanes

In Concept A, a single lane in each direction would be converted to a tolled managed lane. The concept would convert an existing general purpose lane in the southbound direction, and the existing HOV lane in the northbound direction. The following are key findings from the assessment of Concept A:

- Concept A has limited congestion relief benefits, which are generally restricted to tolled lanes during the peak hour.
- Conditions on the unpriced lanes are mostly unchanged, and diversion would be limited.
- Both revenue and capital costs would be relatively low. Revenue will cover toll system operations and maintenance costs, but may not be enough to offset all roadway rehabilitation and reconstruction costs that would be incurred regardless of whether the lanes are priced. It is not likely to substantially support other capital improvements.
- Mitigation strategies particularly may be needed for Hayden Island, which is only accessible via this section of I-5. Impacts to Title VI and/or Environmental Justice communities are likely to be minimal.
- Regarding user costs, this concept maintains two unpriced lanes in each direction; at the same time, the toll amount per user would be higher, which is consistent among single-lane pricing concepts.
- The northbound segment would qualify under FHWA's HOV/HOT Lane Program. The southbound segment may qualify under the FHWA Value Pricing Pilot Program.

⁶ As with the round 1 evaluation, data for quantifying the evaluation metrics and conducting the assessment were supplied by Metro's regional travel demand model. Much of the travel demand model data were processed through ECONorthwest's Toll Optimization Model (TOM), which supplies a refined assessment of changes in traveler behavior, traffic volumes and other metrics associated with the implementation of pricing concepts (see Appendix D for assumptions used in the TOM model). Metro's Multi-criteria Evaluation (MCE) tool, also based on the regional travel demand model results, was used to assess regional and community impacts for measures not traditionally produced directly from regional demand modeling.



Figure 3-1. Round 2 Concept A: Northern I-5 Priced Lanes





3.1.1 Traffic operations improvement on I-5 and I-205

Concept A would improve travel for users of the priced lanes but would not generate much travel time savings for users of the general purpose lanes or the remainder of the area network. Overall, the probability of encountering congestion is slightly reduced and minimal diversion would occur with this concept. Additional detail on this group of performance metrics is included in the evaluation methods and assumptions matrix in Appendix A.

Table 3.1-1. Concept A evaluation: traffic operations improvement

Performance measure	Concept A evaluation	Findings
Vehicle and person throughput on I-5 and I-205		Both an increase and decrease in vehicle and person throughput. Little net impact.
Freight truck throughput on I-5 and I-205		Change in freight truck throughput is relatively minor, but there is an overall trend on I-5 of reduced throughput as well as evidence of diversion to I-205. Trucks are also assumed to be prohibited from accessing the managed lane based on current state law and practice around the country.
Passenger vehicle travel time on I-5 and I-205		Improved travel time on the managed lanes themselves, and no evidence of negative impacts to the general purpose lanes.
Passenger vehicle travel time on managed lanes		Improved travel time on the managed lanes.
Freight truck travel time on I-5 and I-205		No significant improvement or detriment to freight truck travel times.
Assessment of change in duration of peak vehicle traffic conditions		Decrease in the potential for encountering hyper-congested conditions in the vicinity of the managed lanes. This impact extends to some extent away from the managed lanes, and there are no detrimental impacts in other areas on either I-5 or I-205.
Delay on priced facility		Reduced delay on the priced managed lanes with no detrimental effects elsewhere.
Safety impacts		Some limited potential to decrease the frequency and severity of crashes in the region.
Trip length distribution		No significant changes to freeway trip lengths are expected.
Legend:	 Performs well  Performs moderately  Performs poorly	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Vehicle and person throughput on I-5 and I-205

Concept A would result in daily vehicle throughput comparable to the baseline with daily vehicle volumes remaining essentially unchanged. Slight increases in vehicle throughput were seen on I-5 in the southbound direction during the AM and PM peak hours.



Daily person throughput was also comparable to the baseline, with slight increases on I-5 in the southbound direction and slight decreases on I-5 in the northbound direction.

Freight truck throughput on I-5 and I-205

This concept shows modest shifts in daily truck volumes from I-5, with its priced managed lane, to the unpriced I-205 corridor. This shift occurs because trucks over 10,000 pounds cannot access the managed lane under current Oregon law,⁷ and general purpose capacity is limited to two lanes rather than three general purpose lanes in the baseline.

Passenger vehicle travel time on I-5 and I-205

Passenger vehicle travel times, relative to the baseline, change modestly in the general purpose lanes.

Passenger vehicle travel time on managed lanes

The tolled lanes on the northern portion of I-5 in Concept A provide moderate travel time savings to the users of those lanes. These savings occur primarily during the peak hours and are concentrated in those areas where the lanes exist. Travel time savings do not extend much beyond the priced lane, but there is also no observable reduction in travel times in the general purpose lanes.

Freight truck travel time on I-5 and I-205

Freight vehicles over 10,000 pounds are barred by state law from accessing the (leftmost) priced lanes in Concept A. As such, the travel time for freight vehicles in the general purpose lanes for this concept are the same for passenger vehicles in the general purpose lanes, which are generally not affected by the implementation of pricing.

Assessment of change in duration of congested traffic conditions

Concept A results in slight reductions in congested conditions on I-5 where the priced managed lane option is offered. During the 7 AM peak hour, the chance of hyper-congestion on I-5 is reduced from the baseline condition (from 36 to 38 percent in both directions). During the 5 PM peak hour, the chance of encountering hyper-congestion on I-5 is reduced only in the southbound direction, from 34 percent in the baseline to 33 percent for Concept A.

Delay on priced facilities

Concept A reduces delay in the parts of the corridor where pricing is applied (the priced lanes). These results are more pronounced during the AM and PM peak hours than off-peak times of travel.

⁷ 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 except in the HOV lane. https://www.oregonlegislature.gov/bills_laws/ors/ors811.html. Accessed February 9, 2018.



Safety

Concept A provides limited potential for reducing roadway crashes in the region. Reduction in crashes on the priced lanes may be offset in part by increased crashes on the general purpose lanes. According to researchers, "HOV-to-[priced lane] conversion does not significantly affect the safety performance of the roadway segments as a whole."⁸

Trip length distribution

No significant changes to trip length distribution are expected to result from Concept A.

3.1.2 Diversion of traffic

Diversion in Concept A is anticipated to be minimal, but some changes to traffic circulation patterns could occur. While these changes are anticipated to be small, potential locations where increases in roadway volumes could occur include the following:

- Martin Luther King Boulevard (OR 99E) [Lombard Street to Marine Drive]
- Interstate Avenue (OR 99W) [Alberta Street to Columbia Boulevard]
- Columbia Boulevard [I-5 to Martin Luther King Boulevard (OR 99E)]
- I-205

As such, the impact to road users, including vehicular traffic as well as bicyclists and pedestrians, is expected to be minimal. Additional detail on the diversion performance metric is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.1-2. Concept A evaluation: diversion of traffic

Performance measure	Concept A evaluation	Findings
Diversion impacts on non-tolled facilities		No substantial traffic diversion impacts.
Safety impacts to all modes of transportation (including bicyclists and pedestrians) on routes with diversion		No substantial increase in the frequency or severity of crashes is expected.
Legend:	Performs well:  Performs moderately:  Performs poorly: 	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

3.1.3 Transit service and active transportation

Concept A scores moderately well in this category of performance metrics. There is viable transit service in the area with numerous routes parallel to I-5. However, there is a lack of supporting infrastructure, in particular park-and-ride lots. Furthermore, there are

⁸ Abuzwidah, M. and M. Abdel-Aty. "Effects of Using High Occupancy Vehicle Lanes on Safety Performance of Freeways". Presented at the 96th Annual Meeting of the Transportation Research Board, Paper No. 17-06894, Washington, D.C., (2017).



relatively few frequent service lines. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.1-3. Concept A evaluation: transit service and active transportation

Performance measure	Concept A evaluation	Findings
Adequacy of transit service		Eight total transit lines, two TriMet, both frequent service, and six C-Tran. Two park and ride lots and one transit center.
Bus transit travel time		Time savings for AM peak and PM peak (northbound/southbound). Six C-Tran express bus routes would benefit.
Mode share shift (HOV, SOV, transit, walk, bike)		Minimal impacts on regional mode share. Slight potential to shift some trips from SOV to HOV.
Availability of bicycle travel on alternative routes		About 50 miles of bike lanes within a 1-mile buffer of the corridor. Five roadways with bike lanes run mostly parallel to the freeway and another two are somewhat parallel. Gaps are noticeable in the network, however.
Completeness of pedestrian network		66 total street miles of sidewalks. 16.5 miles of sidewalk/mile of corridor length within a half mile buffer.
Legend:	Performs well Performs moderately Performs poorly	

Source: Metro Regional Travel Demand Model, WSP

Adequacy of transit service

Concept A performed well in terms of parallel transit lines running near the corridor as well as lines that run a significant length of the corridor. Altogether C-Tran has six lines that run from Vancouver to downtown Portland (the Lloyd Center, and/or the Delta Park MAX Station), facilitating inter-state travel via transit. TriMet service offers two lines that run the length of this concept's corridor, and both are high frequency. The MAX Yellow line runs near the I-5 Corridor and allows for transfers to C-Tran at the Delta Park MAX Station.

Bus transit travel time

Concept A provides a modest amount of potential travel time savings along I-5. Six C-Tran routes currently use this section of the freeway for their express bus service between downtown Portland and Lloyd Center to Vancouver. TriMet currently operates no bus service along this section of the freeway, and the modest travel time savings potential along with the presence of the MAX Yellow line may not be enough to result in new TriMet service being added.



Mode share shift

The regional model results indicate that there would likely be minimal shifts in mode share, with some limited potential shift from SOV to HOV. No significant change was identified for transit or bicycle/pedestrian mode share.

Availability of bicycle travel

Five routes run parallel to Concept A, providing options for people riding bikes. A path extends across the Columbia River providing access to those traveling to and from Vancouver. However, there are noticeable gaps in the bicycle network, particularly in northern areas where there are fewer bike facilities overall. Some bike lanes also start and end abruptly, limiting connectivity to destinations within the area.

Completeness of pedestrian network

In the southern half of the concept corridor there is a tight, complete pedestrian network. However, north of Columbia Boulevard, the pedestrian network is severely limited with few, if any, sidewalks. Furthermore, pedestrians desiring to walk to Delta Park, the Columbia River or any of the recreational areas in that northern area face obstacles in terms of available infrastructure. Overall, 66 miles of sidewalks are present with 16.5 miles per mile of corridor length.

3.1.4 Equity benefits and impacts

Concept A does not result in any significant travel time benefits for Title VI or Environmental Justice communities (low-income, people of color, and low English proficiency communities), but it also does not result in any substantive negative impacts. Performance measures in other categories also relate to equity, although they are not specifically categorized as such. Additional detail on this and other performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Regarding user costs, this concept maintains two unpriced lanes in each direction, so area drivers would have toll free alternatives to travelling in the tolled lane. However, those using the tolled lane would be subject to a higher toll rate relative to other concepts that price all lanes. This is consistent with other experience with single-lane pricing projects.



Table 3.1-4. Concept A evaluation: equity benefits and impacts

Performance measure	Concept A evaluation	Findings
Value or travel time savings for Title VI and/or Environmental Justice communities (regional)		Small travel time benefit for Title VI and Environmental Justice communities.
Changes in travel time based on geographic zones		Small travel time benefit for the region.
Access to jobs		No significant impact on job access for Title VI or Environmental Justice communities.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Value of travel time savings for Title VI and/or Environmental Justice communities

A small benefit in terms of overall travel time can be expected with this concept for Title VI and Environmental Justice communities in the region. However, the scale of those travel time benefits is small—less than any of the other value pricing concepts.

Travel time savings by geographic area

Concept A would result in a small improvement in vehicle travel time for Title VI and Environmental Justice communities, but the scale of the improvement is the smallest of any value pricing concept. Furthermore, benefits to the region are limited. Trips to and from central Portland, north Portland and in areas between Columbia Boulevard and the Columbia River (between I-5 and I-205) would benefit most.

Access to jobs

Concept A does not result in any significant change in access to jobs within a 30-minute drive for Title VI and Environmental Justice communities.

3.1.5 Benefits and impacts for the community, economy and environment

The positive and negative impacts to the community, economy and environment are mixed for Concept A. The concept shows the potential to increase overall system efficiency by slightly reducing total motor vehicle hours traveled (VHT), VMT, and regional vehicle emissions. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.



Table 3.1-5. Concept A evaluation: benefits and impacts for the community, economy and environment

Performance measure	Concept A evaluation	Findings
Physical impacts to existing residences and businesses		No physical impacts expected.
Regional travel time savings		Minimal impact on overall Regional VHT. Potential for reduction to regional VHT is highest during the AM peak hour.
Regional VMT (including non-freeway)		No significant change on Regional VMT.
Change in air pollution		No significant change expected. Some potential to slightly reduce regional vehicle emissions.
Value of travel time savings		Potential to provide a small regional travel time benefit for motor vehicles. Has the smallest benefit of all concepts evaluated.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Overall, the regional transportation system shows some potential to operate more efficiently under Concept A, as system-wide impacts show the potential to slightly reduce total motor VHT, VMT and vehicle emissions.

This concept does not include construction of new lanes along tolled segments and, therefore, would not have significant physical impacts to residents or businesses adjacent to the corridor.

3.1.6 Revenue and costs

As a single priced lane in each direction of travel with adjacent, toll-free general-purpose lanes, Concept A is not anticipated to generate significant revenue. Revenues would cover toll collection and operating costs, but may not cover all roadway rehabilitation and reconstruction costs of the facility; however, these costs would be incurred regardless of the lanes being priced. Significant revenue for other capital programs is unlikely. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.



Table 3.1-6. Concept A evaluation: revenue and cost

Performance measure	Concept A evaluation	Findings	
Capital expenditure on facility		Low capital costs as tolling is only anticipated for a relatively short distance in a single lane (each direction).	
Estimated toll revenue potential from tolled facility		Low total annual revenue but moderate daily revenue per centerline mile. Sufficient revenue for capital investments would likely not be available.	
Legend:	Performs well 	Performs moderately 	Performs poorly 

Source: WSP, Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Capital expenditure on facility

Concept A would convert an existing northbound HOV lane and would require the conversion of another general purpose lane in the southbound direction. It would likely have low capital costs as tolling is only anticipated for a relatively short distance in these lanes. Capital costs for Concept A are much less than if additional lanes were added, and are less than many major highway capital project costs.

Gross toll revenue potential

The potential annual gross toll revenue estimate for Concept A is \$20 million (in 2017 dollars), one of the two lowest of the five concepts. The revenue estimates were calculated based on toll rates that vary for each segment and time of day based on traffic conditions. The modeling analysis adjusted the toll rates for each hour of the day to the level that maintains free flow traffic conditions on the tolled lanes throughout the day and during peak periods. The toll rates range between \$0.34 per mile during non-peak hours to a high of \$1.45 per mile during the peak. Estimated revenue would be sufficient to cover routine costs associated with toll collection and operations, roadway operations and maintenance, and periodic costs associated with rehabilitation and reconstruction of toll equipment. However, estimated revenues may not be sufficient to cover all periodic roadway rehabilitation and reconstruction costs that would be incurred whether or not the lanes are priced. Excess revenue would likely not be available for significant contributions to capital improvements particularly for underwriting revenue bonds. Appendix E includes additional information about revenue and cost assumptions.

3.1.7 Implementation

Concept A complies with state and regional policy. The conversion of the northbound HOV lane would qualify under FHWA's Section 166 HOV/HOT Lane Program; the southbound conversion could qualify under FHWA's Value Pricing Pilot Program. Concept A could be deployed within a relatively quick timeframe with no impact to



other regional project schedules. Additional detail on all performance metrics are provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.1-7. Concept A evaluation: implementation

Performance measure	Concept A evaluation	Findings
Consistency with state law and policy		Consistent with state law and policy. Any tolling proposal would need to meet additional legal requirements.
Consistency with regional law and policy		Complies with regional law and policy; tolling proposals would need coordination with Metro.
Feasibility under federal law		Operationally similar in the northbound direction to many other congestion pricing projects in the U.S. Southbound conversion of a general purpose lane would have some federal requirements.
Project delivery schedule		No negative impacts to the delivery schedules of other projects.
Legend:	Please see summaries below for additional assessment detail.	
	Performs well 	Performs moderately 
	Performs poorly 	

Source: WSP

Consistency with state and regional law and policy

Concept A generally conforms to guidance and requirements found in state and regional laws and policies. Descriptions of state and regional laws and policies are provided in Appendix F.

Feasibility under federal law

The northbound conversion of the existing HOV lane would be operationally feasible from a federal perspective and would qualify under FHWA's Section 166 HOV/HOT Lane Program. Under Section 166 the implementing agency is required to consult with the local metropolitan planning organization (MPO) regarding the placement and amount of tolls on the converted lanes. The implementing agency is also required to demonstrate that the conversion has not and does not (upon implementation) degrade service for HOV vehicles. Annual reporting is required. The conversion of the southbound general purpose lane may qualify under FHWA's Value Pricing Pilot Program.

Project delivery schedule

Concept A can be developed and implemented relatively quickly. There are no negative impacts to other projects.



Blank Page



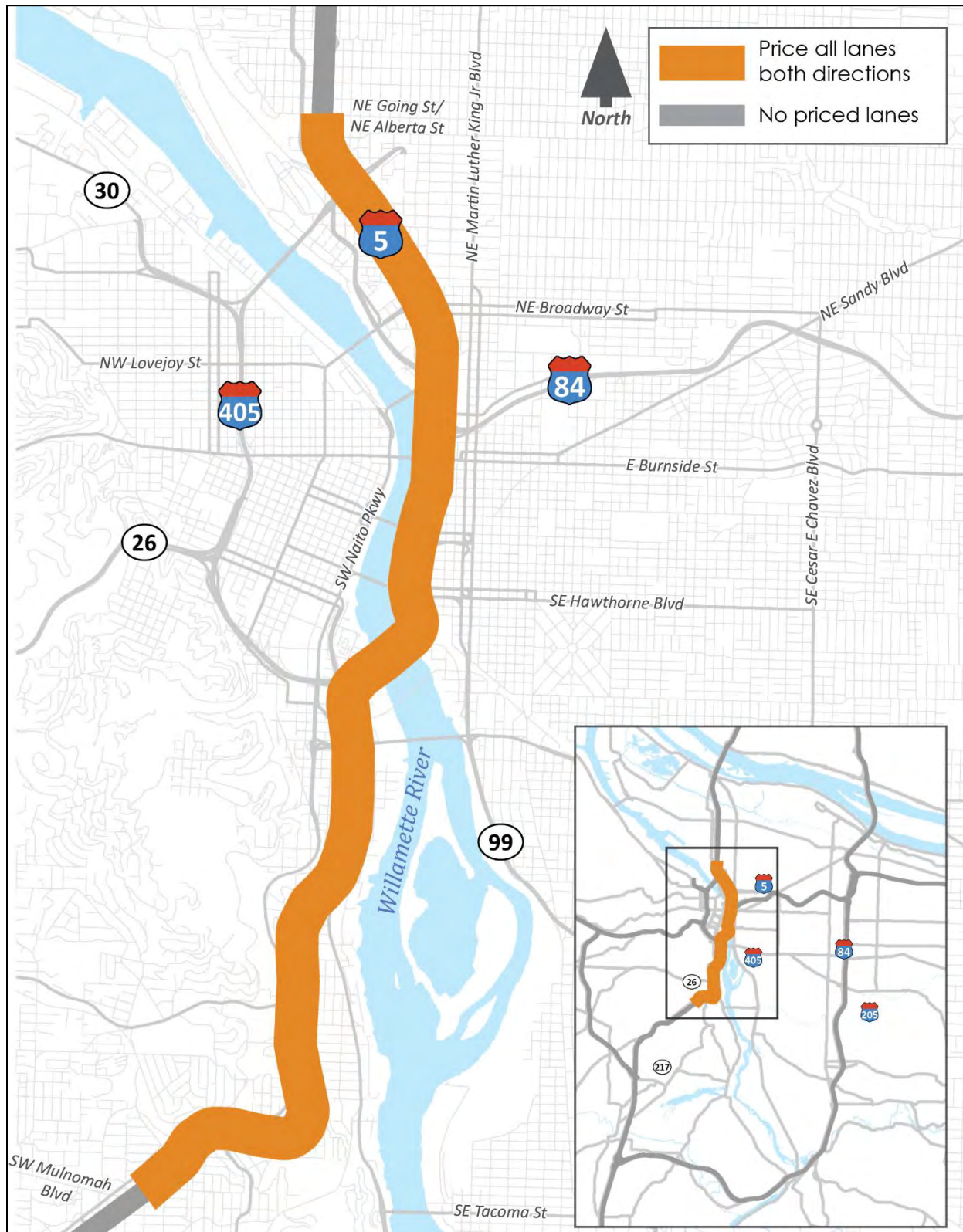
3.2 Concept B: I-5 Priced Lanes: Toll All Lanes between Going Street/Alberta Street and Multnomah Boulevard

Concept B converts all lanes between NE Going Street/Alberta Street and SW Multnomah Boulevard to a priced roadway. The following are key findings from the assessment of Concept B.

- There are noticeable congestion reduction and time savings for users of the facility, particularly during peak periods.
- Concept B provides travel time savings to area Title VI and Environmental Justice communities.
- The concept moves vehicles more efficiently in terms of vehicles per lane per hour relative to the baseline and, as a result, diversion from the tolled facility to I-205 and nearby roads is modest.
- The concept's context features a dense network of transit and multi-modal facilities.
- Because it does not maintain any general purpose (unpriced) freeway lanes, there may be a need to provide mitigations such as increased transit service, low income toll rates, or other strategies.
- Tolling authority for this concept would come under FHWA's Value Pricing Pilot Program.



Figure 3-2. Round 2 Concept B: I-5 Toll All Lanes between Going Street/Alberta Street and Multnomah Boulevard





3.2.1 Traffic operations improvement on I-5 and I-205

Concept B would improve travel for users, with benefits in travel time and delay reductions. Other metrics generally show moderate benefits or limited impacts. It is important to note that traffic operations results should be examined holistically instead of examination of just one or two performance measures to understand the full breadth of implications. Additional detail on this group of performance metrics is included in the evaluation methods and assumptions matrix in Appendix A.

Table 3.2-1. Concept B evaluation: traffic operations improvement

Performance measure	Concept B evaluation	Findings
Vehicle and person throughput on I-5 and I-205		Some evidence of increased vehicle throughput during the peak hours. It is not, however, consistent for all segments. There does not appear to be substantial overall diversion to I-205.
Freight truck throughput on I-5 and I-205		Diversion of truck traffic from I-5 to I-205, which results in less freight truck throughput on I-5. However, freight throughput can be managed with pricing policies post implementation to reduce diversion and maintain throughput.
Passenger vehicle travel time on I-5 and I-205		Improved travel times on I-5 with no significant negative impacts on I-205.
Passenger vehicle travel time on managed lanes	N/A	Not applicable.
Freight truck travel time on I-5 and I-205		Freight trucks travel at the same speeds as passenger vehicles.
Assessment of change in duration of peak vehicle traffic conditions		Conditions moderately improve on I-5, but this is offset to some extent by moderate deterioration on I-205.
Delay on priced facility		Reduced delay on the priced portions of I-5.
Safety impacts		Some limited potential to decrease the frequency and severity of crashes in the region.
Trip length distribution		Trip length distribution is not impacted by this concept.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Vehicle and person throughput on I-5 and I-205

Overall, Concept B does not result in significant changes in daily vehicle and person throughput relative to the baseline (no tolls), but there are potential increases in throughput during the peak hours on some segments. While the modeling results indicate that pricing could lower vehicle volumes during off-peak periods, dynamic pricing of all lanes in this concept allows for toll rates to be adjusted and volumes managed in response to travel conditions.



Freight truck throughput on I-5 and I-205

Concept B results in a shift in daily truck volumes from I-5 (the tolled facility) to I-205 (where no pricing is present). This shift occurs during the peak hours as well as over the course of the day. However, the magnitude of the shift is greater during the peak periods. The model shows that overall throughput on both corridors combined is slightly less than baseline conditions. Freight throughput can be managed post implementation through changes to the tolling schedule if needed to minimize diversion and maintain throughput.

Passenger vehicle travel time on I-5 and I-205

Concept B results in passenger travel time savings on I-5 with some modest increase in travel time on I-205. This is expected given potential for traffic shifts from I-5 to I-205. However, the average increase in travel times on I-205 across all the hours of the day is about 1 percent, or less than a minute, over the 27-mile corridor.

Freight truck travel time on I-5 and I-205

Freight vehicles receive the same travel time improvement benefits on I-5 as passenger vehicles. Furthermore, freight vehicles would see a similar increase in travel times on I-205 (approximately 1 percent) as passenger vehicles.

Assessment of change in duration of congested traffic conditions

Concept B reduces congested conditions on I-5 while only very modestly increasing the incidence of these conditions on I-205. During the 7 AM peak hour, the chance of hyper-congestion on I-5 is reduced from the baseline condition (38 percent in the northbound and southbound directions) to 30 percent in the northbound and 32 percent in the southbound. Further, during the 5 PM peak hour, the chance of hyper-congestion on I-5 is reduced relative to the baseline condition (35 percent in the northbound and 34 percent in the southbound) to 28 percent in the northbound and 30 percent in the southbound.

Delay on priced facilities

The pattern in changes in vehicular volume leads to a similar pattern in delay, as Concept B reduces hours of delay on I-5 and slightly increases delay on I-205.

Safety

No significant change in the overall frequency and severity of crashes is expected to result from this concept, although it may result in a small reduction in the overall frequency and severity of crashes based on Portland Metro's MCE tool that analyzes safety impacts on the overall regional transportation system.

Trip length distribution

No significant changes to trip length distribution are expected to result from this concept.

3.2.2 Diversion of traffic

As all lanes are priced in Concept B, there is a chance of diversion that could negatively impact safety on adjacent and regional toll-free facilities. Additional detail



on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.2-2. Concept B evaluation: diversion of traffic

Performance measure	Concept B evaluation	Findings
Diversion impacts on non-tolled facilities		No substantial diversion impacts are expected when freeway throughput is increased during peak hours. Diversion to non-tolled facilities may occur in off-peak periods.
Safety impacts to all modes of transportation (including bicyclists and pedestrians) on routes with diversion		The diversion of trips in off-peak periods from a priced facility to adjacent arterials and other roadways could increase need for safety mitigation on those facilities.
Legend:	 Performs well  Performs moderately  Performs poorly	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Diversion impacts during peak conditions are expected to be minimal, as I-5 may be able to move more traffic. The application of tolls during off-peak conditions could divert vehicles off the freeway during those times, but tolling through dynamic pricing could minimize this effect.

While the scale of diversion is expected to be small overall, potential locations where increases in roadway volumes could occur include the following:

- I-205
- I-405
- Lewis and Clark Highway (SR-14) [I-5 to I-205]
- Martin Luther King Boulevard (OR 99E) [Broadway Street to Marine Drive]
- Interstate Avenue (OR 99W) [Broadway Avenue to Going Street]
- Greeley Avenue [Going Street to Interstate Avenue]
- McAdam Avenue/Riverside Drive (OR 43) [I-5 to A Avenue]
- Boones Ferry Road [Kruse Way to Terwilliger Boulevard]
- Taylors Ferry Road [McAdam Avenue (OR 43) to I-5]
- Terwilliger Boulevard [Boones Ferry Road to I-5]
- Barbur Boulevard (OR 99W) [I-405 to I-5]
- Minnesota Avenue/Missouri Avenue [Alberta Street I-5 Ramps to Going Street I-5 Ramps] – this potential use of ramps to bypass a short tolled segment is dependent on how tolling is structured

Diversion from freeways in off-peak periods may increase the likelihood of motor vehicle crashes on the potentially impacted roadways and at intersections. Additionally, non-vehicular travel (e.g., bicyclists and pedestrians) on diversion routes could experience increased conflicts with motor vehicles during off-peak periods, which could increase crash frequency.



It should be noted that surface streets (non-freeway roadways) with higher levels of congestion generally exhibit lower serious crash rates per mile than uncongested surface streets.⁹

3.2.3 Transit service and active transportation

Concept B scores well overall in this category of performance as it features good bicycle and pedestrian access and sufficient transit service - including all current and future MAX light rail lines - running in and parallel to the corridor. However, there are no park-and-ride lots and only one transit center adjacent to the corridor. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.2-3. Concept B evaluation: transit service and active transportation

Performance measure	Concept B evaluation	Findings
Adequacy of transit service		26 total transit line options. 19 transit lines by TriMet, five transit lines by C-Tran. No park and ride lots and one transit center.
Bus transit travel time		Time savings for the AM peak and PM peak (northbound/southbound). Five C-Tran express bus routes and one TriMet route would benefit.
Mode share shift (HOV, SOV, transit, walk, bike)		Minimal impact on regional mode share. Some potential to discourage SOV trips, with shifts to HOV, transit, and active modes.
Availability of bicycle travel on alternative routes		Nearly 110 miles of bike lanes within a 1 mile buffer, 17 of which run parallel to the corridor and another 4 that run in a near-parallel fashion. Some gaps are found in the southern area, but options still exist.
Completeness of pedestrian network		138 total street miles of sidewalks. 20 miles of sidewalk/mile of corridor length within a half-mile buffer.
Legend:	 Performs well  Performs moderately  Performs poorly	

Source: Metro Regional Travel Demand Model, WSP

Adequacy of transit service

Concept B performed very well with a total of 21 bus routes, three current and future MAX lines, and two streetcar lines offering parallel service along its route, 19 of which are run by TriMet with 9 of those being frequent service. This provides numerous transit options into and out of the downtown Portland area. C-Tran also has five lines running the length of the I-5 corridor into either downtown Portland or the Lloyd District. However, none of these lines provide frequent service, and they do not run the length

⁹ Metro State of Safety Report, April 2012.



of the corridor. A lack of transit centers and park-and-ride facilities creates further issues for those who want to drive for at least a portion of their trip.

Bus transit travel time

Concept B provides a modest amount of potential travel time savings along I-5. Five C-Tran bus routes currently use this section of the freeway for express bus service between downtown Portland and Lloyd Center to Vancouver. TriMet currently operates one bus route along this section heading into and out of downtown Portland. There is the potential for a new express bus service serving the corridor; however, with the current Yellow Line MAX train and the planned SW Corridor high-capacity transit line, this would need examination.

Mode share shift

Concept B is anticipated to have a minimal impact on regional mode share. However, some potential to discourage SOV trips in favor of HOV, transit, and active modes such as bicycling and pedestrian would be expected due to the application of tolling costs.

Availability of bicycle travel

Concept B has numerous bike facilities running parallel to the corridor giving cyclists multiple options. This concept also benefits from being near downtown Portland, which has multiple planned routes, including the upcoming Green Loop. While some gaps do exist in the southern area of the concept, overall the corridor provides options regardless of where a cyclist travels.

Completeness of pedestrian network

A complete and consistent pedestrian network exists within the concept corridor. Few gaps exist that do not have some type of natural barrier (river, steep hills). This corridor segment also has the highest number of sidewalks per mile of corridor. Overall, aside from the very southern tip of the corridor, the pedestrian network is complete and provides good options for pedestrians.

3.2.4 Equity benefits and impacts

Concept B offers some limited travel time benefits for Title VI and/or Environmental Justice communities in the region. Performance measures in other categories also relate to equity, although they are not specifically categorized as such. Additional detail on this and other performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Because this concept does not maintain any general purpose (unpriced) freeway lanes, there may be a need to provide mitigations such as increased transit service, low income toll rates, or other strategies.



Table 3.2-4. Concept B evaluation: equity benefits and impacts

Performance measure	Concept B evaluation	Findings
Value or travel time savings for Title VI and/or Environmental Justice communities (regional)		Potential travel time benefit for Title VI and Environmental Justice communities.
Changes in travel time based on geographic zones		Potential for vehicle travel time reduction for the region, particularly along the I-5 corridor.
Access to jobs		Potential for some improved access to jobs for Title VI and Environmental Justice communities. Low wage job access shows slightly higher improvements than the overall average.
Legend:	 Performs well  Performs moderately  Performs poorly	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Value of travel time savings for Title VI and/or Environmental Justice communities

An improvement in overall travel time can be expected with this concept for Title VI and Environmental Justice communities in the region (low-income, people of color, and low English proficiency communities). The scale of travel time benefit is smaller than for Concept C but more than would be expected with Concepts A, D or E.

Travel time savings by geographic area

A reduction in vehicle travel time can be expected with this concept and the benefits would be experienced throughout the region. Trips to and from areas along the I-5 corridor (between the I-5 junction with I-205 and the Columbia River) would benefit most, including parts of Tigard, Tualatin, Lake Oswego, and central, north and northeast Portland.

Access to jobs

Concept B offers some potential improvement to the percent of regional jobs accessible within a 30-minute drive for Title VI and/or Environmental Justice communities. On average, approximately 1 percent more (from 32 percent to 33 percent) of all regional jobs would be accessible within a 30-minute drive during the morning peak hour. Access to low wage jobs would be expected to have slightly higher improvements than access to all jobs.

3.2.5 Benefits and impacts for the community, economy and environment

By pricing all lanes, Concept B would improve overall system efficiency, which yields moderate benefits in terms of time savings, reduction in regional vehicle miles traveled and reduction in air pollution. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.



Table 3.2-5. Concept B evaluation: benefits and impacts for the community, economy and environment

Performance measure	Concept B evaluation	Findings
Physical impacts to existing residences and businesses		No physical impacts expected.
Regional travel time savings		Potential for minor reduction in regional VHT. Benefit consistent throughout the day and highest in the AM peak hour.
Regional vehicle miles traveled (VMT) (including non-freeway)		Greater potential for reducing VMT than Concepts A or D or E, minor impacts anticipated.
Change in air pollution		No significant change expected. Some potential to slightly reduce regional vehicle emissions.
Value of travel time savings		Potential to provide travel time savings for the region as a whole. Has the second-highest benefit of all concepts evaluated.
Legend:	 Performs well  Performs moderately  Performs poorly	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Overall, the regional transportation system is expected to operate more efficiently as system-wide impacts show the potential to reduce total motor VHT, VMT and vehicle emissions.

This concept does not include building new lanes and, therefore, would not have any physical impacts to residents or businesses that run adjacent to the corridor.

3.2.6 Revenue and costs

Concept B would generate more revenue than single-lane concepts and would cover all toll collection and operating costs, as well as routine and periodic roadway operations and maintenance that would be incurred regardless of whether the lanes were priced. At this level of analysis, there are too many unknowns to determine how much funding for other capital projects would be generated, and whether it is significant enough to contribute to long-term rehabilitation and reconstruction of the corridor's infrastructure. This concept is relatively inexpensive to deploy. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.



Table 3.2-6. Concept B evaluation: revenue and cost

Performance measure	Concept B evaluation	Findings
Capital expenditure on facility		Higher than costs associated with concepts that only toll a single lane; not as costly as many highway capital projects.
Estimated gross toll revenue potential from tolled facility		Low-to-moderate total annual revenue and revenue per centerline mile. Likely provides excess revenue to designate to other capital projects, but at an unknown level of contribution.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: WSP, Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Capital expenditure on facility

Capital costs for converting general purpose lanes on I-5 for Concept B are higher than the costs associated with concepts that only toll a single lane, but not as costly as many major highway capital projects.

Gross toll revenue potential

The potential annual gross toll revenue estimate for Concept B is \$50 million (in 2017 dollars). The revenue estimates are calculated based on toll rates that vary for each segment and time of day based on traffic conditions. The modeling analysis adjusted the toll rates for each hour of the day to the level that maintains free flow traffic conditions on the tolled lanes throughout the day and during peak periods. The toll rates range between \$0.10 per mile during non-peak hours of the day and up to \$0.26 per mile during the peak. Estimated revenue would be sufficient to cover routine costs associated with toll collection and operations, roadway operations and maintenance, and periodic costs associated with rehabilitation and reconstruction of toll equipment. Estimated revenues hold the potential for excess revenue to be available to support capital investments and/or mitigation solutions. Appendix E includes additional information about revenue and cost assumptions.

3.2.7 Implementation

Concept B complies with applicable state and regional law and policy. The concept may qualify under the FHWA Value Pricing Project Program (VPPP) but would not qualify under the FHWA's Mainstream Tolling or HOV/HOT Lane Program. The concept could be deployed relatively quickly with minimal impact to other regional projects. Additional detail on all performance metrics are provided in the evaluation methods and assumptions matrix in Appendix A.



Table 3.2-7. Concept B evaluation: implementation

Performance measure	Concept B evaluation	Findings
Consistency with state law and policy		Consistent with state law and policy. Any tolling proposal would need to meet additional legal requirements.
Consistency with regional law and policy		Consistent with regional law and policy; likely coordination with Metro.
Feasibility under federal law		May qualify under FHWA VPPP program.
Project delivery schedule		No negative impacts to the delivery schedules of other projects.
Legend:	Performs well  Performs moderately  Performs poorly  Please see summaries below for additional assessment detail.	

Source: WSP

Consistency with state and regional law and policy

Concept B is consistent with guidance and requirements found in state and regional laws and policies. Information on state and regional laws and policies is provided in Appendix F.

Feasibility under federal law

Concept B may qualify for FHWA's Value Pricing Pilot Program (Oregon has a slot), which may allow tolling of all existing general purpose lanes in the absence of reconstruction activities.

Project delivery schedule

Concept B can be developed relatively quickly without significant impact to other projects in the area. Discussion on state and local laws and policies is provided in Appendix F.



Blank Page



3.3 Concept C: I-5 and I-205 Priced Roadway – Toll All Lanes

Concept C would implement pricing on all lanes of I-5 and I-205 from the Washington/Oregon state line to the I-5/I205 interchange near Tualatin. The following are key findings from the assessment of Concept C:

- Concept C generates the greatest overall benefit in terms of regional congestion reduction and travel time savings.
- Route diversion can be expected, which could be minimized through dynamic tolling.
- The concept would provide travel time savings and enhanced access to jobs for Title VI and Environmental Justice communities.
- Transit and multi-modal facilities can serve as travel alternatives though accessibility of these options varies over the I-5 and I-205 corridors.
- Because it does not maintain any general purpose (unpriced) freeway lanes, there may be a need to provide mitigations such as increased transit service, low income toll rates, or other strategies.
- Concept C would generate the largest amount of revenue compared to other concepts.



Figure 3-3. Round 2 Concept C: Priced Roadway – Toll All Lanes





3.3.1 Traffic operations improvement on I-5 and I-205

Concept C would result in the largest overall benefits for the region in terms of congestion reduction and improvement in travel times. However, diversion to the regional arterial network and other non-priced freeways is likely without mitigation. It is important to note that traffic operations results should be examined holistically instead of examination of just one or two performance measures to understand the full breadth of implications. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.3-1. Concept C evaluation: traffic operations improvement

Performance measure	Concept C evaluation	Findings
Vehicle and person throughput on I-5 and I-205		Modeling results indicate that there would be a reduction in vehicle and person throughput on I-5 and I-205, particularly during off-peak periods. It may be possible to minimize or eliminate this in practice through toll adjustments.
Freight truck throughput on I-5 and I-205		Modeling results indicate that freight truck throughput would be reduced. However, freight throughput can be managed with pricing policies post implementation to minimize diversion and maintain throughput.
Passenger vehicle travel time on I-5 and I-205		Major improvements in travel times on all segments of I-5 and I-205.
Passenger vehicle travel time on managed lanes	N/A	Not applicable.
Freight truck travel time on I-5 and I-205		Freight travel times mirror passenger vehicle travel times in this concept.
Assessment of change in duration of peak vehicle traffic conditions		All segments of I-5 and I-205 indicate reductions in the possibility of encountering hyper-congested conditions, indicating a reduction in the duration of congested travel. This is confirmed by the reduction in peak hour VHT for the region as a whole.
Delay on priced facility		Reduced delay on all segments of both I-5 and I-205.
Safety impacts		Some limited potential to decrease the frequency and severity of overall crashes in the region.
Trip length distribution		No significant changes are expected. Some limited potential to reduce overall freeway trip lengths as users seek to limit payments under assumed distance-based toll.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Vehicle and person throughput on I-5 and I-205

The modeling results show that Concept C could reduce vehicle volumes, particularly during off-peak periods. The use of dynamic pricing would allow volumes to be



managed in response to traffic conditions. This would allow for more efficient traffic flow overall. Overall regional VMT and VHT are reduced with Concept C, an indication the network is performing more efficiently overall.

As noted, Concept C could reduce daily vehicle and person throughput on both facilities when compared to the baseline. However, the reduction is smaller during the peak periods, and may explain why the overall network performance shows increased efficiency. Some segments of I-5 and I-205 have higher throughput than the baseline during the peak hour, but the trend overall is moderately lower.

The model used in this analysis applied off-peak toll rates that may have been higher than required and resulted in more vehicle diversion than would be desired in these off-peak travel hours. It is also possible that the toll rates modeled during the peak travel hours had the same effect. Toll rates could be managed to balance freeway performance and vehicle diversion.

Freight truck throughput on I-5 and I-205

Concept C results in lower daily truck throughput on both facilities relative to the baseline. The magnitude of this reduction is greater during the peak hours. Freight throughput can be managed post implementation through changes to the tolling schedule if needed to minimize diversion and maintain throughput.

Passenger vehicle travel time on I-5 and I-205

Concept C results in the largest travel time savings of all the tolling concepts. Travel time savings during the peak hours range from 5 to 9 minutes depending on the corridor and direction of travel. In some cases, this represents a more than a 20 percent reduction in travel time. During off-peak hours, the travel time savings are more modest.

Passenger vehicle travel time on managed lanes.

Concept C has no priced managed lanes in operation.

Freight truck travel time on I-5 and I-205.

Freight vehicles travel in the general purpose lane of I-5 and I-205. As such, the travel time for freight vehicles shows the same improvement as passenger cars.

Assessment of change in duration of congested traffic conditions

Concept C does the most to reduce the probability of experiencing congested conditions compared to other concepts analyzed. During the 7 AM peak hour, the probability of hyper-congestion is reduced by 25 to 50 percent. During the 5 PM peak hour, it is reduced by between 33 to 66 percent.

Delay on priced facilities

Concept C significantly reduces hours of delay during peak periods on both I-5 and I-205 by between 25 to 50 percent depending on the location and time.

Safety

Hyper-congested freeways can create high variances in motor vehicle speeds, especially when approaching a queue, which can result in crashes. Removing hyper-



congestion reduces speed differentials and can therefore reduce the opportunity for crashes on freeways. The freeway performance improvements described above for Concept C, paired with overall region-wide reductions in VMT, would be expected to improve overall safety in the region.

Trip length distribution

No substantial changes to trip length distribution are expected to result from this concept. There is some limited potential to reduce overall freeway trip lengths as users seek to limit payments under an assumed distance-based toll.

3.3.2 Diversion of traffic

The application of pricing to all lanes of I-5 and I-205 within the overall study area is anticipated to result in diversion to arterials and surface streets under Concept C. This could negatively impact safety for bicyclists and pedestrians, as well as drivers on these roads without mitigation. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.3-2. Concept C evaluation: diversion of traffic

Performance measure	Concept C evaluation	Findings
Safety impacts to all modes of transportation (including bicyclists and pedestrians) on routes with diversion		The diversion of trips from a priced facility to adjacent arterials and other roadways could increase the need for safety mitigation on those facilities.
Diversion impacts on non-tolled facilities		Potential for diversion impacts is higher than other concepts. Potential impacts have a wide geographic spread between I-5 and I-205.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Concept C analysis showed high potential for diversion impacts without mitigation. The analysis produced mixed results for changes in freeway volumes, with some freeway segments showing increased throughput during peak demand periods (when hyper-congestion could be relieved) and others showing decreased volume. The impacts vary by time of day, direction and highway. Overall daily impacts show an average decrease of 150 to 250 vehicles per hour on I-5 (each direction) and 250 to 350 fewer vehicles per hour on I-205 (each direction).

The impact of diversion away from freeways is expected to be distributed over many major roadways in the region, particularly north-south routes that are alternatives to I-5 and I-205. Model results indicate most diversion would occur in off-peak periods.

Where diversion from freeways could increase demand on other roadways, the likelihood of motor vehicle crashes could increase. Additionally, non-vehicular travel mode road users (e.g., bicyclists and pedestrians) on diversion routes could experience



increased conflicts with motor vehicles during off-peak periods, which could increase crash frequency.

Safety impacts could occur along segments and at intersections on the diversion routes, as increased motor vehicle volume is an indicator of increased crash potential. It should be noted that surface streets (non-freeway roadways) with higher levels of congestion generally exhibit lower serious crash rates per mile than uncongested surface streets.¹⁰

3.3.3 Transit service and active transportation

Concept C performs well in some aspects of transit service and active transportation but not as well in other areas. This is primarily due to the size of the concept relative to the others. The primary benefits to transit occur around downtown Portland and the inner core of I-205 near the Gateway Transit Center and at the intersection of I-84 and I-205. However, the southern areas of the concept lack transit service and, in particular, frequent service lines (e.g. in Clackamas County). Furthermore, bicycle and pedestrian infrastructure is almost non-existent in the southern areas of the concept. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.3-3. Concept C evaluation: transit service and active transportation

Performance measure	Concept C evaluation	Findings
Adequacy of transit service		36 total transit lines running. 26 lines from TriMet, eight from C-Tran, and 1 from SMART. A total of 11 frequent service lines, four of which are MAX trains. 12 park-and-ride and seven transit centers exist directly along this concept corridor.
Bus transit travel time		Time savings for AM peak and PM Peak (northbound/southbound). Eight C-Tran express bus routes and two TriMet routes would benefit.
Mode share shift (HOV, SOV, transit, walk, bike)		Could produce changes in regional mode share. Potential to discourage SOV trips, with shifts to HOV, transit, and active modes. Overall shift away from SOV travel would be less than 1% of regional trips.
Availability of bicycle travel on alternative routes		335 total miles of bike lanes within a 1-mile buffer. Dozens of parallel paths depending on the location. Gaps exist, especially in the southern and eastern parts of the concept corridor.
Completeness of pedestrian network		416 total street miles of sidewalks. 9 miles of sidewalk per mile of corridor length within a half-mile buffer.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: Metro Regional Travel Demand Model, WSP

¹⁰ Metro State of Safety Report, April 2012



Adequacy of transit service

Concept C features the most transit options with 28 bus routes, five current and future MAX lines, two streetcar lines, and the WES commuter rail line, but it is also the largest concept in terms of geographic area. This limits its effectiveness in terms of transit service evaluation. Through downtown Portland and inner east Portland areas, transit options are plentiful and provide frequent service. There are also large numbers of park-and-ride lots (12) and seven transit centers. However, the southern areas of both corridors lack service as few lines run parallel to either I-5 or especially I-205. The few lines that do run parallel to these corridors either do not run a sufficient length and/or do not offer frequent service.

Bus transit travel time

Concept C provides the highest amount of potential travel time savings along I-5 and I-205. Eight C-Tran routes currently use the concept corridor for express bus service between downtown Portland, Lloyd Center, and Delta Park MAX station to Vancouver. TriMet currently operates two bus routes along this concept corridor. SMART has one route that travels from Wilsonville to the Barbur Transit Station on I-5. Given the potential savings, there is also the possibility to add express bus service along either I-5 or I-205. I-205 along the southern corridor and near the Abernethy Bridge may benefit the most from a new service as it is currently the only section of highway that does not have a current or planned MAX/high-capacity transit line.

Mode share shift

By pricing all lanes of I-5 and I-205 within the study corridor, Concept C has the largest potential mode shift. The pricing of the entire corridor for both facilities would create an incentive to form carpools to reduce the individual burden of tolls or to use transit, bikes or walking to avoid tolls altogether. However, when analyzed over the entire region, the cumulative shift away from SOV travel is anticipated to be less than 1 percent of all regional trips.

Availability of bicycle travel

Concept C has the most bicycle infrastructure with 335 total miles, but this is unequally distributed among the 45 centerline miles of the corridors. As such, some segments of the concept's corridors perform very well. Portland central city and the I-205 east Portland sections have adequate bicycle travel options with multiple parallel bike lanes and paths. I-205 is also home to the I-205 trail, which runs directly parallel to the corridor concept from Abernethy Bridge to Vancouver. However, gaps persist in the overall network. The southern end of the corridor has very few bike facilities, and entire sections of the corridor often have no parallel bike paths. This provides cyclists with few, if any, options to travel the entire length of I-5 or I-205.

Completeness of pedestrian network

Concept C covers the most geographic area and, therefore, is the most challenging to assess in terms of pedestrian network completeness. This is primarily because of the large gaps in the far north segment of I-5 north of Columbia Boulevard, the far south segments of I-5 and I-205, and the general spottiness of the pedestrian network in the



eastern side of the corridor. Pedestrians are likely to encounter at least some gaps unless they are in inner Portland.

3.3.4 Equity benefits and impacts

Concept C offers travel time benefits for Title VI and Environmental Justice communities in the region. Performance measures in other categories also relate to equity, although they are not specifically categorized as such. Additional detail on this and other performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Because this concept does not maintain any general purpose (unpriced) freeway lanes, there may be a need to provide mitigations such as increased transit service, low income toll rates, or other strategies.

Table 3.3-4. Concept C evaluation: equity benefits and impacts

Performance measure	Concept C evaluation	Findings
Value or travel time savings for Title VI and/or Environmental Justice communities (regional)	●	Highest potential travel time benefit for Title VI and Environmental Justice communities.
Changes in travel time based on geographic zones	●	Highest potential vehicle travel time reductions for the region. Benefits would be experienced region-wide.
Access to jobs	●	Greatest potential to improve access to jobs for Title VI and Environmental Justice communities. Low wage jobs have slightly higher improvements than the overall average.
Legend:	Performs well ● Performs moderately ◐ Performs poorly ○	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Value of travel time savings for Title VI and/or Environmental Justice communities

A benefit in overall travel time can be expected with this concept for Title VI and Environmental Justice communities in the region (low-income, people of color, and low English proficiency communities). The scale of travel time benefit is larger than for any other concept.

Travel time savings by geographic area

A reduction in vehicle travel time can be expected with this concept, and the benefits would be experienced throughout the region and into southern Washington. Trips to and from areas along the I-5 and I-205 corridors would benefit most, including parts of Wilsonville, Tualatin, Tigard, Beaverton, Lake Oswego, Portland, West Linn, and Oregon City.



Access to jobs

Concept C offers potential improvement to the percent of regional jobs accessible within a 30-minute drive for Title VI and/or Environmental Justice communities. On average, approximately 3 percent more (from 32 percent to 35 percent) of all regional jobs would be accessible within a 30-minute drive during the morning peak hour. The benefits are more evident for low-wage jobs, as approximately 5 percent more of regional low-wage jobs would be accessible in the morning peak hour. The off-peak period also shows potential for improving the share of regional jobs that can be accessed within a 30-minute drive by approximately 2 percent.

3.3.5 Benefits and impacts for the community, economy and environment

Concept C is anticipated to generate the largest travel time savings for the region and could decrease regional vehicle miles traveled. The benefits of travel time savings are likely to be distributed across the entire regional network. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.3-5. Concept C evaluation: benefits and impacts for the community, economy and environment

Performance measure	Concept C evaluation	Findings
Physical impacts to existing residences and businesses		No physical impacts expected.
Regional travel time savings		Highest potential to decrease regional VHT, with a daily decrease of up to 5%.
Regional vehicle miles traveled (VMT) (including non-freeway)		Could decrease regional VMT, up to 2% across all time periods.
Change in air pollution		Some potential to reduce regional vehicle emissions.
Value of travel time savings		Highest potential to provide regional travel time benefit for motor vehicles.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Overall, the regional transportation system is expected to operate more efficiently as system-wide impacts show the potential to reduce total motor VHT and VMT.

Air pollution impacts (vehicle emissions) of Concept C are challenging to estimate at the regional level because of the scale of potential changes and the dynamics that influence vehicle emissions. While model results indicate a potential exists to reduce regional vehicle emissions if Concept C were implemented, the ultimate outcome is not definitive.

This concept does not include construction of any additional new lanes (beyond the baseline 2027 assumptions) and, therefore, would not have any physical impacts to residents or businesses that run adjacent to the corridor.



3.3.6 Revenue and costs

Concept C generates the greatest amount of revenue of the concepts analyzed, which may cover all routine and periodic roadway facility operation and maintenance costs. The concept would require the largest capital expenditure in terms of tolling equipment. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.3-6. Concept C evaluation: revenue and cost

Performance measure	Concept C evaluation	Findings
Capital expenditure on facility		Requires the largest capital expenditure for toll equipment but not as costly as many highway capital projects.
Estimated gross toll revenue potential from tolled facility		Highest total annual revenue, moderate-to-high daily revenue per centerline mile. Results in excess revenue to designate to other capital projects, but at an unknown level of contribution.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: WSP, Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Capital expenditure on facility

Concept C requires the largest capital expenditure for toll equipment as the concept covers the entirety of I-5 and I-205 within the study area. Capital costs would be less than many major highway capital projects.

Gross toll revenue potential

The potential annual gross toll revenue estimate for Concept C is approximately \$300 million (in 2017 dollars), the highest of all five concepts. About 55 percent of this revenue will be generated by I-5 and 45 percent generated by I-205. The revenue estimates were calculated based on toll rates that vary for each segment and time of day based on traffic conditions. The modeling analysis adjusted the toll rates for each hour of the day to the level that maintains free flow traffic conditions on I-5 and I-205 throughout the day and during peak periods. The toll rates range from \$0.17 per mile during off-peak hours to \$0.38 per mile during peak hours. In addition to covering routine toll collection and operations as well as roadway operations and maintenance costs, Concept C revenues would likely be sufficient to cover periodic toll system rehabilitation and reconstruction costs, roadway rehabilitation and reconstruction costs, and support capital investments and/or mitigation solutions. Appendix E includes additional information about revenue and cost assumptions.



3.3.7 Implementation

Concept C is consistent with state and regional laws and policies. The concept could qualify under the FHWA Value Pricing Pilot Program but would not qualify under FHWA's Mainstream Tolling or HOV/HOT Lane Program. The system would be deployed slower than concepts A and B, given its geographic size, but construction costs and construction timing would be far shorter than that required to add lanes to a facility. Development and implementation would not negatively impact regional project schedules. Additional detail on all performance metrics are provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.3-7. Concept C evaluation: implementation

Performance measure	Concept C evaluation	Findings
Consistency with state law and policy		Consistent with state law and policy. Any tolling proposal would need to meet additional legal requirements.
Consistency with regional law and policy		Consistent with regional law and policy; likely coordination with Metro.
Feasibility under federal law		May qualify for VPPP (Oregon has a slot).
Project delivery schedule		No negative impacts to the delivery schedules of other projects.
Legend:	 Performs well  Performs moderately  Performs poorly	Please see summaries below for additional assessment detail.

Source: WSP

Consistency with state and regional law and policy

Concept C is consistent with state and regional laws and policies. Information on state and regional laws and policies is provided in Appendix F.

Feasibility under federal law

Concept C may qualify for FHWA's Value Pricing Pilot Program (Oregon has a slot), which allows for the tolling of pre-existing general purpose that are not being reconstructed using toll revenues.

Project delivery schedule

Concept C would not require construction of new roadway lanes; however, because it is being implemented over the entirety of the I-5 and I-205 corridors, it would take longer to develop than the smaller-scale concepts. It is not expected to impact regional project delivery schedules.



Blank Page



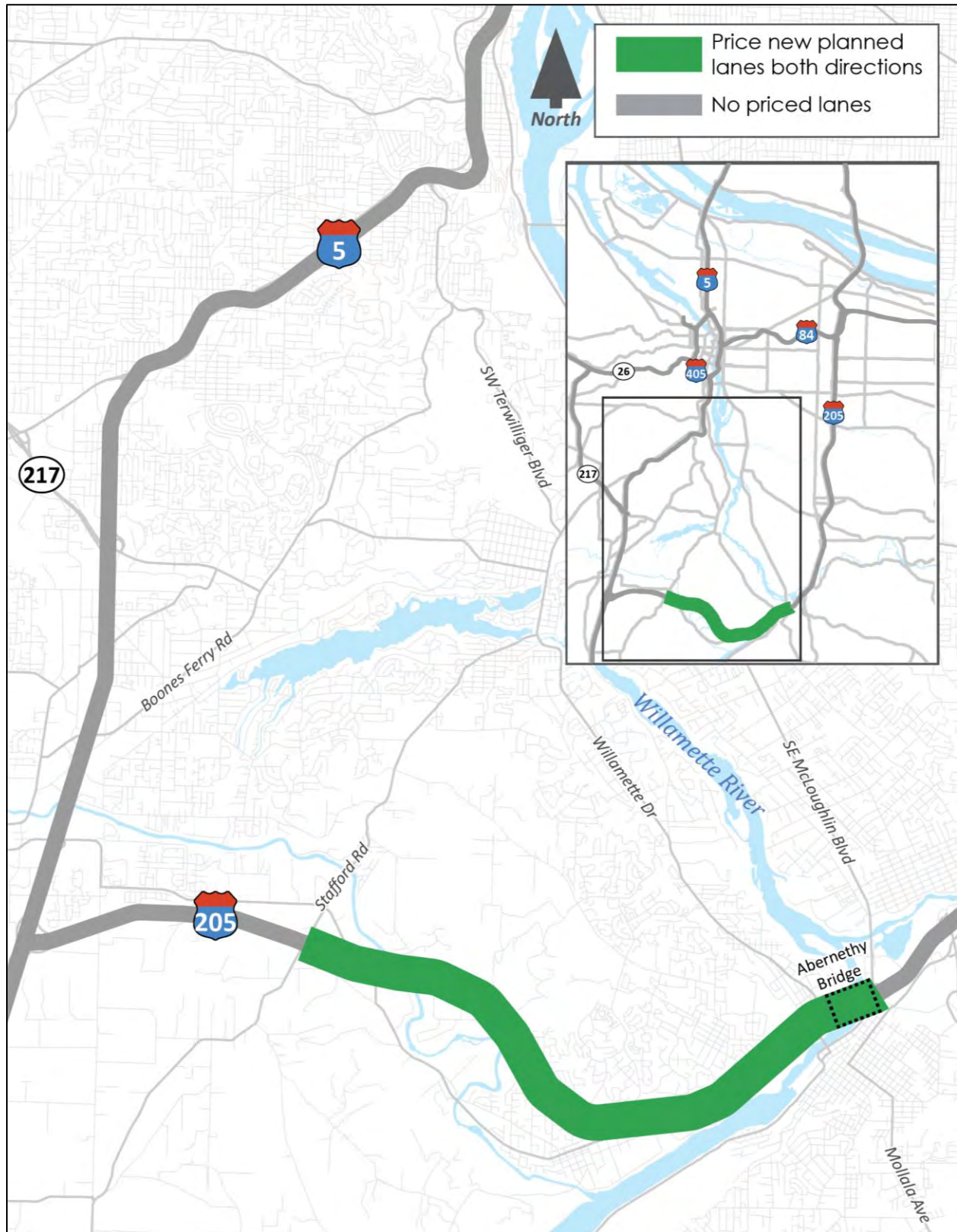
3.4 Concept D: I-205 Priced Lane – OR99E to Stafford Road

Concept D would price future additional third lanes in each direction currently planned but not funded for construction on I-205 from OR99E to Stafford Road, including widening of the Abernethy Bridge. Existing general purpose lanes in each direction would remain unpriced. The future planned project was considered part of the 2027 baseline for all concepts in the evaluation. Key findings from the assessment of Concept D are as follows:

- Congestion reduction is minimal, though the concept slightly reduces congestion along the priced portion of I-205.
- Diversion may occur but it is likely to be minimal.
- The concept area provides very few travel alternatives such as transit and active modes.
- Regarding user costs, this concept maintains two unpriced lanes in each direction; at the same time, the toll amount per user would be higher than all-tolled corridor options, which is consistent among single-lane pricing concepts.
- Concept D may be the quickest to implement from a federal perspective.



Figure 3-4. Round 2 Concept D: I-205 Priced Lane – OR99E to Stafford Road





3.4.1 Traffic operations improvement on I-5 and I-205

Concept D results in travel time improvements for users of the priced lanes. Diversion is minimal. Additional detail on this group of performance metrics can be found in the evaluation methods and assumptions matrix in Appendix E.

Table 3.4-1. Concept D evaluation: traffic operations improvement

Performance measure	Concept D evaluation	Findings	
Vehicle and person throughput on I-5 and I-205		Moderate increases in person throughput during the peak hour on I-205. This is likely because this is a managed lane scenario and higher occupancy vehicles have a preference. Vehicle throughput is changed to a far lesser degree.	
Freight truck throughput on I-5 and I-205		Moderate increases in truck throughput on I-5, but these are offset by decreases on I-205. Trucks are also assumed to not be able to access the managed lane based on current state law and practice around the country. Freight vehicles will receive some benefit from minor decreases in travel time in the general purpose lanes on I-205 in the vicinity of the improvement.	
Passenger vehicle travel time on I-5 and I-205		No significant impacts to travel time on I-5 or I-205. There are improvements in travel time on the managed lanes themselves.	
Passenger vehicle travel time on managed lanes		For vehicles using the managed lanes, there are improvements in travel time.	
Freight truck travel time on I-5 and I-205		No differences in travel time compared with the baseline for trucks on I-5 or I-205.	
Assessment of change in duration of peak vehicle traffic conditions		Moderate improvement on I-205 for the duration of congested travel. This does not translate to I-5.	
Delay on priced facility		Moderate improvements in delay on the priced facility.	
Safety impacts		Potential to decrease the frequency and severity of crashes in the priced section of corridor.	
Trip length distribution		No significant changes to freeway trip lengths are expected overall. Some longer-distance trips may switch from I-5 to I-205 to take advantage of performance improvements on the tolled segment.	
Legend:	Performs well 	Performs moderately 	Performs poorly 

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Vehicle and person throughput on I-5 and I-205

Concept D results in little change in daily vehicle throughput relative to the baseline. All-day vehicle volumes are essentially unchanged but, during the peak hours and in the peak direction, vehicle volumes could increase slightly on I-205 relative to the baseline condition.



All-day person throughput is relatively unchanged compared to the baseline with peak hour, peak direction person throughput on I-205 increasing slightly (about 5 percent in the northbound direction in the 5 PM hour and 7 percent in the southbound direction during the 7 AM peak hour).

Freight truck throughput on I-5 and I-205

Concept D results in modest shifts in daily truck volumes from I-205 (with the priced lane) to I-5 (the facility without the priced lane) with shifts during the peak periods being higher. In Concept D, a single lane in each direction is converted from a general purpose lane to a toll managed lane. Since trucks cannot access the managed lanes, and since general purpose capacity is lower when compared with the baseline, this change in truck routing from I-205 to I-5 is expected. However, freight vehicles should receive some benefit from minor decreases in travel time in the general purpose lanes on I-205 in the vicinity of the improvement.

Passenger vehicle travel time on I-5 and I-205

Concept D results in only modest changes in travel times in the general purpose lanes when compared with the baseline. During peak hours, travel times in the general purpose lanes increase slightly on the segments of I-205 where the priced managed lane is implemented, but total corridor travel times increase very modestly.

Passenger vehicle travel time on managed lanes

Concept D provides a toll managed lane alternative to the general purpose lanes on the southern portion of I-205. As such, users experience travel time savings for the entire corridor of between 7 and 9 percent during peak hours. For the specific segment where the priced managed lanes are operating, the time savings are greater on a percent basis (between 13 and 34 percent).

Freight truck travel time on I-5 and I-205

Freight vehicles travel in the general purpose lanes of I-5 and I-205 in this concept, not the priced lanes. As such, the travel time for freight vehicles is the same as corresponding travel times for passenger vehicles in the general purpose lanes.

Assessment of change in duration of congested traffic conditions

Concept D results in modest reductions in congested conditions on I-205 where the priced managed lane is offered. During the 7 AM peak hour, the chance of encountering hyper-congestion on I-205 is reduced from the baseline condition (28 percent in the northbound and 36 percent in the southbound) to 24 percent for the northbound direction and 31 percent for the southbound. Furthermore, during the 5 PM hour, the chance of hyper-congestion on I-205 is reduced from the baseline condition (30 percent for the northbound and 21 percent for the southbound) to 25 percent in the northbound direction and 19 percent in the southbound.

Delay on priced facilities

Concept D reduces delay in the parts of the corridors where managed lanes are operational. This reduction is more pronounced (up to 10 percent) during peak hours.



Safety

Concept D could potentially reduce crashes within the priced lanes by improving traffic flows. However, there is the potential for these benefits to be offset in part by increased crashes in the general purpose lanes.

Trip length distribution

No significant changes to trip length distribution are expected to result from this concept.

3.4.2 Diversion of traffic

Concept D is not anticipated to generate levels of diversion that may negatively impact safety. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.4-2. Concept D evaluation: diversion of traffic

Performance measure	Concept D evaluation	Findings
Safety impacts to all modes of transportation (including bicyclists and pedestrians) on routes with diversion		No substantial diversion impacts are expected.
Diversion impacts on non-tolled facilities		No substantial traffic diversion impacts.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Overall, diversion is expected to be minimal. However, some changes to traffic circulation patterns may occur. While the scale of diversion is expected to be small, potential locations where increases in roadway volumes could occur include the following:

- Borland Road/Willamette Falls Drive [Stafford Road to Willamette Drive]
- McLoughlin Boulevard [I-205 to Roethe Road]
- Pacific Highway (OR 99E) [I-205 to south of Metro area]
- Trails End Highway (OR 213) [I-205 to south of Metro area]

This concept would likely not result in significant diversion of vehicular traffic from the freeway to arterials or other roads. Therefore, effects to road users (vehicular, bicyclists or pedestrians) are expected to be minimal.

3.4.3 Transit service and active transportation

Concept D performs the worst of any of the concepts in terms of transit service and active transportation. There are no parallel running transit lines, very few bicycle facilities and the pedestrian network is almost non-existent. What pedestrian infrastructure there is has little to no connectivity. Additional detail on this group of



performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.4-3. Concept D evaluation: transit service and active transportation

Performance measure	Concept D evaluation	Findings
Adequacy of transit service		A total of three transit lines, all run by TriMet. Only a single frequent service line, and only a single transit center. No park-and-rides exist in the area.
Bus transit travel time		Minimal time savings for AM peak and PM peak (northbound/southbound). One TriMet route would marginally benefit.
Mode share shift (HOV, SOV, transit, walk, bike)		Minimal impacts on regional mode share. Slight potential to shift SOV to HOV.
Availability of bicycle travel on alternative routes		Just over 28 miles of bike lanes within a 1-mile buffer. Zero parallel paths that run the distance of the concept corridor. Gaps exist along every part of the corridor.
Completeness of pedestrian network		37 total street miles of sidewalks. 6 miles of sidewalk/mile of corridor length within a half-mile buffer.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: Metro Regional Travel Demand Model, WSP

Adequacy of transit service

Concept D performs poorly from a transit perspective. Only three bus routes intersect the Concept D corridor. Only a single bus route runs parallel to the concept corridor for any meaningful length and it does not provide frequent service. For much of the day, bus headways are one hour. The other two bus routes run only slightly parallel to the corridor length but not enough to make them reasonable alternatives. A single transit center exists along the concept corridor and no park-and-rides exist in the area.

Bus transit travel time

Concept D provides only a modest amount of potential travel time savings along I-205. TriMet currently operates one bus route along this section of the freeway, but only over the Abernethy Bridge. Furthermore, there is unlikely to be any incentive for adding a new TriMet express freeway service.

Mode share shift

Concept D is anticipated to have minimal to no impact on regional mode share. What little mode shift may occur would likely be from SOV to HOV modes.



Availability of bicycle travel

Concept D performed poorly for bicycle travel options. While some bike lanes exist near the corridor, only few sections are parallel, and those run for only a small segment to the east. No paths run parallel to the full length of this concept corridor. Cyclists have no alternative options to ride for the length of the concept corridor. Finally, this concept area has severe gaps in the existing bicycle network. What bicycle lanes do exist only run for a few hundred feet before ending.

Completeness of pedestrian network

Concept D performed poorly for pedestrian network completeness. The pedestrian networks that exist are fragmented and end in many cul-de-sacs. A very small, tight sidewalk network is located near the Abernethy Bridge, but it is much too small to be of use to those who live in the western areas of the network.

3.4.4 Equity benefits and impacts

Concept D offers some minimal travel time benefits to the region, but it does not provide much travel time benefits for Title VI and Environmental Justice communities. Performance measures in other categories also relate to equity, although they are not specifically categorized as such. Additional detail on this and other performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Regarding user costs, this concept maintains two unpriced lanes in each direction. At the same time, the toll amount per user would be higher, which is consistent among single-lane pricing concepts.

Table 3.4-4. Concept D evaluation: equity benefits and impacts

Performance measure	Concept D evaluation	Findings
Value or travel time savings for Title VI and/or Environmental Justice communities (regional)		Small travel time benefit for Title VI and Environmental Justice communities.
Changes in travel time based on geographic zones		Small travel time benefit for the region.
Access to jobs		No significant impact on job access for Title VI and/or Environmental Justice communities.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Value of travel time savings for Title VI and/or Environmental Justice communities

A small benefit in overall travel time can be expected with this concept for Title VI and Environmental Justice communities in the region (low-income, people of color, and low English proficiency communities). The scale of the travel time benefit is relatively small, but greater than in Concept A.



Travel time savings by geographic area

A small improvement in vehicle travel time can be expected with this concept. Benefits to the region are focused on the south side of the Portland Metro area. Trips to and from West Linn, Oregon City, Tualatin, Tigard, Wilsonville, and parts of Portland would benefit most.

Access to jobs

Concept D offers no significant change to the percent of regional jobs accessible within a 30-minute drive for Title VI or Environmental Justice communities.

3.4.5 Benefits and impacts for the community, economy and environment

Concept D analysis shows minimal impact on travel time savings or regional vehicle miles traveled. The construction of new capacity could impact nearby residences and businesses. However, the new lanes are already planned for the corridor (and considered part of the baseline for all concepts analyzed). Construction will have impacts regardless of whether they are constructed as general purpose lanes or as priced lanes. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.4-5. Concept D evaluation: benefits and impacts for the community, economy and environment

Performance measure	Concept D evaluation	Findings
Physical impacts to existing residences and businesses		Limited physical impacts might be expected (the additional lane and bridge widening are considered part of the baseline for all concepts).
Regional travel time savings		Minimal impact on overall regional VHT. Potential for reduction of regional VHT is highest during the AM peak period.
Regional vehicle miles traveled (VMT) (including non-freeway)		No significant change in regional VMT.
Change in air pollution		No significant change expected. Some potential to slightly reduce regional vehicle emissions.
Value of travel time savings		Potential to provide a small regional travel time benefit for motor vehicles. Has the second-smallest benefit of all concepts evaluated.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Overall, the regional transportation system shows some potential to operate more efficiently as system-wide impacts show the potential to slightly reduce total motor VHT. There is potential for a small increase (less than 0.1%) in overall VMT due to out-of-



direction travel to the southern portion of I-205, which would benefit from improved performance during peak hours.

Though this concept is anticipated to toll new lanes, the new lanes are planned and included in the baseline for this study. It should be noted that the planned project could have limited physical impacts to adjacent residences and businesses (with or without pricing in place).

3.4.6 Revenue and costs

Concept D generates relatively little revenue, though shows low capital costs as tolling is anticipated for a relatively short distance in a single lane each direction. Additional detail on this group of performance metrics is provided in the evaluation methods and assumptions matrix in Appendix A.

Table 3.4-6. Concept D evaluation: revenue and cost

Performance measure	Concept D evaluation	Findings
Capital expenditure on facility		Low capital costs as tolling is only anticipated for a relatively short distance in a single lane (each direction). ^a
Estimated gross toll revenue potential from tolled facility		Lowest total annual revenue and daily revenue per centerline mile. Sufficient revenue for capital investments would likely not be available.
Legend:	Performs well  Performs moderately  Performs poorly 	

Note: All concepts assume construction of a third lane on I-205 between Stafford Road and OR99E will be operational by 2027. However, if construction of the third lane were to be funded through toll revenues, this assessment would be poor.
Source: WSP, Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Capital expenditures on facility

For this feasibility analysis, the roadway improvement project to add a lane to I-205 along this concept's corridor (including Abernethy Bridge widening) was assumed to be independent of tolling the new lane. As a result, Concept D would likely have low capital costs as tolling is only anticipated for a relatively short distance in these lanes. If tolling revenue is identified as a funding source for the project, the capital cost of constructing the new planned lanes would not be fully covered by the anticipated revenues from this concept.

Gross toll revenue potential

The potential annual gross toll revenue estimate for Concept D is \$20 million (in 2017 dollars), one of the two lowest of the five concepts. The revenue estimates were calculated based on toll rates that vary for each segment and time of day based on traffic conditions. The modeling analysis adjusted the toll rates for each hour of the day to the level that maintains free flow traffic conditions on the tolled lanes throughout the



day and during peak periods. The toll rates range between \$0.16 per mile during non-peak hours to a high of \$1.05 per mile during the peak. Estimated revenue would be sufficient to cover routine costs associated with toll collection and operations, roadway operations and maintenance, and periodic costs associated with rehabilitation and reconstruction of toll equipment. However, estimated revenues may not be sufficient to cover roadway rehabilitation and reconstruction costs that would be required regardless of the lane being tolled. Excess revenue would likely not be available for significant contributions to capital improvements. Appendix E includes additional information about revenue and cost assumptions.

3.4.7 Implementation

Concept D is consistent with state and regional law and policy. The concept qualifies under FHWA's Mainstream Tolling program if the planned new lanes on I-205 are constructed as priced facilities. However, if new lanes were to be constructed and then converted to priced lanes, the authority would be granted under the Value Pricing Pilot Program. The implementation of this concept would not impact other projects, but could require additional design time for the planned project due to the need to address tolling facility design considerations. Developing the new lanes as priced lanes could accelerate their construction. Additional detail on this group of performance metrics is provided in the evaluation matrix in Appendix A.

Table 3.4-7. Concept D evaluation: implementation

Performance measure	Concept D evaluation	Findings
Consistency with state law and policy		Consistent with state law and policy. Any tolling proposal would need to meet additional legal requirements.
Consistency with regional law and policy		Consistent with regional law and policy; likely coordination with Metro.
Feasibility under federal law		Qualifies under Section 129 of U.S. Title 23 for tolling if implemented at time of construction. Otherwise VPPP.
Project delivery schedule		Potential for construction acceleration; may need additional design time to reflect tolling.
Legend:	 Performs well  Performs moderately  Performs poorly	Please see summaries below for additional assessment detail.

Source: WSP

Consistency with state and regional law and policy

Concept D is consistent with guidance and requirements found in state and regional laws and policies. Discussion on state and regional laws and policies is provided in Appendix F.



Feasibility under federal law

Concept D would qualify for implementation under Section 129 of U.S. Title 23 if the planned additional lanes were constructed as priced lanes. However, if the new lanes were to be constructed as general purpose lanes and then converted to priced lanes, then the Value Pricing Pilot Program applies.

Project delivery schedule

It is possible, but not likely, that revenues from Concept D could accelerate construction of the planned additional lane between Stafford Road and OR 99E. There is risk of a need to modify existing design work to reflect tolling design considerations (e.g. buffer between managed lane and general purpose lane).



Blank Page



3.5 Concept E: Abernethy Bridge Priced Roadway

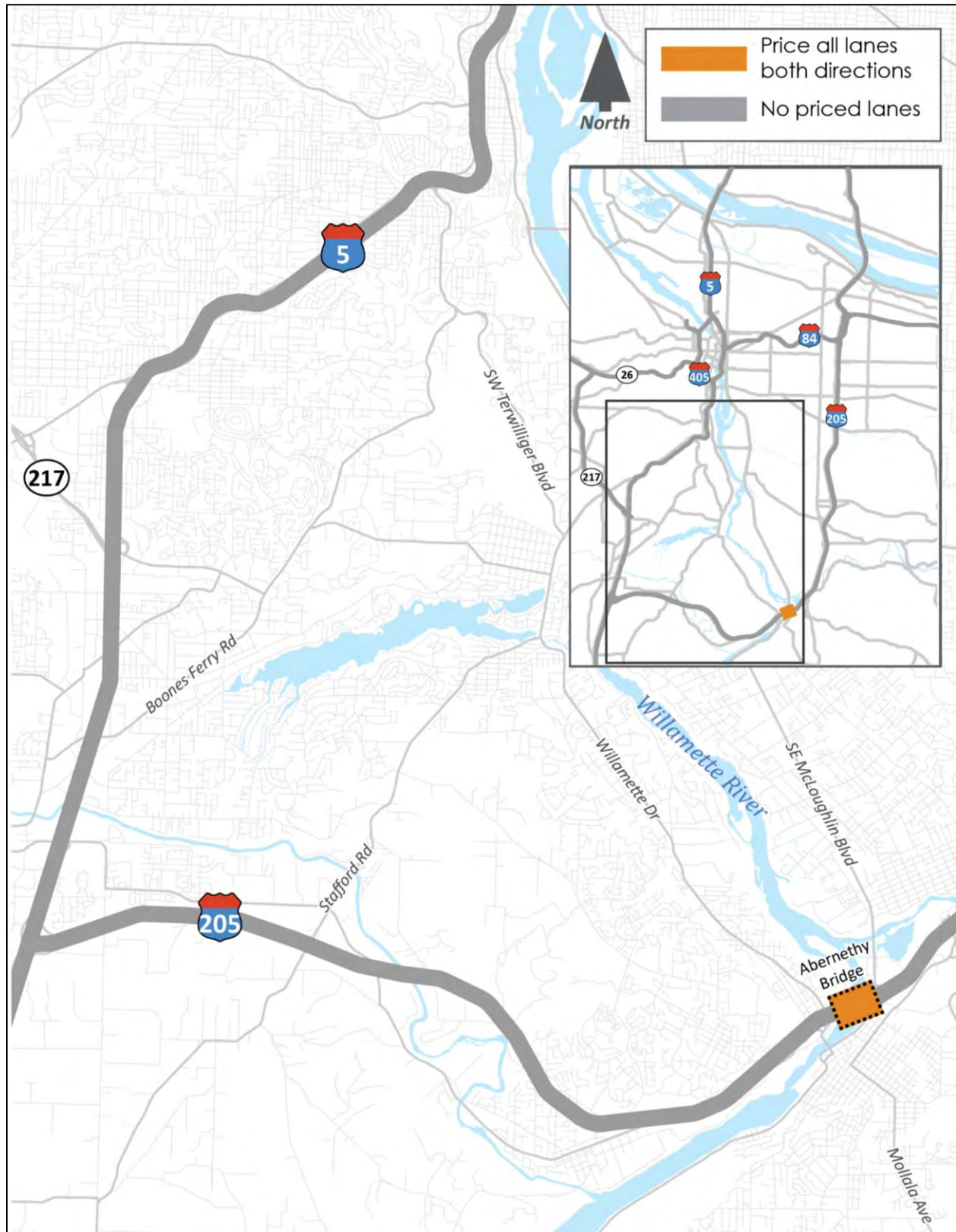
Concept E (Figure 12) applies pricing on all existing lanes of the Abernethy Bridge as well as additional lanes to be constructed as part of the planned bridge widening. This Concept has a different primary objective than Concepts A through D. Rather than pricing to relieve congestion, Concept E was evaluated as a strategy to help reduce congestion by funding a bottleneck relief project that would add a third lane in each direction on I-205 from OR99E to Stafford Road and widening of the Abernethy Bridge. Therefore, revenue generation was the primary objective of this Concept.

The following are key findings from the assessment of Concept E.

- Congestion reduction and travel time savings would occur for drivers on I-205; particularly near the Abernethy Bridge.
- Some traffic, particularly freight traffic, would be diverted to I-5, with longer distance trips attracted to I-5, slightly increasing I-5 travel times.
- There is a high probability of diversion to other facilities as some vehicles seek to avoid the toll (although some trips may also be diverted to different modes or times of day). Strategies to minimize traffic diversion onto the local street network would need to be examined as part of the future NEPA process if this concept is pursued further.
- Because it does not maintain any general purpose (unpriced) freeway lanes, there may be a need to provide mitigations such as increased transit service, low income toll rates, or other strategies.
- Pricing all lanes on the Abernethy Bridge would likely generate sufficient revenue over time to fund bridge expansion, as well as all or a portion of the additional lane in both directions on I-205 from the bridge to Stafford Road (as well as covering tolling operations and freeway operation and maintenance costs).



Figure 3-5. Round 2 Concept E: Abernethy Bridge Priced Roadway





While the primary objective of Concept E is revenue generation in support of constructing congestion relief projects, the use of variable toll rates that are highest during peak conditions on the bridge would also provide congestion relief on I-205. The sections that follow detail findings from key performance measures to help understand the effect of this concept: traffic operations, diversion, revenue and cost, and implementation. Not all the performance measures used for Concepts A through D are relevant to evaluation of Concept E, or in some cases, the results from Concept D are the same.

3.5.1 Traffic operations improvement on I-5 and I-205

Concept E shows reductions in delay on I-205. Concept E would result in some diversion of vehicles away from I-205. Some freight vehicles would be impacted as many long-distance trips would likely shift from I-205 to I-5. As a result of this increased demand on I-5, travel times would likely be slightly increased on I-5. The volume reductions on I-205 would result in travel time improvements, most notably near the Abernethy Bridge. It is important to note that traffic operations results should be examined holistically instead of examination of just one or two performance measures to understand the full breadth of implications. As discussed earlier in this memorandum, reductions in throughput can indicate benefits for other performance measures such as reduced delay or travel time.

Table 3.5-1. Concept E evaluation: traffic operations improvement

Performance measure	Concept E evaluation	Findings
Vehicle and person throughput on I-5 and I-205		Decreased throughput on I-205 with slightly increased throughput on I-5.
Freight truck throughput on I-5 and I-205		Decreased throughput on I-205 with slightly increased throughput on I-5. Freight throughput can be managed post implementation. This ability will be contingent to some extent on potential bonding requirements.
Passenger vehicle travel time on I-5 and I-205		Reduced travel times on I-205 and modestly increased travel times on I-5.
Passenger vehicle travel time on managed lanes	NA	Not applicable.
Freight truck travel time on I-5 and I-205		Reduced travel times on I-205 and increased travel times on I-5.
Assessment of change in duration of peak vehicle traffic conditions		Reduction in duration of peak vehicle traffic conditions on I-205 and a slight increase on I-5.
Delay on priced facility		Substantial delay reductions on I-205, particularly in the area near the Abernethy Bridge.
Legend:	 Performs well  Performs moderately  Performs poorly	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool



Vehicle and person throughput on I-5 and I-205

Concept E results in relatively large reductions in daily passenger vehicle throughput, and therefore likely diversion to other facilities, travel modes, of time of travel on I-205 relative to the Baseline in 2027; approximately 1,000 fewer vehicles per hour (up to 25% during the peak hours) would cross the Abernethy Bridge in each direction. Concept E would likely lower vehicle volumes during the peak periods on both I-5 and I-205. This amount of diversion is significant, and the project team recognizes that mitigation measures and other efforts to minimize impacts on local facilities would need to be identified in future planning phases. The concept would result in slight increases in passenger vehicle throughput on I-205 in the southbound direction in some segments during the AM peak hour as speeds increase and the volume of trucks decline to avoid the peak tolls at the Abernethy Bridge. Daily person throughput follows a similar pattern relative to the baseline as passenger vehicle volumes.

Freight truck throughput on I-5 and I-205

Concept E results in sizable shifts in daily truck volumes from I-205 to I-5. This shift is even more pronounced during peak hours. This shift would occur because trucks are making longer trips than passenger vehicles and have an increased opportunity to avoid the Abernethy Bridge toll by taking I-5 through the Portland metro area. This finding is dependent on the assumption that trucks would pay a multiple of the passenger vehicle toll based on the number of axles, but could be offset to some extent based on the actual toll charged freight vehicles.

Passenger vehicle travel time on I-5 and I-205

Passenger vehicle travel times increase modestly on I-5 (relative to the baseline) due to the diversion of traffic (especially longer distance trips made by trucks) from I-205. However, travel times on I-205 improve as a result of the lower volume of vehicles. Travel times during peak hours decrease by about 10 percent, while off-peak travel time decreases are more modest.

Passenger vehicle travel time on managed lanes

The tolls on the Abernethy Bridge would apply to all lanes, not just a managed lanes subset, so managed lanes travel times are not applicable for this tolling concept.

Freight truck travel time on I-5 and I-205

Because Concept E prices all lanes of travel on the Abernethy Bridge, the travel time for freight vehicles would be the same as for passenger vehicles. Travel time would be reduced on I-205, with modest increases on I-5. However, since a sizable share of freight vehicles divert from I-205 to I-5, a large number of freight vehicles would experience longer travel times on I-5 while a smaller share of freight vehicles would benefit from the reduced travel times on I-205.

Assessment of change in duration of congested traffic conditions

Congested conditions on I-205 would be virtually eliminated at the Abernethy Bridge, with congestion reduction improvements gradually diminishing with distance away from the bridge as a result of the Concept E tolling. However, modest increases in congested



conditions would be expected on I-5 due to longer trip, through traffic diverted from tolling on I-205. During the morning peak hour the chance of hyper-congestion in the I-205 corridor would be reduced from the Baseline condition; from 28 to 14 percent in the northbound direction and from 36 to 23 percent in the southbound direction. During the evening peak the chance of encountering hyper-congestion in the I-205 corridor would also be reduced; from 30 to 12 percent in the northbound direction and from 21 to 9 percent in the southbound direction.

Delay on priced facilities

Concept E would reduce delay in the I-205 corridor, especially near the Abernethy Bridge. This improvement would be more pronounced during the peak hours. Daily hours of delay in the I-205 corridor would be reduced by 38 percent in the northbound direction of travel and by 37 percent in the southbound direction.

3.5.2 Diversion of traffic

All lanes would be priced in Concept E with the primary intention of raising revenue (rather than the primary intention of relieving congestion). As such, there is a high probability of diversion to other facilities as some vehicles seek to avoid the toll (although some trips may also be diverted to different modes or times of day). This diversion could negatively impact safety on adjacent and regional toll-free facilities without mitigation. Additional detail on this group of performance metrics can be found in the evaluation methods and assumptions matrix in Appendix A.

Table 3.5-2. Concept E evaluation: diversion of traffic

Performance measure	Concept E evaluation	Findings
Diversion impacts on non-tolled facilities		Potential for diversion impacts on non-tolled facilities is high.
Safety impacts to all modes of transportation (including bicyclists and pedestrians) on routes with diversion		The diversion of trips from the priced bridge facility to adjacent arterials and other roadways could increase the need for safety mitigation on those facilities.
Legend:	Performs well  Performs moderately  Performs poorly 	

Source: Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Overall diversion is expected to be substantial based on the expected change in vehicle throughput on the tolled segments of I-205. Diversion from the Abernethy Bridge is expected to average approximately 1,000 vehicles per hour (about 25% during peak hours) in each direction. Diversion can occur to different modes, to travel times with lower tolls, or to other roadways. The diversion to other roadways may potentially impact locations including:

- I-5
- OR 224 [OR 99E to OR 212]



- Sellwood Bridge/Tacoma Street [Macadam Avenue (OR 43) to McLoughlin Boulevard (OR 99E)]
- McLoughlin Boulevard (OR 99E) [Tacoma Street to OR 224]
- OR 43 [Taylors Ferry Road to A Avenue]
- Stafford Road/McVey Ave [OR 43 to Borland Road]
- Willamette Falls Drive
- Downtown Oregon City
- Pacific Highway (OR 99E) [I-205 to south of Metro area]

Because this concept does not maintain any general purpose (unpriced) freeway lanes, there may be a need to provide mitigations such as increased transit service, low income toll rates, or other strategies.

3.5.3 Revenue and costs and implementation

Concept E has potential to generate more revenue than all other concepts except for Concept C. Net revenue projections over a 30-year period appears to support \$350 to \$550 million in up-front capital investments through toll-backed financing. Revenue could be available to support the planned additional lane on I-205 (Stafford to OR99E) including the Abernethy Bridge, while funding the tolling and maintenance and operations of the facility.

Table 3.5-3. Concept E evaluation: revenue and cost and implementation

Performance measure	Concept E evaluation	Findings
Capital expenditure on facility		Revenue would be sufficient to cover funding the estimated \$250 million required for the bridge lane expansion, and may be sufficient to cover part, and possibly all, the cost of additional lanes on I-205 between OR99E and Stafford Road.
Estimated gross toll revenue potential from tolled facility		Moderate total annual revenue; highest daily revenue per centerline mile due to a single point toll at the Abernethy Bridge.
Estimated revenue leakage		Primarily leakage attributed to vehicles without an account / pass diverting to alternative facilities or using the facility as a violator, which may be partially mitigated by allowing for image based toll collection and by roadside cameras and visual enforcement.
Estimated toll collection operation and maintenance and periodic rehabilitation and reconstruction costs including toll vendor(s) procurement costs		Relatively low toll transaction volumes will result in higher fixed costs per transaction, or higher costs attributed to contracting with an existing back office system operated by another agency/vendor(s). However, these are offset by high revenue per transaction. Lane-side equipment costs would still be directly incurred along with agency staff and transactional costs. Revenues after leakage adjustments are anticipated to be sufficient to cover toll operating and maintenance costs and contribute toward facility operation and maintenance costs, rehabilitation and reconstruction costs, and / or debt service costs if capital financing is assumed.



Performance measure	Concept E evaluation	Findings
Project delivery schedule		Potential for construction acceleration; may need additional design time to reflect tolling.
Legend:	 Performs well  Performs moderately  Performs poorly	

Source: WSP, Metro Regional Travel Demand Model, Metro Multi-Criteria Evaluation Tool

Capital expenditure on facility

Preliminary costs for identified improvements are estimated at approximately \$250 million for the bridge widening and seismic retrofit project, as well as another \$250 million for adding a lane in each direction from OR99E to SW Stafford Road. Revenue is anticipated to be sufficient to cover bonding for the estimated \$250 million required for the bridge lane expansion, and may be sufficient to cover part, and possibly all of the cost of additional lanes on I-205 between OR99E and Stafford Road.

Gross toll revenue potential

The potential annual gross toll revenue estimate for Concept E is around \$53 million (in 2017 dollars). Concept E differs from the other concepts in that a single point (the Abernethy Bridge) is tolled for an emphasis on revenue generation. Toll rates vary with the level of traffic congestion; the modeling analysis estimated the highest tolls during the peak periods (\$3.50) and no toll between 11 pm and 5 am. Weekend tolls were not modeled but were assumed to have a midday peak toll, with weekend tolls generally lower value than weekdays. In addition to covering routine toll collection and operations, roadway operations and maintenance costs, Concept E revenues would likely be sufficient to cover periodic toll system rehabilitation and reconstruction costs, roadway rehabilitation and reconstruction costs, and support capital investments and/or mitigation solutions. Appendix E includes additional information about revenue and cost assumptions.

Revenue leakage often refers to potential revenue that is not collected from users and may be associated with policy decisions such as available toll payment methods and enforcement strategies. In Concept E, it is assumed that all users must have a tag/transponder in their vehicle that is linked to a pre-established customer account to use the tolled lanes. This analysis did not account for tag/transponder penetration rates or the percentage of through-trips and out of state/country trips that likely would not have a registered transponder account in the state of Oregon. As such, the leakage or revenue loss factors provided assume that a certain number of vehicles would divert to alternative routes to avoid fines and fees associated to being a violator.

In Concept E, HOV and carpool vehicles are assumed to pay tolls; therefore, no leakage associated with false carpool declaration is assumed. Revenue leakage is assumed to occur in the following ways:

- *No Account:* drivers without a valid account who choose an alternate route is estimated between 10 to 20 percent. This could be mitigated if an alternative payment method was offered for infrequent users.



- *Violations:* drivers using the lanes without a transponder are expected to be in the range of 5-10 percent. This, too, could be mitigated with the implementation of an alternative payment method for infrequent users. Depending on that method, there will still likely be some leakage arising from delayed violations due to unpaid toll bills.
- *Equipment error:* equipment read errors of transponders is assumed to be less than 0.5 percent.
- *Account status:* transponder accounts linked to expired credit and debit cards and accounts with insufficient balances are assumed to be 4 percent, some of which may ultimately be recovered depending on business rules implemented.

Routine annual toll collection operations and maintenance costs, as well as periodic rehabilitation and reconstruction costs for Concept E are based on toll agency experience for other comparable toll facilities in the U.S. Concept E includes routine annual costs for credit card banking fees, state/agency management and oversight, back office customer service center vendor systems and operations contract(s), lane-side equipment and vendor operations, and enforcement costs for state highway patrol. Periodic rehabilitation and reconstruction costs include lane-side toll equipment and the procurement of back office and lane-side toll vendor multi-year contracts.

Concept E revenues are based on toll rates that emphasize revenue-generation while still alleviating congestion, and are expected to produce gross toll revenues in the range of \$66 million in year of collection dollars for 2027. This level of revenue, after factoring in leakage, should be sufficient to cover routine toll collection costs, routine facility maintenance costs, and banking fees, with the remaining net revenues available to support the financing of capital investments and contribute to periodic toll collection and roadway facility rehabilitation and capital reconstruction costs.

Under very preliminary, conceptual net revenue and financing assumptions, the Concept E net revenue projections over a 30-year period would appear to support \$350 to 550 million in up-front capital investments through toll bond financing.

The revenues available from pricing could potentially allow the expansion to be accelerated. There is risk of a need to modify existing design work to reflect tolling design considerations.



4 RECOMMENDATION AND NEXT STEPS

The technical analysis identified the following key findings from the evaluation of congestion pricing on I-5 and I-205:

- Concept A in north Portland exhibits little congestion relief benefit and the potential for minimal benefits may harm successful implementation of congestion pricing in the area.
- Concept B near the Portland city center has strong potential to reduce congestion along I-5 with minimal diversion to I-205 and adjacent roadways. This concept also has a dense network of transit and multi-modal facilities in the downtown/Rose Quarter/Swan Island area that can serve as a toll free travel alternative to minimize impacts. Concept termini would need to be examined as part of the future NEPA process.
- Concept B would generate revenue to cover operations and associated costs with excess revenue being available for capital investment and/or mitigation.
- Concept C has the greatest potential for reducing congestion on both I-5 and I-205 and generating travel time savings for the widest possible range of users, and could be considered as part of a future broader regional pricing application pending success of a pilot pricing program.
- Concept C has the greatest revenue potential and would cover toll collection costs, toll system replacement and rehabilitation costs, and provide revenue for capital investment and/or mitigation.
- Concept D in the southern end of I-205 shows little congestion relief benefit with minimal traffic diversion and provides some benefit to I-205.
- Concepts A and D would likely generate sufficient funding to cover toll operations but not replacement and rehabilitation costs, roadway maintenance and would not support capital investments and/or mitigation.
- Concept E centered at the Abernethy Bridge shows promise to raise revenue and reduce congestion on I-205. This concept, or a variant, could pair with a pilot program to balance the travel choice between the I-5 and I-205 corridors. Concept termini would need to be examined as part of the future NEPA process.

4.1 Implications for congestion pricing implementation

Congestion pricing on I-5 and I-205 shows benefits to people living and traveling in the Portland metro area. Pricing would be effective in addressing traffic congestion on these corridors, based on the technical analysis and evaluation. Consideration should be given to the following if any pricing concept is implemented.

- Any concepts considered further should be paired with policy or programs that address potential impacts on lower-income and adjacent communities as part of an equitable strategy to ensure benefits are shared broadly.
- A phased approach – implementing a smaller-scale application as a pilot program and following up with monitoring and scheduled reporting – may ensure that the pricing application meets state and regional goals. Such a program would also lay the foundation for a more comprehensive pricing approach for the metro area by illustrating to the public how pricing has



positively impacted congestion where implemented. A smaller-scale application as a pilot program followed up with monitoring and scheduled reporting based on key performance measures could be established to gauge success. A sunset or benchmark paired with the pilot program could provide a predictable schedule for re-assessment of pricing as a tool for congestion minimization.

4.2 Consultant team recommendation

Based on the key findings from the evaluation, the consultant team recommends a phased approach to implementation of congestion pricing on I-5 and I-205:

- Initial implementation of Concept B as a pilot pricing program, coupled with a sunset or trigger to evaluate success.
 - *Rationale:* Strong potential at congestion reduction along I-5 with minimal diversion to I-205 and adjacent facilities; has a much denser network of transit and multi-modal facilities that can serve as a toll free alternative; significant improvements in facility efficiency and vehicular throughput, meaning that more vehicles can be moved and diversion to free facilities can be managed.
- Consider implementation of Concept E concurrent with implementation of Concept B.
 - *Rationale:* Provides the benefits of Concept B while generating funding to advance the addition of new lanes on I-205 where only two lanes in each direction currently exist as well as retrofitting and adding a lane in each direction to the Abernethy Bridge.
- After assessment of the performance of the initial pricing project, and assuming successful evaluation, implementation of Concept C in phases with more comprehensive system analysis.
 - *Rationale:* Greatest potential for reducing congestion and generating travel time savings for the widest possible range of users; significant improvements in facility efficiency and vehicular throughput, meaning that more vehicles can be moved and diversion to free facilities can be managed.
- Do not implement Concept A or D.
 - *Rationale:* Little congestion relief benefit; would not provide a reasonable test for the potential for pricing to provide congestion relief.

4.3 Next Steps

At the fifth PAC meeting on May 14, 2018, the PAC will review and consider the evaluation presented in this technical memorandum as well as the public comment received over the past six months. In May and June 2018, the PAC will develop a recommendation(s) to advise the OTC. The OTC will submit a report to FHWA by December 2018. After coordination with FHWA, the OTC will provide direction about next steps such as an environmental analysis, which would include additional public involvement, Title VI and Environmental Justice analysis, traffic analysis, and other analysis of potential benefits and impacts.



Appendix A Evaluation methods and assumptions



ROUND 2 METHODOLOGY AND SCREENING DATA DEVELOPMENT

***NOTE:** Scoring is generally 0, 2.5, 5 for qualitative measures, and 0, 1, 3, 5 for quantitative measures. They are different scales to indicate the finer level of detail for the quantitative analysis.

Performance Measure	Evaluation Type	Tool	Description	Scoring*
Traffic operations improvement on I-5 and I-205				
▪ Vehicle and person throughput on I-5 and I-205	Quantitative (vehicles and persons)	TOM	This metric describes the number of vehicles and the number of people moved in those vehicles along the I-5 and I-205 corridors. Concepts that increase the number of vehicles and people moving along I-5 and I-205 during the AM (7am – 8am) and PM (5pm – 6pm) peak hours as well as on a daily basis will score higher. <i>Likely will be based on assessment of average volume per lane mile within the concept, but first the team needs to see the data.</i>	0 – Does not improve (or reduces) vehicular or person throughput. 1 – Results in marginal improvements in throughput (0 to 5 percent improvement over the baseline). 3 – Results in noticeable improvements to throughput (between 5 to 10 percent improvement over the baseline). 5 – Results in significant improvements to throughput (over 10 percent improvement over the baseline).
▪ Freight truck throughput on I-5 and I-205	Quantitative	TOM	This metric describes the number of commercial and other heavy freight vehicles that move along the I-5 and I-205 corridors. Concepts that increase the amount of freight moving along I-5 and I-205 during the AM (7am – 8am) and PM (5pm – 6pm) peak hours as well as on a daily basis will score higher. <i>Likely will be based on assessment of average volume per lane mile within the concept, but first the team needs to see the data.</i>	0 – Does not improve (or reduces) freight throughput. 1 – Results in marginal improvements in throughput (0 to 5 percent improvement over the baseline). 3 – Results in noticeable improvements to throughput (between 5 to 10 percent improvement over the baseline). 5 – Results in significant improvements to throughput (over 10 percent improvement over the baseline).



Performance Measure	Evaluation Type	Tool	Description	Scoring*
Passenger vehicle travel time on I-5 and I-205	Quantitative (for all concepts)	TOM	Pricing frees available freeway capacity and provides tools to better manage that capacity. As such, pricing should reduce the amount of time it takes to travel along I-5 or I-205. This metric describes the time it takes a passenger vehicle to travel along I-5 and I-205 during the AM (7am – 8am) and PM (5pm – 6pm) peak hours as well as on a daily basis. Concepts that reduce travel time will receive a higher score than pricing concepts that do not improve travel time or increase travel times. For priced lanes concepts (Concepts A and D), this metric reflects both travel time in the priced lane and the general-purpose lanes. A different performance measure captures travel time for priced lanes only. A different performance measure captures travel time for freight vehicles.	0 – Does not reduce travel times or results in increased travel times. 1 – Results in marginal improvements to travel time (0 to 5 percent reduction relative to the baseline). 3 – Results in noticeable improvements to travel time (between 5 to 10 percent decrease relative to the baseline). 5 – Results in significant improvements to travel times (over 10 percent reduction relative to the baseline).
Passenger vehicle travel time on managed lanes	Quantitative (for priced lanes concepts only – Concepts A and D)	TOM	Managing congestion on a designated lane on a freeway maintains its free-flow travel conditions and should result in a reduced travel time compared with the general-purpose lanes. For priced lanes concepts only (Concepts A and D), this metric describes the time it takes a passenger vehicle to travel along I-5 and I-205 during the AM (7am – 8am) and PM (5pm – 6pm) peak hours on as well as on a daily basis on the priced lanes only. This is to disaggregate results that combine the travel time for priced lanes and general-purpose lanes. Concepts that reduce travel time as compared to baseline will receive a higher score than pricing concepts that do not improve travel time or increase travel times.	0 – Does not reduce travel times or results in increased travel times. 1 – Results in marginal improvements to travel time (0 to 10 percent reduction relative to the baseline). 3 – Results in noticeable improvements to travel time (between 10 to 25 percent decrease relative to the baseline). 5 – Results in significant improvements to travel times (over 25 percent reduction relative to the baseline).



Performance Measure	Evaluation Type	Tool	Description	Scoring*
Freight truck travel time on I-5 and I-205	Quantitative	TOM	This metric describes the time it takes a commercial or heavy freight vehicle to travel along I-5 and I-205 during the AM (7am – 8am) and PM (5pm – 6pm) peak hours as well as on a daily basis. Pricing concepts that reduce travel time for freight vehicles, regardless of whether they travel in priced lanes or general-purpose lanes, will receive a higher score than pricing concepts that do not improve travel time or increase travel times. Travel in general purpose lanes may or may not improve in concepts with both priced and general-purpose lanes. In concepts with all lanes priced, all vehicles, including freight vehicles, travel in priced lanes. In concepts with both priced and general-purpose lanes, freight vehicles were assumed to travel only in the general-purpose lanes due to the state restriction on heavy vehicles in the left lane (single priced lanes are designed to be in the left lane so that they are safer and more efficient by avoiding ingress and egress conflicts).	0 – Does not reduce travel times or results in increased travel times. 1 – Results in marginal improvements to travel time (0 to 5 percent reduction relative to the baseline). 3 – Results in noticeable improvements to travel time (between 5 to 10 percent decrease relative to the baseline). 5 – Results in significant improvements to travel times (over 10 percent reduction relative to the baseline).



Performance Measure	Evaluation Type	Tool	Description	Scoring*
Assessment of change in duration of peak vehicle traffic conditions	Qualitative	TOM	Both the severity of congestion and the length of time congestion exists describes the overall impacts of congestion on a facility. Because travel conditions vary substantially from day to day, this metric will look at the probability of encountering congested conditions during any given hour of peak demand. Congestion is generally defined on a freeway as when travel speeds drop below 40 mph, though this can vary based on number of lanes, geometric configuration, and posted speed. Observing the decreasing probability of congestion as the time measured moves farther from the peak hour allows for a determination of the likely length of congested conditions. This is a relative measure for the assessed concepts that will show the probability that congestion is encountered.	0 – Longer congested periods likely. 2.5 – Congestion periods somewhat reduced. 5 – Significant congestion reduction.
Delay on priced facility	Qualitative	TOM	This metric describes the continued impact to travel time from congestion after implementation of pricing. This will be developed for both priced and unpriced lanes when appropriate for the concept. It is generated by subtracting the free flow travel time on the segment from the travel time on the segment with the concept in place.	0 – Longer travel time impacts likely. 2.5 – Travel time impacts somewhat reduced. 5 – Significant reduction in travel time impacts.



Performance Measure	Evaluation Type	Tool	Description	Scoring*
▪ Safety impacts	Qualitative	Informed by MCE	This measure assesses the potential to improve regional safety by reducing number of total crashes and/or crash severity. Concepts that increase freeway throughput and reduce probability of congested conditions will score well as freeways are generally safer on a per vehicle mile basis than arterial roadways, particularly when operating at consistent speeds. This measure is informed by regional outputs from Metro Multi-criteria Evaluation Tool that consider overall system impacts on both freeways and non-freeways.	0 – Expected to have no significant impact on number or severity of crashes in the region. 2.5 – Some limited potential to decrease number or severity of crashes in the region. 5 – Significant potential to decrease number or severity of crashes in the region.
▪ Trip length distribution	Qualitative	Informed by SWIM & KATE	Pricing may serve to discourage drivers from making short distance trips on the freeway or may provide an incentive to use alternative, toll free routes or other modes for short trips. This could result in more freeway capacity available for drivers making longer distance trips. This metric describes the likely change in the distribution of trip lengths along segments of I-5 and I-205. Concepts will be scored higher if they result in trip distributions on the freeway with a higher mean trip length; indicating that fewer drivers are making short distance trips on the facility.	0 – Does not result in any significant change to trip length distribution or reduces the mean trip length along segments of I-5 or I-205. 2.5 – Results in noticeable increases in mean trip length (between 10 and 25 percent increase relative to the baseline). 5 – Results in significant increases in mean trip length (over 25 percent increase relative to the baseline).



Performance Measure	Evaluation Type	Tool	Description	Scoring*
Diversion of traffic				
Diversion impacts on non-tolled facilities	Qualitative	Informed by KATE	Pricing provides incentives for drivers to change the time they travel, the mode they use or the routes they take. Regarding route choice, there is a chance that pricing will shift travel to non-tolled routes, potentially increasing congestion and increasing travel times on those routes. This metric will assess the potential of pricing to adjacent, non-tolled facilities. Concepts that may result in significant diversion to adjacent toll-free facilities and increase congestion on those facilities will be rated lower.	0 – Significant potential to cause diversion away from freeways to the arterial system. Scale is extensive in volume and/or in geographic impact. 2.5 – Moderate potential to cause diversion away from freeways to the arterial system. Scale is relatively minor in volume and/or geographic impact. 5 – Limited potential to cause significant diversion away from freeways to the arterial system. The scale is expected to be negligible or limited to parallel routes in the immediate vicinity.
Safety impacts to all modes of transportation (including bicyclists and pedestrians) on routes with diversion	Qualitative	Based on the level of trip diversion and the location of bicycle and pedestrian facilities (bike/ped maps); Informed by MCE	The diversion of trips from a priced facility to adjacent arterials and other roadways may degrade those facilities and could increase safety risks. This metric qualitatively assesses the potential of pricing concepts to increase safety risks on adjacent facilities due to diversion. Concepts that do not result in high levels of diversion to adjacent facilities will therefore be scored higher.	0 – High diversion: Pricing concept is expected to result in increased safety risks on adjacent facilities due to diversion of trips 2.5 – Medium diversion: Pricing concept is expected to result in diversion to adjacent facilities but safety risks on those facilities will be minimal 5 – Low diversion: Pricing concept is expected to have minimal diversion and will not result in any new safety risks for adjacent facilities



Performance Measure	Evaluation Type	Tool	Description	Scoring*
Transit service and active transportation				
▪ Adequacy of transit service	Qualitative	Transit System Maps (TriMet, CTRAN, SMART), Aerial Review	This performance measure assesses the availability of existing or planned transit service along I-5 and I-205 or parallel routes in the vicinity of the concept. Drivers with little to no access to viable transit services will not be able to use transit as an alternative to travel in a personal vehicle. Concepts with existing or planned frequent transit service running along a direct route with short headways (15-minute arrivals or better) and concepts with many transit stations and/or park-and-ride facilities in the area near the concept will be scored higher.	0 – Concepts with no or minimum existing and planned transit service, or only one route with long headways near the concept. 2.5 – Concepts with one transit route with relatively short headways, or multiple routes with longer headways in the concept area; and one park-and-ride lot or major transit station within a one-mile buffer. OR concepts with low or non-existent existing services with planned service. 5 – Concepts with multiple routes with short headways in the area and served by more than one park-and-ride lot or major transit station (within a one-mile buffer). OR concepts with moderate transit services with planned service.
▪ Transit travel time	Qualitative	Transit System Maps (TriMet, CTRAN, SMART), and informed by travel speed information from TOM and/or KATE	This performance measure assesses potential improvements in transit travel time on I-5 and/or I-205. Concepts with more freeway transit service, or that can reasonably encourage additional rubber tired transit options would score higher. Transit routes will be cross-referenced with freeway travel times.	0 – Transit routes with little to no freeway interaction and no opportunity for beneficial freeway interaction – this includes almost all local service. 2.5 – 1-2 existing or planned transit routes with modest freeway mileage OR The concept can encourage development of express service in an area without rail alternatives. 5 – Two+ existing or planned transit routes with freeway mileage and the concept will benefit transit travel time OR The concept has some existing or planned routes and the concept can encourage development of express service in an area without rail alternatives.



Performance Measure	Evaluation Type	Tool	Description	Scoring*
Mode share shift (HOV, SOV, transit, walk, bike)	Qualitative	KATE	This metric considers potential changes in the share of daily person trips by mode. It is based on results from the regional travel demand model with a focus on the ability of a concept to encourage shifts away from SOV travel. This allows consideration of potential changes to transit service on managed facilities beyond that assumed in baseline modeling.	0 – Expected to increase share of regional SOV trips while reducing share from HOV, transit, or active modes. 2.5 – Some limited potential to decrease share of regional SOV trips while increasing share for HOV, transit, or active modes. 5 – Significant potential to decrease share of regional SOV trips while increasing share for HOV, transit, or active modes.
Availability of bicycle travel on alternative routes	Qualitative	RTP Existing Regional Bicycle Network maps	This metric assesses the availability of bicycle infrastructure that might serve as a non-vehicular option to travel in a personal vehicle along alternative and parallel routes. Concepts with available bicycle options within approximately 1-mile buffer of the concept will be scored higher. The analysis was conducted based on the amount of bike lanes per mile of concept length to standardize the assessment across the concepts.	0 – Non-existent bicycle options. 2.5 – Concepts with minimal bicycle options. 5 – Concepts with multiple bicycle options.
Completeness of pedestrian network	Qualitative	RTP Existing Regional Pedestrian Network maps	This metric assesses the consistency of the pedestrian network in a concept area that might serve as a non-vehicular option to travel in a personal vehicle or provide access to transit. Concepts with connected pedestrian networks within approximately 0.5-mile buffer of the concept will be scored higher. The analysis was conducted based on the amount of pedestrian facilities per mile of concept length to standardize the assessment across the concepts.	0 – Non-existent to minimal pedestrian connections (lots of pedestrian system gaps). 2.5 – Concepts with average pedestrian network (minimal gaps). 5 – Concepts with highly connected pedestrian network (few to no gaps).



Performance Measure	Evaluation Type	Tool	Description	Scoring*
Equity impacts				
Value of travel time savings for Title VI and/or Environmental Justice communities (regional)	Quantitative	MCE	Pricing may disproportionately impact Portland metro region drivers based on where they live and travel with regard to I-5 and I-205. This metric assesses travel time benefit by Title VI and/or Environmental Justice communities. Title VI/Environmental Justice communities include low income, low English proficiency (LEP), or communities of color in the region. This measure reflects a regional annualized benefit of travel time savings from the Metro Multi-criteria Evaluation Tool that considers overall system impacts on both freeways and non-freeways. Pricing concepts that decrease travel times and/or do not result in significant increases in travel time for Title VI and/or Environmental Justice communities will receive higher scores.	0 – Concept will increase travel times for Title VI and/or Environmental Justice communities. 1 – Concept will improve travel times but will impose significant travel costs Title VI and/or Environmental Justice communities. 3 – Concept will significantly improve travel times but with additional travel costs. 5 – Concept will significantly improve travel times and with marginal to no increases in overall travel costs.
Changes in travel times based on geographic area	Qualitative (map)	MCE	This criterion reflects the relative change in total vehicle travel time by geographic area (based on Transportation Analysis Zones). It will show the locations where the most vehicle travel time benefit is expected to be experienced by drivers). The measure does not include changes in travel time for trucks. Pricing concepts that decrease total vehicle travel time and offer benefits across the region will receive higher scores.	0 – Significantly increases vehicle travel times across the region. 2.5 – Has relatively little effect on vehicle travel time across the region. 5 – Significantly reduces vehicle travel time across the region. *NOTE – will be displayed in "heat" map format to inform about areas of greatest benefit



Performance Measure	Evaluation Type	Tool	Description	Scoring*
▪ Access to Jobs	Qualitative	KATE	This measure describes the share of regional jobs accessible by mode within a 30-minute drive for Title VI and/or Environmental Justice communities (aggregate changes for TAZs that have these communities, and based on census data). Concepts that increase access will be scored higher.	0 – Significantly increases travel time to employment for areas with significant concentrations of Title VI and/or Environmental Justice communities. 2.5 – Has relatively little effect on travel time to employment for areas with significant concentrations of Title VI and/or Environmental Justice communities. 5 – Significantly reduces travel times to employment for areas with significant concentrations of Title VI and/or Environmental Justice communities.
Impacts on the community, economy, and environment				
▪ Physical impacts to existing residences and businesses	Qualitative	Based on review of aerials (with an understanding of the location of concentrations of Title VI and/or Environmental Justice communities)	This metric assesses each concept's potential to require significant construction or changes to the current roadway footprint. Concepts that do not require new construction or would not require significant changes to the operation of nearby roadways will receive higher scores.	0 – High: Concept will require new construction or significant changes to current roadway footprint such that nearby residences and businesses can be expected to see significant impacts. Significant impacts to concentrations of Title VI and/or Environmental Justice communities. 2.5 – Medium: Concept will require new construction, reconstruction, or changes to existing roadway footprints that will likely impact some nearby residences and businesses. Concentrations of Title VI and/or Environmental Justice communities are impacted. 5 – Low to Non-existent: Concept will not require new construction or changes to existing roadway footprints.



Performance Measure	Evaluation Type	Tool	Description	Scoring*
Regional travel time savings	Quantitative	KATE	This metric examines total vehicle hours of travel (VHT) on the Metro area roadway network, based on the regional travel demand model. The model considers the number of vehicle trips being made, the routing of vehicle trips through the network, and the vehicle travel time required from origin to destination. While most changes are expected to occur near the concept location, changes are often felt throughout the system. This metric compares the total regional travel time between the baseline and the concept.	0 – Pricing concept will increase VHT. 1 – Pricing concept will have only a small effect on VHT 3 – Pricing concept will somewhat reduce VHT. 5 – Pricing concept will significantly reduce VHT.
Regional vehicle miles traveled (VMT) (including non-freeway)	Quantitative	KATE	This metric assesses the change in total vehicle miles of travel on the Portland Metro area roadway network due to pricing, based on the regional travel demand model. The model considers the number of vehicle trips being made and the routing of trips through the network from origin to destination. While most changes are expected to occur near the project location, changes are often felt throughout the system. This metric compares total region VMT between the baseline and the concept. Lower VMT is usually associated with a more efficient system and will be scored higher.	0 – Significant increase in Regional VMT. 2.5 – No significant change in Regional VMT. 5 – Significant reduction in Regional VMT.
Change in air pollution	Qualitative	MCE	This measure examines the potential change in vehicle emissions in the region. The measure is informed by MOVES emissions model application to the regional travel demand modeling results.	0 – Expected to potentially increase regional vehicle emissions. 2.5 – No significant change expected. Some potential to slightly reduce regional vehicle emissions. 5 – Expected to potentially reduce regional vehicle emissions.



Performance Measure	Evaluation Type	Tool	Description	Scoring*
Value of travel time savings	Quantitative	MCE	Travelers tend to use priced lanes because there is value associated with their time and they will often pay to reduce their travel time. This measure monetizes travel time savings generated by the pricing concepts across all modes of travel. It will be determined by the regional travel demand model and multi-criteria evaluation tool (MCE) using an average value of time appropriate to the Portland metro area.	0 – Travel time savings value is negative. 1 – Travel time savings is less than \$20M annual benefit (2010 dollars). 3 – Travel time savings is between \$20M and \$50M annual benefit (2010 dollars). 5 – Travel time savings is greater than \$50M annual benefit (2010 dollars).
Revenue and Costs				
Capital expenditure on facility	Quantitative based on Order of Magnitude Costs	Based on estimates supplied by ODOT, or order of magnitude estimates from similar deployments in other areas.	This metric provides an assessment of potential capital expenditures based on the requirements of the concept itself and the presence of limiting factors (such as a lack of ROW) along key corridor segments. Concepts that will require minimal capital expenditures will be scored higher.	0 – The concept can be accommodated within the segment but major capital expenditures for construction and/or right of way procurement will be required. 2.5 – The concept can be accommodated within the segment with moderate capital expenditure. 5 – The concept can be accommodated within the existing ROW of the segment with minimal capital expenditure.



Performance Measure	Evaluation Type	Tool	Description	Scoring*
Estimated gross toll revenue potential from tolled facility	Quantitative	Modeling Outputs and Traffic and Revenue Annualization Model	This metric relates to forecasted annual gross toll revenue potential. It will be generated by modeled daily toll trips, toll rates, and existing day of week traffic data. There will be consideration of policy and operational assumptions on tolling periods, payment options available to customers and potential differences in rates by payment method. Revenue is provided prior to adjustments for potential revenue leakage due to occupancy violations, unidentified trips or non-payment of toll bills.	1 – Likely does not result in excess revenue. 2.5 – Likely results in some excess revenue. 5 – Results in substantial excess revenue.
Implementation				
Consistency with state and regional law and policy	Quantitative	Review of applicable laws and policies	This metric identifies and confirms compliance with existing OTC policies, state laws, and regional planning regulations.	0 – No. 5 – Yes.
Feasibility under federal law	Quantitative	Seek input from FHWA for specific alternatives being considered	This metric verifies that an option is allowable under federal tolling laws. In some cases options may require Federal concurrence under the Value Pricing Pilot Program or some other authority.	0 – Option is not allowable under current Federal Law. 2.5 – Option is potentially allowable if Federal concurrence is obtained. 5 – Option is allowable under Federal law without additional concurrence.
Project delivery schedules	Quantitative	Comparison of concepts with planned projects	Concepts can potentially affect the schedule of other projects planned in the Portland metro area. Concepts that can accelerate project delivery are rated higher than those that might slow project delivery.	0 – Project could slow the delivery of other projects. 2.5 – Project is not likely to affect the delivery of other projects. 5 – Project may speed up delivery of other projects.



Appendix B Performance measure evaluation scoring

The following ratings summarize the scores for Concepts A-D for all performance metrics, and are intended for this analysis only. Traffic operations scores vary by segment within a concept because traffic impacts change depending on context or interaction with the regional transportation system. Non-traffic operations scores, however, are more localized (such as active transportation) or apply to the concept overall (such as federal feasibility). The project team used professional judgment and technical analysis, and converted these scores to symbols for ease of reporting. Supporting documentation is available upon request.



Summary Sheet – Concepts A through D

		Concept			
		A	B	C	D
Traffic operations improvement	Vehicle and person throughput on I-5 and I-205				
	Freight truck throughput on I-5 and I-205				
	Passenger vehicle travel time on I-5 and I-205				
	Passenger vehicle travel time on managed lanes		N/A	N/A	
	Freight truck travel time on I-5 and I-205				
	Assessment of change in duration of peak vehicle traffic conditions				
	Delay on priced facility				
	Safety impacts				
	Trip length distribution				
Diversion of traffic	Diversion impacts on non-tolled facilities				
	Safety impacts to all modes of transportation (including bicyclists and pedestrians) on routes with diversion				
Transit service and active transportation	Adequacy of transit service				
	Bus transit travel time				
	Mode share shift (HOV, SOV, transit, walk, bike)				
	Availability of bicycle travel on alternative routes				
	Completeness of pedestrian network				
Equity	Value or travel time savings for Title VI and/or Environmental Justice communities (regional)				
	Changes in travel time based on geographic zones				
	Access to jobs				



		Concept			
		A	B	C	D
Community, economy and the environment	Physical impacts to existing residences and businesses				
	Regional travel time savings				
	Regional VMT (including non-freeway)				
	Change in air pollution				
	Value of travel time savings				
Cost and revenue	Capital expenditure on facility				
	Estimated gross toll revenue potential from tolled facility				
Implementation	State law & policy				
	Regional law & policy				
	Federal feasibility				
	Project delivery schedule				
Legend:		Performs well 	Performs moderately 	Performs poorly 	



		5 ← 4 3 2 1					
		Most Favorable ← Least Favorable					
Non-Traffic Scores							
Impacts to the Community, Economy, and Environment		Impacts to the Community, Economy, and Environment					
		Physical Impacts Score	Regional Travel Time Savings Score	Diversion Impact Scores	Regional VMT Score	Change in Air Quality Score	Value of Travel Time Savings Score
Concept A	HOV/GP to Priced Lane (I-5)	5.0	1.0	5.0	2.5	2.5	1.0
Concept B	Price All Lanes (I-5: Downtown)	5.0	3.0	2.5	2.5	2.5	3.0
Concept C	Price All Lanes (I-5 & I-205)	5.0	5.0	0.0	5.0	2.5	5.0
Concept D	Price New Planned Lane (I-205)	5.0	1.0	5.0	2.5	2.5	1.0
Equity Impacts		Equity Impacts					
		Safety Impact Score (Routes w/ Diversion)	Access to Jobs Score	Geo Zone Travel Time Change Score	Value of Travel Time Savings Score (Regional)		
Concept A	HOV/GP to Priced Lane (I-5)	5.0	2.5	2.5	1.0		
Concept B	Price All Lanes (I-5: Downtown)	2.5	2.5	5.0	3.0		
Concept C	Price All Lanes (I-5 & I-205)	0.0	5.0	5.0	5.0		
Concept D	Price New Planned Lane (I-205)	5.0	2.5	2.5	1.0		
Transit Service & Active Transportation		Transit Service & Active Transportation					
		Adequacy of Transit Service Score	Transit Travel Time Score	SOV Mode Shift Score	Bicycle & Ped Option Score	Ped Network Consistency Score	
Concept A	HOV/GP to Priced Lane (I-5)	2.5	2.5	2.5	2.5	2.5	
Concept B	Price All Lanes (I-5: Downtown)	5.0	5.0	2.5	5.0	5.0	
Concept C	Price All Lanes (I-5 & I-205)	2.5	5.0	5.0	2.5	2.5	
Concept D	Price New Planned Lane (I-205)	0.0	0.0	2.5	0.0	0.0	
Cost & Revenue		Cost & Revenue					
		Capital Cost (High-Level) Score	Estimated Revenue Score				
Concept A	HOV/GP to Priced Lane (I-5)	5.0	1.0				
Concept B	Price All Lanes (I-5: Downtown)	5.0	2.5				
Concept C	Price All Lanes (I-5 & I-205)	5.0	5.0				
Concept D	Price New Planned Lane (I-205)	5.0	1.0				
Law & Policy		Law & Policy					
		State Law & Policy Score	Regional Law & Policy Score	Federal Feasibility Score	Project Delivery Schedule Score		
Concept A	HOV/GP to Priced Lane (I-5)	2.5	5.0	2.5	5.0		
Concept B	Price All Lanes (I-5: Downtown)	2.5	5.0	2.5	5.0		
Concept C	Price All Lanes (I-5 & I-205)	5.0	5.0	2.5	2.5		
Concept D	Price New Planned Lane (I-205)	5.0	5.0	5.0	2.5		



Baseline Traffic Performance

Corridor	Segment ID	Direction	From	To	Length (Miles)	Peak Hour	Traffic Operations on I-5 & I-205							
							Peak-Hour Vehicle Throughput	Peak-Hour Person Throughput	Peak-Hour Freight Truck Throughput	Peak-Hour GP Travel Time	Peak-Hour ML Travel Time	Peak-Hour Freight Truck Travel Time	Chance of Hyper-Congestion	Hours of Delay on Priced Facility
I-5	2	NB	I-205	OR-217	3.6	AM	3,891	4,447	356	7.52	0.00	7.52	0.44	253.7
						PM	4,998	5,899	198	6.81	0.00	6.81	0.44	255.2
I-5	3	NB	OR-217	Capitol Hwy	2.7	AM	3,440	3,917	430	4.11	0.00	4.11	0.20	78.1
						PM	4,075	4,773	192	4.00	0.00	4.00	0.10	77.8
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	AM	3,418	3,920	308	10.16	0.00	10.16	0.48	310.6
						PM	4,092	4,884	167	9.03	0.00	9.03	0.38	275.7
I-5	5	NB	Ross Island Bridge	I-84	1.9	AM	2,503	2,873	260	4.67	0.00	4.67	0.48	109.0
						PM	3,078	3,752	111	4.76	0.00	4.76	0.49	130.9
I-5	6	NB	I-84	N Skidmore St.	2.2	AM	3,255	3,714	348	3.98	0.00	3.98	0.38	103.8
						PM	3,803	4,911	151	3.54	0.00	3.54	0.26	85.6
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	AM	3,305	4,781	408	8.29	7.23	8.29	0.31	172.8
						PM	4,256	5,357	134	13.34	7.86	13.34	0.41	510.1
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	AM	3,398	3,845	208	11.67	0.00	11.67	0.53	370.3
						PM	3,750	4,486	301	8.02	0.00	8.02	0.27	190.3
I-5	9	SB	N Skidmore St.	I-84	2.2	AM	3,337	3,888	315	3.67	0.00	3.67	0.35	87.1
						PM	3,860	4,626	277	3.69	0.00	3.69	0.33	102.6
I-5	10	SB	I-84	Ross Island Bridge	1.9	AM	2,620	3,006	212	5.05	0.00	5.05	0.36	128.3
						PM	2,877	3,448	204	5.07	0.00	5.07	0.35	140.4
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	AM	3,531	4,002	302	8.93	0.00	8.93	0.39	248.5
						PM	4,088	4,873	282	9.31	0.00	9.31	0.40	313.7
I-5	12	SB	Capitol Hwy	OR-217	3.0	AM	3,621	4,062	312	4.32	0.00	4.32	0.27	94.8
						PM	3,832	4,550	289	4.27	0.00	4.27	0.25	95.9
I-5	13	SB	OR-217	I-205	3.7	AM	4,200	4,746	337	6.18	0.00	6.18	0.35	174.3
						PM	4,681	5,529	273	7.22	0.00	7.22	0.46	276.3
I-205	15	NB	I-5	Stafford Rd	2.0	AM	3,713	4,216	216	2.09	0.00	2.09	0.19	16.1
						PM	4,292	5,060	262	2.38	0.00	2.38	0.26	40.4
I-205	16	NB	Stafford Rd	10th St	3.3	AM	3,908	4,450	210	4.34	0.00	4.34	0.22	52.1
						PM	4,387	5,187	253	4.97	0.00	4.97	0.31	106.9
I-205	17	NB	10th St	Sunset Ave	1.9	AM	3,918	4,452	193	4.09	0.00	4.09	0.32	102.4
						PM	4,416	5,238	251	4.39	0.00	4.39	0.38	139.6
I-205	18	NB	Sunset Ave	Main St	1.2	AM	4,337	4,946	195	1.26	0.00	1.26	0.34	34.4
						PM	4,790	5,736	264	1.26	0.00	1.26	0.27	38.0
I-205	19	NB	Main St	SR-224	4.1	AM	3,887	4,512	164	7.92	0.00	7.92	0.44	246.3
						PM	4,440	5,408	263	6.78	0.00	6.78	0.30	199.4
I-205	20	NB	SR-224	NE Glisan St	7.7	AM	4,055	4,744	226	14.35	0.00	14.35	0.31	371.5
						PM	4,355	5,321	302	13.59	0.00	13.59	0.25	350.6
I-205	21	NB	NE Glisan St	Jackson Bridge	3.6	AM	3,726	4,386	234	6.90	0.00	6.90	0.15	61.0
						PM	5,092	5,844	284	9.14	0.00	9.14	0.33	287.2
I-205	22	SB	Jackson Bridge	NE Glisan St	3.9	AM	4,463	5,031	257	10.59	0.00	10.59	0.40	375.2
						PM	4,240	5,183	173	6.63	0.00	6.63	0.09	55.7
I-205	23	SB	NE Glisan St	SR-224	7.4	AM	3,805	4,401	310	14.04	0.00	14.04	0.30	336.1
						PM	4,453	5,488	165	13.81	0.00	13.81	0.29	363.3
I-205	24	SB	SR-224	Main St	4.0	AM	3,413	3,922	241	7.14	0.00	7.14	0.38	171.9
						PM	4,536	5,548	132	7.70	0.00	7.70	0.38	264.1
I-205	25	SB	Main St	Sunset Ave	1.3	AM	3,974	4,515	262	1.27	0.00	1.27	0.36	33.3
						PM	4,699	5,680	154	1.14	0.00	1.14	0.23	27.9
I-205	26	SB	Sunset Ave	10th St	1.9	AM	3,840	4,353	250	4.52	0.00	4.52	0.39	130.0
						PM	4,609	5,559	157	3.87	0.00	3.87	0.19	100.3
I-205	27	SB	10th St	Stafford Rd	3.3	AM	3,843	4,358	247	5.35	0.00	5.35	0.37	117.7
						PM	4,342	5,221	161	4.09	0.00	4.09	0.17	36.1
I-205	28	SB	Stafford Rd	I-5	2.3	AM	3,797	4,299	266	2.77	0.00	2.77	0.37	49.8
						PM	3,881	4,637	160	2.24	0.00	2.24	0.14	13.7



Blank Page



Round 2 Concept A: HOV/GP to Priced Lane (I-5)						Traffic Operations on I-5 & I-205																				
Corridor	Segment ID	Direction	From	To	Length (Miles)	Peak Hour	Most Favorable ← 5 4 3 2 1 → Least Favorable																			
							Peak-Hour Vehicle Throughput	Peak-Hour Vehicle Throughput Score	Peak-Hour Person Throughput	Peak-Hour Person Throughput Score	Peak-Hour Freight Truck Throughput	Peak-Hour Freight Truck Throughput Score	Peak-Hour GP Travel Time	Peak-Hour GP Travel Time Score	Peak-Hour ML Travel Time	Peak-Hour ML Travel Time Score	Peak-Hour Freight Truck Travel Time	Peak-Hour Freight Truck Travel Time Score	Chance of Hyper-Congestion	Chance of Hyper-Congestion Score	Hours of Delay on Priced Facility	Hours of Delay on Priced Facility Score	Safety Impacts	Safety Impact Score	Trip Length Distribution	Trip Length Distribution Score
I-5	2	NB	I-205	OR-217	3.6	AM	2	1.0	6	1.0	0	0.0	-0.01	1.0	0.00		-0.01	1.0	0.00	2.5	-0.77	2.5	Moderate	2.5	Moderate	2.5
						PM	-2	0.0	-2	0.0	2	1.0	0.01	0.0	0.00		0.01	0.0	0.00	0.0	0.48	0.0	Moderate	2.5	Moderate	2.5
I-5	3	NB	OR-217	Capitol Hwy	2.7	AM	1	1.0	6	1.0	-1	0.0	0.00	1.0	0.00		0.00	1.0	0.00	0.0	-0.28	2.5	Moderate	2.5	Moderate	2.5
						PM	-4	0.0	-3	0.0	2	1.0	0.00	1.0	0.00		0.00	1.0	0.00	0.0	-0.19	2.5	Moderate	2.5	Moderate	2.5
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	AM	2	1.0	4	1.0	-1	0.0	0.00	1.0	0.00		0.00	1.0	0.00	2.5	-0.14	2.5	Moderate	2.5	Moderate	2.5
						PM	-2	0.0	0	0.0	2	1.0	0.02	0.0	0.00		0.02	0.0	0.00	0.0	0.97	0.0	Moderate	2.5	Moderate	2.5
I-5	5	NB	Ross Island Bridge	I-84	1.9	AM	17	1.0	47	1.0	-10	0.0	-0.02	1.0	0.00		-0.02	1.0	0.00	2.5	-0.69	2.5	Moderate	2.5	Moderate	2.5
						PM	-2	0.0	3	1.0	2	1.0	-0.01	1.0	0.00		-0.01	1.0	0.00	2.5	-0.27	2.5	Moderate	2.5	Moderate	2.5
I-5	6	NB	I-84	N Skidmore St.	2.2	AM	2	1.0	179	1.0	-3	0.0	-0.24	3.0	0.00		-0.24	3.0	-0.05	5.0	-14.05	2.5	Moderate	2.5	Moderate	2.5
						PM	-3	0.0	5	1.0	2	1.0	0.00	0.0	0.00		0.00	0.0	0.00	0.0	0.14	0.0	Moderate	2.5	Moderate	2.5
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	AM	-111	0.0	-909	0.0	-1	0.0	-0.44	3.0	-1.34	3.0	-0.44	3.0	-0.09	5.0	-31.99	2.5	Moderate	2.5	Moderate	2.5
						PM	-3	0.0	9	1.0	2	1.0	-1.80	5.0	-3.20	5.0	-1.80	5.0	0.00	0.0	-116.45	2.5	Moderate	2.5	Moderate	2.5
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	AM	155	1.0	558	5.0	-45	0.0	0.05	0.0	-3.05	5.0	0.05	0.0	-0.07	5.0	-48.30	2.5	Moderate	2.5	Moderate	2.5
						PM	-47	0.0	124	1.0	-4	0.0	0.16	0.0	-1.47	3.0	0.16	0.0	-0.04	5.0	-20.51	2.5	Moderate	2.5	Moderate	2.5
I-5	9	SB	N Skidmore St.	I-84	2.2	AM	92	1.0	392	5.0	-56	0.0	-0.06	1.0	0.00		-0.06	1.0	-0.02	2.5	-2.54	2.5	Moderate	2.5	Moderate	2.5
						PM	6	1.0	135	1.0	-5	0.0	-0.03	1.0	0.00		-0.03	1.0	-0.01	2.5	-2.10	2.5	Moderate	2.5	Moderate	2.5
I-5	10	SB	I-84	Ross Island Bridge	1.9	AM	61	1.0	93	1.0	-36	0.0	-0.03	1.0	0.00		-0.03	1.0	-0.01	2.5	-0.06	2.5	Moderate	2.5	Moderate	2.5
						PM	2	1.0	13	1.0	-2	0.0	-0.01	1.0	0.00		-0.01	1.0	0.00	2.5	-0.37	2.5	Moderate	2.5	Moderate	2.5
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	AM	68	1.0	86	1.0	-39	0.0	-0.04	1.0	0.00		-0.04	1.0	0.00	2.5	-0.74	2.5	Moderate	2.5	Moderate	2.5
						PM	0	1.0	3	1.0	0	0.0	0.00	1.0	0.00		0.00	1.0	0.00	0.0	-0.24	2.5	Moderate	2.5	Moderate	2.5
I-5	12	SB	Capitol Hwy	OR-217	3.0	AM	70	1.0	89	1.0	-44	0.0	-0.02	1.0	0.00		-0.02	1.0	0.00	0.0	-0.77	2.5	Moderate	2.5	Moderate	2.5
						PM	0	1.0	5	1.0	0	0.0	0.00	1.0	0.00		0.00	1.0	0.00	0.0	-0.13	2.5	Moderate	2.5	Moderate	2.5
I-5	13	SB	OR-217	I-205	3.7	AM	68	1.0	87	1.0	-43	0.0	-0.04	1.0	0.00		-0.04	1.0	-0.01	2.5	-2.29	2.5	Moderate	2.5	Moderate	2.5
						PM	-1	0.0	4	1.0	0	0.0	-0.01	1.0	0.00		-0.01	1.0	0.00	2.5	-1.10	2.5	Moderate	2.5	Moderate	2.5
I-205	15	NB	I-5	Stafford Rd	2.0	AM	3	1.0	1	1.0	2	1.0	0.01	0.0	0.00		0.01	0.0	0.01	0.0	0.50	0.0	Moderate	2.5	Moderate	2.5
						PM	4	1.0	4	1.0	-2	0.0	0.00	0.0	0.00		0.00	0.0	0.00	0.0	0.11	0.0	Moderate	2.5	Moderate	2.5
I-205	16	NB	Stafford Rd	10th St	3.3	AM	0	1.0	-3	0.0	2	1.0	0.02	0.0	0.00		0.02	0.0	0.00	0.0	1.08	0.0	Moderate	2.5	Moderate	2.5
						PM	2	1.0	3	1.0	-1	0.0	0.00	0.0	0.00		0.00	0.0	0.00	0.0	0.13	0.0	Moderate	2.5	Moderate	2.5
I-205	17	NB	10th St	Sunset Ave	1.9	AM	-3	0.0	-9	0.0	2	1.0	0.01	0.0	0.00		0.01	0.0	0.00	0.0	0.55	0.0	Moderate	2.5	Moderate	2.5
						PM	2	1.0	3	1.0	-1	0.0	0.00	1.0	0.00		0.00	1.0	0.00	0.0	-0.17	2.5	Moderate	2.5	Moderate	2.5
I-205	18	NB	Sunset Ave	Main St	1.2	AM	-3	0.0	-9	0.0	2	1.0	0.00	0.0	0.00		0.00	0.0	0.00	0.0	0.17	0.0	Moderate	2.5	Moderate	2.5
						PM	2	1.0	3	1.0	-1	0.0	0.00	1.0	0.00		0.00	1.0	0.00	0.0	-0.03	2.5	Moderate	2.5	Moderate	2.5
I-205	19	NB	Main St	SR-224	4.1	AM	-2	0.0	-10	0.0	1	1.0	0.01	0.0	0.00		0.01	0.0	0.00	0.0	0.34	0.0	Moderate	2.5	Moderate	2.5
						PM	2	1.0	3	1.0	-1	0.0	0.00	1.0	0.00		0.00	1.0	0.00	0.0	-0.25	2.5	Moderate	2.5	Moderate	2.5
I-205	20	NB	SR-224	NE Glisan St	7.7	AM	-1	0.0	-12	0.0	1	1.0	0.00	0.0	0.00		0.00	0.0	0.00	0.0	0.08	0.0	Moderate	2.5	Moderate	2.5
						PM	3	1.0	4	1.0	-2	0.0	0.00	1.0	0.00		0.00	1.0	0.00	0.0	-0.22	2.5	Moderate	2.5	Moderate	2.5
I-205	21	NB	NE Glisan St	Jackson Bridge	3.6	AM	74	1.0	40	1.0	5	1.0	0.07	0.0	0.00		0.07	0.0	0.02	0.0	3.93	0.0	Moderate	2.5	Moderate	2.5
						PM	1	1.0	4	1.0	-1	0.0	-0.03	1.0	0.00		-0.03	1.0	0.00	2.5	-2.47	2.5	Moderate	2.5	Moderate	2.5
I-205	22	SB	Jackson Bridge	NE Glisan St	3.9	AM	-81	0.0	-243	0.0	37	5.0	0.17	0.0	0.00		0.17	0.0	0.01	0.0	9.87	0.0	Moderate	2.5	Moderate	2.5
						PM	26	1.0	-14	0.0	2	1.0	0.03	0.0	0.00		0.03	0.0	-0.01	5.0	2.36	0.0	Moderate	2.5	Moderate	2.5
I-205	23	SB	NE Glisan St	SR-224	7.4	AM	-75	0.0	-110	0.0	46	5.0	0.04	0.0	0.00		0.04	0.0	0.00	0.0	0.14	0.0	Moderate	2.5	Moderate	2.5
						PM	0	1.0	-9	0.0	1	1.0	0.02	0.0	0.00		0.02	0.0	0.00	0.0	1.18	0.0	Moderate	2.5	Moderate	2.5
I-205	24	SB	SR-224	Main St	4.0	AM	-65	0.0	-86	0.0	37	5.0	0.03	0.0	0.00		0.03	0.0	0.00	0.0	0.30	0.0	Moderate	2.5	Moderate	2.5
						PM	-1	0.0	-6	0.0	0	1.0	0.01	0.0	0.00		0.01	0.0	0.00	0.0	0.42	0.0	Moderate	2.5	Moderate	2.5
I-205	25	SB	Main St	Sunset Ave	1.3	AM	-74	0.0	-95	0.0	43	5.0	0.00	0.0	0.00		0.00	0.0	0.00	0.0	-0.13	2.5	Moderate	2.5	Moderate	2.5
						PM	0	1.0	-4	0.0	1	1.0	0.00	0.0	0.00		0.00	0.0	0.00	0.0	0.08	0.0	Moderate	2.5	Moderate	2.5
I-205	26	SB	Sunset Ave	10th St	1.9	AM	-72	0.0	-91	0.0	40	5.0	0.02	0.0	0.00		0.02	0.0	0.00	0.0	0.41	0.0	Moderate	2.5	Moderate	2.5
						PM	1	1.0	-2	0.0	1	1.0	0.01	0.0	0.00		0.01	0.0	0.00	0.0	0.57	0.0	Moderate	2.5	Moderate	2.5
I-205	27	SB	10th St	Stafford Rd	3.3	AM	-72	0.0	-91	0.0	40	5.0	0.03	0.0	0.00		0.03	0.0	0.00	0.0	1.36	0.0	Moderate	2.5	Moderate	2.5
						PM	2	1.0	-1	0.0	1	1.0	0.00	0.0	0.00		0.00	0.0	0.00	0.0	0.35	0.0	Moderate	2.5	Moderate	2.5
I-205	28	SB	Stafford Rd	I-5	2.3	AM	-76	0.0	-93	0.0	44	5.0	0.03	0.0	0.00		0.03	0.0	0.00	0.0	1.38	0.0	Moderate	2.5	Moderate	2.5
						PM	2	1.0	0	0.0	0	1.0	0.00	0.0	0.00		0.00	0.0	0.02	0.0	0.20	0.0	Moderate	2.5	Moderate	2.5



Round 2 Concept 8: Price All Lanes (I-5: Downtown)						Traffic Operations on I-5 & I-205																				
Corridor	Segment ID	Direction	From	To	Length (Miles)	Peak Hour	Most Favorable ← 5 4 3 2 1 → Least Favorable																			
							Peak-Hour Vehicle Throughput	Peak-Hour Vehicle Throughput Score	Peak-Hour Person Throughput	Peak-Hour Person Throughput Score	Peak-Hour Freight Truck Throughput	Peak-Hour Freight Truck Throughput Score	Peak-Hour GP Travel Time	Peak-Hour GP Travel Time Score	Peak-Hour ML Travel Time	Peak-Hour ML Travel Time Score	Peak-Hour Freight Truck Travel Time	Peak-Hour Freight Truck Travel Time Score	Chance of Hyper-Congestion	Chance of Hyper-Congestion Score	Hours of Delay on Priced Facility	Hours of Delay on Priced Facility Score	Safety Impacts	Safety Impact Score	Trip Length Distribution	Trip Length Distribution Score
I-5	2	NB	I-205	OR-217	3.6	AM	130	1.0	153	1.0	-85	0.0	-0.22	1.0			-0.22	1.0	0.47	0.0	-10.76	2.5	Moderate	2.5	Moderate	2.5
						PM	-13	0.0	-5	0.0	-10	0.0	-0.10	1.0			-0.10	1.0	0.43	2.5	-8.66	2.5	Moderate	2.5	Moderate	2.5
I-5	3	NB	OR-217	Capitol Hwy	2.7	AM	229	3.0	273	3.0	-329	0.0	-0.57	5.0			-0.57	5.0	0.11	2.5	-36.23	5.0	Moderate	2.5	Moderate	2.5
						PM	-129	0.0	-141	0.0	-122	0.0	-0.46	5.0			-0.46	5.0	0.08	2.5	-33.51	5.0	Moderate	2.5	Moderate	2.5
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	AM	650	5.0	772	5.0	-308	0.0	-1.70	5.0			-1.70	5.0	0.34	5.0	-86.41	5.0	Moderate	2.5	Moderate	2.5
						PM	187	1.0	238	1.0	-144	0.0	-1.32	5.0			-1.32	5.0	0.24	5.0	-92.11	5.0	Moderate	2.5	Moderate	2.5
I-5	5	NB	Ross Island Bridge	I-84	1.9	AM	424	5.0	506	5.0	-244	0.0	-0.53	5.0			-0.53	5.0	0.41	2.5	-16.44	2.5	Moderate	2.5	Moderate	2.5
						PM	129	1.0	163	1.0	-76	0.0	-0.75	5.0			-0.75	5.0	0.37	5.0	-33.63	5.0	Moderate	2.5	Moderate	2.5
I-5	6	NB	I-84	N Skidmore St.	2.2	AM	302	3.0	358	3.0	-231	0.0	-0.58	5.0			-0.58	5.0	0.25	5.0	-31.88	5.0	Moderate	2.5	Moderate	2.5
						PM	-123	0.0	-172	0.0	-64	0.0	-0.39	5.0			-0.39	5.0	0.17	2.5	-27.49	5.0	Moderate	2.5	Moderate	2.5
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	AM	135	1.0	145	1.0	-106	0.0	-0.64	3.0			-0.64	3.0	0.24	2.5	-25.32	2.5	Moderate	2.5	Moderate	2.5
						PM	22	1.0	11	1.0	-11	0.0	-0.49	1.0			-0.49	1.0	0.39	2.5	-25.54	2.5	Moderate	2.5	Moderate	2.5
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	AM	181	3.0	207	3.0	-80	0.0	-0.55	1.0			-0.55	1.0	0.49	2.5	-26.78	2.5	Moderate	2.5	Moderate	2.5
						PM	21	1.0	30	1.0	-30	0.0	-0.29	1.0			-0.29	1.0	0.24	2.5	-19.59	2.5	Moderate	2.5	Moderate	2.5
I-5	9	SB	N Skidmore St.	I-84	2.2	AM	60	1.0	71	1.0	-120	0.0	-0.41	5.0			-0.41	5.0	0.25	2.5	-25.31	5.0	Moderate	2.5	Moderate	2.5
						PM	77	1.0	99	1.0	-130	0.0	-0.34	3.0			-0.34	3.0	0.29	2.5	-23.60	2.5	Moderate	2.5	Moderate	2.5
I-5	10	SB	I-84	Ross Island Bridge	1.9	AM	253	3.0	308	5.0	-139	0.0	-0.54	5.0			-0.54	5.0	0.39	0.0	-17.72	2.5	Moderate	2.5	Moderate	2.5
						PM	255	3.0	321	3.0	-138	0.0	-0.51	5.0			-0.51	5.0	0.38	0.0	-18.72	2.5	Moderate	2.5	Moderate	2.5
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	AM	315	3.0	381	3.0	-169	0.0	-1.10	5.0			-1.10	5.0	0.29	5.0	-63.22	5.0	Moderate	2.5	Moderate	2.5
						PM	165	1.0	210	1.0	-105	0.0	-1.08	5.0			-1.08	5.0	0.30	5.0	-75.05	2.5	Moderate	2.5	Moderate	2.5
I-5	12	SB	Capitol Hwy	OR-217	3.0	AM	131	1.0	160	1.0	-138	0.0	-0.51	5.0			-0.51	5.0	0.18	2.5	-32.19	5.0	Moderate	2.5	Moderate	2.5
						PM	-11	0.0	-19	0.0	-73	0.0	-0.44	5.0			-0.44	5.0	0.16	2.5	-30.64	5.0	Moderate	2.5	Moderate	2.5
I-5	13	SB	OR-217	I-205	3.7	AM	119	1.0	142	1.0	-88	0.0	-0.19	1.0			-0.19	1.0	0.32	2.5	-12.66	2.5	Moderate	2.5	Moderate	2.5
						PM	40	1.0	46	1.0	-33	0.0	-0.12	1.0			-0.12	1.0	0.44	2.5	-8.30	2.5	Moderate	2.5	Moderate	2.5
I-205	15	NB	I-5	Stafford Rd	2.0	AM	-130	0.0	-149	0.0	105	5.0	0.06	0.0			0.06	0.0	0.21	0.0	3.64	0.0	Moderate	2.5	Moderate	2.5
						PM	11	1.0	6	1.0	4	1.0	0.03	0.0			0.03	0.0	0.27	0.0	2.77	0.0	Moderate	2.5	Moderate	2.5
I-205	16	NB	Stafford Rd	10th St	3.3	AM	-143	0.0	-165	0.0	99	5.0	0.11	0.0			0.11	0.0	0.23	0.0	6.96	0.0	Moderate	2.5	Moderate	2.5
						PM	-2	0.0	-9	0.0	3	1.0	0.07	0.0			0.07	0.0	0.32	0.0	5.28	0.0	Moderate	2.5	Moderate	2.5
I-205	17	NB	10th St	Sunset Ave	1.9	AM	-157	0.0	-178	0.0	89	5.0	0.13	0.0			0.13	0.0	0.36	0.0	6.91	0.0	Moderate	2.5	Moderate	2.5
						PM	-7	0.0	-14	0.0	3	1.0	0.06	0.0			0.06	0.0	0.38	0.0	4.86	0.0	Moderate	2.5	Moderate	2.5
I-205	18	NB	Sunset Ave	Main St	1.2	AM	-160	0.0	-181	0.0	91	5.0	0.04	0.0			0.04	0.0	0.37	0.0	2.40	0.0	Moderate	2.5	Moderate	2.5
						PM	12	1.0	7	1.0	4	1.0	0.02	0.0			0.02	0.0	0.30	0.0	2.17	0.0	Moderate	2.5	Moderate	2.5
I-205	19	NB	Main St	SR-224	4.1	AM	-144	0.0	-166	0.0	75	5.0	0.14	0.0			0.14	0.0	0.45	0.0	5.21	0.0	Moderate	2.5	Moderate	2.5
						PM	4	1.0	-3	0.0	3	1.0	0.10	0.0			0.10	0.0	0.31	0.0	8.25	0.0	Moderate	2.5	Moderate	2.5
I-205	20	NB	SR-224	NE Glisan St	7.7	AM	-147	0.0	-171	0.0	91	5.0	0.19	0.0			0.19	0.0	0.32	0.0	8.05	0.0	Moderate	2.5	Moderate	2.5
						PM	9	1.0	3	1.0	3	1.0	0.10	0.0			0.10	0.0	0.26	0.0	8.31	0.0	Moderate	2.5	Moderate	2.5
I-205	21	NB	NE Glisan St	Jackson Bridge	3.6	AM	-92	0.0	-105	0.0	117	5.0	0.12	0.0			0.12	0.0	0.15	2.5	6.64	0.0	Moderate	2.5	Moderate	2.5
						PM	2	1.0	4	1.0	4	1.0	0.04	0.0			0.04	0.0	0.34	0.0	3.68	0.0	Moderate	2.5	Moderate	2.5
I-205	22	SB	Jackson Bridge	NE Glisan St	3.9	AM	-124	0.0	-141	0.0	72	5.0	0.08	0.0			0.08	0.0	0.40	0.0	1.90	0.0	Moderate	2.5	Moderate	2.5
						PM	-9	0.0	-10	0.0	35	5.0	0.05	0.0			0.05	0.0	0.09	2.5	4.39	0.0	Moderate	2.5	Moderate	2.5
I-205	23	SB	NE Glisan St	SR-224	7.4	AM	-141	0.0	-163	0.0	87	5.0	0.16	0.0			0.16	0.0	0.31	0.0	6.20	0.0	Moderate	2.5	Moderate	2.5
						PM	-42	0.0	-54	0.0	31	5.0	0.09	0.0			0.09	0.0	0.30	0.0	5.41	0.0	Moderate	2.5	Moderate	2.5
I-205	24	SB	SR-224	Main St	4.0	AM	-127	0.0	-146	0.0	69	5.0	0.10	0.0			0.10	0.0	0.38	0.0	3.59	0.0	Moderate	2.5	Moderate	2.5
						PM	-47	0.0	-58	0.0	27	5.0	0.07	0.0			0.07	0.0	0.39	0.0	4.24	0.0	Moderate	2.5	Moderate	2.5
I-205	25	SB	Main St	Sunset Ave	1.3	AM	-143	0.0	-163	0.0	79	5.0	0.02	0.0			0.02	0.0	0.38	0.0	1.17	0.0	Moderate	2.5	Moderate	2.5
						PM	-34	0.0	-40	0.0	32	5.0	0.01	0.0			0.01	0.0	0.25	0.0	1.10	0.0	Moderate	2.5	Moderate	2.5
I-205	26	SB	Sunset Ave	10th St	1.9	AM	-144	0.0	-164	0.0	75	5.0	0.08	0.0			0.08	0.0	0.39	0.0	3.14	0.0	Moderate	2.5	Moderate	2.5
						PM	-35	0.0	-41	0.0	32	5.0	0.05	0.0			0.05	0.0	0.20	0.0	4.06	0.0	Moderate	2.5	Moderate	2.5
I-205	27	SB	10th St	Stafford Rd	3.3	AM	-143	0.0	-165	0.0	75	5.0	0.09	0.0			0.09	0.0	0.37	0.0	4.21	0.0	Moderate	2.5	Moderate	2.5
						PM	-25	0.0	-29	0.0	34	5.0	0.05	0.0			0.05	0.0	0.10	2.5	3.64	0.0	Moderate	2.5	Moderate	2.5
I-205	28	SB	Stafford Rd	I-5	2.3	AM	-143	0.0	-165	0.0	81	5.0	0.08	0.0			0.08	0.0	0.38	0.0	4.51	0.0	Moderate	2.5	Moderate	2.5
						PM	-28	0.0	-32	0.0	32	5.0	0.02	0.0			0.02	0.0	0.18	0.0	1.61	0.0	Moderate	2.5	Moderate	2.5



Round 2 Concept C: Price All Lanes (I-5 & I-205)						Traffic Operations on I-5 & I-205																				
Corridor	Segment ID	Direction	From	To	Length (Miles)	Peak Hour	Most Favorable ← 5 4 3 2 1 → Least Favorable																			
							Peak-Hour Vehicle Throughput	Peak-Hour Vehicle Throughput Score	Peak-Hour Person Throughput	Peak-Hour Person Throughput Score	Peak-Hour Freight Truck Throughput	Peak-Hour Freight Truck Throughput Score	Peak-Hour GP Travel Time	Peak-Hour GP Travel Time Score	Peak-Hour ML Travel Time	Peak-Hour ML Travel Time Score	Peak-Hour Freight Truck Travel Time	Peak-Hour Freight Truck Travel Time Score	Chance of Hyper-Congestion	Chance of Hyper-Congestion Score	Hours of Delay on Priced Facility	Hours of Delay on Priced Facility Score	Safety Impacts	Safety Impact Score	Trip Length Distribution	Trip Length Distribution Score
I-5	2	NB	I-205	OR-217	3.6	AM	0	1.0	32	1.0	66	5.0	-1.18	5.0	0.00		-1.18	5.0	0.33	5.0	-77.37	5.0	Moderate	2.5	Moderate	2.5
						PM	-319	0.0	-383	0.0	-63	0.0	-1.68	5.0	0.00		-1.68	5.0	0.13	5.0	-154.51	5.0	Moderate	2.5	Moderate	2.5
I-5	3	NB	OR-217	Capitol Hwy	2.7	AM	-193	0.0	-197	0.0	54	5.0	-0.26	3.0	0.00		-0.26	3.0	0.14	2.5	-18.53	2.5	Moderate	2.5	Moderate	2.5
						PM	-385	0.0	-437	0.0	-115	0.0	-0.61	5.0	0.00		-0.61	5.0	0.17	0.0	-45.09	5.0	Moderate	2.5	Moderate	2.5
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	AM	26	1.0	59	1.0	56	5.0	-1.27	5.0	0.00		-1.27	5.0	0.39	2.5	-73.59	2.5	Moderate	2.5	Moderate	2.5
						PM	46	1.0	80	1.0	-166	0.0	-2.05	5.0	0.00		-2.05	5.0	0.15	5.0	-149.20	5.0	Moderate	2.5	Moderate	2.5
I-5	5	NB	Ross Island Bridge	I-84	1.9	AM	-31	0.0	-12	0.0	31	5.0	-0.33	3.0	0.00		-0.33	3.0	0.45	2.5	-13.97	2.5	Moderate	2.5	Moderate	2.5
						PM	119	1.0	131	1.0	-80	0.0	-1.03	5.0	0.00		-1.03	5.0	0.33	5.0	-47.20	5.0	Moderate	2.5	Moderate	2.5
I-5	6	NB	I-84	N Skidmore St.	2.2	AM	-91	0.0	-83	0.0	43	5.0	-0.30	3.0	0.00		-0.30	3.0	0.31	2.5	-18.79	2.5	Moderate	2.5	Moderate	2.5
						PM	-140	0.0	-479	0.0	-59	0.0	-0.38	5.0	0.00		-0.38	5.0	0.21	2.5	-26.74	5.0	Moderate	2.5	Moderate	2.5
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	AM	-237	0.0	-1,227	0.0	54	5.0	-1.09	5.0	-7.23		-1.09	5.0	0.20	5.0	-45.86	5.0	Moderate	2.5	Moderate	2.5
						PM	-75	0.0	-429	0.0	18	5.0	-4.00	5.0	-7.86		-4.00	5.0	0.34	2.5	-201.27	5.0	Moderate	2.5	Moderate	2.5
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	AM	411	5.0	533	5.0	-164	0.0	-2.45	5.0	0.00		-2.45	5.0	0.35	5.0	-128.37	5.0	Moderate	2.5	Moderate	2.5
						PM	-278	0.0	-308	0.0	-54	0.0	-1.25	5.0	0.00		-1.25	5.0	0.15	5.0	-91.26	5.0	Moderate	2.5	Moderate	2.5
I-5	9	SB	N Skidmore St.	I-84	2.2	AM	50	1.0	110	1.0	-192	0.0	-0.59	5.0	0.00		-0.59	5.0	0.19	5.0	-36.21	5.0	Moderate	2.5	Moderate	2.5
						PM	-11	0.0	15	1.0	-168	0.0	-0.52	5.0	0.00		-0.52	5.0	0.24	2.5	-38.04	5.0	Moderate	2.5	Moderate	2.5
I-5	10	SB	I-84	Ross Island Bridge	1.9	AM	381	5.0	482	5.0	-195	0.0	-1.24	5.0	0.00		-1.24	5.0	0.23	5.0	-47.99	5.0	Moderate	2.5	Moderate	2.5
						PM	340	5.0	433	5.0	-182	0.0	-1.03	5.0	0.00		-1.03	5.0	0.48	0.0	-42.72	5.0	Moderate	2.5	Moderate	2.5
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	AM	337	3.0	436	5.0	-302	0.0	-2.19	5.0	0.00		-2.19	5.0	0.14	5.0	-138.27	5.0	Moderate	2.5	Moderate	2.5
						PM	241	3.0	310	3.0	-282	0.0	-2.34	5.0	0.00		-2.34	5.0	0.13	5.0	-172.19	5.0	Moderate	2.5	Moderate	2.5
I-5	12	SB	Capitol Hwy	OR-217	3.0	AM	-52	0.0	-23	0.0	-205	0.0	-0.85	5.0	0.00		-0.85	5.0	0.08	5.0	-56.44	5.0	Moderate	2.5	Moderate	2.5
						PM	-159	0.0	-181	0.0	-174	0.0	-0.79	5.0	0.00		-0.79	5.0	0.07	5.0	-56.31	5.0	Moderate	2.5	Moderate	2.5
I-5	13	SB	OR-217	I-205	3.7	AM	-212	0.0	-210	0.0	-111	0.0	-1.28	5.0	0.00		-1.28	5.0	0.14	5.0	-100.60	5.0	Moderate	2.5	Moderate	2.5
						PM	14	1.0	26	1.0	-133	0.0	-1.83	5.0	0.00		-1.83	5.0	0.23	5.0	-151.04	5.0	Moderate	2.5	Moderate	2.5
I-205	15	NB	I-5	Stafford Rd	2.0	AM	-606	0.0	-666	0.0	-82	0.0	-0.34	5.0	0.00		-0.34	5.0	0.00	5.0	-16.10	5.0	Moderate	2.5	Moderate	2.5
						PM	-418	0.0	-478	0.0	-106	0.0	-0.47	5.0	0.00		-0.47	5.0	0.02	5.0	-36.37	5.0	Moderate	2.5	Moderate	2.5
I-205	16	NB	Stafford Rd	10th St	3.3	AM	-430	0.0	-461	0.0	-64	0.0	-0.76	5.0	0.00		-0.76	5.0	0.04	5.0	-48.81	5.0	Moderate	2.5	Moderate	2.5
						PM	-204	0.0	-211	0.0	-100	0.0	-1.03	5.0	0.00		-1.03	5.0	0.13	5.0	-80.46	5.0	Moderate	2.5	Moderate	2.5
I-205	17	NB	10th St	Sunset Ave	1.9	AM	-164	0.0	-154	0.0	-56	0.0	-0.78	5.0	0.00		-0.78	5.0	0.12	5.0	-55.95	5.0	Moderate	2.5	Moderate	2.5
						PM	-142	0.0	-128	0.0	-116	0.0	-0.99	5.0	0.00		-0.99	5.0	0.11	5.0	-80.04	5.0	Moderate	2.5	Moderate	2.5
I-205	18	NB	Sunset Ave	Main St	1.2	AM	-177	0.0	-163	0.0	-56	0.0	-0.22	5.0	0.00		-0.22	5.0	0.17	5.0	-17.01	5.0	Moderate	2.5	Moderate	2.5
						PM	-274	0.0	-276	0.0	-99	0.0	-0.21	5.0	0.00		-0.21	5.0	0.18	2.5	-19.28	5.0	Moderate	2.5	Moderate	2.5
I-205	19	NB	Main St	SR-224	4.1	AM	270	3.0	372	3.0	-113	0.0	-1.85	5.0	0.00		-1.85	5.0	0.24	5.0	-117.80	5.0	Moderate	2.5	Moderate	2.5
						PM	-214	0.0	-203	0.0	-84	0.0	-1.29	5.0	0.00		-1.29	5.0	0.12	5.0	-107.04	5.0	Moderate	2.5	Moderate	2.5
I-205	20	NB	SR-224	NE Glisan St	7.7	AM	-71	0.0	-29	0.0	-47	0.0	-1.83	5.0	0.00		-1.83	5.0	0.22	2.5	-129.85	5.0	Moderate	2.5	Moderate	2.5
						PM	-189	0.0	-147	0.0	-85	0.0	-1.80	5.0	0.00		-1.80	5.0	0.16	2.5	-146.72	5.0	Moderate	2.5	Moderate	2.5
I-205	21	NB	NE Glisan St	Jackson Bridge	3.6	AM	-483	0.0	-512	0.0	-56	0.0	-0.64	3.0	0.00		-0.64	3.0	0.03	5.0	-36.96	5.0	Moderate	2.5	Moderate	2.5
						PM	-563	0.0	-409	0.0	-80	0.0	-2.17	5.0	0.00		-2.17	5.0	0.10	5.0	-203.45	5.0	Moderate	2.5	Moderate	2.5
I-205	22	SB	Jackson Bridge	NE Glisan St	3.9	AM	-34	0.0	84	1.0	21	3.0	-2.01	5.0	0.00		-2.01	5.0	0.20	5.0	-150.92	5.0	Moderate	2.5	Moderate	2.5
						PM	-552	0.0	-606	0.0	55	5.0	-0.43	3.0	0.00		-0.43	3.0	0.01	2.5	-34.63	5.0	Moderate	2.5	Moderate	2.5
I-205	23	SB	NE Glisan St	SR-224	7.4	AM	-131	0.0	-75	0.0	26	3.0	-1.30	3.0	0.00		-1.30	3.0	0.21	2.5	-91.82	5.0	Moderate	2.5	Moderate	2.5
						PM	-304	0.0	-328	0.0	29	5.0	-1.75	5.0	0.00		-1.75	5.0	0.17	5.0	-144.36	5.0	Moderate	2.5	Moderate	2.5
I-205	24	SB	SR-224	Main St	4.0	AM	-1	0.0	50	1.0	24	5.0	-0.86	5.0	0.00		-0.86	5.0	0.28	2.5	-50.75	5.0	Moderate	2.5	Moderate	2.5
						PM	-59	0.0	-35	0.0	-39	0.0	-1.71	5.0	0.00		-1.71	5.0	0.22	5.0	-132.62	5.0	Moderate	2.5	Moderate	2.5
I-205	25	SB	Main St	Sunset Ave	1.3	AM	-21	0.0	27	1.0	-30	0.0	-0.17	5.0	0.00		-0.17	5.0	0.25	5.0	-12.00	5.0	Moderate	2.5	Moderate	2.5
						PM	-503	0.0	-578	0.0	22	5.0	-0.15	5.0	0.00		-0.15	5.0	0.13	2.5	-13.82	5.0	Moderate	2.5	Moderate	2.5
I-205	26	SB	Sunset Ave	10th St	1.9	AM	41	1.0	89	1.0	-15	0.0	-0.75	5.0	0.00		-0.75	5.0	0.25	5.0	-50.43	5.0	Moderate	2.5	Moderate	2.5
						PM	-575	0.0	-679	0.0	19	5.0	-0.66	5.0	0.00		-0.66	5.0	0.06	5.0	-58.15	5.0	Moderate	2.5	Moderate	2.5
I-205	27	SB	10th St	Stafford Rd	3.3	AM	39	1.0	90	1.0	-5	0.0	-0.78	5.0	0.00		-0.78	5.0	0.25	5.0	-51.98	5.0	Moderate	2.5	Moderate	2.5
						PM	-665	0.0	-787	0.0	14	3.0	-0.54	5.0	0.00		-0.54	5.0	0.01	5.0	-36.09	5.0	Moderate	2.5	Moderate	2.5
I-205	28	SB	Stafford Rd	I-5	2.3	AM	-74	0.0	-46	0.0	-1	0.0	-0.34	5.0	0.00		-0.34	5.0	0.22	5.0	-23.71	5.0	Moderate	2.5	Moderate	2.5
						PM	-607	0.0	-725	0.0	27	5.0	-0.27	5.0	0.00		-0.27	5.0	0.00	5.0	-13.75	5.0	Moderate	2.5	Moderate	2.5



Round 2 Concept D: Price New Planned Lane (I-205)						Traffic Operations on I-5 & I-205																				
Corridor	Segment ID	Direction	From	To	Length (Miles)	Peak Hour	Most Favorable ← 5 4 3 2 1 → Least Favorable																			
							Peak-Hour Vehicle Throughput	Peak-Hour Vehicle Throughput Score	Peak-Hour Person Throughput	Peak-Hour Person Throughput Score	Peak-Hour Freight Truck Throughput	Peak-Hour Freight Truck Throughput Score	Peak-Hour GP Travel Time	Peak-Hour GP Travel Time Score	Peak-Hour ML Travel Time	Peak-Hour ML Travel Time Score	Peak-Hour Freight Truck Travel Time	Peak-Hour Freight Truck Travel Time Score	Chance of Hyper-Congestion	Chance of Hyper-Congestion Score	Hours of Delay on Priced Facility	Hours of Delay on Priced Facility Score	Safety Impacts	Safety Impact Score	Trip Length Distribution	Trip Length Distribution Score
I-5	2	NB	I-205	OR-217	3.6	AM	4	1.0	123	1.0	1	1.0	-0.01	1.0			-0.01	1.0	0.44	0.0	-0.36	2.5	Moderate	2.5	Moderate	2.5
						PM	-74	0.0	-45	0.0	50	5.0	0.08	0.0			0.08	0.0	0.45	0.0	5.21	0.0	Moderate	2.5	Moderate	2.5
I-5	3	NB	OR-217	Capitol Hwy	2.7	AM	11	1.0	6	1.0	1	1.0	0.05	0.0			0.05	0.0	0.21	0.0	3.22	0.0	Moderate	2.5	Moderate	2.5
						PM	-58	0.0	-116	0.0	55	5.0	0.05	0.0			0.05	0.0	0.11	0.0	2.99	0.0	Moderate	2.5	Moderate	2.5
I-5	4	NB	Capitol Hwy	Ross Island Bridge	4.9	AM	-6	0.0	-22	0.0	-2	0.0	0.08	0.0			0.08	0.0	0.49	0.0	4.42	0.0	Moderate	2.5	Moderate	2.5
						PM	-81	0.0	-144	0.0	47	5.0	0.08	0.0			0.08	0.0	0.38	0.0	3.58	0.0	Moderate	2.5	Moderate	2.5
I-5	5	NB	Ross Island Bridge	I-84	1.9	AM	-6	0.0	-19	0.0	3	1.0	0.01	0.0			0.01	0.0	0.48	0.0	0.43	0.0	Moderate	2.5	Moderate	2.5
						PM	-77	0.0	-119	0.0	44	5.0	0.04	0.0			0.04	0.0	0.50	0.0	0.70	0.0	Moderate	2.5	Moderate	2.5
I-5	6	NB	I-84	N Skidmore St.	2.2	AM	-6	0.0	-13	0.0	3	1.0	0.01	0.0			0.01	0.0	0.38	0.0	0.26	0.0	Moderate	2.5	Moderate	2.5
						PM	-89	0.0	-120	0.0	56	5.0	0.01	0.0			0.01	0.0	0.26	0.0	0.17	0.0	Moderate	2.5	Moderate	2.5
I-5	7	NB	N Skidmore St.	Interstate Bridge	3.6	AM	1	1.0	-1	0.0	0	1.0	0.03	0.0			0.03	0.0	0.31	0.0	1.40	0.0	Moderate	2.5	Moderate	2.5
						PM	-86	0.0	-97	0.0	49	5.0	0.09	0.0			0.09	0.0	0.41	0.0	1.46	0.0	Moderate	2.5	Moderate	2.5
I-5	8	SB	Interstate Bridge	N Skidmore St.	3.6	AM	-94	0.0	-114	0.0	52	5.0	0.05	0.0			0.05	0.0	0.54	0.0	-1.21	2.5	Moderate	2.5	Moderate	2.5
						PM	-1	0.0	-5	0.0	1	1.0	0.01	0.0			0.01	0.0	0.27	0.0	0.49	0.0	Moderate	2.5	Moderate	2.5
I-5	9	SB	N Skidmore St.	I-84	2.2	AM	-118	0.0	-147	0.0	71	5.0	0.01	0.0			0.01	0.0	0.35	0.0	-0.38	2.5	Moderate	2.5	Moderate	2.5
						PM	-1	0.0	-6	0.0	1	1.0	0.00	0.0			0.00	0.0	0.33	0.0	0.26	0.0	Moderate	2.5	Moderate	2.5
I-5	10	SB	I-84	Ross Island Bridge	1.9	AM	-97	0.0	-138	0.0	54	5.0	0.05	0.0			0.05	0.0	0.38	0.0	0.09	0.0	Moderate	2.5	Moderate	2.5
						PM	-4	0.0	-18	0.0	2	1.0	0.01	0.0			0.01	0.0	0.35	0.0	0.49	0.0	Moderate	2.5	Moderate	2.5
I-5	11	SB	Ross Island Bridge	Capitol Hwy	4.5	AM	-112	0.0	-183	0.0	59	5.0	0.15	0.0			0.15	0.0	0.40	0.0	5.85	0.0	Moderate	2.5	Moderate	2.5
						PM	-4	0.0	-21	0.0	2	1.0	0.02	0.0			0.02	0.0	0.40	0.0	1.57	0.0	Moderate	2.5	Moderate	2.5
I-5	12	SB	Capitol Hwy	OR-217	3.0	AM	-103	0.0	-165	0.0	68	5.0	0.09	0.0			0.09	0.0	0.30	0.0	4.63	0.0	Moderate	2.5	Moderate	2.5
						PM	0	0.0	0	0.0	2	1.0	0.01	0.0			0.01	0.0	0.25	0.0	0.91	0.0	Moderate	2.5	Moderate	2.5
I-5	13	SB	OR-217	I-205	3.7	AM	-110	0.0	-78	0.0	69	5.0	0.04	0.0			0.04	0.0	0.35	0.0	1.24	0.0	Moderate	2.5	Moderate	2.5
						PM	1	1.0	113	1.0	1	1.0	0.00	1.0			0.00	1.0	0.46	0.0	-0.22	2.5	Moderate	2.5	Moderate	2.5
I-205	15	NB	I-5	Stafford Rd	2.0	AM	-159	0.0	29	1.0	-8	0.0	-0.13	3.0			-0.13	3.0	0.11	2.5	-9.04	5.0	Moderate	2.5	Moderate	2.5
						PM	7	1.0	393	3.0	-59	0.0	-0.14	3.0			-0.14	3.0	0.19	2.5	-11.25	5.0	Moderate	2.5	Moderate	2.5
I-205	16	NB	Stafford Rd	10th St	3.3	AM	-112	0.0	107	1.0	-5	0.0	-0.08	1.0	-0.75	3.0	0.14	2.5	-20.27	5.0	Moderate	2.5	Moderate	2.5		
						PM	36	1.0	471	3.0	-52	0.0	0.09	0.0	-1.33	5.0	0.09	0.0	0.24	2.5	-24.33	2.5	Moderate	2.5	Moderate	2.5
I-205	17	NB	10th St	Sunset Ave	1.9	AM	-26	0.0	205	1.0	-1	0.0	0.08	0.0	-1.25	5.0	0.26	2.5	-19.92	2.5	Moderate	2.5	Moderate	2.5		
						PM	35	1.0	459	3.0	-47	0.0	0.16	0.0	-1.56	5.0	0.16	0.0	0.28	5.0	-21.75	2.5	Moderate	2.5	Moderate	2.5
I-205	18	NB	Sunset Ave	Main St	1.2	AM	-33	0.0	210	1.0	-5	0.0	0.04	0.0	-0.39	5.0	0.27	2.5	-5.20	2.5	Moderate	2.5	Moderate	2.5		
						PM	16	1.0	379	3.0	-55	0.0	0.06	0.0	-0.39	5.0	0.06	0.0	0.22	2.5	-3.68	2.5	Moderate	2.5	Moderate	2.5
I-205	19	NB	Main St	SR-224	4.1	AM	22	1.0	125	1.0	-2	0.0	-0.15	1.0	-0.14	1.0	0.42	2.5	-11.36	2.5	Moderate	2.5	Moderate	2.5		
						PM	68	1.0	248	1.0	-53	0.0	-0.13	1.0	-0.11	1.0	0.28	2.5	-12.02	2.5	Moderate	2.5	Moderate	2.5		
I-205	20	NB	SR-224	NE Glisan St	7.7	AM	-1	0.0	33	1.0	-2	0.0	-0.08	1.0	0.31	2.5	-5.65	2.5	Moderate	2.5	Moderate	2.5	Moderate	2.5		
						PM	69	1.0	143	1.0	-55	0.0	-0.15	1.0			-0.15	1.0	0.24	2.5	-9.66	2.5	Moderate	2.5	Moderate	2.5
I-205	21	NB	NE Glisan St	Jackson Bridge	3.6	AM	-10	0.0	0	0.0	-3	0.0	-0.02	1.0	0.18	0.0	0.18	0.0	-0.97	2.5	Moderate	2.5	Moderate	2.5		
						PM	75	1.0	98	1.0	-55	0.0	-0.05	1.0			-0.05	1.0	0.33	2.5	-2.69	2.5	Moderate	2.5	Moderate	2.5
I-205	22	SB	Jackson Bridge	NE Glisan St	3.9	AM	104	1.0	132	1.0	-60	0.0	-0.05	1.0	0.39	2.5	0.39	2.5	-0.61	2.5	Moderate	2.5	Moderate	2.5		
						PM	-4	0.0	2	1.0	-2	0.0	-0.01	1.0			-0.01	1.0	0.12	0.0	-0.75	2.5	Moderate	2.5	Moderate	2.5
I-205	23	SB	NE Glisan St	SR-224	7.4	AM	108	1.0	191	1.0	-71	0.0	-0.21	1.0	0.28	2.5	0.28	2.5	-11.08	2.5	Moderate	2.5	Moderate	2.5		
						PM	1	1.0	30	1.0	-3	0.0	-0.03	1.0			-0.03	1.0	0.29	2.5	-2.44	2.5	Moderate	2.5	Moderate	2.5
I-205	24	SB	SR-224	Main St	4.0	AM	115	1.0	282	3.0	-59	0.0	-0.18	1.0	-0.14	1.0	0.35	2.5	-11.03	2.5	Moderate	2.5	Moderate	2.5		
						PM	1	1.0	80	1.0	-2	0.0	-0.04	1.0	-0.10	1.0	0.37	2.5	-5.30	2.5	Moderate	2.5	Moderate	2.5		
I-205	25	SB	Main St	Sunset Ave	1.3	AM	93	1.0	422	3.0	-67	0.0	0.00	1.0	0.29	2.5	0.29	2.5	-7.07	2.5	Moderate	2.5	Moderate	2.5		
						PM	-57	0.0	156	1.0	-6	0.0	0.07	0.0	-0.30	5.0	0.07	0.0	0.19	2.5	-1.33	2.5	Moderate	2.5	Moderate	2.5
I-205	26	SB	Sunset Ave	10th St	1.9	AM	140	1.0	588	5.0	-59	0.0	0.01	0.0	-1.57	5.0	0.29	5.0	-28.43	2.5	Moderate	2.5	Moderate	2.5		
						PM	-87	0.0	126	1.0	-5	0.0	0.21	0.0	-1.09	5.0	0.21	0.0	0.14	2.5	-9.24	2.5	Moderate	2.5	Moderate	2.5
I-205	27	SB	10th St	Stafford Rd	3.3	AM	145	1.0	621	5.0	-60	0.0	-0.07	1.0	-1.56	5.0	0.27	2.5	-36.38	5.0	Moderate	2.5	Moderate	2.5		
						PM	-93	0.0	105	1.0	-7	0.0	0.10	0.0	-0.64	3.0	0.10	0.0	0.13	2.5	-5.85	2.5	Moderate	2.5	Moderate	2.5
I-205	28	SB	Stafford Rd	I-5	2.3	AM	104	1.0	520	5.0	-71	0.0	-0.18	3.0	0.31	2.5	0.31	2.5	-11.58	2.5	Moderate	2.5	Moderate	2.5		
						PM	-86	0.0	65	1.0	-6	0.0	-0.06	1.0			-0.06	1.0	0.09	2.5	-4.50	5.0	Moderate	2.5	Moderate	2.5



Appendix C Regional transportation demand model findings

Metro's regional travel demand model plays a key role in concept evaluations. One of the benefits of a regional model is its ability to show regional impacts on the overall transportation system, including freeways and surface streets. These include the following:

- Vehicle hours of travel (VHT), which totals the travel time of all vehicle trips made within the model area. VHT can be a good indicator of network efficiency and the impact of a particular alternative.
- Vehicle miles of travel (VMT), which is the total of all vehicle miles driven in the model area. VMT is also a measure of network efficiency. A reduction in VMT when the number of trips is held constant, as it is in the regional model, can indicate a more efficient network.
- Mode share, which is the breakdown of daily person trips by mode (single-occupant vehicle [SOV], high-occupancy vehicle [HOV], public transportation, bicycle, pedestrian) and how the share of any particular mode choice changes under each concept. Reported percentage changes may not appear to be high but can still represent a large number of total trips changed.

These regional impacts had a significant bearing on the evaluation and implications for the recommendations contained within this technical memorandum. Key data points are summarized in subsequent sections.

VHT summary

Observations and conclusions:

- All tolling concepts indicate a net reduction in regional VHT.
- Concepts A and D have minimal impact on regional VHT. The most significant impact is seen in the AM peak hour.
- Concept B has a small impact on regional VHT. The benefit is relatively consistent throughout the day, though also highest in the AM peak hour.
- Concept C would produce the most significant decreases in regional VHT, a daily decrease of ~5.0 percent.

Table B1. Vehicle Hours Traveled (VHT) by time period by concept – difference from baseline

Reporting Period	Concept A	Concept B	Concept C	Concept D
AM Peak Hour	(1,600)	(3,200)	(16,100)	(2,100)
PM Peak Hour	(100)	(1,500)	(8,600)	(700)
Morning	(2,600)	(6,400)	(34,200)	(3,600)
Midday	(600)	(3,700)	(17,200)	(700)
Afternoon	(400)	(4,600)	(23,500)	(1,900)
24 hour Total	(3,600)	(15,500)	(79,000)	(6,400)

Source: Metro regional travel demand model



Table B2. Vehicle Hours Traveled (VHT) by time period by concept – percent difference

Reporting Period	Concept A	Concept B	Concept C	Concept D
AM Peak Hour	-1.2%	-2.3%	-11.4%	-1.5%
PM Peak Hour	-0.1%	-1.2%	-6.9%	-0.6%
Morning	-0.6%	-1.6%	-8.5%	-0.9%
Midday	-0.1%	-0.8%	-3.5%	-0.2%
Afternoon	-0.1%	-1.0%	-5.3%	-0.4%
24 hour Total	-0.2%	-1.0%	-5.0%	-0.4%

Source: Metro regional travel demand model

VHT sensitivity testing

Model sensitivity testing with less perceived benefit of improved freeway travel time indicated lower overall benefits in daily VHT savings. These results indicate smaller reductions in daily VHT for Concept A (0.0%), Concept B (-0.6%), and Concept C (-3.1%), and a small increase in VHT for Concept D (+0.1%)

Observations and conclusions:

- Concepts A and D would have minimal impact on regional VHT. There is some potential for a small increase or decrease, depending on model sensitivity assumptions.
- Concept B also has a small impact on regional VHT but shows consistent savings throughout the day. Reduction in VHT is between 0.5 and 1 percent depending on model capacity assumptions/methods.
- Concept C would produce most significant decreases to regional VHT, between 3 and 5 percent depending on model sensitivity assumptions.
- The greatest VHT benefits are generally experienced in the AM peak period.

VMT summary

Observations and conclusions:

- Overall, concepts A and D have minimal impact on regional VMT. Concept A model results indicate small decreases in VMT, while Concept D results indicate small increases in VMT. Neither concept would be expected to produce a significant change in total VMT.
- The potential increases in Concept D are likely due to the out-of-direction travel necessary to use the southern section of I-205.
- Concept B has a greater impact on VMT than Concept A or D but the reduction is also a small percentage of total VMT.
- Concept C could produce significant decreases to regional VMT, a daily decrease of 2 percent.
- Changes to VMT are generally consistent for all time periods.



Table B3. Vehicle Miles Traveled by time period by concept – difference from baseline

Reporting Period	Concept A	Concept B	Concept C	Concept D
AM Peak Hour	(1,000)	(9,200)	(79,400)	3,100
PM Peak Hour	(600)	(8,300)	(77,200)	2,300
Morning	(2,200)	(28,300)	(249,300)	5,600
Midday	(5,700)	(21,100)	(385,800)	1,200
Afternoon	(2,800)	(30,300)	(286,000)	5,300
24 hour Total	(14,800)	(98,400)	(1,091,100)	10,100

Source: Metro regional travel demand model

Table B4. Vehicle Miles Traveled by time period by concept – percent difference

Reporting Period	Concept A	Concept B	Concept C	Concept D
AM Peak Hour	0.0%	-0.3%	-2.2%	0.1%
PM Peak Hour	0.0%	-0.2%	-2.1%	0.1%
Morning	0.0%	-0.2%	-2.1%	0.0%
Midday	0.0%	-0.1%	-2.2%	0.0%
Afternoon	0.0%	-0.2%	-2.1%	0.0%
24 hour Total	0.0%	-0.2%	-2.1%	0.0%

Source: Metro regional travel demand model

VMT sensitivity testing

Model sensitivity testing with less perceived benefit of improved freeway travel time indicated similar overall benefits in daily VMT changes. These results indicate potential reductions in daily VMT, as follows: Concept A (0.0%), Concept B (-0.2%), Concept C (-2.2%), and Concept D (-0.1%)

Observations and conclusions:

- Concept A shows small daily VMT reduction with a similar overall daily impact, regardless of model sensitivity assumptions.
- Concept D shows a potential to slightly increase or decrease VMT, depending on model sensitivity assumptions. This is most likely due the out-of-direction travel associated with using the southern segment of I-205 and how attractive the freeway is to travelers. In either approach, the overall change to VMT is small.
- Concept B shows similar VMT savings, regardless of model sensitivity assumptions.
- Concept C would produce the most significant decreases to regional VMT. The daily decrease in VMT is very similar regardless of model sensitivity assumptions.

Mode share summary

Observations and conclusions:

- Concepts A and D have minimal impact on regional mode share. There is some potential to shift SOV to HOV trips.
- Concept B has minimal impact on regional mode share. There is some potential to discourage some SOV trips, with shifts to HOV primarily but also active transportation modes.
- Concept C could produce significant changes to regional mode share, although the total change still reflects less than half of one percent of regional trips. There is potential to discourage some SOV trips, with shifts to HOV primarily but also active transportation modes.



Table B5. Mode share shift relative to 2027 baseline (Daily Person Trips)

Reporting Period	Concept A	Concept B	Concept C	Concept D
SOV	0.0%	-0.1%	-0.5%	0.0%
HOV	0.0%	0.0%	0.3%	0.0%
Transit /Bus	0.0%	0.0%	0.1%	0.0%
Bike/Walk	0.0%	0.0%	0.0%	0.0%

Source: Metro regional travel demand model

Table B6. Change in daily person trips

Reporting Period	Concept A	Concept B	Concept C	Concept D
SOV	-2,000	-7,000	-50,000	-2,000
HOV	2,000	4,000	31,000	2,000
Transit/Bus	0	2,000	11,000	0
Bike/Walk	0	1,000	8,000	0

Source: Metro regional travel demand model

Note: Values rounded to nearest 1,000.

Note: Mode share changes may be overstated to some degree due to limitations of the analysis approach in fully accounting for potential freeway travel time savings in the model's mode choice estimation.



Appendix D Toll Optimization Model (TOM) inputs and assumptions

Toll Optimization Modeling

Inputs, Policy Assumptions, and Options

Portland Value Pricing
Feasibility Analysis

Modeling Coordination

March 8, 2018

- ECONorthwest's Toll Optimization Model© (TOM) is a special suite of models designed to determine equilibrium lane volumes, toll levels, revenues, and associated travel times for tolled highway facilities.
- ECONorthwest has been operating traffic and revenue models with benefit-cost features for over two decades.
- These tools allow “pivoting” or “extrapolating” performance of an existing project to a much wider range of conditions and business rules.
- The tools are supplied with demand forecasts to test future performance of toll facilities.
- Tolls, traffic and revenues can be optimized under a variety of tolling objectives. The models also can be used to evaluate non-tolled (HOV) managed lane facilities.
- In complex modeling settings (e.g. dynamic pricing) the models provide over 150 output variables per facility segment or link.

- Efficient pricing requires variability in prices at various times and under various circumstances. This is because the costs imposed by a user's vehicle vary with the nature of and conditions on the roadway, and the characteristics of the vehicles using of the roadway.
- Policy makers benefit from having a means that allows them to quickly determine whether or not a project offers the prospect of meaningful net benefits and revenues that support toll operations.
- This exercise is made complex by the number of factors that contribute to a successful managed lanes facility design and operation.
- Many of these factors are explicitly represented in the TOM model as policy assumptions that can be established by the end user.

■ Corridor Volumes

- Some express lanes have been developed in relatively lightly-used corridors, while others have been developed in corridors that have heavy corridor volumes.
- While not strictly a policy assumption, the demand volumes provided to the TOM model may have some uncertainty associated with them. Test can be performed using variations in volume to determine the influence on project feasibility

- **Demographic Conditions**
- Express Lanes have generally, but not always, been implemented in settings where incomes and values of time are high. Others are in corridors with a high share of recreational or other on-work traffic.
- Again modeling tests can be made regarding uncertainty associated with demographics and growth.

■ Value of Time

- Different users of potential managed lanes will have levels of willingness to pay for travel time savings. This is known as a user's value of time (VOT) savings.
- The TOM model typically makes use of any locally available information on VOT, such as mean values from a travel demand model. The TOM model then applies a distribution (log-normal distribution) around those mean values.
- Modeling tests can be made with alternative VOT in order to help determine project financial risk and feasibility.

- **Traffic Composition**

- Corridors can differ in the share of traffic comprised by SOVs, HOVs, and trucks. This affects the ease of traffic movements between the express and general-purpose lanes, and the value of travel time savings or losses.
- The TOM model typically inherits the composition of traffic from a validated travel demand model.

■ Facility Geometry

- Facilities with express lanes vary in the number of express lanes and their share of total cross-sectional capacity. They also differ in the number of ingress and egress points and whether "hard" or "soft" barriers separate express from general purpose lanes.
- The nature of the planned project determines the characterization of lanes and any limits on express lane access. In the case of limited access special procedures are implemented in the TOM model to properly represent the demand for express lane usage.

- **Hours of Operation**

- Some express lanes operate only in the AM and/or PM peak periods of workdays while others operate 'round the clock and on weekends.
- The TOM model can represent every five minutes of the day and hours of operation can be set to meet desired operating rules.

- **Carpool Policies**

- In some express lane implementations policy makers have seen fit to continue allowing 2+ person carpools to travel free in the tolled lanes, while other projects have raised the carpool occupancy requirement. In other settings all vehicles pay for access to the managed lanes.
- The TOM model permits the selection of which vehicle classes pay a toll for express lane use and which are exempt. These assumptions can also be varied by time of day.

■ Tolling Objectives

- The tolling objective is manifest in the procedures used to vary tolls. In some cases, the toll is varied with the sole purpose of maintaining a **minimum level of service** in the express lane, while in other cases, the objective is to **minimize the costs** to users of the corridor or, alternatively, to **maximize the revenue** generated by the facility.
- In a typical TOM model run both **cost min.** and **rev. max.** are analyzed. These objectives can also be subject to other policy constraints. More below...

- **Minimum and Maximum Tolls**
- Some facility operators will impose constraints on a toll objective such as minimum or maximum toll rates. Minimum tolls may ensure that toll transaction costs are recovered. Maximum tolls may provide users a price guarantee.
- Minimum and maximum constraints can be impose on any other toll objective. Each will have implications for both revenue and facility performance.

■ Toll Discounts

- It is sometimes desired to offer toll discounts to certain vehicle classes such as HOV2+ vehicles or electric vehicles.
- The TOM model allows any vehicle class that is modeled to be provided a discount toll rate. Discounts can vary by time of day and can be combined with any other toll objective. Toll discounts will influence both revenue and facility performance.

- **Level of Service Violations**
- Some facilities are required to maintain a minimum level-of-service, often this is a minimum speed (45 m.p.h.) during much of the facilities operation.
- The TOM model permits the establishment of a minimum level-of-service. In this case when the express lane speeds drop below this threshold the lane reverts to HOV operations and no tolls are imposed until speeds recover.

- Pricing Frequency
 - Some facilities implement variable pricing via a table of fixed rates that varies by day of week and time of day. Others employ so-called dynamic pricing, wherein the toll varies in real time with the facility volume.
 - The TOM model can represent either “static” or “dynamic” toll rate setting. Dynamic pricing allows for re-pricing every five minutes and draws from traffic distributions across many days of “operation”.

- **Feedback to Regional Model**
- Express toll lanes are a lane choice for users of a corridor. Typically these facilities will not significantly influence the choice of travel mode. But conversion from HOV operations can have some influence of carpool formation.
- The TOM model is a micro-assignment model and inherits demand from a regional model. To test mode choice implications of toll policy a feedback step must be implemented between TOM and the regional model.

- **Treatment of Hyper-Congestion**
- Many corridors with express lanes experience hyper-congestion during some point during one or both peak periods of operations. These conditions present unique challenges in modeling facility performance and toll implementations.
- The TOM model has special features to properly handle the hyper-congested state. TOM makes use of high frequency and high resolution data on historical corridor performance (when available) to customize the implementation of these procedures.

- **Modeling of the Spreading of the Peak**
- As demand in a corridor grows the peak period of operations typically expands. Conversely, as capacity is added to a corridor the peaks may shorten.
- The TOM model has an optional feature that models the lengthening/shortening of the peak. This feature makes use of high frequency and high resolution data on current traffic volumes (when available), and changes in future demand and facility capacity.



Blank Page



Appendix E Discussion on revenue and cost metrics

Estimated revenue leakage

For all of the evaluated concepts, facility users are assumed to be required to have a tag/transponder in their vehicle that is linked to a pre-established account to use the tolled lanes. The use of photo toll equipment for image capture and toll bill processing is not assumed in any of the concepts, although photo enforcement equipment may be installed to deter people from avoiding toll equipment by switching lanes before and after toll gantries or in shoulder lanes, as well as for identification of vehicles traveling in the toll lanes without a valid transponder.

The modeled transaction and revenue values do not account for penetration rates for transponder accounts or the percentage of through trips and out of state/country trips that likely would not be associated to a registered transponder account in the state of Oregon. As adjustments for transponder usage rates were not made in the traffic modeling, the leakage or revenue loss factors provided assume that a certain number of transactions will divert to alternative routes or general purpose lanes, in the case of express toll lanes or HOT lanes, to avoid fines and fees associated with violation.

Additional leakage attributed to equipment read errors of transponders is assumed to be less than 0.5 percent and consistent across concepts. Transponder accounts linked to expired credit and debit cards and accounts with insufficient balances are assumed to be 4 percent and consistent across concepts.

Estimated toll collection operations and maintenance / rehabilitation and reconstruction costs

For all concepts, routine operations and maintenance costs and periodic rehabilitation and reconstruction costs are assumed and estimated using existing toll agency experience on other comparable toll facilities in the U.S. All concepts assume costs associated to credit card fees, state/agency costs, back office customer service center vendor contract(s), lane-side equipment and vendor costs, enforcement costs for state highway patrol, and periodic replacement of lane-side toll equipment and procurement of back office and lane-side toll vendors.

- Credit card fees are anticipated to be comprised of a fixed base cost and percentage cost based on the value of the transaction. The overall percentage rate is assumed to be 2.3 percent consistent with typical credit card fee processing rates, including a factor for account refunds.
- The state or toll agency is assumed to be responsible for general management, vendor oversight, marketing, information technology, accounting and finance, and enforcement/violations. In addition to administrative costs attributed to rent, computer equipment and other general overhead, other agency costs also include items for consultant fees, including personal services contracts and forecasting activities
- The customer service center vendor(s) is (are) responsible for processing toll transactions, collecting toll revenue, maintaining customer accounts, interfacing with customers via telephone and potential retail walk-in centers and providing



software applications to enable these functions. Either a single vendor or multiple vendors will be responsible for providing both the software systems that process electronic toll transactions for payment and the operations to provide customer service. Expenditures for vendor services are incurred on a contract basis that can be based on either a fixed monthly amount, a transactional fee, or combination of the two.

- Roadway toll systems costs include all lane equipment, hardware and software required to identify a toll transaction and transmit data about that transaction to the customer service center for payment processing. Sometimes referred to as "lane systems," this equipment includes transponder readers, cameras, and communications network equipment that need regular maintenance and/or replacement to ensure the system is functioning properly. For all of the concepts, it is assumed the toll systems vendor operate under a 10-year fixed-fee contract that is procured under the same timeline with a full set of equipment replacement at the beginning of each vendor contract cycle. Lane side equipment costs primarily cover transponder readers and cameras used for video enforcement.
- Enforcement costs are assumed to be incurred through interagency agreements with law enforcement, typically state patrol, for both HOV occupancy declaration enforcement and to confirm vehicles are traveling through the facility with a valid and correctly installed transponder. In all concepts, enforcement is budgeted during toll service hours with additional enforcement during peak travel times. Current methods of enforcement are not foolproof and there are still challenges in enforcing the entire length of the facility as well as accurately determining occupancy levels in backseats of passenger vehicles. Typically, enforcement officers will be able to identify carpool declaration through a beacon signal on the gantry when a vehicle declared as a HOV passes through or through the back of a switchable transponder set to carpool declaration mode, which is identified by a red background on the back of the transponder facing the windshield. Similar to vehicle occupancy detection, a gantry beacon may alert enforcement officers to vehicles without valid transponders.

The following assumptions relate to specific concepts:



Concept A

The following cost factors, based on industry best practices and the judgment of the evaluation team, were accounted for in the generation of revenue estimates for Concept A:

- Concepts facility users are assumed to be required to have a tag/transponder in their vehicle that is linked to a pre-established account to use the tolled lanes.
- Carpools (HOV 3+) are assumed to be exempt from paying tolls. These vehicles would self-declare using a switchable transponder that allows them to switch to HOV status, which tend to be more expensive than a sticker tag. False carpool declaration is estimated to be more than 25 percent of declared carpool trips on U.S. express lane toll facilities. However, rates decline with the presence of law enforcement. This evaluation assumed enforcement levels are adequate for coverage during operating hours, with higher levels during peak periods, with revenue loss of 20 percent.
- The use of photo toll equipment for image capture and toll bill processing is not assumed in any of the concepts.
- The modeling assumes that 30 percent potential transactions will divert to the general purpose lanes or alternative routes to avoid fines and fees associated to being a violator.
- Drivers using the lanes without a transponder is expected to be 5 percent, the lowest of the tolling concepts. Lower rates are expected due to the presence of law enforcement to monitor HOV declaration.
- Equipment read errors of transponders were assumed to account for less than 0.5 percent, which was consistent across all concepts.
- Transponder accounts linked to expired credit and debit cards and accounts with insufficient balances are assumed to be 4 percent, and consistent across concepts.
- Credit card fees are anticipated to be comprised of a fixed base cost and percentage cost based on the value of the transaction. The overall percentage rate is assumed to be 2.3 percent consistent with typical credit card fee processing rates including a factor for account refunds. With lower revenue generation in comparison to the other concepts, Concept A is expected to incur low overall costs attributed to credit card fees.
- The state or toll agency is assumed to be responsible for general management, vendor oversight, marketing, information technology, accounting and finance, and enforcement/violations. In addition to administrative costs attributed to rent, computer equipment, and other general overhead, other agency costs also include items for consultant fees, including personal services contracts and forecasting activities.
- The customer service center vendor(s) is (are) responsible for processing toll transactions, collecting toll revenue, maintaining customer accounts, interfacing with customers via telephone and potential retail walk-in centers and providing software applications to enable these functions. For Concept A it was assumed, due to the limited number of transactions and reduced potential for economies of scale in procuring a back-office vendor(s) directly, that back functions would be contracted through another agency at a cost premium to account for



periodic vendor procurement. Periodic costs associated to vendor procurement, implementation, and testing are not assumed in Concept A.

- Roadway toll systems costs include all lane equipment, hardware, and software required to identify a toll transaction and transmit data about that transaction to the customer service center for payment processing. For all of the concepts it is assumed the toll systems vendor operate under a 10-year fixed fee contract that is procured under the same timeline with a full set of equipment replacement at the beginning of each vendor contract cycle. In Concept A multiple single lane toll points are assumed in both the north and south travel directions.
- Enforcement costs are assumed to be incurred through interagency agreements with law enforcement, typically state patrol, for both HOV occupancy declaration enforcement and to confirm vehicles are traveling through the facility with a valid and correctly installed transponder. In all concepts enforcement is budgeted during toll service hours with additional enforcement during peak travel times. Concept A assumes higher levels of enforcement for both occupancy and registered transponder detection.

Concept B

The following cost factors, based on industry best practices and the judgment of the evaluation team, were accounted for in the generation of revenue estimates for Concept B:

- Concepts facility users are assumed to be required to have a tag/transponder in their vehicle that is linked to a pre-established account to use the tolled lanes.
- Carpools (HOV 3+) are assumed to pay tolls. As such, there is no revenue loss associated with false HOV declaration.
- The use of photo toll equipment for image capture and toll bill processing is not assumed in any of the concepts.
- The modeling assumes that 20 percent potential transactions will divert to the general purpose lanes or alternative routes to avoid fines and fees associated to being a violator.
- Drivers using the lanes without a transponder is expected to be 10 percent.
- Equipment read errors of transponders were assumed to account for less than 0.5 percent, which was consistent across all concepts.
- Transponder accounts linked to expired credit and debit cards and accounts with insufficient balances are assumed to be 4 percent, and consistent across concepts.
- Credit card fees are anticipated to be comprised of a fixed base cost and percentage cost based on the value of the transaction. The overall percentage rate is assumed to be 2.3 percent consistent with typical credit card fee processing rates including a factor for account refunds. With lower revenue generation in comparison to the other concepts, Concept B, with the lowest average toll rates is expected to incur lower overall costs attributed to credit card fees.
- The state or toll agency is assumed to be responsible for general management, vendor oversight, marketing, information technology, accounting and finance, and enforcement/violations. In addition to administrative costs attributed to rent, computer equipment, and other general overhead, other agency costs also



include items for consultant fees, including personal services contracts and forecasting activities.

- The customer service center vendor(s) is (are) responsible for processing toll transactions, collecting toll revenue, maintaining customer accounts, interfacing with customers via telephone and potential retail walk-in centers and providing software applications to enable these functions. Concept B it is assumed that customer service center vendor(s) will be procured to process tolls and manage customer accounts and walk-in centers. Periodic costs associated to vendor procurement, implementation, and testing are typically contracted for 6-10 year periods for systems functions and 3-8 years for operations functions (assuming bifurcated vendor contracts), in Concept B vendors are assumed to be procured on 8 year cycles.
- Roadway toll systems costs include all lane equipment, hardware, and software required to identify a toll transaction and transmit data about that transaction to the customer service center for payment processing. For all of the concepts it is assumed the toll systems vendor operate under a 10-year fixed fee contract that is procured under the same timeline with a full set of equipment replacement at the beginning of each vendor contract cycle. In Concept B a single toll point is assumed in all lanes and shoulders in both the north and south travel directions and entry ramps.
- Enforcement costs are assumed to be incurred through interagency agreements with law enforcement, typically state patrol, to confirm vehicles are traveling through the facility with a valid and correctly installed transponder. In all concepts enforcement is budgeted during toll service hours with additional enforcement during peak travel times. Concept B assumes base levels of enforcement for registered transponder detection.

Concept C

The following cost factors, based on industry best practices and the judgment of the evaluation team, were accounted for in the generation of revenue estimates for Concept C:

- Concepts facility users are assumed to be required to have a tag/transponder in their vehicle that is linked to a pre-established account to use the tolled lanes.
- Carpools (HOV 3+) are assumed to pay tolls. As such, there is no revenue loss associated with false HOV declaration.
- The use of photo toll equipment for image capture and toll bill processing is not assumed in any of the concepts.
- The modeling assumes that 20 percent potential transactions will divert to the general purpose lanes or alternative routes to avoid fines and fees associated to being a violator.
- Drivers using the lanes without a transponder is expected to be 15 percent.
- Equipment read errors of transponders were assumed to account for less than 0.5 percent, which was consistent across all concepts.
- Transponder accounts linked to expired credit and debit cards and accounts with insufficient balances are assumed to be 4 percent, and consistent across concepts.



- Credit card fees are anticipated to be comprised of a fixed base cost and percentage cost based on the value of the transaction. The overall percentage rate is assumed to be 2.3 percent consistent with typical credit card fee processing rates including a factor for account refunds. With lower revenue generation in comparison to the other concepts, Concept B, with the lowest average toll rates is expected to incur lower overall costs attributed to credit card fees.
- The state or toll agency is assumed to be responsible for general management, vendor oversight, marketing, information technology, accounting and finance, and enforcement/violations. In addition to administrative costs attributed to rent, computer equipment, and other general overhead, other agency costs also include items for consultant fees, including personal services contracts and forecasting activities. Concept C would generate enough annual toll trips to assume that Oregon would establish their own toll agency and back office systems and operations with benefits from economies of scale in regards to state administrative costs per toll transactions.
- The customer service center vendor(s) is (are) responsible for processing toll transactions, collecting toll revenue, maintaining customer accounts, interfacing with customers via telephone and potential retail walk-in centers and providing software applications to enable these functions. For Concept C it was assumed that customer service center vendor(s) will be procured to process tolls and manage customer accounts and walk-in centers. Periodic costs associated to vendor procurement, implementation, and testing are typically contracted for 6-10 year periods for systems functions and 3-8 years for operations functions (assuming bi-furcated vendor contracts), in Concept C vendors are assumed to be procured on 8 year cycles.
- Roadway toll systems costs include all lane equipment, hardware, and software required to identify a toll transaction and transmit data about that transaction to the customer service center for payment processing. For all of the concepts it is assumed the toll systems vendor operate under a 10-year fixed fee contract that is procured under the same timeline with a full set of equipment replacement at the beginning of each vendor contract cycle. In Concept C multiple toll points are assumed in all lanes and shoulders in both the north and south travel directions and entry ramps on both I-5 and I-205, providing significant operations and maintenance and rehabilitation and reconstruction costs.
- Enforcement costs are assumed to be incurred through interagency agreements with law enforcement, typically state patrol, to confirm vehicles are traveling through the facility with a valid and correctly installed transponder. In all concepts enforcement is budgeted during toll service hours with additional enforcement during peak travel times. Concept C assumes base levels of enforcement for registered transponder detection.

Concept D

The following cost factors, based on industry best practices and the judgment of the evaluation team, were accounted for in the generation of revenue estimates for Concept D:



- Concepts facility users are assumed to be required to have a tag/transponder in their vehicle that is linked to a pre-established account to use the tolled lanes.
- Carpools (HOV 3+) are assumed to be exempt from paying tolls. These vehicles would self-declare using a switchable transponder that allows them to switch to HOV status, which tend to be more expensive than a sticker tag. False carpool declaration is estimated to be more than 25 percent of declared carpool trips on U.S. express lane toll facilities. However, rates decline with the presence of law enforcement. This evaluation assumed enforcement levels are adequate for coverage during operating hours, with higher levels during peak periods, with revenue loss of 20 percent.
- The use of photo toll equipment for image capture and toll bill processing is not assumed in any of the concepts.
- The modeling assumes that 30 percent potential transactions will divert to the general purpose lanes or alternative routes to avoid fines and fees associated to being a violator.
- Drivers using the lanes without a transponder are expected to be 5 percent.
- Equipment read errors of transponders were assumed to account for less than 0.5 percent, which was consistent across all concepts.
- Transponder accounts linked to expired credit and debit cards and accounts with insufficient balances are assumed to be 4 percent, and consistent across concepts.
- Credit card fees are anticipated to be comprised of a fixed base cost and percentage cost based on the value of the transaction. The overall percentage rate is assumed to be 2.3 percent consistent with typical credit card fee processing rates including a factor for account refunds. With lower revenue generation in comparison to the other concepts, Concept B, with the lowest average toll rates is expected to incur lower overall costs attributed to credit card fees.
- The state or toll agency is assumed to be responsible for general management, vendor oversight, marketing, information technology, accounting and finance, and enforcement/violations. In addition to administrative costs attributed to rent, computer equipment, and other general overhead, other agency costs also include items for consultant fees, including personal services contracts and forecasting activities. For Concept D it is assumed that, due to the limited number of transactions and reduced potential for economies of scale in procuring a back-office vendor(s) directly, back office functions are assumed to be contracted through another agency at a cost premium to account for periodic vendor procurement.
- The customer service center vendor(s) is (are) responsible for processing toll transactions, collecting toll revenue, maintaining customer accounts, interfacing with customers via telephone and potential retail walk-in centers and providing software applications to enable these functions. For Concept D it was assumed, due to the limited number of transactions and reduced potential for economies of scale in procuring a back-office vendor(s) directly, that back functions would be contracted through another agency at a cost premium to account for periodic vendor procurement. Periodic costs associated to vendor procurement, implementation, and testing are not assumed in Concept D.



- Roadway toll systems costs include all lane equipment, hardware, and software required to identify a toll transaction and transmit data about that transaction to the customer service center for payment processing. For all of the concepts it is assumed the toll systems vendor operate under a 10-year fixed fee contract that is procured under the same timeline with a full set of equipment replacement at the beginning of each vendor contract cycle. In Concept D multiple toll points are assumed in both the east and west travel directions.
- Enforcement costs are assumed to be incurred through interagency agreements with law enforcement, typically state patrol, for both HOV occupancy declaration enforcement and to confirm vehicles are traveling through the facility with a valid and correctly installed transponder. In all concepts enforcement is budgeted during toll service hours with additional enforcement during peak travel times. Concept D assumes higher levels of enforcement for both occupancy and registered transponder detection.



Appendix F Discussion on state and regional laws and policies

The analysis presented in this technical memorandum regarding concept consistency with state and regional laws and policies was conducted using the following documents:

- Oregon Highway Plan (OHP)
- Oregon Transportation Plan (OTP)
- Oregon Revised Statutes (ORS)
- Oregon Constitution
- Oregon Administrative Rules (OAR)
- Metro Regional Transportation Plan (RTP)

It is important to note that this analysis was conducted by applying the methodology that if a concept does not specifically violate applicable state or regional law or policy (i.e., if a concept is not specifically illegal), then the concept receives a top score. State and regional laws and policies contain some standards that any proposed future tolling project must meet. For example, OAR 731-040-0050 – Evaluation and Authorization requires that the OTC cannot “consider authorizing a proposed tollway project for construction until the tollway project has been included as a tollway in the local or regional transportation system plan of jurisdictions in which the project would be located.”¹¹ This means that some level of detail on the proposed tollway would likely need to be included in the Metro RTP at some point.

Other regulations require that the tolling proposal meet certain revenue and cost requirements at a level of detail that is not knowable at the feasibility analysis stage. Still other regulations require that proposed tollways meet certain unspecified parameters that dictate policy considerations (such as traffic operations, diversion of traffic and other considerations similar to those included in this feasibility analysis). This analysis assumes that the specific parameters of the Portland Metro Area Value Pricing Feasibility Analysis, and/or parameters included in future analysis that will be conducted before any tolling proposal is actually implemented, will be accepted as parameters.¹²

Also worth noting is that ORS 383.150 – Traffic congestion relief program, which was established by House Bill 2017, stipulates the following:

- (1) The Oregon Transportation Commission shall establish a traffic congestion relief program.
- (2) No later than December 31, 2018, the commission shall seek approval from the Federal Highway Administration, if required by federal law, to implement value pricing as described in this section.

¹¹ OAR 731-040-0050 (7).

¹² For example, the OHP stipulates that “ODOT will only consider those toll projects ranked ‘medium to high’ under tolling parameters considered by ODOT” and then refers to a 2009 white paper that provided similar parameters to this feasibility analysis (OHP Action 6.A.2). This feasibility analysis assumes that the specific parameters of this feasibility analysis are acceptable and/or that future analysis of an actual tolling proposal will include acceptable parameters. This analysis assumes that the parameters identified in the 2009 white paper are not the only parameters that may be determined acceptable.



- (3) After seeking and receiving approval from the Federal Highway Administration, the commission shall implement value pricing to reduce traffic congestion. Value pricing may include, but is not limited to, variable time-of-day pricing. The commission shall implement value pricing in the following locations:
- (a) On Interstate 205, beginning at the Washington state line and ending where it intersects with Interstate 5 in this state.
 - (b) On Interstate 5, beginning at the Washington state line and ending where it intersects with Interstate 205.

Portland Metro Area Value Pricing – Summary of Relevant Policies

The information below provides a summary of relevant federal, state, and regional plans and policies in support of the Portland Metro Area Value Pricing Feasibility Analysis.

This is not intended to provide a comprehensive history of all tolling or value pricing efforts in Oregon. Further information about these topics can be found at ODOT's website, <http://www.oregon.gov/ODOT/Pages/Value-Pricing.aspx>. Questions about the content of this document can be directed to valuepricinginfo@odot.state.or.us.

Background

In 2017, the legislature made a significant commitment to Oregon's multimodal transportation system by passing House Bill 2017, also known as Keep Oregon Moving. The legislation committed \$5.3 billion for projects aimed at freeway bottlenecks, active transportation needs, and funding for transit operations.

Section 120 of HB 2017 creates the Traffic Congestion Relief Program and directs the Oregon Transportation Commission (OTC) to request approval from the Federal Highway Administration (FHWA) to implement value pricing on Interstate 5 and Interstate 205 in the Portland metropolitan area. The OTC has until December 31, 2018 to seek FHWA's approval. Once Oregon receives that authority, HB 2017 compels the OTC to move forward with value pricing implementation to relieve congestion.

The OTC directed the Oregon Department of Transportation (ODOT) to conduct a feasibility analysis, working with local government officials and stakeholders and seeking public input so that the voice of all those who may be affected can be heard. A Policy Advisory Committee (PAC) was convened to advise the OTC on implementing Section 120, making recommendation(s) regarding:

- Based on the considerations described under Committee Responsibilities, what location(s) on I-5 and/or I-205 are best suited to implement value pricing?
- For the recommended location(s), what type of value pricing should be applied?
- What mitigation strategies should be pursued based on their potential to reduce the impact of value pricing on environmental justice communities or adjacent communities?

The PAC is asked to consider the following factors in evaluating pricing options:

- Revenue and cost



- Traffic operations improvements
- Diversion of traffic
- Adequacy of transit service
- Equity impacts
- Impacts on the community, economy, and environment
- Public input
- Consistency with state and regional law and policy
- Feasibility under federal law
- Project delivery schedules

Oregon plans and policies

HB 2017 and its value pricing directive are not Oregon's first legislative experience with tolling. The Oregon Department of Transportation's (ODOT's) deliberate approach to modern tolling and value pricing policy began in 1995 with the passage of Senate Bill 626. That legislation resulted in much of Oregon Revised Statutes (ORS) Chapter 383 as it exists today, governing tollway project authority, agreements, funding and fee collection. Although lawmakers and ODOT did not move forward any tolling projects at the time, the Traffic Congestion Relief Program provisions of HB 2017 augment this existing statute in ORS Chapter 383.

Oregon Highway Plan Goal 6

Starting in 2006, the OTC adopted policies to support the consideration of tolling in Oregon as a means to improve the capacity and operational efficiency of the state highway system. Following the commission of a series of white papers that investigated many facets of tolling and value pricing, ODOT updated the Oregon Highway Plan (OHP) in 2009 with Goal 6: Tolling and Congestion Pricing. These amendments set the policy for ODOT and the OTC to follow on future value pricing projects. The white papers and resulting policy identified that tolling can accomplish more than just revenue generation. Additional objectives include congestion relief, greenhouse gas/emission reduction, and economic development. OHP Goal 6 also established policies that stipulate tolling project requirements, public engagement and education, and tolling technology and system interoperability (<http://www.oregon.gov/ODOT/Planning/Documents/OHP-Tolling-Pricing-Policy-Amendments.pdf>).

Statewide tolling policy work continued in 2012, with the adoption of many additions to Oregon Administrative Rule (OAR) Chapter 731, Division 40. These rules implement the provisions of ORS Chapter 383 that direct ODOT and OTC to further clarify statute and set the parameters OTC will use when considering toll project proposals. These rules also create a process for reviewing and approving toll rates, reinforce Oregon's commitment to interoperability, establish civil penalties for failure to pay a toll, and set up processes specific to interstate bridge toll projects.

Oregon policy on uses of revenue

HB 2017 dedicates net revenue from value pricing to a newly created Congestion Relief Fund. As a tax or excise levied on the operation or use of a motor vehicle, revenue from value pricing would be subject to the same limitations as the State Highway Fund. The State Highway Fund is bound by the restrictions of Article IX, Section 3a of the Oregon



Constitution, which specifies that funds “shall be used exclusively for the construction, reconstruction, improvement, repair, maintenance, operation and use of public highways, roads, streets and roadside rest areas in this state.”

The Oregon Supreme Court has interpreted this to mean that these funds “must be limited exclusively to expenditures on highways, roads, streets and roadside rest areas themselves and for other projects or purposes within or adjacent to a highway, road, street or roadside rest area right-of-way that primarily and directly facilitate motorized vehicle travel.”

The Oregon Department of Justice (DOJ) has not completed a full analysis of what activities that support public transportation or active transportation may be eligible under Article IX, Section 3a. However, DOJ has provided informal and formal opinions on a range of potential eligible uses of State Highway Fund dollars that may help inform the OTC considerations:

- Park-and-ride lots that connect auto users to bus systems: these must be in or adjacent to the right-of-way and must serve bus routes (and could not solely serve light rail, for example, as it is not “motorized vehicle travel”).
- Construction of shared-purpose lanes that include light rail—although the cost of light rail-only improvements within the lane (such as the rail itself) would not be eligible to be paid with State Highway Fund dollars.
- Bus malls: former public streets that will be closed to all motor vehicle traffic except buses are eligible.
- Bus pullouts on the highway.
- Bicycle and pedestrian facilities that are within the highway, road or street right-of-way are eligible. Off-system paths and trails are not.

The newly created Congestion Relief Fund is a dedicated account to finance congestion relief efforts on the identified tollways, including value pricing administrative and operating costs, new or expanded facilities and ongoing maintenance of the tollways.

While the Congestion Relief Fund is established in statute as a distinct account from the previously established State Tollway Account, the latter may provide insights into future rules for use for the newly created fund. ORS 383.009(2) provides that State Tollway Account funds may be used to finance preliminary studies, acquire right of way, construct, improve or maintain the tollway, operate and administer applicable toll systems, and finance any bonds or other obligations used for such expenses.

Upon passage of HB 2017, the legislature included a “budget note” directing ODOT to dedicate value pricing revenue for funding congestion relief efforts along I-205, particularly the I-205 Stafford Road to Abernethy Bridge projects. The note attached to ODOT's 2017-2019 budget is in effect through the duration of the budgetary biennium, which ends June 30, 2019. Beyond the period of time covered by the budget note, the Oregon Transportation Commission will set policy for where revenue from value pricing should be directed, subject to further direction from the Legislature. The Policy Advisory Committee may choose to make recommendations to the Commission on this topic.



Federal tolling programs

Federal laws pertaining to the collection of tolls on Interstate highways, and the use of federal funds for tolling projects, largely predate the Interstate system itself. Initially, provisions in Title 23 of United State Code (U.S.C.) prohibited the use of federal money for tolling projects on federal-aid highway fund facilities. In 1991, however, the Intermodal Surface Transportation Efficiency Act (ISTEA) opened the door for federally funded tolling projects. ISTEA required that tolling of any existing roads or bridges may only occur after the facility is reconstructed, expanded or otherwise improved. Subsequent congressional action allowed tolling of high-occupancy vehicle lanes and established a pilot project for jurisdictions to experiment with congestion pricing. The following is an overview of relevant tolling regulations and their applicability to the various concepts under consideration by the Portland Metro Area Value Pricing Policy Advisory Committee (PAC).

23 U.S.C. Section 129 – Mainstream Tolling

Title 23 U.S.C. Section 129 provides authority for tolling Federal-aid highways in conjunction with new construction or other improvements to those highways. Public agencies may impose new tolls on federal-aid highways in the following cases:

- Initial construction of a new highway, bridge, or tunnel
- Initial construction of new lanes on highways, bridges, and tunnels (including Interstates), as long as the number of toll-free lanes is not reduced
- Reconstruction or replacement of a bridge or tunnel
- Reconstruction of a highway (other than an Interstate)
- Reconstruction, restoration, or rehabilitation of an Interstate highway, as long as the number of toll-free lanes is not reduced

Prior to October 1, 2012, public authorities were required to execute a tolling agreement with FHWA to impose tolls on a federal-aid highway, but this requirement is no longer required. Although tolling agreements are no longer required under the mainstream tolling programs, State departments of transportation and other public agencies responsible for toll facilities are strongly encouraged to execute a memorandum of understanding (MOU) with their FHWA Division Offices, particularly considering the new requirements for audits and the potential consequences of noncompliance (including the discontinuation of toll collection).

Of the pricing concepts advanced for Round 2 analysis, Concepts D (adding capacity to the southern section of I-205 and pricing those lanes) and E (replacement of the Abernethy Bridge) fall under the jurisdiction of the Title 23 U.S.C. Section 129 provisions.

23 U.S.C. Section 166 – HOV/HOT Lane Program

Under Section 166 of Title 23, existing HOV lanes may be converted to tolled operation provided that tolls are variably priced and collected electronically in order to manage travel demand. The program includes consultation the local metropolitan planning organization (MPO) regarding the placement and amount of tolls on the converted lanes. To implement tolls on an existing high-occupancy vehicle (HOV) lane, project sponsors must demonstrate that the presence of paying vehicles will not cause conditions on the facility to become degraded. Ongoing annual reporting



documenting conditions on the converted lanes is also required, and if the HOV facility becomes degraded the sponsor must bring the facility into compliance either by increasing HOV occupancy requirements, increasing tolls, increasing capacity, or eliminating access to paying motorists.

The following certification provisions apply whenever an HOV lane is converted to HOT operations under Section 166:

- States must certify annual to FHWA that they meet the operational requirements stipulated in Section 166, including vehicle eligibility; enforcement, and operational performance monitoring, evaluation and reporting. The annual certifications must demonstrate that the presence of paying vehicles in the high-occupancy toll (HOT) lane has not cause traffic service to become degraded.
- States must demonstrate that programs are in place to inform motorists how they may enroll and use the managed lane, either in a non-paying HOV vehicle or a paying HOT vehicle.
- States must indicate that they have or will have an automated electronic toll collection system in place on the managed lanes.

While Oregon has only minimally utilized HOV lanes, one option under consideration in Round 2, Concept A, involves conversion of the existing HOV lane on the northbound portion of I-5. Accordingly, Oregon could avail itself to the provisions of 23 U.S.C. Section 166 should this concept continue to move forward.

Value Pricing Pilot Program

The Value Pricing Pilot Program (VPPP) is designed to assess the potential of different value pricing approaches for reducing congestion. Under this program, tolls may be imposed on existing toll-free highways, bridges, and tunnels, so long as variable pricing is used to manage demand. Congress has authorized up to 15 slots under the VPPP, which are allocated to State or local agencies. Seven of these slots have been permanently allocated to States that have executed agreements for tolling projects under the program.

Oregon currently has a VPPP slot, which was used in the past to evaluate tolling on Highway 217 as well as a project by Portland State University regarding peer-to-peer car sharing in Portland. This VPPP could be used for other congestion pricing projects in Oregon. Once an agency holds a slot in the program, it may be used for multiple value pricing projects.

Round 2 Concepts A (southbound I-5 managed lane), B (pricing all lanes of I-5 from Going St. at the northern end to Multnomah Blvd. at the southern end) and C (pricing all lanes of I-5 and I-205, from the Washington state line to the southern terminus of I-205 at I-5) would likely use the VPPP tolling program.

Regional plans and policies

In 2000, the Metro Council and the Joint Policy Advisory Committee on Transportation (JPACT) adopted a peak period pricing policy and policy direction for future corridor refinement plans and studies, as recommended by the Traffic Relief Options (TRO) study led by ODOT and Metro. This action was reflected in a new RTP policy on peak period pricing and specific provisions for pricing to be considered as part of several upcoming



corridor studies, including the Sunrise Highway, I-5-99W Connector, Sunset Highway, I-5, I-205, Highway 99E/224 and Highway 217.

The Transportation System Management and Operations (TSMO) Strategic Plan, which was adopted as part of the RTP in 2010, also identifies value pricing as a potential strategy for future traffic management and calls for the study and implementation of congestion pricing/high occupancy lanes.

The 2014 RTP also made value pricing an objective within the plan's Goal 4, "Emphasize Effective and Efficient Management of the Transportation System." The RTP advances value pricing as one possible strategy to help the region optimize capacity of existing facilities, improve travel conditions for system users, and address complementary goals such as improving air quality and meeting greenhouse gas emission reduction targets.

Chapter 2 of the 2014 RTP includes the following language:

"Value pricing—sometimes called congestion pricing—involves the application of market pricing (through variable tolls, variable priced lanes, area-wide charges or cordon charges) to the use of roadways at different times of day. While this tool has been successfully applied in other parts of the U.S. and internationally, it has not been applied in the Portland metropolitan region to date. In 2008, the Oregon Department of Transportation (ODOT) researched the potential effects of tolling/pricing to determine if and how tolling could be applied in Oregon. ODOT will research the application of this tool in the Portland metropolitan region and identify a pilot project to further test this strategy in response to House Bill 2001, which was adopted by the 2009 Legislature.

"As applied elsewhere, this strategy manages peak use on limited roadway infrastructure by providing an incentive for drivers to select other modes, routes, destinations or times of day for their travels. Reducing discretionary peak hour travel helps the system operate more efficiently improving mobility and reliability of the transportation system while limiting vehicle miles traveled and congestion-related auto emissions. In addition, those drivers who choose to pay tolls can benefit from significant savings in time. Similar variable charges have been utilized for pricing airline tickets, telephone rates and electricity rates to allocate resources during peak usage. In addition, value pricing may generate revenues to help with needed transportation improvements. More work is needed to gain public support for this tool." (2014 RTP, pages 2-86 and 2-87).

Chapter 6 of the RTP, "Implementation," identifies several corridors and facilities that should consider pricing strategies as part of future rehabilitation or capacity expansion projects. Specifically, Tigard to Wilsonville (Mobility Corridor #3, centered on I-5 South), Clark County to I-5 via Gateway, Oregon City and Tualatin (Mobility Corridors # 7, 8, and 9, centered on I-205) and Portland Central City Loop (Mobility Corridor # 4, centered on I-5 and I-405) are all targets of opportunity for future pricing efforts.



March 22, 2018

Mr. Matthew Garrett, Director
Oregon Department of Transportation
355 Capitol St NE
Salem, OR 97301

Dear Director Garrett:

I write to you regarding a budget note included in Oregon's 2017-19 Budget, HB 5045, that is related to the work the Oregon Department of Transportation (ODOT) has undertaken to implement the value pricing component of the 2017 transportation revenue package, HB 2017. As a member of the Value Pricing Policy Advisory Committee (PAC) that ODOT has established to assist in that work, I am in need of clarification on how that budget note has been interpreted.

If implemented today, the budget note in HB 5045 seems to imply that revenue from tolling anywhere on I-5 or I-205 could be directed to a single bottleneck relief project on I-205, specifically the Abernethy Bridge. That runs contrary to our understanding that value pricing under HB 2017 is to focus on congestion management and that those who pay the tolls will directly benefit. If the intent of the value pricing discussion is to focus on funding specific projects, there are nationally significant bottlenecks within the region that should be included in the conversation, such as an I-5 replacement bridge, and other potential improvements that would more directly benefit all users.

Given the information in the budget note, and the conversation that has been evolving through the PAC, our hope is that you may be able to provide more clarity. WSDOT's position has always been that those paying a toll, regardless of the state in which they live, must see direct benefits from that toll. Our recommendation would be that any tolling, regardless of location, should provide a direct benefit to the users paying the fee, which would include those north of the Columbia River.

Sincerely,

Kris Strickler, P.E.
WSDOT Southwest Regional Administrator

cc: Mayor Anne McEnerny-Ogle, City of Vancouver
Clark County Councilor Eileen Quiring



Oregon

Kate Brown, Governor

Department of Transportation

Office of the Director

355 Capitol St NE

Salem, OR 97301

March 23, 2018

Kris Strickler
WSDOT – SW Region Administrator
11018 NE 51st Circle
Vancouver, WA 98682-6686

Dear Mr. Strickler,

Thank you for your letter about the budget note attached to ODOT's 2017-2019 budget in HB 5045. I appreciate the opportunity to clarify the purpose and effect of this legislative direction.

Budget notes are inserted into the legislatively approved budgets of Oregon state agencies to provide direction during the time period covered by the budget. This specific budget note provides direction to ODOT during the 2017-2019 biennium, which ends June 30, 2019.

In 2017 the Oregon Legislature considered funding for three major projects in the Portland metro region. Two of the three projects—I-5 at the Rose Quarter and OR 217—received funding in HB 2017, but the Legislature did not provide funding for the I-205 Stafford Road to Abernethy Bridge widening project, which we estimate will cost approximately \$500 million. In response, Sen. Richard Devlin, who at the time co-chaired the Joint Committee on Ways and Means but has since retired from the Legislature, inserted the budget note to ensure that ODOT continues to seek resources for congestion relief on I-205.

ODOT is implementing the budget note by seeking funding for the I-205 project from a variety of sources. In April ODOT will ask the Oregon Transportation Commission to consider adding \$15 million to the I-205 Stafford Road to Abernethy Bridge project budget to continue project development work. In addition, two of the five value pricing concepts presented to the Value Pricing Policy Advisory Committee (PAC) are specific to the I-205 Stafford Road to Abernethy Bridge segment: Concept D would create a new priced lane on this section of freeway, while concept E would price the I-205 Abernethy Bridge over the Willamette River to fund improvements.

Oregon law (Oregon Revised Statutes Chapter 383 on Tollways) designates the Oregon Transportation Commission as the toll authority to establish tolls on state highways, set toll rates and determine where net revenue from tolls will be spent. Past the period of time covered by the budget note the Commission will set policy for where revenue from value pricing under HB 2017 should be directed.

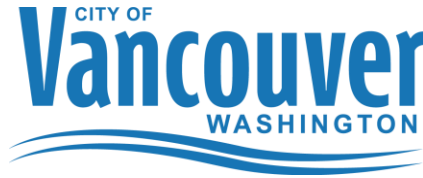
Given the role of the PAC in advising the Commission, it would be appropriate and useful for the PAC to make recommendations to the Commission on where revenues from value pricing should be invested so the Commission can consider this input from stakeholders.

Please let me know if we can provide further clarity on this matter.

Sincerely,

A handwritten signature in blue ink, appearing to read 'M. Garrett', is written over the word 'Sincerely,'.

Matthew L. Garrett
Director



May 10, 2018

Judith Gray
Value Pricing Project Manager
ODOT Region 1
123 NW Flanders
Portland, OR 97209

Dear Judith,

The Vancouver City Council has endorsed a policy framework to inform their participation and engagement with the Value Pricing study. This approach reflects concerns about potential impacts to residents of Southwest Washington and the equitable distribution of benefits associated with various pricing concepts. In addition, it highlights the need to consider impacts to a future I-5 bridge replacement project, which we assume will require tolling to implement. The Council will continue to work collaboratively with the OTC towards an equitable solution that benefits the entire Vancouver/Portland Metropolitan area. Below, please find the policy framework that we have endorsed as a Council body.

Vancouver City Council Policy Framework

1. **Extend Timeline for Value Pricing Study:** The timeline for the Value Pricing Feasibility Analysis is insufficient. Given the significance of this project to the future of the entire region, the timeline for concept evaluation and recommendation should be extended to allow for more analysis and additional public input.
2. **User Equity:** Value pricing proposals should be designed to avoid or minimize impacts and distribute benefits in an equitable manner. Any revenue generated by congestion pricing should be spent on improvements within the area where it was generated, so that those paying the toll also receive the benefits of reduced peak-hour congestion, increased vehicle/person throughput, increased travel time reliability, expanded multimodal capacity, and/or improved operations on existing roadways.
3. **Interstate Equity:** The OTC should not seek approval for or implement any tolling plan that disproportionately impacts residents/commuters in Southwest Washington without providing commensurate benefits in reduced peak-hour congestion, increased vehicle/person throughput, increased travel time reliability, expanded multimodal capacity, and/or improved operations on existing roadways.
4. **Infrastructure Funding:** The five concepts currently under evaluation include both congestion management strategies and bottleneck relief strategies. If one of the aims of the value pricing discussion is to fund specific infrastructure projects that relieve existing bottlenecks within the region, it should include replacement of the Interstate 5 Bridge. Under any scenario, the OTC should not implement any congestion pricing strategy that negatively impacts a future Interstate 5 bridge replacement project, which we assume will require tolling to implement.
5. **System-Wide Impact Analysis:** The diversion and impact analysis for all tolling concepts should consider impacts to the entire regional system, including all impacted local street systems, SR-14 and SR-500 in Vancouver, and I-84, US-26 and OR-217 in Oregon.

Thank you for the opportunity to comment.

Sincerely,

A handwritten signature in cursive script that reads "Anne McEnery-Ogle".

Anne McEnery-Ogle, Mayor

cc: Vancouver City Council
Chair, Marc Boldt, Clark County

Kris Strickler, WSDOT
Councilor Eileen Quiring, Clark County



Staff Report 088-18

TO: Mayor and City Council

FROM: Eric Holmes, City Manager

DATE: 6/18/2018

SUBJECT Approval of Purchase Authority for Northend Truck Equipment Inc.

Key Points

- Staff has greatly benefited from using the City of Seattle Contract 0000003205 and would like to continue to utilize this contract with Northend Truck Equipment Inc. for hooklifts, dump body's and other auxiliary equipment for use on the City's heavy duty trucks.
- Purchases from this contract will exceed the City's \$300,000 purchasing threshold requiring Council approval.
- Staff is requesting approval to exceed the threshold up to a maximum of \$1,000,000 over the life of the contract.
- The City has current replacement needs within its fleet, and staff is recommending that the City Council approve the use of this five-5 year contract, December 2013 through November 2018, with an option to extend for an additional 3 more years.

Strategic Plan Alignment

N/A

Present Situation

Currently, the City purchases hooklifts, dump body's and other auxiliary equipment utilizing the City of Seattle Contract. The 2018 purchases are expected to exceed the \$300,000 threshold requiring approval of Council.

This contract awarded to Northend Truck Equipment Inc. includes many of the City's uniform hooklift's, dump body's and auxiliary equipment for heavy duty trucks. In an ongoing effort to standardize and streamline the City's fleet, staff is requesting the

ability to purchase from this contract and take advantage of the contract pricing.

Presently, the city's fleet has seven (7) Lifthook truck chassis on order, of which six (6) are replacements for trucks that have met or exceeded their life and one (1) newly authorized chassis. The city also has eight (8) 10-yard dump trucks, of which one (1) will be replaced in 2018 and four (4) in 2019-20 biennium.

Equipment Services is requesting that Council approve the increased spending at Northend Truck Equipment up to a \$1,000,000 threshold against this contract to build and install lifthook and dump truck bodies.

Advantage(s)

Utilizes an existing contract through the City of Seattle.

Disadvantage(s)

None.

Budget Impact

This additional purchasing authority is already budgeted within the current adopted biennial budget appropriation. These equipment purchases are budgeted as part of the Equipment Services Capital Fund in 2017-2018 and any additional funds needed will be addressed by realignment of appropriations of existing budgets or minimal requests of additional funds.

Prior Council Review

None.

Action Requested

Approve purchases from the City of Seattle Contract #0000003205 with Northend Truck Equipment Inc. based in Marysville, WA, in an amount not to exceed \$1,000,000 over the life of the contract.

Tim Buck, Operations Manager, 487-8261; Dan Zenger, Equipment Services Superintendent, 487-8205

ATTACHMENTS:

- City of Seattle contract with Northend Truck Equipment Inc. - Approval of Purchasing Authority



City Purchasing

Current Contract Information

General Information 206-684-0444

ALERTS

This contract is not intended for anything that is more properly classified as Public Works.
This contract is limited to only those items expressly provided for in this contract.
Do not use for federally funded purchases without a specific review for your grant funding requirements.

Contract Title : Multi-Year to Install Custom Bodies and Miscellaneous Auxiliary Equipment on City of Seattle Supplied Vehicles		Contract# 0000003205	
Buyer	Name: Rick Davison	Phone: 206-684-8310	E-Mail: rick.davison@seattle.gov
Vendor	Northend Truck Equipment Inc		ID 0000033711
Vendor Address	14919 40th Ave NE		Marysville WA 98271
Vendor Contact	Name: Jim O' Brien Phone: 206-953-8124 Fax: 360-653-0100 E-Mail: jimob@northendtruck.com		
WMBE Status	No WMBE ownership		
Description	Multi-Year to Install Custom Bodies and Miscellaneous Auxiliary Equipment on City of Seattle Supplied Vehicles		
Contract Term	12/18/13 to 11/30/18		
Future Extension Option	Additional three years		
Freight Terms	N/A		
Prompt Pay Discount	Net 30		
Delivery ARO	Varies		
Order Instructions	For Use By: All City Departments	Order Limit: None	
Contracting Options	☒ This is one of several contracts awarded for this product. The City may select among any of the following: J & D 's Hydraulic #3203 Terex Utilities Inc. #3204 Allied Body #3206 PMI #3234 Geo Heiser, #3207		
Comprehensive Contract	Current Pricing  0000003205va1.pdf	Original ITB  ITBInstallAuxEquipment2013pt.doc	
Contract History	Contract Start date		12/16/13
	Change Order # 1, issued to add Attachment A, instructions for contact people		12/30/2013
	Change Order #2 To update order limits and Approval Authority on Attachment A of contract.		4/8/15
	Change Order #3		
Vendor Emergency Contact Information			
Emergency Contact Name		Jim O'Brien	
Emergency Phone Number		360-653-6066	
Back-Up Emergency Phone Number		1-800-653-6066	
Contact information for company locations areas outside Seattle that can be called upon in an emergency			
Alternative Address			



City Purchasing

Current Contract Information

General Information 206-684-0444



Staff Report 089-18

TO: Mayor and City Council

FROM: Eric Holmes, City Manager

DATE: 6/18/2018

SUBJECT Proposed Settlement of a Tort Claim brought by Susan Ryland

Key Points

- On February 18, 2017, Susan Ryland was a pedestrian crossing the street when a Vancouver Police Officer struck her with his vehicle.
- Ms. Ryland sustained injuries as a result of the accident requiring extensive medical treatment.
- Ms. Ryland filed a tort claim with the City, initially demanding more than \$130,000.
- City staff and Ms. Ryland's legal counsel have negotiated a tentative settlement agreement for \$87,500 that, if approved by City Council, would extinguish all liability the City may have to Ms. Ryland as a result of the vehicle accident.

Strategic Plan Alignment

N/A

Present Situation

During daylight hours on February 18, 2017, former Vancouver Police Department Officer Gregory Zimmerman was operating a City- owned 2015 Ford Explorer when he attempted to make a left-hand turn from W. Evergreen Blvd. onto Columbia Street. In the process of his turn, Officer Zimmerman struck two pedestrians in the crosswalk, one of which was Ms. Ryland. As a result of the collision, Ms. Ryland underwent extensive medical treatment of more than \$30,000 in expenses. Following the conclusion of Ms. Ryland's treatment, City staff and Ms. Ryland's attorney began settlement negotiations beginning with an opening demand of \$130,000. A tentative agreement was reached, subject to City Council approval, to resolve the claim fully for \$87,500, which would encompass payment for Ms. Ryland's medical expenses.

Advantage(s)

1. Resolves a claim against the City at an acceptable amount without the expense of litigation costs.
2. Avoids the uncertainty of trial and a potentially significant adverse outcome.

Disadvantage(s)

Eliminates the possibility of a defense verdict if the claim were to go to trial, which would negate all City liability.

Budget Impact

None. Sufficient funding is available in the Risk Fund.

Prior Council Review

None

Action Requested

Authorize the City Manager or his designee and the City Attorney to execute any and all documents necessary to complete the settlement with Susan Ryland in the amount of \$87,500.00.

Dan Lloyd, Assistant City Attorney, 487-8500



Staff Report 090-18

TO: Mayor and City Council

FROM: Eric Holmes, City Manager

DATE: 6/18/2018

SUBJECT Notice of Withdrawal from the Portland RegJIN System

Key Points

- In 2015, the Vancouver Police Department entered into a consortium of law enforcement agencies to participate in a shared regional records management system known as the Regional Joint Information Network (RegJIN) which is hosted by the Portland Police Bureau.
- The efficiencies expected through the RegJIN system have not materialized.
- RegJIN requires significant IT maintenance due to complex hardware architecture, antiquated software design, and frequent system updates.
- RegJIN costs are projected to rise due to significant fixed costs to maintain system functionality—even with decreasing numbers of users.
- This notice of intent to withdraw is provided in accordance with section 11 of the Master Intergovernmental Agreement for the User Board of the Region Justice Information System (RegJIN), and section 16 of the RegJIN Participant Intergovernmental Agreement-Regional Partner Agency.
- The majority of the original agencies have left or provided notice of withdrawal from the RegJIN, increasing projected costs substantially.
- The RegJIN software system interaction has proven to be difficult and time consuming from an officer/user perspective.
- Promised RegJIN system improvements have been slow to achieve and not fully

delivered.

- The timeline to select an alternative records management system/vendor and submit the contractual notice of termination to the Portland Police Bureau RegJIN project is compressed and is required to be delivered to the Portland Police Bureau by June 30, 2018, with an effective termination date January 1, 2019 or a negotiated withdrawal date thereafter.

Strategic Plan Alignment

Goal 2: Provide effective, innovative and well-resourced police, fire and emergency medical services.

Present Situation

The current police reporting/records management system, known as the Regional Joint Information Network (RegJIN) utilized by the Vancouver Police, has not met performance expectations.

The majority of the original agencies have left the RegJIN consortium, resulting in significant projected cost increases to be borne by the remaining partners, and severely limited information sharing capabilities among Portland metropolitan law enforcement agencies. Even the City of Portland, which serves as host agency for the RegJIN system, has begun the process to retain a consultant to explore alternative systems. This has created significant doubt as to the future viability of the system.

The Vancouver Police Department has identified the need for the replacement of RegJIN by conducting an internal needs assessment and selecting an alternative police reporting records management system through a competitive request for proposal (RFP) process. Efficiency studies from other law enforcement agencies utilizing the current records management system that have selected a replacement system indicate significant gains in efficiencies in labor and time associated with police report writing, report processing, and utilizing statistical data for crime analytics derived from police reports. PRI Management Group has been retained to provide project management services for the Police Records Management System Replacement Project. PRI and the Vancouver Police Department have accomplished a gap analysis of the current RegJIN system. The RMS Replacement Project Executive Steering Committee has determined that there is a business necessity to develop and publish an RFP for the RMS Replacement.

The Portland RegJIN Interlocal Agreement requires a six month notice of withdrawal from the RegJIN system to be provided by June 30, 2018, with an effective withdrawal date of January 1, 2019, or a negotiated date thereafter.

Advantage(s)

Providing written notice of withdrawal from the RegJIN System is required per the Interlocal Agreement with the Portland Police Bureau and is necessary in order to effectively implement a new Police RMS System in 2019.

Disadvantage(s)

Due to the withdrawal notification requirements with the Portland Police Bureau, the compressed timeline may create a business necessity to negotiate an extended withdrawal date to accommodate the Vancouver Police RMS Project timeline. Discussions with the Portland Police Bureau indicate that an extension request is not anticipated to be a problem.

Budget Impact

Costs associated with implementing a new police reporting/records management system vary based on cloud or on-premise platforms. In the 2018 First Supplemental a total of \$940,000 has been proposed to Council to fund the replacement and will go forward for Public Hearing and Adoption on June 18, 2018.

Prior Council Review

- On August 25, 2014, the Council was briefed on the RegJIN system as part of a general update on VPD initiatives.
- RegJIN system was included in the 2015-16 biennial budget, reviewed and adopted by Council fall of 2014.
- The City Council approved an Interlocal Agreement with the City of Portland for participation in the RegJIN network on March 23, 2015.
- A VPD staffing overview was provided at the January 25, 2016, Vancouver Police Workshop.
- A comprehensive brief of the Police Records situation was provide to City Council and addressed under City Manager communications on March 7, 2016.
- In addition, development of the RegJIN system, and the City's participation in it, has been underway since 2009, including the City's receipt of a \$1 million federal appropriation 2009-10 fiscal year to support establishment of the system.
- The City Council approved staff report 127-17 recommendations to contract with PRI Management Group for the Police RMS Replacement Project on November 6, 2017 (Staff Report 127-17).

Action Requested

Approve the Notice of Withdrawal from the Portland Police Bureau RegJIN System and authorize the City Manager or designee to execute the same.

Chris Sutter, Assistant Police Chief, 487-7421

ATTACHMENTS:

- ▣ RegJIN Notice of Departure Requiring Signatures



VANCOUVER POLICE DEPARTMENT

James P. McElvain, Ph.D.
Chief of Police



June 27, 2018

City of Portland
RegJIN User Board Chair
Portland Police Bureau
1111 SW Second Avenue, Suite 1156
Portland, OR 97204

City of Portland
RegJIN System Manager
Portland Police Bureau
1111 Second Avenue, Suite 1156
Portland, OR 97204

Dear RegJIN User Board Chair and RegJIN System Manager,

This letter serves as formal notice that the City of Vancouver Police Department intends to withdraw from the Regional Justice Information Network (RegJIN) effective on January 1, 2019. This notice of intent to withdraw is provided in accordance with section 11 of the Master Intergovernmental Agreement for the User Board of the Region Justice Information System (RegJIN), and section 16 of the RegJIN Participant Intergovernmental Agreement-Regional Partner Agency.

As discussed, understanding that Portland Police Bureau is now also exploring exiting the RegJIN partnership, the City of Vancouver will work to coordinate the precise crossover date with the User Board Chair. To that end, if project timelines change, an extension to the withdrawal date may be requested; we understand that such requests have previously been granted. Assistant Chief Chris Sutter will be our contact person for all issues regarding our withdrawal.

Sincerely,

Chief James McElvain, Ph.D.
Chief of Police

Anne McEnery-Ogle
Mayor



MEMORANDUM

DATE: June 18, 2018

TO: Mayor and City Councilmembers

FROM: Council Committee II (Topper, Turlay, Lebowsky)

RE: **RECOMMENDATION FOR APPOINTMENT TO THE HISTORIC PRESERVATION COMMISSION**

CC: Eric J. Holmes, City Manager
Michelle Bartley, Boards & Commissions

The Historic Preservation Commission coordinates preservation activities for the County, City of Vancouver and other cities. The commission encourages rehabilitation projects, administers incentive programs, and maintains the local Heritage Register.

The Historic Preservation Commission currently has one mid-term position open. Council Committee II is recommending that Andrew Gregg, be appointed to the mid-term opening beginning immediately, and expiring 7/1/20. Andrew Gregg brings the professional expertise required under Clark County Code 40.250.03(D) (b).

If there are no objections, I would like to recommend making these appointments at the **Monday, June 18, 2018** Council meeting.

Attachments:
Applications
Current Roster

Clark County Historic Preservation Commission

This local historical board reviews applications for tax valuation, maintains the local historic register, identifies historic/landmark buildings and sites, and facilitates the process to nominate properties to the national historic register.

7* Members appointed by County Council, nominated by City Council.

Name & Address		Date (Re)Appointed	Term Expiration	Contact Info
1.	Sean Denniston 4200 NW Grant St. Vancouver, WA 98660	6/13/16	7/1/18	916.559.2327 sedenniston@yahoo.com
2.	Rob Heaney 419 E Cedar, Suite C101 PO Box 728 La Center, WA 98629	6/13/16	7/1/18	360.600.5229 rob@br-arch.com
3.	Sarah Fox, AICP 216 W. 35 th St. Vancouver, WA 98660	5/20/14 6/13/16	7/1/19	sarahfox73@gmail.com
4.	Robert Hinds 1901 SE 130 th Ave. Vancouver, WA 98683	5/20/14 6/13/16	7/1/19 (last term)	503.753.3322 RT_Hinds@msn.com
5.	Alex Gall, RPA 5305 E 18 th St., Suite 101 Vancouver, WA 98661	6/16/14 7/1/17	7/1/20	360.260.8614 alex@archaeologicalservices.com
6.	Roch Manley, AIA PO Box 144 Vancouver, WA 98666-0144	6/16/14 7/1/17	7/1/20	360.718.2260 rmanley@manleyarchitects.com
7.	Mark Pelletier 707 SE 6 th St. Battle Ground, WA 98604	7/1/17	7/1/20	360.487.0349 mpelletier2852@gmail.com
Meetings: 1 st Tuesday of the month, 6:00 p.m. O.O. Howard House, 750 Anderson St., Vancouver, WA				
Term: 3 years		Term Limit: Max. 2 consecutive terms		Special Appointment Requirements: Must have demonstrated special interest, experience or knowledge in history, historic preservation, architecture, or related disciplines. <i>*Switched from 5 to 7 appointed members in June 2016</i>
Governing references: County Code 40.250.030; Ord. M-3673, VMC 20.220.050				

Staff Contacts

City: Jan Bader, Program and Policy Development Manager, 360.487.8606, jan.bader@cityofvancouver.us

County: Jacqui Kamp, 360.397.2280 ext. 4913, Jacqueline.kamp@clark.wa.gov



MEMO

TO: Vancouver City Council

FROM: Sharon Lumbantobing, Planner II

DATE: May 2, 2018

SUBJECT: Re-Appointment of Sean Denniston and applicant recommendations for one position to the Clark County Historic Preservation Commission

A subcommittee of the Clark County Historic Preservation Commission (HPC) reviewed the fourteen applications for the two seats advertised for the Historic Preservation Commission. The subcommittee is recommending that Sean Denniston be reappointed to serve his second term on the HPC. After reviewing the applications and interviewing four applicants for the second open seat, the subcommittee would like to forward on two applicants, Michelle Kapitanovich and Andrew Gregg, for consideration.

The HPC subcommittee strongly believes **Sean Denniston** should continue his excellent work as a member of the Historic Preservation Commission to serve his second term for July 1, 2018-June 30, 2021. Sean's educational and professional background in architecture and historic preservation bring the professional expertise that is required by Clark County Code 40.250.030(D)(b), that:

The commission shall always include at least (2) professionals who have experience in identifying, evaluation and protecting historic and cultural resources and are selected from among disciples of history, public history, architecture, architectural history, historic preservation, planning, cultural anthropology, archaeology, cultural geography, American studies, or the practice of historic rehabilitation or restoration.

Sean has a Bachelor of Architecture from the University of Oregon and a Master of Science in Historic Preservation from the University of Pennsylvania. He has demonstrated his understanding of the historic preservation program and its processes, and has been a tremendous resource in lending his professional expertise to the discussion. He brings logical and thoughtful deliberation to the cases that come before the HPC.

For the second open seat, the HPC subcommittee recommends either Michelle Kapitanovich or Andrew Gregg.

Michelle Kapitanovich is a life-long resident of Clark County and currently lives in Yacolt. She is a second grade teacher with the Battle Ground School District. She also runs a small business that deals in antique lighting.

She has an MA in Education and a BA in Journalism. She was a strong candidate for the vacancy on the HPC in 2017 and reapplied for the position this year.

Andrew Gregg is a retired school teacher and native of Clark County. Andrew served two consecutive terms on the HPC from 2008-2014, including serving as Chair. He has a demonstrated in-depth knowledge of historic preservation and history of Clark County. He also served as Chair of the Clark County Arts Commission from 2017-May 2018. He holds an MA in History and a BA in History and Russian.

During the interview, all four candidates were given an actual historic preservation case to review and discuss. Both Michelle and Andrew had the best discussion and understanding of the type of issues the commission considers and the processes involved.

Once Vancouver City Council makes a recommendation decision for the two seats, the request for appointment will be forwarded to the Clark County Council.

If any further information is needed, please feel free to contact me at (564) 397-4909.

CC: Jan Bader, City Manager's Office
Jennifer Clark, Clark County Board of Commissioners

Attachments:
Letter from the HPC Chair
Letters of intent and resumes



Clark County Historic Preservation Commission

MEMO

TO: Vancouver City Council and Clark County Council

FROM: Robert Hinds, Chair - Historic Preservation Commission

DATE: May 2, 2018

SUBJECT: HPC Commissioner Appointment Recommendations

The Clark County Historic Preservation Commission formed a subcommittee at its March 6, 2018, meeting of the HPC to review applicants for two open positions on the commission. Though we had many strong candidates for these roles, the HPC narrowed the field to four individuals for in-person interviews, which were conducted during the month of April. This letter is intended to inform you of the CCHPC's recommendations for appointment.

Potential commissioners for the HPC were screened based on the criteria for appointment listed in Clark County Unified Development Code 40.250.030 (D)(1, 2). In addition, candidates selected for in-person interviews were queried on their knowledge of the HPC, its role in the community, and historic preservation in general. Candidates were also provided an actual case for a Certificate of Appropriateness ahead of their interviews and asked to share their thoughts as though they were serving on the HPC. This has proven to be an effective method of determining a candidate's ability or willingness to review the materials, make concise and insightful contributions to the discussion, and to apply appropriate rules for historic preservation.

Based on these considerations and each candidate's performance in the interview process, it is our pleasure to offer the following recommendations for appointment to the HPC:

Open Position #1: We recommend **Sean Denniston** for a second term. Sean has served with distinction on the CCHPC for two years. He holds a Bachelor of Architecture from the University of Oregon and a Master of Science in Historic Preservation from the University of Pennsylvania. His expertise on historic preservation has proven valuable to the HPC and its constituency. Sean has also participated in the HPC's public outreach initiatives and will represent Clark County as a panelist at the National Alliance of Preservation Commissions Forum in Des Moines, Iowa in July.

Open Position #2: For the position being vacated by Rob Heaney, who is stepping down to devote more time to his architecture firm, we wish to give our highest recommendation to two individuals for your consideration. (1) **Michelle Kapitanovich** is a life-long resident of Clark County and a school teacher in Yacolt with a demonstrated interest in historic preservation. She holds a Masters in Education from Washington State University and a

Bachelor of Science in Journalism from University of Portland. Michelle was strongly recommended for an open position on the HPC in 2017 and we also believe it is important to have a balanced, diverse commission. (2) **Andrew Gregg** served two consecutive terms on the HPC from 2007-2013 and currently serves on the Clark County Arts Commission. He earned a Master of Arts in History from Washington State University and his Bachelor of Arts in History and Russian from Willamette University. Andrew is a native of Clark County with a long record of public service and dedication to historic preservation.

Please feel free to contact me with any questions you may have about our recommendations or candidate screening process.

Sean Denniston

4200 NW Grant St.
Vancouver, WA 98660
(916) 599-2327
sedenniston@yahoo.com

February 7, 2018

Tina Redline

County Manager's Office
P.O. Box 5000
Vancouver, WA 98666-5000

RE: Historic Preservation Commission Vacancies

Ms. Redline,

I am writing to express an interest in returning to a seat on the Clark Count Historic Preservation Commission. I think that my two years on the Commission have been productive and that I have been an active contributor to the Commission's importance work. My background in architecture and historic preservation has allowed me to bring a lot to discussions and decisions made by the Commission. My additional background in energy efficiency brings an additional dimension to one of the pressing issues facing historic buildings and our entire building stock.

I think that my background has made me a good addition to the Commission and I would very much like to continue to contribute to the Commission's important work.

I appreciate your time and consideration. I can be contacted by telephone at (916) 599-2327 or by email at sedenniston@yahoo.com.

Sincerely,

A handwritten signature in black ink, appearing to read 'Sean Denniston', with a stylized, flowing script.

Sean Denniston

Curriculum Vitae

Sean Denniston

sedenniston@yahoo.com; 4200 NW Grant St., Vancouver, WA 98660; (916) 599-2327

Education

Master of Science in Historic Preservation 2007

The University of Pennsylvania

Real Estate Certificate - Joint Program in the School of Design and the Wharton Business School.

Thesis: *Evaluating Energy Efficient Lighting Strategies for Use in Historic Preservation.*

Bachelor of Architecture 2001

The University of Oregon (*magna cum laude*)

Robert D. Clark Honors College, Minors in Religious Studies and Architectural History

Thesis: *A Design For An Environmental Learning Center For Fourth and Fifth Graders at Cama Beach State Park On Camano Island In The Puget Sound.*

Teaching

Various Training Webinars 2014-2017

Instructor:

"Tools and Design Strategies of Resilient Buildings " 2017

"Office Worker Performance and the Indoor Environment" 2017

"Greater Energy Efficiency for Multifamily Buildings – Facing the Unique Challenges " 2017

"The Changing Commercial Energy Code - Moving from 2012 IECC to 2015 IECC" 2017

"Deep Energy Retrofits: Getting to Zero Net Energy" 2016

"Deep Energy Retrofits: Best Practices in Technologies and Strategies" 2016

"Deep Energy Retrofits: Vision, Goals and Process" 2016

"Staying Ahead of Advancing Energy Codes with the *Advanced Buildings New Construction Guide*" 2014

Colorado Chapter of the International Code Council Education Institute **2015**

Guest Instructor:

“Changes for Historic Buildings in the 2015 Suite of Codes”

“Changes for Existing Buildings in the 2015 Suite of Codes”

“Proposed Changes for Multifamily Buildings in the 2018 International Energy Conservation Code”

College of Human Ecology, Kansas State University **2014-2015**

Guest Lecturer on Sustainability Topics: Department of Apparel, Textiles, and Interior Design

ID 645: Interior Design Studio 8: Re-use of 1902 school Spring 2015

ID 630: Advanced Interior Design Theory: Sustainability & Systems Spring 2014

Professional Experience

New Buildings Institute 2009 - present

Senior Project Manager

New Buildings Institute is a non-profit working to improve the energy efficiency of commercial buildings, from thought leadership to fundamental research to the development of design guidance to innovation in codes and policy.

Responsibilities Include: Research and development of energy codes and policies with specialized work in existing and historic building topics; the technical development of energy efficiency strategies and guidance for commercial and multifamily buildings especially as they pertain to existing buildings; writing papers and creating presentations for journals and conferences; development of policies, methodologies and tools for the analysis of building energy data; the development and delivery of training on energy efficiency, existing buildings and building science topics for professional designers and engineers as well as government officials; utility incentive program design and support..

Domus Antiquum 2006 - 2009

Principal

Domus Antiquum is a small historic preservation consulting and development firm founded to rehabilitate historic residential properties with a special emphasis on energy efficiency upgrades that are both effective and sensitive to the significant aspects of historic buildings. In 2009, Domus Antiquum transitioned to property ownership only.

Responsibilities Include: All stages of planning, design, construction management, leasing and property management.

University of Pennsylvania 2004 - 2006

Research Assistant for Frank Matero, professor and Chair of the Dept. of Historic Preservation

Responsibilities Included: Providing support for ongoing research, university courses and outside projects, including preparation of presentations and reports.

Partners for Sacred Places

2005

Intern

Partners for Sacred Places is a non-profit organization that promotes the preservation of historic houses of worship.

Responsibilities Included: The complete development and implementation of a new historic site survey process and building database used to evaluate and track historic houses of worship; performing on-site surveys of historic sites, gathering information of specific interest to Partners for Sacred Places' grant program, the Philadelphia Regional Fund for Sacred Places; providing advice and guidance in energy efficiency issues for congregations for their historic houses of worship, especially in regards to energy efficient lighting strategies.

Heschong Mahone Group, Inc.

2001 - 2004

Research Associate

The Heschong Mahone Group is a research and consulting firm specializing in energy efficiency issues in architecture.

Responsibilities Included: Providing a variety of technical, analytical and research expertise including administration of "Designed for Comfort" utility incentive program; extensive field work involving both on-site data collection and subsequent analysis; building energy analysis; research and analysis for the development of California Codes and Standards; and training in energy efficiency for professionals both within and without the field of architecture.

Publications (Peer Reviewed)

Denniston, S. (2005) *A Radical Restoration: The Baltimore Cathedral*. University of Pennsylvania Press. Philadelphia, PA.

Publications (Editor Reviewed)

Denniston, S. (2017) "The Implications of Developments in National Model Codes for Historic Preservation." *National Alliance of Preservation Commissions' Alliance Review*.

Denniston, S., Frankel, M. (2017) *Building Innovation – Multifamily Guide*. New Buildings Institute. Vancouver, WA.

Denniston, S. (2016) *Five Steps to Zero Net Energy in Existing Buildings*. National Grid. Waltham, MA.

Denniston, S., Frankel, M. & Lyles, M. (2012) *Advanced Buildings New Construction Guide*. New Buildings Institute. Vancouver, WA.

Conference Papers (peer-reviewed)

Baker, K., Denniston, S. & Frankel, M. (2014). *A Targeted Energy Outcome Existing Buildings Toolkit for Cities*. Paper & presentation at the American Council for an Energy Efficient Economy Summer Study Conference in Asilomar, CA.

Denniston, S. *Bringing Outcome-Based Code Compliance to the IgCC*. (2012). Paper & presentation at the American Council for an Energy Efficient Economy Summer Study Conference in Asilomar, CA.

- Antonoff, S., Denniston, S., DiNola, R. & Dunn, L. (2010). *Toward a Future Model Energy Code for Existing and Historic Buildings*. Paper & presentation at the American Council for an Energy Efficient Economy Summer Study Conference in Asilomar, CA.
- Denniston, S., Ehrlich, C., Manglani, P. & Stone, N. (2004) *Energy Efficiency-Based Utility Allowances: A Driver for More Efficient Affordable Housing*. Paper & presentation at the American Council for an Energy Efficient Economy Summer Study Conference in Asilomar, CA.

Presentations & Lectures

- Denniston, S. (2018). *Confederate Monuments and Preserving "Uncomfortable History."* Presentation at the National Alliance of Preservation Commissions 2018 Forum in Des Moines, IA. (Proposal Accepted for July Conference)
- Denniston, S. (2016). *The Theology of the Church Building*. Lecture for the "Theology on Tap" series in Vancouver, WA.
- Denniston, S. (2016). *Strategies for Getting to Zero in Existing Buildings*. Presentation at the Transforming Existing Buildings to ZNE Workshop in San Jose, CA.
- Denniston, S. (2016). *Incorporating ZNE into your Design & Operations*. Presentation at the Transforming Existing Buildings to ZNE Workshop in San Jose, CA.
- Denniston, S. (2015). *The Implications of Developments in National Model Codes for Historic Preservation*. Presentation at the Association of Preservation Technology Conference in Kansas City, MO.
- Denniston, S. (2014). *Future-Proof Design*. Presentation for the American Institute of Architecture Symposium on Resilient Design, The Survival and Perseverance of Place through Design in Portland, OR.
- Denniston, S., Finlayson, I. & Mathis, C. (2012). *The New Massachusetts "Stretch" Energy Code*. Presentation for the Architecture Boston Expo in Boston, MA.
- Denniston, S., Mathis, C. & Woodworth, V. (2012). *Introduction to the International Green Construction Code*. Presentation for the Architecture Boston Expo in Boston, MA.
- Denniston, S. *The Switch from Component Replacement to System Analysis and Performance Upgrades*. Presentation for the ACEEE Market Transformation Symposium in 2012.
- Denniston, S. (2012). *Code Creep: How Green is Making its Way into Codes and What it Means for the Future of Codes and Incentive Programs*. Presentation for the American Council for an Energy Efficient Economy Market Transformation Symposium in Washington DC.
- Denniston, S. (2011). *Historic Preservation & Renovation*. Presentation for the American Institute of Architecture Symposium: Schools for the Future of Our Communities in Portland, OR.
- Denniston, S. (2009). *Myths, Obstacles and Opportunities of Energy Efficiency in the Re-Use of Historic Buildings*. Presentation for the League of Oregon Cities Conference in Portland, OR.
- Denniston, S. & Pande, A. (2004). *Photocontrols and Daylighting Savings: Urban Myths and Realities from a Field Study*. Presentation for the American Solar Energy Society Conference in Portland, OR.

Professional Service

Clark County Historic Preservation Commission (Commissioner)

Department of Energy State and Energy Efficiency Action: Existing Commercial Buildings
Working Group - Subcommittee on Performance Based Codes (Co-Chair)

The Collaborative for High Performance Schools: Integration and Steering Subcommittee
(former member) and Energy Subcommittee (current co-chair)

Earth Advantage Commercial Advisory Council: Advisory Group for EA's Earth
Advantage Commercial Certification Program

March 6, 2018

Tina Redline
County Manager's Office
P.O. Box 5000
Vancouver, WA, 98666

To Whom It May Concern,

Please consider this my application for one of the vacant seats on the Clark County Historic Preservation Commission. Also enclosed is a resume detailing my experience.

I am a life-long resident of Clark County and have always had an interest in old houses, antique furnishings and the history of this wonderful area I call home. I recently decided to pursue my love of antique lighting by starting a web-based business selling it. I take cast-off chandeliers, sconces and pendants and clean them and rewire them, restoring them to their former glory. I get such satisfaction in taking these really well-made, distinctive old lights and giving them a new lease on life. As my business has evolved, I've been busy establishing connections with other organizations and individuals working to restore and preserve historic homes and businesses. My business is a member of the Architectural Heritage Center in Portland, Restore Oregon and the Washington Trust for Historic Preservation.

As you can see from my resume, I have had a variety of career experiences, but one that might be particularly pertinent to the commission is that of newspaper reporter. During that time, I attended a myriad of public meetings, so I have a good understanding of public meeting laws, Roberts Rules of Order and how to work cooperatively with other members of a public service board. As a reporter, I was always suggesting ideas about old homes or structures we could feature. Using this tactic, I managed to work my way into—and write about—the O.O. Howard House on Officers' Row, the Albert and Letha Green House in Battle Ground, the Henry Heisen House in Heissen and the Judge Lancaster House in Ridgefield. Getting to walk through these old homes as the proprietors told stories and pointed out features was a real privilege and a highlight of that job. This position and others held since then have helped me develop strong writing and marketing skills as well.

Since I started teaching, I've been busy sharing my love of all things historic with my second graders. I'm based at Yacolt Primary School, and Yacolt has the most fabulous history. In social studies lessons, I teach the children how Yacolt was once a busy metropolis due to the logging industry; near the turn of the century, it had almost 2,000 residents. It also had four hotels, a hospital, a movie theater, a power plant and even a school that went through grade 12. We put up a huge timeline in my classroom and draw pictures representing each of these historic aspects and also take a walk through the community, in which I point out where these old structures were located. Even at the end of the year, the students still remember a lot about Yacolt history.

In my spare time, I enjoy puttering around my house and riding my bicycle. I like to target my rides in areas where I get to look at lovely old houses and businesses. I love admiring their individuality, their unique features, and all the care and workmanship that went into them. I see a position on the Commission as a way to formalize what has always been a happy pastime for me and to also do some good for the community. I truly believe we need to preserve our historic structures as much as possible; they make the place in which we reside more unique, more desirable and give us inescapable grounding with the past.

I'm happy to provide any additional information you should need.

Sincerely,

Michelle Kapitanovich

Michelle Kapitanovich
4218 N.E. 359th St.
La Center, Washington, 98629
(360) 263-2035 michellekap@tds.net

Objective: Obtain a position on the Clark County Historic Preservation Commission.

Education: Masters in Teaching, Washington State University, Vancouver
Research Emphasis: Phonemic Awareness

Bachelor of Science in Journalism
University of Portland, conferred August 1988

Experience: **Small Business Owner**, Old West Coast Lighting Company, Jan. 2016 to present
Old West Coast offers antique lighting via its web-based business site,
www.oldwestcoastlightingcompany.com.

Second Grade Teacher, Battle Ground School District August 2005 to present
Assess the wide-ranging abilities of 25 second graders and tailor curriculum/teaching to meet their needs. Built literacy skills, developed computational fluency and improved writing abilities.

Substitute Teacher September 2004 to June 2005
Taught kindergarten through fourth grade in the Battle Ground, La Center and Woodland school districts. Further honed classroom management skills, gained broader exposure to different educational practices, and obtained additional teaching experience in literacy and mathematics.

Student Media Adviser, University of Portland August 1999 to July 2003
Ensured the smooth operation of five student media organizations at this Oregon university. Advised group leaders about best practices in journalism and taught these principles in regular workshops.

Reporter, The Reflector May 1988 to July 1999
Wrote news and features on issues of importance to readers of this 23,000-circulation newspaper in Battle Ground, Washington. Coordinated the work of other reporters, and edited stories for clarity and style.

Marketing Assistant, Jantzen Beach Center July 1989 to November 1989
Supervised the CitiFrequent Shopper Program and solicited \$2,000 in monthly prizes for this Portland, Oregon, shopping mall.

References Available Upon Request

From: [Weyhrauch, Alyssa](#)
To: [Kamp, Jacqueline](#)
Subject: FW: Historic Preservation Commission
Date: Monday, March 05, 2018 7:41:06 AM
Attachments: [Andy Resume 3 4-3-10-1.doc](#)

For you! ☺



Alyssa Weyhrauch
Office Administrator
Clark County Council

360.397.2232



From: Redline, Tina
Sent: Monday, March 05, 2018 6:50 AM
To: Weyhrauch, Alyssa
Subject: FW: Historic Preservation Commission

For you



Tina Redline
Office Supervisor
COUNTY MANAGER'S OFFICE

360.397.2232 ext 4978



From: ANDREW J DONNA W OAD GREGG [<mailto:AGREGG3995@msn.com>]
Sent: Saturday, March 03, 2018 10:27 PM
To: Redline, Tina
Subject: Historic Preservation Commission

Greetings,

Please accept this letter of interest in joining Clark County
Historic Preservation Commission.

A recent resume is attached.

Many thanks,

Sincerely,

Andrew Gregg,
10201 NE 82nd Avenue
Vancouver, WA 98662

Sent from [Mail](#) for Windows 10

ANDREW J. GREGG
10201 NE 82nd Avenue
Vancouver, WA 98662
Home Phone: 360-260-3995
E-mail: andy.gregg@hock.k12.wa.us

Core Educational Background

1983 Master of Arts In History, Washington State University at Pullman.
1979 Gonzaga University School of Law, Spokane, WA.
1978 Bachelors of Arts in History and Russian, Willamette University, Salem, OR.
1974 Diploma, Hudson's Bay High School, Vancouver, WA

2006 National Board for Professional Teaching Standards Certification in History
1986 Continuing Teaching Certificate, Washington State University.

NCLB Highly Qualified Teacher for Middle/High School: History, Civics/Government, Economics, Geography, Designated World Languages (Russian, French), Visual Arts, Music, Theatre, English/Language-Arts, Reading, Science

Enhanced Educational Background

2010 Guided Language Acquisition Design (ELL)
2009 National Board Legislative Advisor
2009 History on Location Seminar participant in Birmingham, Selma, Montgomery, AL
2009 CSTP Writer's Retreat
2009 National Board Candidate Facilitator Training I and II
2004 National Endowment for the Humanities Fellow
2003 National Expeditionary Learning/Outward Bound participant
2001 Harvard University Institute for School Leadership.
1998 K-12 Continuing Principal Credential, Washington State University.
1993 4-12 Initial Principal Credential, Washington State University.
1973 Certificate of Completion, Leningrad State University, Leningrad, USSR.

Instructional Experience - Hockinson School District

2001 - 2014	Studies in Literature and Literacy
1993 - 2013	Leadership
1998 - 2003	History of Washington and America
1984 - 1992	Highly Capable Program
1982 - 1998, 2004-2016	United States History
1982 - 1993	Law and Justice, Economics, Art, Health

Instructional Experience - Higher Education

- **1984 - 2004** **Adjunct Professor of History at Clark College, Vancouver, WA.**
Assignment included Pacific Northwest History (HIST 235). Developed partnership with the Fort Vancouver Historical Society to publish students' term papers as articles in *Clark County History*, the organization's scholarly journal. More than 100 such papers have appeared since the inception of this partnership. Qualifies candidate to teach Advanced Placement courses in History and English.

- **1986 - Present Featured Speaker/Consultant**
Professionally presented programs and papers related to educational research at numerous regional conferences. Appearances include presentations for Washington Association of Educators of Talented and Gifted, Washington Association of Middle Level Educators, Infant and Early Childhood Conference, and the Washington Association for the Education of Young Children. In addition, consulted for the Yakima School District, Kelso School District, Connell Public Schools, and the Washington State Center for Supported Education on Special Education and the legal requirements of IDEA (1997).
- **1985 - 2004 Editor of *Clark County History***
Clark County History is the scholarly journal of Fort Vancouver Historical Society. In print since 1960, this journal highlights professional scholarship centering on the history of Southwest Washington. Articles focusing on significant individuals, events, businesses, arts, architecture, institutions, and historical trends are among the features.

Administrative Experience

- **2007-Present Founder, Social Studies Studio**
This work group served as the precursor to the current Social Studies Instructional Materials Adoption Team. These practitioners researched the implementation of the new Washington State Social Studies Standards in our district.
- **2001-Present Program and Scheduling Committee**
Responsible for reinventing Hockinson Middle School's program and schedule for the 2002-2003 academic year. Challenges included: establishing an exploratory class for every student, enhancing elective courses for all students, maintaining the total inclusion model for special education students, and providing collaborative planning time for faculty.
- **2001-2007 District Steering Committee, Gates Foundation Grant**
Responsible for keeping Hockinson's Gates Foundation Grant on schedule and on budget. Tasks include initiating individual teacher grants, and promoting continuous improvement of instruction district wide. Establishing priorities and time lines have been a major focus. In addition, Hockinson was subjected to an annual Gates Foundation audit in which I participated and arranged testimony on the part of community patrons.
- **2001-2005 O.S.P.I./Riverside Press On-Line Assessment Development Cadre**
Independent of Hockinson's Gates Grant, the Foundation selected me to participate in the development of student on-line assessment. In the future, standardized testing will take place without the usual hardcopy booklets. In association with Riverside Press, I authored and tested on-line written examinations with actual students. An outcome of this initiative was O.S.P.I.'s acceptance of Riverside's proposal for use in Washington State schools.
- **2000-2005 Middle School Steering Committee, Gates Foundation Grant**
In conjunction with Gates Foundation mandates, I authored the Middle School Improvement Plan. Subsequently, faculty and staff implemented suggestions and practices in accordance with that document. Proposals included plans for improved collaborative practices, how to implement high standards for instruction, and ways in which to use technology as a teaching tool.
- **1999- 2004 Clark County Community Truancy Board**
Led the Battle Ground/Hockinson Truancy Board, which is responsible for returning students, who are in defiance of their court orders, to school. Working with a board consisting of education professionals and community members, alternatives to incarceration are found for juveniles who are unable to contend with public school. This group received the Clark County Service Award in 2002.

- **1998 - Present Grant Writing**
Successfully wrote grants for Hockinson Schools. Secured funding for Student based ecology project. Authored a Clark County grant for Leadership students to supply a battered and homeless women and children's shelter with personal necessity items. Applied for and awarded a Washington State Arts Commission Artist-in-Residence grant to create on-campus murals reflecting historic Hockinson scenes. Developed grant program to award funding from Hockinson's Gates Foundation Grant to teachers engaged in original research and staff development projects. Coached faculty to draft successful grant applications.
- **1997-2004 High School Credit for Middle School History**
Developed a pioneering middle school course in Washington State history for High School credit. In collaboration with O.S.P.I. and Hockinson's Board of Directors, a successful pilot year was adopted as a regular part of the curriculum. Subsequently, the State Board of Education amended its policy to define secondary education to encompass grades 7-12 reflecting this successful model.
- **1993-Present Total Inclusion Program for Special Education**
In compliance with IDEA (1997), Hockinson has devoted itself to providing every child with an equitable education. Collaborating with the Special Education staff, I developed and demonstrated a successful inclusive classroom. As a result, we have enrolled all of our students in a regular classroom.
- **1993-Present A.S.B. Governor (responsible for A.S.B. functions)**
Established and carried out Hockinson's student leadership program. This function involves overseeing student fundraising activities, student council, community service projects, and other A.S.B. work. Leadership is a daily class that focuses on responsible execution of A.S.B. demands, and responds to both faculty and student concerns. Since its inception, the Washington State Auditor has commended this program for its accounting practices.
- **1993-Present Acting Principal, Hockinson Middle School**
Responsible for leadership and supervision in the absence of the administrator. Served 200 days to date. Duties included student discipline, parent conferences, state reporting, contact with law enforcement, responding to emergency situations, dealing with student transportation problems, student supervision, and conflict resolution.
- **1983-Present Instructional Materials Committee (Chair, 2000-2010)**
Developed the policy for Hockinson School District relating to the adoption and implementation of instructional materials. Review of, reaction to, and community challenges of instructional materials are included in these duties.
- **1982-Present Hockinson Safety Committee**
Responsible for receiving and responding to safety issues district wide. Concern with liability and insurance situations are a primary focus of this committee. Air quality, playgrounds, parking lots, bus lanes, and walkways are examples of this committee's purview. Enhancing awareness of the value of safety is also an important function of this group.
- **1984-1996 Director of Highly Capable Program**
Developed and directed Hockinson's Gifted Students' curriculum. Supervised the nomination process, and implemented a program in compliance with Washington Association of Educators of Talented and Gifted Students guidelines. Presented papers detailing Hockinson's program to WAETAG's annual conference.

- **1990, 1998, 2010 Social Studies Textbook Adoption Committee**
Responsible for evaluating, recommending, and implementing the district's United States History instructional materials. This duty included moderating discussions with faculty, patrons, and administration regarding the recommended curriculum.
- **1992, 1999, 2000 Master's-In-Teaching Intern Supervisor**
Supervised interns from Eastern Washington University and Washington State University. Accountable to respective Universities for candidates' evaluation. Enhancing individuals' strengths and ameliorating weaknesses were key responsibilities.

Selected Publications

- *An Inclusion Program That Really Works* (2002)
- *Tunes of Tales, Tall and True Creating Local History Folksongs* (2009)
- *Rendezvous at the Kiggins: Racial Integration in Wartime Vancouver*, (2009)
- *Vancouver Federal Savings and Loan Association, a History* (1981).
- *Soldier, Builder, Showman, Mayor: J.P. Kiggins and Vancouver* (2018)

Community Involvement

- Chairman, Clark County Historic Preservation Commission (2008-2014)
- Founding Member: Hockinson Building Leadership Team (2002-present)
- Chairman, Clark County Arts Commission (2017-present)

VOUCHER APPROVAL

We, the undersigned council members of the City of Vancouver, Clark County, Washington, do hereby certify that the merchandise or services hereinafter specified have been received and that the vouchers listed below are approved for payment in the amount of:

\$ **6,542,794.74** this 18th day of June 2018.

MAYOR



AUDITING OFFICER

COUNCILMEMBER

COUNCILMEMBER

DATE	INCLUSIVE CHECK NUMBERS	CHECK TOTAL
June 5 - June 11	Accounts Payable Checks (see attached)	\$ 3,715,229.97
June 5 - June 11	Visa Refunds (see attached)	\$ 4,151.63
June 5 - June 11	Payroll Checks (see attached)	\$ 2,823,413.14
TOTAL		\$ 6,542,794.74

INVOICE PAYMENTS REPORT

Check Number	Check Date	Amount	Vendor Name	Description
119557	05-Jun-2018	526.35	HEALTH SMART BENEFITS SOLUTIONS INC	***WIRE*** HEALTH SMART CLAIMS WEEK 5 OF MAY
119558	06-Jun-2018	27,320.41	GALLAGHER BASSETT SERVICES INC	***WIRE*** WORKERS' COMP FUNDING / MESSAGE ID: 40946396
119559	08-Jun-2018	14,751.20	LYNN WITTWER MD PC	***WIRE*** 18MAY - AMERICAN MEDICAL RESPONSE SERVICES - FINANCE
119560	08-Jun-2018	4,790.70	LYNN WITTWER MD PC	***WIRE*** 18MAY - VANCOUVER FIRE DEPT SERVICES - FINANCE/FIRE
119561	08-Jun-2018	18,646.01	BANK OF AMERICA	***WIRE*** UTILITY POSTAGE IMPREST ACCT FOR MAY 2018 - UTILITIES
119562	08-Jun-2018	750.00	VANCOUVER FIRE COMMAND OFFICERS	***WIRE*** PAYROLL
119563	08-Jun-2018	11,415.26	ALLEGIANCE BENEFIT PLAN MANAGEMENT	***WIRE*** PAYROLL
119564	08-Jun-2018	11,994.54	WESTERN STATES HEALTH &	***WIRE*** PAYROLL
119565	08-Jun-2018	25,183.35	VANCOUVER FIREFIGHTERS UNION HEALTH	***WIRE*** PAYROLL
119566	08-Jun-2018	75.00	HRA VEBA PLAN	***WIRE*** PAYROLL
119567	08-Jun-2018	20,651.11	ING	***WIRE*** PAYROLL
119568	08-Jun-2018	17,700.00	WASHINGTON STATE FIREFIGHTERS	***WIRE*** PAYROLL
119569	08-Jun-2018	53,473.39	STATE OF WASHINGTON 457	***WIRE*** PAYROLL
119570	08-Jun-2018	6,099.80	WASHINGTON SDU	***WIRE*** PAYROLL
119571	08-Jun-2018	6,343.42	ICMA 401A	***WIRE*** PAYROLL
119572	08-Jun-2018	161,815.59	ICMA CORP	***WIRE*** PAYROLL
119573	08-Jun-2018	153.52	OREGON SDU	***WIRE*** PAYROLL
119574	11-Jun-2018	12,710.25	KAISER PERMANENTE	***WIRE*** KAISER DENTAL JUNE PREMIUMS
119575	11-Jun-2018	270,081.55	KAISER PERMANENTE	***WIRE*** KAISER MEDICAL JUNE PREMIUMS
119576	11-Jun-2018	65,660.58	WASHINGTON DENTAL SERVICE	***WIRE*** WASHINGTON DENTAL JUNE PREMIUMS FT
119577	11-Jun-2018	831.77	WASHINGTON DENTAL SERVICE	***WIRE*** WASHINGTON DENTAL JUNE PREMIUMS PT
119578	11-Jun-2018	2,259.60	BLUE CROSS BLUE SHIELD OF OR	***WIRE*** BLUE CROSS VHA JUNE PREMIUMS
119579	11-Jun-2018	22,596.00	BLUE CROSS BLUE SHIELD OF OR	***WIRE*** BLUE CROSS ACTIVE FT JUNE PREMIUMS
119580	11-Jun-2018	322.80	BLUE CROSS BLUE SHIELD OF OR	***WIRE*** BLUE CROSS PT JUNE PREMIUMS
119581	11-Jun-2018	387,097.28	VANCOUVER FIREFIGHTERS UNION HEALTH	***WIRE*** FIREFIGHTER JUNE PREMIUMS HEALTH TRUST
119582	11-Jun-2018	190,468.75	WESTERN STATES HEALTH &	***WIRE*** OPEIU HEALTH TRUST PREMIUMS JUNE
119583	11-Jun-2018	161,606.06	BLUE CROSS BLUE SHIELD OF OR	***WIRE*** BLUE CROSS WEEKLY CLAIMS 1ST WEEK OF JUNE
119584	11-Jun-2018	9,967.34	BLUE CROSS BLUE SHIELD OF OR	***WIRE*** BLUE CROSS WEEKLY CLAIMS 6TH OF MAY
119585	11-Jun-2018	6,658.75	BANK OF AMERICA	***WIRE*** 11 2018 PAYROLL HSA
119586	11-Jun-2018	767,116.97	INTERNAL REVENUE SERVICE	***WIRE*** 11 2018 PAYROLL TAXES; FEDERAL W/H
119587	11-Jun-2018	108,215.99	US BANK TRUST	***WIRE*** TAX REVENUES - TREASURY
119588	08-Jun-2018	10.00	BANK OF AMERICA	***WIRE*** UTILITY POSTAGE IMPREST ACCT FOR MAY 2018 - UTILITIES - ADDED DUE TO MISSED LINE 2 OF PO - MDH
591551	06-Jun-2018	6,351.07	A-CHECK AMERICA INC	SUMMARY: EMPLOYMENT SCREENING SERVICES - HR
591552	06-Jun-2018	18.17	303 HOUGH LLC	REF 400 WATER SDC LOAN
591553	06-Jun-2018	9,756.00	AAA SEPTIC SERVICE	SCIP CONTRACTOR PMT - VAN BAALEN @ 625-631 MARTIN WAY
591553	06-Jun-2018	32,303.20	AAA SEPTIC SERVICE	SCIP CONTRACTOR PMT - VAN BAALEN @ 812-910 NE 106TH AVE
591554	06-Jun-2018	2,507.61	ABM ON-SITE SERVICES WEST INC	JOB 31062242 - CUST 6631793 - EXTRA JANITORIAL SERVICES - MULTIPLE CITY LOCATIONS - THRU 05/08/18 - OP CENTER - RECEIPT 134929 BY P NEWTON PER E-MAIL
591554	06-Jun-2018	2,019.00	ABM ON-SITE SERVICES WEST INC	JOB 31062242 - CUST 6631793 - POWER WASH HANGARS - PEARSON AIRFIELD - 18MAY - OP CENTER
591555	06-Jun-2018	4,070.00	ACCENT BUSINESS SERVICES INC	ALI ZULFI - W/E 05/05/18 - INFO TECH - RECEIPT 134777 BY J SCHOESSLER PER E-MAIL
591556	06-Jun-2018	605.37	ADVANCE STORES CO INC	SUMMARY: PARTS FOR REPAIR AND MAINTENANCE - EQUIP SERVICES
591557	06-Jun-2018	35.84	AIRGAS NOR PAC INC	PAYER 2363679 - SHIP TO 2335879 - COMPRESSED GAS - 05/10/18 - FIRE STATION 5
591558	06-Jun-2018	1,083.56	ALBINA FUEL	CUST 00-0076624 - ORDER V281358 - CSS-1 TACK OIL - 1.19 TON - OPS CENTER

INVOICE PAYMENTS REPORT

Check Number	Check Date	Amount	Vendor Name	Description
591559	06-Jun-2018	134.75	ALLEGIANCE BENEFIT PLAN MANAGEMENT	RETIRED LEOFF FIRE ADMIN CLAIMS FEES - HR
591559	06-Jun-2018	211.75	ALLEGIANCE BENEFIT PLAN MANAGEMENT	RETIRED LEOFF POLICE ADMIN CLAIMS FEES - HR
591560	06-Jun-2018	420.82	ALLEGIANCE BENEFIT PLAN MANAGEMENT	RETIRED LEOFF 1 FIRE MEDICAL CLAIMS
591561	06-Jun-2018	301.00	Allison, Adam William	CDL TESTING AND ENDORSEMENT REIMBURSEMENT
591562	06-Jun-2018	5,110.00	ANDREW JEFFERS DBA JEFFERS PHOTOGRAPHY	SUMMARY: EDITING/PHOTO SHOOTING
591563	06-Jun-2018	20.00	ANSON/CAROLE ROBINSON	REF ALARM
591564	06-Jun-2018	225.62	ARAMARK UNIFORM SERVICES INC	SUMMARY: MAT/TOWEL/COVERALL/UNIFORM CLEANING SERVICES
591565	06-Jun-2018	11,978.20	ARBORSCAPE LTD INC	04/23/18-05/02/18 - TREE TRIMMING SERVICES - IN ADVANCE OF PAVING WORK - ALONG POPLAR ST/NE 39TH ST AND NE 28TH ST - OP CENTER
591565	06-Jun-2018	277.78	ARBORSCAPE LTD INC	05/10/18 - REMOVE CRABAPPLE TREE - URBAN FORESTRY
591566	06-Jun-2018	55.10	ARONSON SECURITY GROUP	DUPLICATE OF MPE-140844
591567	06-Jun-2018	132.51	AT&T MOBILITY II LLC	ACCOUNT # 287238238360 - 04/17/18-05/16/18 - IT
591568	06-Jun-2018	1,722.50	BAKER CREW CONSULTING	CDR SUPPORT PROJECT - DESIGN/CONFIGURATION - THRU 04/19/18 - CDD - RECEIPT 134834 BY B THOMAS PER E-MAIL
591569	06-Jun-2018	90.00	BIGGS INSURANCE SERVICES	ACCT JEANMSN-01 - POL 63646209N - NOTARY BOND - JEANNE SNOW - 05/24/18-05/24/22 - LAW
591570	06-Jun-2018	9.16	Bishop, Matthew G	STATION MOVES
591571	06-Jun-2018	11.25	Blair, Lacey N	ATTEND 2018 TRAFFIC SAFETY CONFERENCE
591572	06-Jun-2018	200.00	BRADFORD DAVIS	05/13/18 - SUNDAY DANCE - MUSICAL ENTERTAINMENT - PARKS
591573	06-Jun-2018	47.81	BRIAN LARSON	REF PKG PERMIT COV05976
591574	06-Jun-2018	5,433.65	CADMAN MATERIALS INC	CUST 9408272 - S/O 10066746 - PROD 92253 CSTC - 291.26 TON - OPS CENTER
591575	06-Jun-2018	4,862.72	CASCADE CENTERS INC	PROJ EAP AB - MONTHLY EMPLOYEE ASSISTANCE PROGRAM - 18JUN - HR - RECEIPT 135152 BY A BAFUS PER E-MAIL
591576	06-Jun-2018	61,164.91	CENTENNIAL CONTRACTORS ENTERPRISES, INC.	SUMMARY: CONSTRUCTION SERVICES
591577	06-Jun-2018	1,056.25	CINTAS CORP NO 2	CUST 3570 - ACCT 03570 - LOC F80 - EXTINGUISHERS AND INSPECTIONS - EQUIP SERVICES - RECEIPT 135082 BY J CHICK PER E-MAIL
591578	06-Jun-2018	1,095.50	CITY OF BATTLE GROUND	GRANT 6020095 - STATEWIDE DUI - 05/05/18-05/06/18 - VPD - RECEIPT 135195 BY A CARMAN PER E-MAIL
591578	06-Jun-2018	547.75	CITY OF BATTLE GROUND	GRANT 6020095 - STATEWIDE DUI - 05/12/18 - VPD - RECEIPT 135195 BY A CARMAN PER E-MAIL
591579	06-Jun-2018	7,499.50	CITY OF VANCOUVER POLICE TRAVEL FUND	TO REIMB. CHECKS WRITTEN AGAINST POLICE TRAVEL ADVANCE FUNDS.
591580	06-Jun-2018	400.00	CLARK COUNTY	CUST 1810 - PUBLIC UTILITY PERMITS - 17APR - OPS CENTER
591580	06-Jun-2018	30.00	CLARK COUNTY	CUST 1817 - FINGERPRINTING SERVICES - 2 EA - 18APR - LAW
591581	06-Jun-2018	573.06	CLARK COUNTY	GRANT 620095 - STATEWIDE DUI - 18APR - VPD - RECEIPT 135192 BY A CARMAN PER E-MAIL
591582	06-Jun-2018	37,146.32	CLARK COUNTY	SUMMARY: WORK CREWS - OP CENTER
591583	06-Jun-2018	510.00	CLARK COUNTY TITLE CO	RECONVEYANCES FOR: NASH; PAVLOV; WALLING
591584	06-Jun-2018	1,200.00	CLARK COUNTY TITLE CO	RECONVEYANCES FOR: VANDYKE; JONES; GREEN; 303 HOUGH LLC; HENDRICKS; VANDYKE
591585	06-Jun-2018	83,572.53	CLARK PUBLIC UTILITIES	SUMMARY: ELECTRICITY
I				
591591				
591592	06-Jun-2018	411.41	CLARK REGIONAL EMERGENCY SERVICES AGENCY	GRANT 620095 - STATEWIDE DUI - 18APR - K HENDERSON - VPD - RECEIPT 135193 BY A CARMAN PER E-MAIL
591592	06-Jun-2018	308.44	CLARK REGIONAL EMERGENCY SERVICES AGENCY	GRANT 620095 - STATEWIDE DUI - 18APR - K YAGER - VPD - RECEIPT 135193 BY A CARMAN PER E-MAIL

INVOICE PAYMENTS REPORT

Check Number	Check Date	Amount	Vendor Name	Description
591593	06-Jun-2018	31,134.65	COLUMBIA FORD	2017 FORD TRANSIT CONNECT CARGO VAN - VIN NM0LS7E71H1330481 - EQUIP SERVICES
591594	06-Jun-2018	1,645.87	COLUMBIA RESOURCE COMPANY	ACCT 450001 - 18APR - DISPOSAL FEE FOR YARD DEBRIS - SOLID WASTE
591595	06-Jun-2018	120.00	COLUMBIA RIVER NEIGHBORHOOD ASSN	2018 RECYCLING 101 COMPLETION - SOLID WASTE
591596	06-Jun-2018	14,327.61	COMCAST CABLE COMMUNICATIONS INC	SUMMARY: INTERNET AND CABLE SERVICES
I				
591599				
591600	06-Jun-2018	16,186.53	COMMUNITY SERVICES NORTHWEST	PROJ 221508 - 18JAN-18APR - HOUSING REHABILITATION - AFFORDABLE HOUSE FUND - CDBG
591600	06-Jun-2018	18,343.97	COMMUNITY SERVICES NORTHWEST	PROJ 221508 - 18MAY - HOUSING REHABILITATION - AFFORDABLE HOUSE FUND - CDBG
591601	06-Jun-2018	3,436.28	CORE & MAIN LP	ACCT 110866 - OPERATING SUPPLIES - OPS CENTER
591602	06-Jun-2018	120.00	COUNTRYSIDE WOODS NEIGHBORHOOD ASSN	2018 RECYCLING 101 COMPLETION - SOLID WASTE
591603	06-Jun-2018	379.00	Curtiss, Caleb James	REIMBURSEMENT FOR CDL TESTING AND ENDORSEMENT FEES
591604	06-Jun-2018	2,799.51	CYBERSOURCE CORPORATION	18APR - CREDIT CARD SERVICES - TREASURY - RECEIPTS 135137 (PO 89736) AND 135135 (PO 76366) BY C ALLEMANG
591605	06-Jun-2018	20.00	DAN MCDANIEL	REF ALARM
591606	06-Jun-2018	2,974.45	DATABAR INC	ORDER 46771 - #9 BLUE STRIPE ENVELOPES - UTILITIES
591607	06-Jun-2018	1,346.48	DKS ASSOCIATES	PROJ 16117-006 - 42ND & ST JAMES SIGNAL DESIGN - THRU 04/30/18 - TRANSPORTATION - RECEIPT 134911 BY N KERFOOT
591608	06-Jun-2018	511.83	DSU PETERBILT & GMC INC	ACCT 53317 - PARTS FOR VEHICLE REPAIR - EQUIP SERVICES
591609	06-Jun-2018	13,983.60	EARTHWORKS EXCAVATING	SUMMARY: SCIP CONTRACTOR PAYMENT
591610	06-Jun-2018	120.00	EAST MILL PLAIN NEIGHBORHOOD ASSN	2018 RECYCLING 101 COMPLETION - SOLID WASTE
591611	06-Jun-2018	219.93	EMERALD SERVICES INC	ACCT CI36500 - PARTS WASHER SERVICE-SOLVENT - 04/30/18 - EQUIP SERVICES - RECEIPT 135084 BY J CHICK PER E-MAIL
591611	06-Jun-2018	167.53	EMERALD SERVICES INC	ACCT CI36500 - USED OIL FILTERS/ANTIFREEZE SERVICES AND USED AND WASTE OIL FILTERS - 05/08/18 - EQUIP SERVICES
591612	06-Jun-2018	2,000.00	ENTERCOM PORTLAND LLC	STATION SRD-POR - DIGITAL MARKETING PLAN DISPLAY/SOCIAL MEDIA - 18APR - FLIGHT DATES 02/01/18-10/31/18 - VPD - REVISED INV SUBMITTED BY VPD - RECEIPT 135076 BY A CARMAN PER E-MAIL
591613	06-Jun-2018	18,532.63	EPIC LAND SOLUTIONS INC	SUMMARY: ON-CALL RIGHT-OF-WAY SERVICES - TRANSPORTATION
591614	06-Jun-2018	220.00	ESIX SPORTSWEAR INC	PORT & COMPANY UNIFORMS/PROTECTIVE CLOTHING - OP CENTER
591615	06-Jun-2018	850.00	EXAMWORKS INC	CUST 1-BMWHT - MANDATORY INSURER REPORTING - 18MAY - RISK
591616	06-Jun-2018	56.37	EXPERIAN MARKETING SOLUTIONS	ACCT TBD1-1957212 - 18MAY - UTILITY COLLECTIONS ASSIST - UTILITIES
591617	06-Jun-2018	100.00	FIRCREST NEIGHBORHOOD ASSN	2018 PARTICIPATION IN THE RESOURCE CONSERVATION CHALLENGE - SOLID WASTE
591617	06-Jun-2018	120.00	FIRCREST NEIGHBORHOOD ASSN	2018 RECYCLING 101 COMPLETION - SOLID WASTE
591618	06-Jun-2018	4,224.00	FORT VANCOUVER NATIONAL	SUMMARY: LANDSCAPE/MAINTENANCE OF LAND BRIDGE - APRIL THRU MAY 2018 - CMO
591619	06-Jun-2018	7,112.50	FORTENBERRY & ASSOCIATES INC	RECORDS MANAGEMENT ASSESSMENT - CONSULTING - 18APR - FINANCE
591620	06-Jun-2018	5,000.00	FOURTH PLAIN FORWARD	2018 SUPPORT FOR THE FOURTH PLAIN MULTICULTURAL FESTIVAL - CMO
591621	06-Jun-2018	57.75	FRED NEIMAN JR	REIMBURSE CCSO EMPLOYEE FOR OUT OF POCKET EXPENSES
591622	06-Jun-2018	23,938.95	FREDERICK VANKUREN	SUMMARY: LAND ACQUISITION AND RELOCATION FEES
591623	06-Jun-2018	40.69	FRONTIER COMMUNICATIONS	ACCT 253-014-5765-032404-5 - 05/25/18-06/24/18 - WESTRIDGE PUMP STATION OPS CENTER
591624	06-Jun-2018	978.14	GALLS LLC	ACCT 1001096190 - FIRE UNIFORM - FIRE
591625	06-Jun-2018	1,880.57	GENUINE PARTS COMPANY	CUST 7970 - 18MAY - PARTS FOR VEHICLE AND EQUIPMENT REPAIRS - EQUIP SERVICES

INVOICE PAYMENTS REPORT

Check Number	Check Date	Amount	Vendor Name	Description
591626	06-Jun-2018	2,140.91	GEORGE ELEVATOR SERVICE LLC	18MAY - MONTHLY ELEVATOR MAINTENANCE - MULTIPLE CITY LOCATIONS - OP CENTER - RECEIPT 134933 BY P NEWTON PER E-MAIL
591627	06-Jun-2018	46.00	GUTEN FOODS	REF CIVICGOV
591628	06-Jun-2018	13,906.47	HALBERT CONSTRUCTION LLC	SUMMARY: CONSTRUCTION SERVICES
591629	06-Jun-2018	262.00	Hayes, Colin J	REIMBURSEMENT FOR CDL TESTING AND ENDORSEMENT FEES
591630	06-Jun-2018	3,222.90	HDJ DESIGN GROUP	PROJ HDJ4101.004 - WYE REHABILITATION PHASE II - 18APR - CONSTRUCTION - RECEIPT 134826 BY L PETERSEN PER E-MAIL
591630	06-Jun-2018	2,672.70	HDJ DESIGN GROUP	PROJ HDJ4101.005 - 2018 PRESERVATION CURB RAMPS - 18APR - CONSTRUCTION - RECEIPT 134821 BY L PETERSEN PER E-MAIL
591631	06-Jun-2018	21,231.47	HDR ENGINEERING INC	SUMMARY: ENGINEERING SERVICES
591632	06-Jun-2018	11,382.00	HENCO PLUMBING SERVICES LLC	SCIP CONTRACTOR PMT- PULVER (5918 NE 45TH AVE)
591633	06-Jun-2018	20.00	JAYMI/SHAWN WHALEN	REF ALARM
591634	06-Jun-2018	2,500.00	JCI JONES CHEMICALS INC	ORDER 556114 - CHLORINE 150 LB CYLINDERS - 10 EA - OP CENTER
591635	06-Jun-2018	50.00	JD FULWILER & CO INSURANCE	POL USS380317 - BRKG/INS POLICY FEE - NEW BUSINESS TULIP 2018 - 06/15/18-06/15/19 - RISK
591636	06-Jun-2018	4,581.75	KBA LAND CLEARING	SCIP CONTRACTOR PMT - CARLSON @ 8206 NE 7TH ST
591637	06-Jun-2018	57.75	KC KASBERG	REIMBURSE CCSO EMPLOYEE FOR OUT OF POCKET EXPENSES
591638	06-Jun-2018	1,588.00	KELLY SERVICES INC	SCHMID, L - ORDER A2342 - W/E 05/27/18 - IT - RECEIPT 135115 BY J SCHOESSLER PER E-MAIL
591639	06-Jun-2018	720.00	KRONOS INCORPORATED	PROJ 30307 - VANCOUVER FIRE TSG - PROJECT
591640	06-Jun-2018	242.34	LANGLEYS TOWING	PLANNING/ASSESSMENT/SCHEDULING SERVICES - THRU 04/25/18 - INFO TECH - RECEIPT 135148 BY J SCHOESSLER PER E-MAIL
591641	06-Jun-2018	109.00	LEGACY 6 INC	SUMMARY: TOWING SERVICES
591642	06-Jun-2018	114.80	LEHMANN COURT REPORTING INC	REF CIVICGOV
591643	06-Jun-2018	20.00	LINESPEED EVENTS LLC	JOB 48512 - 04/25/18 - CASE 16-2-00044-8 - D SHORT V DOES #1-5 AND COV - TRANSCRIPTION SERVICES - RISK
591644	06-Jun-2018	20.00	LISA PROVOST	REF ALARMS
591645	06-Jun-2018	2,968.64	LORETTA MURDOCK ROSSINI	REF ALARM
591646	06-Jun-2018	770.00	MAKHAN UPPAL	SETTLEMENT RE: MURDOCK - DOL: 05/21/18 - RISK
591647	06-Jun-2018	192.00	MATTHEW VOLKER	PARCEL 110291-032 - REAL PROPERTY VOUCHER - MILL PLAIN BLVD-104TH AVE TO CHKLOV DR - 10601 SE MILL PLAIN BLVD - PROTECTIVE RENT - 2 LOCATIONS @ \$385.00 PER MO - 18MAY - CONSTRUCTION
591648	06-Jun-2018	26.87	McHugh, Michael Chris	REIMBURSE CCSO EMPLOYEE FOR OUT OF POCKET EXPENSES
591649	06-Jun-2018	17.72	MICHAEL C JOHNSON	STRUCTURAL COLLAPSE SPECIALIST - COLLEGE STATION TX
591650	06-Jun-2018	20.00	MICHAEL GRAHAM	REF 600 SCIP LOAN
591651	06-Jun-2018	20.00	MICHAEL/DENISE WERNER	REF ALARM
591652	06-Jun-2018	5,112.97	MISCELLANEOUS	REF ALARM
591671				SUMMARY: CITY UTILITIES REFUNDS, PARKS REFUNDS & OTHER MISC REFUNDS
591672	06-Jun-2018	3.52	MONICA KINGSBURY	
591673	06-Jun-2018	748.70	MUNICIPAL EMERGENCY SERVICES INC	REF 907 CITY REHAB LOAN
591674	06-Jun-2018	49.27	MUNNELL AND SHERRILL INC	SUMMARY: OPERATING SUPPLIES - VPD & FIRE
591675	06-Jun-2018	90.25	Nelson, Christel Marie	CUST 3363 - DOC 002404 - SHOP SUPPLIES - EQUIP SERVICES
591676	06-Jun-2018	2,422.70	NET TRANSCRIPTS	WA FIRE CHEIFS ADMIN SUPPORT CONFERENCE - WALLA WALLA
591677	06-Jun-2018	181.90	NORTHWEST CASCADE INC DBA HONEY BUCKET	CUST 20-VANCOUVERPD - TRANSCRIPTION SERVICES - 04/16/18-04/30/18 - VPD - RECEIPT 135046 BY A CARMAN PER E-MAIL
591678	06-Jun-2018	2,682.90	NORTHWEST LANDCARE	SUMMARY: PORTA POTTY RENTALS
				SCIP CONTRACTOR PMT- WILLIS (400 NE 97TH AVE)

INVOICE PAYMENTS REPORT

Check Number	Check Date	Amount	Vendor Name	Description
591679	06-Jun-2018	14,053.79	NORTHWEST STAFFING RESOURCES	CITY WIDE TEMPORARY SERVICES - W/E 05/13/18
591680	06-Jun-2018	2,901.98	NW NATURAL	ACCT #1546824-2 - 18MAY GAS USAGE - FIRSTENBURG
591681	06-Jun-2018	120.00	OGDEN NEIGHBORHOOD ASSN	2018 RECYCLING 101 COMPLETION - SOLID WASTE
591682	06-Jun-2018	189.70	ORCHARDS TOWING	04/25/18 - TOWING - '99 KAWASAKI VN800 - LIC 9E7671 WA - FROM 2800 STAPLETON RD TO 2511 NE 65TH AVE #C - CASE 2318-4843 - VPD
591683	06-Jun-2018	4,829.52	OTAK INC	PROJ 017867.A00 - VANCOUVER COUNTRY CLUB VILLAGE LID RETROFIT - THRU 04/27/18 - MP ENG - RECEIPT 134765 BY L JONES PER E-MAIL
591684	06-Jun-2018	17,096.85	PACIFIC BUSINESS SYSTEMS	GEAR LOCKERS AND MAPLE BENCH/INSTALLATION - THRU 02/21/18 - VPD/WEST
591685	06-Jun-2018	20.00	PACIFIC LIFESTYLE HOME	REF ALARM
591686	06-Jun-2018	4,005.00	PARKEON	CUST 0030328P - SO P71203 - PARKFOLIO LEVEL 3 FEES - 89 EA - 18FEB - PARKING
591686	06-Jun-2018	3,561.52	PARKEON	CUST S0130328 - SO P70915 - MAIN BOARD (2 EA)/ COIN INLET SENSOR/M900
591687	06-Jun-2018	658.42	PETTY CASH CUSTODIAN	MAG KIT - 18JAN - PARKING
				SUMMARY: PETTY CASH REPLENISHMENT
591689				
591690	06-Jun-2018	150.00	PORTLAND ADVENTIST MEDICAL CENTER	18APR - WORKFORCE - POST JOB OFFER SCREENING - 1 EA - HR
591691	06-Jun-2018	113.28	POTTER WEBSTER CO	CUST 8108500 - ORDER 258615 - PARTS FOR VEHICLE REPAIR AND EQUIPMENT - EQUIP SERVICES
591692	06-Jun-2018	274.67	PRAXAIR DISTRIBUTION INC	CUST 73769060 - CO2 LIQUID BULK TANK 450# - THRU 05/02/18 - PARKS & REC FCC
591693	06-Jun-2018	1,052.88	PROFESSIONAL CREDIT SERVICE	SUMMARY: MULTIPLE REFUNDS
591694	06-Jun-2018	698.84	QWEST CORP DBA CENTURY LINK	PDX LINES CITYWIDE
591695	06-Jun-2018	6,202.61	QWEST CORP DBA CENTURY LINK	CITYWIDE PHONE LINES
591696	06-Jun-2018	4,185.00	RECOLLECT SYSTEMS INC	06/01/18-05/31/19 - ON-LINE YARD DEBRIS ON-CALL REQUEST FEATURE RENEWAL - SOLID WASTE
591697	06-Jun-2018	986.44	RENTOKIL NORTH AMERICA INC	SUMMARY: MONTHLY PEST CONTROL MAINTENANCE - MULTIPLE LOCATIONS
591698	06-Jun-2018	5,303.12	RIGHT OF WAY ASSOC INC	REF 15001-010-000 THRU 15001-010-077 - SE 1ST ST-NE 164TH AVE TO NE 192ND AVE - RIGHT OF WAY SERVICES - 02/01/18-03/28/18 - TRANSPORTATION - RECEIPT 135160 BY L PETERSEN PER E-MAIL
591699	06-Jun-2018	100.00	RIVERIDGE NEIGHBORHOOD	2018 PARTICIPATION IN THE RESOURCE CONSERVATION CHALLENGE - SOLID WASTE
591700	06-Jun-2018	3,826.02	ROBERT HALF INTERNATIONAL	CUST 03660-000152000 - SHICK DAVID - W/E 05/04/18 - FINANCE
591701	06-Jun-2018	792.00	ROTSCHY INC	CLIENT 59 - FILL CLASS S, VAC TRUCK DUMP - OPS CENTER
591701	06-Jun-2018	345,403.26	ROTSCHY INC	WFP - GRANT ST PIER - EST 22 - THRU 05/10/18
591702	06-Jun-2018	432.52	S&B INC	ORDER 24843 - STOCK ORDER - PLUG IN RELAY & INPUT COUPLER RELAY - 10 EA - 05/08/18 - OP CENTER
591702	06-Jun-2018	1,570.62	S&B INC	ORDER 24844 - SUS RENEWALS - SIEPRO AGREEMENT FOR PRO CLASSIC/PRO TIA/WINCC COMFORT - 5 SUBSCRIPTIONS - 05/08/18 - OP CENTER - RECEIPT 134763 BY P NEWTON PER E-MAIL
591703	06-Jun-2018	29,674.42	SAN DIEGO POLICE EQUIPMENT CO	CUST 52 - ORDER 90592- OPERATING SUPPLIES - VPD
591704	06-Jun-2018	18,919.62	SECURITY DEVICES INTERNATIONAL INC	BLUNT IMPACT PROJECTILES - VPD
591705	06-Jun-2018	166.77	Serface, Justin T	APWA TRAVEL
591706	06-Jun-2018	484.65	SHANNON JOY GREGORY DBA CLASSY CAMELIDS LLC	05/30/18 - WELLNESS FAIR - LLAMA APPEARANCE - CMO
591707	06-Jun-2018	9.05	SHRED IT USA LLC	ACCT 13630245 - DOCUMENT DESTRUCTION - 05/03/18 - UTILITIES

INVOICE PAYMENTS REPORT

Check Number	Check Date	Amount	Vendor Name	Description
591708	06-Jun-2018	209.18	SOFTWARE HOUSE INTERNATIONAL SHI	CUST 1072078 - SO S47608544 - ACROBAT NEW LICENSE - 1 EA - AGREEMENT 4600014240 - INFO TECH - RECEIPT 134806 BY J SCHOESSLER PER E-MAIL
591708	06-Jun-2018	209.18	SOFTWARE HOUSE INTERNATIONAL SHI	CUST 1072078 - SO S47612601 - ACROBAT NEW LICENSE - 1 EA - AGREEMENT 4600014240 - INFO TECH - RECEIPT 134805 BY J SCHOESSLER PER E-MAIL
591709	06-Jun-2018	1,349.00	SOUTHWEST OFFICIALS SERVICES INC	04/19/18-05/11/18 - ADULT BASKETBALL OFFICIATING FEES - PARKS
591710	06-Jun-2018	96,627.76	SPECIAL ASPHALT PRODUCTS INC	2018 CIMLINE M4 410 GAL, DIESEL HEATED HOSE & PUMP POWER CONVEYOR - REPLACING 5072 - EQUIP SERVICES
591710	06-Jun-2018	(5,000.00)	SPECIAL ASPHALT PRODUCTS INC	TRADE IN VALUE FOR # 5072 - EQUIP SERVICES
591711	06-Jun-2018	89.75	STATE OF WASHINGTON	PROJ LA07135R - NE 137TH AVE CORRIDOR COMPLETION - 18APR - TRANSPORTATION
591712	06-Jun-2018	4,126.99	STATE OF WASHINGTON	PROJ JM0203L - CUST 916001288 5 - MATERIAL LAB CHARGES - 18APR - CONSTRUCTION
591713	06-Jun-2018	11.12	STERICYCLE INC	CUST 6068464 - 18MAY - MEDICAL WASTE REMOVAL - FIRSTENBURG COMM CTR
591714	06-Jun-2018	10,929.50	TEKSYSTEMS	SUMMARY: TEMPORARY STAFFING SERVICES - INFO TECH
591715	06-Jun-2018	108.40	TOWING & RECOVERY SERVICES INC	TOWING - '18 VW TIGUAN - LIC BIX0794 WA - FROM NE 113TH ST TO WEST PRECINCT - VPD
591716	06-Jun-2018	60.00	TRADER JOES #136	REF ALARMS
591717	06-Jun-2018	7,406.15	TYREE OIL, INC	SUMMARY: OPERATING SUPPLIES - EQUIP SERVICES
591718	06-Jun-2018	20.00	U4IK GARDENS	REF ALARM
591719	06-Jun-2018	32.00	Ulibarri, Steven G	WSP - FIRE SPRINKLER TRAINING - KENNEWICK WA
591720	06-Jun-2018	605.74	UNITED PARCEL SERVICE	SUMMARY: SHIPPING CHARGES - MAIL ROOM & OPS CENTER
I				
591722				
591723	06-Jun-2018	225.00	UNITED STATES POSTAL SERVICE	2018 BRM PERMIT 183000 RENEWAL - FINANCE/MAILROOM
591724	06-Jun-2018	10,269.22	VANCOUVER NATIONAL HISTORIC RESERVE TRUST DBA	2018 INDEPENDENCE DAY EXPENSES - THRU 04/30/18 - CMO
591725	06-Jun-2018	25.00	VANCOUVER PEACE & JUSTICE FAIR	09/08/18 - 2018 PEACE AND JUSTICE FAIR - EXHIBITOR RATE - VPD
591726	06-Jun-2018	200.00	VANCOUVER SCHOOL DISTRICT #37	RENTAL DEPOSIT RETURN/VANCOUVER ITECH PREP SCHOOL
591727	06-Jun-2018	7,150.00	VANCOUVER SLOW PITCH UMPIRES ASSN	18MAY - SPORTS OFFICIATING - PARKS
591728	06-Jun-2018	4,100.00	VANCOUVER USA REGIONAL TOURISM OFFICE	2018 MARKETING GRANT PROGRAM - REGIONAL TOURISM MARKETING WATERFRONT - FINANCE
591729	06-Jun-2018	3,274.06	VANCOUVERCENTER CONDOMINIUM ASSOCIATION	18APR - OPERATING EXPENSE REIMBURSEMENT - VANCOUVERCENTER PLAZA - PARKING - RECEIPT 134857 BY T PICCHIONI PER E-MAIL
591730	06-Jun-2018	6.00	VANESSA A SENA	REF CITATION 170600863
591731	06-Jun-2018	18,058.66	VERIZON WIRELESS	SUMMARY: WIRELESS SERVICES
I				
591741				
591742	06-Jun-2018	540.14	VERIZON WIRELESS SERVICES LLC	ACCT 342019650-00001 - CURRENT CHARGES - 04/24/18-05/23/18 - CONSTRUCTION
591743	06-Jun-2018	120.00	VILLAGE AT FISHERS LANDING NEIGHBORHOOD ASSN	2018 RECYCLING 101 COMPLETION - SOLID WASTE
591744	06-Jun-2018	12,844.26	WALTER E NELSON CO	SUMMARY: JANITORIAL SUPPLIES - FIRE & OPS CENTER
591745	06-Jun-2018	163.47	WAPITI NW LLC	2018 ANNUAL SERVICE AND INSPECTION - 2006 MAGNUM FLOODLIGHT TRAILER - LIC 42879D - UNIT 5057 - EQUIP SERVICES
591746	06-Jun-2018	2,618.53	WASHINGTON STATE DEPT OF NATURAL RESOURCES	CUST 1042641 - AGREEMENT IAA 15-127 - INMATE LOCAL GOVT LABOR PROJ - MAINTENANCE OF CEMETERIES - OP CENTER

INVOICE PAYMENTS REPORT

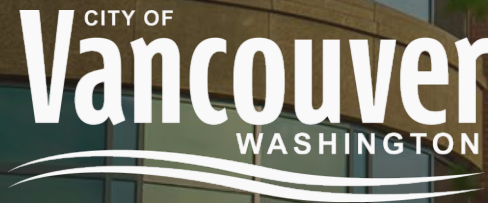
Check Number	Check Date	Amount	Vendor Name	Description
591747	06-Jun-2018	323.50	WASHINGTON STATE UNIVERSITY	05/23/18 - WSU VANCOUVER EVENT SERVICES - 2018 WATERSHED CONGRESS - WREC
591748	06-Jun-2018	25.00	WESLEY DAMERON	REF CITATION 7200407553
591749	06-Jun-2018	47,577.63	WILCOX & FLEGEL	SUMMARY: FUEL - EQUIP SERVICES
591750	06-Jun-2018	18,963.83	WINTERBAUER & DIAMOND PLLC	ACCT 1987-00M - LEGAL SERVICES - INVOKE VMC 3.05.200(2) - THRU 04/26/18 - RISK
591751	06-Jun-2018	5,042.97	WIRE WORKS LLC	LABOR/SUPPLIES TO INSTALL 911 CIRCUITS POWER DISTRIBUTION PANELS FOR VPD - UNIT 2288 - VIN ENDING IN 15738 - EQUIP SERVICES
591752	06-Jun-2018	28.06	WOOBX	REF PKG PERMIT COV03449
591753	06-Jun-2018	114.40	XPO ENTERPRISE SERVICES INC	WEEKLY POSTAGE SERVICES - THRU 05/05/18 - FINANCE/MAILROOM
591754	06-Jun-2018	52.50	XPRESS LEGAL SUPPORT LLC	01/12/18 - PROCESS SERVICE - 12921 SE RIVERCREST DR - B NORBERG - LAW
591755	07-Jun-2018	1,022.90	WESTERN METAL IND PENSION FUND	PAYROLL
591756	07-Jun-2018	1,122.01	UNITED WAY OF THE COLUMBIA WILLAMETTE	PAYROLL
591757	07-Jun-2018	4,412.00	CHAPTER 13 - TRUSTEE	PAYROLL
591758	07-Jun-2018	7,471.47	LIFE INSURANCE CO OF NORTH AMERICA	PAYROLL
591759	07-Jun-2018	9,429.32	AMERICAN FAMILY LIFE ASSURANCE	PAYROLL
591760	07-Jun-2018	722.50	IAM LOCAL #1374	PAYROLL
591761	07-Jun-2018	18,867.54	IAFF LOCAL #452	PAYROLL
591762	07-Jun-2018	14,686.62	VANCOUVER POLICE OFFICER GUILD	PAYROLL
591763	07-Jun-2018	5,307.10	AFSCME LOCAL #307	PAYROLL
591764	07-Jun-2018	5,107.54	OPEIU LOCAL #11	PAYROLL
591765	07-Jun-2018	3,283.74	WESTERN CONFERENCE OF TEAMSTERS	PAYROLL
591766	07-Jun-2018	550.00	MFS SERVICE CENTER INC	PAYROLL
591767	07-Jun-2018	640.00	TEAMSTERS LOCAL #58	PAYROLL
591768	07-Jun-2018	297.50	UA LOCAL #290	PAYROLL
591769	07-Jun-2018	72.36	LEGAL SHIELD	PAYROLL
	SUBTOTAL	3,715,229.97		
VISA	12-Jun-2018	1,871.63	MISCELLANEOUS	PARKS CLASS REFUNDS - FCC 06/05/18 - 06/11/18
VISA	12-Jun-2018	2,015.00	MISCELLANEOUS	PARKS CLASS REFUNDS - MCC 06/05/18 - 06/11/18
VISA	12-Jun-2018	-	MISCELLANEOUS	PARKS CLASS REFUNDS - SPECIAL EVENTS 06/05/18 - 06/11/18
VISA	12-Jun-2018	65.00	MISCELLANEOUS	PARKS CLASS REFUNDS - VTC 06/05/18 - 06/11/18
VISA	12-Jun-2018	200.00	MISCELLANEOUS	PARKS CLASS REFUNDS - WREC 06/05/18 - 06/11/18
	SUBTOTAL	4,151.63		
	TOTAL	3,719,381.60		

City of Vancouver
Payroll Council Report
June 5, 2018 - June 11, 2018

Check No.	Date	Explanation	Amount
91080 - 91194	6/8/2018	11 2018 Payroll	34,273.05
N/A	6/8/2018	11 2018 Direct Deposits	2,789,140.09

\$ 2,823,413.14

City Council Public Hearing - 2019-2024 Transportation Improvement Plan (TIP)



June 18, 2018

Chris Malone

Public Works Finance and Asset Manager

Why we create a TIP

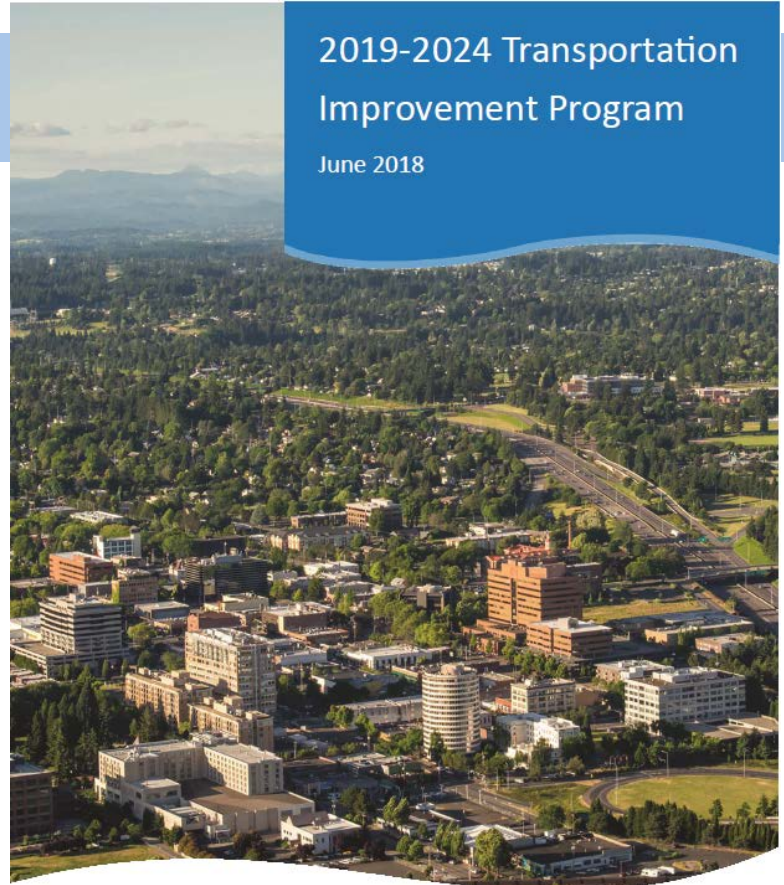
- Required by law (RCW 35.77.010)
- Coordinated planning
- Required for state and federal grants
- Improved transparency and accountability

2019-2024 TIP -- Highlights

- Implements Street Funding Strategy (SFS)
- Key projects (funded, partially funded, ongoing)
- Arterial map update

2019-2024 Transportation
Improvement Program

June 2018



Vancouver Public Works
PO Box 1995
Vancouver, WA 98668-1995
www.cityofvancouver.us/StreetsTIP

2019-2024 TIP – Arterial Map Updates

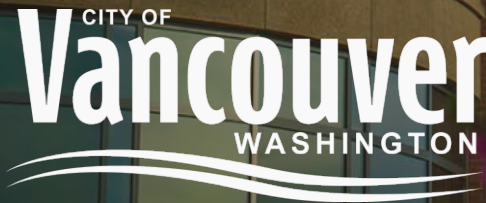
STREETS - ARTERIAL CLASSIFICATION CHANGES	
New Designation:	Recommendation
Redesignation:	
NE 137th Avenue (4th Street to 9th Street)	Remove from arterial map.
Other:	

Public outreach

- Draft has been posted on the city website since May 4, 2018
- Neighborhood Traffic Safety Alliance – May 15, 2018
- Planning Commission workshop – May 22, 2018
- Joint City Council/Transportation Benefit District (TBD) workshop – June 4, 2018
- City Council public hearing – June 18, 2018
- Website content will be updated after adoption

Questions and Discussion

- Chris Malone -- PW Finance & Asset Management Manager
- Webpage: www.cityofvancouver.us/streetstip
- Webpage: www.cityofvancouver.us/betterstreets





Staff Report 091-18

TO: Mayor and City Council

FROM: Eric Holmes, City Manager

DATE: 6/18/2018

SUBJECT 2019-2024 Transportation Improvement Program

Key Points

- Per RCW 35.77.010, the City must adopt a comprehensive TIP prior to July 1st of each year.
- This TIP reflects additional funding resulting from the street funding strategy decisions made to date.
- Each year staff includes updates/changes to the City's arterial map as part of the yearly TIP update.
- Adopting the TIP keeps the City in compliance with state law, allows the City to pursue grants for projects listed in the TIP, provides candidate projects for funding by the Vancouver Transportation Benefit District, and facilitates coordinated planning between agencies within the region.

Strategic Plan Alignment

Goal 1, Objective 1.1: Develop and maintain a safe, balanced and innovative transportation system that will meet the needs of future generations.

Goal 1, Objective 1.2: Ensure our infrastructure, including buildings and utilities, is safe, environmentally responsible and well maintained.

Present Situation

The 2019–2024 TIP presents a transportation development program that supports implementation of the City's adopted comprehensive plan. It includes funding allocation recommendations for street capital revenues including new revenues from

the Street Funding Strategy. The project lists clearly identify those projects and programs that are intended to receive funding from the sources approved as part of the Street Funding Strategy.

The TIP also provides updates to the Arterial Classification Map. The arterial map update includes minor revisions, such as changing proposed arterials to existing arterials.

Advantage(s)

1. Adoption of the Six-Year TIP conveys the direction and intent of the City to provide certain transportation projects within a given timeframe and satisfies state law.
2. The Six-Year TIP is used as a planning and project programming tool to develop funding strategies that include local, state, federal, and private funding sources.
3. The Six-Year TIP provides information to the Washington State Department of Transportation (WSDOT) and the Regional Transportation Council (RTC) for coordination of transportation projects with other agencies in the region.

Disadvantage(s)

None.

Budget Impact

The 2019-2024 TIP will be tied directly to adopted capital budgets. The TIP reflects the budget programming of the City's capital funding for transportation, including anticipated grant revenues.

Prior Council Review

June 4, 2018 Council/Transportation Benefit District workshop.

Action Requested

On June 18, 2018, following a public hearing, adopt a resolution approving the proposed 2019-2024 Transportation Improvement Program.

Chris Malone, Public Works Finance & Asset Manager, 487-7711

ATTACHMENTS:

- ▣ 2019-2024 TIP Resolution
- ▣ 2019-2024 TIP Document

6/18/18

RESOLUTION NO. _____

A RESOLUTION adopting the City of Vancouver's Comprehensive Six-Year Transportation Improvement Program for 2019-2024 and revising the City's Arterial Street System and Classification Map.

WHEREAS, pursuant to RCW 35.77.010, the Vancouver Department of Public Works has prepared the Comprehensive Six-Year Transportation Improvement Program for 2019-2024 ("2019-2024 TIP"); and

WHEREAS, the purpose of the 2019-2024 TIP is to ensure that the City will have available advance plans as a guide in carrying out a coordinated street construction program; and

WHEREAS, the City's Arterial Street System and Classification Map ("Arterial Classification Map") is maintained within the 2019-2024 TIP; and

WHEREAS, City Council originally adopted the Arterial Classification Map by Resolution M-781 on November 28, 1961, and annually reviews proposals and makes classification designation changes on the map where the use of a roadway is inconsistent with its current arterial designation; and

WHEREAS, notice of the time and place for a hearing on the 2019-2024 TIP was published in accordance with law; and

WHEREAS, the City Council conducted a public hearing on June 18, 2018 at 7:00 p.m., where it considered the 2019-2024 TIP and determined to adopt it.

NOW, THEREFORE,

RESOLUTION – 1

BE IT RESOLVED BY THE CITY OF VANCOUVER:

Section 1. Legislative Findings. The recitals set forth above are adopted as the legislative findings of Vancouver's City Council in support of adoption of this resolution.

Section 2. City Council hereby adopts the 2019 – 2024 Comprehensive Six-Year Transportation Improvement Program, which is attached as Exhibit "A" and incorporated by this reference as if fully set forth herein.

Section 3. City Council hereby adopts the Revised Arterial Street System and Classification Map, which is contained in the 2019-2024 Comprehensive Six-Year Transportation Improvement Program.

Section 4. The City Manager or his designee is hereby directed to file the 2019 - 2024 Comprehensive Six-Year Transportation Improvement Program and the Revised Arterial Street System and Classification Map with the Washington State Department of Transportation within 30 days of the date of this resolution.

ADOPTED at regular session of the Council of the City of Vancouver on June 18, 2018.

Anne McEnery-Ogle, Mayor

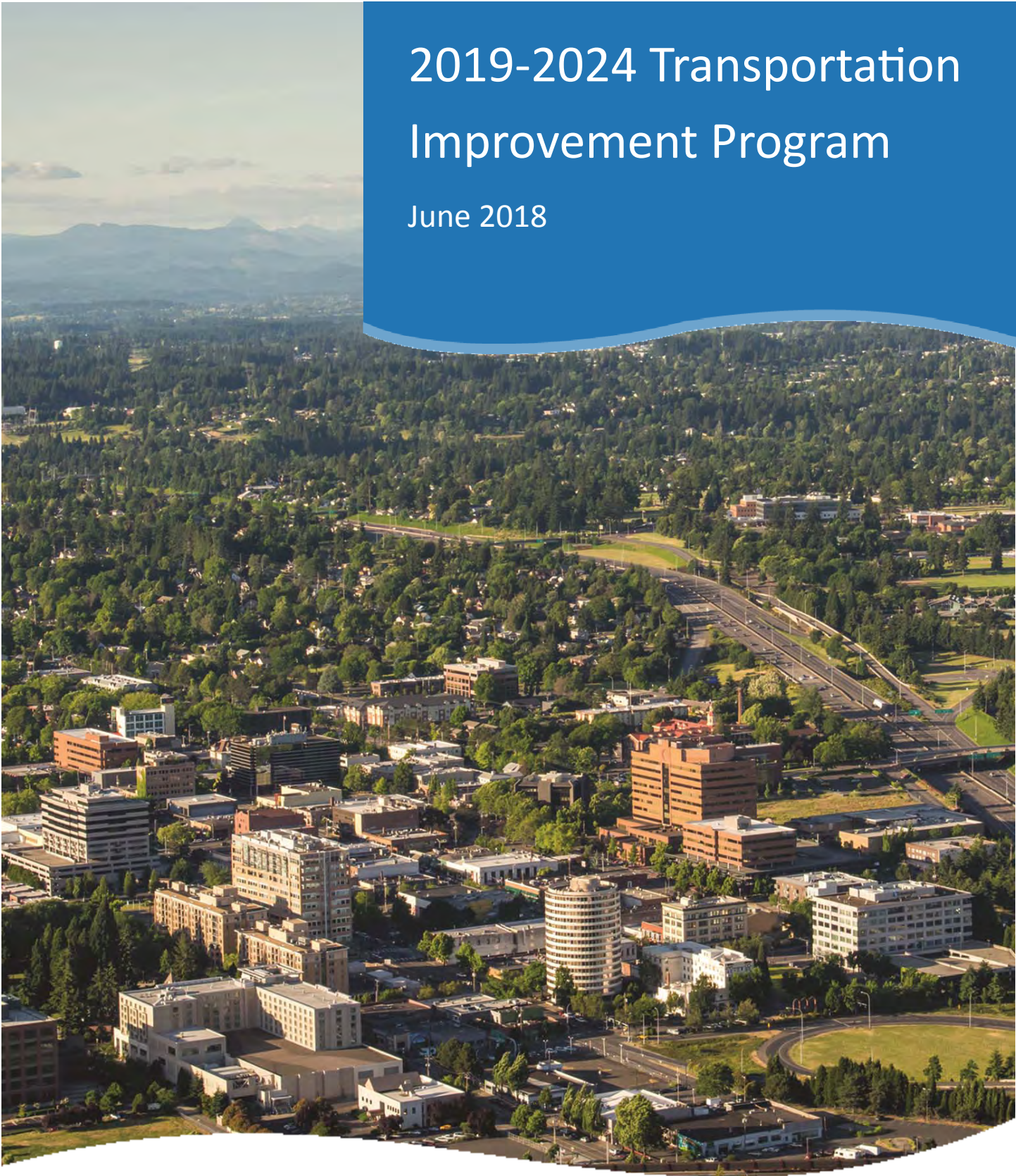
Attest:

Approved as to form:

Natasha Ramras, City Clerk
By: Carrie Lewellen, Deputy City Clerk

E. Bronson Potter, City Attorney

RESOLUTION – 2



2019-2024 Transportation Improvement Program

June 2018



Vancouver Public Works

PO Box 1995

Vancouver, WA 98668-1995

www.cityofvancouver.us/StreetsTIP

Table of Contents

Table of Contents.....	1
Adopting Resolution.....	2
Program Overview.....	4
Letter from the Director.....	5
Policies	8
Title VI Policy Statement.....	10
Financial Analysis.....	11
TIP Changes Last Year to This Year.....	25
Business License Surcharge Projects Update.....	27
Six-Year Project Lists.....	29
Project Detail Sheets.....	35
Arterial Map Updates.....	121
Glossary.....	124



6/18/18

RESOLUTION NO. _____

A RESOLUTION adopting the City of Vancouver's Comprehensive Six-Year Transportation Improvement Program for 2019-2024 and revising the City's Arterial Street System and Classification Map.

WHEREAS, pursuant to RCW 35.77.010, the Vancouver Department of Public Works has prepared the Comprehensive Six-Year Transportation Improvement Program for 2019-2024 ("2019-2024 TIP"); and

WHEREAS, the purpose of the 2019-2024 TIP is to ensure that the City will have available advance plans as a guide in carrying out a coordinated street construction program; and

WHEREAS, the City's Arterial Street System and Classification Map ("Arterial Classification Map") is maintained within the 2019-2024 TIP; and

WHEREAS, City Council originally adopted the Arterial Classification Map by Resolution M-781 on November 28, 1961, and annually reviews proposals and makes classification designation changes on the map where the use of a roadway is inconsistent with its current arterial designation; and

WHEREAS, notice of the time and place for a hearing on the 2019-2024 TIP was published in accordance with law; and

WHEREAS, the City Council conducted a public hearing on June 18, 2018 at 7:00 p.m., where it considered the 2019-2024 TIP and determined to adopt it.

NOW, THEREFORE,

RESOLUTION – 1

BE IT RESOLVED BY THE CITY OF VANCOUVER:

Section 1. Legislative Findings. The recitals set forth above are adopted as the legislative findings of Vancouver's City Council in support of adoption of this resolution.

Section 2. City Council hereby adopts the 2019 – 2024 Comprehensive Six-Year Transportation Improvement Program, which is attached as Exhibit "A" and incorporated by this reference as if fully set forth herein.

Section 3. City Council hereby adopts the Revised Arterial Street System and Classification Map, which is contained in the 2019-2024 Comprehensive Six-Year Transportation Improvement Program.

Section 4. The City Manager or his designee is hereby directed to file the 2019 - 2024 Comprehensive Six-Year Transportation Improvement Program and the Revised Arterial Street System and Classification Map with the Washington State Department of Transportation within 30 days of the date of this resolution.

ADOPTED at regular session of the Council of the City of Vancouver on June 18, 2018.

Anne McEnery-Ogle, Mayor

Attest:

Approved as to form:

Natasha Ramras, City Clerk
By: Carrie Lewellen, Deputy City Clerk

Bronson Potter, City Attorney

RESOLUTION – 2

TRANSPORTATION IMPROVEMENT PROGRAM OVERVIEW

The City of Vancouver 2019 – 2024 Transportation Improvement Program (TIP) is an update of the City’s 2018 - 2023 TIP. The TIP is a technical document for transportation improvements over a six-year period. For more information about the City of Vancouver street system, how it is funded, and how money is spent go to:

www.cityofvancouver.us/betterstreets

The State of Washington law (RCW 35.77.010) requires the City to prepare a TIP annually that is consistent with and implements the city’s adopted comprehensive growth management plan. The TIP identifies capital transportation system improvement projects and includes a policy to work with affected property owners to preserve railroad right-of-way in the event a railroad ceases to operate.

A City of Vancouver Arterial Street System and Classification Map which designates roadways functionally classified as Arterials pursuant to VMC 11.80.040 and VMC 9.02.040 is adopted and attached hereto.

For information about the City’s Comprehensive Plan, contact Vancouver Planning at 360-487-7950. For questions or more information about specific transportation projects, please contact Vancouver Public Works at 360-487-7130, or visit the City’s website:

www.cityofvancouver.us



2019-2024 Transportation Improvement Program (TIP)

Letter from the Public Works Director

The City of Vancouver continues to accelerate efforts to improve our community's street system for all users, with the support of the long-term Street Funding Strategy, adopted by City Council in late 2015 and soon to be entering full funding levels.

In implementing the Street Funding Strategy, we are steadfast in our commitment to these Council-approved, guiding principles and policies:

- Any new revenue sources shall supplement, not supplant, existing revenues for streets.
- Priority will be given to activities that seek to take care of what we have.
- Revenues will be used to "pay as you go" versus debt financing.
- Resources currently being used to repay debt for streets will continue to be used for streets when the debt is repaid.

In late 2017, Vancouver's Transportation Benefit District Board approved an increase from \$20 to \$40 in the vehicle license renewal fee. That increase takes effect July 1, 2018, and was a recommendation of the Streets Commission, a citizen group representing a variety of stakeholders and informed by an extensive public engagement process. Other resource components of the Street Funding Strategy include:

- Increase of 1.5 percent utility tax on city-owned utilities,
- Increase in business license surcharge fee,
- Vancouver portion of additional gas tax raised by the state Legislature in 2015,
- Commitment to continue to allocate funds previously used for street project debt back to street improvement on "pay-as-you-go basis" once debt is fully repaid, and
- Endorsement and adoption of financial policies consistent with recommendations.

This stable, long-term funding, which supplements previously existing street revenues, allows the city to more actively anticipate and plan its investments in transportation system improvements that support a healthy, livable and thriving community.

As a result, the city is delivering targeted outcomes in the following key areas: pavement management; median/rights-of-way maintenance; neighborhood traffic calming; mobility, accessibility and safety; asset replacement; and improved sidewalk management. These areas were identified as important to the community by the Street Funding Commission. (See *2017 Street Funding Strategy Report* at www.cityofvancouver.us/tbd.)

Among the major initiatives underway is the pavement rehabilitation of neighborhood streets that had fallen into poor or failed condition. This effort began in 2017 and is continuing each year within the Pavement Management Program as part of the city's goal to improve overall pavement conditions throughout the city. In 2019, we will further expand the program by beginning reconstruction of failed streets that have been identified as requiring significantly more work to restore than rehabilitation can provide.

Street Funding Strategy resources also provide the local dollar leverage or match the city needs to seek grants, expanding our ability to improve transportation corridors. In 2017, the city received federal grants of \$1.8 million toward construction of the coming Southeast 1st Street Improvement Project and \$150,000 for design of the Franklin Elementary area sidewalk improvement project.

In May 2018, the city completed a major urban upgrade of Northeast 18th Street, from Four Seasons to Northeast 136th Avenue, to improve vehicle and multi-modal usage along this heavily traveled corridor, following the new Washington State Department of Transportation interchange at NE 18th Street and Interstate 205. This project presented both opportunities and unique challenges, including multiple ownership interests in needed right of way. The city is continuing to evaluate traffic impacts on streets within the nearby neighborhoods.

Going forward, the City of Vancouver's 2019-2024 Six-Year Transportation Improvement Program (TIP) takes into account all new revenues from the Street Funding Strategy and expands on programs and projects begun with this renewed strategic investment in our community's transportation infrastructure. Vancouver's TIP continues to exceed the state statutory requirements by providing a comprehensive look at communitywide projects and programs, reflecting our commitment to transparency in projects and funding.

Significantly, in 2018 the city will embark upon an update to the Transportation System Plan (TSP), as noted in the 2019-2024 TIP. The last plan update occurred in 2004, and the City of Vancouver has changed greatly since that time. The TSP, which guides all aspects of our transportation system moving into the future, will include an in-depth review of multiple sub plans, such as bicycle, pedestrian, arterial streets, neighborhood streets, freight, signals, and transit. Complete Streets philosophies and an upcoming citywide collision study will help guide the plan.

Our future, in part, depends upon our ability to invest in public infrastructure in a way that both preserves our community's neighborhoods and supports its economic well-being. Through responsible funding and systematic planning, design, construction, maintenance, operations, and improvements, the City of Vancouver is committed to efficient and cost-effective management of its public assets to provide the highest, most sustainable service possible for all users. Highlights for the 2019-2024 TIP are shown on the next page.

Brian K. Carlson, P.E.

Director of Vancouver Public Works

Ryan Lopossa, P.E.

Streets and Transportation Manager

June 01, 2018

2019-2024 Transportation Improvement Program Highlights:

Transportation System Plan (TSP) Update: Work will begin in 2018 on the plan, which helps guide all aspects of the transportation system. The update will include an in-depth review of multiple sub plans, such as bicycle, pedestrian, arterial streets, neighborhood streets, freight, signals, and transit plans. Complete Streets policies and an upcoming citywide collision study will be reflected in the plan and help guide identified future transportation needs.

Neighborhood Traffic Calming Program: Funded at \$270,000 annually, this program works with the Neighborhood Traffic Safety Alliance (NTSA) to enhance neighborhood livability.

Multimodal Safety and Accessibility Program: The city's focus for 2017 was on ADA ramps. For 2018, the focus is on sidewalk infill projects. In 2019, the focus will be on bicycle improvements. This 3-part cycle will start over again in 2020.

Grant Efforts: In 2018, the city expects to submit grant applications for several projects, including large arterials, complete streets, multimodal, and intersection improvement projects.

Street Lights: Work will begin in 2018 on upgrading 13,000 of the estimated 18,000 city street lights to Light Emitting Diode (LED) bulbs. The project is funded by a nearly \$5 million low-interest loan from the state Public Works Trust Fund, to be repaid with energy cost savings.

Other Major Projects: The 2019-2024 TIP identifies funding for many projects, which require several years for planning, design, right-of-way, and construction phases. These include:

- Southeast 1st Street, from Southeast 164th Avenue to Southeast 177th Avenue: This segment is currently anticipated to begin construction in 2020. Staff is also working with private developers on plans to complete the eastern section of the corridor from 177th Avenue to 192nd Avenue.

- Northeast 137th Ave, from Northeast 49th Street to Northeast Fourth Plain Boulevard: Federal environmental approval was received in 2018. Right-of-way acquisition is beginning. The city will be applying this year for a federal grant for the construction phase, utilizing Street Funding Strategy revenues as local contribution.

- Jefferson/Kauffman Connection from West Evergreen Boulevard to West Mill Plain Boulevard: A preliminary conceptual plan has been established and design/right-of-way work is beginning. This work continues in 2018.

- Northeast 18th Street, from Northeast 97th Avenue to Northeast 107th Avenue, will begin design and right-of-way acquisition in 2018 for the westerly connection to the new WSDOT I-205/18th Street interchange.

- Planning will begin in 2018 on extension of Northwest 32nd Avenue and Fruit Valley Road from Lower River Road (SR 501) to Northwest 78th Street in unincorporated Clark County. This project includes replacement of the city's Fruit Valley Road Bridge over the BNSF Mainline Railroad and will require significant partnerships and grant funding to move forward. Originally initiated in 2006 in cooperation with the Port of Vancouver, the project was renewed with the 2016 Council-adopted Westside Mobility Strategy, which seeks to balance freight mobility and livability.

TRANSPORTATION RELATED POLICIES

(Vancouver Comprehensive Plan 2011)

1. **TRANSPORTATION SYSTEM:** Develop and maintain an interconnected and overlapping transportation system grid of pedestrian walkways, bicycle facilities, roadways for automobiles and freight, transit service, and high capacity transit service. Include support programs such as traffic operations, transportation demand management, neighborhood traffic management, and the regional trails program. Work towards completing and sustaining individual components and programs to ensure success of the entire system.
2. **SYSTEM BALANCE:** Allocate resources to balance transportation choices. Promote development of a broader range of transportation options including pedestrian, bike, and transit systems, rather than focusing all resources on satisfying peak commuting demand with roadway capacity alone.
3. **TRANSPORTATION SAFETY:** Ensure high safety standards for motorists, pedestrians, and bicyclists through the development and capital improvement processes. Allocate city capital resources to high risk and collision location for motorists, bicyclists, and pedestrians.
4. **TRANSPORTATION FINANCE:** Develop recurring and dedicated funding for a complete transportation program, including system operation and maintenance. Leverage local funding with innovative and aggressive finance strategies including partnerships, grant development, efficient debt, and fee-based funding sources.
5. **TRANSPORTATION CIRCULATION AND SYSTEM CONNECTIVITY:** Develop a transportation grid that provides good connections to surrounding land uses and activity centers and allows for multiple circulation routes to/from each location. Close gaps and complete system connections through the development and capital improvement processes.
6. **LAND USE AND TRANSPORTATION INTEGRATION:** Develop and implement innovative transportation investment, design, and program incentives to achieve the urban environment envisioned in the Comprehensive Plan.
7. **LIVABLE STREETS:** Design streets and sidewalks and manage vehicular traffic to encourage livability, interaction, and sense of neighborhood or district ownership in linkage with adjacent land uses. Encourage multi-modal travel, and provide accessible, human scale opportunities for transferring between travel modes.
8. **TRANSPORTATION ACCESSIBILITY:** Build an accessible transportation system focused on inter-modal connectivity and removing barriers to personal physical mobility.
9. **TRANSPORTATION SYSTEM EFFICIENCY:** Invest in and improve efficiency of the transportation system with multi-modal design, advanced traffic management and operations technology, demand management strategies and high-frequency transit service.
10. **NEIGHBORHOOD TRAFFIC:** Protect and enhance neighborhoods with an active program that focuses on safety, safe routes to school, traffic calming, education, and enforcement.
11. **TRANSPORTATION REGIONAL AND METROPOLITAN COORDINATION:** Coordinate Vancouver's transportation plans, policies, and programs with those of other jurisdictions serving the greater Metropolitan area to ensure a seamless transportation system. Focus particularly on cooperation with the Southwest Washington Regional Transportation Council, Washington State Department of Transportation, Clark County and C-TRAN.
12. **ECONOMIC DEVELOPMENT:** In order to support the continued economic vitality of Vancouver, major transportation system investments should facilitate freight mobility, job creation, regional competitive position, and revenue growth.
13. **VEHICLE MILES TRAVELED:** Use transportation and land use measures to maintain or reduce single occupant motor vehicle miles traveled per capita to increase system efficiency and lower overall environmental impacts.
14. **STREET DESIGN:** Design city streets to achieve safety and accessibility for all modes. Arterial streets shall provide facilities for automobile, bike, pedestrian and transit mobility, and shall include landscaping and adequate lighting.
15. **PARKING STANDARDS:** Adopt coordinated parking standards which maintain neighborhood integrity, promote the use of a multi-modal transportation system, encourage desired economic development and growth throughout the entire urban area, and which economize the use of urban land by reducing the need for any excess provision of surface parking.

CAPITAL PLANNING AND ASSET MANAGEMENT FINANCIAL POLICIES (Adopted 05/07/2012 Revised 11/07/2016)

31. Asset management best practice involves managing the performance, risk and expenditures on infrastructure assets in an optimal and sustainable manner throughout their lifecycle covering planning, design, construction, operation, maintenance, and disposal. The City shall integrate the principles and best practices of Asset Management such as those embodied in the International Infrastructure Management Manual in the management of its assets.
32. **Asset Inventory** will be maintained with maintenance, repair and deferred maintenance costs identified and updated on an annual basis.
33. **Maintenance** of city assets shall be addressed on a current need, rather than deferred into the future.
34. In 2015, Council adopted a **New Street Funding Program** in response to formal recommendations from a citizen-led effort. Revenues from this program were established to supplement and not supplant street funding resources identified in the 2015-2016 Adopted Biennial Budget. A formal process will be established requiring review of any future proposals to redirect revenues in the new Street Funding Program for purposes other than streets funding.
35. The City will maintain funding of the **Pavement Management Program** at no less than that in the 2015-2016 Biennial Adopted Budget level increased by an appropriate inflationary factor, if necessary. To ensure accountability and transparency, the increase in program level funded by the new street funding program revenue sources will be fully costed, budgeted for and spent from special funds created to track direct operation, capital and administrative expenses. Annual reporting of the outcomes will be published for the residents and City Council prior to the end of the first quarter of each year for the prior year beginning for fiscal year 2016.
36. The City will redirect the new street funding program expiring debt service budget from pre-2015 debt issues for Transportation projects, beginning with debt expiring in 2016.
37. **A six-year City-Wide Capital Improvement Program** shall be developed annually and shall provide a prioritized list of reasonably funded projects and those in process of securing funding. Capital Improvement Plans for utility assets shall be updated no less frequently than every two years. The comprehensive plan will identify longer-term capital needs by program area.
38. **Funding** for capital projects, including major facilities maintenance projects, will be allocated in a manner that balances community needs with City priorities, the potential for attracting matching funds, and the ability to reduce or limit expenses in future years.
39. The City's objective is to incorporate a "**Pay-As-You-Go**" approach (using available cash and current resources) in the Capital Improvement program. Proceeds from the sale of City capital assets no longer utilized in operations will be deposited consistent with the initial ownership of the asset and invested in the highest priority capital projects.
40. The Capital Budget will be adopted at the same time the City Operating Budget is adopted. The Capital budget will only include fully funded projects. The Capital Budget will only contain projects identified in the Capital Improvement Program.
41. A **capital repair appropriation** will be maintained for unanticipated major repairs of general operating facilities and for emergency replacement of general fund equipment. Additions to the capital repair contingency reserve will be made based on Council directions.
42. Impacts on net **annual operating and maintenance costs** will be identified as part of the funding considerations for new capital projects such as buildings, parks and street enhancements. This includes identifying potential reductions in maintenance costs if improvements are funded. The necessary funds to operate the capital facility will be identified at the time the capital budget is adopted.

DEBT MANAGEMENT POLICIES (Adopted 05/07/2012 Revised 11/07/2016)

48. The City will attempt to pay for capital projects on a "pay-as-you-go" basis. However, if debt is required, the City will follow debt policies as detailed in Exhibit B-Debt Management Policy.

ASSET MANAGEMENT COMPREHENSIVE PLAN POLICY (Adopted 12/16/2013)

31. City public facility assets shall be systematically managed to balance full life cycle costs, performance, risk, and service levels, using best management practices and data.

City of Vancouver Title VI Plan

The City Manager is responsible for ensuring implementation of the City of Vancouver's Title VI Plan. The Public Works Director, on behalf of the City Manager, is responsible for the overall management of the Title VI Plan as outlined herein. The Public Works Director does not hereby assume responsibility for Title VI compliance outside the scope of this report. The day to day administration of the Title VI Plan lies with the Title VI Coordinator under the direct supervision of the Public Works Director.

In addition to the Title VI Coordinator, Title VI Specialists will be named in the following program areas:

- Transportation Design and Engineering
- Transportation Right of Way
- Transportation Environmental Services
- Transportation Administration, Public Information and Outreach
- Human Resources
- Procurement

Policy Statement, Authorities and Citations

A. Policy of Nondiscrimination

The City of Vancouver (City) assures that no person shall on the grounds of race, color, national origin, or sex as provided by Title VI of the Civil Rights Act of 1964, and the Civil Rights Restoration Act of 1987 (P.L. 100.259) be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any City sponsored transportation program or activity. The City further assures every effort will be made to ensure nondiscrimination in all of its federally funded transportation programs and activities.

In the event that the City distributes federal transportation funds to another entity, it will include Title VI language in all written agreements and will monitor for compliance.

Title VI compliance is a condition of receipt for federal funds, including funds from the Federal Highway Administration. Assurance of compliance falls under the proper authority of the City pursuant to its budgetary authority and responsibility. The Public Works Director and Transportation Title VI Coordinator are authorized to ensure compliance with provisions of this policy and with the law, including the requirements of 23 Code of Federal Regulation (CFR) 200 and 49 CFR 21.


Eric Holmes, City Manager

16-23-17

Date



Funding Overview

Beginning in 1995, the City of Vancouver began a street funding strategy for local revenue to use for transportation capital improvements. This strategy involved identifying a revenue source and then committing that revenue source for debt service on bonds. Proceeds from the bond sale were then leveraged with grant revenues to the maximum extent possible for transportation improvements. Coupled with impact fees and developer contributions, this strategy netted hundreds of millions worth of capital improvements but resulted in a cyclical search for new revenues to address the continued need for capital improvements. Over the past several years, City Council searched for a reasonable mix of new revenue sources that could be used on a “pay-as-you-go” basis to fund capital improvements as well as halt the gradual decline in our system pavement condition index. Early in 2015, City Council established a goal to complete, by year-end “an adopted street funding program that provides reliable, dedicated, long-term funding for streets, including pedestrian, bike and accessible infrastructure.” In late 2015, City Council enacted a number of revenue sources for streets including:

- Creation of a Transportation Benefit District and with the District enacting a new revenue source; a \$20 Vehicle License Fee (planned to be raised to \$40 in 2018).
- Increased the existing Business License Surcharge by \$10/employee in 2016 and an additional \$10/per employee starting on January 1, 2018.
- Increased the Utility Tax on City Owned utilities dedicating the additional revenue for streets.
- Dedicated that revenue sources used to pay debt service on bonds (as described above) would continue to be dedicated for street purposes on a pay-as-you-go basis as debt is retired.
- Dedicated that revenue from the increased gas tax resulting from the 2015 state gas tax increase would be used for median maintenance and street sweeping to accomplish service level increases for esthetic purposes.

On December 18, 2017 the Transportation Benefit District increased the vehicle license fee from \$20 to \$40 as allowed by State law and continuing the long term funding plan for streets as recommended by the Street Funding Commission in September, 2015.

City staff focuses on certain guiding principles and strategic outcomes that City Council and the Transportation Benefit District (TBD) asked for when they enacted the new revenue sources. The guiding principles and the strategic outcomes are listed below:

Street Funding Strategy Guiding Principles:

- New street funding revenues are to supplement, not supplant, existing revenues
- “Take care of what we have”
- Pay-as-we-go goal of financing infrastructure projects is preferred
- As street bond debt service is repaid, use funds previously needed for debt payments for streets
- Continued public transparency and accountability

Street Funding Strategy Outcomes:

- Restore historically maintained City right-of-way and medians to pre-recessionary 2009-2010 service levels, and increase arterial sweeping frequency
- Over a 20-year period, improve overall pavement conditions from Fair to Good throughout the City
- Develop replacement program for street assets such as street lights, traffic signals and City-owned bridges
- Expand mobility, safety and accessibility programs, including the Neighborhood Traffic Calming Program
- Complete one arterial street improvement project approximately every 2-3 years, leveraging local funding with state and federal grants to greatest extent possible

The 2017 annual street funding strategy report to the community and more information about the TBD can be found here:

<http://www.cityofvancouver.us/tbdb/page/vancouver-transportation-benefit-district>

Local Funding

Public Sources:

(New) Vehicle License Fee: Fee established by the Vancouver Transportation Benefit District collected by the Washington State Department of Licensing. Fee paid at time of vehicle license renewal.

Motor Vehicle Fuel Tax aka State Gas Tax: About \$3.4 million per year.

(New) Motor Vehicle Fuel Tax (2015): Additional fuel tax to Vancouver resulting from the gas tax increase passed by the State Legislature in July 2015

REET: Real estate excise tax, varies per year, depending on real estate transactions.

Bonds (debt): Periodically the City sells bonds for transportation construction projects. Revenues to pay those debts come from several sources including gas tax, general fund, REET, and business license surcharge.

Business License Surcharge: Surcharge paid at the time of initial or renewal of business licenses. First \$50/employee generates around \$2.0 million annually to pay bond debt. The next \$10 (\$20 in 2018) will be used for street improvements on a pay as you go basis.

(New) Utility Tax: Tax on gross receipts for city-owned utilities including water, sewer, drainage and garbage. Tax raised 1.5% and all revenue resulting from rate increases to pay the tax are dedicated for operating and capital street funding purposes.

Private Sources:

Direct Construction: Private developers are required to build or improve on-site roadways and may also be required to make off-site improvements to comply with concurrency or SEPA impacts.

Traffic Impact Fees (TIF): The City maintains a TIF program (fees paid by a developer per new trip) which historically covers about 10% of the annual construction program.

Proportionate Share Contributions: Developer contributions toward an improvement project to meet concurrency or safety requirements.

Grant Programs

Federal Grant Programs:

STBG: Surface Transportation Block Grant funds are allocated by the SW Washington Regional Transportation Council and then, through a competitive grant process, to jurisdictions in the region.

TAP: Transportation Alternatives Program—provides funding for alternative modes of transportation projects (i.e. modes other than vehicles).

CMAQ: Congestion Mitigation and Air Quality Program funds are administered like STBG funds.

CDBG: Community Development Block Grant—periodically available for public street infrastructure (typically used for small sidewalk and ADA ramp improvements).

State Grant Programs:

Transportation Improvement Board (TIB): Funded with a small portion of the state gas tax, TIB is the main source for state grant funds to state agencies. Vancouver competes with other urban jurisdictions in Washington State for funds from several TIB grant programs. For example: urban arterial; urban sidewalk; and complete street programs.

Pedestrian and Bicycle & Safe Routes to School Grant Program. These programs provide resources to make strategic investments that support pedestrian and bicycle improvements and improve walking/bicycle routes to schools.

Washington Traffic Safety Commission Grant Program. Grants awarded on an annual cycle, focusing on projects that address one or more of the top Target Zero priorities including impaired driving, speeding, young drivers, seat belts and occupant protection, distracted driving and traffic records.

The table and graphs on the next few pages show the historical and forecasted revenues and expenses for streets in the City of Vancouver.

Transportation Financial Data (including SFS funds*)

	2012	2013	2014	2015	2016	2017
STREET MAINTENANCE						
Expenses						
Street Maintenance						
Pavement Management	5,631,248	5,942,740	7,120,088	8,350,840	6,674,672	10,422,494
Signs and Striping	1,219,456	1,257,580	1,211,337	1,437,178	1,085,164	1,253,462
Signals	917,800	1,145,852	1,239,687	1,433,429	1,453,476	1,673,480
Street Lights	1,695,242	1,775,652	1,811,064	1,755,073	1,824,082	1,777,258
Street Maintenance	714,832	559,316	699,225	1,569,052	1,893,058	2,300,036
Administration	2,419,916	2,693,072	2,774,369	2,402,651	3,133,094	3,661,398
Traffic Engineering	488,101	522,239	609,148	1,327,937	820,960	1,031,519
Additional Right-of-Way maintenance					714,407	555,426
Sidewalk Maintenance						51,068
Subtotal Street Maintenance Expenses	13,086,595	13,896,451	15,464,918	18,276,160	17,598,913	22,726,141
Transportation Debt Service paid by Fund 102	639,102	634,303	632,219	636,378	638,981	651,144
Transfers to Transportation Capital	2,449,167	2,507	301,361	1,039,349	369,532	344,274
Total Street Maintenance Expenses	16,174,864	14,533,261	16,398,498	19,951,887	18,607,426	23,721,559
Revenues						
Street Maintenance						
Property Taxes		103,416	-	-	-	451,919
REET 2	1,315,273	2,173,822	2,418,940	3,246,532	3,577,691	3,762,613
Motor Vehicle Fuel Tax	3,316,804	3,396,802	3,405,241	3,506,747	3,556,557	3,675,935
General Fund	9,364,098	9,822,342	9,845,456	11,763,428	11,763,428	10,988,176
SFS Revenues for O&M *					1,750,000	1,805,718
Miscellaneous	1,003,096	681,715	1,027,435	1,467,393	1,467,032	1,491,578
Total Street Maintenance Revenues	14,999,271	16,178,097	16,697,072	19,984,100	22,114,708	22,175,939

TRANSPORTATION DEBT						
Expenses						
Yearly Debt Service	5,142,388	5,144,299	5,154,058	5,166,410	4,634,217	4,582,824
Revenues						
Debt Service Revenues						
General Fund	2,053,276	2,062,167	2,076,537	2,085,119	1,554,012	1,487,122
Employee Surcharge	1,945,481	1,944,661	1,940,679	1,943,271	1,938,739	1,944,407
Motor Vehicle Fuel Tax	639,102	634,303	632,219	636,378	638,981	651,144
REET	504,530	503,168	504,624	501,642	502,485	500,151
Total Debt Service Revenues	5,142,388	5,144,299	5,154,059	5,166,410	4,634,217	4,582,824

TRANSPORTATION ENGINEERING						
Expenses						
Transportation Engineering						
Administration	53,371	38,932	46,722	13,289	12,756	51,050
Street Design	417,185	365,461	333,772	424,785	561,563	492,702
Transportation Planning	15,327	26,845	41,419	59,121	67,746	25,752
Development Review	202,836	214,380	208,425	269,060	286,298	251,821
Totals Transportation Engineering	688,719	645,618	630,338	766,255	928,363	821,325
Revenues						
Transportation Engineering						
General Fund	688,719	645,618	630,338	766,255	928,363	821,325

TRANSPORTATION CAPITAL						
Expenses						
Transportation Capital Expenses						
Capital Expenses	16,259,786	18,276,550	6,568,516	11,746,438	4,918,878	17,019,355
Revenues						
Transportation Capital Revenues						
REET	78,916	130,429	145,136	130,000	147,395	150,490
Grants	4,451,602	5,559,068	5,408,605	6,441,881	1,567,536	12,612,119
Developer Participation	24,302	-	736,692	76,212	63,504	27,544
Intergovernmental Loan Proceeds	6,000	1,496,000				
General Fund	67,963	265,934	526,037	222,737	21,867	220,862
Street Maintenance Fund	2,449,167	22,730	421,361	1,039,349	369,532	344,274
Transportation Special Revenue Fund	126,639	74,251	67,256	23,584	72,444	337,237
TIF Funds	1,532,710	1,736,997	1,738,219	1,476,234	2,082,380	678,257
Bond Capital Fund	6,749,195	7,052,756	498,961	134,284	313,075	715,757
SFS Revenues for Capital *					-	821,308
Miscellaneous Revenue	380,502	815,752	444,287	964,301	520,549	240,146
Total Capital Revenues	15,866,996	17,153,917	9,986,554	10,508,582	5,158,282	16,147,994

* See SFS tabular sheet for further breakdown of SFS expenses and revenues

Street Funding Strategy Tabular Financial Data

	Actuals 2016	Actuals 2017	Budgeted 2018
SFS STREET MAINTENANCE			
Expenses			
Street Maintenance Fund 103			
Right of Way Maintenance	714,407	555,426	750,000
Pavement Management	2,881	3,259,688	3,600,000
Sidewalk Repair	-	51,068	250,000
Total Street Maintenance Fund 103 Expenses	717,288	3,866,182	4,600,000
Revenues			
Street Maintenance Fund 103			
Motor Vehicle Fuel Tax (additional)	488,771	345,738	450,000
Business License Surcharge (additional)	11,535	459,980	880,000
Retirement of Debt Service	1,000,000	1,000,000	1,000,000
TBD (Vehicle License Fee)		931,165	1,000,000
1.5% Utility Tax	-	1,722,822	1,500,000
Subtotal SFS revenues for Fund 103	1,500,306	4,459,705	4,830,000
Grants			665,000
Miscellaneous (i.e. interest, interfund, etc.)	2,132	270,465	-
Total Fund 103 All Revenues	1,502,438	4,730,170	4,830,000

SFS TRANSPORTATION CAPITAL			
Expenses			
Fund 331 Transportation Capital			
Pavement Management	999,039	-	
Capital Projects	-	768,094	2,699,564
Total Fund 331 Expenses	999,039	768,094	2,699,564
Revenues			
Fund 331			
Business License Surcharge	460,936		100,000
1.5% Utility Tax	1,593,064		
Transfer from fund 103		21,308	8,634
TBD (Vehicle License Fee)	-	800,000	1,250,000
Subtotal SFS revenues for Fund 331	2,053,999	821,308	1,358,634
Transfer from fund 102		287,798	425,000
Transportation Impact Fees			175,000
Real Estate Excise Tax		150,490	130,000
Grants		13,820	105,952
Developer Participation			25,000
Miscellaneous (i.e. interest, interfund, etc.)	(1,425)	12,373	-
Total Fund 331 All Revenues	2,052,575	1,285,789	2,219,586

Transportation Benefit District Fund (TBD) Fund 634			
Expenses			
Fund 634 Expenses	None		
Transfer to fund 103 (Streets Maintenance)		931,165	605,539
Transfer to fund 330 (Capital Projects)			1,000,000
Transfer to fund 331 (Capital Projects)		800,000	1,250,000
Total Fund 634 Expenses		1,731,165	2,855,539
Revenues			
Fund 634 Revenues			
TBD (Vehicle License Fee)	1,238,204	2,425,136	3,600,000
Miscellaneous (i.e. interest, interfund, etc.)	1,828	9,934	-
Total Fund 634 Expenses	1,240,032	2,435,070	3,600,000

**2017 Streets Expenses Operating and Capital
\$46.7 Million**

**Debt Service, \$4.6
mill**

**Operations and
Maintenance,
\$14.7 mill**

**Operating
Expenses
64%**

**Pavement
Management,
\$10.4 mill**

**Capital
Expenses
36%**

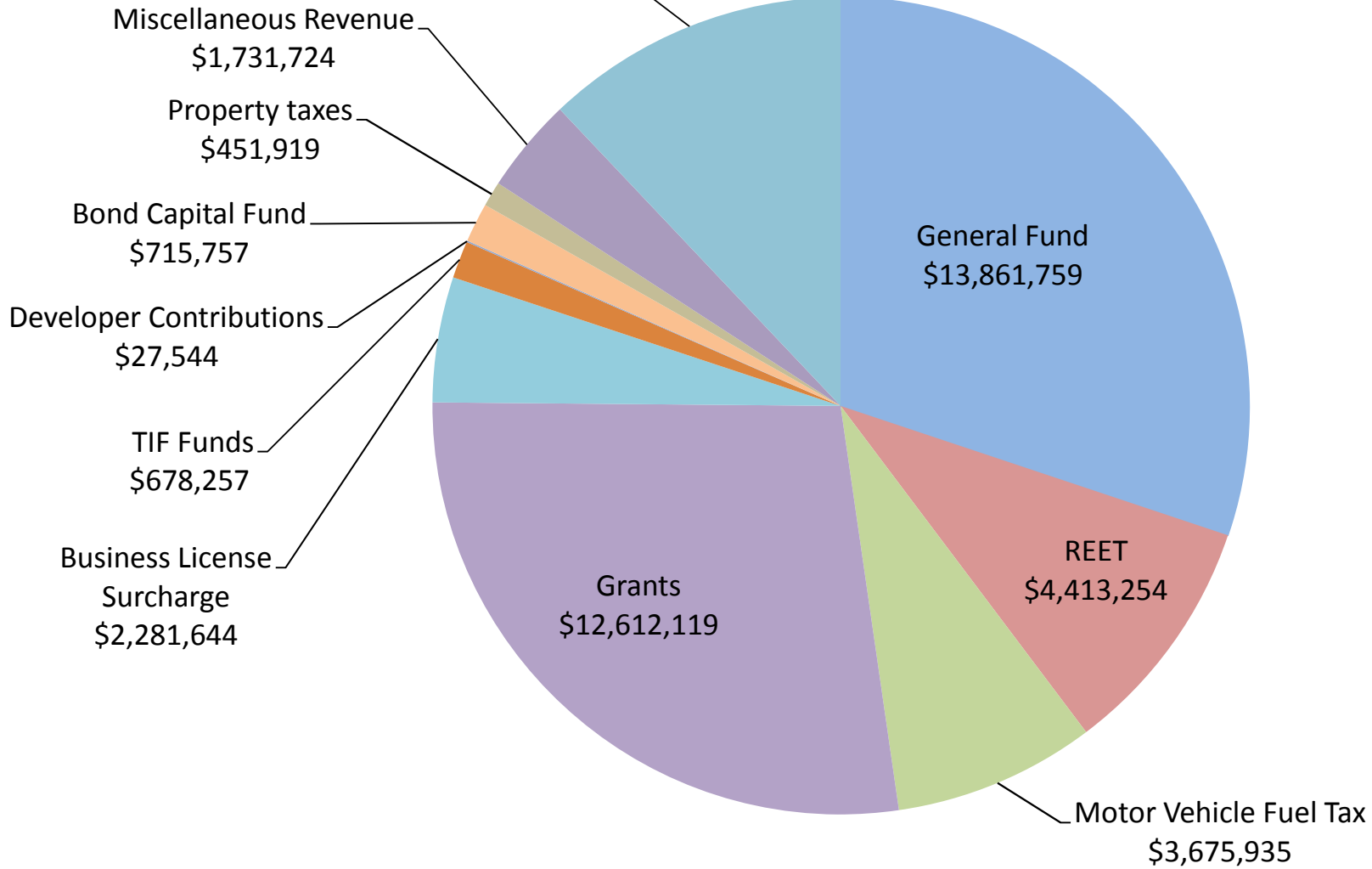
**Capital Projects,
\$17.0 mill**

2017 Streets Revenue Operating and Capital

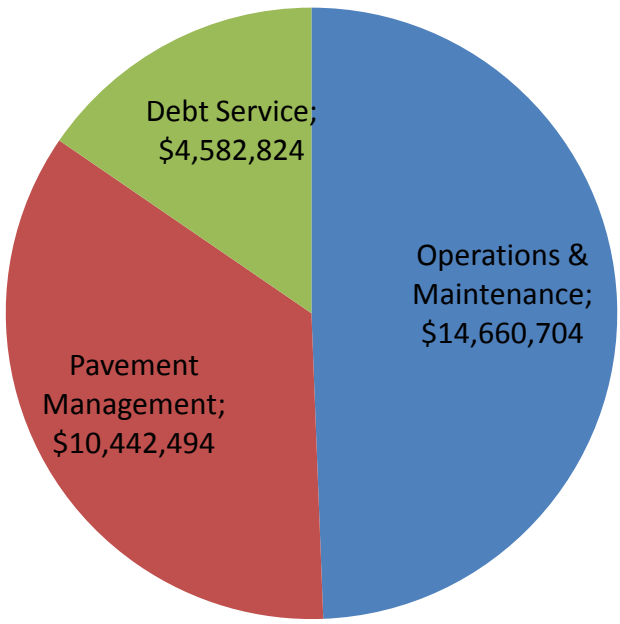
Street Funding Strategy **\$46.0 Million**

(SFS) \$

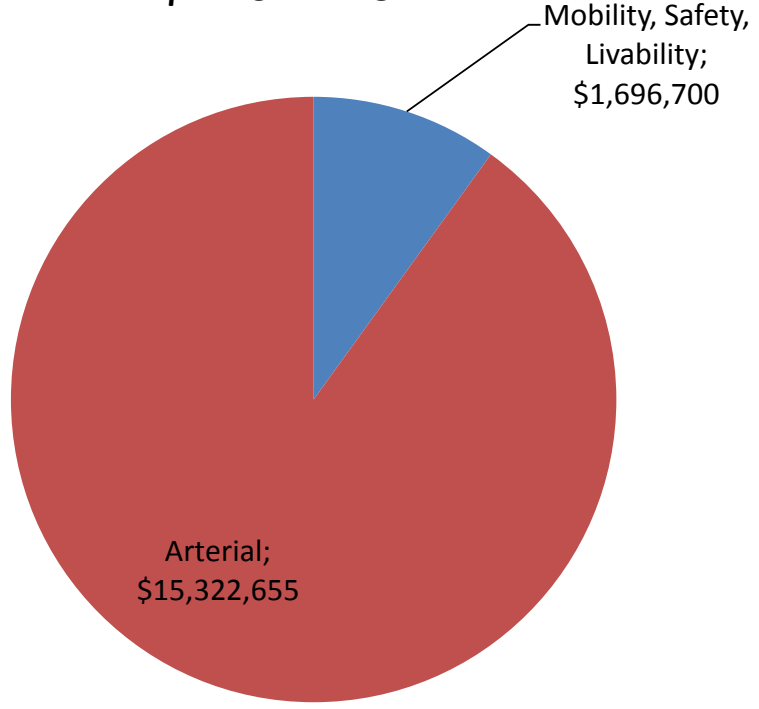
\$5,551,478



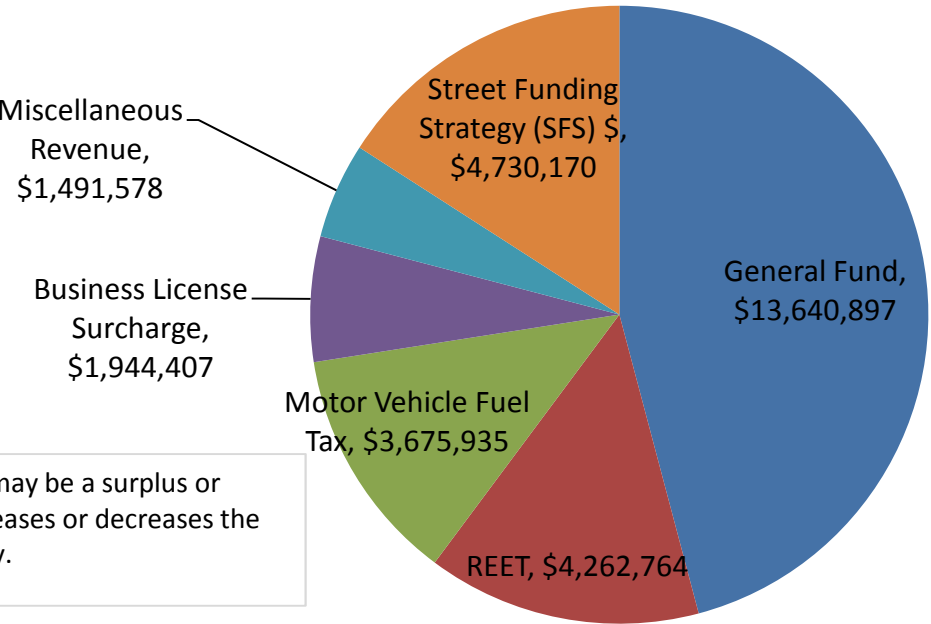
2017 Baseline Expenses
\$29.7 million



2017 Capital Expenses
\$17.0 million

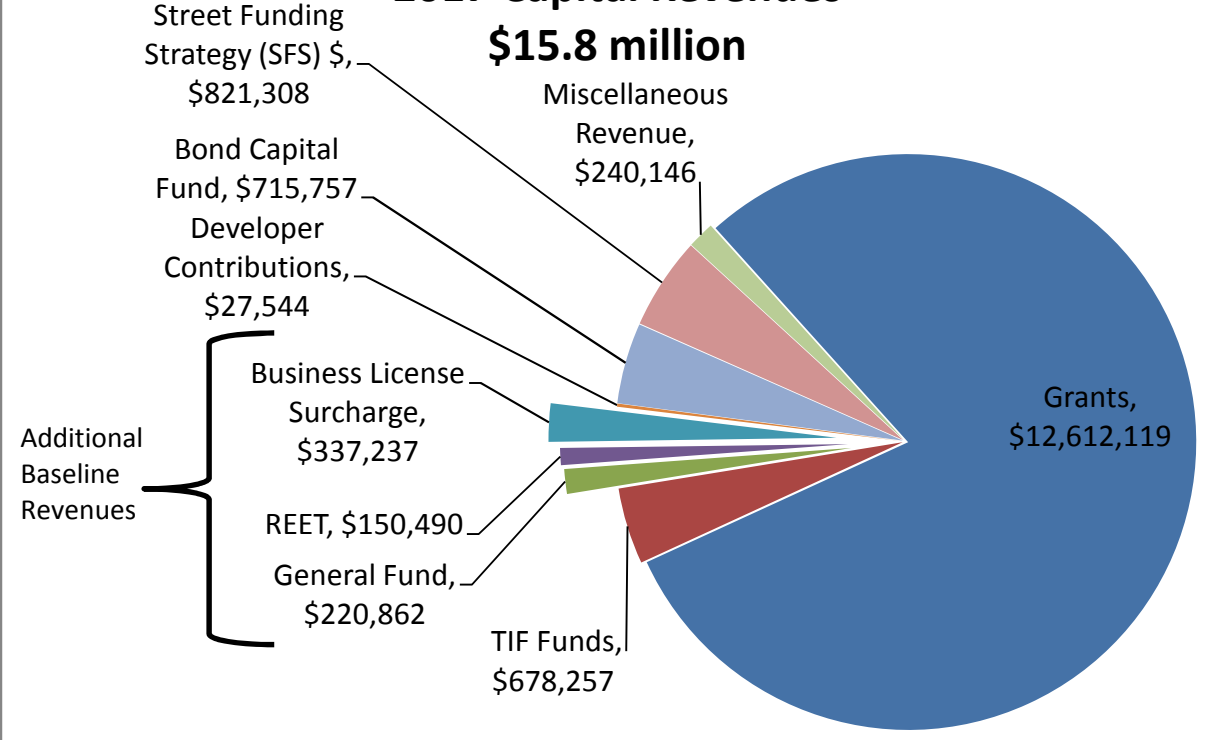


2017 Baseline Revenues
\$29.7 million



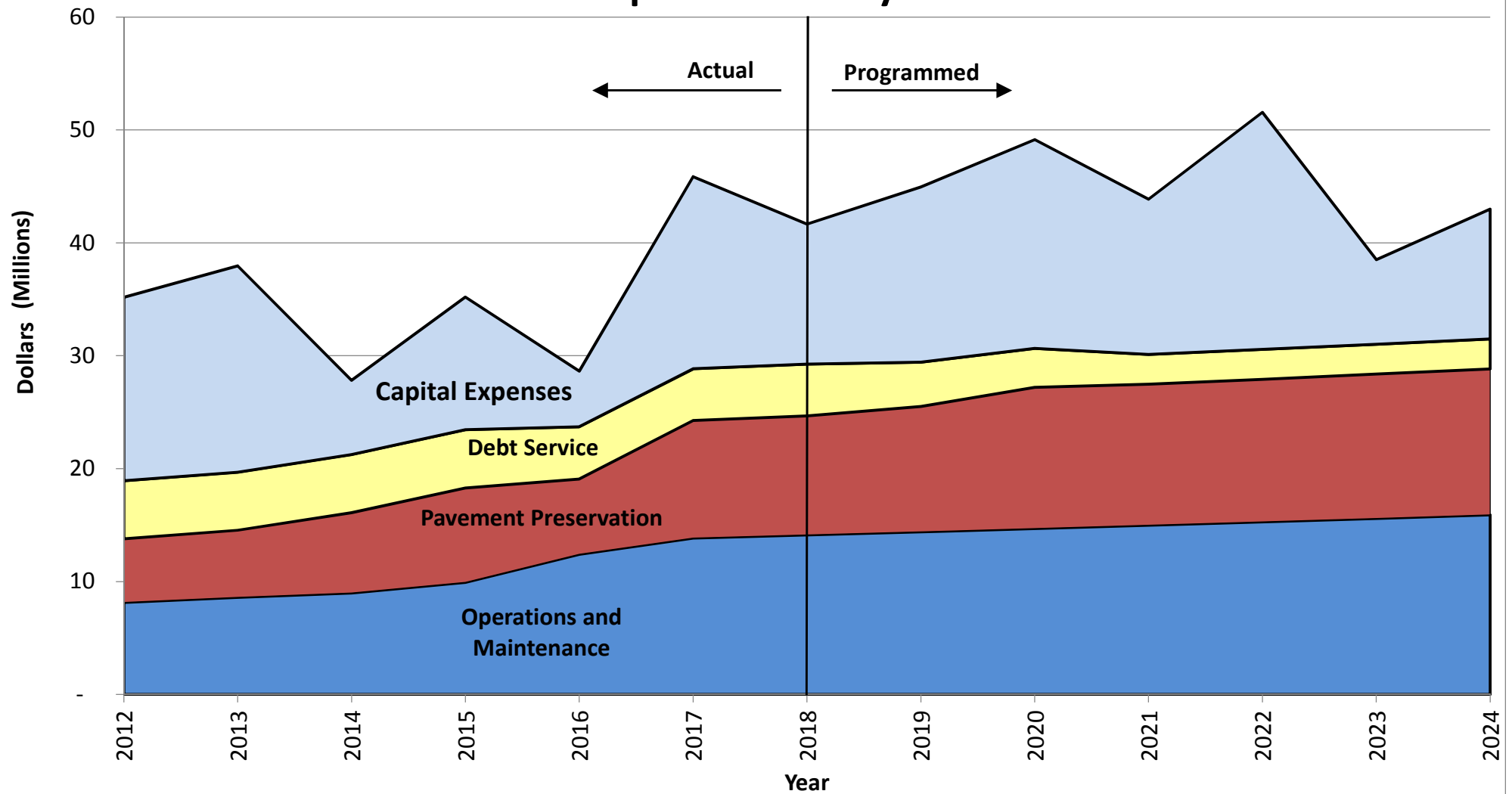
In any given year there may be a surplus or deficit which either increases or decreases the fund balance accordingly.

2017 Capital Revenues
\$15.8 million

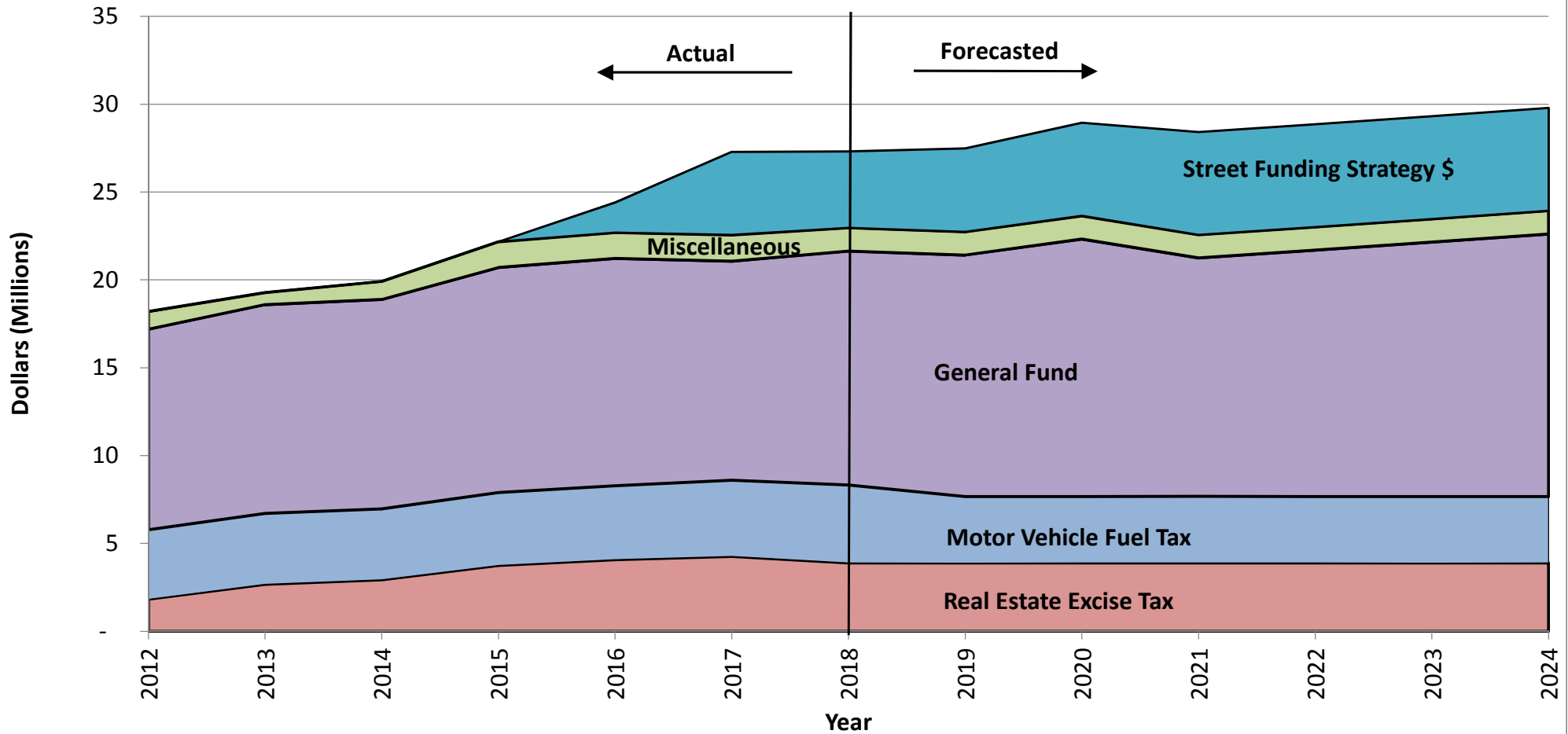


Additional
Baseline
Revenues

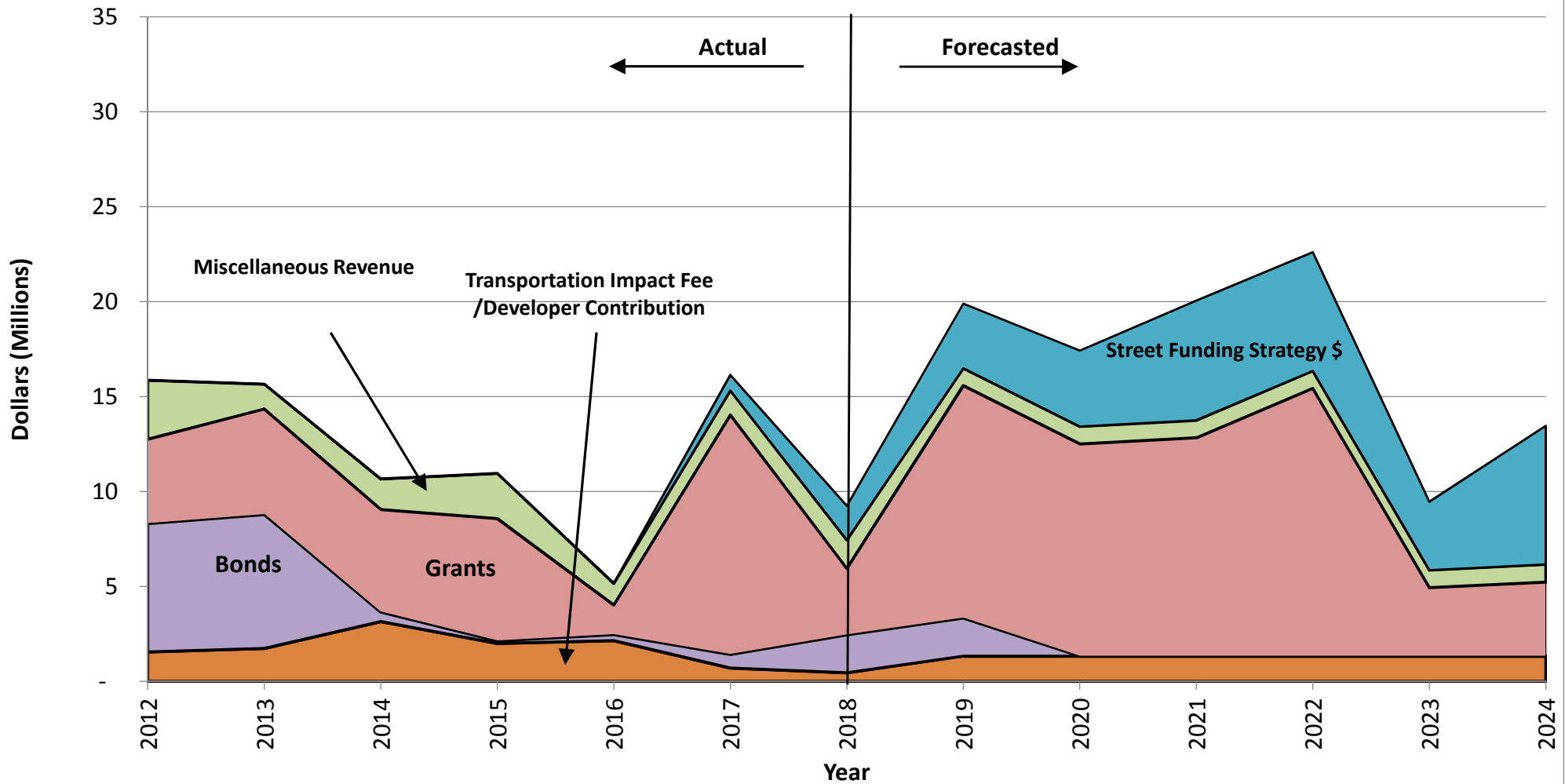
Total Streets Expenses History and Forecasts



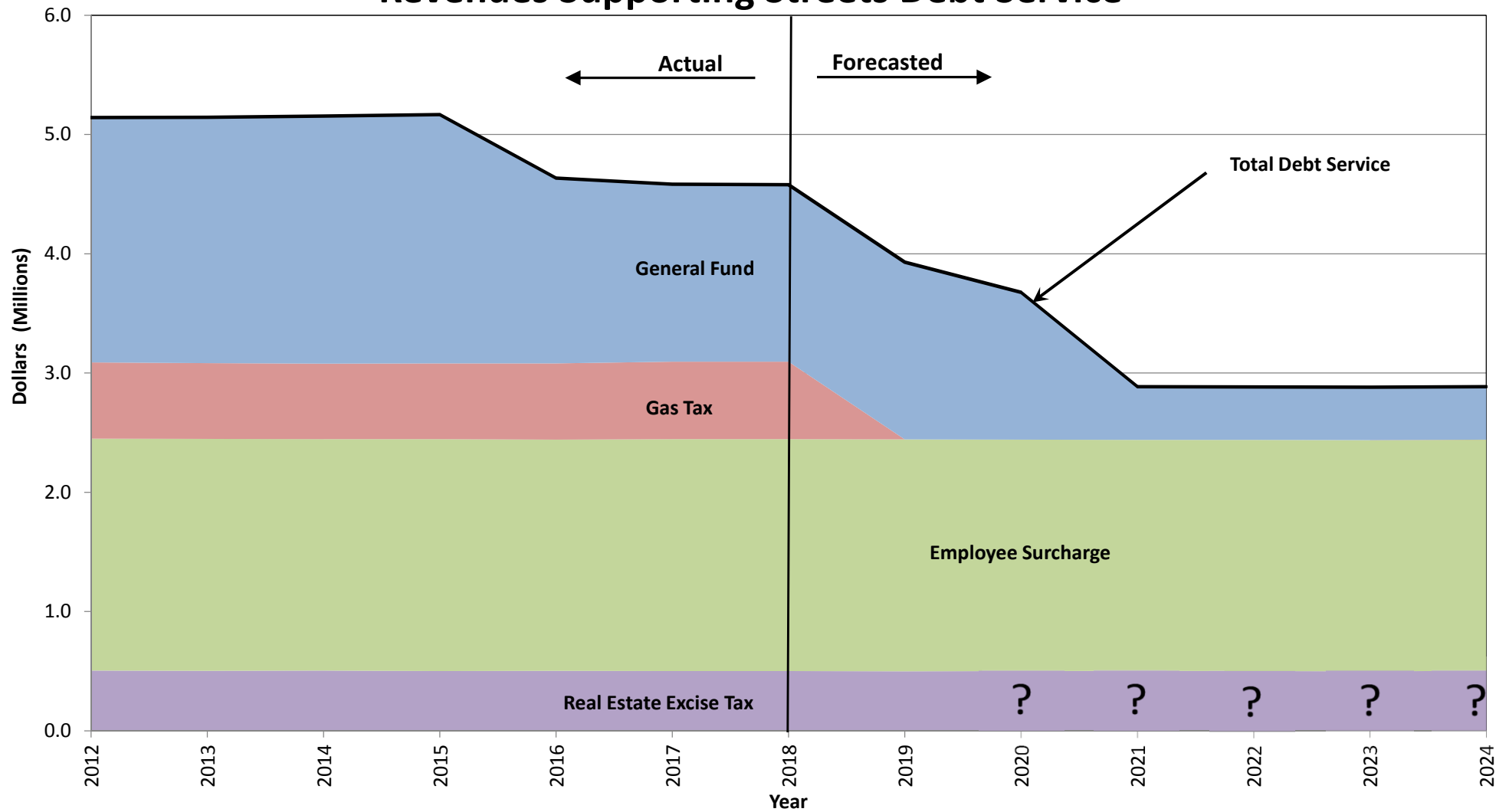
Revenue Supporting Street Operations, Pavement Preservation, and Debt Service



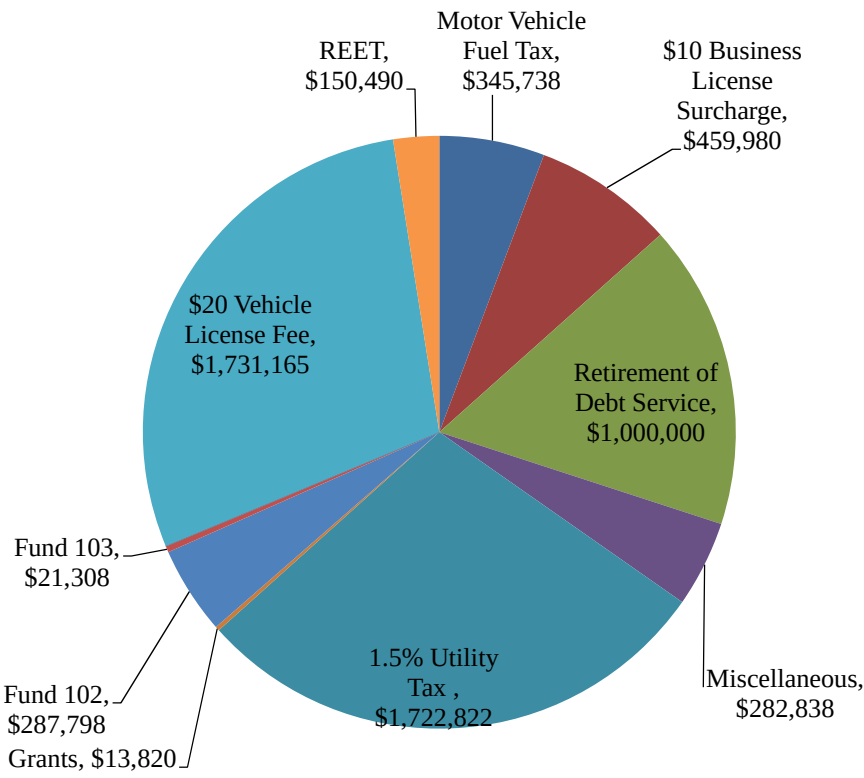
Revenues Supporting Streets Capital Projects & Programs



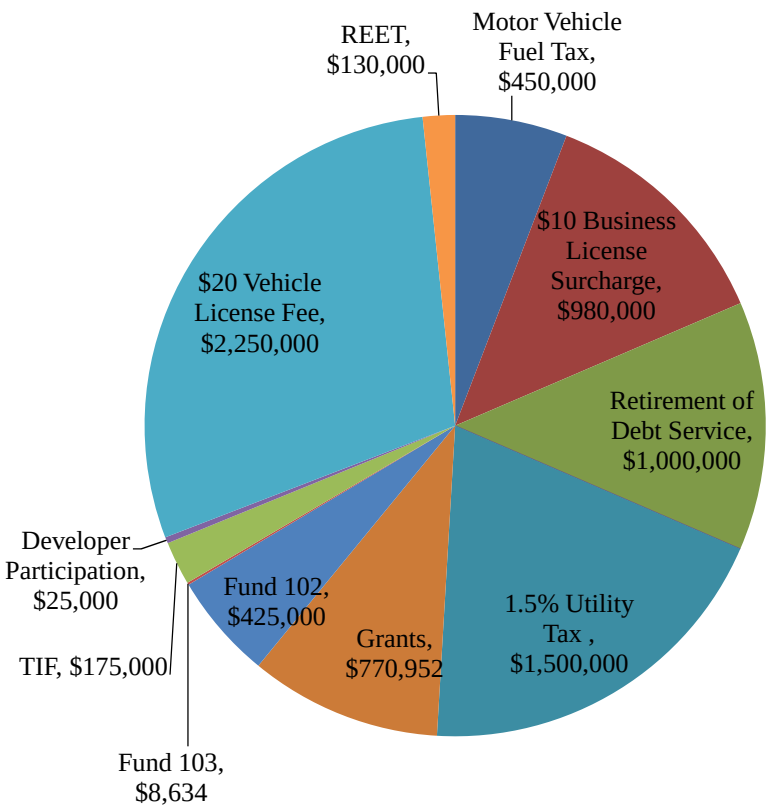
Revenues Supporting Streets Debt Service



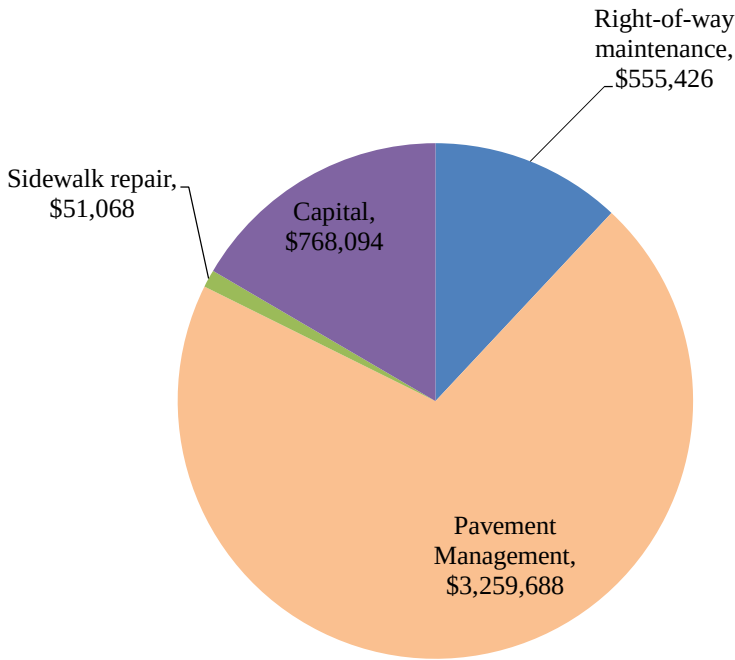
2017 Street Funding Strategy Revenues
\$6.0 M (actuals)



2018 Street Funding Strategy Revenues
\$6.9 M (budgeted)

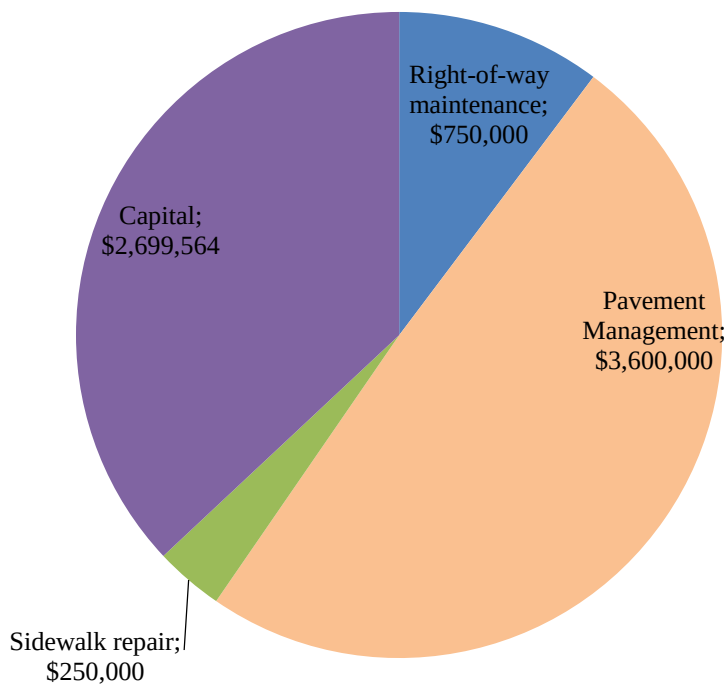


2017 Street Funding Strategy Expenses
\$4.6 M (actuals)



In any given year there may be a surplus or deficit which either increases or decreases the fund balance accordingly.

2018 Street Funding Strategy Expenses
\$7.3 M (budgeted)





This section provides an overview of the changes from the previous 6 year project list (2018-2023) to this year's 6 year project list (2019-2024). The changes are segmented by: projects removed; projects added; and other changes.

Projects Removed:	TIP ID:	Project Type:	Comments:
Evergreen & Washington APS	TRANS-849	Traffic	Project was completed in 2017.

Projects Added:	TIP ID:	Project Type:	Comments:
4 th Plain & St. Johns Signal	TRANS-863	Traffic	New project built as part of TRANS-A-237.
St. James & 42nd Signal	TRANS-864	Traffic	New project built as part of TRANS-A-237.
W Columbia & 13 th St. Signal	TRANS-865	Traffic	New project built as part of TRANS-A-237.
Mill Plain Arrival on Green	TRANS-877	Traffic	New traffic related project.
Evergreen Hwy & 113 th Ave Pedestrian Crossing	TRANS-875	Multimodal	New enhanced pedestrian crossing partially funded by TRANS-A-241.
4 th Plain @ Caples/Wintler Intersection Improvements	TRANS-876	Multimodal	Pedestrian improvements. Local match provided by TRANS-A-844.
McCloughlin Complete Street – Reserve to Mill Plain	TRANS-862	Multimodal	New complete street project. Pending grant approval.
Devine Pedestrian Improvements	TRANS-871	Multimodal	New infill sidewalk project. Pending grant approval.
Fourth Plain Road Diet – I-5 to 65 th Ave	TRANS-872	Multimodal	New multimodal project. Pending grant approval.
5 th Street Pedestrian Improvements – Fort Vancouver to Reserve	TRANS-874	Multimodal	New multimodal project. Pending grant approval. Joint effort with NPS.
Sidewalk Management Program	TRANS-A-859	Ongoing	New ongoing sidewalk management program.
Project Scoping and Estimation	TRANS-A-860	Ongoing	New ongoing project for scoping and estimation.
W Fourth Plain and Franklin Signal	TRANS-866	Traffic	New unfunded signal project.
NE 162 nd and NE 34 th St Signal	TRANS-867	Traffic	New unfunded signal project.
St. Johns and Fort Vancouver Way Intersection Improvements	TRANS-868	Traffic	New unfunded signal project.
Annual Street Light Program	TRANS-869	Traffic	New unfunded ongoing program.
Westside Bike Mobility	TRANS-861	Multimodal	New unfunded multimodal project.
Main Street Road Diet – Fourth Plain to 39 th St	TRANS-873	Multimodal	New unfunded multimodal project.

Other Changes:	TIP ID:	Project Type:	Comments:
SE 1 st St. – SE 164 th to 177 th	TRANS-268	Capacity	Project split into two phases TRANS-268 & TRANS-870. This phase is funded.
SE 1 st St. – SE 177 th to 192 nd	TRANS-870	Capacity	Project split into two phases TRANS-268 & TRANS-870. This phase is partially funded by developer contributions.
112 th Avenue Sidewalk – Chkalov to 9 th	TRANS-852	Multimodal	Added \$100k from 2018 Multimodal Safety and Livability Program (TRANS-A-844).
Traffic Signal and Lighting Sustainability	TRANS-A-237	Ongoing	Added St. Johns/42 nd intersection and Columbia/13 th intersection to 2018 program.
Neighborhood Traffic Management Program	TRANS-A-240	Ongoing	Added 39 th St. speed cushions; Nicholson Rd speed cushions; NW Lincoln Ave/W 4 th Plain/NE 97 th Ave speed radar signs.
Pavement Preservation Program	TRANS-A-241	Ongoing	Received NHS federal grants for Mill Plain – I-5 to Grand and 164 th – Mill Plain to 18 th St.
Bridge Inspection Program	TRANS-A-245	Ongoing	Changed name from Bridge Management Program to Bridge Inspection Program.

City of Vancouver 6-Year Transportation Improvement Program (2019-2024)

Multimodal Safety and Accessibility	TRANS-A-844	Ongoing	Added 112 th Ave sidewalks and Divine Pedestrian Improvements to 2018 program.
NE 18 th St – NE 142 nd to 162 nd	TRANS-444	Capacity	Moved from unfunded to partially funded list.
SE McGillivray Blvd. @ 166 th Ave	TRANS-746	Traffic	Project moved from partially funded to unfunded.
Lieser Rd @ MacArthur St. Intersection	TRANS-603	Traffic	Moved from unfunded to partially funded list. Pending grant approval.
NE Hearthwood & 1 st Street	TRANS-724	Traffic	Moved from unfunded to partially funded list.
NW Neighborhood Circulation Improvements	TRANS-850	Multimodal	Pending grant approval.
Pavement Reconstruction Program	TRANS-A-421	Ongoing	Moved from funded to partially funded.
NE 112 th Ave- Mill Plain to 28 th	TRANS-719	Capacity	Changed limits to accurately reflect project.

<u>Other:</u>	<u>Project Type:</u>	<u>Comments:</u>
Non-City Projects Added		
SR-500 Safety Improvements	Access Management	Access management at Falk and Stapleton.
Mill Plain BRT	Bus Rapid Transit	New C-Tran BRT line on Mill Plain
Non-City Projects Removed		
SR-500 @ Falk Overpass	Interchange	Project replaced with SR-500 safety improvements.
SR-500 @ Stapleton Overpass	Interchange	Project replaced with SR-500 safety improvements.

Council Approved Business License Surcharge Capital Projects - Status	
Project	Status
E Mill Plain Blvd. & 104th Ave. Intersection	Completed
Esther & 4th Street Lowering & Realignment	Completed
NE 49th Street – 112th Ave. to 122nd Ave.	Completed
NE Fourth Plain Blvd. at 65th/66th Ave.	Completed
NE Thurston Rd. at Parkway & Van Mall Dr.	Completed
Mill Plain Blvd. & 136th Ave. Intersection	Completed
Main Street Reconstruction Design Only	Completed design
NE 138 th Avenue – 28 th St. to 49 th St.	Completed
NE 18 th Street – I-205 to Four Seasons	Completed
SE 164th Intersection Improvements	Completed
NE 18 th Street – Four Seasons to 136th Ave	Completed

Council requested that staff report back on the status of the Business License Surcharge projects on an annual basis. The NE 18th Street Improvements was completed in 2018 and is the last project to be completed on the list. Therefore, this table will not be included in future versions of the TIP.

Planned expenses from Street Funding Commission Report

Recommended Allocation of Additional Street Funding Revenues (\$ in Millions)									
	2016 (planned)	2017 (planned)	2018 (planned)	2019 (planned)	2020 (planned)	2021 (planned)	2022 (planned)	2023 (planned)	2024 (planned)
Taking Care of What We Have									
Maintain Right of Way and Increased Arterial Sweeping	\$0.20	\$0.75	\$0.75	\$0.75	\$0.75	\$0.75	\$0.75	\$0.75	\$0.75
Pavement Preservation	\$1.00	\$3.40	\$3.60	\$3.50	\$3.95	\$4.00	\$4.00	\$4.00	\$4.00
Pavement Reconstruction				\$0.50	\$0.60	\$1.10	\$1.10	\$1.10	\$1.10
Asset Replacement	Note 1	\$0.20	\$0.20	\$0.20	\$0.35	\$0.40	\$0.40	\$0.40	\$0.40
Sidewalk Management (See note 4)		\$0.25	\$0.25	\$0.25	\$0.25	\$0.25	\$0.25	\$0.25	\$0.25
Improving the System									
Mobility, Accessibility, Safety, Neighborhood Improvements (See Note 2)	Note 1	\$0.60	\$0.60	\$0.60	\$0.60	\$0.70	\$0.70	\$0.70	\$0.70
Grant Funded Projects (See Note 3)	Note 1	\$3.40	\$3.50	\$3.50	\$3.60	\$3.60	\$3.60	\$3.60	\$3.60
Note 1: Implement the 2016 Transportation Improvement Program with Existing Resources Note 2: Locally funded Projects With Limited Potential to Leverage with Competitive Grants Note 3: Local Dollars to Leverage with Competitive Transportation Grants Note 4: Sidewalk program added in 2017 (not part of original Street Funding Commission Report)									

2019-2024 Transportation Improvement Program

Recommended Allocation of Additional Street Funding Revenues (\$ in Millions)									
	2016 (actuals)	2017 (actuals)	2018 (planned)	2019 (planned)	2020 (planned)	2021 (planned)	2022 (planned)	2023 (planned)	2024 (planned)
Pavement Preservation									
Pavement Preservation Program (See Trans-A-241)	\$1.00	\$3.20	\$3.60	\$3.50	\$3.95	\$4.00	\$4.00	\$4.00	\$4.00
Pavement Reconstruction									
Pavement Reconstruction Program (See TRANS A-421)				\$0.50	\$0.60	\$1.10	\$1.10	\$1.10	\$1.10
Asset Replacement									
Traffic Signal and Lighting Sustainability (See Trans-A-237)		\$0.20	\$0.20	\$0.20	\$0.35	\$0.40	\$0.40	\$0.40	\$0.40
Mobility, Accessibility, Safety, Neighborhood Improvements									
Neighborhood Traffic Management Program (See TRANS-A-240)		\$0.10	\$0.10	\$0.10	\$0.10	\$0.10	\$0.10	\$0.10	\$0.10
Multimodal Safety and Accessibility (See TRANS-A-844)		\$0.50	\$0.50	\$0.50	\$0.50	\$0.60	\$0.60	\$0.60	\$0.60
Sidewalk Management									
Sidewalk Management Program (TRANS-A-859)		\$0.05	\$0.25	\$0.25	\$0.25	\$0.25	\$0.25	\$0.25	\$0.25
Grant Funded Projects									
SE 1st ST-SE 164th Ave to SE 192nd Ave (See TRANS-268)					\$3.00	\$2.20			
Evergreen Hwy Trail -- Image to Chelsea (See TRANS-740)			\$0.05	\$0.15			\$0.45		
Lieser Rd @ MacArthur St. Intersection (See TRANS-603)					\$0.38				
NE 137th Ave - NE 49th St to NE Fourth Plain Blvd (See TRANS-275)			\$0.90	\$1.60	\$1.00		\$3.90	\$1.50	
Jefferson St W Evergreen to W Mill Plain Blvd (See TRANS-531)							\$0.40	\$1.00	\$2.60
NW Neighborhood Circulation Improvements (See TRANS-850)				\$0.10	\$0.30				
Mcloughlin Complete Street Project (See TRANS-862)				\$0.50					
Fourth Plain Road Diet - I-5 to 65th Ave (See TRANS-872)					\$0.36				
Clark College TDM (See TRANS-858)						\$0.04			
18th Street - 142nd Ave to 162nd Ave (See TRANS-444)							\$0.50		
NE 18th St NE 97th Ave to NE 107th Ave (See Trans 527)									\$3.50
Total Grant Funded	\$0.00	\$0.00	\$0.95	\$2.35	\$5.04	\$2.24	\$5.25	\$2.50	\$6.10

Operations Activities Not Included in TIP but Included in Street Funding Recommendations

	2016 (actuals)	2017 (actuals)	2018 (planned)	2019 (planned)	2020 (planned)	2021 (planned)	2022 (planned)	2023 (planned)	2024 (planned)
Maintain Right of Way and Increased Arterial Sweeping	\$0.72	\$0.55	\$0.75	\$0.75	\$0.75	\$0.75	\$0.75	\$0.75	\$0.75

**SIX-YEAR TRANSPORTATION IMPROVEMENT PROGRAM
(2019-2024)**

Note: All costs are in 2018 dollars. 2018 shown for reference only (6-year plan is for 2019-2024).

FUNDED PROJECTS/PROGRAMS

RANK	Project ID	Project Name	Project Type	Funding Type	Spent to Date (4-1-18)	2018 Planned Expenditures	2019 Planned Expenditures	2020 Planned Expenditures	2021 Planned Expenditures	2022 Planned Expenditures	2023 Planned Expenditures	2024 Planned Expenditures	6-Year Total	TIF Area old/new	
FUNDED PROJECTS/PROGRAMS															
			Capacity												
	TRANS-268	SE 1st St - SE 164th Ave to SE 177th Ave Design Phase - Funded from 164th to 177th Right-of-Way Phase - Funded from 164th to 177th Construction Phase - Funding uncertain from 164th to 177th	Capacity	EXST \$		\$450,000							\$450,000	East City/Cascade	
				SFS \$				\$1,000,000	\$2,200,000				\$3,200,000		
				GRANT \$		\$1,000,000		\$4,000,000	\$1,800,000				\$6,800,000		
				TOTAL \$	\$1,594,895	\$1,450,000	\$0	\$5,000,000	\$4,000,000	\$0	\$0	\$0	\$12,044,895		
	TRANS -678	E Mill Plain Blvd. - 104th Ave to Chkalov Design Phase - Funded - Started Right-of-Way Phase - Funded - Started Construction Phase - Funded - Not started	Capacity	EXST \$		\$500,000	\$300,000						\$800,000	East City/Cascade	
				SFS \$									\$0		
				GRANT \$			\$2,000,000						\$2,000,000		
				TOTAL \$	\$3,245,656	\$500,000	\$2,300,000	\$0	\$0	\$0	\$0	\$0	\$6,045,656		
	TRANS-703	NE 18th St - Four Seasons Lane to NE 136th Ave Design Phase - Completed Right-of-Way Phase - Completed Construction Phase - Funded - Started	Capacity	EXST \$		\$500,000							\$500,000	Evergreen & East City/ Pacific & Cascade	
				SFS \$									\$0		
				GRANT \$		\$500,000							\$500,000		
				TOTAL \$	\$12,388,316	\$1,000,000	\$0	\$0	\$0	\$0	\$0	\$0	\$13,388,316		
			Traffic												
	TRANS-841	Fourth Plain and Norris Signal Improvement Project Design Phase - Funded - Started Right-of-Way Phase - Funded - Not started Construction Phase - Funded - Not started	Traffic	EXST \$		\$300,000	\$150,000						\$450,000	Vancouver/Columbia	
				SFS \$									\$0		
				GRANT \$									\$0		
				TOTAL \$	\$3,042	\$300,000	\$150,000	\$0	\$0	\$0	\$0	\$0	\$453,042		
	TRANS-A-853	LED Street Light Retrofit Design Phase - Funded - Not started Right-of-Way Phase - Not applicable Construction Phase - Funded - Not started	Traffic	EXST \$		\$2,000,000	\$2,815,000						\$4,815,000	Vancouver/Columbia	
				SFS \$									\$0		
				GRANT \$									\$0		
				TOTAL \$	\$0	\$2,000,000	\$2,815,000	\$0	\$0	\$0	\$0	\$0	\$4,815,000		
	TRANS-863	Fourth Plain and St. Johns Signal Improvement Project (*funded by TRANS-A-237) Design Phase - Funded - Not Started Right-of-Way Phase - Funded - Not started Construction Phase - Funded - Not started	Traffic	EXST \$									\$0	Vancouver/Columbia	
				SFS \$	*								\$0		
				GRANT \$									\$0		
				TOTAL \$	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
	TRANS-864	St. James and 42nd St. Signal Improvement Project (*funded by TRANS-A-237) Design Phase - Funded - Not Started Right-of-Way Phase - Funded - Not started Construction Phase - Funded - Not started	Traffic	EXST \$									\$0	Vancouver/Columbia	
				SFS \$	*								\$0		
				GRANT \$									\$0		
				TOTAL \$	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
	TRANS-865	W Columbia and 13th St. Signal Improvement Project (*funded by TRANS-A-237) Design Phase - Funded - Not Started Right-of-Way Phase - Funded - Not started Construction Phase - Funded - Not started	Traffic	EXST \$									\$0	Vancouver/Columbia	
				SFS \$	*								\$0		
				GRANT \$									\$0		
				TOTAL \$	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
	TRANS-877	Mill Plain Arrival on Green - I-205 to 164th Ave Design Phase - Funded - Not started Right-of-Way Phase - Not applicable Construction Phase - Funded - Not started	Traffic	EXST \$		\$20,000							\$20,000	Vancouver/Columbia	
				SFS \$									\$0		
				GRANT \$		\$72,000							\$72,000		
				TOTAL \$	\$0	\$92,000	\$0	\$0	\$0	\$0	\$0	\$0	\$92,000		
			Multimodal												
	TRANS-DT-451	Destination Downtown TDM Design Phase - Funded - Started Right-of-Way Phase - Not applicable Construction Phase - Funded - Not started	Multimodal	EXST \$		\$20,000							\$20,000	Vancouver/Columbia	
				SFS \$									\$0		
				GRANT \$		\$85,000							\$85,000		
				TOTAL \$		\$105,000	\$0	\$0	\$0	\$0	\$0	\$0	\$105,000		
	TRANS-833	Vancouver Waterfront Trail Design Phase - Completed Right-of-Way Phase - Completed Construction Phase - Funded - Not started	Multimodal	EXST \$									\$0	Vancouver/Columbia	
				SFS \$									\$0		
				GRANT \$		\$600,000							\$600,000		
				TOTAL \$		\$600,000	\$0	\$0	\$0	\$0	\$0	\$0	\$600,000		
	TRANS-835	Fort Vancouver Way/Mcloughlin Sidewalk Infill and Hawk Signal Design Phase - Funded - Started Right-of-Way Phase - Funded - Not Started Construction Phase - Funded - Not started	Multimodal	EXST \$		\$50,000	\$50,000						\$100,000	Vancouver/Columbia	
				SFS \$									\$0		
				GRANT \$		\$450,000	\$450,000						\$900,000		
				TOTAL \$	\$132,621	\$500,000	\$500,000	\$0	\$0	\$0	\$0	\$0	\$1,132,621		



SIX-YEAR TRANSPORTATION IMPROVEMENT PROGRAM
(2019-2024)

Note: All costs are in 2018 dollars. 2018 shown for reference only (6-year plan is for 2019-2024).

FUNDED PROJECTS/PROGRAMS

RANK	Project ID	Project Name	Project Type	Funding Type	Spent to Date (4-1-18)	2018	2019	2020	2021	2022	2023	2024	6-Year Total	TIF Area old/new
						Planned Expenditures	Planned Expenditures	Planned Expenditures	Planned Expenditures	Planned Expenditures	Planned Expenditures	Planned Expenditures		
FUNDED PROJECTS/PROGRAMS														
	TRANS-852	112th Avenue Sidewalk - Chkalov to 9th Street (*using \$100k from 2018 TRANS-A-844) Design Phase - Funded - Started Right-of-Way Phase - Not applicable Construction Phase - Funded - Not started	Multimodal	EXST \$									\$0	Vancouver/Columbia
				SFS \$	*	\$0	\$0						\$0	
				GRANT \$		\$14,000	\$106,000						\$120,000	
				TOTAL \$	\$44,711	\$14,000	\$106,000	\$0	\$0	\$0	\$0	\$0	\$164,711	
	TRANS-A-854	Transportation System Plan (TSP) Update Design Phase - Funded - Started Right-of-Way Phase - Not applicable Construction Phase - Not applicable	Multimodal	EXST \$		\$100,000	\$230,000	\$250,000					\$580,000	Vancouver/Columbia
				SFS \$									\$0	
				GRANT \$									\$0	
				TOTAL \$	\$0	\$100,000	\$230,000	\$250,000	\$0	\$0	\$0	\$0	\$580,000	
	TRANS-875	Evergreen Hwy and 113th Ave Pedestrian crossing (*partially funded by TRANS-A-241) Design Phase - Funded - Started Right-of-Way Phase - Not applicable Construction Phase - Not applicable	Multimodal	EXST \$	*	\$100,000							\$100,000	Vancouver/Columbia
				SFS \$									\$0	
				GRANT \$									\$0	
				TOTAL \$	\$0	\$100,000	\$0	\$0	\$0	\$0	\$0	\$0	\$100,000	
	TRANS-876	4th plain caples/wintler (*using \$60k from 2017 TRANS-A-844) Design Phase - Funded - Started Right-of-Way Phase - Not applicable Construction Phase - Not applicable	Multimodal	EXST \$									\$0	Vancouver/Columbia
				SFS \$	*	\$0							\$0	
				GRANT \$		\$208,000							\$208,000	
				TOTAL \$	\$0	\$208,000	\$0	\$0	\$0	\$0	\$0	\$0	\$208,000	
			Ongoing											
	TRANS-A-237	Traffic Signal and Lighting Sustainability Sub projects for 2018 include: 4th Plain & St. Johns APS Upgrade; St. Johns & 42nd St; Columbia & 13th St	Ongoing	EXST \$		\$215,000	\$215,000	\$215,000	\$215,000	\$215,000	\$215,000	\$215,000	\$1,505,000	
				SFS \$		\$200,000	\$200,000	\$350,000	\$400,000	\$400,000	\$400,000	\$400,000	\$2,350,000	
				GRANT \$									\$0	
				TOTAL \$		\$415,000	\$415,000	\$565,000	\$615,000	\$615,000	\$615,000	\$615,000	\$3,855,000	
	TRANS-A-240	Neighborhood Traffic Management Program Sub projects for 2018 include: NE 39th St speed cushions; Nicholson Road speed cushions; NW Lincoln Ave/W 4th Plain/NE 97th Ave speed radar	Ongoing	EXST \$		\$170,000	\$170,000	\$170,000	\$170,000	\$170,000	\$170,000	\$170,000	\$1,190,000	
				SFS \$		\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$700,000	
				GRANT \$									\$0	
				TOTAL \$		\$270,000	\$270,000	\$270,000	\$270,000	\$270,000	\$270,000	\$270,000	\$1,890,000	
	TRANS-A-241	Pavement Preservation Program Received NHS federal grants for Mill Plain - I-5 to Grand and 164th Ave - Mill Plain to NE 18th St	Ongoing	EXST \$		\$6,960,686	\$7,099,900	\$7,241,898	\$7,386,736	\$7,534,470	\$7,685,159	\$7,838,862	\$51,747,711	
				SFS \$		\$3,600,000	\$3,500,000	\$3,950,000	\$4,000,000	\$4,000,000	\$4,000,000	\$4,000,000	\$27,050,000	
				GRANT \$									\$0	
				TOTAL \$		\$10,560,686	\$10,599,900	\$11,191,898	\$11,386,736	\$11,534,470	\$11,685,159	\$11,838,862	\$78,797,711	
	TRANS-A-245	Bridge Inspection Program	Ongoing	EXST \$		\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$70,000	
				SFS \$									\$0	
				GRANT \$									\$0	
				TOTAL \$		\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$70,000	
	TRANS-A-844	Multimodal safety and accessibility Sub projects for 2018 include: 112th Avenue Sidewalk (TRANS-852 = \$100k); Divine Pedestrian Improvements (TRANS-871 = \$330k)	Ongoing	EXST \$									\$0	
				SFS \$		\$500,000	\$500,000	\$500,000	\$600,000	\$600,000	\$600,000	\$600,000	\$3,900,000	
				GRANT \$									\$0	
				TOTAL \$		\$500,000	\$500,000	\$500,000	\$600,000	\$600,000	\$600,000	\$600,000	\$3,900,000	
				EXST \$	Annually =	\$11,395,686	\$11,039,900	\$7,886,898	\$7,781,736	\$7,929,470	\$8,080,159	\$8,233,862	EXST \$	\$62,347,711
				SFS \$	Annually =	\$4,400,000	\$4,300,000	\$5,900,000	\$7,300,000	\$5,100,000	\$5,100,000	\$5,100,000	SFS \$	\$37,200,000
				GRANT \$	Annually =	\$2,929,000	\$2,556,000	\$4,000,000	\$1,800,000	\$0	\$0	\$0	GRANT \$	\$11,285,000
				TOTAL \$	Annually =	\$18,724,686	\$17,895,900	\$17,786,898	\$16,881,736	\$13,029,470	\$13,180,159	\$13,333,862	TOTAL \$	\$128,241,952
			Non-City											
		West Vancouver Freight Access (under construction)	Port of Vancouver											
		SR-500 Safety Improvements (funded)	WSDOT											
		SR-14 (I-205 to 162nd) Widening (funded)	WSDOT											
		Mill Plain & I-5 Interchange Improvements (2022-2025)	WSDOT											
		Mill Plain (Port of Vancouver to I-5) Improvements (2018-2020)	WSDOT											
		I-5 Interstate Bridge Replacement (unfunded)	Multi-agency											
		Mill Plain BRT (unfunded)	C-Tran											



SIX-YEAR TRANSPORTATION IMPROVEMENT PROGRAM
(2019-2024)

Note: All costs are in 2018 dollars. 2018 shown for reference only (6-year plan is for 2019-2024).

PARTIALLY FUNDED PROJECTS/PROGRAMS

R A N K	Project ID	Project Name	Project Type	Funding Type	Spent to Date (4-1-18)	2018	2019	2020	2021	2022	2023	2024	6-Year Total	TIF Area old/new
						Planned Expenditures	Planned Expenditures	Planned Expenditures	Planned Expenditures	Planned Expenditures	Planned Expenditures	Planned Expenditures		
PARTIALLY FUNDED PROJECTS/PROGRAMS														
			Capacity											
	TRANS-275	NE 137th Ave - NE 49th St to NE Fourth Plain Blvd Design Phase - Funded - Started Right-of-Way Phase - Funding uncertain - Not started Construction Phase - Funding uncertain - Not started	Capacity	EXST \$		\$200,000							\$200,000	Evergreen/Pacific
				SFS \$		\$900,000	\$1,600,000	\$1,000,000		\$3,880,000	\$1,500,000		\$8,880,000	
				GRANT \$		\$400,000	\$1,000,000	\$2,000,000		\$5,820,000	\$2,100,000		\$11,320,000	
				TOTAL \$	\$1,529,318	\$1,500,000	\$2,600,000	\$3,000,000	\$0	\$9,700,000	\$3,600,000	\$0	\$21,929,318	
	TRANS-527	NE 18th St - NE 97th Ave to NE 107th Avenue Design Phase - Funded - Started Right-of-Way Phase - Funded - Not started Construction Phase - Funding uncertain - Not started	Capacity	EXST \$		\$750,000	\$1,250,000	\$1,500,000					\$3,500,000	Evergreen & E. City/ Pacific & Cascade
				SFS \$								\$3,500,000	\$3,500,000	
				GRANT \$							\$7,000,000	\$7,000,000		
				TOTAL \$	\$70,458	\$750,000	\$1,250,000	\$1,500,000	\$0	\$0	\$0	\$10,500,000	\$14,070,458	
	TRANS-531	Jefferson St - W Evergreen to W Mill Plain Blvd Design Phase - Funded - Started Right-of-Way Phase - Funded - Not started Construction Phase - Funding uncertain - Not started	Capacity	EXST \$		\$1,000,000	\$100,000						\$1,100,000	Vancouver/Columbia
				SFS \$						\$400,000	\$1,000,000	\$2,600,000	\$4,000,000	
				GRANT \$						\$600,000	\$1,500,000	\$3,900,000	\$6,000,000	
				TOTAL \$	\$94,196	\$1,000,000	\$100,000	\$0	\$0	\$1,000,000	\$2,500,000	\$6,500,000	\$11,194,196	
	TRANS-444	NE 18th St - NE 142nd Ave to NE 162nd Ave Design Phase - Funded - Not started Right-of-Way Phase - Funded - Not started Construction Phase - Funding uncertain - Not started	Capacity	EXST \$									\$0	Evergreen & E. City/ Pacific & Cascade
				SFS \$						\$500,000			\$500,000	
				GRANT \$									\$0	
				TOTAL \$	\$0	\$0	\$0	\$0	\$0	\$500,000	\$0	\$0	\$500,000	
	TRANS-855	W 32nd Avenue Extension Feasibility Study Design Phase - Funded - Started Right-of-Way Phase - Funded - Not started Construction Phase - Funding uncertain - Not started	Capacity	EXST \$		\$200,000	\$100,000						\$300,000	Vancouver/Columbia
				SFS \$									\$0	
				GRANT \$									\$0	
				TOTAL \$	\$0	\$200,000	\$100,000	\$0	\$0	\$0	\$0	\$0	\$300,000	
	TRANS-870	SE 1st St - SE 177th Ave to SE 192nd Ave Design Phase - funded by developer Right-of-Way Phase - Funded by developer Construction Phase - Unfunded - Not started	Capacity	EXST \$	Developer \$								\$0	East City/Cascade
				SFS \$				\$3,000,000				\$3,000,000		
				GRANT \$				\$4,000,000				\$4,000,000		
				TOTAL \$		\$0	\$0	\$0	\$7,000,000	\$0	\$0	\$0	\$7,000,000	
			Traffic											
	TRANS-603	Lieser Rd @ MacArthur St. Intersection Design Phase - Funded - Started Right-of-Way Phase - Funded - Started Construction Phase - Funding uncertain - Not started	Traffic	EXST \$			\$225,000						\$225,000	Vancouver/Columbia
				SFS \$			\$375,000					\$375,000		
				GRANT \$		\$900,000	\$2,000,000					\$2,900,000		
				TOTAL \$	\$0	\$0	\$1,125,000	\$2,375,000	\$0	\$0	\$0	\$0	\$3,500,000	
	TRANS-724	NE Hearthwood & 1st street Design Phase - Funded - Started Right-of-Way Phase - Funded - Started Construction Phase - Funding uncertain - Not started	Traffic	EXST \$		\$150,000	\$180,000						\$330,000	East City/Cascade
				SFS \$								\$0		
				GRANT \$								\$0		
				TOTAL \$	\$30,000	\$150,000	\$180,000	\$0	\$0	\$0	\$0	\$0	\$360,000	
			Multimodal											
	TRANS-740	Evergreen Hwy Pathway -Image to Chelsea Design Phase - Funded - Started Right-of-Way Phase - Funded - Not started Construction Phase - Unfunded - Not started	Multimodal	EXST \$		\$150,000							\$150,000	East City/Cascade
				SFS \$		\$50,000	\$150,000			\$450,000			\$650,000	
				GRANT \$						\$675,000			\$675,000	
				TOTAL \$	\$281,380	\$200,000	\$150,000	\$0	\$0	\$1,125,000	\$0	\$0	\$1,756,380	
	Trans-741	Evergreen Hwy Pathway - Columbia Springs to SE 164th Ave Design Phase - Partially funded by citizen group - Started Right-of-Way Phase - Unfunded - Not started Construction Phase - Unfunded - Not started	Multimodal	EXST \$										East City/Cascade
				SFS \$										
				GRANT \$										
				TOTAL \$	\$0									
	TRANS-843	Evergreen Hwy Pathway -Weber Arboretum to 100th Court Design Phase - Funded - Started Right-of-Way Phase - Funded - Not started Construction Phase - Unfunded - Not started	Multimodal	EXST \$		\$100,000	\$50,000						\$150,000	East City/Cascade
				SFS \$								\$0		
				GRANT \$								\$0		
				TOTAL \$	\$1,268,035	\$100,000	\$50,000	\$0	\$0	\$0	\$0	\$0	\$1,418,035	



SIX-YEAR TRANSPORTATION IMPROVEMENT PROGRAM
(2019-2024)

Note: All costs are in 2018 dollars. 2018 shown for reference only (6-year plan is for 2019-2024).

PARTIALLY FUNDED PROJECTS/PROGRAMS

RANK	Project ID	Project Name	Project Type	Funding Type	Spent to Date (4-1-18)	2018	2019	2020	2021	2022	2023	2024	6-Year Total	TIF Area old/new	
						Planned Expenditures	Planned Expenditures	Planned Expenditures	Planned Expenditures	Planned Expenditures	Planned Expenditures	Planned Expenditures			
PARTIALLY FUNDED PROJECTS/PROGRAMS															
	Trans-850	NW Neighborhood Circulation Improvements - Franklin Elementary/Lincoln Sidewalks and Enhanced Pedestrian Crossing Design Phase - Partially funded - Not started Right-of-Way Phase - Unfunded - Not started Construction Phase - Unfunded - Not started	Multimodal	EXST \$		\$90,000							\$90,000	Vancouver/Columbia	
				SFS \$				\$263,000					\$263,000		
				GRANT \$		\$147,000		\$1,100,000					\$1,247,000		
				TOTAL \$	\$0	\$237,000	\$0	\$1,363,000	\$0	\$0	\$0	\$0	\$1,600,000		
	Trans-858	Clarck College TDM Design Phase - Partially Funded - Not started Right-of-Way Phase - Unfunded - Not started Construction Phase - Unfunded - Not started	Multimodal	EXST \$									\$0	Vancouver/Columbia	
				SFS \$				\$40,000					\$40,000		
				GRANT \$				\$250,000					\$250,000		
				TOTAL \$	\$0	\$0	\$0	\$290,000	\$0	\$0	\$0	\$0	\$290,000		
	Trans-862	Mcloughlin Complete Street - Reserve to Mill Plain Design Phase - Partially Funded - Not started Right-of-Way Phase - Unfunded - Not started Construction Phase - Unfunded - Not started	Multimodal	EXST \$									\$0	Vancouver/Columbia	
				SFS \$			\$500,000						\$500,000		
				GRANT \$			\$500,000						\$500,000		
				TOTAL \$	\$0	\$0	\$1,000,000	\$0	\$0	\$0	\$0	\$0	\$1,000,000		
	TRANS-871	Devine Pedestrian Improvements - Mill Plain to 18th (*using \$330k from 2018 TRANS-A-844) Design Phase - Funded - Started Right-of-Way Phase - Not applicable Construction Phase - Not applicable	Multimodal	EXST \$									\$0	Vancouver/Columbia	
				SFS \$	*		\$0						\$0		
				GRANT \$			\$489,000						\$489,000		
				TOTAL \$	\$0	\$0	\$489,000	\$0	\$0	\$0	\$0	\$0	\$489,000		
	Trans-872	Fourth Plain Road Diet - I-5 to 65th Ave Design Phase - Partially Funded - Not started Right-of-Way Phase - Unfunded - Not started Construction Phase - Unfunded - Not started	Multimodal	EXST \$									\$0	Vancouver/Columbia	
				SFS \$				\$363,000					\$363,000		
				GRANT \$				\$3,150,000					\$3,150,000		
				TOTAL \$	\$0	\$0	\$0	\$3,513,000	\$0	\$0	\$0	\$0	\$3,513,000		
	Trans-874	5th Street Pedestrian Improvements - Fort Vancouver to Reserve (TRANS-A-241 providing local match) Design Phase - Partially Funded - Not started Right-of-Way Phase - Unfunded - Not started Construction Phase - Unfunded - Not started	Multimodal	EXST \$	*		\$0						\$0	Vancouver/Columbia	
				SFS \$									\$0		
				GRANT \$			\$500,000						\$500,000		
				TOTAL \$	\$0	\$0	\$500,000	\$0	\$0	\$0	\$0	\$0	\$500,000		
			Ongoing												
	TRANS-A-421	Pavement Reconstruction Program	Ongoing	EXST \$									\$0		
				SFS \$			\$500,000	\$600,000	\$1,100,000	\$1,100,000	\$1,100,000	\$1,100,000	\$5,500,000		
				GRANT \$									\$0		
				TOTAL \$		\$0	\$500,000	\$600,000	\$1,100,000	\$1,100,000	\$1,100,000	\$1,100,000	\$5,500,000		
	TRANS-A-859	Sidewalk Management Program	Ongoing	EXST \$									\$0		
				SFS \$		\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$1,750,000		
				GRANT \$									\$0		
				TOTAL \$		\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$1,750,000		
	TRANS-A-860	Project Scoping and Estimation	Ongoing	EXST \$		\$55,000							\$55,000		
				SFS \$									\$0		
				GRANT \$									\$0		
				TOTAL \$		\$55,000	\$0	\$0	\$0	\$0	\$0	\$0	\$55,000		
				EXST \$	Annually =	\$2,695,000	\$1,905,000	\$1,500,000	\$0	\$0	\$0	\$0	EXST \$	6-year Totals	
				SFS \$	Annually =	\$1,200,000	\$3,000,000	\$2,851,000	\$4,390,000	\$6,580,000	\$3,850,000	\$7,450,000	SFS \$	\$6,045,000	
				GRANT \$	Annually =	\$547,000	\$3,389,000	\$8,250,000	\$4,250,000	\$7,095,000	\$3,600,000	\$10,900,000	GRANT \$	\$29,321,000	
				TOTAL \$	Annually =	\$4,387,000	\$8,294,000	\$12,601,000	\$8,640,000	\$13,675,000	\$7,450,000	\$18,350,000	TOTAL \$	\$38,031,000	
														\$76,670,387	

RANK						2018		2023	Scoping Level Estimate	TIF Area old/new
	Project ID	Project Name	Project Type	Phase	Spent to Date (4-1-18)					
UNFUNDED PROJECTS/PROGRAMS										
			Capacity							
	TRANS-274	NE 28th St - NE 142nd Ave to NE 162nd Ave.	Capacity						\$10-12 mill	Evergreen/Pacific
			Total		\$0		No Funding			
	TRANS-279	NE 49th St. - NE 122nd Ave. to NE 137th Ave.	Capacity						\$9-11 mill	Evergreen/Pacific
			Total		\$0		No Funding			
	TRANS-281	NE 18th St - NE 87th Ave to NE 97th Ave	Capacity						\$14-16 mill	Evergreen & East City/ Pacific & Cascade
			Total		\$0		No Funding			
	TRANS-349	NE 18th St - NE 164th Ave to NE 192nd Ave	Capacity						\$18-20 mill	Evergreen & East City/ Pacific & Cascade
			Total		\$0		No Funding			
	TRANS-536	Fruit Valley Rd - 61st St to NW 78th St	Capacity						\$35- 40 mill	Vancouver/Columbia
			Total		\$0		No Funding			
	TRANS-583	NE 87th Ave / Lieser Rd. Realignment	Capacity						\$5-6 mill	Vancouver/Cascade
			Total		\$0		No Funding			
	TRANS-607	NE 192nd Ave - SE 1st St. to NE 18th St.	Capacity						\$20 mill	East City/Cascade
			Total		\$0		No Funding			
	TRANS-680	Columbia Shores Blvd @ Columbia Way	Capacity						\$25-30 mill	Vancouver/Columbia
			Total		\$0		No Funding			
	TRANS-712	NE 59th St - NE 147th Ave to NE 162nd Ave	Capacity						\$7-9 mill	Evergreen/Pacific
			Total		\$0		No Funding			
	TRANS-716	NE 9th St - NE 172nd Ave to NE 192nd Ave	Capacity						\$10-12 mill	East City/Cascade
			Total		\$0		No Funding			
	TRANS-717	NE 182nd Ave - SE 1st St to NE 18th St	Capacity						\$12-14 mill	East City/Cascade
			Total		\$0		No Funding			
	TRANS-718	NE 162nd Ave - SE 1st St to NE 9th St	Capacity						\$11-13 mill	East City/Cascade
			Total		\$0		No Funding			
	TRANS-719	NE 112th Ave - E Mill Plain Blvd. to NE 28th St	Capacity						\$2-3 mill	East City/Cascade
			Total		\$0		No Funding			
	TRANS-816	NW 32nd Ave - SR501 to Whitney	Capacity						\$20 mill	Vancouver/Columbia
			Total		\$0		No Funding			
	TRANS-825	NE 54th St - 15th Avenue to St. James Street	Capacity						\$14 mill	Vancouver/Columbia
			Total		\$0		No Funding			
	TRANS-826	NE 104th Avenue - Mill Plain Blvd. to 14th Street	Capacity						\$10-12 mill	East City/Cascade
			Total		\$0		No Funding			
	TRANS-827	NE 104th Avenue - 14th Street to 18th Street	Capacity						\$10-12 mill	East City/Cascade
			Total		\$0		No Funding			
	TRANS-834	NE 9th St. - Broadway to "C"	Capacity						\$2-3 mill	Vancouver/Columbia
			Total		\$0		No Funding			
			Traffic							
	TRANS-363	SE 136th Ave. and SE 7th St.	Traffic	PSE	\$0				\$0.2-0.5 mill	East City/Cascade
			Total		\$0		No Funding			
	TRANS-720	136th/137th Ave - E Mill Plain Blvd to E 28th St	Traffic	PSE	\$0				\$1-2 mill	Evergreen & East City/ Pacific & Cascade
			Total		\$0		No Funding			
	TRANS-722	St Johns Blvd. @ NE 68th St	Traffic	PSE	\$0				\$0.5-1 mill	Vancouver/Columbia
			Total		\$0		No Funding			
	TRANS-723	SE 20th St @ SE 176th Ave	Traffic	PSE	\$0				\$0.5-1 mill	East City/Cascade
			Total		\$0		No Funding			
	TRANS-818	NE Burton/28th Street - NE Andresen Rd to NE 138th Ave	Traffic	PSE	\$0				\$1-2 mill	Evergreen/Pacific
			Total		\$0		No Funding			
	TRANS-819	NW Fruit Valley Rd @ La Frambois	Traffic	PSE	\$0				\$0.5-1 mill	Vancouver/Columbia
			Total		\$0		No Funding			
	TRANS-839	152nd Avenue & 4th Plain Blvd. Signal	Traffic	PSE	\$0				\$0.5-1 mill	Evergreen/Pacific
			Total		\$0		No Funding			
	TRANS-847	164th Avenue & Mill Plain intersection improvements	Traffic	PSE	\$0				\$0.5-1 mill	East City/Cascade
			Total		\$0		No Funding			
	TRANS-848	164th Avenue & SE 12th Street intersection improvements	Traffic	PSE	\$0				\$0.5-1 mill	East City/Cascade
			Total		\$0		No Funding			
	TRANS-851	192nd Avenue & NE 13th Street intersection improvements	Traffic	PSE	\$0				\$0.3-0.5 mill	East City/Cascade
			Total		\$0		No Funding			
	TRANS-856	NE 18th Street and 172nd Avenue Intersection Improvements	Traffic	PSE	\$0				\$0.3-0.5 mill	East City/Cascade
			Total		\$0		No Funding			
	TRANS-866	W Fourth Plain and Franklin Signal	Traffic	PSE	\$0				\$0.3-0.5 mill	Citywide
			Total		\$0		No Funding			
	TRANS-867	NE 162nd and NE 34th Signal	Traffic	PSE	\$0				\$0.3-0.5 mill	Citywide
			Total		\$0		No Funding			
	TRANS-868	St. Johns and Fort Vancouver Way Intersection Improvements	Traffic	PSE	\$0				\$0.3-0.5 mill	Citywide
			Total		\$0		No Funding			
	TRANS-869	Annual Street Light Program	Traffic	PSE	\$0					Citywide
			Total		\$0		No Funding			

						2018	↔	2023		
RANK	Project ID	Project Name	Project Type	Phase	Spent to Date (4-1-18)				Scoping Level Estimate	TIF Area old/new
UNFUNDED PROJECTS/PROGRAMS										
			Multimodal							
	TRANS-258	E. Fourth Plain Blvd. - Ft Vancouver Way to NE Andresen Rd.	Multimodal	PSE	\$0				\$2-3 mill	Vancouver/Columbia
				Total	\$0	↔ No Funding ↔				
	TRANS-495	Main St Reconstruction - 5th St to 15th Street	Multimodal	PSE	\$0				\$11-13 mill	Vancouver/Columbia
				Total	\$0	↔ No Funding ↔				
	TRANS-742	Evergreen Hwy Pathway - SE 164th Ave to E. city limits	Multimodal	PSE	\$0				\$7 mill	East City/Cascade
				Total	\$0	↔ No Funding ↔				
	TRANS-857	SE 10th Street Sidewalks - 98th Avenue to Ellsworth Road	Multimodal	PSE	\$0				\$1-2 mill	Evergreen/Pacific
				Total	\$0	↔ No Funding ↔				
	TRANS-861	Westside Bike Mobility	Multimodal	PSE	\$0				\$3 mill	Vancouver/Columbia
				Total	\$0	↔ No Funding ↔				
	TRANS-873	Main Street Road Diet - Fourth Plain Blvd to 39th St	Multimodal	PSE	\$0				\$0.5-1 mill	Vancouver/Columbia
				Total	\$0	↔ No Funding ↔				
			Other							
	TRANS-836	Evergreen Blvd. Bridge over Blandford	Safety	PSE	\$0				\$15-20 mill	Vancouver/Columbia
				Total	\$0	↔ No Funding ↔				
	TRANS-838	Evergreen Highway Pavement Project (Scope and extent of this project is under review)	Reconstruction	PSE	\$0				\$40-50 mill	East City/Cascade
				Total	\$0	↔ No Funding ↔				
						Project unfunded ==>			\$400 mill	





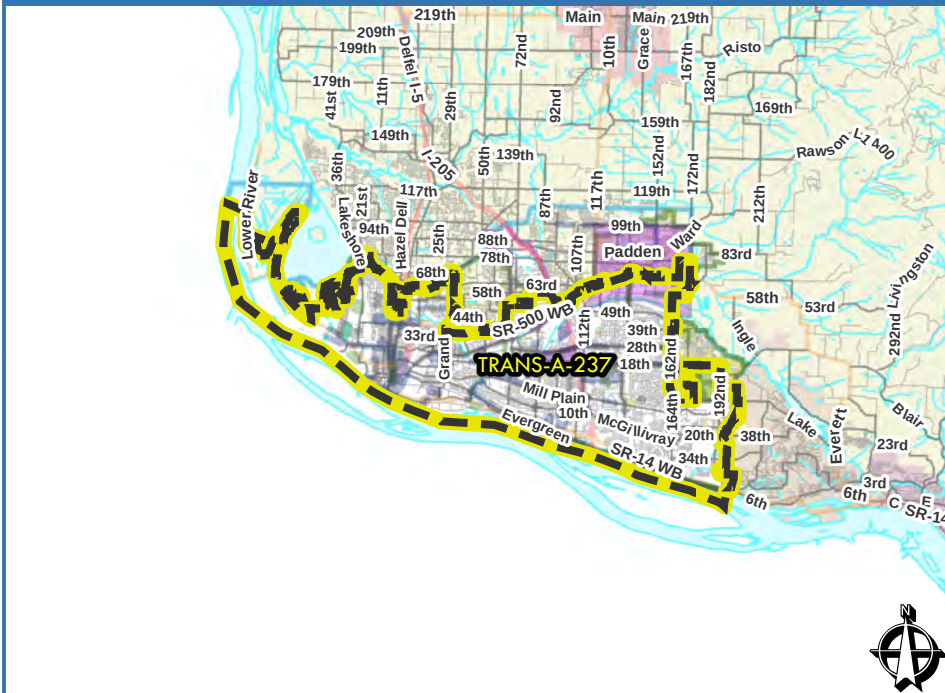
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **TRAFFIC SIGNAL SUSTAINABILITY**

PROJECT EXTENT: **CITYWIDE**

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Ongoing
Project Status:	Ongoing
Funding Status:	Funded

PROJECT DESCRIPTION

Project Description / Comments

Ongoing updating of traffic signals at locations throughout the City. May include but is not limited to adding left-turn phasing, signal heads, pedestrian push-button and detectors, as well as removing an operation, changing detector setup or other improvements. Sub projects for 2018 include: 4th Plain and St. Johns Accessible Pedestrian Signal Updrade (Trans-863); St. James and 42nd St. Signal (Trans-864); and Columbia and 13th St. Signal (Trans-865).

LEGEND

	Project Area		Water Project Areas		Battle Ground
	Transportation Project Areas		SCIP Project Areas		Camas
	Sanitary Sewer Project Areas		Vancouver City Limits		Washougal
	Surface Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Funded
Existing Funds:	Yes
SFS Funds:	Yes
Grant Funds:	No
Total Proj. Cost:	
*Start of Construction (Year):	Ongoing



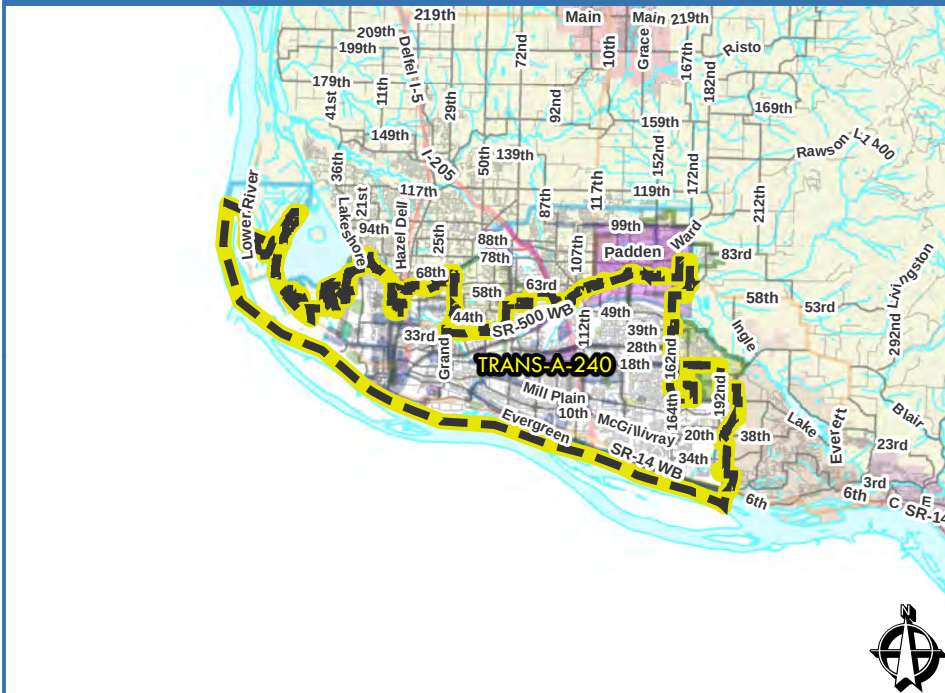
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **NEIGHBORHOOD TRAFFIC MANAGEMENT**

PROJECT EXTENT: **CITYWIDE**

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Ongoing
Project Status:	Ongoing
Funding Status:	Funded

PROJECT DESCRIPTION

Project Description / Comments

Ongoing projects through the Neighborhood Traffic Management Program to provide for traffic calming and control. These include projects that increase education/awareness to reduce speeding impacts, as well as projects that address pedestrian/bicycle safety, sight restrictions, parking and other issues, for neighborhood livability and mobility. Sub projects for 2018 include: NE 39th St. speed cushions (\$124k); Nicholson Road speed cushions (\$92k); NE 97th Ave. speed radar feedback signs (\$27k); NW Lincoln Ave. speed radar feedback signs (\$27k); Fourth Plain Blvd. speed radar feedback signs (\$14k).

LEGEND

	Project Area		Water Project Areas		Battle Ground
	Transportation Project Areas		SCIP Project Areas		Camas
	Sanitary Sewer Project Areas		Vancouver City Limits		Washougal
	Surface Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Funded
Existing Funds:	Yes
SFS Funds:	Yes
Grant Funds:	No
Total Proj. Cost:	\$0.00
*Start of Construction (Year):	Ongoing



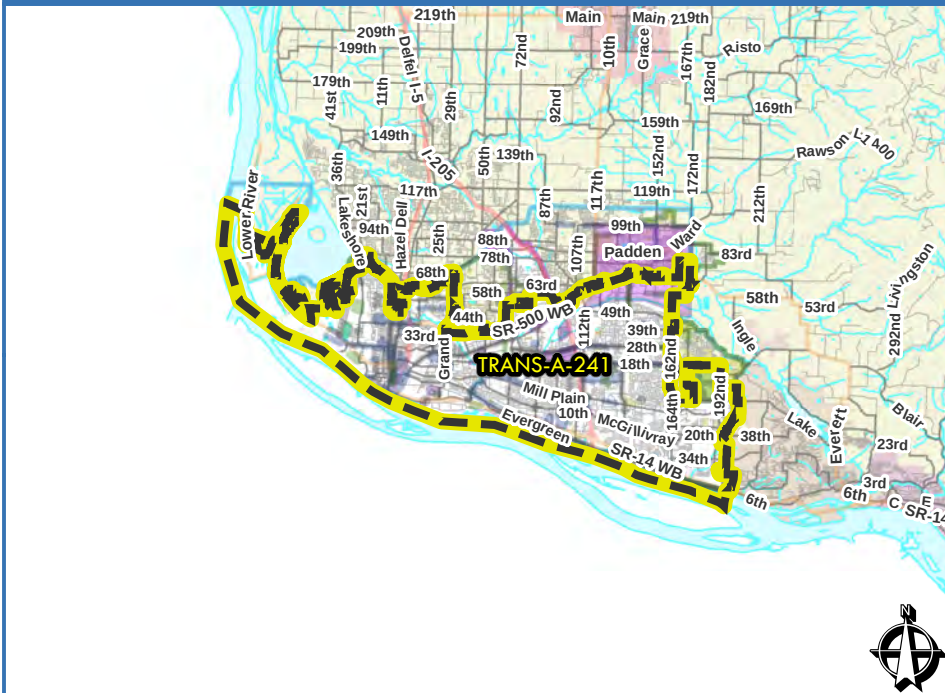
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **PAVEMENT PRESERVATION PROGRAM**

PROJECT EXTENT: **CITYWIDE**

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Ongoing
Project Status:	Ongoing
Funding Status:	Funded

PROJECT DESCRIPTION

Project Description / Comments

Ongoing effort to improve and maintain pavement surfaces through surface overlay, microsurfacing and slurry treatments at multiple locations citywide. Upgrades may include new ADA ramps, traffic striping and markings. City's more than 1,800 lane miles of streets are carefully inspected and evaluated to determine most cost-effective means to preserve pavement and manage resources. Received NHS federal grants for 164th - Mill Plain to 18th (\$1,003,000) and Mill Plain - I-5 to Grand (\$665,000).

LEGEND

	Project Area		Water Project Areas		Battle Ground
	Transportation Project Areas		SCIP Project Areas		Camas
	Sanitary Sewer Project Areas		Vancouver City Limits		Washougal
	Surface Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Funded
Existing Funds:	Yes
SFS Funds:	Yes
Grant Funds:	No
Total Proj. Cost:	
*Start of Construction (Year):	Ongoing



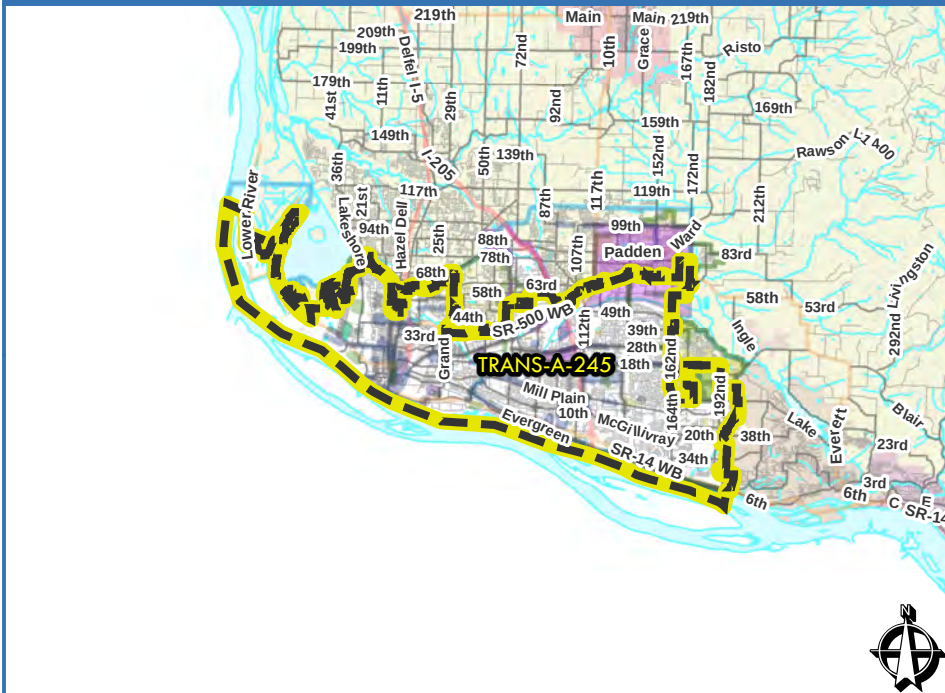
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **BRIDGE INSPECTION PROGRAM**

PROJECT EXTENT: **CITY-OWNED BRIDGES CITYWIDE**

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Ongoing
Project Status:	Ongoing
Funding Status:	Funded

PROJECT DESCRIPTION

Project Description / Comments

Ongoing citywide inspection and maintenance of the City's bridges to meet state and federal regulations.

LEGEND

	Project Area		Water Project Areas		Battle Ground
	Transportation Project Areas		SCIP Project Areas		Camas
	Sanitary Sewer Project Areas		Vancouver City Limits		Washougal
	Surface Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Funded
Existing Funds:	Yes
SFS Funds:	No
Grant Funds:	No
Total Proj. Cost:	
*Start of Construction (Year):	Ongoing



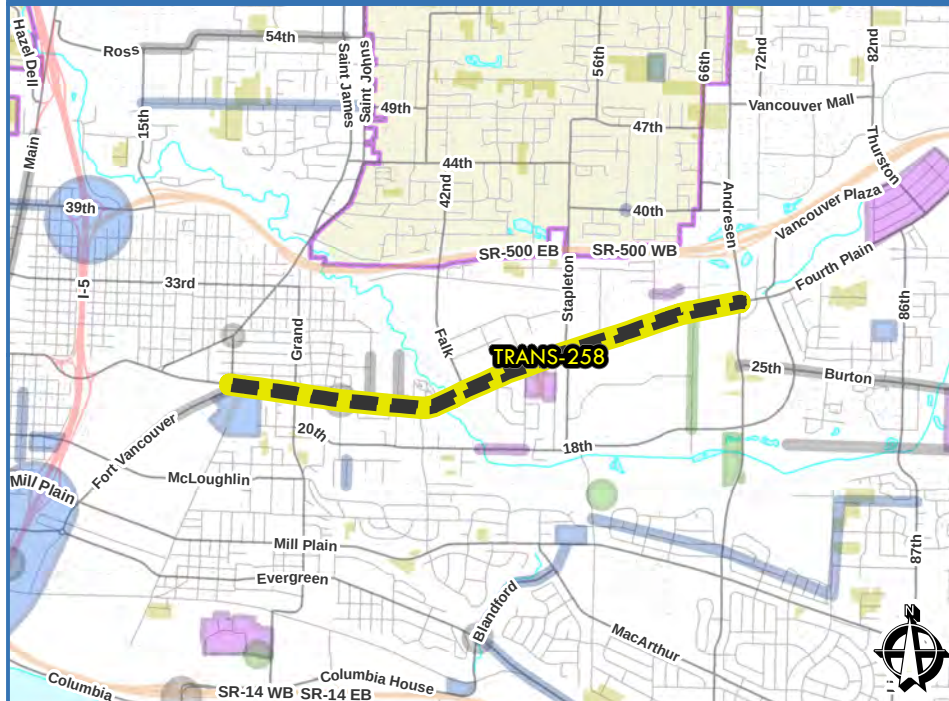
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **E. FOURTH PLAIN BLVD. - FT VANCOUVER WAY TO NE ANDRESEN RD.**

PROJECT EXTENT: **FT VANCOUVER WAY**

TO: **NE ANDRESEN RD**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Enhancement
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Upgrade of sidewalks and street lights identified as safety priority in Fourth Plain Sub-Area Plan. Improvements include wider sidewalks, upgraded street lights and street trees.

LEGEND

	Project Area		Water Project Areas		Battle Ground
	Transportation Project Areas		SCIP Project Areas		Camas
	Sanitary Sewer Project Areas		Vancouver City Limits		Washougal
	Surface Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$2,000,000.00
*Start of Construction (Year):	Unknown

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



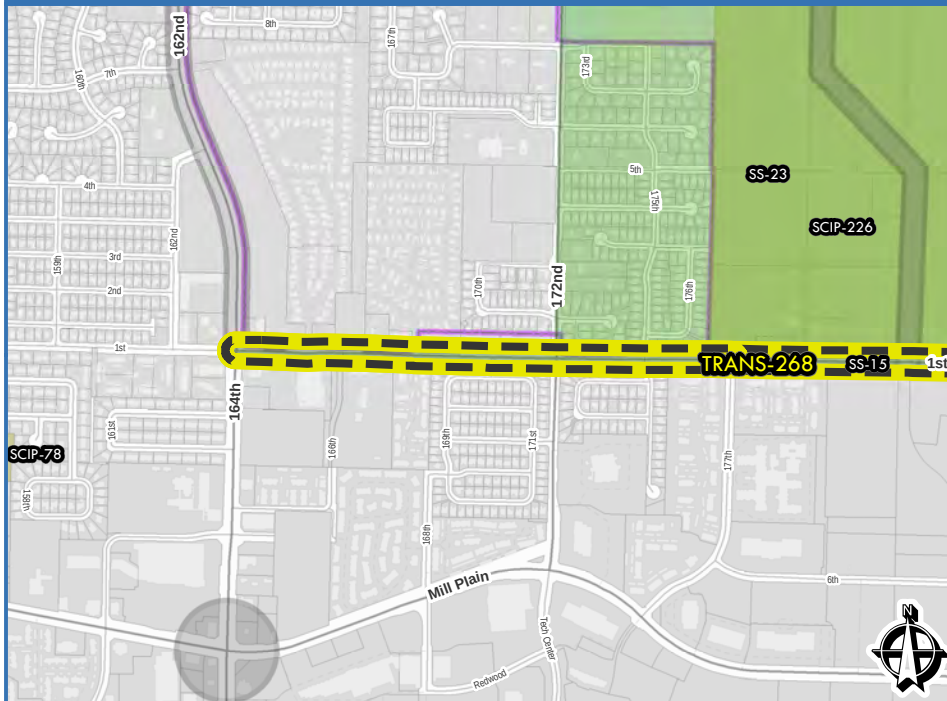
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **SE 1ST ST - SE 164TH AVE TO SE 177TH AVE**

PROJECT EXTENT: **SE 164TH AVE**

TO: **SE 177TH AVE**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	In Design
Funding Status:	Funded

PROJECT DESCRIPTION

Project Description / Comments

Urban arterial upgrade of existing 2-lane rural road to increase safety, mobility and livability, and meet future subarea needs. Roadway cross section varies with 3 and 5-lane segments. Improvements include sidewalks, bike facilities, stormwater, streetlights and sound walls. Anticipated funding of west portion (164th-177th avenues) by SFS \$ and potential grants. Anticipated funding of east portion (177th to 192nd) by developer contributions, local funds and potential grants. Cost estimates shown here are for west only.

LEGEND

Project Area	SCIP Project Areas	Battle Ground
Transportation Project Areas	Vancouver City Limits	Camas
Sanitary Sewer Project Areas	Building Footprints	Washougal
Surface Water Project Areas	Taxlots	
Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Funded
Existing Funds:	Yes
SFS Funds:	Yes
Grant Funds:	Potential
Total Proj. Cost:	\$12,000,000.00
*Start of Construction (Year): 2019 (est)	

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



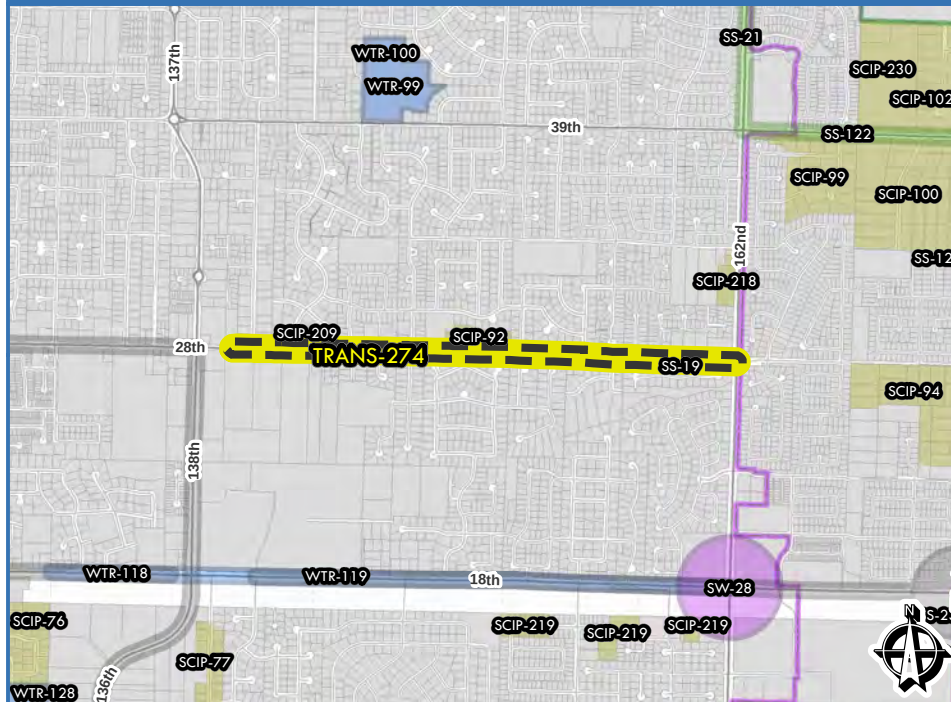
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **NE 28TH ST - NE 142ND AVE TO NE 162ND AVE.**

PROJECT EXTENT: **NE 142ND AVE**

TO: NE 162ND AVE

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Upgrade of existing 2-lane former rural road to urban 3-lane minor arterial (1 lane each direction plus center turn lane) with sidewalks, bike facilities, streetlights, signals, school crossings, stormwater and sound walls where required. Project addresses capacity and improves pavement and safety conditions.

LEGEND



Project Area



Water Project Areas

Clark County



Transportation Project Areas

SCIP Project Areas



Battle Ground



Sanitary Sewer Project Areas



Vancouver City Limits



Camas



Surface Water Project Areas



Taxlots



Washougal

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$9,750,000.00
*Start of Construction (Year):	Unknown



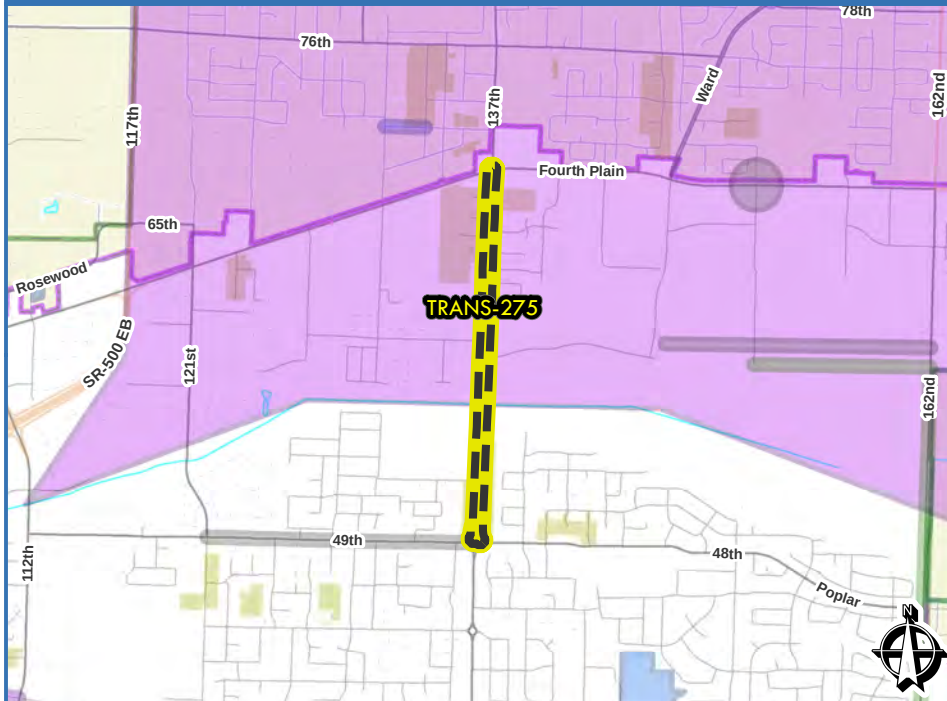
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: NE 137TH AVE - NE 49TH ST TO NE FOURTH PLAIN BLVD

PROJECT EXTENT: **NE 49TH ST**

TO: **NE FOURTH PLAIN BLVD**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	In Design
Funding Status:	Partially Funded

PROJECT DESCRIPTION

Project Description / Comments

Urban upgrade of existing, narrow 2-lane rural road. Upgrades to this minor arterial include 1 lane each direction with turn lane or median divider with roundabouts, new NE 59th St intersection, sidewalks, bike facilities, stormwater facilities and streetlights. Improvements will enhance safety, manage access and minimize delays now caused by turning vehicles.

LEGEND



Project Area



Water Project Areas



Battle Ground



Transportation Project Areas

SCIP Project Areas



Camas



Sanitary Sewer Project Areas



Vancouver City Limits



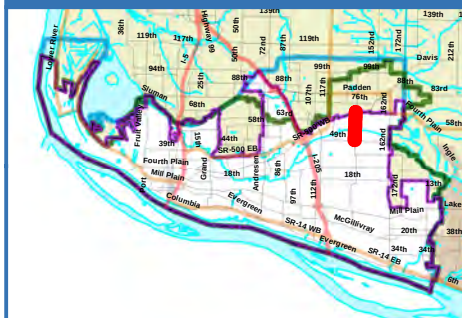
Washougal



Surface Water Project Areas

Clark County

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Partially Funded
Existing Funds:	Yes
SFS Funds:	Yes
Grant Funds:	Potential
Total Proj. Cost:	\$20,000,000.00
*Start of Construction (Year): 2020 (Est)	



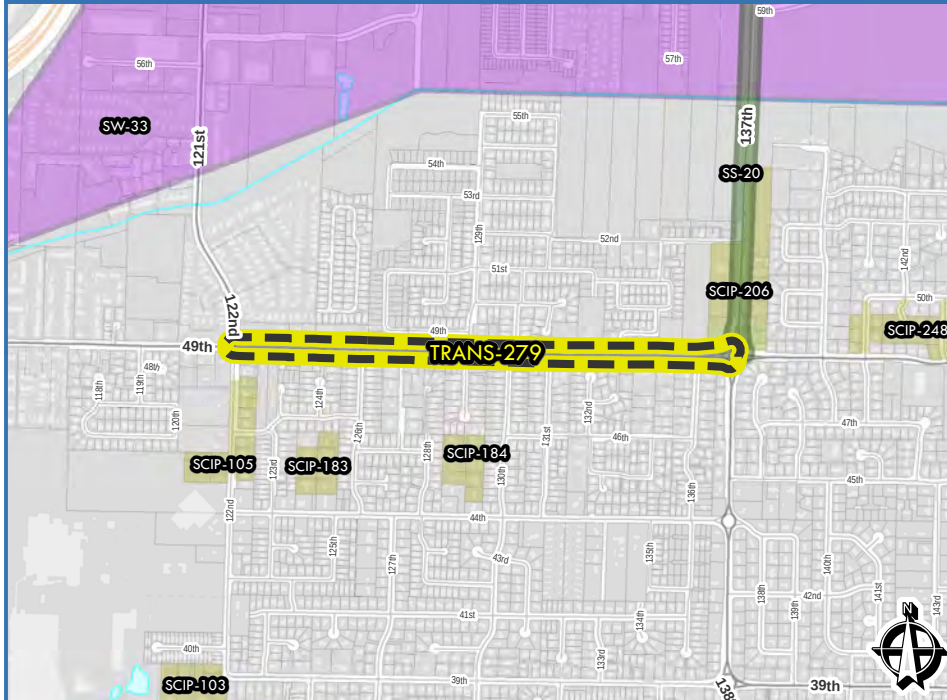
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: NE 49TH ST - NE 122ND AVE TO NE 137TH AVE

PROJECT EXTENT: **NE 122ND AVE**

TO: **NE 137TH AVE**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Upgrade of existing 2-lane street to 3-lane urban minor arterial (1 lane each direction and turn lane) with sidewalks, bike facilities and streetlights.

LEGEND



VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$8,700,000.00
*Start of Construction (Year):	Unknown



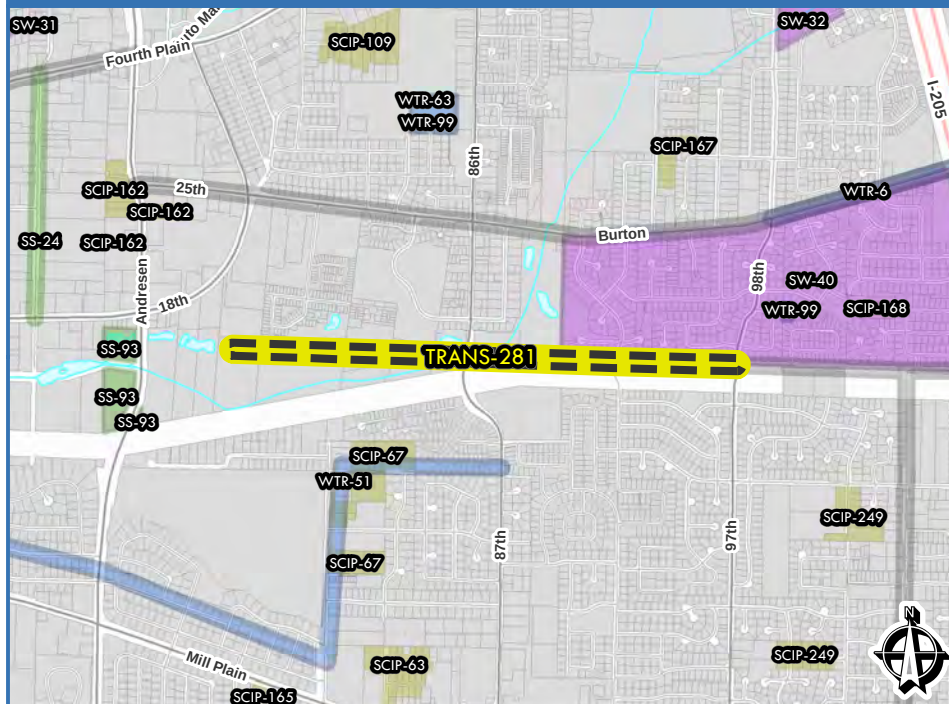
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **NE 18TH ST - NE 87TH AVE TO NE 97TH AVE**

PROJECT EXTENT: **NE 87TH AVE**

TO: **NE 97TH AVE**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

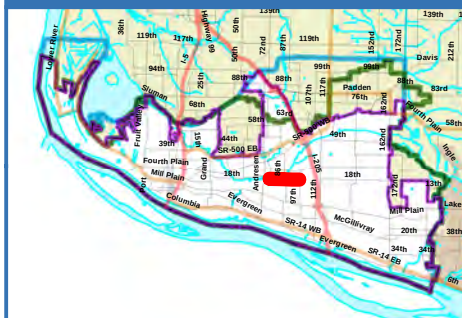
Project Description / Comments

Long-planned construction of new minor arterial street (1 lane each direction plus turn lane) with bike facilities, streetlights, sound walls, a sidewalk on north side and shared use pathway on south side of street. Project provides planned east-west circulation.

LEGEND

	Project Area		Water Project Areas		Clark County
	Transportation Project Areas		SCIP Project Areas		Battle Ground
	Sanitary Sewer Project Areas		Vancouver City Limits		Camas
	Surface Water Project Areas		Taxlots		Washougal

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$14,200,000.00
*Start of Construction (Year):	Unknown

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



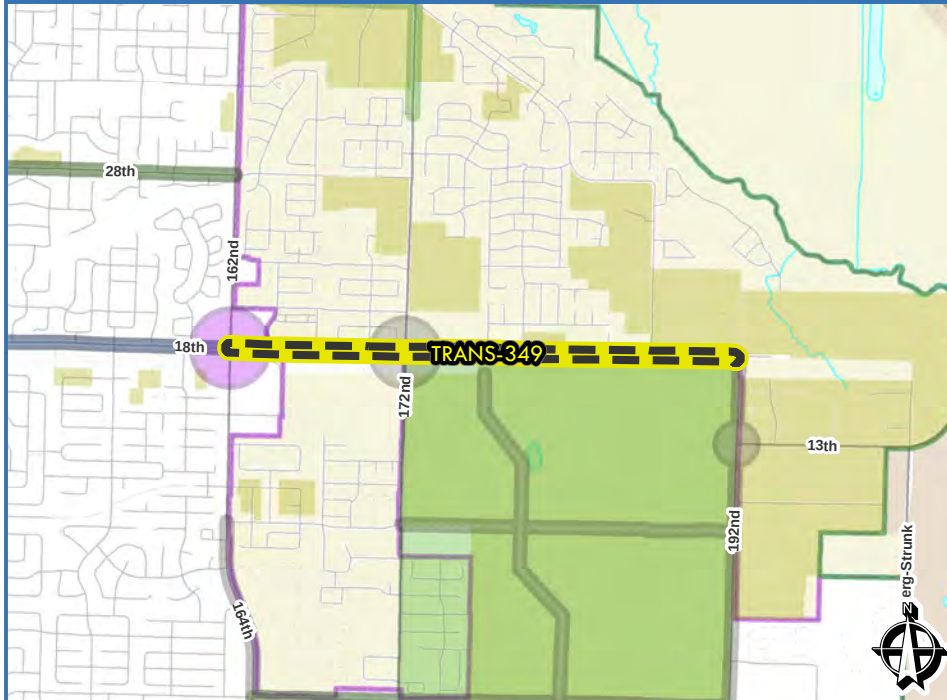
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **NE 18TH ST - NE 164TH AVE TO NE 192ND AVE**

PROJECT EXTENT: **NE 164TH AVE**

TO: **NE 192ND AVE**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Long-planned upgrade of 2-lane principal arterial, originally at rural standards, to increase safety and improve service levels. Improvements include additional travel lanes, bike facilities, streetlights, sound walls, sidewalk on north side and shared use pathway on south side of street.

LEGEND

Project Area	Water Project Areas	Battle Ground
Transportation Project Areas	SCIP Project Areas	Camas
Sanitary Sewer Project Areas	Vancouver City Limits	Washougal
Surface Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$18,250,000.00
*Start of Construction (Year):	Unknown

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



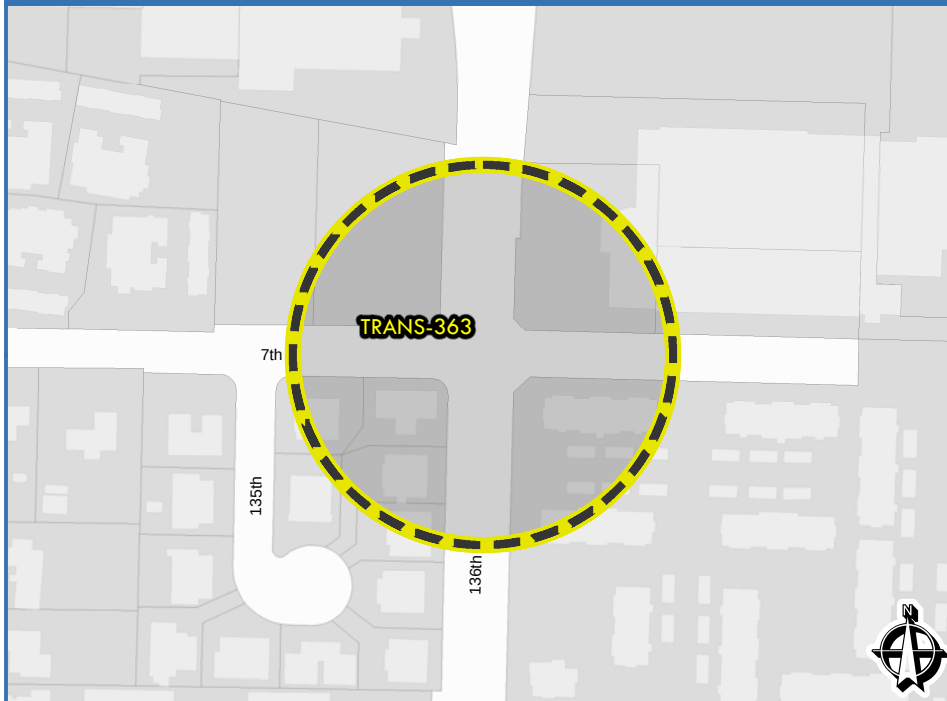
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **SE 136TH AVE @ SE 7TH ST**

PROJECT EXTENT:

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	On Hold
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Installation of new traffic signal to improve service and multimodal safety. Includes ADA ramps and streetlights and provides potentially high safety benefits. Design and ROW are fully funded, and city is seeking grants for construction.

LEGEND

Project Area	SCIP Project Areas	Battle Ground
Transportation Project Areas	Vancouver City Limits	Camas
Sanitary Sewer Project Areas	Building Footprints	Washougal
Surface Water Project Areas	Taxlots	
Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	
*Start of Construction (Year):	Unknown

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



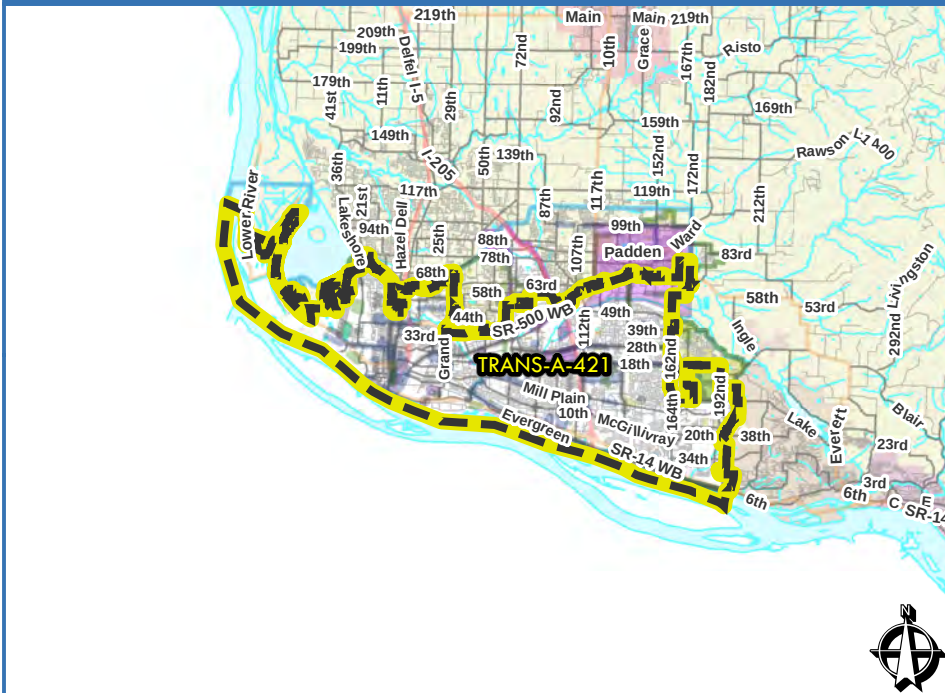
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **PAVEMENT RECONSTRUCTION PROGRAM**

PROJECT EXTENT: **CITYWIDE**

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Ongoing
Project Status:	Future
Funding Status:	Funded

PROJECT DESCRIPTION

Project Description / Comments

Major pavement and roadway reconstruction of failed pavement on existing streets at various locations citywide. Of Vancouver's 1,810 lane miles, approx 185 lane miles were rated 'failed' in 2016. Currently no annual budget, but new SFS \$ begins to partially fund the program starting in 2019.

LEGEND

	Project Area		Water Project Areas		Battle Ground
	Transportation Project Areas		SCIP Project Areas		Camas
	Sanitary Sewer Project Areas		Vancouver City Limits		Washougal
	Surface Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Funded
Existing Funds:	No
SFS Funds:	Yes
Grant Funds:	No
Total Proj. Cost:	\$0.00
*Start of Construction (Year):	2019

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



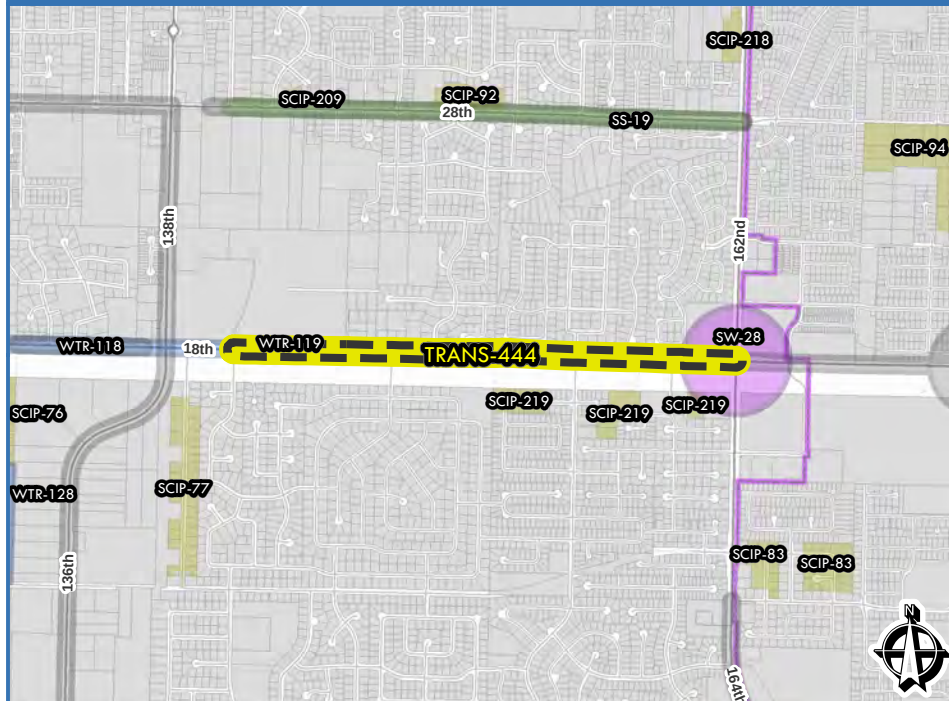
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **NE 18TH ST - NE 142ND AVE TO NE 162ND AVE**

PROJECT EXTENT: **NE 142ND AVE**

TO: **NE 162ND AVE**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Long-planned urban upgrade of 2-lane road to principal arterial standards. originally built at rural standards to improve service and safety. Improvements include 5-lane principal arterial (2 lanes each direction plus turn lane) with bike facilities, streetlights, sound walls, sidewalk on north side and shared use pathway on south side of street.

LEGEND

	Project Area		Water Project Areas		Clark County
	Transportation Project Areas		SCIP Project Areas		Battle Ground
	Sanitary Sewer Project Areas		Vancouver City Limits		Camas
	Surface Water Project Areas		Taxlots		Washougal

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$19,600,000.00
*Start of Construction (Year):	Unknown

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



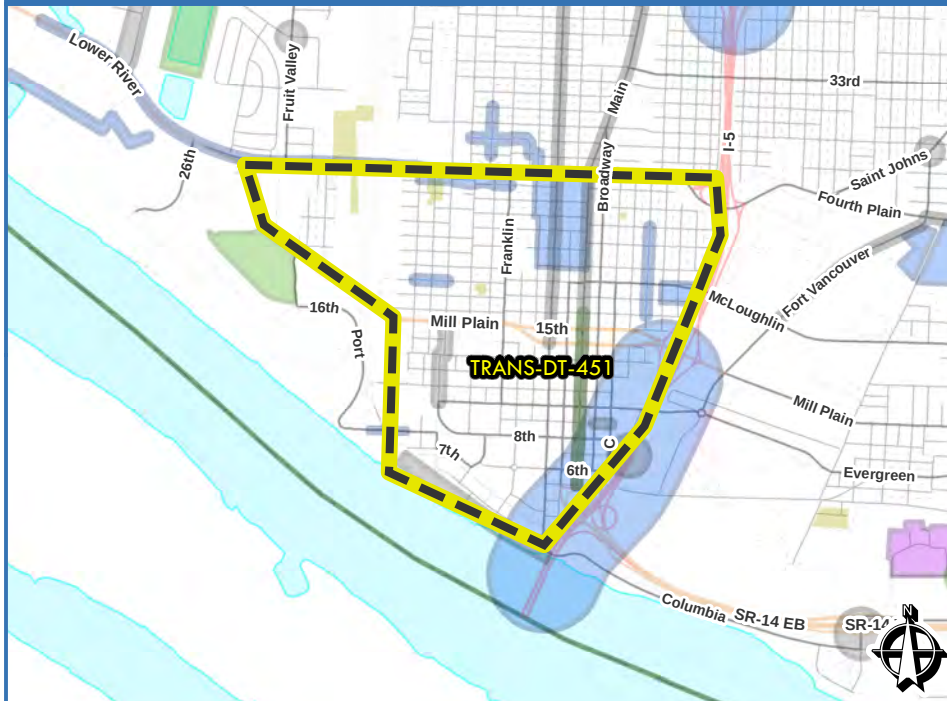
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **DESTINATION DOWNTOWN TDM**

PROJECT EXTENT:

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Multimodal
Project Status:	Ongoing
Funding Status:	Funded

PROJECT DESCRIPTION

Project Description / Comments

Downtown-focused transportation demand management program, supporting City Center Vision, commute trip reduction and transportation efficiency. Includes employer outreach, commuter training, bike, sidewalk and ADA facilities and program incentives.

LEGEND

	Project Area		Water Project Areas		Battle Ground
	Transportation Project Areas		SCIP Project Areas		Camas
	Sanitary Sewer Project Areas		Vancouver City Limits		Washougal
	Surface Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Funded
Existing Funds:	Yes
SFS Funds:	No
Grant Funds:	Yes
Total Proj. Cost:	\$459,000.00
*Start of Construction (Year):	2016



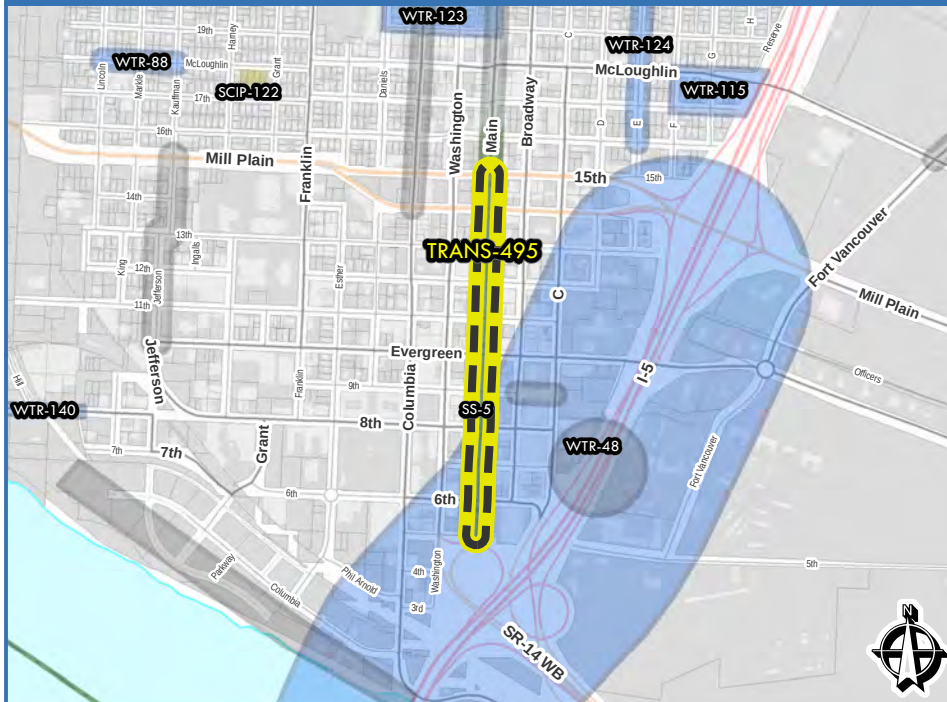
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **MAIN ST RECONSTRUCTION - 5TH ST TO 15TH STREET**

PROJECT EXTENT: **5TH ST**

TO: 15TH ST

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Enhancement
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

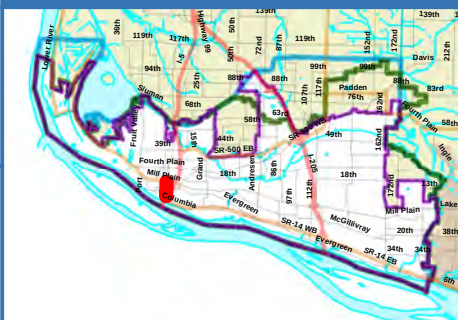
Project Description / Comments

Improve safety with complete reconstruction of pavement and sidewalks, a priority of City Center Vision. Project includes upgraded streetlights and pedestrian amenities.

LEGEND

	Project Area		SCIP Project Areas		Battle Ground
	Transportation Project Areas		Vancouver City Limits		Camas
	Sanitary Sewer Project Areas		Building Footprints		Washougal
	Surface Water Project Areas		Taxlots		
	Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$11,150,000.00
*Start of Construction (Year):	Unknown

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



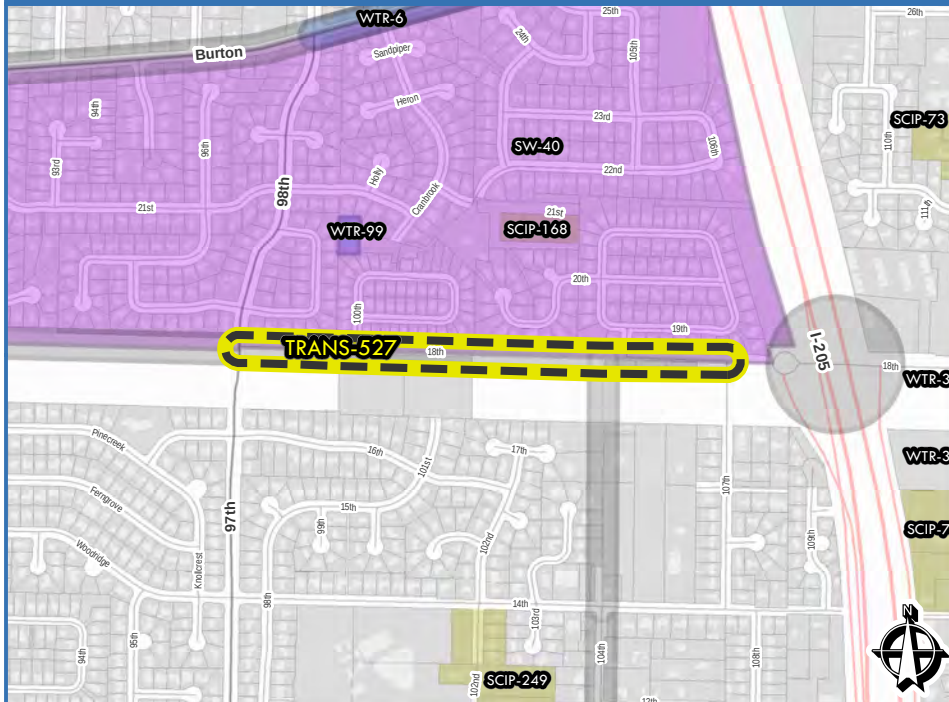
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **NE 18TH ST - NE 97TH AVE TO NE 107TH AVENUE**

PROJECT EXTENT: **NE 97TH AVE**

TO: **NE 107TH AVE**

PROJECT AREA MAP



LEGEND

- | | | | | | |
|--|------------------------------|--|-----------------------|--|---------------|
| | Project Area | | SCIP Project Areas | | Battle Ground |
| | Transportation Project Areas | | Vancouver City Limits | | Camas |
| | Sanitary Sewer Project Areas | | Building Footprints | | Washougal |
| | Surface Water Project Areas | | Taxlots | | |
| | Water Project Areas | | Clark County | | |

PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	Future
Funding Status:	Partially Funded

PROJECT DESCRIPTION

Project Description / Comments

Long-planned new principal arterial street and upgrade of existing segments to current arterial standards including travel lanes, turn lane, bike facilities, streetlights, sound walls, sidewalk on one side of street and shared use pathway on other. Note: WSDOT will open a new I-205 interchange at NE 18th Street in 2016. Design and right-of-way phases are funded. Construction is unfunded.

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Partially Funded
Existing Funds:	Yes
SFS Funds:	Yes
Grant Funds:	Potential
Total Proj. Cost:	\$13,500,000.00
*Start of Construction (Year): 2022 (Est)	



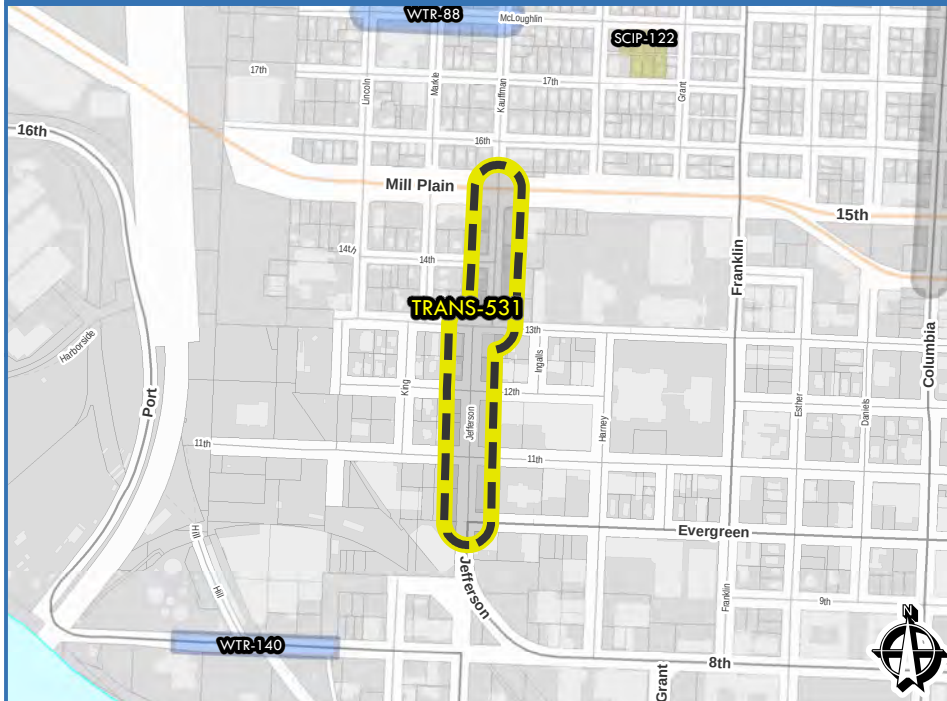
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **JEFFERSON ST - W EVERGREEN TO W MILL PLAIN BLVD**

PROJECT EXTENT: **8TH ST**

TO: 13TH ST

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	In Design
Funding Status:	Partially Funded

PROJECT DESCRIPTION

Project Description / Comments

Upgrade of a priority westside arterial circulation route with realignment of Jefferson/Kauffman at 13th St. Projects include 3 lanes (1 lane each direction and turn lane), ADA ramps, sidewalk repair, bike facilities and streetlights, with potential for high safety benefits. Design phase and right-of-way phases are funded. Construction phase unfunded.

LEGEND

Project Area	SCIP Project Areas	Battle Ground
Transportation Project Areas	Vancouver City Limits	Camas
Sanitary Sewer Project Areas	Building Footprints	Washougal
Surface Water Project Areas	Taxlots	
Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Partially Funded
Existing Funds:	Yes
SFS Funds:	Yes
Grant Funds:	Potential
Total Proj. Cost:	\$11,000,000.00
*Start of Construction (Year):	Uncertain



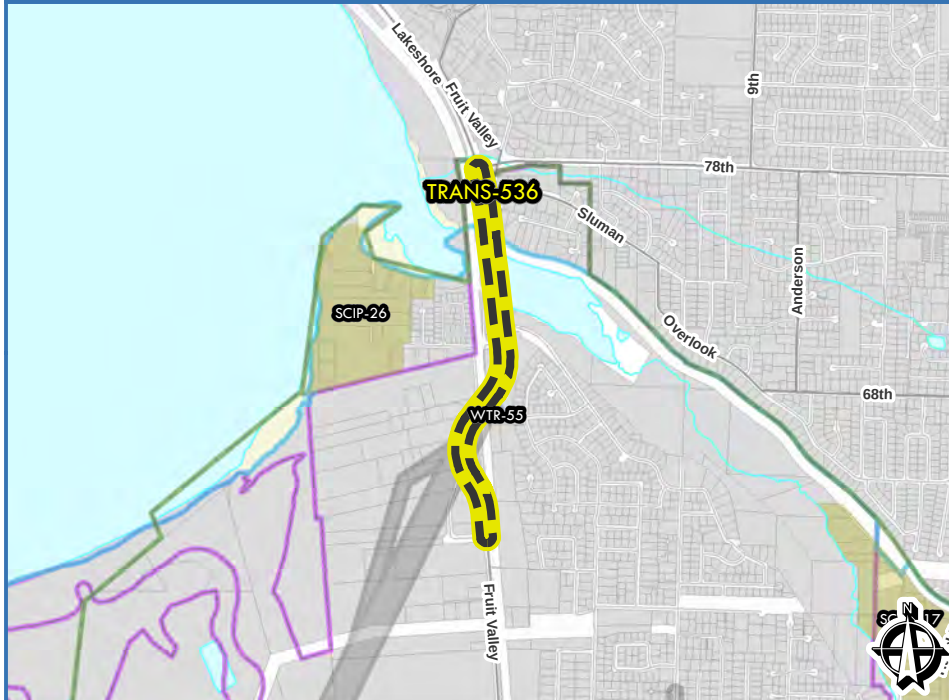
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **FRUIT VALLEY RD - 61ST ST TO NW 78TH ST**

PROJECT EXTENT: **WHITNEY RD**

TO: **NW 78TH ST**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

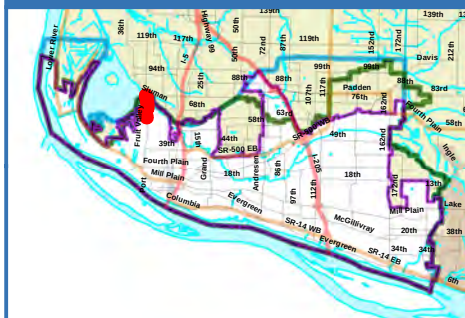
Project Description / Comments

Upgrade of substandard 2-lane road to full urban principal arterial (1 lane each direction plus center turn lane) to improve safety, mobility and traffic conditions. Project includes sidewalks, bike facilities, streetlights and replacement of existing substandard bridge over railroad tracks. The Westside Mobility Study recommends this project be constructed to help move people, freight, and goods.

LEGEND

Project Area	Water Project Areas	Clark County
Transportation Project Areas	SCIP Project Areas	Battle Ground
Sanitary Sewer Project Areas	Vancouver City Limits	Camas
Surface Water Project Areas	Taxlots	Washougal

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	Potential
SFS Funds:	Potential
Grant Funds:	Potential
Total Proj. Cost:	\$34,100,000.00
*Start of Construction (Year):	Unknown

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



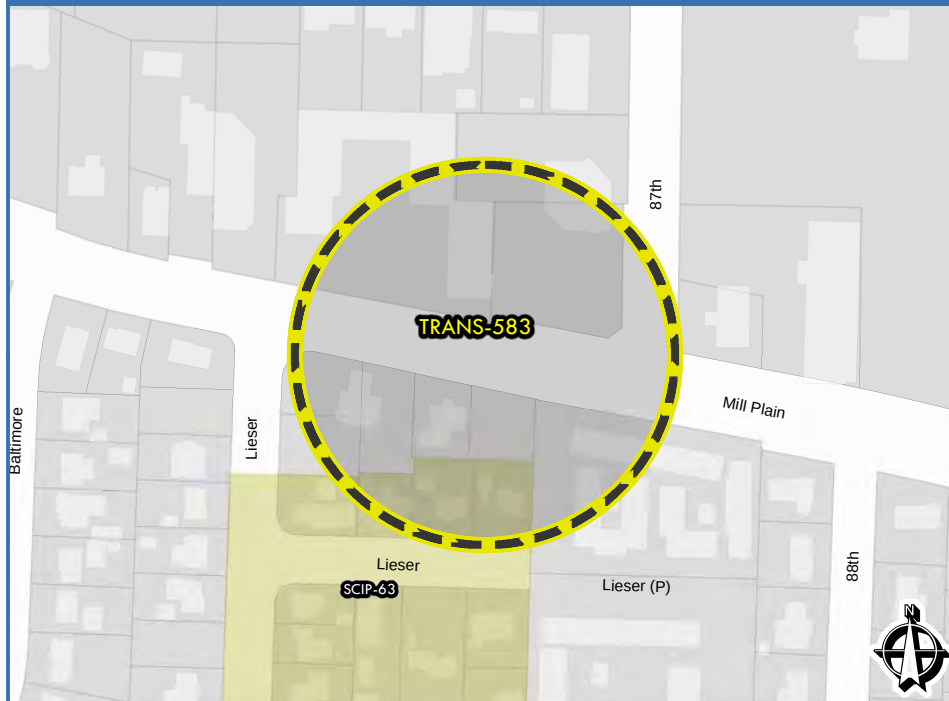
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **NE 87TH AVE / LIESER RD. REALIGNMENT**

PROJECT EXTENT: **LIESER RD.**

TO: **EAST 5TH ST.**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Intersection modifications along E. Mill Plain Blvd. at NE 87th Ave. and Lieser Rd to improve capacity and safety at these offset intersections. Scope of project is undefined.

LEGEND

	Project Area		SCIP Project Areas		Battle Ground
	Transportation Project Areas		Vancouver City Limits		Camas
	Sanitary Sewer Project Areas		Building Footprints		Washougal
	Surface Water Project Areas		Taxlots		
	Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$5,000,000.00
*Start of Construction (Year):	Unknown

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



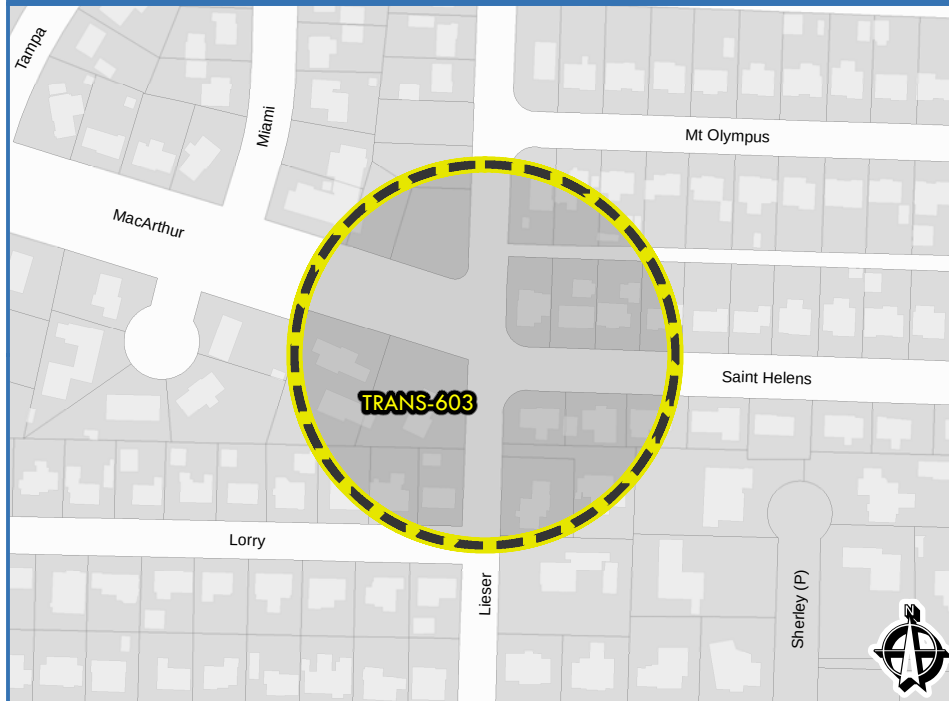
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **LIESER RD @ MACARTHUR ST. INTERSECTION**

PROJECT EXTENT: **MACARTHUR ST. INTERSECTION**

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	Future
Funding Status:	Partially Funded

PROJECT DESCRIPTION

Project Description / Comments

Intersection modification of existing 4-way-stop intersection operating at near maximum capacity. Improvements include new traffic signal, upgraded sidewalks, ADA ramps and streetlights to improve traffic system, safety, mobility and accessibility

LEGEND

Project Area	SCIP Project Areas	Battle Ground
Transportation Project Areas	Vancouver City Limits	Camas
Sanitary Sewer Project Areas	Building Footprints	Washougal
Surface Water Project Areas	Taxlots	
Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Partially Funded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$1,075,000.00
*Start of Construction (Year):	Unknown

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



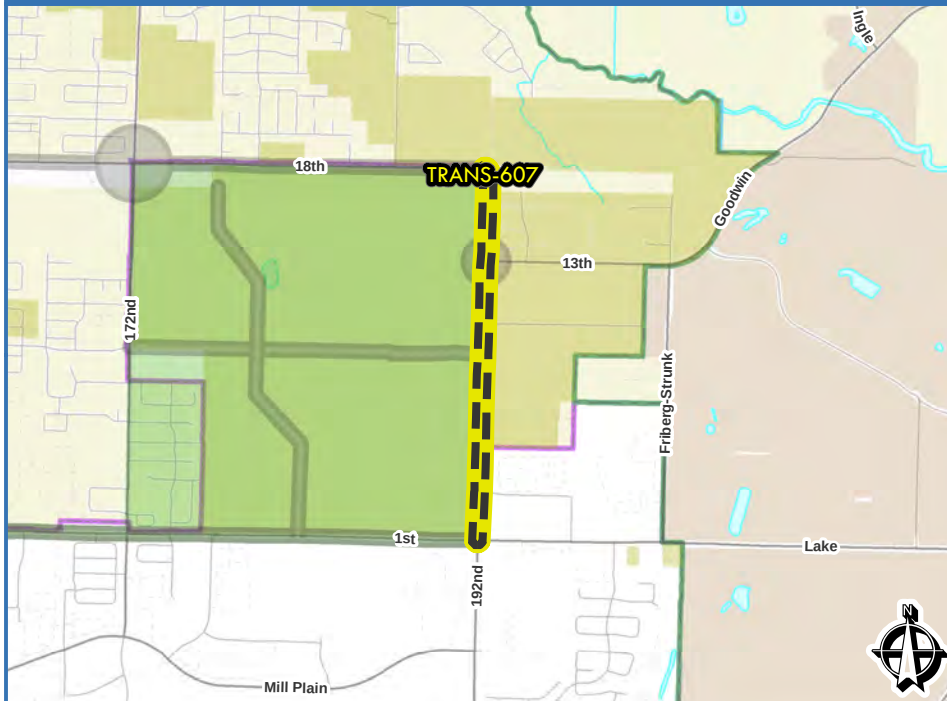
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **NE 192ND AVE - SE 1ST ST. TO NE 18TH ST.**

PROJECT EXTENT: **SE 1ST ST**

TO: **NE 18TH ST**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Urban upgrade of existing 2-lane street. Improvements include additional travel lanes, sidewalks, bike facilities, ADA ramps and streetlights to improve system, safety, mobility and accessibility.

LEGEND

	Project Area		Water Project Areas		Battle Ground
	Transportation Project Areas		SCIP Project Areas		Camas
	Sanitary Sewer Project Areas		Vancouver City Limits		Washougal
	Surface Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$20,000,000.00
*Start of Construction (Year):	Unknown

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



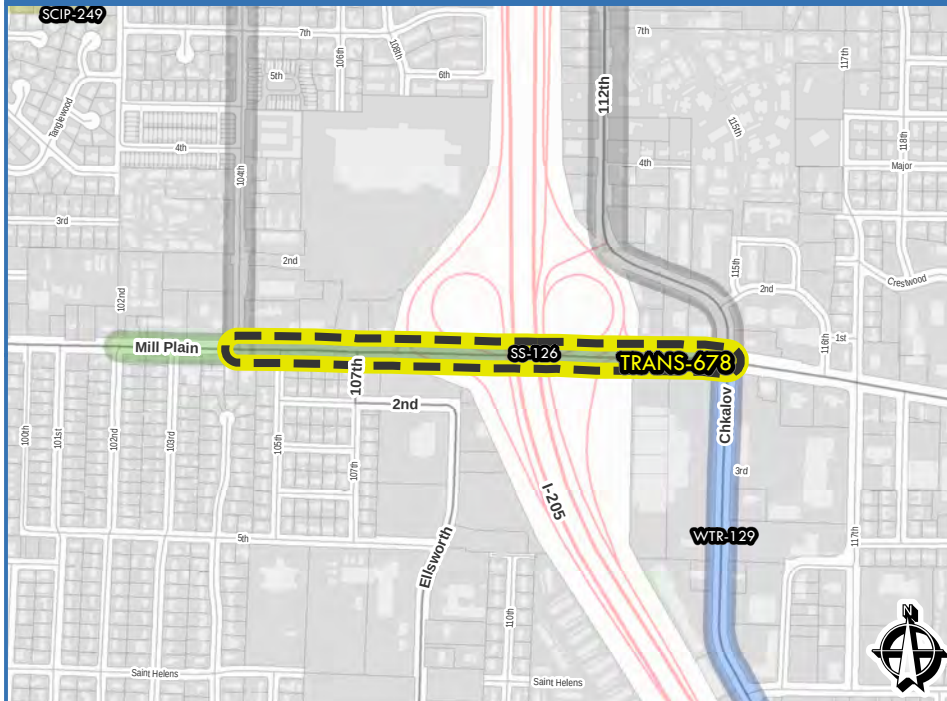
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **E MILL PLAIN BLVD. - 104TH AVE TO CHKALOV**

PROJECT EXTENT: **NE 104TH AVE**

TO: **CHKALOV**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	In ROW
Funding Status:	Funded

PROJECT DESCRIPTION

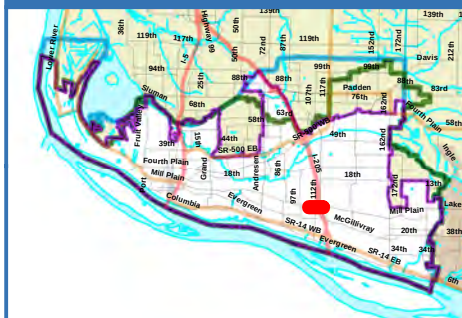
Project Description / Comments

Roadway, traffic signal, access and southbound I-205 onramp modifications to enhance safety and minimize delays. Includes realignment of SE 104th Ave to SE 2nd St, modification of access at SE 105th Ave, closure of NE 107th Ave access to Mill Plain, improved ADA and pedestrian facilities, street lights, pavement restoration and transit stop.

LEGEND

Project Area	SCIP Project Areas	Battle Ground
Transportation Project Areas	Vancouver City Limits	Camas
Sanitary Sewer Project Areas	Building Footprints	Washougal
Surface Water Project Areas	Taxlots	
Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Funded
Existing Funds:	Yes
SFS Funds:	No
Grant Funds:	Yes
Total Proj. Cost:	\$4,500,000.00
*Start of Construction (Year):	2018

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



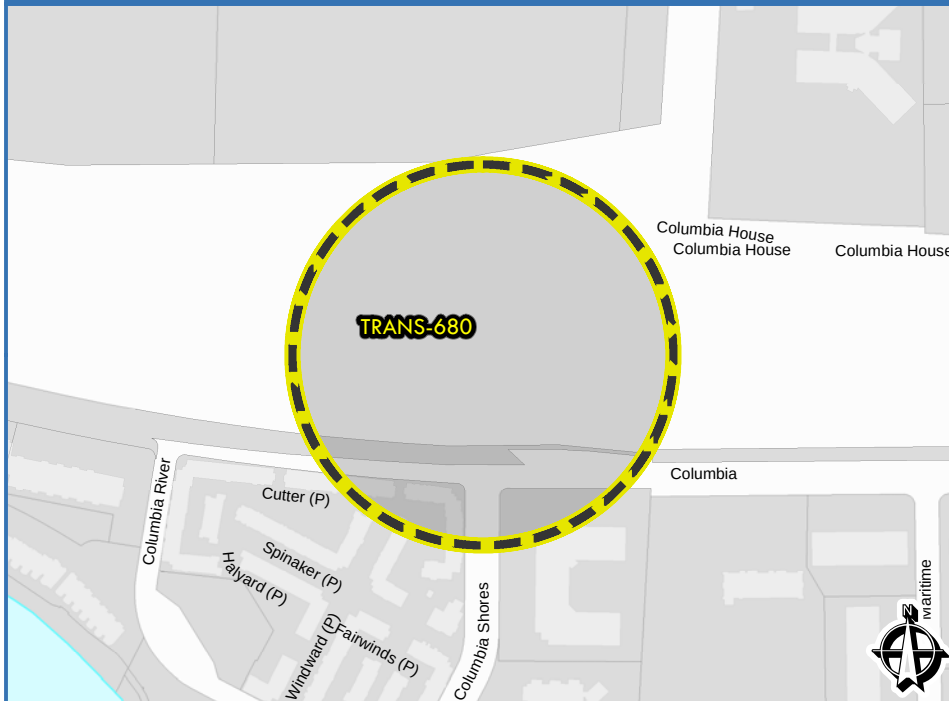
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **COLUMBIA SHORES BLVD @ COLUMBIA WAY - BNSF UNDERCROSSING WIDENING**

PROJECT EXTENT: **RR UNDERCROSSING PORTAL**

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

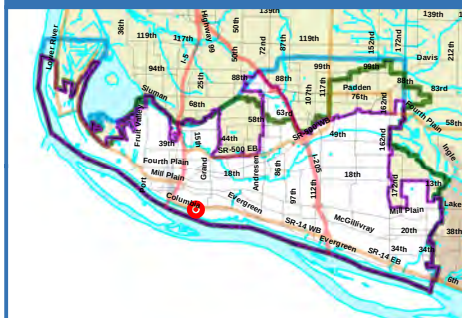
Project Description / Comments

Project to widen existing railroad undercrossing portal and improve Columbia Shores/Columbia Way intersection to address service levels and increase pedestrian and bike access. Total scope of project is undefined.

LEGEND

Project Area	SCIP Project Areas	Battle Ground
Transportation Project Areas	Vancouver City Limits	Camas
Sanitary Sewer Project Areas	Building Footprints	Washougal
Surface Water Project Areas	Taxlots	
Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$25,000,000.00
*Start of Construction (Year):	Unknown

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



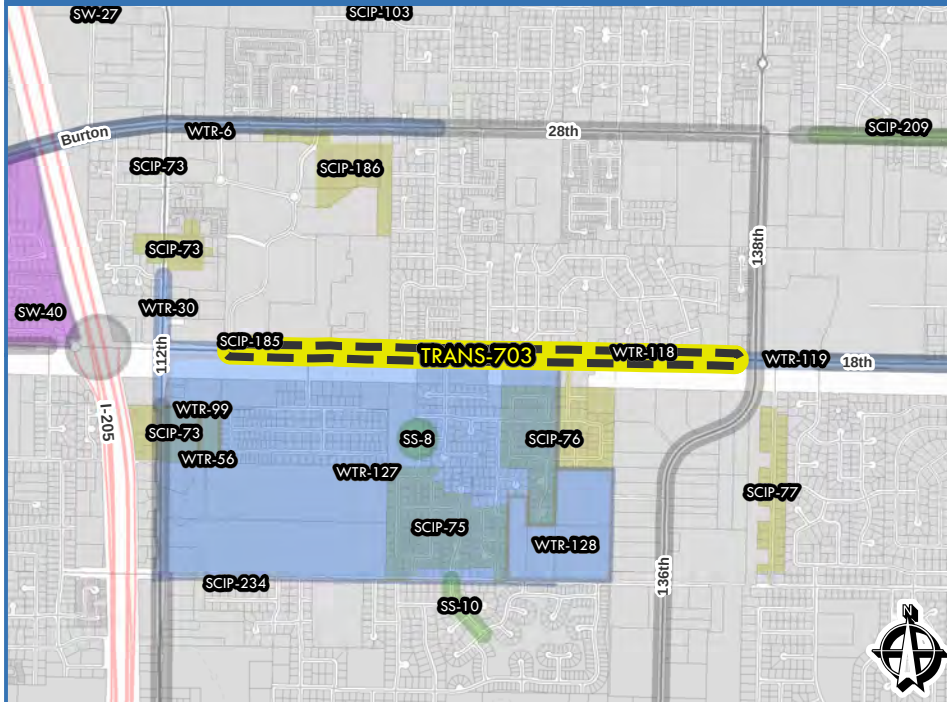
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **NE 18TH ST - FOUR SEASONS LANE TO NE 138TH AVE**

PROJECT EXTENT: **FOUR SEASONS LANE**

TO: **138TH AVE**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	In Construction
Funding Status:	Funded

PROJECT DESCRIPTION

Project Description / Comments

Provides multi-modal east/west connection, enhances safety and alleviates traffic congestion on nearby streets. Construction is fully funded. Work expected to be complete in 2018. Long-planned urban upgrade of existing rural-standard 2-lane roadway. Improvements to this principal arterial street include 5 lanes (2 lanes each direction plus turn lane), new bike and pedestrian facilities, streetlights, sound walls and frontage road.

LEGEND

Project Area	Water Project Areas	Clark County
Transportation Project Areas	SCIP Project Areas	Battle Ground
Sanitary Sewer Project Areas	Vancouver City Limits	Camas
Surface Water Project Areas	Taxlots	Washougal

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Funded
Existing Funds:	Yes
SFS Funds:	No
Grant Funds:	Yes
Total Proj. Cost:	\$13,000,000.00
*Start of Construction (Year):	2017

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



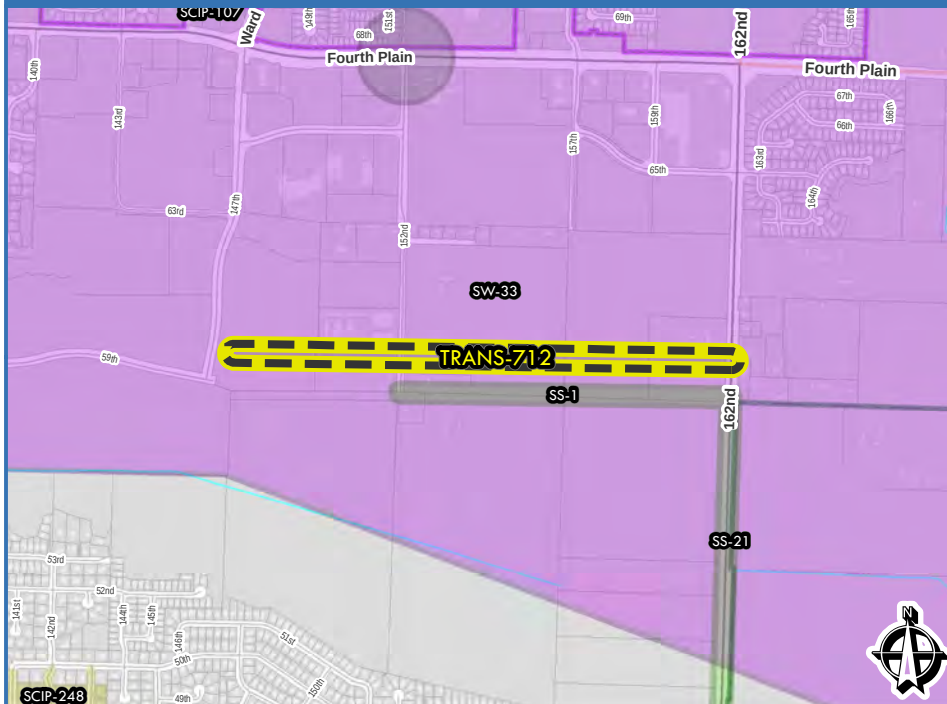
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **NE 59TH ST - NE 147TH AVE TO NE 162ND AVE**

PROJECT EXTENT: **NE 147TH AVE**

TO: **NE 162ND AVE**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

New minor arterial street (1 lane each direction plus turn lane) with sidewalks, bike facilities, streetlights and surface water treatment. Project will address circulation needs, improve safety, mobility, accessibility and stormwater management.

LEGEND

	Project Area		SCIP Project Areas		Battle Ground
	Transportation Project Areas		Vancouver City Limits		Camas
	Sanitary Sewer Project Areas		Building Footprints		Washougal
	Surface Water Project Areas		Taxlots		
	Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$7,450,000.00
*Start of Construction (Year):	Unknown

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



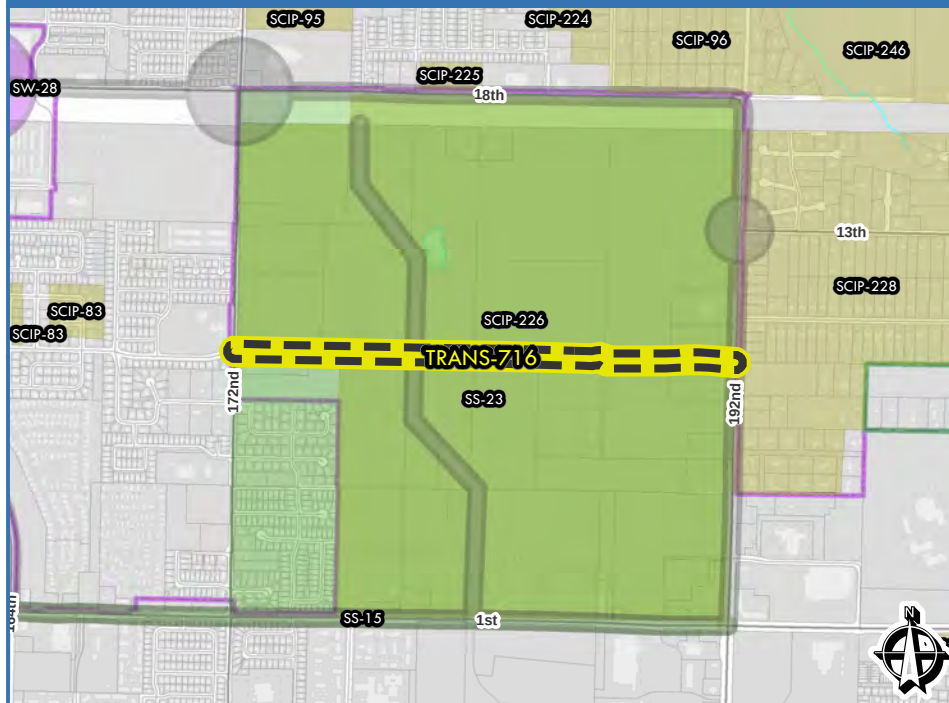
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **NE 9TH ST - NE 172ND AVE TO NE 192ND AVE**

PROJECT EXTENT: **NE 172ND AVE**

TO: **NE 192ND AVE**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

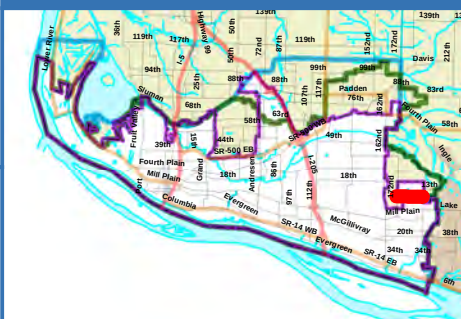
Project Description / Comments

New urban collector street (1 lane each direction plus turn lane), including sidewalks, bike facilities, streetlights. This priority east-west circulation route in part of Section 30 Sub Area Plan concept.

LEGEND

	Project Area		SCIP Project Areas		Battle Ground
	Transportation Project Areas		Vancouver City Limits		Camas
	Sanitary Sewer Project Areas		Building Footprints		Washougal
	Surface Water Project Areas		Taxlots		
	Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$10,000,000.00
*Start of Construction (Year):	Unknown

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



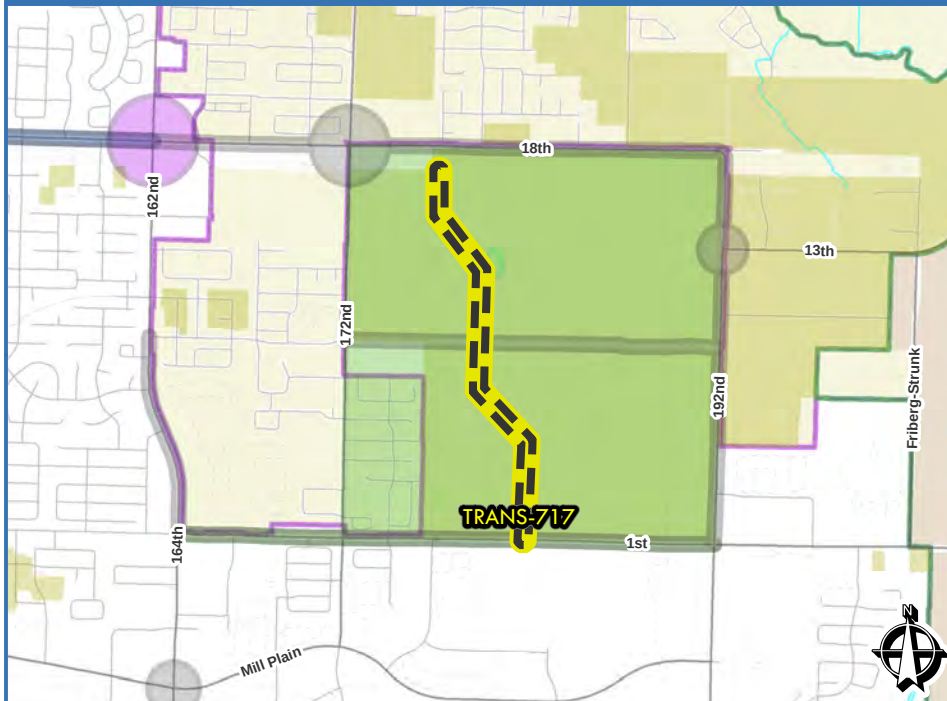
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **NE 182ND AVE - SE 1ST ST TO NE 18TH ST**

PROJECT EXTENT: **SE 1ST ST**

TO: **NE 18TH ST**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

New urban collector street (1 lane each direction plus turn lane), including sidewalks, bike facilities and streetlights. Roadway weaves north/south thru site and is part of Section 30 Sub Area Plan concept.

LEGEND

Project Area	Water Project Areas	Battle Ground
Transportation Project Areas	SCIP Project Areas	Camas
Sanitary Sewer Project Areas	Vancouver City Limits	Washougal
Surface Water Project Areas	Clark County	

VICINITY MAP





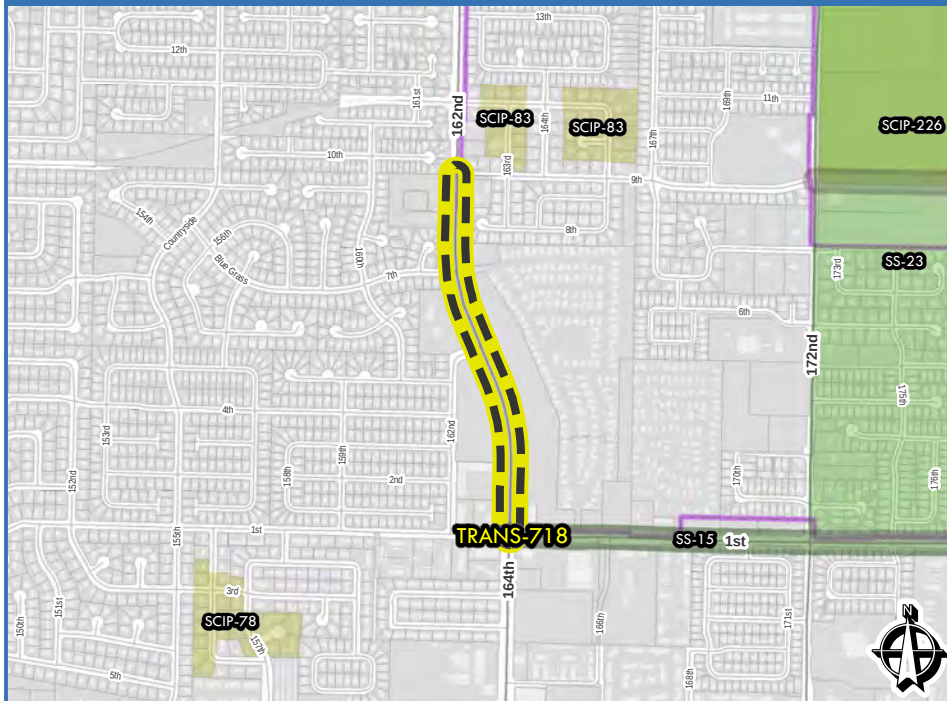
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **NE 162ND AVE - SE 1ST ST TO NE 9TH ST**

PROJECT EXTENT: **SE 1ST ST**

TO: **NE 9TH ST**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Upgrade of 5-lane road to 7-lane principal arterial street (3 lanes each direction plus turn lane), including sidewalks, bike facilities and streetlights

LEGEND

Project Area	SCIP Project Areas	Battle Ground
Transportation Project Areas	Vancouver City Limits	Camas
Sanitary Sewer Project Areas	Building Footprints	Washougal
Surface Water Project Areas	Taxlots	
Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$11,250,000.00
*Start of Construction (Year):	Unknown



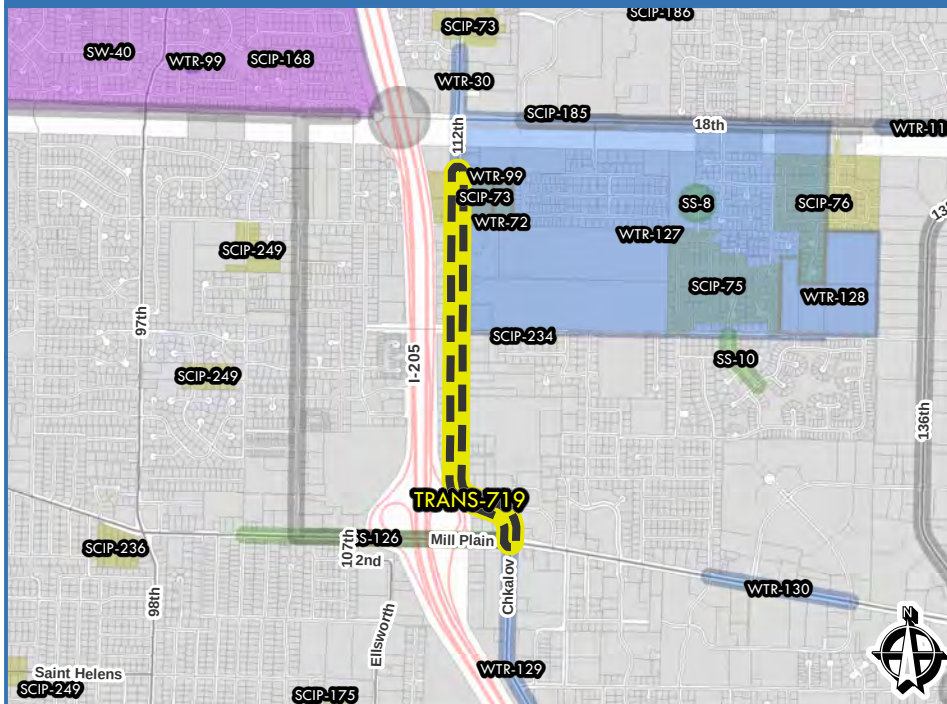
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **NE 112TH AVE - E MILL PLAIN BLVD. TO NE 28TH ST**

PROJECT EXTENT: **E MILL PLAIN BLVD**

TO: **NE 15TH ST**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

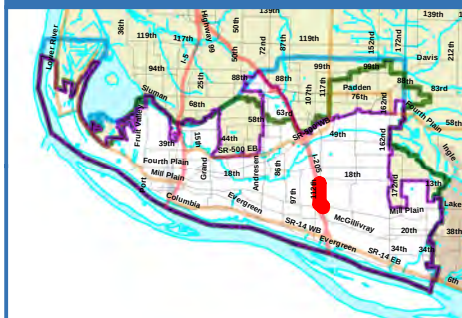
Project Description / Comments

Corridor improvements to bring NE 112th Ave up to urban arterial standards.

LEGEND

	Project Area		Water Project Areas		Clark County
	Transportation Project Areas		SCIP Project Areas		Battle Ground
	Sanitary Sewer Project Areas		Vancouver City Limits		Camas
	Surface Water Project Areas		Taxlots		Washougal

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$1,650,000.00
*Start of Construction (Year):	Unknown



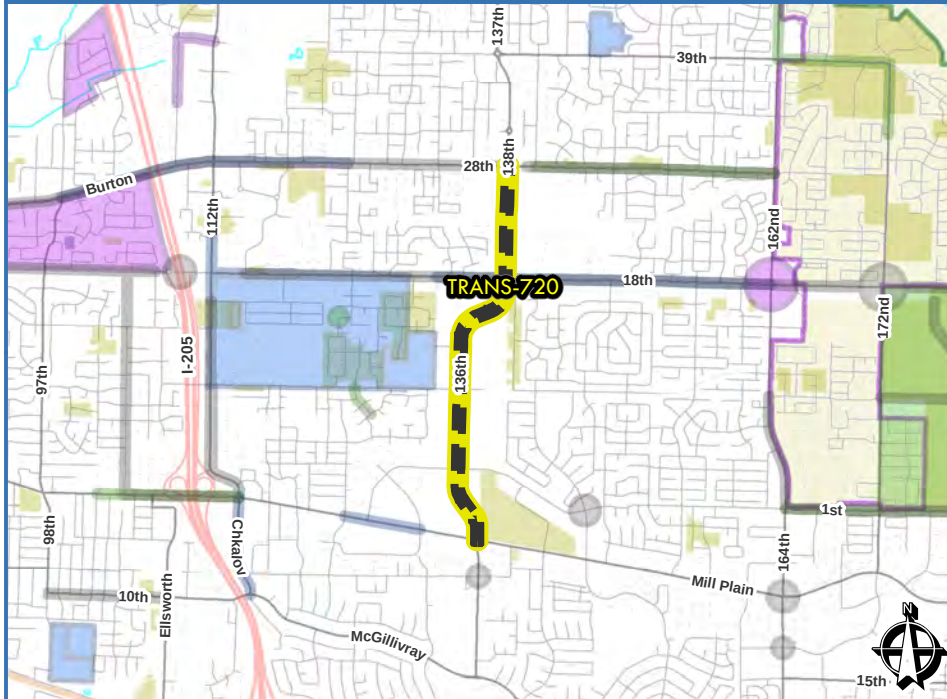
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **NE 136TH / 137TH AVE - E MILL PLAIN BLVD TO NE 28TH ST**

PROJECT EXTENT: **E MILL PLAIN BLVD**

TO: **NE 28TH ST**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

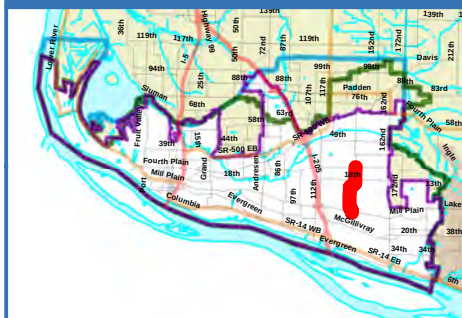
Project Description / Comments

Upgrade of traffic signals with new switches and hardware at each signal along corridor to improve communications, network operations and safety.

LEGEND

	Project Area		Water Project Areas		Battle Ground
	Transportation Project Areas		SCIP Project Areas		Camas
	Sanitary Sewer Project Areas		Vancouver City Limits		Washougal
	Surface Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$1,000,000.00
*Start of Construction (Year):	Unknown



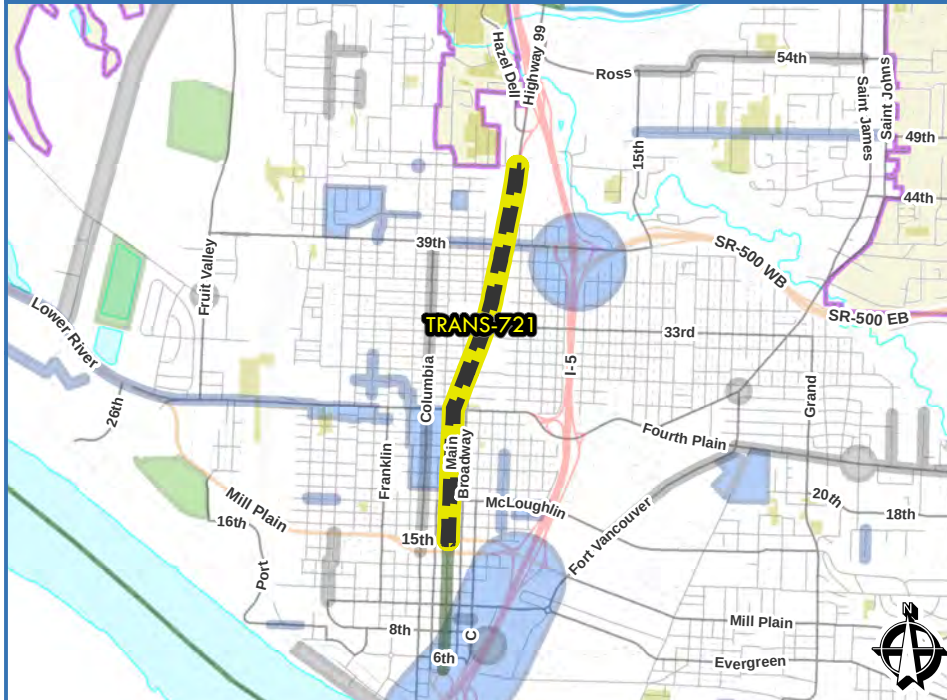
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **COLUMBIA ST./MAIN ST. VAST 6TH TO 45TH**

PROJECT EXTENT: **6TH ST**

TO: **NE 45TH ST**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	Completed
Funding Status:	Funded

PROJECT DESCRIPTION

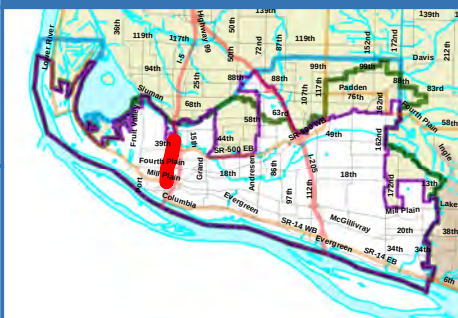
Project Description / Comments

New fiber optic communications and signal hardware at each traffic signal to improve communications, network operations and safety.

LEGEND

	Project Area		Water Project Areas		Battle Ground
	Transportation Project Areas		SCIP Project Areas		Camas
	Sanitary Sewer Project Areas		Vancouver City Limits		Washougal
	Surface Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Funded
Existing Funds:	Yes
SFS Funds:	No
Grant Funds:	Yes
Total Proj. Cost:	\$1,059,900.00
*Start of Construction (Year):	2016



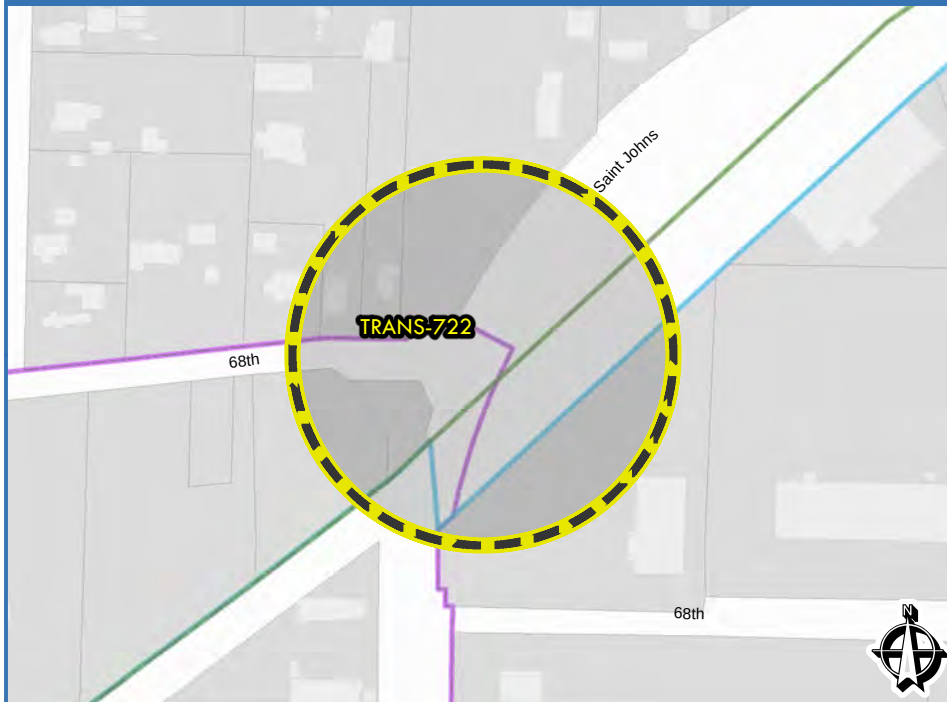
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **ST JOHNS BLVD. @ NE 68TH ST**

PROJECT EXTENT:

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	On Hold
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Modify existing intersection to improve traffic safety and level of service.

LEGEND

	Project Area		SCIP Project Areas		Battle Ground
	Transportation Project Areas		Vancouver City Limits		Camas
	Sanitary Sewer Project Areas		Building Footprints		Washougal
	Surface Water Project Areas		Taxlots		
	Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$1,000,000.00
*Start of Construction (Year):	Unknown



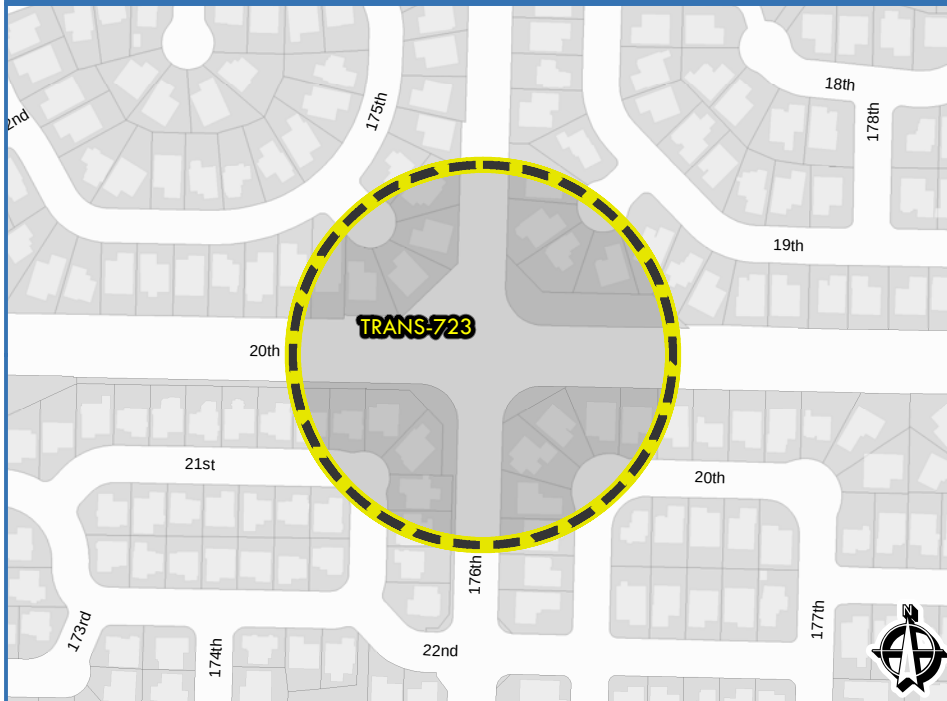
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **SE 20TH ST @ SE 176TH AVE**

PROJECT EXTENT:

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	On Hold
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Modify existing intersection to improve traffic safety, operations and level of service.

LEGEND

	Project Area		SCIP Project Areas		Battle Ground
	Transportation Project Areas		Vancouver City Limits		Camas
	Sanitary Sewer Project Areas		Building Footprints		Washougal
	Surface Water Project Areas		Taxlots		
	Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$500,000.00
*Start of Construction (Year):	Unknown



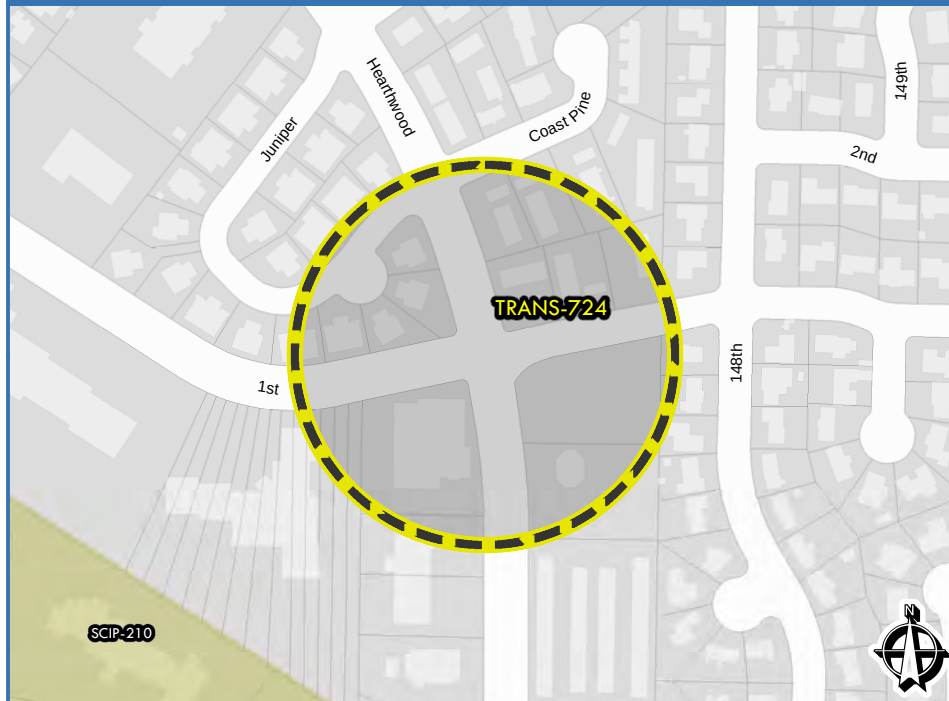
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **HEARTHWOOD @ SE 1ST ST**

PROJECT EXTENT:

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	On Hold
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Modify existing intersection for traffic safety, operations and level of service. Scope of work is undefined.

LEGEND

	Project Area		SCIP Project Areas		Battle Ground
	Transportation Project Areas		Vancouver City Limits		Camas
	Sanitary Sewer Project Areas		Building Footprints		Washougal
	Surface Water Project Areas		Taxlots		
	Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$500,000.00
*Start of Construction (Year):	Unknown

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



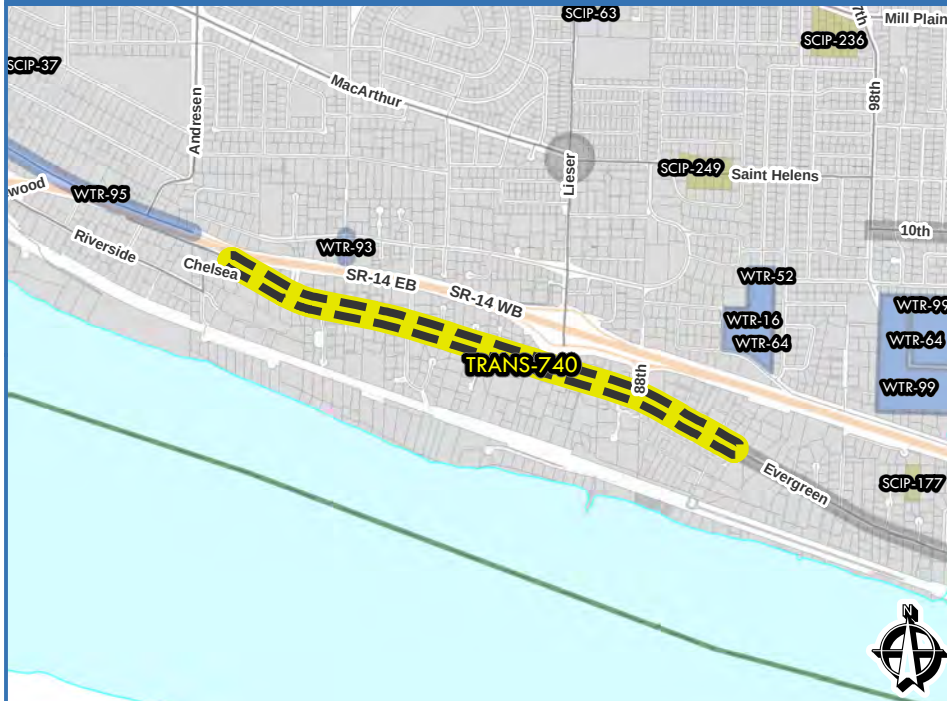
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **EVERGREEN HWY PATHWAY - IMAGE RD. TO CHELSEA**

PROJECT EXTENT: **IMAGE RD**

TO: **CHELSEA**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Multimodal
Project Status:	In Design
Funding Status:	Partially Funded

PROJECT DESCRIPTION

Project Description / Comments

Upgrade roadway with 6-10 foot pedestrian pathway on south side, a priority east-west pedestrian and bicycle corridor. Design and ROW funded. No funding for construction.

LEGEND

	Project Area		Water Project Areas		Clark County
	Transportation Project Areas		SCIP Project Areas		Battle Ground
	Sanitary Sewer Project Areas		Vancouver City Limits		Camas
	Surface Water Project Areas		Taxlots		Washougal

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Partially Funded
Existing Funds:	Yes
SFS Funds:	Yes
Grant Funds:	Potential
Total Proj. Cost:	\$2,400,000.00
*Start of Construction (Year):	Uncertain



2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **EVERGREEN HWY PATHWAY - COLUMBIA SPRINGS TO SE 164TH AVE**

PROJECT EXTENT: **SE SILVER SPRINGS DR**

TO: **SE 164TH AVE**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Multimodal
Project Status:	In Design
Funding Status:	Partially Funded

PROJECT DESCRIPTION

Project Description / Comments

Upgrade roadway with 6-10 foot pedestrian pathway, a priority east-west pedestrian and bicycle corridor. Design partially funded by citizen efforts.

LEGEND

	Project Area		Water Project Areas		Battle Ground
	Transportation Project Areas		SCIP Project Areas		Camas
	Sanitary Sewer Project Areas		Vancouver City Limits		Washougal
	Surface Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Partially Funded
Existing Funds:	Yes
SFS Funds:	No
Grant Funds:	Potential
Total Proj. Cost:	\$5,100,000.00
*Start of Construction (Year):	Uncertain



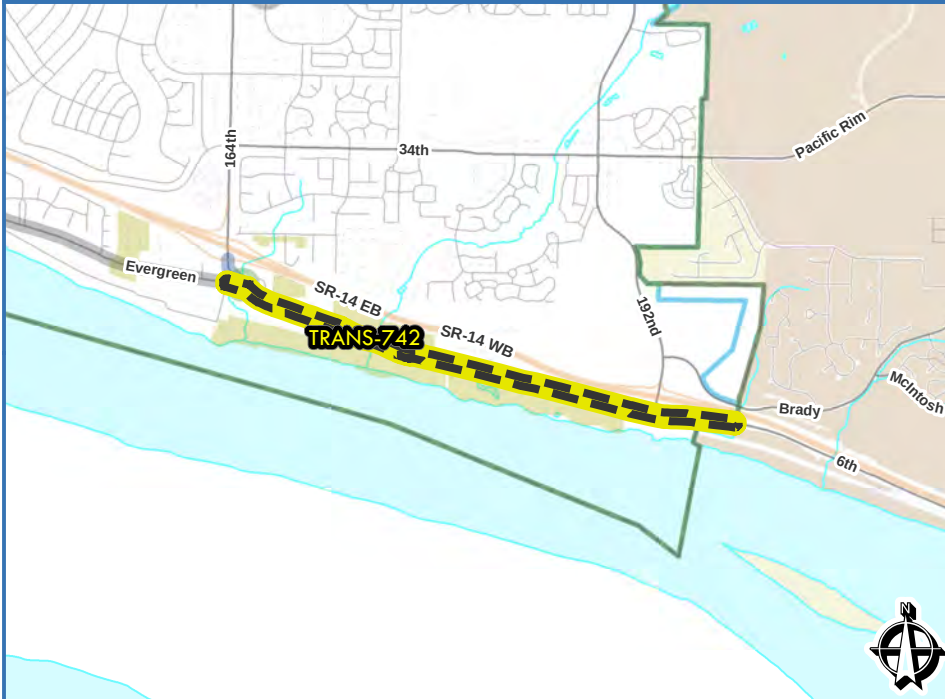
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **EVERGREEN HWY PATHWAY - SE 164TH AVE TO E. CITY LIMITS**

PROJECT EXTENT: **SE 164TH AVE**

TO: **EAST CITY LIMITS**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Multimodal
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

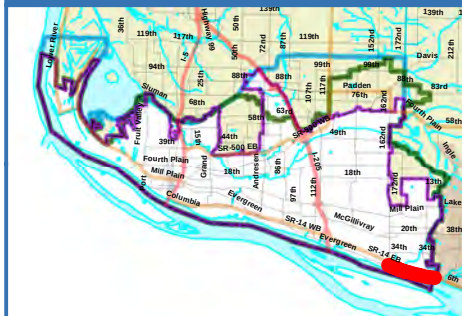
Project Description / Comments

Upgrade roadway with 6-10 foot pedestrian pathway on south side, a priority east-west pedestrian and bicycle corridor.

LEGEND

	Project Area		Water Project Areas		Battle Ground
	Transportation Project Areas		SCIP Project Areas		Camas
	Sanitary Sewer Project Areas		Vancouver City Limits		Washougal
	Surface Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$7,000,000.00
*Start of Construction (Year):	Unknown



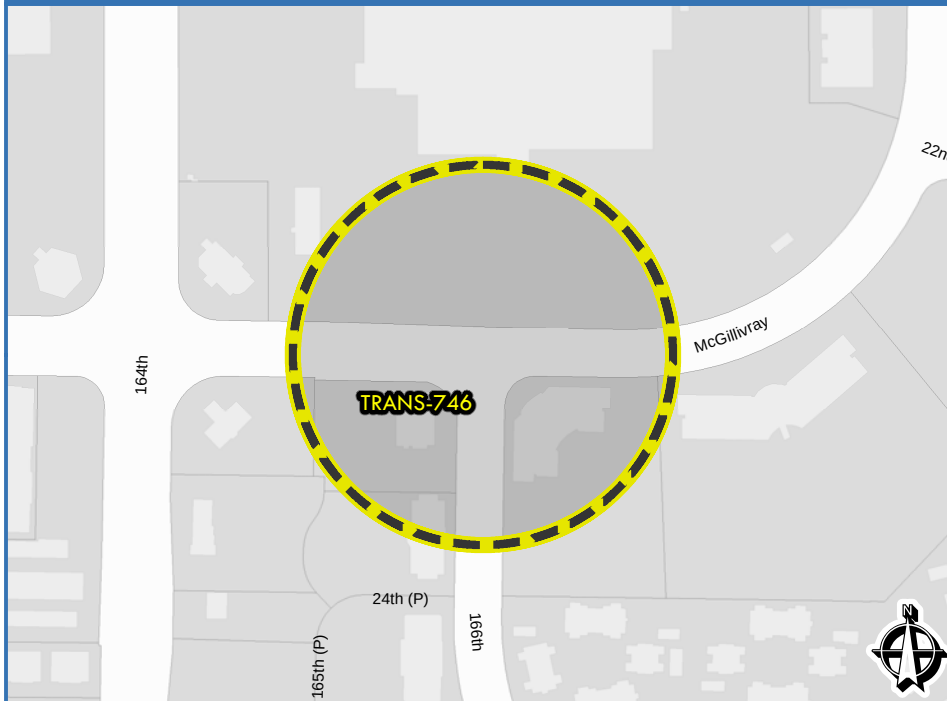
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **SE MCGILLIVRAY BLVD. @ SE 166TH AVE**

PROJECT EXTENT: **SE 164TH AVE**

TO: **SE 166TH AVE**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	On Hold
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Improve intersection with urban roundabout, including upgrades to ADA ramps and streetlights.

LEGEND

Project Area	SCIP Project Areas	Battle Ground
Transportation Project Areas	Vancouver City Limits	Camas
Sanitary Sewer Project Areas	Building Footprints	Washougal
Surface Water Project Areas	Taxlots	
Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	Yes
SFS Funds:	No
Grant Funds:	No
Total Proj. Cost:	\$600,000.00
*Start of Construction (Year):	

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



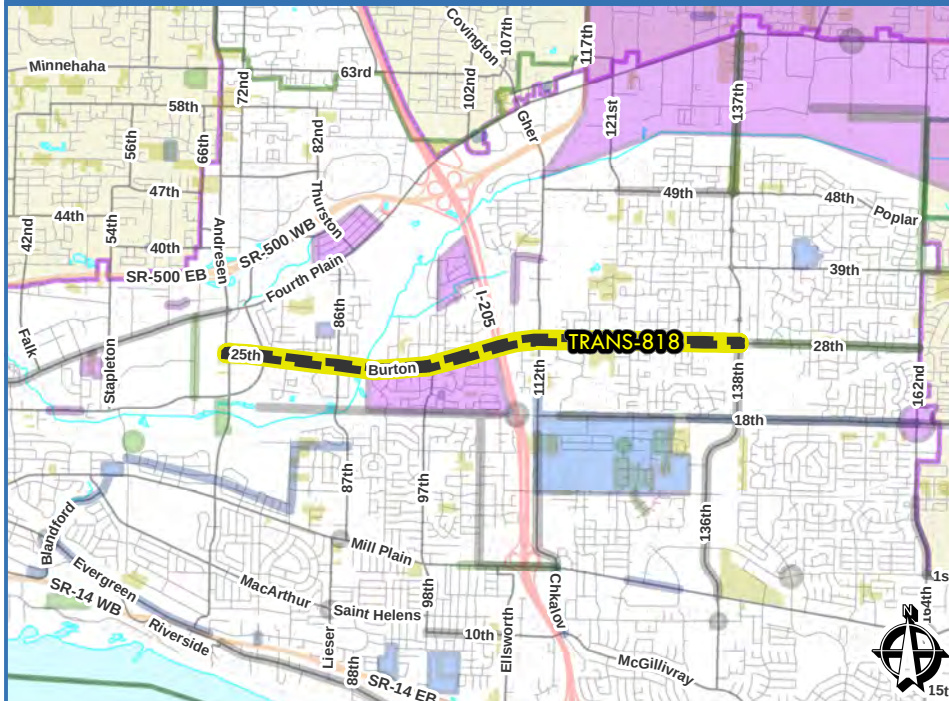
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **NE BURTON/28TH STREET - NE ANDRESEN RD TO NE 138TH AVE**

PROJECT EXTENT: **NE ANDRESEN RD**

TO: **NE 138TH AVE**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Installation of connections between fiber optic cables to traffic signal controllers to improve signal operations along the corridor.

LEGEND

	Project Area		Water Project Areas		Battle Ground
	Transportation Project Areas		SCIP Project Areas		Camas
	Sanitary Sewer Project Areas		Vancouver City Limits		Washougal
	Surface Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$1,000,000.00
*Start of Construction (Year):	Unknown



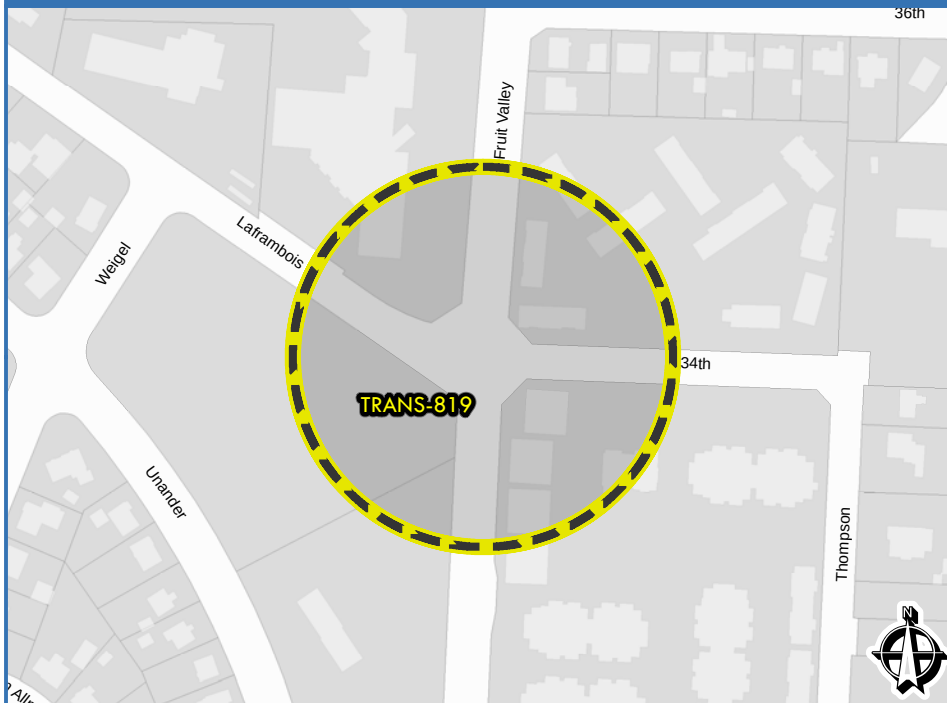
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **NW FRUIT VALLEY RD @ LA FRAMBOIS**

PROJECT EXTENT:

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Upgrade existing signal to current standards.

LEGEND

Project Area	SCIP Project Areas	Battle Ground
Transportation Project Areas	Vancouver City Limits	Camas
Sanitary Sewer Project Areas	Building Footprints	Washougal
Surface Water Project Areas	Taxlots	
Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$500,000.00
*Start of Construction (Year):	Unknown

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



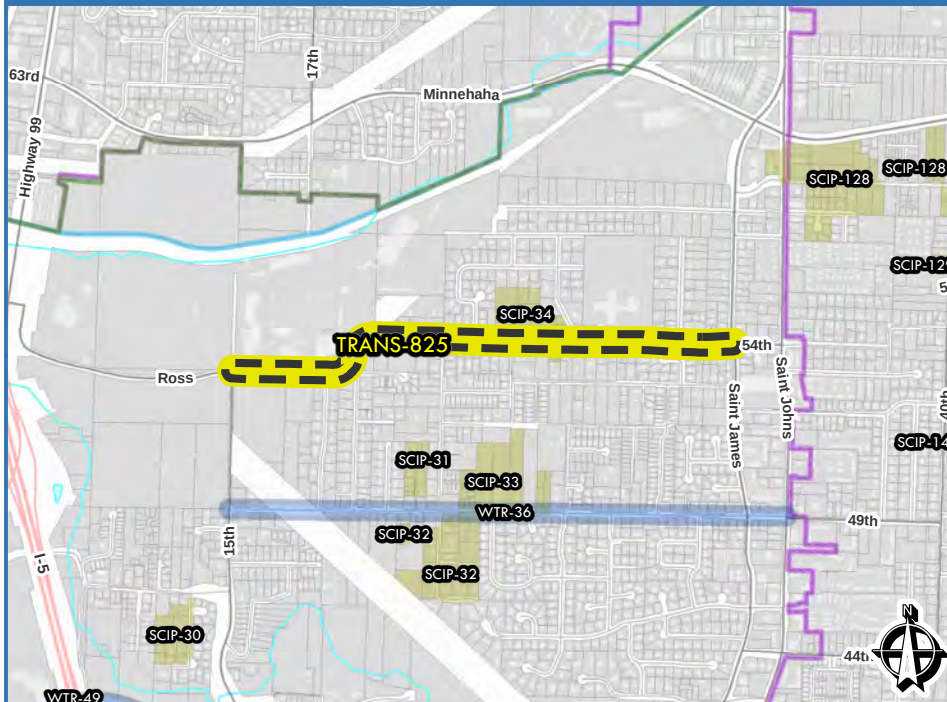
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **NE 54TH STREET - NE 15TH AVE TO NE SAINT JAMES RD**

PROJECT EXTENT: **NE 15TH AVE**

TO: **NE SAINT JAMES RD**

PROJECT AREA MAP



LEGEND

- | | | | | | |
|--|------------------------------|--|-----------------------|--|---------------|
| | Project Area | | SCIP Project Areas | | Battle Ground |
| | Transportation Project Areas | | Vancouver City Limits | | Camas |
| | Sanitary Sewer Project Areas | | Building Footprints | | Washougal |
| | Surface Water Project Areas | | Taxlots | | |
| | Water Project Areas | | Clark County | | |

PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Upgrade of existing 2-lane road to an urban arterial (1 lane each direction plus turn lane), including sidewalks, ADA ramps, bike facilities and streetlights to improve safety, mobility, accessibility and service.

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$14,000,000.00
*Start of Construction (Year):	Unknown

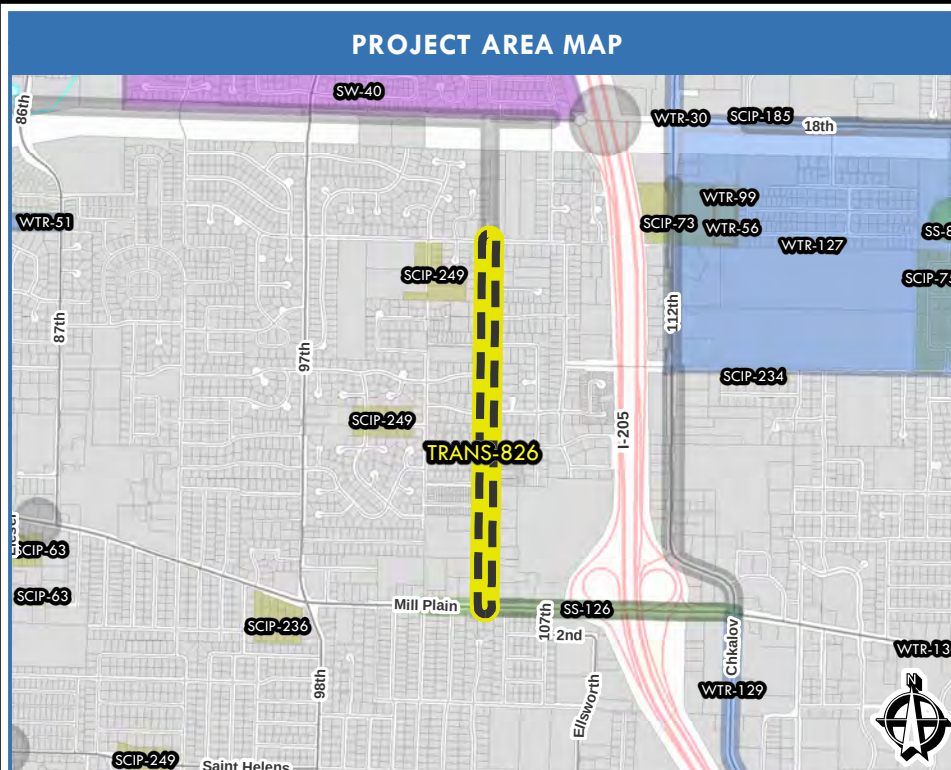


2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: NE 104TH AVENUE - SE MILL PLAIN BLVD TO NE 14TH STREET

PROJECT EXTENT: **SE MILL PLAIN BLVD**

TO: **NE 14TH ST**



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

[illegible]

Upgrade of existing 2-lane road to urban arterial (1 lane each direction plus turn lane), including sidewalks, ADA ramps, bike facilities and streetlights.

LEGEND

	Project Area		Water Project Areas		Clark County
	Transportation Project Areas		SCIP Project Areas		Battle Ground
	Sanitary Sewer Project Areas		Vancouver City Limits		Camas
	Surface Water Project Areas		Taxlots		Washougal

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$10,000,000.00
*Start of Construction (Year):	Unknown



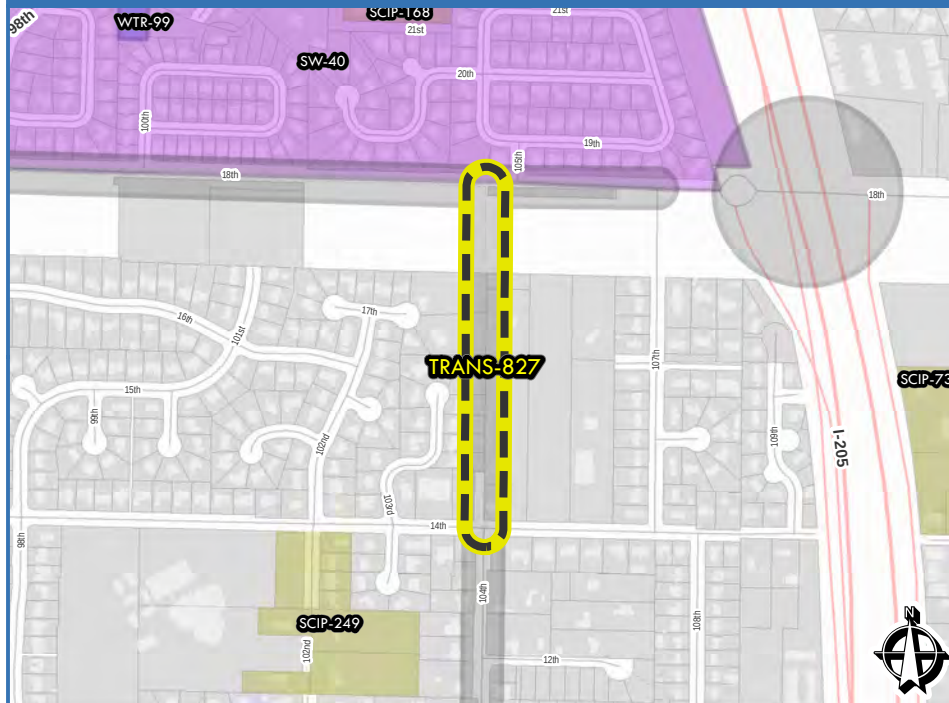
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **NE 104TH AVENUE - NE 14TH STREET TO NE 18TH STREET**

PROJECT EXTENT: **NE 14TH ST**

TO: **NE 18TH ST**

PROJECT AREA MAP



LEGEND

- | | | |
|------------------------------|-----------------------|---------------|
| Project Area | SCIP Project Areas | Battle Ground |
| Transportation Project Areas | Vancouver City Limits | Camas |
| Sanitary Sewer Project Areas | Building Footprints | Washougal |
| Surface Water Project Areas | Taxlots | |
| Water Project Areas | Clark County | |

PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

New arterial street (1 lane each direction plus turn lane), with sidewalks, ADA ramps, bike facilities and streetlights, to increase safety, mobility, accessibility and level of service.

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$10,000,000.00
*Start of Construction (Year):	Unknown

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



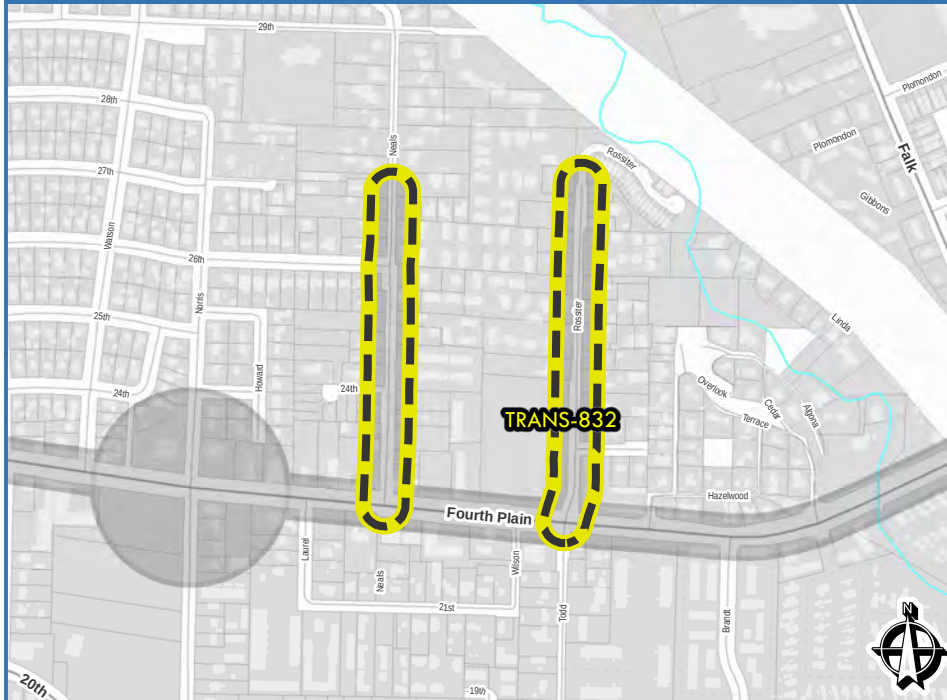
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **FOURTH PLAIN INFILL SIDEWALK**

PROJECT EXTENT:

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Multimodal
Project Status:	Completed
Funding Status:	Funded

PROJECT DESCRIPTION

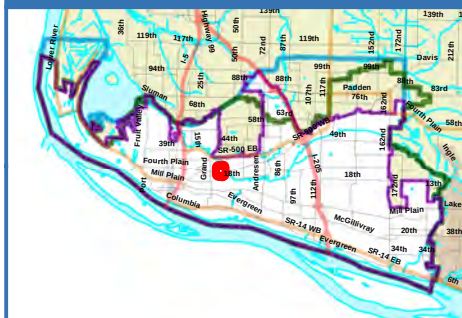
Project Description / Comments

Sidewalk and ADA improvements along Neals Ln and Rossiter Ln from Fourth Plain to NE 26th St to improve pedestrian safety and accessibility. Will be completed in 2018.

LEGEND

	Project Area		SCIP Project Areas		Battle Ground
	Transportation Project Areas		Vancouver City Limits		Camas
	Sanitary Sewer Project Areas		Building Footprints		Washougal
	Surface Water Project Areas		Taxlots		
	Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Funded
Existing Funds:	Yes
SFS Funds:	No
Grant Funds:	Yes
Total Proj. Cost:	\$1,042,000.00
*Start of Construction (Year):	2017



2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **VANCOUVER WATERFRONT TRAIL**

PROJECT EXTENT: **LINCOLN ST**

TO: **COLUMBIA ST**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Enhancement
Project Status:	In Construction
Funding Status:	Funded

PROJECT DESCRIPTION

Project Description / Comments

Major trail and aesthetic improvements along Vancouver Waterfront between approx Lincoln and Columbia streets to improve pedestrian access and safety. Project lead: Vancouver Parks.

LEGEND

Project Area	SCIP Project Areas	Battle Ground
Transportation Project Areas	Vancouver City Limits	Camas
Sanitary Sewer Project Areas	Building Footprints	Washougal
Surface Water Project Areas	Taxlots	
Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Funded
Existing Funds:	No
SFS Funds:	No
Grant Funds:	Yes
Total Proj. Cost:	\$1,350,000.00
*Start of Construction (Year):	2015

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **NE 9TH ST - BROADWAY TO C ST**

PROJECT EXTENT: **BROADWAY ST**

TO: **C ST**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Extend 9th street from Broadway to C Street, including travel lanes, sidewalk, ADA ramps and streetlights, similar to existing 9th.

LEGEND

Project Area	SCIP Project Areas	Battle Ground
Transportation Project Areas	Vancouver City Limits	Camas
Sanitary Sewer Project Areas	Building Footprints	Washougal
Surface Water Project Areas	Taxlots	
Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$2,000,000.00
*Start of Construction (Year):	Unknown



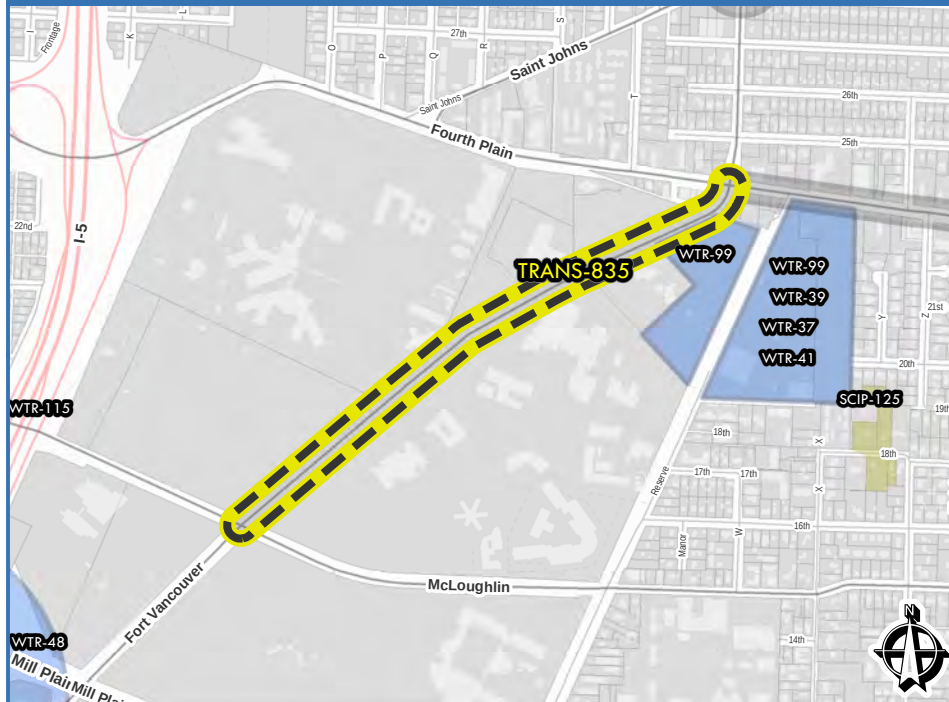
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **FORT VANCOUVER WAY AND MCLOUGHLIN SIDEWALK INFILL AND HAWK SIGNAL**

PROJECT EXTENT: **E MCLOUGHLIN BLVD**

TO: **E FOURTH PLAIN BLVD**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Enhancement
Project Status:	In Design
Funding Status:	Funded

PROJECT DESCRIPTION

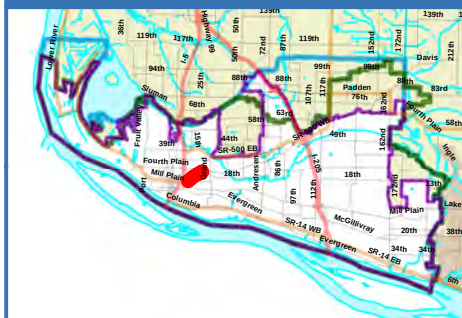
Project Description / Comments

Pedestrian, bike, and aesthetic improvements along multiple streets within and around the Central Park Subarea boundaries.

LEGEND

	Project Area		SCIP Project Areas		Battle Ground
	Transportation Project Areas		Vancouver City Limits		Camas
	Sanitary Sewer Project Areas		Building Footprints		Washougal
	Surface Water Project Areas		Taxlots		
	Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Funded
Existing Funds:	Yes
SFS Funds:	No
Grant Funds:	Yes
Total Proj. Cost:	\$1,125,000.00
*Start of Construction (Year):	2018



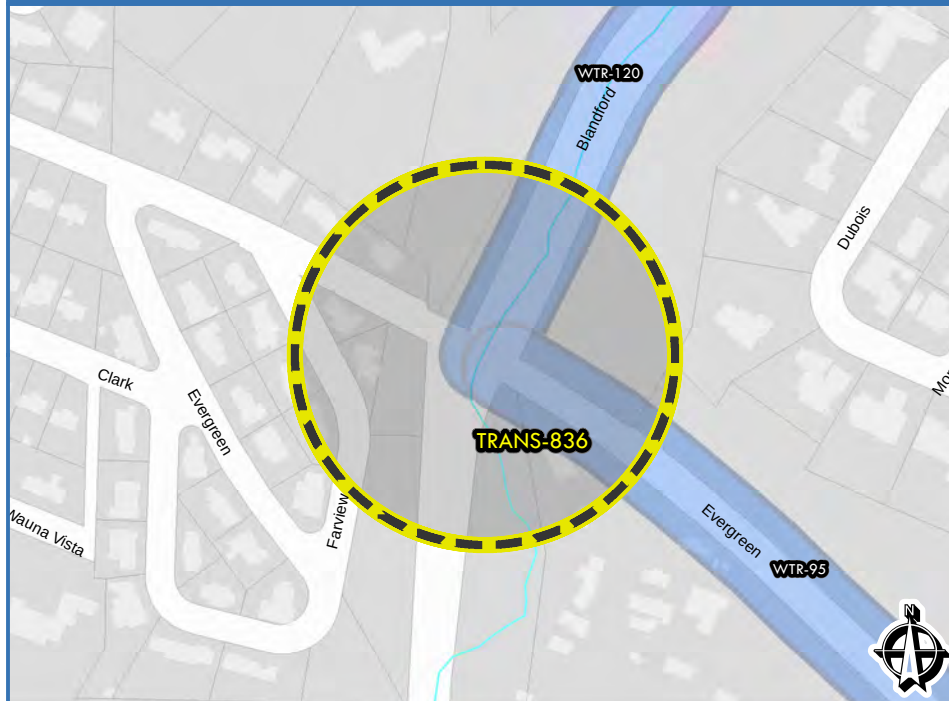
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **EVERGREEN BLVD BRIDGE AT BLANDFORD**

PROJECT EXTENT:

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Safety
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Replace existing bridge along Evergreen Blvd at Blandford with new structure

LEGEND

	Project Area		SCIP Project Areas		Battle Ground
	Transportation Project Areas		Vancouver City Limits		Camas
	Sanitary Sewer Project Areas		Building Footprints		Washougal
	Surface Water Project Areas		Taxlots		
	Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$15,000,000.00
*Start of Construction (Year):	Unknown

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **EVERGREEN HIGHWAY PAVEMENT PROJECT**

PROJECT EXTENT: **CHELSEA**

TO: **164TH AVE**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Reconstruction
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Project includes developing customized roadway cross section for this section, then reconstructing to that standard. In addition, project includes reconfiguration of intersection of 164th Ave/Evergreen Hwy. Cost estimates to be determined following development and adoption of roadway cross section.

LEGEND

	Project Area		Water Project Areas		Battle Ground
	Transportation Project Areas		SCIP Project Areas		Camas
	Sanitary Sewer Project Areas		Vancouver City Limits		Washougal
	Surface Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$40,000,000.00
*Start of Construction (Year):	Unknown



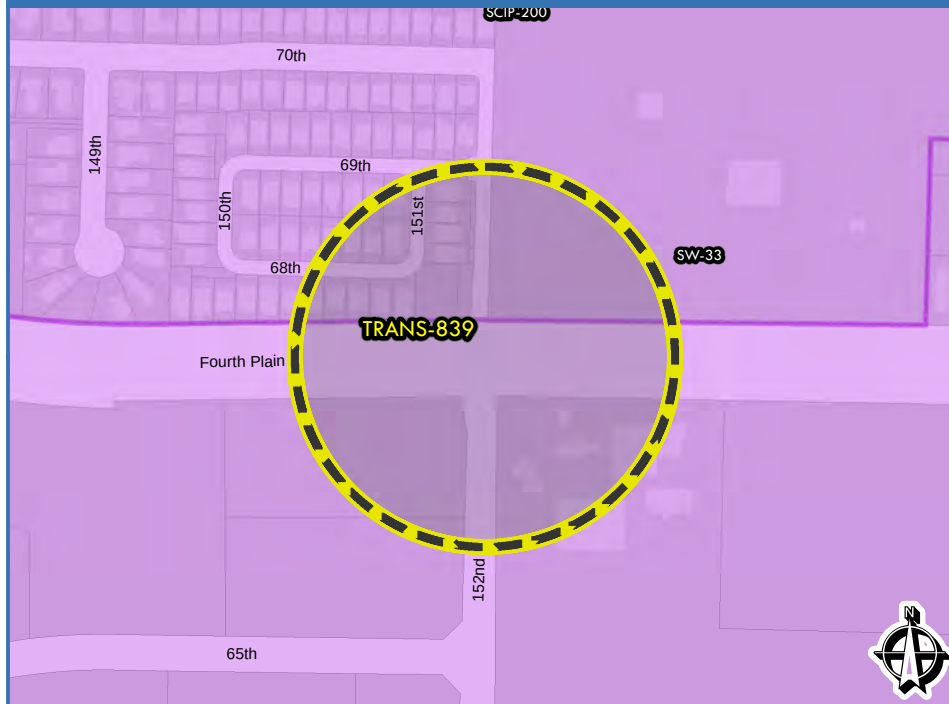
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **152ND AVENUE & 4TH PLAIN SIGNAL**

PROJECT EXTENT: **152ND AVENUE**

TO: **4TH PLAIN BOULEVARD**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

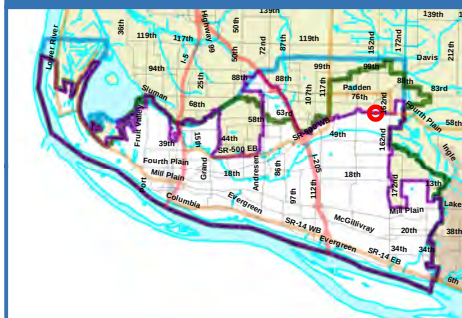
Project Description / Comments

Install new signal to accommodate future growth

LEGEND

	Project Area		SCIP Project Areas		Battle Ground
	Transportation Project Areas		Vancouver City Limits		Camas
	Sanitary Sewer Project Areas		Building Footprints		Washougal
	Surface Water Project Areas		Taxlots		
	Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$500,000.00
*Start of Construction (Year):	Unknown

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



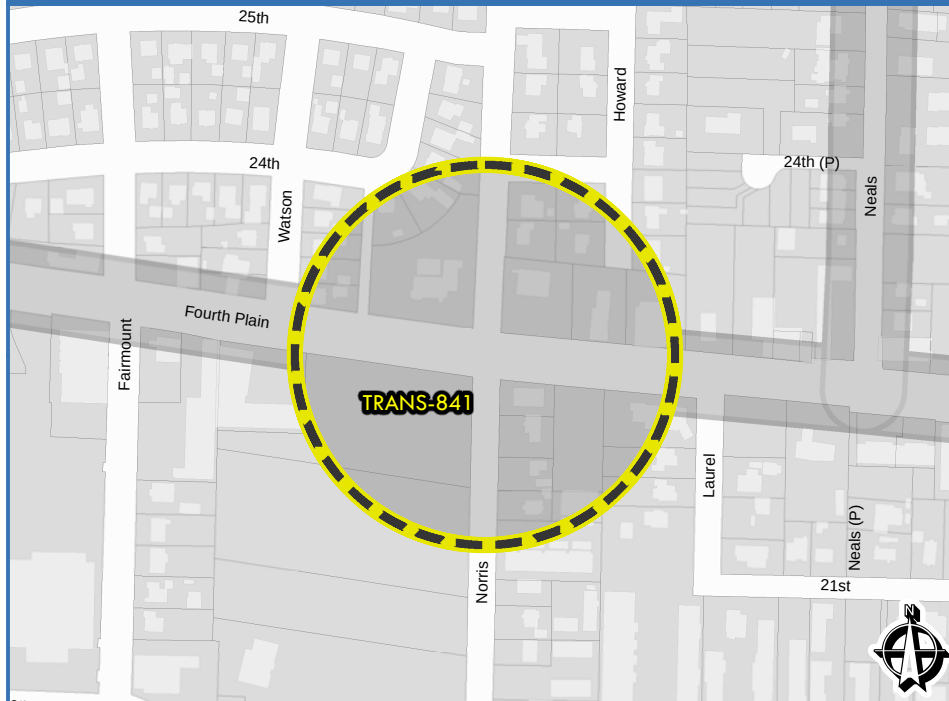
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **FOURTH PLAIN AND NORRIS SIGNAL IMPROVEMENT PROJECT**

PROJECT EXTENT:

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	In Design
Funding Status:	Funded

PROJECT DESCRIPTION

Project Description / Comments

Upgrade existing span wire signal. Upgrade all components to current standards including cabinet, poles, conduit, junction boxes, detection, ADA ramps, mast arms and lights.

LEGEND

	Project Area		SCIP Project Areas		Battle Ground
	Transportation Project Areas		Vancouver City Limits		Camas
	Sanitary Sewer Project Areas		Building Footprints		Washougal
	Surface Water Project Areas		Taxlots		
	Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Funded
Existing Funds:	Yes
SFS Funds:	No
Grant Funds:	No
Total Proj. Cost:	\$400,000.00
*Start of Construction (Year):	2017

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **EVERGREEN HWY PATHWAY - WEBER ARBORETUM TO 100TH COURT**

PROJECT EXTENT: **WEBER ARBORETUM**

TO: **100TH COURT**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Multimodal
Project Status:	In Design
Funding Status:	Partially Funded

PROJECT DESCRIPTION

Project Description / Comments

Upgrade street with 6-10 foot pedestrian pathway on south side of roadway, a priority east/west pedestrian and bike corridor. Design and ROW funded. No funding for construction.

LEGEND

	Project Area		SCIP Project Areas		Battle Ground
	Transportation Project Areas		Vancouver City Limits		Camas
	Sanitary Sewer Project Areas		Building Footprints		Washougal
	Surface Water Project Areas		Taxlots		
	Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Partially Funded
Existing Funds:	Yes
SFS Funds:	No
Grant Funds:	No
Total Proj. Cost:	\$900,000.00
*Start of Construction (Year):	Uncertain



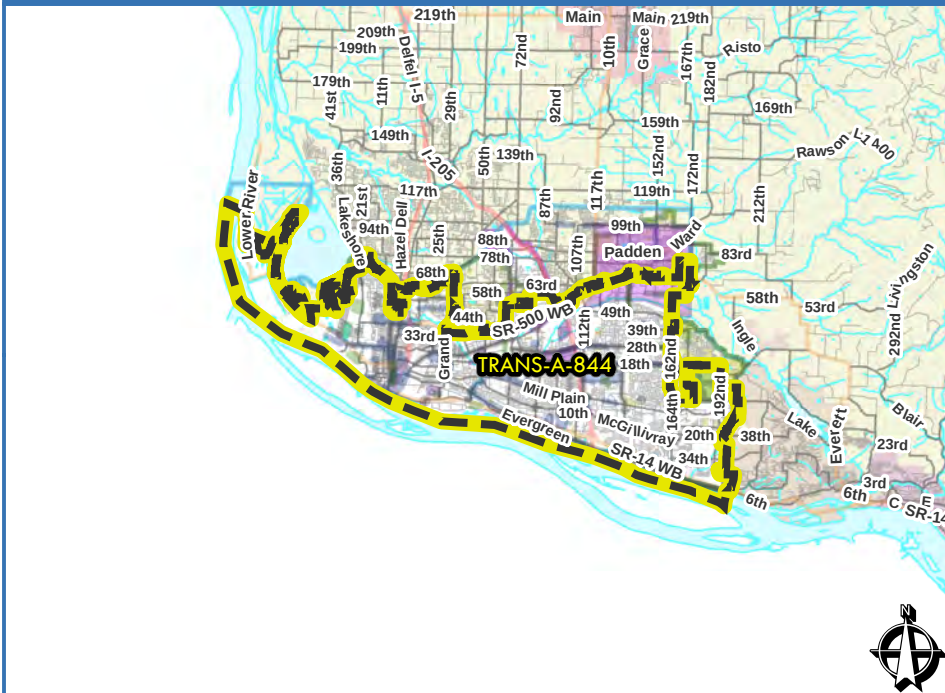
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **MULTIMODAL SAFETY AND ACCESSIBILITY**

PROJECT EXTENT: **CITYWIDE**

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Ongoing
Project Status:	Ongoing
Funding Status:	Funded

PROJECT DESCRIPTION

Project Description / Comments

Ongoing program to address safety and accessibility for all modes of transportation. The 2018 program focuses on sidewalk infill projects. Sub projects for 2018 include: Fourth Plain and Caples/Wintler Intersection improvements (Trans-876); Divine Sidewalk Improvements (Trans-871); 112th Avenue Sidewalk (Trans-852).

LEGEND

	Project Area		Water Project Areas		Battle Ground
	Transportation Project Areas		SCIP Project Areas		Camas
	Sanitary Sewer Project Areas		Vancouver City Limits		Washougal
	Surface Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Funded
Existing Funds:	No
SFS Funds:	Yes
Grant Funds:	No
Total Proj. Cost:	
*Start of Construction (Year):	Ongoing



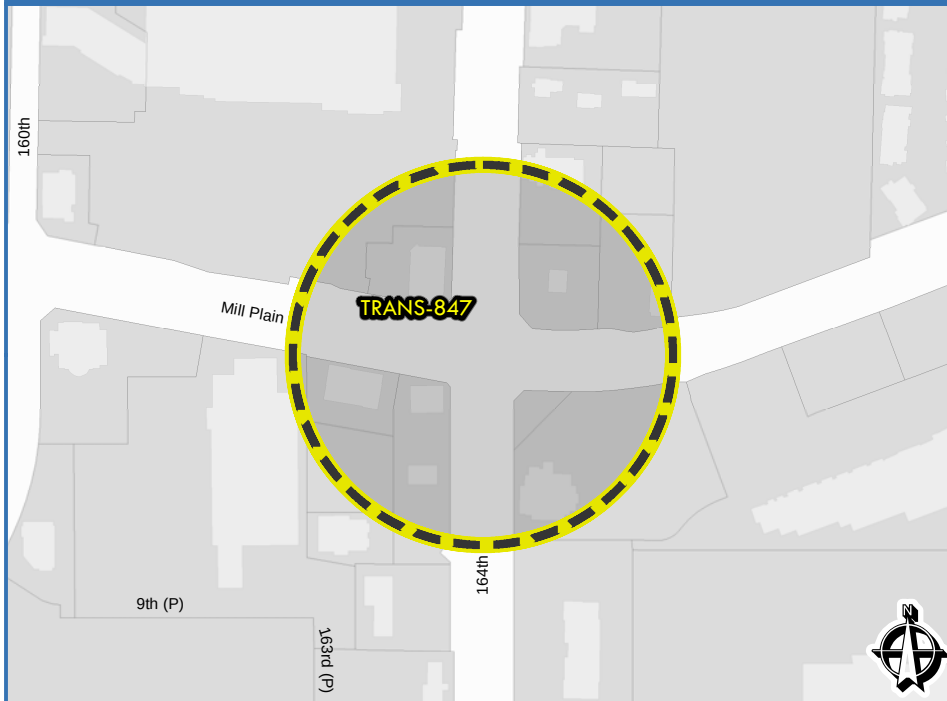
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **164TH AVENUE & MILL PLAIN INTERSECTION IMPROVEMENTS**

PROJECT EXTENT:

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Increase left-turn movement capacity at intersection of 164th Ave/Mill Plain Blvd.

LEGEND

Project Area	SCIP Project Areas	Battle Ground
Transportation Project Areas	Vancouver City Limits	Camas
Sanitary Sewer Project Areas	Building Footprints	Washougal
Surface Water Project Areas	Taxlots	
Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$500,000.00
*Start of Construction (Year):	Unknown

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



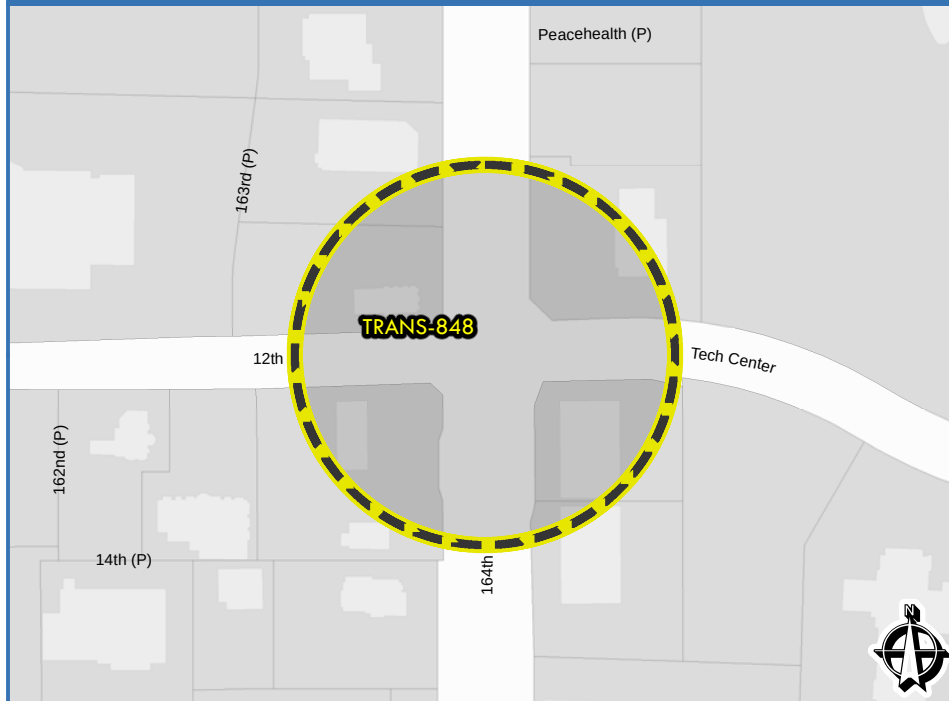
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **164TH AVENUE & SE 12TH STREET INTERSECTION IMPROVEMENTS**

PROJECT EXTENT:

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Increase left-turn movement capacity at intersection of 164th Ave/12th St

LEGEND

Project Area	SCIP Project Areas	Battle Ground
Transportation Project Areas	Vancouver City Limits	Camas
Sanitary Sewer Project Areas	Building Footprints	Washougal
Surface Water Project Areas	Taxlots	
Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	N/A
SFS Funds:	N/A
Grant Funds:	N/A
Total Proj. Cost:	\$500,000.00
*Start of Construction (Year):	Unknown

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



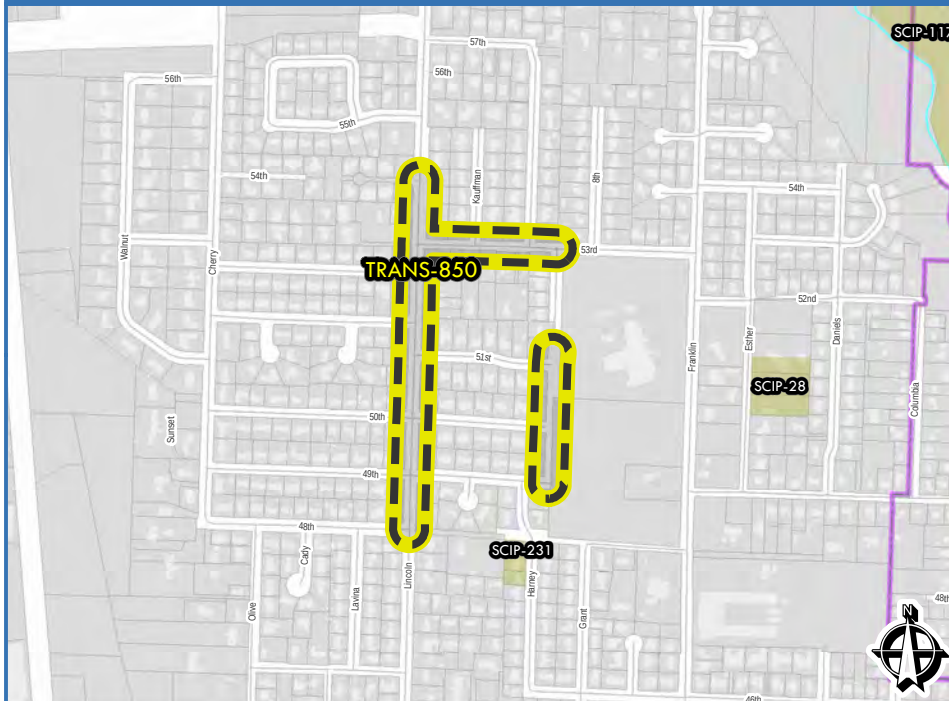
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **NW NEIGHBORHOOD CONNECTIVITY IMPROVEMENTS - FRANKLIN ELEMENTARY**

PROJECT EXTENT: **LINCOLN & 48TH ST.**

TO: **53RD & HARNEY**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Multimodal
Project Status:	Future
Funding Status:	Partially Funded

PROJECT DESCRIPTION

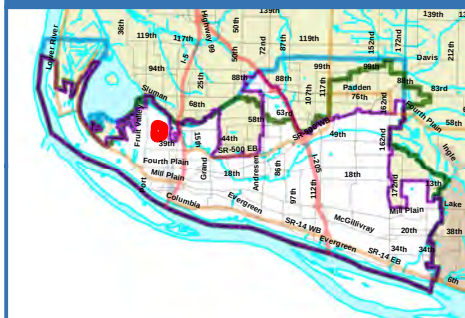
Project Description / Comments

Install sidewalks and enhanced pedestrian crossings at key locations around Franklin Elementary school to improve pedestrian safety and accessibility in the area. Requesting partial funding via federal grant in 2017. Will request remaining funds via state grant in 2018.

LEGEND

	Project Area		SCIP Project Areas		Battle Ground
	Transportation Project Areas		Vancouver City Limits		Camas
	Sanitary Sewer Project Areas		Building Footprints		Washougal
	Surface Water Project Areas		Taxlots		
	Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Partially Funded
Existing Funds:	Yes
SFS Funds:	No
Grant Funds:	Potential
Total Proj. Cost:	\$1,200,000.00
*Start of Construction (Year):	2018



2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **192ND AVENUE & NE 13TH STREET INTERSECTION IMPROVEMENTS**

PROJECT EXTENT: **192ND AVENUE**

TO: **NE 13TH STREET**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Improve intersection to current standards including additional turn lanes to accommodate future growth in the area. This project is part of a larger project to improve 192nd Avenue from 1st Street to 18th Street.

LEGEND

	Project Area		SCIP Project Areas		Battle Ground
	Transportation Project Areas		Vancouver City Limits		Camas
	Sanitary Sewer Project Areas		Building Footprints		Washougal
	Surface Water Project Areas		Taxlots		
	Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	Yes
SFS Funds:	No
Grant Funds:	No
Total Proj. Cost:	\$400,000.00
*Start of Construction (Year):	Unkown

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



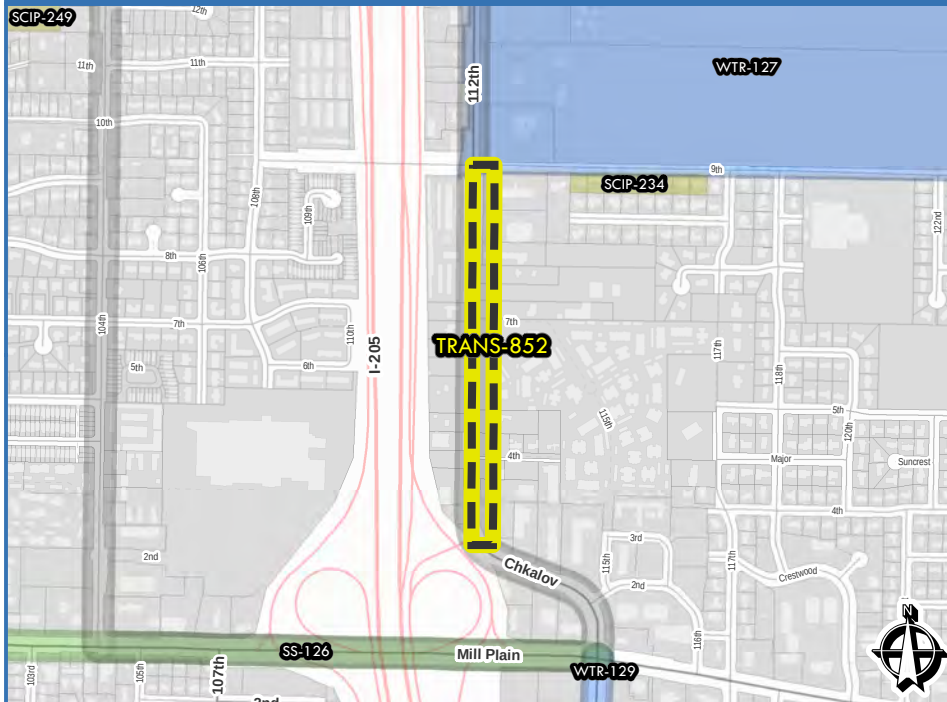
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **112TH AVENUE SIDEWALK - CHKALOV TO 9TH STREET**

PROJECT EXTENT: **CHKALOV**

TO: **9TH STREET**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Multimodal
Project Status:	In Design
Funding Status:	Funded

PROJECT DESCRIPTION

Project Description / Comments

Install new sidewalk along the east side of NE 112th Avenue from Chkalov to 9th Street. Using \$100,000 from 2018 Multimodal Safety and Accessibility Program (TRANS-A-844).

LEGEND

Project Area	SCIP Project Areas	Battle Ground
Transportation Project Areas	Vancouver City Limits	Camas
Sanitary Sewer Project Areas	Building Footprints	Washougal
Surface Water Project Areas	Taxlots	
Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Funded
Existing Funds:	No
SFS Funds:	Yes
Grant Funds:	Yes
Total Proj. Cost:	\$250,000.00
*Start of Construction (Year):	2018



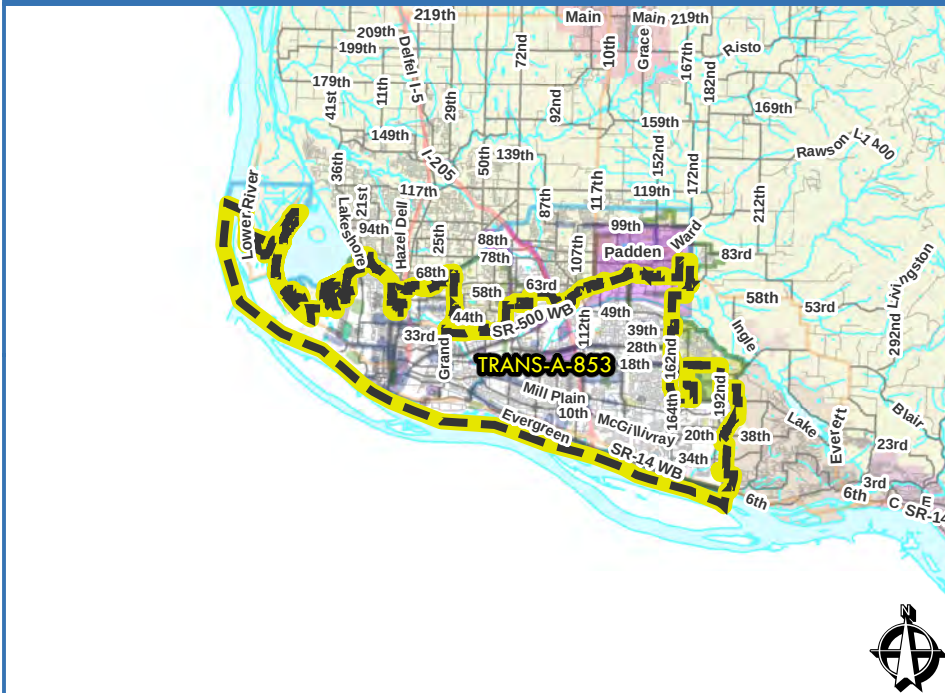
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **LED STREET LIGHT RETROFIT**

PROJECT EXTENT:

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	Future
Funding Status:	Funded

PROJECT DESCRIPTION

Project Description / Comments

Replace existing cobra head style street light bulbs with new very efficient LED bulbs. Paid for using low interest Public Trust Fund Loan.

LEGEND

	Project Area		Water Project Areas		Battle Ground
	Transportation Project Areas		SCIP Project Areas		Camas
	Sanitary Sewer Project Areas		Vancouver City Limits		Washougal
	Surface Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Funded
Existing Funds:	Yes
SFS Funds:	No
Grant Funds:	No
Total Proj. Cost:	\$4,815,000.00
*Start of Construction (Year):	2017

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



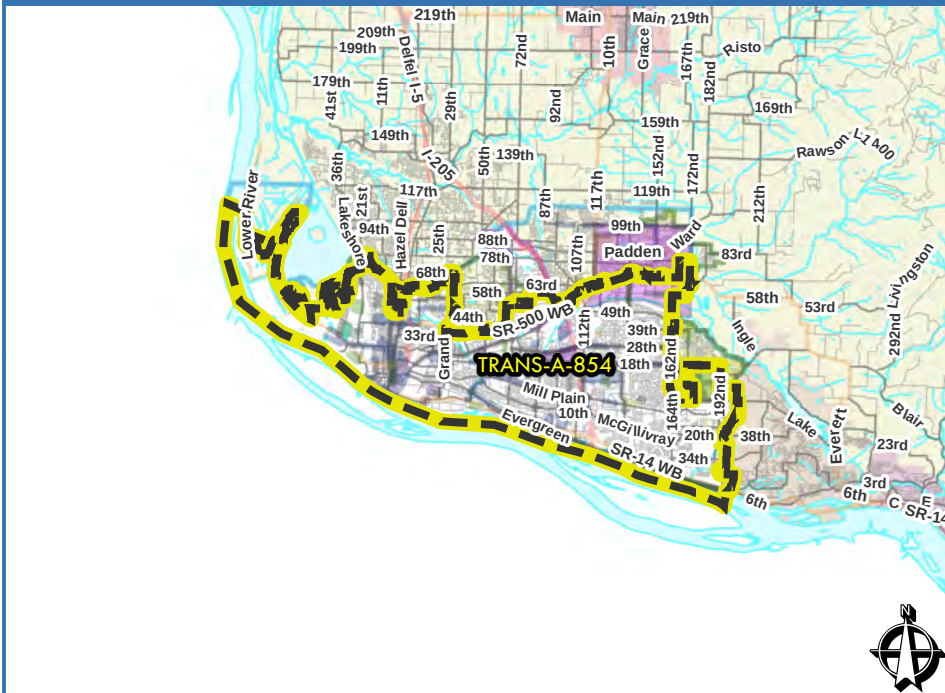
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **TRANSPORTATION SYSTEM PLAN (TSP) UPDATE**

PROJECT EXTENT:

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Multimodal
Project Status:	In Design
Funding Status:	Funded

PROJECT DESCRIPTION

Project Description / Comments

Comprehensive update to the Transportation System Plan (TSP). Funded by general fund and 192nd Avenue property sale

LEGEND

	Project Area		Water Project Areas		Battle Ground
	Transportation Project Areas		SCIP Project Areas		Camas
	Sanitary Sewer Project Areas		Vancouver City Limits		Washougal
	Surface Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Funded
Existing Funds:	Yes
SFS Funds:	No
Grant Funds:	No
Total Proj. Cost:	\$580,000.00
*Start of Construction (Year):	

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



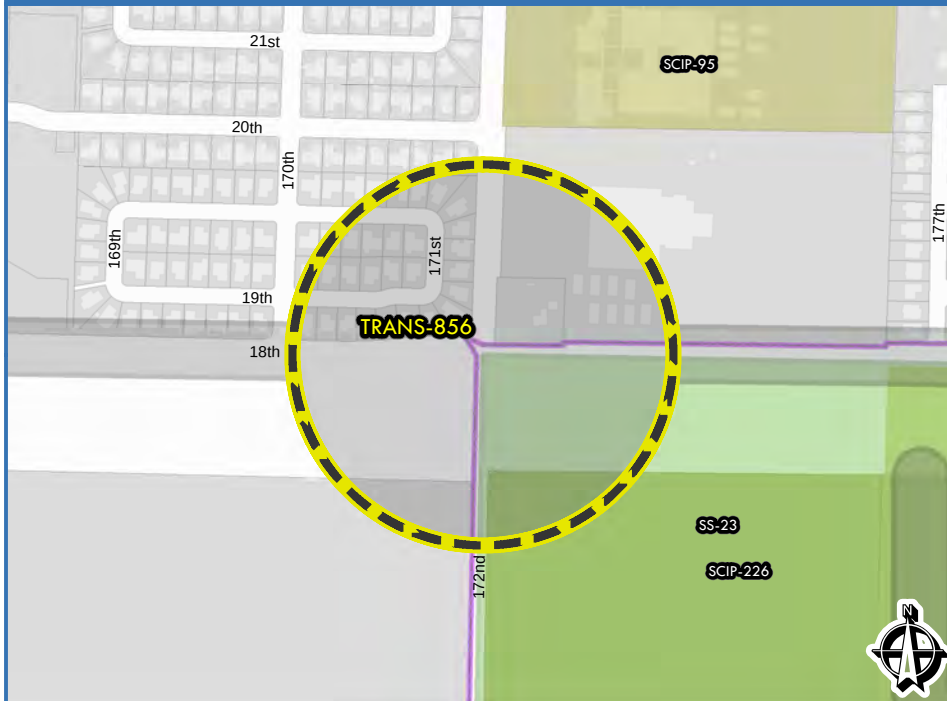
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **18TH STREET AND 172ND AVENUE INTERSECTION IMPROVEMENTS**

PROJECT EXTENT:

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Capacity
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Install additional turn lanes and other signal improvements at the intersection of 18th Street and 172nd Avenue.

LEGEND

Project Area	SCIP Project Areas	Battle Ground
Transportation Project Areas	Vancouver City Limits	Camas
Sanitary Sewer Project Areas	Building Footprints	Washougal
Surface Water Project Areas	Taxlots	
Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	
SFS Funds:	
Grant Funds:	
Total Proj. Cost:	
*Start of Construction (Year):	

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



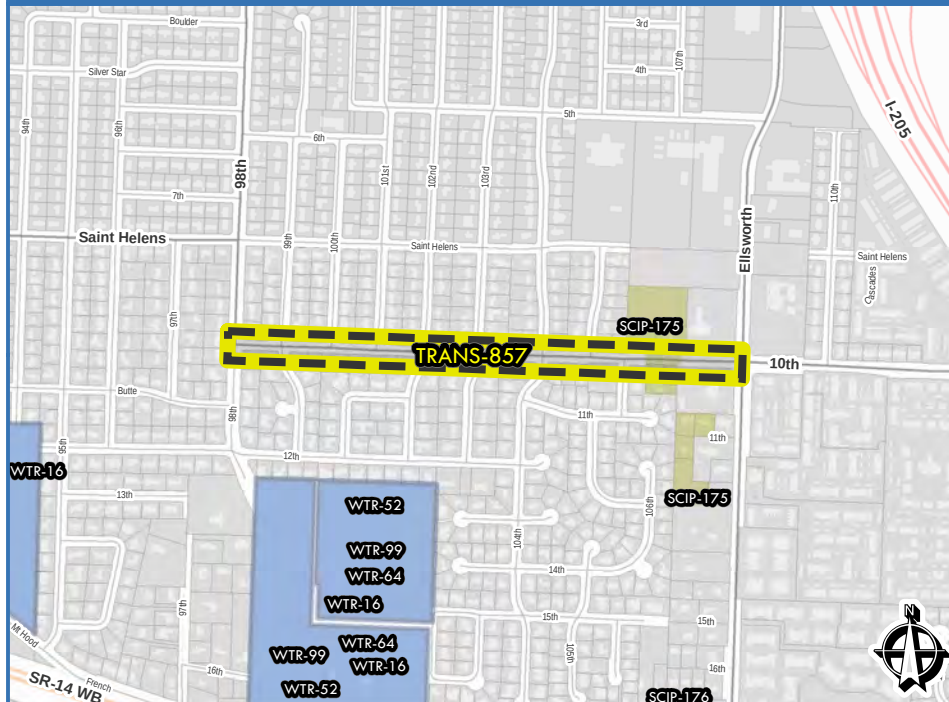
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **SE 10TH STREET SIDEWALKS - 98TH AVENUE TO ELLSWORTH ROAD**

PROJECT EXTENT: **98TH AVENUE**

TO: **ELLSWORTH ROAD**

PROJECT AREA MAP



LEGEND

- | | | |
|------------------------------|-----------------------|---------------|
| Project Area | SCIP Project Areas | Battle Ground |
| Transportation Project Areas | Vancouver City Limits | Camas |
| Sanitary Sewer Project Areas | Building Footprints | Washougal |
| Surface Water Project Areas | Taxlots | |
| Water Project Areas | Clark County | |

PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Multimodal
Project Status:	Future
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Install sidewalks along 10th Street from 98th Avenue to Ellsworth Road.

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	
SFS Funds:	
Grant Funds:	
Total Proj. Cost:	
*Start of Construction (Year):	



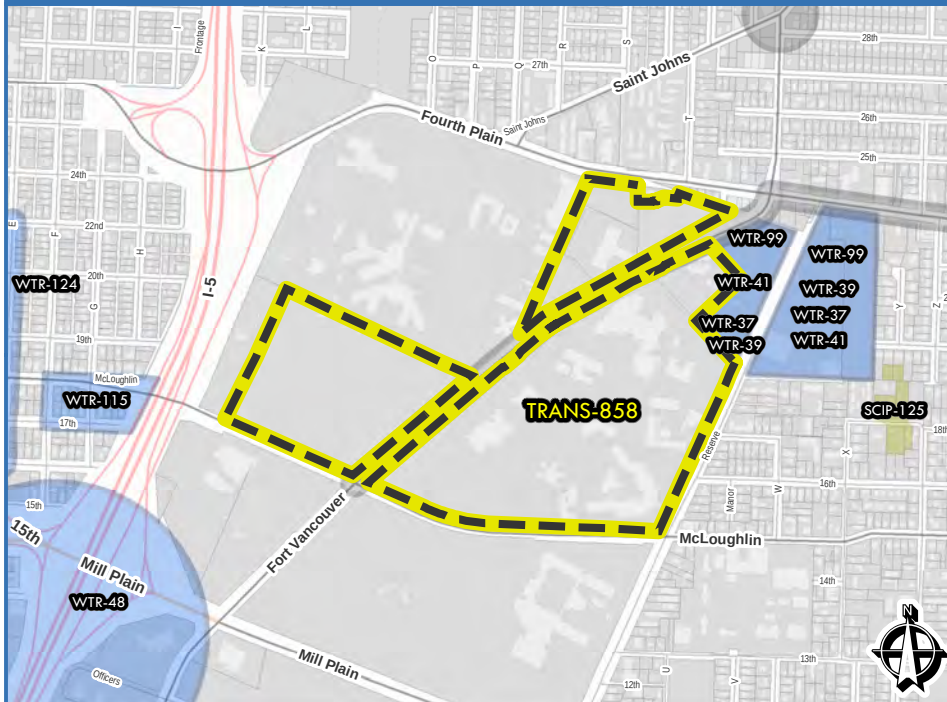
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **CLARK COLLEGE TRANSPORTATION DEMAND MANAGEMENT (TDM)**

PROJECT EXTENT: **CLARK COLLEGE CAMPUS**

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Multimodal
Project Status:	Pending Funding
Funding Status:	Pending Funding

PROJECT DESCRIPTION

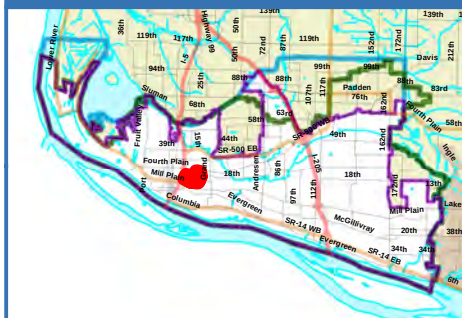
Project Description / Comments

New program to be implemented on the Clark College campus that encourages modes of travel other than single occupant vehicles. Other modes include: bicycle, pedestrian, transit, carpool, rideshare, etc.

LEGEND

Project Area	SCIP Project Areas	Battle Ground
Transportation Project Areas	Vancouver City Limits	Camas
Sanitary Sewer Project Areas	Building Footprints	Washougal
Surface Water Project Areas	Taxlots	
Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Pending Funding
Existing Funds:	
SFS Funds:	Yes
Grant Funds:	Potential
Total Proj. Cost:	\$290,000.00
*Start of Construction (Year):	2020



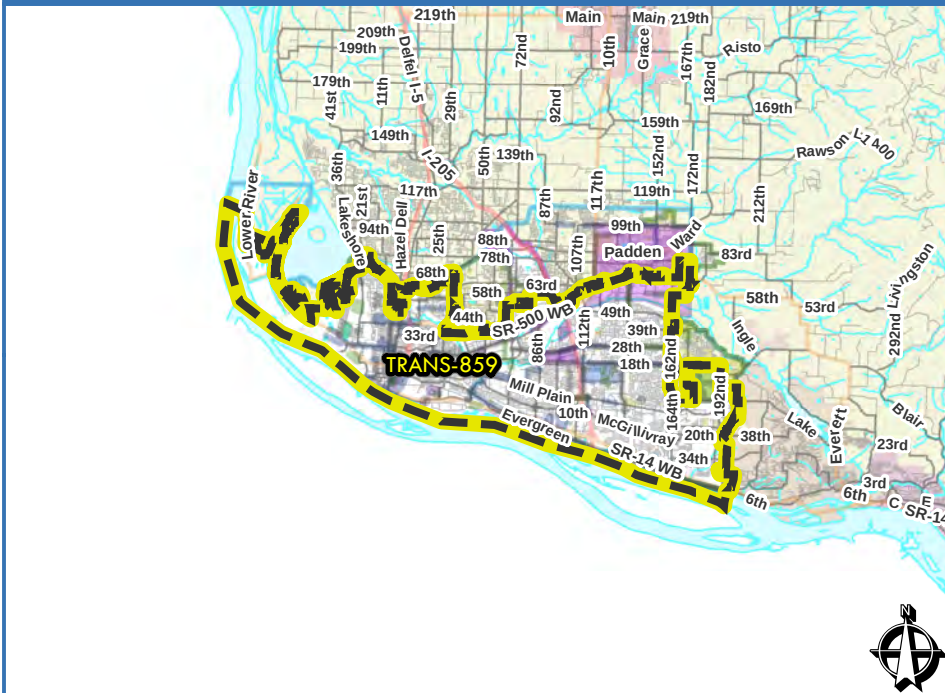
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **SIDEWALK MANAGEMENT PROGRAM**

PROJECT EXTENT: **CITYWIDE**

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Multimodal
Project Status:	Ongoing
Funding Status:	Ongoing

PROJECT DESCRIPTION

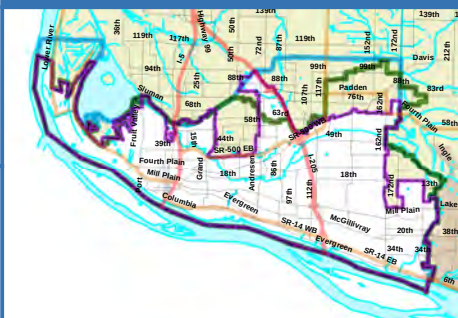
Project Description / Comments

Program manages all sidewalks/curb ramps within the City limits. Includes notification and assistance to land owners to correct sidewalk/curb ramp deficiencies along their property frontage. \$250,000 budgeted annually.

LEGEND

Project Area	Water Project Areas	Battle Ground
Transportation Project Areas	SCIP Project Areas	Camas
Sanitary Sewer Project Areas	Vancouver City Limits	Washougal
Surface Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Ongoing
Existing Funds:	No
SFS Funds:	Yes
Grant Funds:	No
Total Proj. Cost:	\$250,000.00
*Start of Construction (Year):	2017



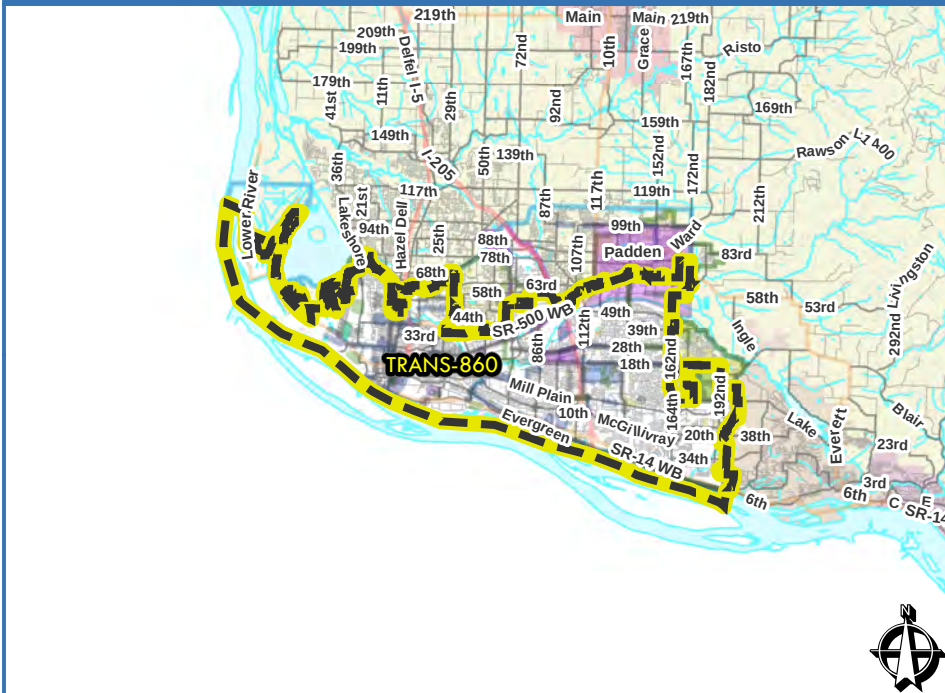
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **PROJECT SCOPING AND ESTIMATION**

PROJECT EXTENT: **CITYWIDE**

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Planning
Project Status:	Ongoing
Funding Status:	Ongoing

PROJECT DESCRIPTION

Project Description / Comments

Covers City staff time for working on scoping and estimation for grant applications.

LEGEND

	Project Area		Water Project Areas		Battle Ground
	Transportation Project Areas		SCIP Project Areas		Camas
	Sanitary Sewer Project Areas		Vancouver City Limits		Washougal
	Surface Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Ongoing
Existing Funds:	Yes
SFS Funds:	No
Grant Funds:	No
Total Proj. Cost:	\$55,000.00
*Start of Construction (Year):	2017

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



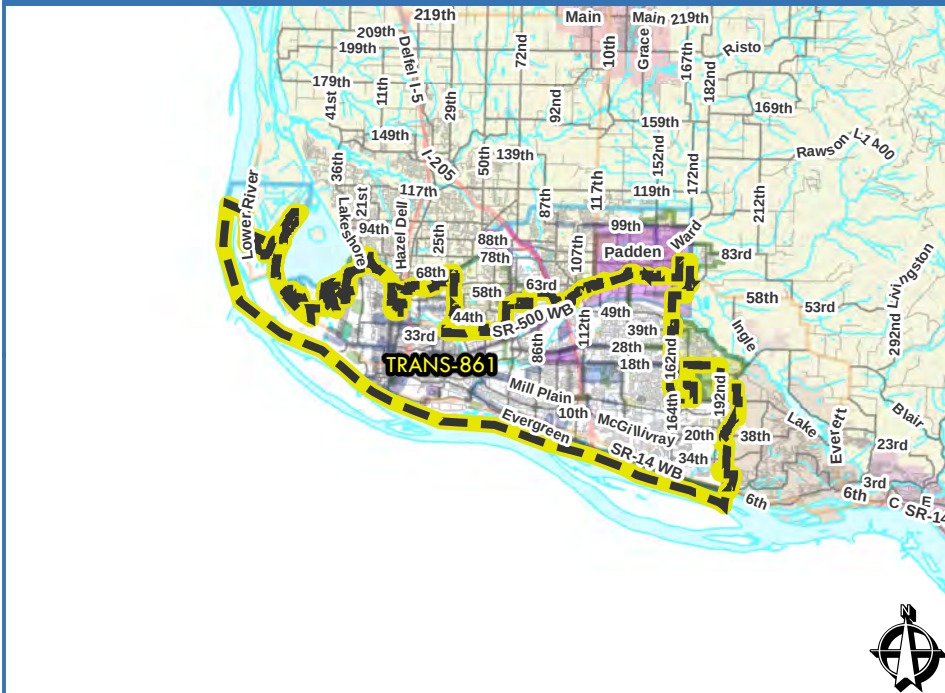
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **WESTSIDE BIKE MOBILITY**

PROJECT EXTENT: **DOWNTOWN**

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Multimodal
Project Status:	Pending Funding
Funding Status:	Pending Funding

PROJECT DESCRIPTION

Project Description / Comments

Implement multiple bicycle facility enhancements in the downtown area as recommended by the westside mobility study.

LEGEND

	Project Area		Water Project Areas		Battle Ground
	Transportation Project Areas		SCIP Project Areas		Camas
	Sanitary Sewer Project Areas		Vancouver City Limits		Washougal
	Surface Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Pending Funding
Existing Funds:	Potential
SFS Funds:	Potential
Grant Funds:	No
Total Proj. Cost:	\$3,000,000.00
*Start of Construction (Year):	

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



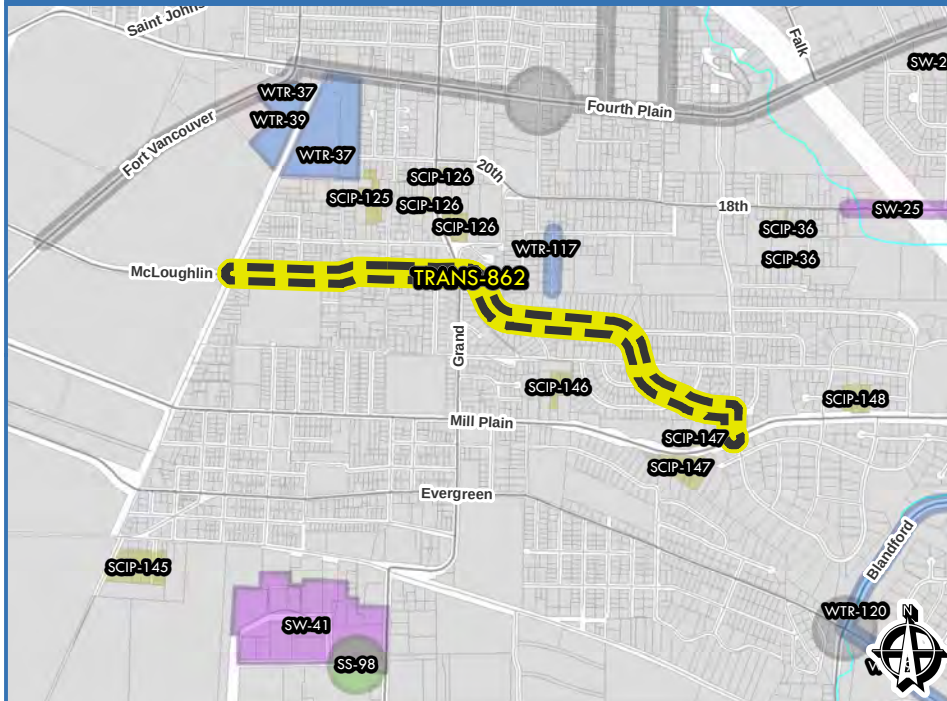
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **MCLOUGHLIN BOULEVARD COMPLETE STREET**

PROJECT EXTENT: **RESERVE STREET**

TO: **MILL PLAIN BOULEVARD**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Multimodal
Project Status:	Pending Funding
Funding Status:	Pending Funding

PROJECT DESCRIPTION

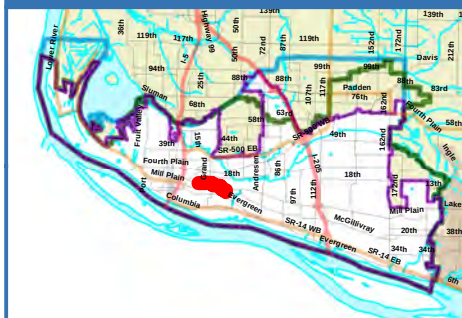
Project Description / Comments

Install a bicycle facility along McLaughlin and other improvements to make it a complete street.

LEGEND

	Project Area		Water Project Areas		Clark County
	Transportation Project Areas		SCIP Project Areas		Battle Ground
	Sanitary Sewer Project Areas		Vancouver City Limits		Camas
	Surface Water Project Areas		Taxlots		Washougal

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Pending Funding
Existing Funds:	Potential
SFS Funds:	Potential
Grant Funds:	No
Total Proj. Cost:	\$1,500,000.00
*Start of Construction (Year):	

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



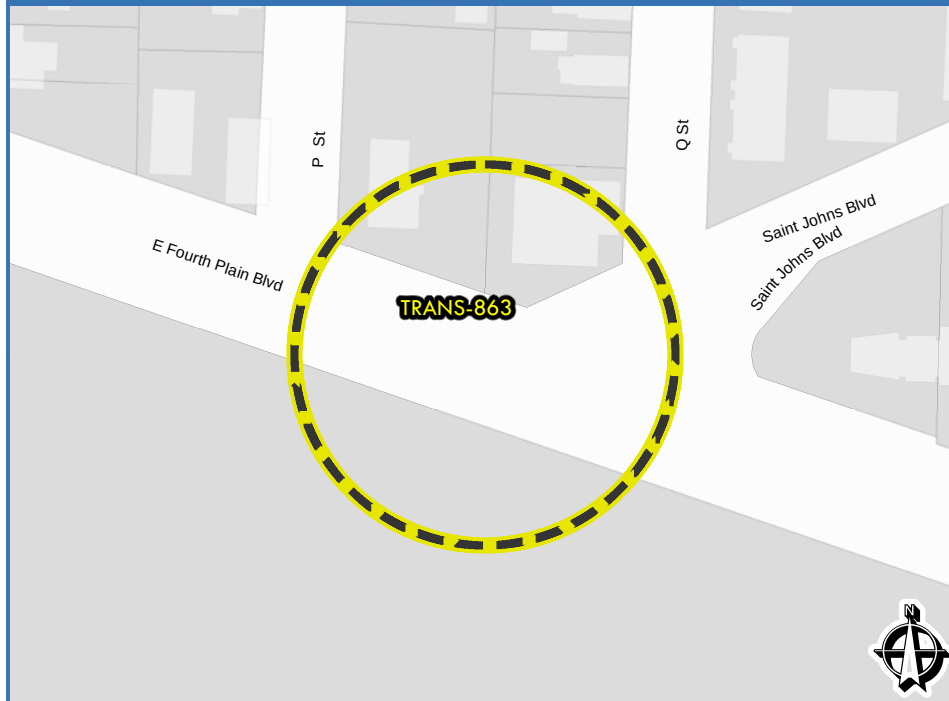
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **FOURTH PLAIN BOULEVARD AND ST. JOHNS BOULEVARD INTERSECTION IMPROVEMENT**

PROJECT EXTENT: **FOURTH PLAIN BOULEVARD**

TO: **ST. JOHNS BOULEVARD**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	On Hold
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Upgrade the signal at Fourth Plain and St. Johns and associated civil improvements.

LEGEND

Project Area	SCIP Project Areas	Battle Ground
Transportation Project Areas	Vancouver City Limits	Camas
Sanitary Sewer Project Areas	Building Footprints	Washougal
Surface Water Project Areas	Taxlots	
Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	Potential
SFS Funds:	Potential
Grant Funds:	No
Total Proj. Cost:	\$350,000.00
*Start of Construction (Year):	

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



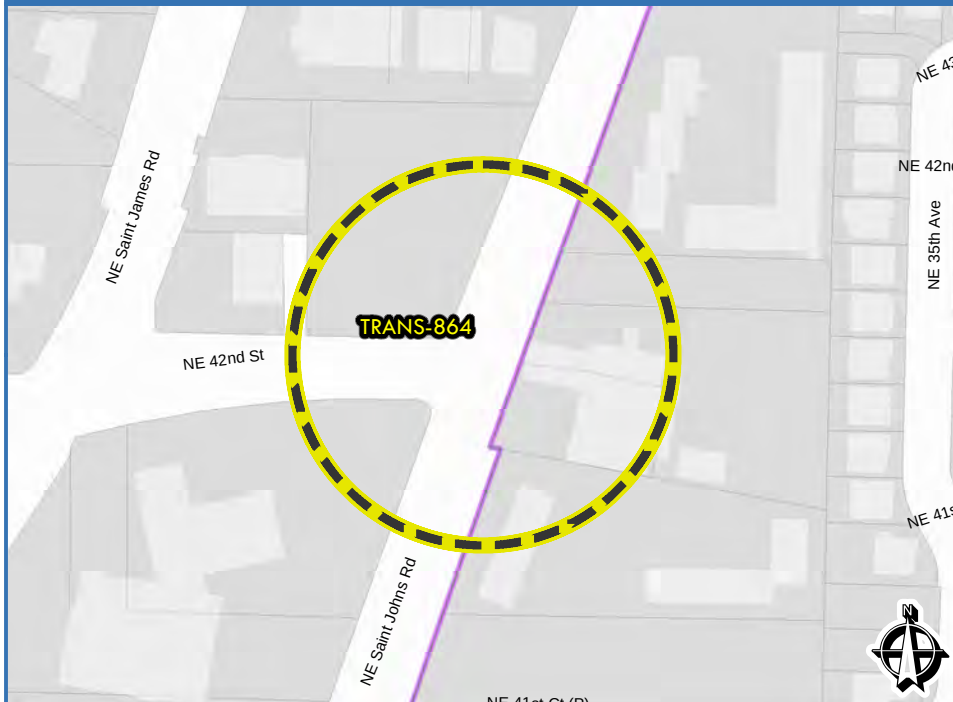
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **ST. JAMES BOULEVARD AND NE 42ND STREET INTERSECTION IMPROVEMENT**

PROJECT EXTENT: **ST. JAMES BOULEVARD**

TO: **42ND STREET**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	On Hold
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Install a signal at St. James and NE 42nd street as well as associated civil improvements.

LEGEND

Project Area	SCIP Project Areas	Battle Ground
Transportation Project Areas	Vancouver City Limits	Camas
Sanitary Sewer Project Areas	Building Footprints	Washougal
Surface Water Project Areas	Taxlots	
Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	Potential
SFS Funds:	Potential
Grant Funds:	No
Total Proj. Cost:	\$350,000.00
*Start of Construction (Year):	



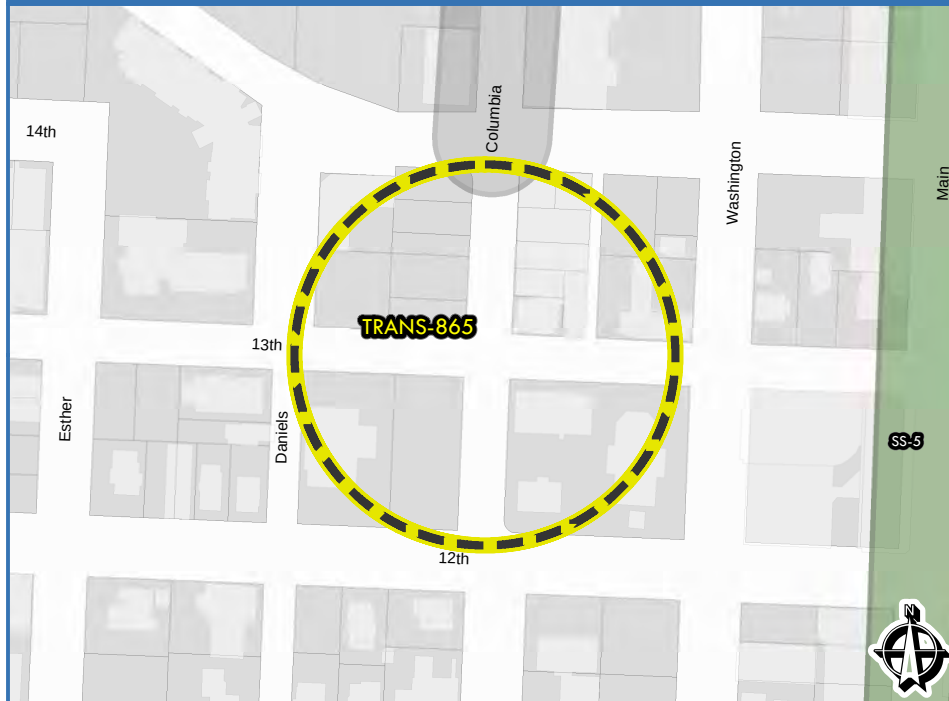
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **COLUMBIA STREET AND W 13TH STREET INTERSECTION IMPROVEMENT**

PROJECT EXTENT: **COLUMBIA STREET**

TO: **13TH STREET**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	On Hold
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Upgrade the signal at Columbia Street and 13th Street as well as associated civil improvements.

LEGEND

Project Area	SCIP Project Areas	Battle Ground
Transportation Project Areas	Vancouver City Limits	Camas
Sanitary Sewer Project Areas	Building Footprints	Washougal
Surface Water Project Areas	Taxlots	
Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	Potential
SFS Funds:	Potential
Grant Funds:	No
Total Proj. Cost:	\$350,000.00
*Start of Construction (Year):	

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



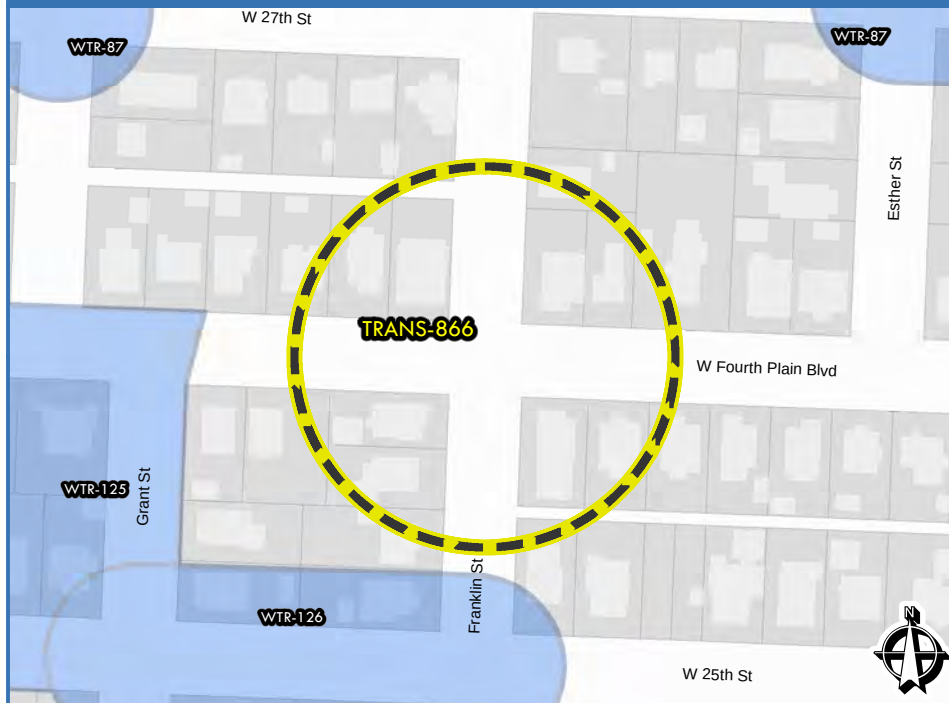
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **FOURTH PLAIN BOULEVARD AND W FRANKLIN STREET INTERSECTION IMPROVEMENTS**

PROJECT EXTENT: **FOURTH PLAIN BOULEVARD**

TO: **FRANKLIN STREET**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	On Hold
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Install a signal at Fourth Plain and Franklin as well as associated civil improvements.

LEGEND

	Project Area		SCIP Project Areas		Battle Ground
	Transportation Project Areas		Vancouver City Limits		Camas
	Sanitary Sewer Project Areas		Building Footprints		Washougal
	Surface Water Project Areas		Taxlots		
	Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	Potential
SFS Funds:	Potential
Grant Funds:	No
Total Proj. Cost:	\$350,000.00
*Start of Construction (Year):	

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



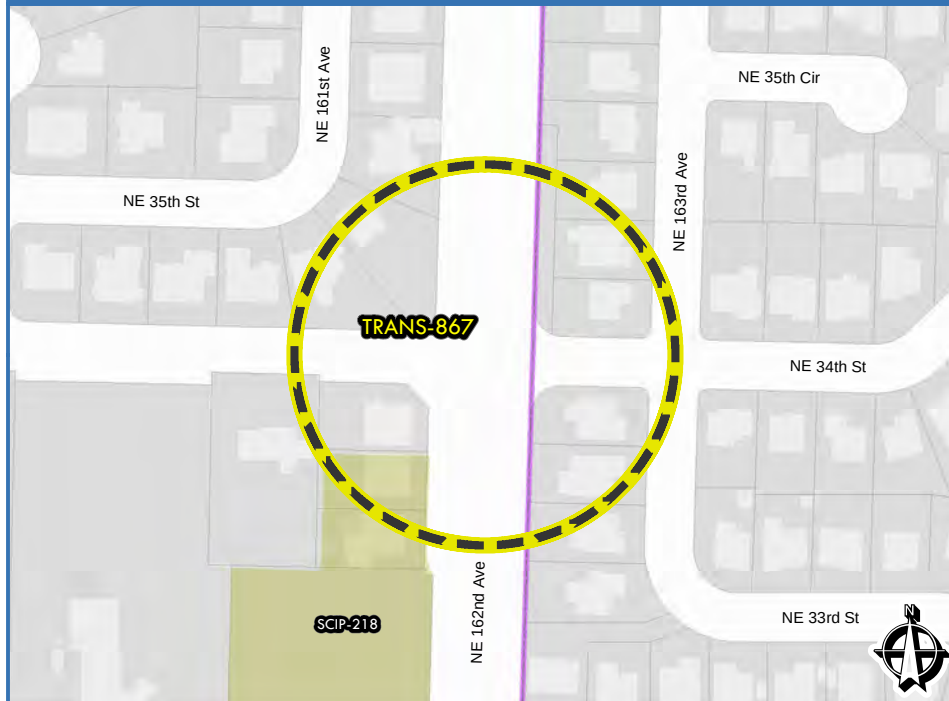
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **NE 164TH AVENUE AND NE 34TH STREET INTERSECTION IMPROVEMENTS**

PROJECT EXTENT: **164TH AVENUE**

TO: **NE 34TH STREET**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	On Hold
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Install a signal at 164th Avenue and NE 34th Street as well as associated civil improvements.

LEGEND

	Project Area		SCIP Project Areas		Battle Ground
	Transportation Project Areas		Vancouver City Limits		Camas
	Sanitary Sewer Project Areas		Building Footprints		Washougal
	Surface Water Project Areas		Taxlots		
	Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	Potential
SFS Funds:	Potential
Grant Funds:	No
Total Proj. Cost:	\$350,000.00
*Start of Construction (Year):	

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



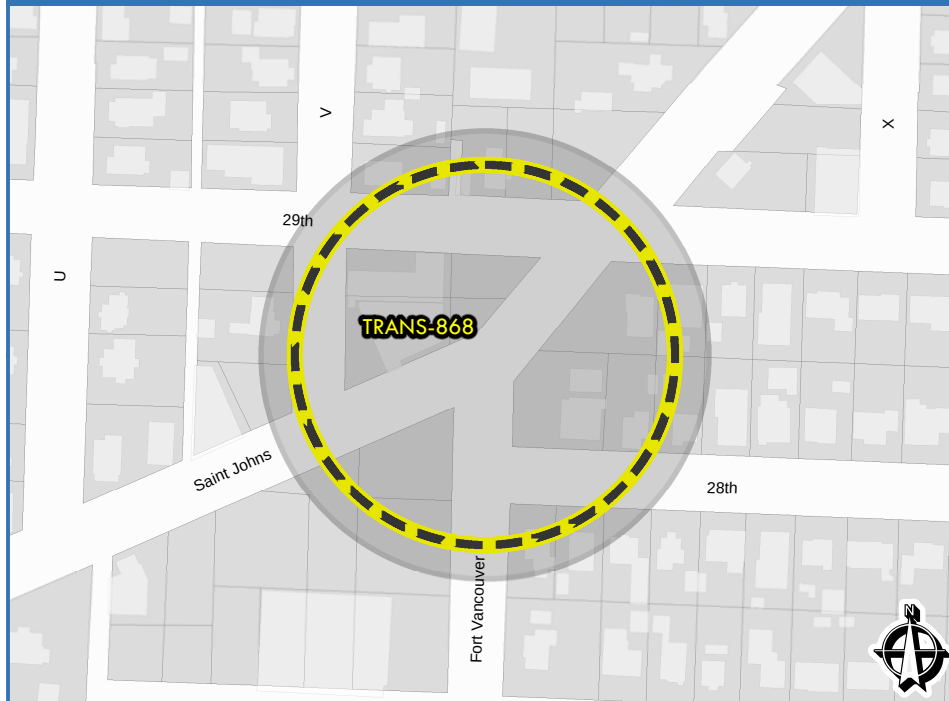
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **ST. JOHNS BOULEVARD AND FORT VANCOUVER WAY INTERSECTION IMPROVEMENTS**

PROJECT EXTENT: **ST. JOHNS BOULEVARD**

TO: **FORT VANCOUVER WAY**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	On Hold
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Install a signal at St. Johns Boulevard and Fort Vancouver Way as well as associated civil improvements.

LEGEND

Project Area	SCIP Project Areas	Battle Ground
Transportation Project Areas	Vancouver City Limits	Camas
Sanitary Sewer Project Areas	Building Footprints	Washougal
Surface Water Project Areas	Taxlots	
Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	Potential
SFS Funds:	Potential
Grant Funds:	No
Total Proj. Cost:	\$350,000.00
*Start of Construction (Year):	

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



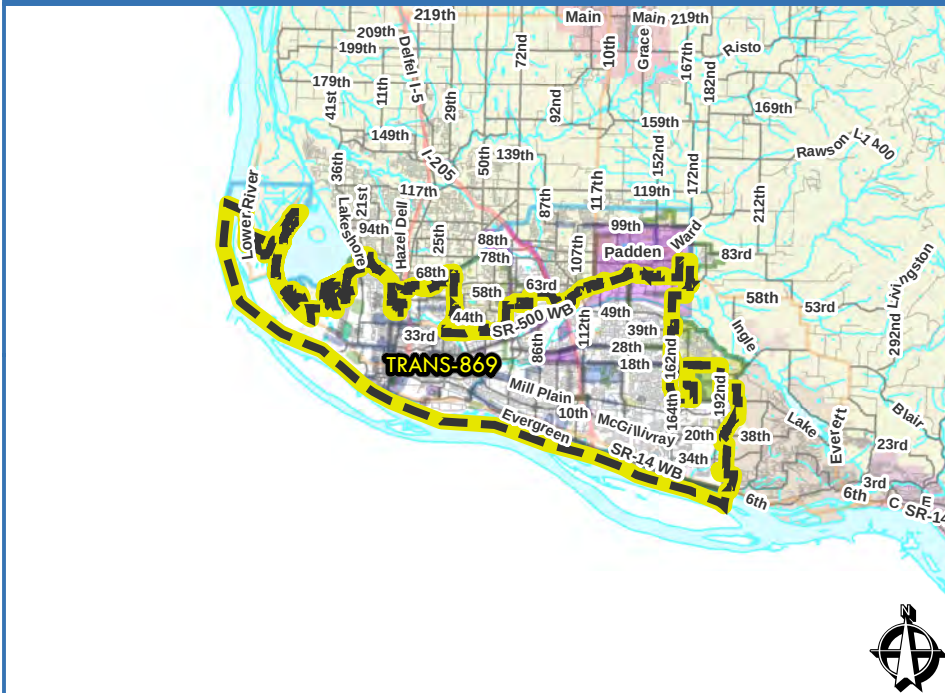
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **ANNUAL STREET LIGHT PROGRAM**

PROJECT EXTENT: **CITYWIDE**

TO:

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	On Hold
Funding Status:	Unfunded

PROJECT DESCRIPTION

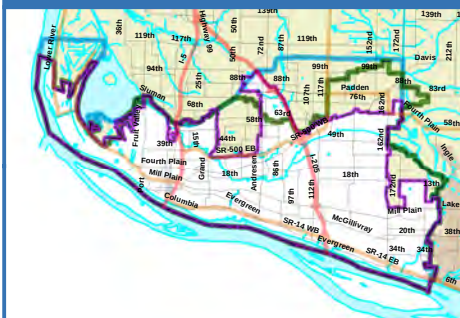
Project Description / Comments

Unfunded program to install new street lights and replace old street lights citywide. For example, 172nd Avenue from NE 8th Street to NE 18th Street.

LEGEND

	Project Area		Water Project Areas		Battle Ground
	Transportation Project Areas		SCIP Project Areas		Camas
	Sanitary Sewer Project Areas		Vancouver City Limits		Washougal
	Surface Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	
SFS Funds:	
Grant Funds:	
Total Proj. Cost:	
*Start of Construction (Year):	

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



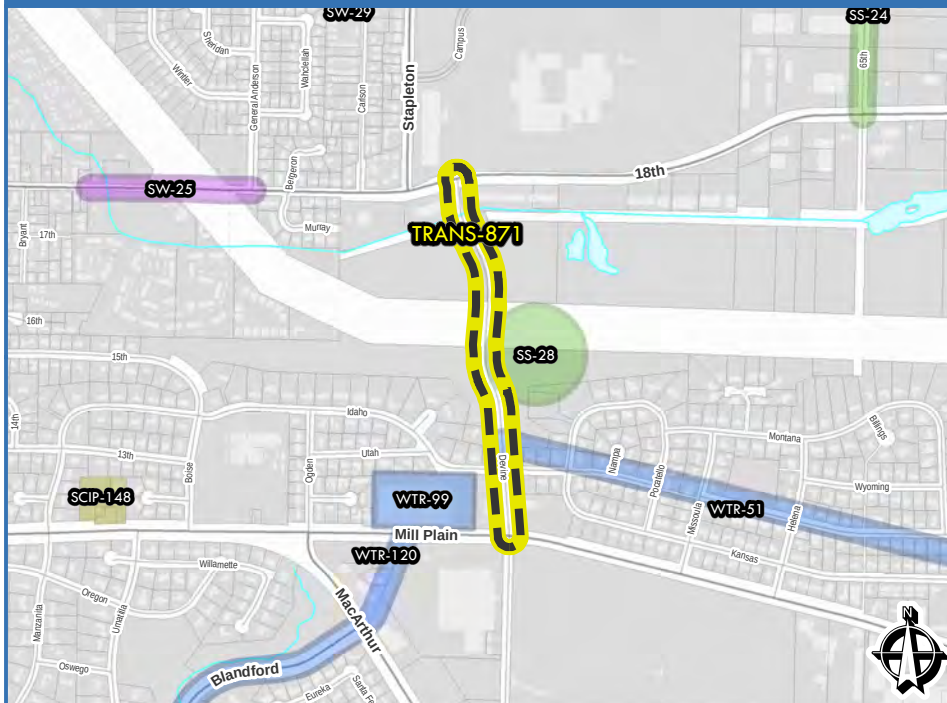
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **DEVINE ROAD PEDESTRIAN IMPROVEMENTS**

PROJECT EXTENT: **MILL PLAIN BOULEVARD**

TO: **E 18TH STREET**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Multimodal
Project Status:	Pending Funding
Funding Status:	Pending Funding

PROJECT DESCRIPTION

Project Description / Comments

Install a safe and continuous pedestrian facility along Devine Road from Mill Plain to 18th Street.

LEGEND

	Project Area		SCIP Project Areas		Battle Ground
	Transportation Project Areas		Vancouver City Limits		Camas
	Sanitary Sewer Project Areas		Building Footprints		Washougal
	Surface Water Project Areas		Taxlots		
	Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Pending Funding
Existing Funds:	Potential
SFS Funds:	Potential
Grant Funds:	Potential
Total Proj. Cost:	\$1,100,000.00

***Start of Construction (Year):**

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **MAIN STREET ROAD DIET FROM FOURTH PLAIN TO 39TH STREET**

PROJECT EXTENT: **FOURTH PLAIN BOULEVARD**

TO: **39TH STREET**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Multimodal
Project Status:	Pending Funding
Funding Status:	Unfunded

PROJECT DESCRIPTION

Project Description / Comments

Narrow Main Street from a four-lane facility to a two-lane facility with center turn lane. Also, install pedestrian and bicycle enhancements along the corridor.

LEGEND

	Project Area		SCIP Project Areas		Battle Ground
	Transportation Project Areas		Vancouver City Limits		Camas
	Sanitary Sewer Project Areas		Building Footprints		Washougal
	Surface Water Project Areas		Taxlots		
	Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Unfunded
Existing Funds:	Potential
SFS Funds:	Potential
Grant Funds:	Potential
Total Proj. Cost:	\$800,000.00
*Start of Construction (Year):	

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **E 5TH STREET IMPROVEMENTS - FORT VANCOUVER TO RESERVE (FLAP GRANT)**

PROJECT EXTENT: **FORT VANCOUVER WAY**

TO: **RESERVE STREET**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Multimodal
Project Status:	Pending Funding
Funding Status:	Pending Funding

PROJECT DESCRIPTION

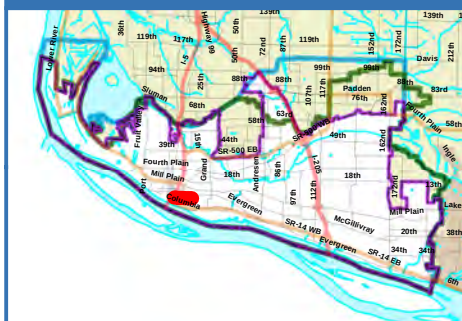
Project Description / Comments

Improve pavement, parking, and sidewalk along 5th Street between Fort Vancouver Way and E Reserve.

LEGEND

Project Area	SCIP Project Areas	Battle Ground
Transportation Project Areas	Vancouver City Limits	Camas
Sanitary Sewer Project Areas	Building Footprints	Washougal
Surface Water Project Areas	Taxlots	
Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Pending Funding
Existing Funds:	Potential
SFS Funds:	Potential
Grant Funds:	Potential

Total Proj. Cost:

***Start of Construction (Year):**

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



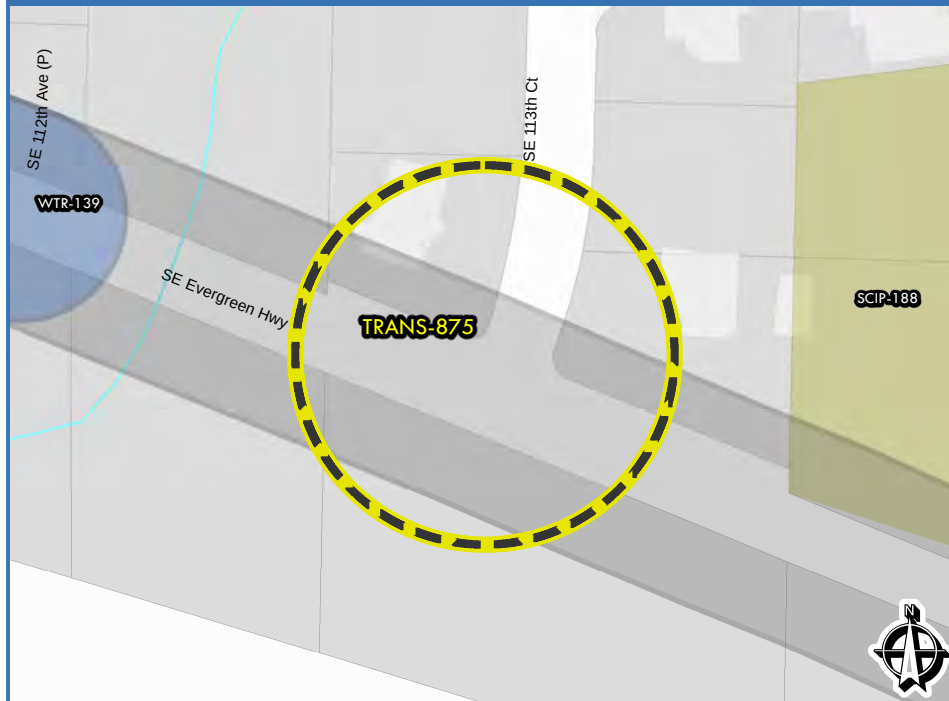
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **EVERGREEN HIGHWAY AND E 113TH AVENUE PEDESTRIAN CROSSING**

PROJECT EXTENT: **OLD EVERGREEN HIGHWAY**

TO: **E 113TH AVENUE**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Multimodal
Project Status:	In Design
Funding Status:	Funded

PROJECT DESCRIPTION

Project Description / Comments

Install speed cushions and a flashing beacon at Evergreen Highway and 113th Avenue.

LEGEND

	Project Area		SCIP Project Areas		Battle Ground
	Transportation Project Areas		Vancouver City Limits		Camas
	Sanitary Sewer Project Areas		Building Footprints		Washougal
	Surface Water Project Areas		Taxlots		
	Water Project Areas		Clark County		

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Funded
Existing Funds:	Yes
SFS Funds:	No
Grant Funds:	No
Total Proj. Cost:	\$100,000.00
*Start of Construction (Year):	

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



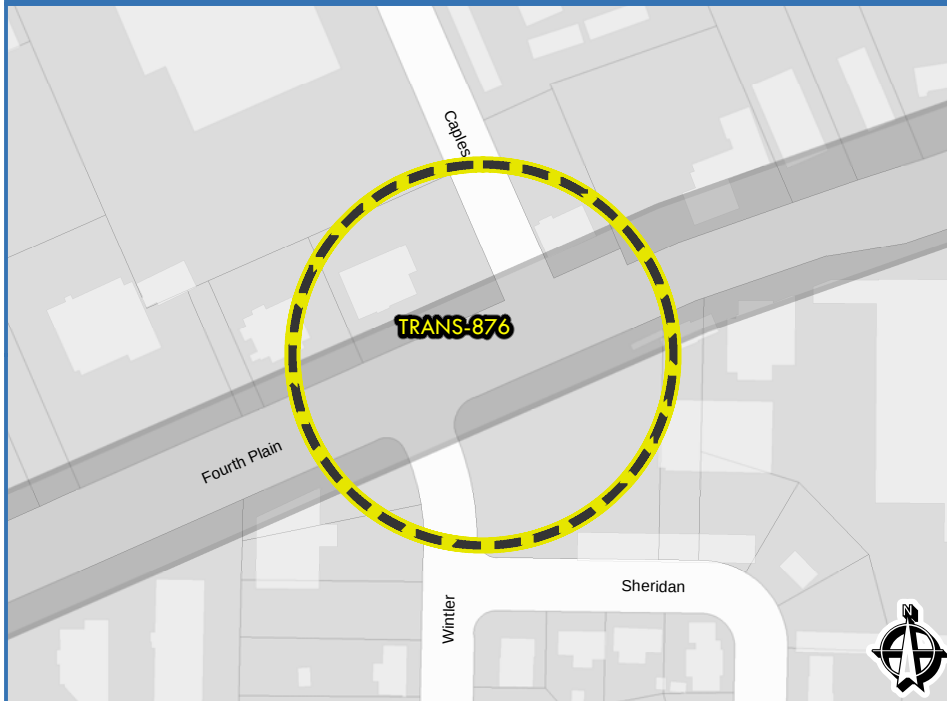
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **FOURTH PLAIN AND CAPLES/WINTLER INTERSECTION IMPROVEMENTS**

PROJECT EXTENT: **CAPLES AVENUE**

TO: **WINTLER DRIVE**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Multimodal
Project Status:	In Design
Funding Status:	Funded

PROJECT DESCRIPTION

Project Description / Comments

Install civil improvements and other crossing enhancements to improve safety for pedestrians and bicyclists crossing Fourth Plain.

LEGEND

Project Area	SCIP Project Areas	Battle Ground
Transportation Project Areas	Vancouver City Limits	Camas
Sanitary Sewer Project Areas	Building Footprints	Washougal
Surface Water Project Areas	Taxlots	
Water Project Areas	Clark County	

VICINITY MAP



FUNDING & SCHEDULE

Funding Status:	Funded
Existing Funds:	No
SFS Funds:	Yes
Grant Funds:	Yes
Total Proj. Cost:	\$268,000.00
*Start of Construction (Year):	2018

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



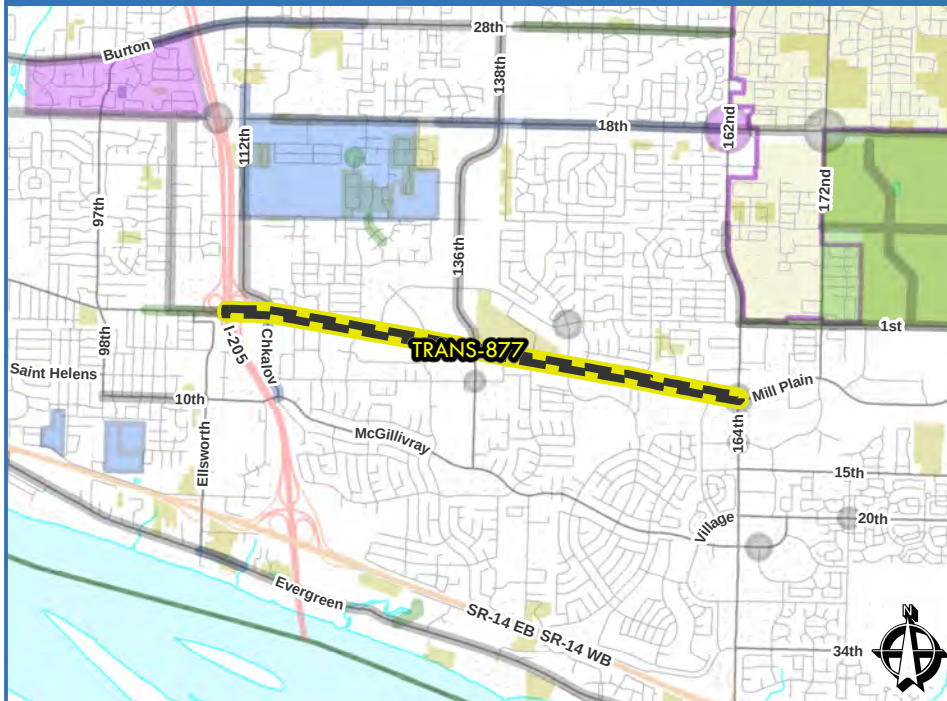
2019 - 2024 TRANSPORTATION IMPROVEMENT PROGRAM

PROJECT: **MILL PLAIN ARRIVAL ON GREEN PROJECT**

PROJECT EXTENT: **I-205**

TO: **164TH AVENUE**

PROJECT AREA MAP



PROJECT SUMMARY

Program/Discipline Type:	Transportation
Project Type:	Traffic
Project Status:	In Design
Funding Status:	Funded

PROJECT DESCRIPTION

Project Description / Comments

Install signal equipment to monitor how well Transit Signal Priority (TSP) is working along Mill Plain and to see how TSP is impacting other users along the corridor.

LEGEND

	Project Area		Water Project Areas		Battle Ground
	Transportation Project Areas		SCIP Project Areas		Camas
	Sanitary Sewer Project Areas		Vancouver City Limits		Washougal
	Surface Water Project Areas		Clark County		

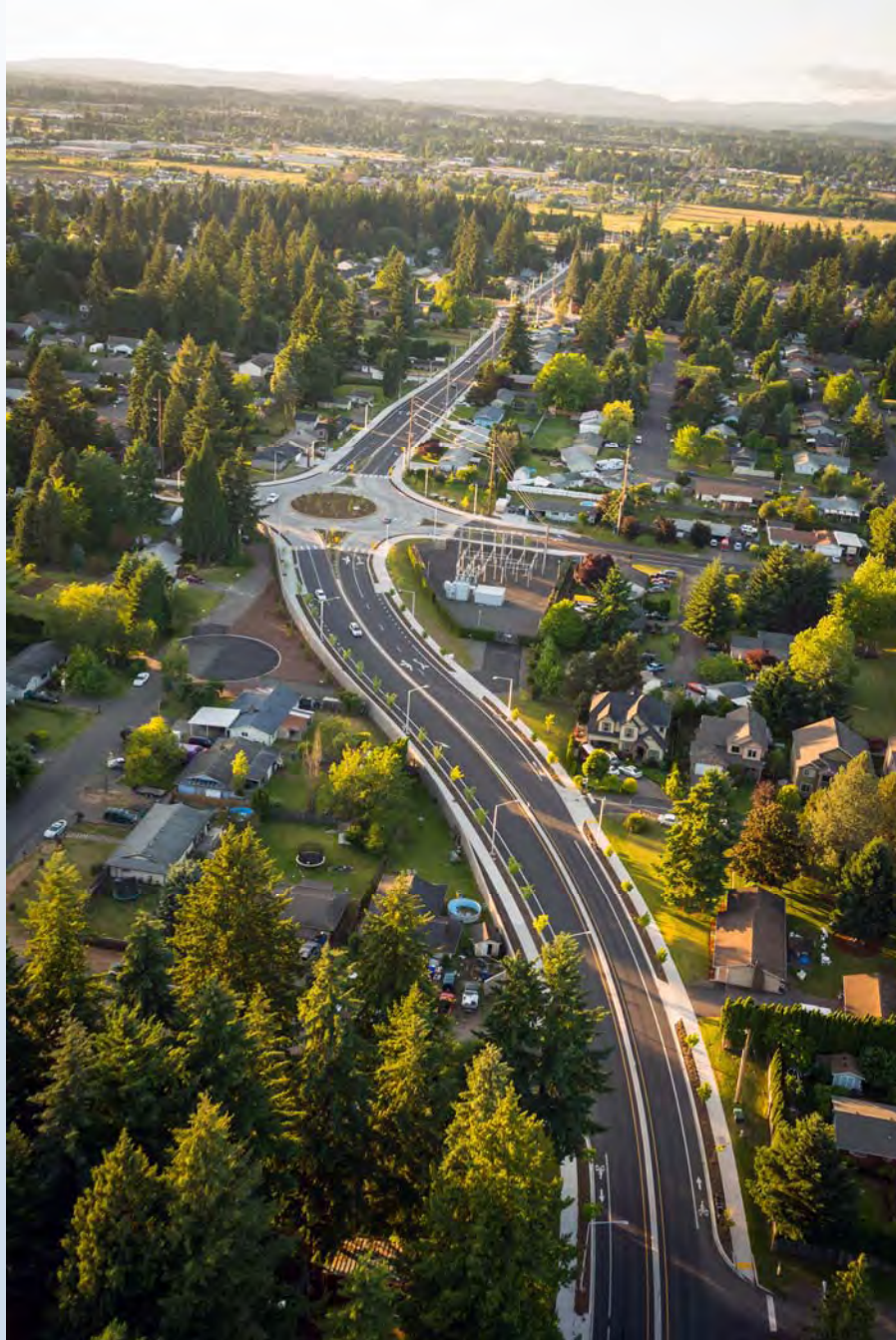
VICINITY MAP



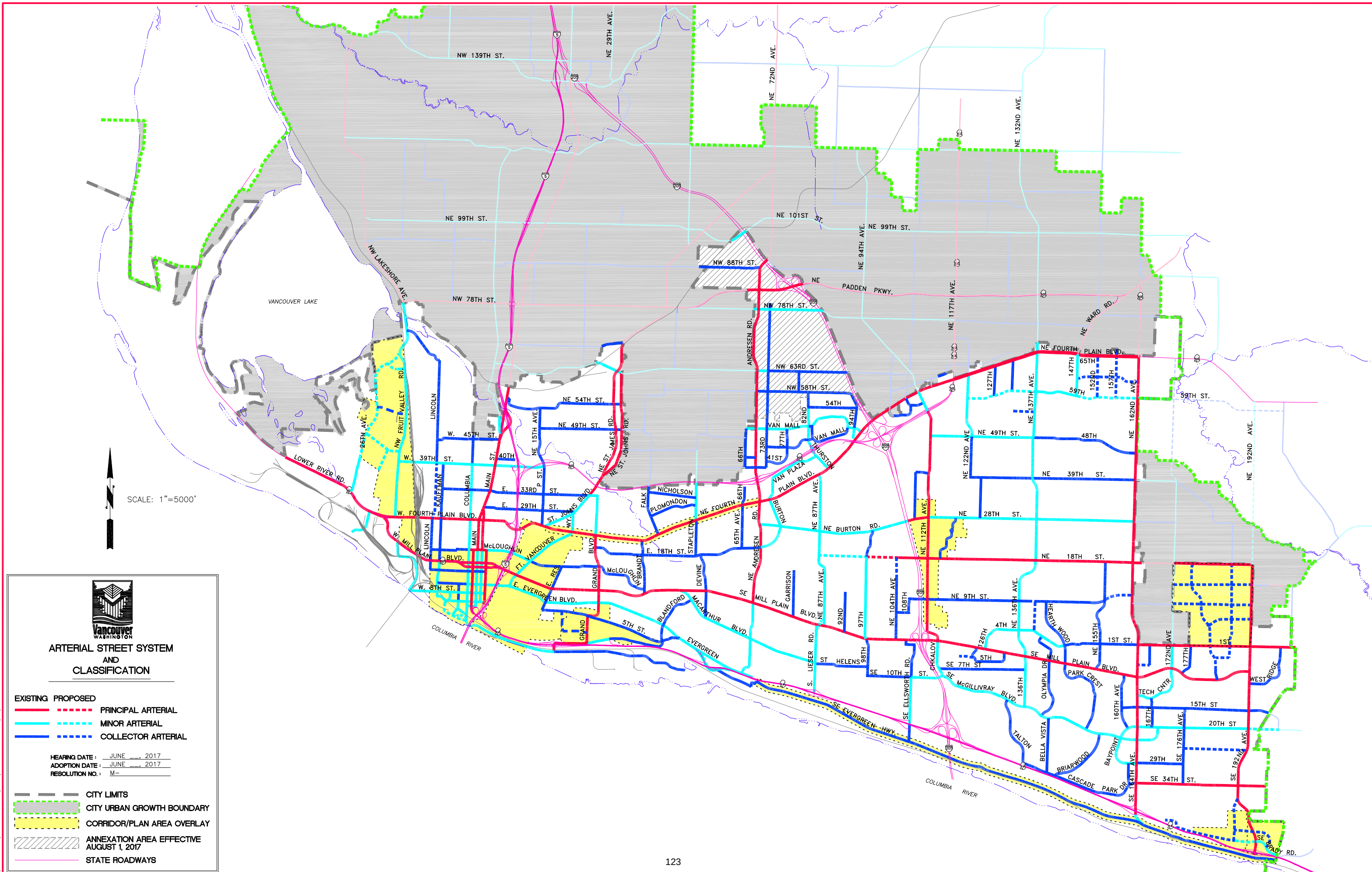
FUNDING & SCHEDULE

Funding Status:	Funded
Existing Funds:	Yes
SFS Funds:	No
Grant Funds:	Yes
Total Proj. Cost:	\$92,000.00
*Start of Construction (Year):	

*All project timing will be dependent on coordination with other departments including streets, pavement management, sewer, water and surface water.



STREETS - ARTERIAL CLASSIFICATION CHANGES	
New Designation:	Recommendation
Redesignation:	
NE 137th Avenue (4th Street to 9th Street)	Remove from arterial map due to proximity of other arterials (NE 136th Avenue on the west and Hearthwood on the east.)
Other:	





GLOSSARY

FREQUENTLY USED TERMS AND ACRONYMS

ACP

Annual Construction Program or Asphalt Concrete Pavement

ADA

Americans with Disabilities Act

ADT

Average Daily Traffic

AIP

Arterial Improvement Program (TIB funding Program)

Access

Access is a means of approach to provide vehicular or pedestrian entrance or exit to a property. This may not necessarily include all movements.

Access Management

Access management is the process of providing and managing access to land development while preserving the regional flow of traffic in terms of safety, capacity and speed.

A.M. Peak Hour

Identified by a one-hour period in the morning when traffic flow increases. The A.M. peak hour typically occurs between 6:30 a.m. and 9 a.m. Traffic volumes occurring during the A.M. peak hour are used to calculate the overall operation of a roadway or intersection.

ARRA

American Recovery and Reinvestment Act. Also referred to as an economic stimulus package, ARRA was enacted by Congress in February 2009. The act provides \$28.35 billion for improving and maintaining transportation infrastructure throughout the United States.

Arterial

An arterial is a major street carrying the traffic of local and collector streets to and from freeways and other major streets. Arterials generally have traffic signals at intersections and may have limits on driveway spacing and street intersection spacing. Further details can be found in the Vancouver Municipal Code (11.80.040).

Biological Assessment

A biological assessment is an environmental document required for compliance with the Endangered Species Act for projects with federal funding or permits.

CAT

Citizen Advisory Team

CCRP

Corridor Congestion Relief Program (State funding source)

CDBG

Community Development Block Grant. Block grants are targeted for low and moderate-income areas. Improvements typically consist of sidewalk and capital improvement programs.

CMAQ

Congestion Mitigation and Air Quality Improvement (Federal funding source). This funding is for projects that create a direct air quality benefit, leading toward attainment or maintenance of a National Ambient Air Quality Standard (NAAQS).

CN

Construction

CTL

Center-Turn Lane

C-TRAN

Clark County Public Transportation Benefit Area Authority, the transit agency for Clark County, Washington.

CWP

Clean Water Program

Capacity

The maximum rate of flow at which vehicles can be reasonably expected to traverse a point or uniform segment of a lane or roadway during a specified time period under prevailing roadway, traffic, and control conditions; usually expressed as vehicles per hour. In the project list spreadsheets *Capacity* is a term used to describe a subset of projects that upgrade existing substandard streets to urban arterial standards. This subset of projects typically improves more than just vehicle capacity. They also improve the pavement section, street lighting, bicycle, pedestrian and ADA facilities.

Collector Streets – Urban Collector

Collectors – Urban Collector. *Urban collector* provides for land access and traffic circulation within and between residential neighborhoods, and commercial and industrial areas. Direct access to adjacent land uses, however, is still subordinate to traffic movement. Access to abutting properties is controlled through the use of raised channelization, driveway spacing and pavement markings. Typically, collectors are not continuous for any great length, nor do they form a connected network by themselves.

Comprehensive Plan

Long-range plan, typically looking 20 to 50 years into the future, which is intended to guide growth and development of a community. Comprehensive Plans are required by the Washington State Growth Management Act for specific counties and cities in Washington State. The Plans establish goals and policies for managing population growth and land development while ensuring that the growth is adequately served by public facilities.

Concurrency

The Concurrency ordinance (VMC 11.95) was adopted in response to the Washington State Growth Management Act, which required local jurisdictions to adopt level-of-service (LOS) standards for the arterial road system and to ensure maintaining those standards when considering new development. This process is called *Concurrency*. Concurrency applies to any development, land division, site plan and conditional use permit approvals.

EA

Environmental Assessment

Environmental Review

The consideration of environmental factors as required by the Washington State Environmental Policy Act (SEPA). The environmental review process is the procedure used by agencies and others under SEPA for giving appropriate consideration to the environment in agency decision-making. (WAC 197-11-746).

Enhancement

In the project list spreadsheets *Capacity* is a term used to describe a subset of projects that upgrade pedestrian or bicycle facilities, or otherwise enhance the livability of the community through upgrades to the street system.

ESA

The Endangered Species Act was established in 1973 to preserve ecosystems of endangered and threatened species. The Act was recently amended to include various species of fish, wildlife, and plants throughout the United States.

FAST Act

On December 4, 2015, President Obama signed the Fixing America's Surface Transportation (FAST) Act (Pub. L. No. 114-94) into law—the first federal law in over a decade to provide long-term funding certainty for surface transportation infrastructure planning and investment. The FAST Act authorizes \$305 billion over fiscal years 2016 through 2020 for highway, highway and motor vehicle safety, public transportation, motor carrier safety, hazardous materials safety, rail, and research, technology, and statistics programs. The FAST Act maintains our focus on safety, keeps intact the established structure of the various highway-related programs we manage, continues efforts to streamline project delivery and, for the first time, provides a dedicated source of federal dollars for freight projects. With the enactment of the FAST Act, states and local governments are now moving forward with critical transportation projects with the confidence that they will have a federal partner over the long term.

Growth Management

A group of strategies used by a government to direct the timing, location and type of development in a community

Growth Management Act (GMA)

The State of Washington's Growth Management Act was adopted in 1990 to address the negative consequences of unprecedented population growth and suburban sprawl in the State. The GMA requires all cities and counties in the State to plan for future growth, with more extensive requirements for the largest and fastest-growing counties and cities in the State. Its requirements include guaranteeing the consistency of transportation and capital facilities plans with land use plans.

HES

Hazard Elimination System/Safety (Federal Funding Source). The objective of this fund is to improve specific locations which constituted a danger to vehicles or pedestrians as shown by frequency of accidents.

HIS-HRRP

In 2008, a portion of the funding provided through Federal Transportation Act SAFETEA-LU was made available for safety grants. Funds were provided through the Highway Safety Improvement Program (HSIP) and the High Risk Rural Roads Program (HRRRP).

HOV

High-Occupancy Vehicle

Impacts

Impacts are the effects or consequences of actions. Environmental impacts are effects upon the elements of the environment.

Interchange

A system of interconnecting roadways in conjunction with one or more grade separations, providing for the movement of traffic between two or more roadways on different levels

Intersection

The general area where two or more roadways join or cross, within which are included the roadway and roadside facilities for traffic movements in that area.

ITS

Intelligent Transportation System

Land Use

The type of activity associated with a specific geographic area. Land-use categories can be broad (e.g., residential, retail, office, industrial, and recreational), or they can be very specific (e.g., single-family residential, convenience market, or elementary school). In order to estimate trip generation characteristics for a specific geographic area, it is necessary to know both the type and intensity of land use (e.g., single-family residential land use at a development intensity of eight units per acre).

Level of Service (LOS)

The Level of Service is a grading system developed by the transportation profession to quantify the degree of comfort (including such elements as speed, travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles) afforded to drivers as they travel through an intersection or roadway segment. LOS is expressed as a letter grade that ranges from “A”, indicating that drivers will experience little, if any delay, to “F”, indicating significant traffic congestion and driver delay will occur.

MVFT

Motor Vehicle Fuel Tax

Mitigation

(1) Avoiding impacts altogether by not taking a certain action or parts of an action; (2) minimizing impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts; (3) rectifying impacts by repairing, rehabilitating, or restoring the affected environment; (4) reducing or eliminating impacts over time by preservation and maintenance operations during the life of the action; (5) compensating for impacts by replacing, enhancing or providing substitute resources or environments; and/or, (6) monitoring impacts and taking appropriate corrective measures (WAC 197-11-768).

Mode

The means by which travel is accomplished. Alternative modes of travel include walking, bicycling, auto, bus, light rail, airplane, ferry, etc.

NAAQS

The National Ambient Air Quality Standards were set up by the Environmental Protection Agency (EPA) to help mitigate the health impacts of air pollution. EPA established NAAQS measure for six pollutants that include carbon monoxide, ozone, particulate matter, lead, sulfur dioxide, and nitrous oxide.

Non-attainment Area

Geographic area in which air pollution levels exceed the NAAQS. (See above.)

Peak Hour

A period of 60 consecutive minutes during which an intersection or roadway system experiences the greatest amount of traffic volume

P.M. Peak Hour

A one-hour period in the afternoon or evening when traffic flow increases. The P.M. peak hour typically occurs between 4 and 6 p.m. Traffic volumes occurring during the P.M. peak hour are used to calculate the overall operation of a roadway or intersection.

PE

Preliminary Engineering

PSE

Plans, Specifications and Estimates

PSMP

Pedestrian Safety and Mobility Program

PWB

Public Works Board. The Public Works Board was created by the 1985 State Legislature. The Board is composed of local government officials, special purpose district representatives and private sector members. The mission of the Washington State Public Works Board is “to assist Washington’s local governments and private water systems in meeting their public works needs to sustain livable communities.” The Board is authorized to loan money to counties, cities, and special purpose districts to repair, replace, or create domestic water systems, sanitary sewer systems, storm water systems, roads, streets, solid waste and recycling facilities and bridges.

PWTF

Public Works Trust Fund. This trust fund is administered by the Public Works Board. The PWTF Construction and Pre-construction Loan Programs provide funds to design, repair, replace or create a facility. These loans have a 5- to 20-year term with an interest rate of one-half percent. Maximum for any agency is \$10 million per biennium.

RCW

Revised Code of Washington. Contains all laws of the state of general and permanent nature.

REET

Real-estate Excise Tax

RTC

Southwest Washington Regional Transportation Council. RTC is the regional transportation planning agency for Clark, Klickitat and Skamania counties.

WW&RP

Washington Wildlife and Recreation Program

Right-of-Way/ROW

Right-of-way is property held by the City for existing or future public roads or other public improvements.

Roadway Conditions

The geometric characteristics of the street or highway, including the type of facility and its development environment, the number of lanes (by direction), lane and shoulder widths, lateral clearances, design speed, and horizontal and vertical alignments.

Roadway

A roadway is the improved portion of an easement or right-of-way, excluding curbs, sidewalks and ditches. Road, roadway and street are used as interchangeable terms.

Roadway Section

A roadway section is a cross-section of a roadway which displays, travel lanes, turning lanes, bike lanes, sidewalks and medians with their respective dimensions. Each classification of roadway has a corresponding roadway section.

SAFETEA-LU

Safe, Accountable, Flexible, Efficient Transportation Equity Act - A Legacy for Users (SAFETEA-LU. The Act was signed into law by the President on August 10, 2005.). With

guaranteed funding for highways, highway safety and public transportation totaling \$244.1 billion, SAFETEA-LU represents the largest surface transportation investment in our nation's history. The two landmark bills – the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the Transportation Equity Act for the 21st Century (TEA-21) – shaped the highway program to meet the nation's changing transportation needs. SAFETEA-LU builds on this firm foundation, supplying the funds and refining the programmatic framework for investments needed to maintain and grow our vital transportation infrastructure.

SEPA

State Environmental Policy Act. SEPA is a state law requiring agencies to consider the environmental consequences of their decisions. (WAC 197-11-790).

SFS

Street Funding Strategy (SFS). Refers to any revenue sources approved in 2015. Including Utility tax increase of 1.5%, Business License Surcharge increase, Transportation Benefit District (TBD) licensing fee revenues, and/or retired debt service being redirected to transportation improvements.

STP

Surface Transportation Program (Federal funding source). The objective of the STP is to fund construction, reconstruction, resurfacing, restoration and rehabilitation of roads functionally classified as arterials.

STP-C

Surface Transportation Program – Competitive Grant

STP-E

Surface Transportation Program – Enhancement Grant

STP-TMA

Surface Transportation Program – Transportation Management Area Grant

Signal Warrant

A criterion that must be met before the installation of a traffic signal can be considered.

Significant/Significance

- 1) *Significant* as used in SEPA means a reasonable likelihood of more than a moderate adverse impact on environment quality.
- 2) *Significance* involves context and intensity and does not lend itself to a formula or quantifiable test. Context may vary with the physical setting. Intensity depends on

magnitude and duration of an impact. Severity of an impact should be weighed along with the likelihood of its occurrence. An impact may be *significant* if its chance of occurrence is not great, but the resulting environmental impact would be severe if it occurred. (WAC 197-11-794).

SWCAA

Southwest Washington Clean Air Agency. A government agency responsible for air pollution control and planning in Clark, Cowlitz, Lewis, Skamania and Wahkiakum Counties.

SYS

Traffic Signal System Improvement

TBD

Transportation Benefit District (TBD). In the state of Washington, a Transportation Benefit District is a quasi-municipal corporation and independent taxing district that can raise revenue for specific transportation projects, usually through vehicle license fees or sales taxes. RCW 36.73 authorizes cities (see also RCW 35.21.225) and counties to form TBDs. In other uses, TBD is a common term meaning “to be determined.”

TDM

Transportation Demand Management. A demand-based technique for reducing traffic congestion, such as ride-sharing programs and flexible work schedules enabling employees to commute to and from work outside of peak hours.

TEA-21

The Transportation Equity Act for the 21st Century was signed on June 9, 1998, superseding the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991. This bill provides Federal transportation dollars for Federal, State and Local agencies. The majority of benefits associated with ISTEA are continued or expanded upon through TEA-21. Also, see SAFETEA-LU.

TIB

Transportation Improvement Board. A state funding agency that administers several state funding programs. The mission of the TIB is to assist local agencies to preserve and improve transportation systems by providing financial assistance, supporting economic development, promoting multi-jurisdictional and multi-modal coordination and to promote public/private cooperation.

TIF

Transportation Impact Fee. TIF is the traffic impact component of a development impact fee. An impact fee is a fee levied on a developer by the county as compensation for expected effects of the development.

TIMACS

Transportation Information Management and Control System

TIP

Six-Year Transportation Improvement Program

TPP

Transportation Partnership Program (TIB Funding Program)

TS

Traffic Signal Project

TSNS

Traffic Safety Near Schools

TSO

Traffic Signal Optimization

UAP

Urban Arterial Program (State funding source), formally known as the Arterial Improvement Program. This program was established by the State in 1967 as the Urban Arterial Trust Account (UATA) and designated as the AIP in July 1999. The purpose of this program is to fund city and urban county arterial road and street projects to reduce congestion and improve safety, geometrics and structural concerns.

UCP

Urban Corridor Program (State funding source), formally known as the Transportation Partnership Program. This program was established by the State in 1988 as the Transportation Improvement Account (TIA) and designated as the TPP in July 1999. The purpose of the program is to fund projects on the regional transportation plan that are necessitated by existing or future congestion due to economic growth.

UR-SP

Urban Sidewalk Program (State funding source), formally known as the Pedestrian Safety and Mobility Program. This program was established by the TIB in 1994 as the Pedestrian Facilities Program (TIA-PFP) and designated as the PSMP in July 1999. The program goal is to enhance and promote pedestrian mobility by providing funding for pedestrian projects that provide access and connectivity of pedestrian facilities.

V/C Ratio

Ratio of volume to capacity for a traffic facility

Volume

Number of vehicles passing a point on a lane or roadway during some time interval, often taken to be one hour, but may also be expressed in terms such as sub-hourly, daily or annually.

WAC

Washington Administrative Code. The WAC is laws adopted by state agencies to implement state legislation.

WSDOT

Washington State Department of Transportation. WSDOT is a department of the State of Washington responsible for transportation-related planning, management and coordination.

Zoning

A map and ordinance text which divides a city or county into land use “zones” and specifies the types of land uses, setbacks, lot size, and size restrictions for buildings within each zone.



For additional information see
www.cityofvancouver.us/streetstip
or
www.cityofvancouver.us/betterstreets



To request other formats, please contact:
Vancouver Public Works
360-487-7130 | TTY: 360-487-8602
betterstreets@cityofvancouver.us



Staff Report 082-18

TO: Mayor and City Council

FROM: Eric Holmes, City Manager

DATE: 6/18/2018

SUBJECT 2018 First Supplemental Budget

Key Points

- Budget adjustments are made each year to reflect changes in revenues and expenditures that occur after the biennial budget is adopted.
- This supplemental budget includes a total expenditure adjustment of \$10.6 million in the City's Operating and Capital funds.
- The supplemental budget also includes a total increase of 4.25 FTEs, all of which are supported either by external revenue or existing budget.

Strategic Plan Alignment

N/A

Present Situation

Each year, budget adjustments must be made to reflect changes in revenues and expenses that occur after the budget is adopted by City Council. These adjustments can generally be categorized into the following areas:

- Corrections or administrative updates to the adopted 2017-2018 Biennial Budget.
- Activities and expenditures associated with new external revenues.
- New items funded with unobligated and undesignated funds.

Budget amendments are recommended for the City's various funds as detailed in Attachment A of the Ordinance. The recommended expenditure appropriation adjustments for the City's Operating and Capital funds included in the 2018 First Supplemental Budget total \$10.6 million. Of the \$10.6 million expenditure increase,

\$9.8 million is related to the Operating budget, and the remaining appropriation increase of \$0.8 million relates to changes in the Capital budget and supporting transfers. The net impact on all City resources is an addition of \$5.0 million to fund balances; the net impact on the General Fund is a \$0.7 million decrease to the fund balance.

The total Operating budget appropriation change in the General, Street and Fire (GSF) funds represents an increase of \$4.6 million. The remaining \$5.2 million increase relates to changes in other funds.

Appropriation adjustments in the City's GSF funds total increase of \$4.6 million include the following major items:

- New initiative requests of \$3.9 million include:
 - Appropriation of \$0.7 million for salary contingency.
 - Appropriation of \$0.6 million for the homeless day center improvements expected at the newly acquired Grand Blvd property, all of which is offset by revenue.
 - Increased appropriation of \$0.5 million related to a property purchase for the future Operations Center redevelopment project in which General Fund is 40% owner.
 - Increased appropriation of \$0.5 million set aside for expected property repair & maintenance for the Tower Mall facility.
 - Increased appropriation of \$0.3 million to fund the replacement of the police department's records management system.
 - Appropriation in Community & Economic Development of \$0.2 million for downtown entryway improvements and \$0.2 million for the Heights Subarea planning to replace the current Tower Mall location.
 - Streets increased appropriation of \$0.1 million for contracted services for homeless encampment clean-up efforts.
- Cost neutral requests totaling \$0.7 million and funded by \$0.8 million in new external revenues:
 - Numerous grants in Police totaling \$0.5 million and in Fire for \$0.2 million.
- Administrative adjustments include:
 - An alignment of appropriation between Street fund 102 and Street Initiative fund 103 in the Pavement Management construction budget for more efficient tracking by the department.
 - Updated appropriation for utility tax revenue increases to the General Fund.

A total of \$10.7 million in appropriation increase relates to other operating city funds. Some of the major changes are summarized below:

- Budget adjustment of \$5.6 million in the Streets Initiative Operating fund 103 offset by a reduction in fund 102.
- Additional appropriation of \$1.5 million in the Self Insurance Benefits fund to support increased benefit costs.
- Adjustment to the Tennis Center fund of \$1.0 million to support the transition through new ownership of operations to UTSA.
- Adjustment in the Risk Management Fund of \$0.6 million to cover higher than originally anticipated actuarial costs and claims activity.

The total Capital Budget appropriation of \$0.8 million (including internal transfer reduction of \$1.0 million) is included in the First Supplemental of 2018. Specific amendments by project are outlined in Attachment C to the ordinance. Following are some of major projects included by functional area:

- General/Facilities major capital projects totaling \$1.7 million include the following:
 - Fire Station 11 land and design appropriation of \$0.6 million fully funded by Fire District 5.
 - Petlock building demolition site conversion into a parking lot for \$0.3 million.
 - An appropriation of \$0.3 million for HVAC and entryway stair replacement in the Historic Museum fully funded by a Department of Commerce grant.
 - Firstenberg Community Center pool resurfacing repair for \$0.3 million.
- Parks of \$1.9 million for the Waterfront Park and plaza work offset by developer contribution of \$1.0 million. Fire Station 11 land and design appropriation of \$0.6 million fully funded by Fire District 5.
- Transportation project reduction totaling \$3.1 million include:
 - A reduction of \$3.5 million in appropriation for the SE 1st St – 164th to 192nd Ave project due to timing; will be budgeted in the next biennium.
 - Multimodal Safety and Accessibility project of \$0.2 million.
- Airport capital of \$0.6 million for the Pearson Airport runway project offset with grant funding.
- Parking fund capital of \$0.4 million for the installation of pay stations at the Waterfront. Historic Reserve projects of \$0.2 million for Evergreen trail asphalt replacement, additional street lights for the Officer's Row alley, and land bridge irrigation system repairs.
- Increased appropriation of \$1.5 million from General Fund reserves to put aside for the new future Operations Center redevelopment project.

Attachment B of the ordinance outlines changes to FTEs. An increase of 4.25 FTEs is recommended in the First Supplemental of 2018, all of which are supported by external revenue or existing budget and are outlined below:

- 1.0 new 3-year limited-term Communications Coordinator position in the City Manager's Office.
- 1.0 new Senior Construction Inspector in the Streets Pavement Management program in which will replace work currently being contracted out.
- 1.0 new Police Service Technician for neighborhood parking enforcement.
- 0.5 new 3-year limited-term Support Specialist in Parking to administer the court appeals process offset with a reduction in district court expenses in the general fund.
- 0.25 increase to an existing position in the Human Resources department.
- 0.5 new Support Specialist for Code Compliance

Proposal: To approve the 2018 First Supplemental Budget Ordinance.

Advantage(s)

1. The proposed budget adjustments will ensure that the City remains in compliance with state statutes that require all City expenditures to have an appropriation approved by ordinance.
2. Appropriations are provided for important City programs, services, and capital projects.

Disadvantage(s)

Proposed supplemental recommends spending \$0.7 million of the unassigned General Fund balance

Budget Impact

N/A - See above.

Prior Council Review

- City Council workshop on May 21, 2018.
- First reading of ordinance on June 4, 2018.

Action Requested

On Monday, June 18, 2018, subject to second reading and public hearing, approve ordinance.

Natasha Ramras, Chief Financial Officer, 487-8484

ATTACHMENTS:

- ▣ Ordinance
- ▣ Attachment A
- ▣ Attachment B
- ▣ Attachment C

06/04/18
06/18/18

ORDINANCE M-_____

AN ORDINANCE relating to the 2017-2018 Biennial Budget and making various appropriations in various funds; eliminating a fund that is no longer needed; declaring an emergency and providing an effective date.

BE IT ORDAINED BY THE CITY OF VANCOUVER:

Section 1. Supplemental appropriations are needed to meet certain necessary expenditures to be incurred in 2017-2018 which were not and could not reasonably have been foreseen at the time of adoption of the 2017-2018 Budget. As required by RCW 35.34.120, there is hereby set forth in summary form the total adjustments of expenditure appropriations for each separate fund adjusted and the aggregate totals for all such funds combined, as set forth in Attachment "A" of this ordinance. Attachment "C" outlines specific capital projects included in the 2017-2018 City of Vancouver Capital Budget.

Section 2. That a total of net 4.25 full-time equivalent positions are added as identified in Attachment "B" to this ordinance. The position adjustments shall be made consistent with applicable civil service rules and personnel regulations.

Section 3. The "2015 Bond Capital Fund – VNHR" (fund number 338), created on 04/27/2015 by ordinance No. M-4120 is no longer needed and is hereby eliminated.

Section 4. As reported in SR No. _____ the appropriations made in this ordinance are necessary to meet certain necessary expenditures that will be incurred in 2017-

ORDINANCE - 1

2018 which were not and could not reasonably have been foreseen at the time of adoption of the 2017-2018 Budget; an emergency is hereby declared, and this ordinance shall go into effect immediately upon final passage.

Read first time:

PASSED BY THE FOLLOWING VOTE

Ayes: Councilmembers

Nay: Councilmembers

Absent: Councilmembers

Read second time:

PASSED BY THE FOLLOWING VOTE:

Ayes: Councilmembers

Nays: Councilmembers

Absent: Councilmembers

SIGNED this _____ day of _____, 2018.

Anne McEnerny-Ogle, Mayor

Attest:

Natasha Ramras, City Clerk
By: Carrie Lewellen, Deputy City Clerk

Approved as to form:

E. Bronson Potter, City Attorney

ORDINANCE - 2

SUMMARY

ORDINANCE NO. _____

AN ORDINANCE relating to the 2017-2018 Biennial Budget and making various appropriations in various funds; eliminating a fund that is no longer needed; declaring an emergency and providing an effective date. Supplemental appropriations are needed to meet certain necessary expenditures to be incurred in 2017-2018 which were not and could not reasonably have been foreseen at the time of adoption of the 2017-2018 Budget; providing for an immediate effective date.

The full text of this ordinance will be mailed upon request. Contact Raelyn McJilton, Records Officer at 487-8711, or via www.cityofvancouver.us (Go to City Government and Public Records).

ORDINANCE - 3

	2018 Supplemental 1 Changes
APPROPRIATION BY FUND	2018
OPERATING BUDGET	
General Fund, Street, & Fire	
General Fund	3,831,560
Street Fund	(5,302,074)
Street Funding Initiative Operating	5,565,912
Fire Fund	494,836
Total General, Street, & Fire	4,590,234
Special Revenue Funds	
Investigative Fund	14,165
Drug Enforcement Fund	52,060
CED Grants	200
Tourism Fund	384,522
Fire Equipment Fund	26,098
Emergency Ambulance Services Contract Admin Fund	168
Enterprise Funds	
Surface Water Management Fund	233,650
Water Utility Fund	1,373
Sewer Utility Fund	25,000
Building Inspection Fund	76,326
Solid Waste Fund	50
Parking Services Fund	195,715
Tennis Center Fund	1,012,515
Internal Service Funds	
Equipment Services Operations Fund	35,000
Equipment Services Capital Fund	281,313
Computer Repair & Replacement	(31,000)
Self-Insured Workers Comp & Liability Fund	596,367
Internal Administrative Services Fund	118,421
Benefits Fund	1,500,000
Fiduciary Funds	
SW Washington Regional SWAT Team Fund	101,877
City/County Cable TV Fund	132,809
PEG Capital Support Fund	415,808
Total Other Funds	5,172,437
Total Operating Budget Appropriation	9,762,671

**2018 Supplemental 1
Changes**

CAPITAL BUDGET

Capital Project Funds

Transportation Capital	56,152
Street Funding Initiative Capital	(3,140,864)
Fire Equipment Fund	55,000
Fire Acquisition	644,000
General Capital Improvement	1,025,600
VNHR Property Capital	220,000
Parks Construction	1,939,893
Water Construction	41,400
Airport	588,000
Parking Services	378,400
Total Capital Project Funds	1,807,581

Capital Funding Transfers Supporting City of Vancouver Capital Projects Budget

General Fund	1,528,750
Street Fund	96,287
Tourism Fund	15,350
Fire Fund	55,000
TIF - Vancouver	20,000
TIF - Orchards	91,001
Building Inspection Fund	12,320
Parking Services	30,000
Facilities Asset Management and Replacement Reserve	674,490
Transportation Benefit District	(3,500,000)

Total Transfers for Capital (976,802)

Total Capital Budget Appropriation 830,779

Total Operating and Capital Appropriation 10,593,450

**City of Vancouver 2018 Supplemental 1 Budget
Summary of FTE Changes**

Attachment B

Fund - Department		Notes	
General Fund			
City Attorney's Office			
Assistant City Attorney II	Reclassification		-1.00
Assistant City Attorney III	Reclassification		1.00
City Attorney's Office Total			0.00
City Manager's Office			
Communications Coordinator	NEW - 3 YR Limited Term		1.00
Communications Coordinator	Reclassification		-1.00
Communications Specialist	Reclassification		1.00
City Manager's Office Total			1.00
Community & Economic Dev			
IT Technical Specialist	Administrative		-1.00
Permit Center Supervisor	Administrative		-1.00
Planner B	Administrative		-1.00
Support Specialist	NEW - Regular		0.50
Community & Economic Dev Total			-2.50
Parks & Recreation			
Departmental Aide	Administrative		-1.05
Parks & Recreation Total			-1.05
Public Works			
Grounds Maintenance Worker II	Administrative		1.00
Real Property Specialist	Administrative		1.00
Public Works Total			2.00
Vancouver Police			
Computer Forensic Specialist	Reclassification		-2.00
Departmental Aide	Administrative		-0.50
Police Service Technician	NEW - Regular		1.00
Police Service Technician	Reclassification		2.00
Vancouver Police Total			0.50
General Fund Total			-0.05
Street Fund			
Public Works			
Senior Construction Inspector	NEW - Regular		1.00

City of Vancouver 2018 Supplemental 1 Budget Summary of FTE Changes			Attachment B
Fund - Department	Notes		
Public Works Total			1.00
Street Fund Total			1.00
CED Grants			
Community & Economic Dev			
Associate Planner	Reclassification		1.00
CDBG Coordinator	Reclassification		-1.00
Community & Economic Dev Total			0.00
CED Grants Total			0.00
Water Utility Fund			
Public Works			
Departmental Aide	Administrative		-0.50
Public Works Total			-0.50
Water Utility Fund Total			-0.50
Building Inspection Fund			
Community & Economic Dev			
IT Technical Specialist	Administrative		1.00
Permit Center Supervisor	Administrative		1.00
Community & Economic Dev Total			2.00
Building Inspection Fund Total			2.00
Parking Services Fund			
Community & Economic Dev			
Support Specialist	NEW - 3 YR Limited Term		0.50
Community & Economic Dev Total			0.50
Parking Services Fund Total			0.50
Self-Insured Worker's Comp & Liability Fund			
Human Resources			
Loss Prevention Specialist	Increase to existing FTE		0.25
Human Resources Total			0.25
Self-Insured Worker's Comp & Liability			0.25
Internal Administrative Services Fund			
City Manager's Office			
Real Property Specialist	Administrative		-1.00

City of Vancouver 2018 Supplemental 1 Budget Summary of FTE Changes		Attachment B
Fund - Department	Notes	
City Manager's Office Total		-1.00
Human Resources		
Departmental Aide	Administrative	2.05
Human Resources Total		2.05
Internal Administrative Services Fund T		1.05
Grand Total		4.25

	Total 2018 First Supplemental Changes
CAPITAL PROJECTS BY DEPARTMENT	
GENERAL CAPITAL PROJECTS	
Petlock Demolition	290,000
Clark County Historical Museum (Dept of Commerce Grant)	300,000
GGov - City Hall	77,000
Esther Short Park	31,000
Firstenburg Community Center	300,000
Future Fire Station 11 Land	644,000
Marine Boat House	55,000
Operations Center Redevelopment	27,600
Total General Capital Construction Projects	1,724,600
PARKS CAPITAL PROJECTS	
Columbia Waterfront Park	1,939,893
Total Parks Capital Projects	1,939,893
TRANSPORTATION/STREETS CAPITAL PROJECTS	
Evergreen and Grand Accessible Pedestrian Signal	56,152
SE 1st St - 164th to 192nd	(3,500,000)
Project Scoping and Estimation	96,287
32nd Avenue Extension Feasibility Study	20,000
Traffic Signal and Lighting Sustainability	(56,152)
Multimodal Safety and Accessibility Program	208,000
Non-Programmed Safety (fund 331)	91,001
Total Transportation/Streets Capital Projects	(3,084,712)
AIRPORT PROJECTS	
Pearson Airport Runway Project	588,000
Airport Capital Projects	588,000
OTHER CAPITAL PROJECTS	
Operations Center Redevelopment	41,400
Evergreen Asphalt Trail Replacement	100,000
Officers Row - Additional Street Lights in Alley	45,000
Land Bridge Irrigations System Repair	75,000
Waterfront Pay Stations	378,400
Total Other Capital Projects	639,800
CAPITAL PROJECTS SUMMARY	
General Capital	1,724,600
Parks	1,939,893
Transportation/Streets	(3,084,712)
Airport Capital	588,000
Other Capital	639,800
Total Capital Projects	1,807,581



Staff Report 052-18

TO: Mayor and City Council

FROM: Eric Holmes, City Manager

DATE: 6/18/2018

SUBJECT Kessid Church Right-of-Way Vacation

Key Points

- Right-of-way vacation of approximately 2,303 square feet of partially improved alley right-of-way associated with the alley connecting Washington Street and Main Street, located between West 27th and West 28th Streets;
- There are existing utilities within the proposed vacation area;
- Staff recommends full compensation be required for the vacated area.

Strategic Plan Alignment

N/A

Present Situation

Staff has received a request from the Kessid Church to vacate a portion of partially improved alley right-of-way associated with the alley connecting Washington Street and Main Street, located between West 27th and West 28th Streets. The right-of-way is specifically located within Block 3 of "Steel's Addition," in the Southeast Quarter of Section 22, Township 2 North, Range 1 East, Willamette Meridian.

The pending site improvements on the applicant's properties will include construction of an ADA-compliant elevator enclosure on the external face of the existing church building. The applicant's architect explored all location options for the elevator and concluded that the only viable location is on the south face of the building, immediately adjacent to the alley. The elevator enclosure will extend into the alley right-of-way, thus requiring the proposed right-of-way vacation.

The alley right-of-way currently provides secondary property access and public

vehicular circulation between Washington Street and Main Street. The west segment of this alley provides rear property access to two (2) existing residential lots with single-family homes (2701 and 2711 Washington Street). This segment of the alley right-of-way will not be vacated, and will remain unchanged.

The portion of the alley right-of-way to be vacated begins approximately 150 feet east of Washington Street and extends approximately 155 feet westward to Main Street. This right-of-way contains approximately 15 feet of paved alley surface, an 8-inch sewer main, and a 2-inch water main.

Six (6) parcels adjoin the right-of-way to be vacated. All of these adjoining parcels are owned by the applicant. Pursuant to VMC 11.05.130, the property associated with a vacated street shall belong to the abutting property owners, one-half to each. Since the applicant owns all adjoining parcels, the entirety of the right-of-way to be vacated will be transferred to the applicant.

In addition to the elevator enclosure described above, the pending site improvements on the applicant's properties will include construction of new parking areas and associated vehicular circulation aisles. The proposed circulation aisle on the north side of the block will connect to the dead-end of the remaining alley right-of-way to provide vehicular connectivity to West 28th Street. In addition to normal vehicular traffic, this connection will accommodate trash collection trucks and may also be used as a secondary emergency access corridor. The design of the proposed circulation corridor has been reviewed and approved by the Fire Department and the Solid Waste Division. A public access easement is being provided to protect the proposed circulation connection.

Finally, staff has reviewed the City's Transportation Systems Plan and determined there is no future need for this portion of alley right-of-way. Therefore, vacation of this alley right-of-way will have no adverse impact on the City's transportation assets.

Staff has contacted all utility owners with facilities potentially located within the subject area. The City of Vancouver has utilities within the area of the proposed vacation, including a 2-inch water main and an 8-inch sewer main. As part of the pending site improvements, the applicant will be required to abandon the 2-inch water main and move the 8-inch sewer main. The applicant will reconnect water services to the affected properties as part of the pending site improvements, at the direction of the Water Engineering Division. The applicant will also reconstruct the existing sewer main in a new alignment and dedicate a public utility easement for the construction, repair and maintenance of the new sewer main. There are no other utilities requiring an easement within the area to be vacated.

RCW 35.79.030 and VMC 11.05.120 stipulate provisions for the City to collect compensation for the value of public right-of-way that is vacated. An analysis of the

County Assessor's records for properties in the immediate vicinity of the proposed vacation area resulted in an estimated property value equal to \$17.56 per square foot. The total area of the proposed vacation is 2,303 square feet. This results in a total estimated property value equal to \$40,440.

As previously noted, the right-of-way has historically been used to provide public street connectivity and utility services to the immediate area. The alley has been part of a dedicated public right-of-way for 25 years or more, and the vacated area will be utilized by the applicant for expansion of their current use. Therefore, staff recommends the imposition of compensation equal to 100% of the total estimated property value, which is equal to \$40,440. This sum shall be remitted to the City prior to the right-of-way vacation becoming effective.

Advantage(s)

1. Allows the vacated property to be placed on the tax rolls.
2. Allows the applicants to maximize use of the abutting property.
3. Facilitates development of an existing property.

Disadvantage(s)

No known disadvantages.

Budget Impact

Any revenue associated with the compensation received for vacated right-of-way will be deposited into the City of Vancouver's transportation fund.

Prior Council Review

First reading on April 16, 2018; second reading on May 21, 2018 - public hearing continued.

Action Requested

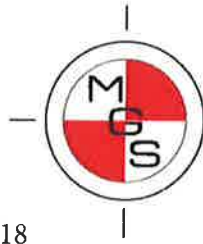
On Monday, June 18, 2018, subject to second reading and public hearing, approve the ordinance.

Ryan Lopossa, Streets & Transportation Manager, 487-7706

ATTACHMENTS:

- ▣ Exhibit A - Legal Description
- ▣ Exhibit B - Site Map
- ▣ Exhibit C - Overall Vicinity Map
- ▣ Ordinance
- ▣ Resolution
- ▣ Property Value Analysis
- ▣ Public Sewer Easement Legal Description & Exhibit

Exhibit A



MINISTER-GLAESER SURVEYING INC.

*Vancouver Office – 2200 E. Evergreen Blvd., Vancouver, Washington 98661
(360) 694-3313 (360) 694-8410 FAX
Pasco Office – 6303 Barden Blvd. Suite E, Pasco, Washington 99301
(509) 544-7802 (509) 544-7802 FAX*

02/21/18



February 21, 2018

EXHIBIT “ ”

PORTION OF ALLEY TO BE VACATED

A portion of a 15.00-foot-wide alley in a portion of Block 3, “Steel’s Addition”, Volume “B” of Plats, page 41, Clark County, Auditor’s Records, in a portion of the Southeast quarter of Section 22, Township 2 North, Range 1 East, Willamette Meridian, City of Vancouver, Clark County, Washington, described as follows:

Beginning at a 1/2” iron rod with a yellow plastic cap stamped “Renton 37535” set to mark the Northwest corner of said Block 3, as shown in Book 65 of Surveys, page 104, Clark County Auditor’s Records;

Thence South $87^{\circ}47'44''$ East, along the North line of said Block 3 as shown in said survey for a distance of 133.00 feet;

Thence leaving said North line South $02^{\circ}12'16''$ West, for a distance of 99.62 feet to the North Line of said 15.00 foot-wide alley and the **TRUE POINT OF BEGINNING**;

Thence continuing South $02^{\circ}12'16''$ West, for a distance of 15.00 feet to the South line of said alley;

Thence South $87^{\circ}50'15''$ East along said South alley line, for a distance of 151.06 feet more or less to the Westerly Right-of-Way line of Main Street;

Thence North $20^{\circ}18'23''$ East along said Westerly Right-of-Way line, for a distance of 15.79 feet more or less to the North line of said 15.00 foot-wide alley;

S:\Jobs_17\17-256\LEGALS\ALLEY_VACATION.docx

Thence leaving the Westerly Right-of-Way line of Main Street, North $87^{\circ}50'15''$
West along said North Alley Line, for a distance of 155.96 feet more or less to the
TRUE POINT OF BEGINNING.

Contains 2,303 square feet of land, more or less.

S:\Jobs_17\17-256\LEGALS\ALLEY_VACATION.docx

Exhibit B

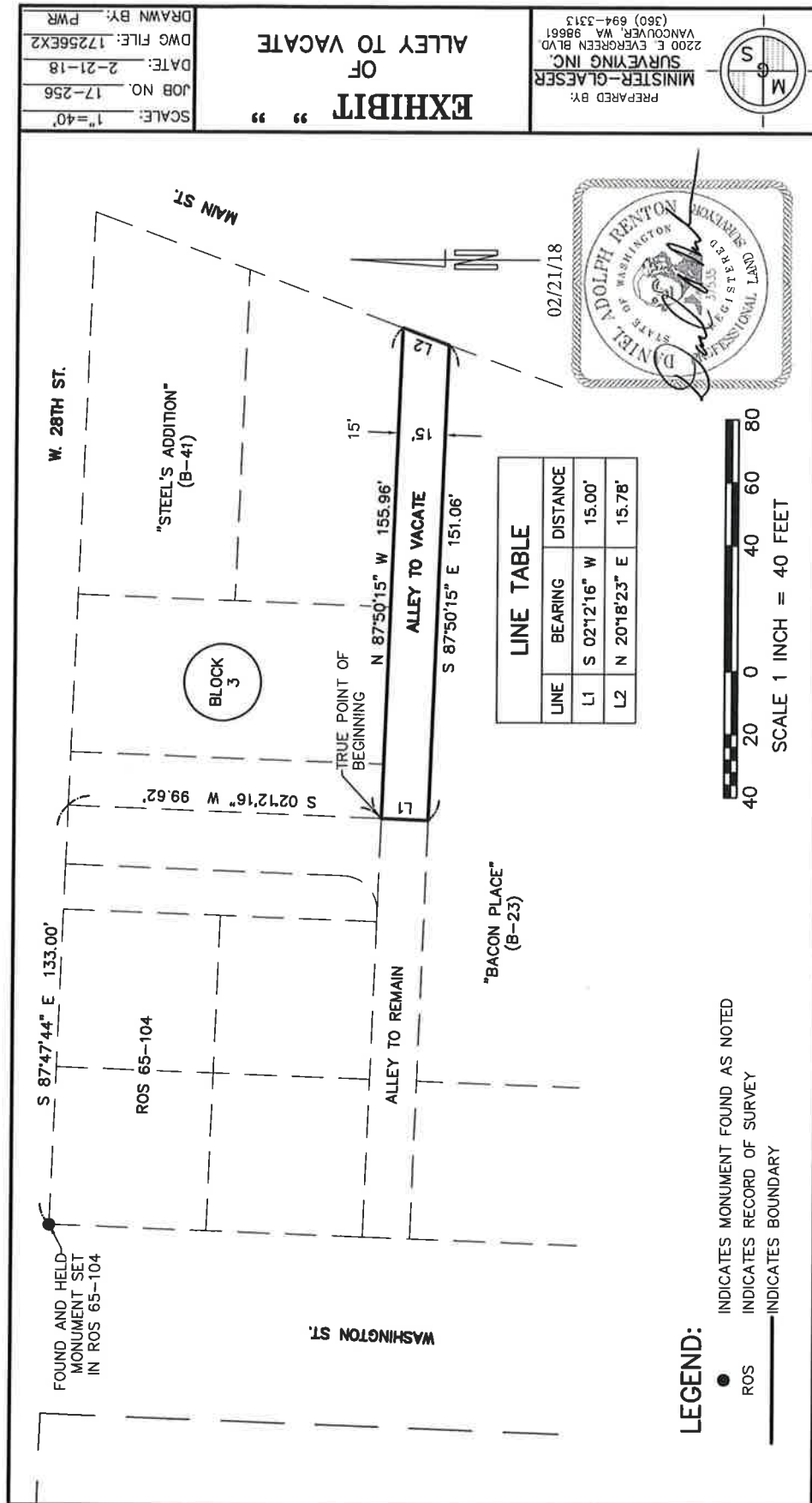
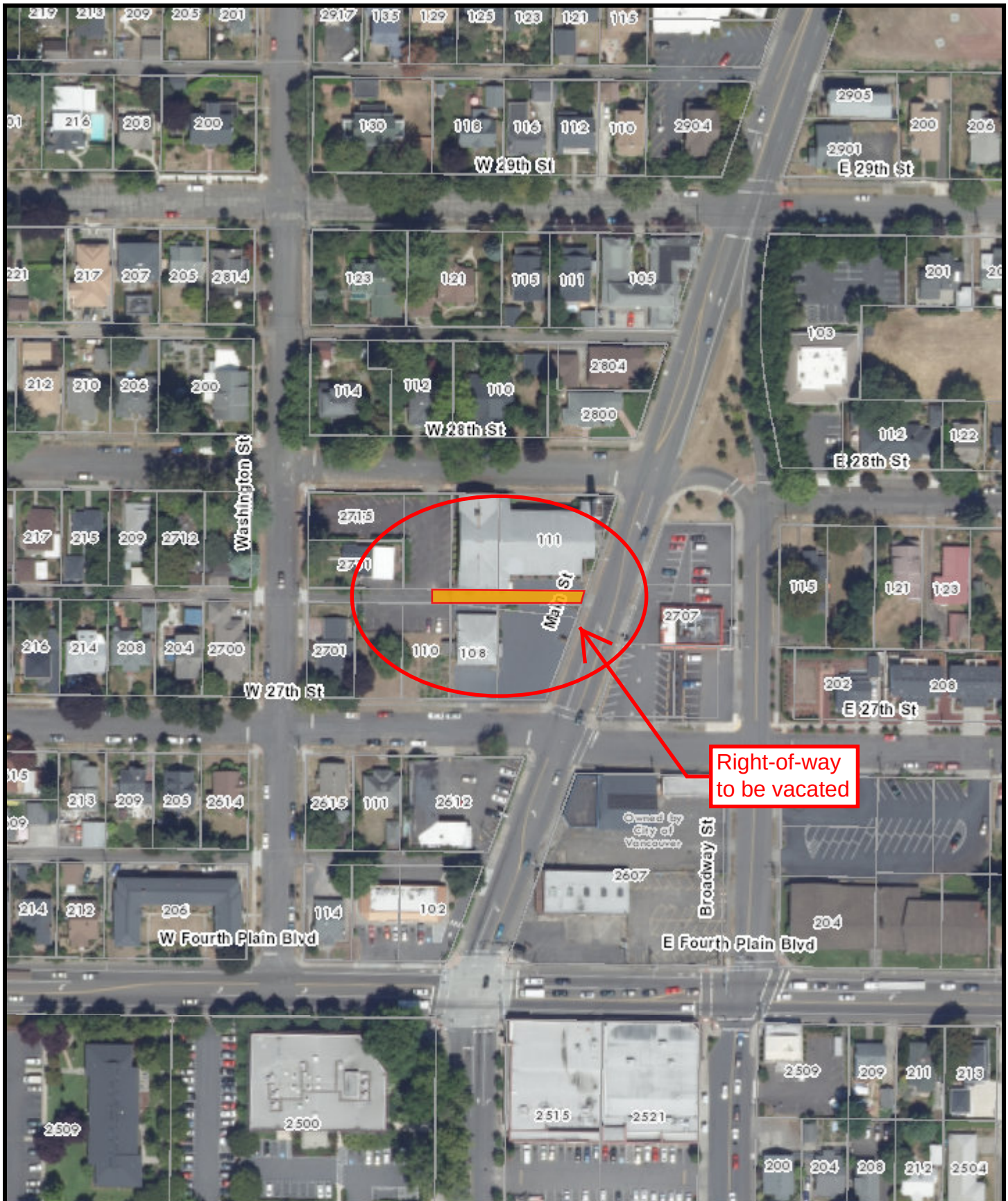


Exhibit C - Overall Vicinity Map



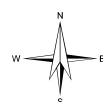
System Utility Map



RUS / PAC

Taxlot #:

1 inch = 200 feet



THE UTILITY INFORMATION SHOWN ON THIS MAP DOES NOT INDICATE OR IMPLY AVAILABILITY. CONTACT THE ENGINEERING COUNTER STAFF AT THE CDD PERMITS CENTER AT (360) 487-7804 OR 415 W. 6TH ST. FOR AVAILABILITY OF SERVICE.

THIS INFORMATION IS COMPILED FROM A VARIETY OF SOURCES. THE CITY OF VANCOUVER ASSUMES NO RESPONSIBILITY FOR MAP ACCURACY.

04/16/18
05/21/18
06/18/18

ORDINANCE NO. _____

AN ORDINANCE vacating a portion of the right-of-way associated with the alley connecting Washington Street and Main Street, between West 27th and West 28th Streets, located within Block 3 of “Steel’s Addition,” in the Southeast Quarter of Section 22, Township 2 North, Range 1 East, Willamette Meridian, City of Vancouver, Clark County, Washington; providing for an effective date.

BE IT ORDAINED BY THE CITY OF VANCOUVER:

Section 1. City Council initiated a vacation proceeding for a portion of the public right-of-way associated with the alley connecting Washington Street and Main Street, between West 27th and West 28th Streets, located within Block 3 of “Steel’s Addition,” in the Southeast Quarter of Section 22, Township 2 North, Range 1 East, Willamette Meridian, City of Vancouver, Clark County, Washington. As recommended by Staff Report No. _____, Council adopted Resolution M-_____ and set the date of public hearing for May 21, 2018 at 7:00 p.m. The City Clerk caused the notices of the public hearing to be posted and published as required by law.

At the time and place set for hearing, the hearing was held. City Council considered the reports and information provided at the public hearing and found that:

ORDINANCE - 1

1. A vacation of the right-of-way will better serve the public;
2. The right-of-way is not currently no longer needed for public access and changes are not likely to occur in the future requiring the need for the right of way; and
3. There are no objections to the vacation sufficient to deny its approval.

Based on the foregoing, the City Council determined to vacate the property as described in Section 2 of this ordinance subject to the following:

A. The City has contacted utility owners and found that all public utility facilities within the area of right-of-way to be vacated will be moved from the right-of-way and protected with separate easements. Therefore, the City will not retain any easements under or over any portion of the vacated area.

B. The area of right-of-way to be vacated consists of approximately 2,303 square feet.

C. RCW 35.79.030 and VMC 11.05.120 stipulate provisions for the City to collect compensation for the value of public right-of-way that is vacated. An analysis of the County Assessor's records for properties adjacent to the proposed vacation area resulted in an estimated property value equal to \$17.56 per square foot. The total area of the proposed vacation is 2,303 square feet. This results in a total estimated property value equal to \$40,440. Prior to the effective date of this ordinance, the applicant shall remit \$40,440 to the City as compensation for the vacated property.

Section 2. The following street area to be vacated is described herein in the legal description and map exhibit attached hereto and incorporated herein as Exhibits "A" and "B".

Section 3. Effective date. This ordinance shall go into effect five days after the applicant has fulfilled the requirements stipulated in Section 1.C of this ordinance.

Read first time:

Ayes: Councilmembers

Nays: Councilmembers

Absent: Councilmembers

Read second time:

PASSED by the following vote:

Ayes: Councilmembers

Nays: Councilmembers

Absent: Councilmembers

SIGNED this _____ day of _____, 2018.

Anne McEnerny-Ogle, Mayor

Attest:

Natasha Ramras, City Clerk
By: Carrie Lewellen, Deputy City Clerk

Approved as to form:

E. Bronson Potter, City Attorney

ORDINANCE - 3

SUMMARY

ORDINANCE NO. _____

AN ORDINANCE vacating a portion of the right-of-way associated with the alley connecting Washington Street and Main Street, between West 27th and West 28th Streets, located within Block 3 of “Steel’s Addition,” in the Southeast Quarter of Section 22, Township 2 North, Range 1 East, Willamette Meridian, City of Vancouver, Clark County, Washington; providing for an effective date.

The full text of this ordinance will be mailed upon request. Contact Raelyn McJilton, Records Officer at 487-8711, or via www.cityofvancouver.us (Go to City Government and Public Records).

04/16/18

RESOLUTION NO. M-3963

A RESOLUTION fixing May 21, 2018 as the date for a public hearing on a proposal to vacate a portion of a public right-of-way associated with the alley connecting Washington Street and Main Street, between West 27th and West 28th Streets, located within Block 3 of "Steel's Addition," in the Southeast Quarter of Section 22, Township 2 North, Range 1 East, Willamette Meridian, City of Vancouver, Clark County, Washington.

BE IT RESOLVED BY THE CITY OF VANCOUVER:

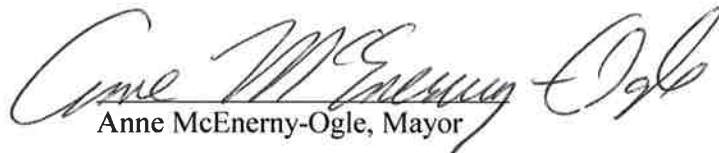
Section 1. As recommended in SR- 052-18, City Council, pursuant to VMC 11.05.040 and RCW 35.79.010, hereby initiates procedures to vacate a portion of the right-of-way of the alley connecting Washington Street and Main Street, between West 27th and West 28th Streets.

Section 2. The legal description and Map Exhibit of the street area proposed to be vacated are attached hereto and incorporated herein as Exhibits "A" and "B".

Section 3. On May 21, 2018 at the hour of 7:00 p.m. in the Council Chambers in City Hall, 415 West 6th Street, Vancouver, Washington, is fixed as the time and place for public hearing on said proposed street vacation.

Section 4. The City Clerk shall give notice of the pendency of said proposal and time and place of hearing, as required by VMC 11.05.060 and RCW 35.79.020.

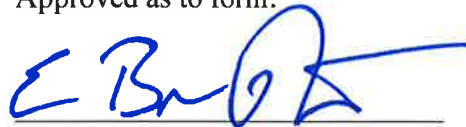
ADOPTED at regular session of the Council of the City of Vancouver, this 11th
day of April, 2018.


Anne McEnerny-Ogle, Mayor

Attest:


Natasha Ramras, City Clerk
By: Carrie Lewellen, Deputy City Clerk

Approved as to form:


E. Bronson Potter, City Attorney



MEMORANDUM

DATE: March 27, 2018

TO: File – Kessid Church alley Right-of-Way Vacation

FROM: Eric Hahn, P.E. – Transportation Development Review

SUBJECT: **Property Value Analysis and Compensation Review**

The purpose of this memorandum is to summarize the analysis completed by staff to determine property values and compensation requirements for the proposed vacation of a public street right-of-way associated with the alley located at the Kessid Church property. RCW 35.79.030 and VMC 11.05.120 stipulate provisions for the City to collect compensation for the value of public right-of-way that is vacated.

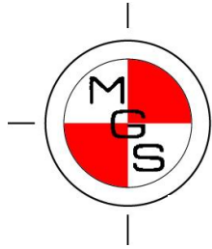
An analysis of the County Assessor's records for properties adjacent to the proposed vacation area resulted in an estimated property value equal to **\$17.56 per square foot**. The analysis is as follows:

Parcel No.	Parcel Size (SF)	Current Assessed Value	
		(Land Value)	Cost/SF
9940000	10,700	\$128,400	\$12.00
9950000	5,212	\$62,500	\$11.99
9960000	5,062	\$60,700	\$11.99
9970000	5,000	\$118,369	\$23.67
9980000	5,000	\$114,950	\$22.99
9508000	5,096	\$61,200	\$12.01
9506000	5,000	\$60,000	\$12.00
9504000	4,994	\$114,844	\$23.00
9500000	5,000	\$114,950	\$22.99
9465000	5,000	\$114,950	\$22.99
Average Cost/SF			\$17.56

The total area of the proposed vacation is 2,303 square feet. At full value, this results in a total estimated property value equal to **\$40,440**.

The right-of-way has historically been used to provide public street connectivity and utility services to the immediate area. The City has provided minimal maintenance of this alley right-of-way, most of the paving and maintenance has been performed by the applicant. However, the alley has been part of a dedicated public right of way for 25 years or more. Therefore, staff recommends the imposition of compensation

equal to 100% of the total estimated property value, which is equal to \$40,440. This sum shall be remitted to the City prior to the right-of-way vacation becoming effective.



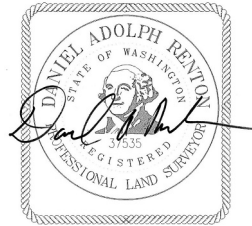
MINISTER-GLAESER SURVEYING INC.

*Vancouver Office – 2200 E. Evergreen Blvd., Vancouver, Washington 98661
(360) 694-3313 (360) 694-8410 FAX
Pasco Office – 6303 Burden Blvd. Suite E, Pasco, Washington 99301
(509) 544-7802 (509) 544-7862 FAX*

March 21, 2018

03/21/18

EXHIBIT “ _ ”



SEWER EASEMENT

A 15.00 foot-wide sewer easement in a portion of Block 3, “Steel’s Addition”, Volume “B” of Plats, page 41, and a portion of Block 6, “Bacon Place”, Volume “B” of Plats, page 23, Clark County, Auditor’s Records, in a portion of the Southeast quarter of Section 22, Township 2 North, Range 1 East, Willamette Meridian, City of Vancouver, Clark County, Washington, described as follows:

Beginning at a 1/2” iron rod with a yellow plastic cap stamped “Renton 37535” set to mark the Northwest corner of said Block 3, as shown in Book 65 of Surveys, page 104, Clark County Auditor’s Records;

Thence South 02°05’37” West, along the West line of said Block 3 as shown in said survey, for a distance of 114.72 feet to the South line of a 15.00-foot-wide alley;

Thence South 87°50’15” East along said South line, for a distance of 118.78 feet to the **TRUE POINT OF BEGINNING**;

Thence leaving said South line South 13°47’23” East, for a distance of 23.96 feet;

Thence South 87°43’53” East, for a distance of 124.51 feet;

Thence North 63°31’10” East, for a distance of 36.54 feet, more or less to the Westerly Right-of-Way line of Main Street;

Thence North 20°18’23” east along said Westerly line, for a distance of 21.91 feet;

Thence leaving said Westerly line South 63°31’10” West, for a distance of 48.67 feet;

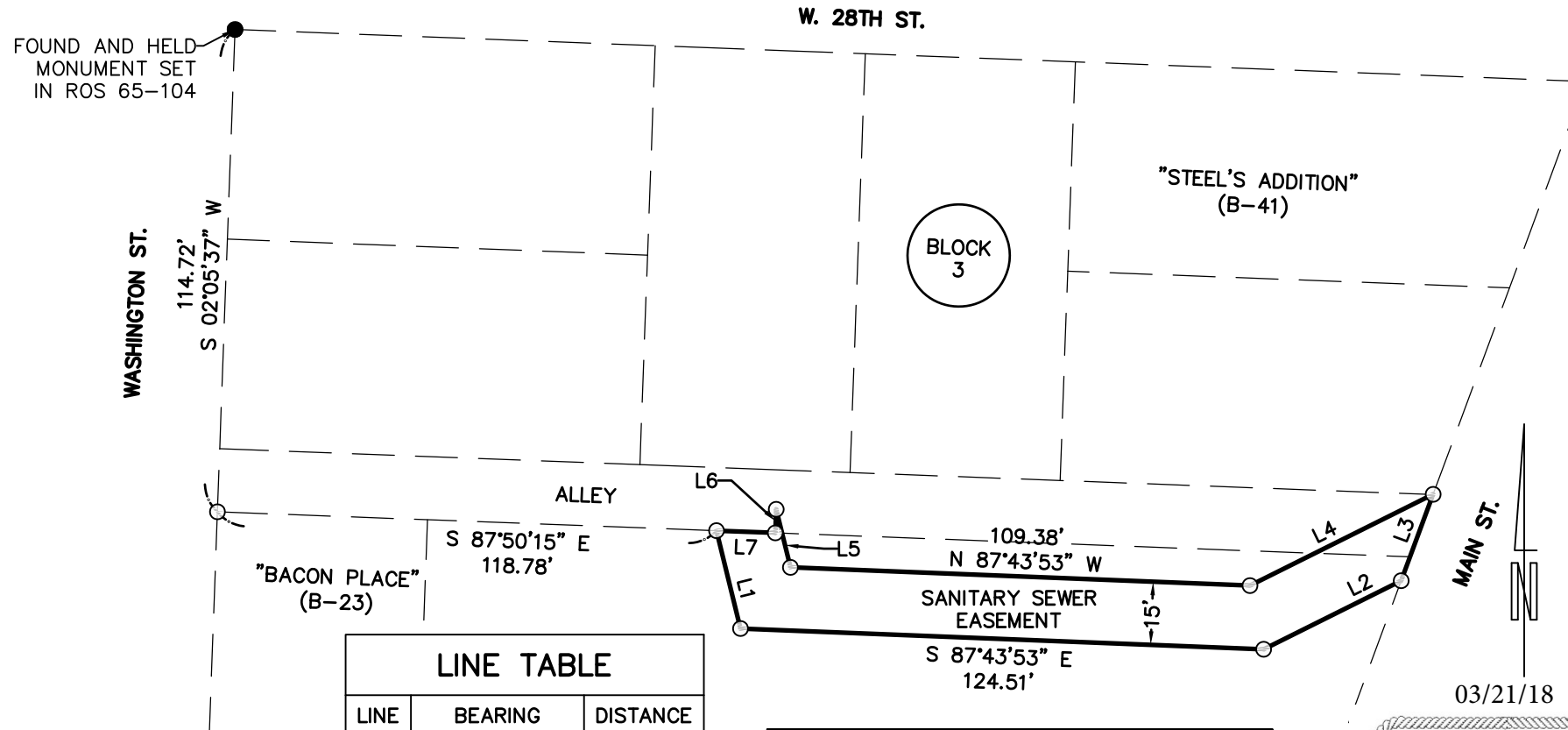
S:\Jobs_17\17-256\LEGALS\DOC\SEWER_EASEMENT.docx

Thence North $87^{\circ}43'53''$ West, for a distance of 109.38 feet;

Thence North $13^{\circ}47'23''$ West, for a distance of 14.21;

Thence South $02^{\circ}12'16''$ West, for a distance of 5.60 feet to the South line of said 15.00-foot-wide alley;

Thence North $87^{\circ}50'15''$ West along said South line, for a distance of 14.00 feet to the **TRUE POINT OF BEGINNING**.



LINE TABLE		
LINE	BEARING	DISTANCE
L1	S 13°47'23" E	23.96'
L2	N 63°31'10" E	36.54'
L3	N 20°18'23" E	21.91'
L4	S 63°31'10" W	48.67'
L5	N 13°47'23" W	14.21'
L6	S 02°12'16" W	5.60'
L7	N 87°50'15" W	14.00'



SCALE 1 INCH = 40 FEET

LEGEND:



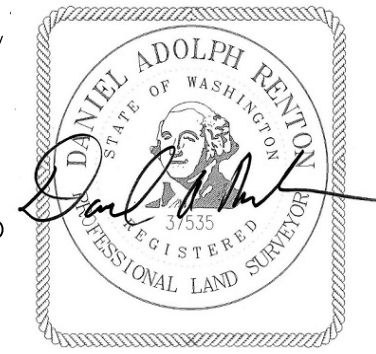
ROS

INDICATES MONUMENT FOUND AS NOTED

INDICATES RECORD OF SURVEY



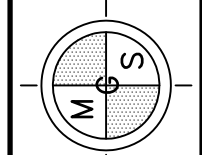
INDICATES BOUNDARY



SCALE: 1"=40'
 JOB NO. 17-256
 DATE: 3-21-18
 DWG FILE: 17256EX4
 DRAWN BY: DAR

EXHIBIT " " OF A SANITARY SEWER EASEMENT

PREPARED BY:
 MINISTER-GLAESER
 SURVEYING INC.
 2200 E. EVERGREEN BLVD.
 VANCOUVER, WA 98661
 (360) 694-3315





MEMORANDUM

DATE: May 21, 2018

TO: Eric Holmes, City Manager

THROUGH: Brian Carlson, Public Works Director

FROM: Rich McConaghy, Environmental Resources Manager
Tanya Gray, Solid Waste Supervisor

RE: UPDATE ON PLASTIC BAG AND FILM RECYCLING STRATEGY

Within the last few weeks there have been questions from students, the community and Council members about the City's position and plans for implementing a plastic bag ban or similar local regulation. The following is a recent response developed for these sorts of inquiries:

Thank you for the concern for our community's environmental and public health! We encourage residents to reuse and minimize their use of single use bags whenever possible. What's more, did you know that plastic bags are just a small part of the plastic wrap and film plastics in our everyday waste stream?

Plastic bags are about one-third of the film plastics, also called polyethylene. The other two-thirds include things like bread bags, dry cleaning bags, plastic 'air pillows' that come in packaging, bags that keep newspapers dry in rainy weather, and all that wrap around rolls of toilet paper, paper towels, disposable diapers and cases of water bottles. These all cause the same concerns as plastic bags if they are not managed properly - when they escape into the environment as litter or are put into curbside recycling carts, where they jam equipment when recyclables are sorted at transfer centers.

To get to this bigger picture of film plastics and wrap, Vancouver has been a leader in the "Beyond Bags" regional program, which allows residents to recycle right by returning film plastics to retailers and keeping it out of the curbside recycling cart. The program provides a convenient and comprehensive solution aimed at keeping plastic bags and wraps out of the environment and in the economy. You can join us, too. The plastic film packaging, bags and wrap you save and take back to your neighborhood grocery store or other drop-off site, are collected, recycled and turned into resources to make new products, such as TREX composite lumber for benches and decking, or even new grocery bags. Again, please do use reusable bags where possible. AND please do save other filmy plastic and take back to the store. Thank you for helping your community!

The City's partnership with the WRAP Campaign (Wrap Recycling Action Program - www.plasticfilmrecycling.org), was initiated in 2015 with an August 24th proclamation (attached) following a workshop which focused on the following objectives and messages:

1. Increase understanding that each of us can help reduce the amount of single-use bags (plastic and paper) used by consumers in our community. Opting for no bags or reusable bags are great strategies.
2. Each of us can properly manage the bags that we do receive with our retail purchases:
 - Don't put plastic bags in the recycling cart – paper bags are fine in carts
 - Recycle clean plastic bags, wraps, and film by returning these to the store
 - Don't litter – bags or any other sorts of materials – keep them out of the environment and keep our community looking great
 - Reuse plastic bags, if you receive them, creatively or functionally
 - Plastic film that can't be recycled or contains waste is fine going to the landfill (does not harm the landfill process and is kept out of the environment).

As a result of Vancouver's [leadership](#), all Safeway stores in Southwest Washington and throughout Oregon undertook a similar WRAP effort in 2016 and the local Fred Meyer stores have recently expanded their outreach to include other non-bag film and wrap materials in their collection bins. Discussions with the national WRAP program continue at the state level with both Washington and Oregon and we are hopeful that this will help to grow national recovery of polyethylene film in the coming years.

Within the last 10 years [nearly 20 communities in the state of Washington](#) have implemented some form of local plastic bag ban or related regulation. Though there are some similarities among many of these ordinances there is also some variation related to the rationale for implementing these laws, the scope of stores affected, fees/taxes paid, allowances and definitions for reusable or alternative bags that can be utilized, compliance schedules, and exemptions. In some cases, the community undertook an extensive and lengthy process of policy development prior to enacting the regulations (for example by undertaking community wide surveys, involving focus/stakeholder groups, or by undertaking an options analysis – the [City of Kirkland](#) and [Thurston County](#) websites provide helpful examples for these processes and results) and in other cases the action was taken fairly quickly or in partnership with nearby communities.

These examples provide one possible path to follow if City Council wishes to articulate a rationale for implementing a local plastic bag ban or if there is interest among other regional jurisdictions in working on this collaboratively. Staff generally favors a statewide approach to product stewardship strategies as this provides greater involvement of industry to innovate and respond with meaningful solutions. We have seen this play out well through Washington's [E-Cycle](#) and [LightRecycle](#) programs and we are anticipating that similar positive results will occur with implementation of the new 2018 Washington law for safe and secure collection and disposal of unwanted medications ([HB 1047](#)). Being supportive of statewide regulations on single use product availability is an alternative approach the City might pursue; and if so we recommend discouraging the use of “compostable” or “biodegradable” film retail bags or other products which complicate recycling of these materials.

Because lightweight plastic shopping bags, if preferred and utilized by consumers in favor over other options, are just a portion of the mix of film and wrap materials generated through retail

purchases, we believe that Vancouver might offer leadership for the state and for our region by implementing a more comprehensive approach that requires local retailers to take back and recycle this broader set of plastic wrap, film and bag materials. Encouraging robust recycling options is a clear local function and we have a demonstrated need for retailers to collect these film materials as they create problems for processing of other target recyclables when they are mistakenly set-out for curbside collection. Retailers can be good partners in relaying messages to consumers about both reducing single use packaging and about properly recycling clean and dry plastic film, bags and wrap at retail locations rather than by placing them in big blue carts.

New York State has gained experience working with retailers following implementation of its [Plastic Bag and Film Plastic Reduction Act](#) (updated in 2015), however, this sort of requirement has not yet been enacted on the west coast. If plastic bags are banned before retailers are required to recycle, then they have less interest or capacity to continue or expand film/bag/wrap recycling opportunities for their customers. Film and plastic wrap markets are already in place for the majority of retailers in our community through reverse logistics and the domestic demand for good quality material is healthy; in spite of recent issues with export markets for some materials.

Recommendation

Staff's recommendation is that we develop a proposal for Council in 2018 that will require our retailers, of a certain size who offer carry out plastic bags, to provide collection bins with signage in a visible easily accessible location(s) to accept the full range of "beyond bags" plastic film and wrap materials from their customers, whether or not there is a state or local plastic bag ban in the future. This would involve outreach to affected businesses in the coming months and possible consideration of an ordinance by the end of the year.

Attachment: Wrap Recycling Action Program Proclamation

Proclamation

Designating September 2015 as Vancouver Plastic Wrap Recycling

"Beyond Bags" Awareness Month

- WHEREAS,** plastic wrap and bags are utilized by many manufacturers to safely and economically deliver products to consumers; and
- WHEREAS,** these materials can cause serious challenges for our local curbside recycling processor when they are mistakenly placed in the blue recycling carts and get tangled in the sorting equipment; and
- WHEREAS,** many retailers in our community have existing plastic bag recycling drop-off bins that can accommodate plastic wraps as well as bags, and serve the markets that exist for recapturing these resources; and
- WHEREAS,** local Safeway stores, Trex, and the American Chemistry Council's Flexible Film Recycling Group have joined with the City and its recycling partners in a pilot project to increase consumer awareness of appropriate recycling opportunities for plastic bags and – Beyond Bags – plastic wraps; and
- WHEREAS,** community members are important participants in ensuring plastic wraps and bags are recycled properly and kept out of recycling carts by taking them to participating stores or drop-off sites.

NOW, THEREFORE, I, Timothy D. Leavitt, Mayor of Vancouver, do hereby proclaim September 2015 as:

"Plastic Wrap Recycling, Beyond Bags, Awareness Month"

in the City of Vancouver, and urge all residents of Vancouver to learn more and to reduce, reuse and properly recycle these materials, which can become valuable resources and help increase stewardship.

