MEMORANDUM

TO: Southwest Washington Regional Transportation Council Board of Directors

FROM: Matt Ransom, Executive Director

DATE: January 29, 2019

SUBJECT: **Vancouver Regional Operations Studies, 2019 Update**

AT A GLANCE – INFORMATION

The purpose of this memorandum is to present an overview of several studies in the region that focus on improving the management and efficiency of the highway system through the application of low cost operations and technology strategies.

INTRODUCTION

At the March 2018 RTC Board meeting, members approved Resolution 03-18-05 amending the Transportation Improvement Program to obligate state and federal funds for the Regional Origin Destination (ROD) Study and the Urban Freeway Corridor Operational (UFCO) Study. RTC subsequently developed work scopes for the studies in coordination with Washington State Department of Transportation (WSDOT). The RTC Board approved professional services contracts for the studies at their September 2018 meeting followed by a combined Technical Advisory Committee kickoff meeting for the ROD and UFCO Studies in November.

The purpose of the UFCO Study is to analyze near term freeway operations needs and to recommend low cost strategies to improve system performance and mobility on the Vancouver urban freeway system. Strategies being considered include both technology based real-time advanced traffic management and low cost capital improvements to address geometric constraints. The ROD Study analysis directly supports the operational analysis by providing an understanding of access to and from the freeways and will supplement other traffic data collected for the UFCO Study which will jointly provide information needed to assess the effectiveness of potential strategies for evaluation during the Study. Although the Regional Origin Destination Study and the Urban Freeway Corridor Operations Study are separate initiatives, they will be closely coordinated so that the origin destination data best supports the baseline data needs and existing conditions analysis of the UFCO Study. A related operational analysis, the I-205 Corridor Study, is being conducted by the WSDOT.

Leading to up to these studies, there have been numerous initiatives in Clark County and the Portland metropolitan area over the last several years that have continued efforts to advance comprehensive operational strategies in the bi-state region. These include: WSDOT's Regional Ramp Meter Study for Southwest Washington; RTC's Bus on Shoulder Feasibility Study; the Oregon Department of Transportation (ODOT) Advanced Traffic Management Study; the Bi-state Freeway Travel Time Project; RTC's Access and Operations Study; and ODOT's Congestion Bottleneck Operational Study.

In addition, several improvements are programed in the Vancouver region over the next two years to improve mobility and traffic operations. These include:

- Ramp meter at SR-500 north to I-205 north
- Ramp meter at Mill Plain Boulevard to I-205 north
- Ramp meters on I-5 south to the Interstate Bridge
- Bus on shoulder on I-5 south to the Interstate Bridge

At the February 5 Board meeting, ODOT will present information on operational improvements on I-5 from Hwy 217 to I-205, a specific example that demonstrates how implementing low cost improvements can benefit freeway operations.

Vancouver area studies presented in this memo build on these activities and include the:

- Regional Origin Destination Study
- Urban Freeway Corridor Operations Study
- I-205 Corridor Operations Study

Regional Origin Destination Study

Data from the ROD Study is a key input to the UFCO Study. The Study will identify where travelers enter and exit the freeway system and as well trip patterns of vehicles accessing interchanges into and through the study area. The OD data and associated analytical tools and findings developed for the Study will assist in understanding the effectiveness and benefits of the various improvements and strategies to be evaluated during the UFCO Study.

Evaluation and Selection of OD Data Collection Approach: The initial task for the study is underway. It is assessing a number of origin destination data methodologies and developed selection criteria that will be used to identify the most effective data collection approach. It is currently identifying options available through surveys, field data collection, or private sector 'big data' providers, and based on the selection criteria, will recommend a preferred data procurement method for the study.

Depending on data approach selected, some OD data sources might also include speed, travel time, trip purpose, and vehicle classification. These additional benefits will be noted as secondary information that will not just support the UFCO Study, but other regional analysis as well.

The OD Study data will also be utilized for interchange/intersection analysis areas in the I-205 Corridor Study and will support calibration of the regional transportation model for improved travel forecasting. Depending on the data procurement process, any raw or processed data collected will be made available for use by other public agency participants.

Data Summary Report: Study products will include information on: travel patterns and characteristics, trip length, through trips versus local trips, when and where vehicles are accessing the freeway system, and transit access from park and ride facilities to the freeways. Data tables will include OD volumes and percentages by time of day and day of week for all

origin and destination locations analyzed. It will also document detailed traffic patterns as they relate to the freeway facility access points.

Findings and Visualization Report: In addition, another deliverable will consist of a report summarizing findings and graphic visualizations from the data tables in the previous task. Findings will consist of narrative observations and characteristics of travel patterns within the study area specifically on I-5, I-205, SR-14 and SR-500. Visualizations will consist of a series of maps showing distribution of trips by facility or at specific locations or screen lines along a facility.

Urban Freeway Corridor Operations Study

The UFCO Study is analyzing near term operational and system management improvements on Clark County freeways. The study area encompasses the full freeway system in the Clark County Urban area which consists of: I-5 from the Columbia River to 179th; I-205 from the Columbia River to I-5; SR-14 from I-5 to 192nd; and SR-500 from I-5 to Fourth Plain, including north from SR-500 on SR-503 up to Padden Parkway.

Identify Operational Strategies: One set of strategies will include technology based active traffic management (ATM) techniques. ATM is intended to dynamically manage regular and incident related congestion based on current and predicted traffic conditions. Real time traffic management can improve trip reliability and maximize effectiveness and efficiency of the roadway. ATM strategies include: adaptive ramp metering, dynamic speeds and dynamic lane control, and queue warning. Experience in other regions of these techniques has shown they can smooth traffic flow, improve safety, and reduce the duration of congestion caused by incidents.

Low cost capital improvements that could address geometric constraints, including bottlenecks and safety, will also be evaluated. Low cost options include ramp modifications, lane extensions, and mainline reconfiguration/restriping improvements that would balance capacity, reduce weaving and merging conflicts, or other operational efficiencies.

Data Collection and Existing Conditions: Available transportation data will be compiled and, combined with the OD data, be reviewed to identify data gaps in order to determine additional data collection needed to conduct the existing conditions analysis for the Study. UFCO Study data needs include: geometric and roadway information, existing peak hour traffic counts and speeds, level of service, crash data, and signal timing near ramp interchanges. The data will be used to conduct an existing conditions analysis which will provide baseline information to document and inventory the issues, constraints, and opportunities in the study corridors.

Screening and Selection of Strategies: Identify a range of potential low cost capital and advanced traffic management improvements to address known corridor bottleneck and operational deficiencies. This set of ideas will provide a basis to develop an initial set of spot and system improvements that respond to bottlenecks and operational limitations on each corridor that will be reviewed and refined at the Design Workshop.

Design Workshop: RTC will host a workshop with members of the TAC and other agency stakeholders. The purpose of the workshop is for comprehensive review and discussion of all

work conducted to date. It will consist of a detailed examination and discussion of the preliminary improvements and how they address the operational and geometric constraints identified in the previous tasks. It will consider the impacts on safety, travel time, delay, reliability, traffic flow, and duration of congestion. Workshop goals are to support the development of, and agency consensus on, improvement concepts by corridor and location.

Evaluation of Improvements and Costs: Finalize detailed traffic operational and safety analysis to determine the potential benefits for the final list of projects by category, type and location. Operational benefits may include reduction of travel time, increased speeds, improvements in reliability or reduction of queuing. Safety benefits include potential reduction in number of crashes, which will reduce delays and congestion at bottleneck locations.

Findings and Recommendations Atlas: Study findings will include a description of recommended improvements on safety, delay and reliability; cost/benefit analysis, and a prioritized list of projects and costs to support policy makers in funding decisions. The outcome of this task is a recommended set of integrated improvements and strategies for implementation to guide investment in operational improvements and low cost capital projects on the urban freeway system. The report will primary be an atlas made up of one-page project fact sheets as well as 3 to 4 page narratives for each project with more detailed information for each project in the Atlas.

I-205 Corridor Study

The I-205 Corridor Study is a related effort that is evaluating traffic operations in the I-205 corridor. The Study is being led by WSDOT with support from RTC and is similar to the UFCO Study in that it will identify cost effective strategies/projects to reduce congestion, increase safety and improve travel reliability in the next five to ten years in the study area. The key study outcomes are to produce a list of proposed strategies/projects that will address the operations, safety, and travel reliability in the study area.

There are portions of the I-205 corridor that are also a part of the UFCO Study. While WSDOT will complete the I-205 Study by June 30 of this year, the UFCO Study will not be completed until the end of 2019; therefore, RTC will coordinate closely with WSDOT in order to avoid duplication of work and maximize the utility of the two projects. The I-205 Corridor Study will focus on the identification and evaluation of lower cost capital improvements for overlapping study areas of I-205. Technology based non-capital operational improvements will occur under the UFCO Study.

The table on the next page provides an example of how strategies and improvements for the two studies will be addressed:

Study	*Types of Strategies to be Analyzed*
UFCO Study	Variable speed signage Queue warning locations Variable lane assignment Additional variable message signs Dynamic ramp metering Signage and marking improvements Lane restriping
I-205 Corridor Study	Lane extensions Mainline reconfiguration Auxiliary lanes Width improvements Interchange/ramp modifications

Each proposed strategy/project will be selected based on how well they address operational, safety and reliability issues related to I-205 mainline operations; if the benefits outweigh the costs; and whether the project can be implemented in five to ten years with minor impacts to properties and the environment and has community support.

Selection criteria for the consideration of improvements will look at three main factors: measurable benefit to mobility, safety and reliability; cost effectiveness; and feasible implementation by assessing impacts to the environment, right of way, and community support.

NEXT STEPS

The ROD Study will be recommending an origin destination data collection method in the next few weeks and will begin procuring OD data shortly after. The UFCO Study team is completing the compilation of existing traffic data and a preliminary analysis of existing conditions in the study corridor. This information will be presented to the joint meeting of the OD/UFCO Technical Advisory Committee in early February.