



MEMORANDUM

TO: Regional Transportation Advisory Committee
FROM: Bob Hart
DATE: April 17, 2014
SUBJECT: I-205 Access and Operations Study, Preliminary Findings

INTRODUCTION

At the January RTC Board meeting, RTC staff presented information on 2022 demographics and system performance in the I-205 corridor. In addition, the findings on the impacts of a ramp meter from Mill Plain Boulevard to I-205 was presented to the Board

Overall, the I-205 Corridor Study is analyzing both short (2022) and long term (2035) performance in the corridor. The purpose of the 2022 analysis is to examine how low cost improvements can manage mobility and improve operations in the corridor without major capital investment. It is the operations and management component of addressing transportation needs and is not an alternative to roadway expansion. The 2035 analysis will address the capital investment component and associated benefits of infrastructure investment in the corridor through the implementation of the I-205 core projects.

The 2022 analysis is consistent with the management and operations policies of the Regional Transportation Plan. On freeways, management and operations strategies can include low cost capital projects; merge lane extensions, ramp meters, variable speeds and other low cost strategies. On the arterial system, management and operations strategies can include intelligent transportation systems, signal system upgrades, signal coordination, traffic responsive systems, and access control.

This update provides a follow up the northbound PM strategies and presents findings on the set of southbound AM strategies analyzed in the I-205 corridor.

2022 NORTHBOUND PM OPERATIONAL STRATEGIES

Ramp Meter from Mill Plain to I-205 northbound

At the January meeting RTC presented initial findings on the addition of a ramp meter at Mill Plain Boulevard to I-205 north. The analysis indicated that average speeds between Mill Plain and SR-500 increased by about two mph during the PM peak period. In addition, hours of congestion for all freeway lanes at the merge location was reduced from 2.25 to 0.50.

In response to questions from the Board, RTC had further discussion with WSDOT regarding the ramp meter. Staff confirmed that the ramp structure is wide enough to accommodate two

vehicles allowing more vehicle storage on the ramp. The initial analysis also had a low ramp meter flow rate onto the freeway and resulted in periodic infiltration onto Mill Plain Boulevard. If the project is recommended for implementation, WSDOT will evaluate the flow rate and use dynamic metering to ensure that there are no negative impacts on Mill Plain Boulevard.

In addition, the northbound ramp meter, will be reassessed in conjunction with the auxiliary lane from Mill Plain Boulevard to SR-500, a 2035 core project, to determine performance benefits of the ramp meter with the project in place.

Exit Only Lane from I-205 Northbound to SR-14

Under this strategy, the right lane on the Glenn Jackson Bridge will become an exit only lane to both eastbound and westbound SR 14. The right lane currently operates as an optional through/exit lane.

Over a 5 hour PM peak period, northbound off-ramp to SR-14 currently carries over 2,000 vehicles per hour. The overwhelming majority of vehicles in the rightmost lane crossing the Glenn Jackson Bridge during the peak period are exiting at SR-14. The proposed lane reconfiguration would align signage and striping to match how drivers are currently using the existing transportation system. Mobility and safety benefits are expected to be negligible as travel patterns and lane utilization are expected to remain similar to existing conditions after this reconfiguration, although it would improve driver expectations along the corridor and aid drivers who are unfamiliar to the area.

Converting the right lane on the bridge to an exit only at SR-14 would reduce mainline travel lanes for the road segment between SR-14 off-ramp and on-ramp from 4 to 3 lanes. Three lanes may improve the merge from SR-14 to I-205 NB. Any negative impacts between ramps because of reduced capacity could be addressed by expanding back out to 4 travel lanes.

If the off-ramp to SR-14 is reconstructed such that two lanes would have the ability to head eastbound, then dropping the rightmost lane at the interchange would allow for the 2nd rightmost lane to be an optional thru/exit lane. The configuration could be constructed in conjunction with the SR-14 widening project from I-205 to 164th and may improve mobility in the corridor. Further study is required in order to make a decision regarding this project; however it may serve as an initial stage towards a two lane off-ramp to SR-14.

2022 SOUTHBOUND AM OPERATIONAL STRATEGIES

The 2022 southbound AM operational analysis is examining how the addition of low cost operational improvements to the base case can manage or improve vehicle flow on I-205. The southbound strategies have been developed based on regional model results, information coming out of the microsimulation analysis, the strategies that came out of the I-205 operational strategies workshop in March 2013, and WSDOT staff review. Preliminary findings on the southbound strategies are being presented at the April 18 RTAC meeting. The strategies are described below.

Padden Parkway to I-205 south

Two ramp meter options are being evaluated from Padden Parkway to I-205 south. There are currently two merge locations from Padden Parkway onto I-205, one merge from Padden WB and a second merge from Padden EB about a third of a mile south of the first one.

- One option will remove the WB merge location and continue the ramp lane south to the EB merge to create a single merge location onto I-205 southbound. The strategy meters both WB and EB ramps that will access I-205 at the single merge location.
- The second option will maintain the two merge locations onto I-205 and add a single ramp meter for the Padden Parkway EB to I-205 south movement.
- A third option, a ramp meter from WB Padden Parkway was not analyzed due to limited ramp storage length and a short acceleration distance to the mainline.

SR-500 to I-205 south

Heavy on-ramp traffic volumes from SR 500 to I-205 southbound causes congestion at the merge area and as well as significant queuing on the ramps, especially from SR-500 WB. Several operational strategies were considered to improve mobility from SR-500 to I-205 south.

- *Reduce I-205 southbound mainline from three to two lanes under the SR-500 overpass:* This option would make the SR-500 on-ramp an add lane instead of a drop lane. It is not recommended for further analysis. Existing volumes on this section of the I-205 mainline would have an acceptable level service under a two lane scenario; however 2022 forecast volumes shows a high v/c ratio north of SR-500. Although volumes under SR-500 are acceptable now, preliminary review indicates that the addition of the I-205 widening project north of SR-500 may require converting back to 3 travel lanes under SR-500 to handle increased demand.
- *Ramp meter at SR-500 westbound to I-205 south:* Not recommended for further analysis. A ramp meter would lead to excessive queuing on the WB loop ramp due to higher ramp volumes than a single lane meter can accommodate. Backups at the WB on-ramp would also conflict with SB I-205 off-ramp volumes to SR-500 EB.
- *Extend southbound on-ramp from SR-500 to I-205:* the current single lane on-ramp from WB and EB SR-500 would be widened to two lanes up to the current ramp terminus location and then reduced to a single lane and extended an additional 1,400 feet before merging onto I-205.
- *Ramp meter at SR-500 eastbound to I-205 south:* the current ramp configuration and the merge distance from SR-500 to I-205 southbound would not change.

NEXT STEPS

An assessment of bus on shoulder operations, potential benefits and issues will be conducted. RTC staff, in coordination with WSDOT, will begin the analysis of 2035 core projects. Regional analysis will include 2035 transportation system performance with and without the core projects. It will also include an assessment of which operational strategies may be negated by the addition

of core projects or which may have a longer term benefit and can be included as part of the 2035 core project improvements.

In addition, operational analysis will be conducted of slip ramp options from I-205 northbound to 72nd Avenue and at the west end of the SR-14 widening project.

Attachments