Corridor Management Plan

Introduction

This white paper is a brief introduction to WSDOT's approach to managing urban freeway corridors such as SR 520, HOV lane performance standards and monitoring efforts, and the future of each as part of the new SR 520 corridor.

How was a corridor management plan addressed in the preferred alternative?

The SR 520 I-5 to Medina preferred alternative includes a variety of corridor management strategies, all designed to reduce collisions and congestion.

In ESSB 6392, the Washington State Legislature mandated the tolling authority to set a variable schedule of toll rates on SR 520, intended to maintain travel time, speed, and reliability on the SR 520 corridor and generate the necessary revenue for the project. The Legislature also mandated that high occupancy vehicle (HOV) lanes on SR 520 will require a minimum occupancy of three-plus persons. The Legislature further asked WSDOT to report when average transit speeds in the two HOV lanes fall below 45 miles per hour at least 10 percent of the time during peak hours.

What comments were received?

Comments from the Seattle City Council supported the Legislature's mandate, requesting development and implementation of "a corridor management plan that includes minimum performance standards for transit/HOV and general purpose lanes with triggers for mandatory actions to maintain those standards." The Seattle City Council requested that if minimum performance standards are not met in the transit/HOV lanes, mandatory triggers should be in place to increase the minimum number of passengers per vehicle in the HOV lanes, or consider conversion of the HOV lanes to transit-only lanes. The Council also recommended that performance management standards be developed for general purpose lanes on SR 520, including the potential use of variable tolling along the entire corridor to allow increasing toll rates to achieve specific performance standards for general purpose lanes as well as transit/HOV lanes.

Addressing the problem

How will we identify possible solutions?

WSDOT developed corridor management recommendations based on existing strategies for managing urban freeways. These strategies were presented to the Technical Coordination Team (TCT) for discussion.

Recommendations

What did we consider?

WSDOT deploys a variety of strategies to manage urban freeways with the goals of reducing collisions and congestion both in the general purpose lanes and HOV lanes. The intensity with which these strategies are deployed increases with the level of traffic demand on each facility so that WSDOT can increase the system "up time" (i.e., maintain travel speeds and avoid collisions). Today on the SR 520 corridor, WSDOT deploys the full suite of strategies, with the newest strategies of variable speed limits and lane control coming on-line in the latter part of 2010.

What are the options presented for TCT consideration?

Incident Response Teams. One of the longest running strategies deployed on SR 520 is WSDOT's Incident Response Teams (IRT). IRT service reduces the time lanes are blocked due to motorists running out of gas or having a flat tire, or due to collisions. This effort began in the 1980s with tow trucks stationed at the ends of the floating bridge during the peak rush hours and has since expanded, both with regard to the miles of SR 520 covered and the duration of coverage. WSDOT now has roving vehicles throughout most of the day covering SR 520 from I-5 to SR 202 and this service is expected to continue on the new SR 520 corridor.

Intelligent Transportation Systems. Another long-running set of strategies deployed on SR 520 are ramp meters, message signs, and cameras, collectively known as Intelligent Transportation Systems (ITS). These devices help maintain travel speeds by smoothing out merges at on-ramps and managing traffic demand by providing information to the public about lane blockages or congested conditions. This information helps the public make more-informed travel decisions and reduces the vehicle traffic demand on SR 520. The next evolution in ITS deployment on SR 520 will be the introduction of variable speed limits and lane control signs, currently branded as Smarter Highways. Together these applications will reduce the frequency and duration of collisions, which in turn will help maintain travel speeds. All of these traffic management applications will continue to be deployed on the new SR 520 corridor.

Electronic tolling. In Spring 2011 electronic tolling will begin on the SR 520 floating bridge. WSDOT secured funding for the toll systems through the USDOT's Urban Partnership program. Per that agreement with USDOT, WSDOT is to implement "variable pricing (based on the level of demand) on all through lanes of SR 520 between I-5 and I-405 and, to the extent necessary to maintain free flow traffic in the through-lanes, on all collectors and distributors for SR 520 between I-5 and I-405." The definition of free flow has been defined by USDOT to mean "speeds at or above 45 miles per hour at least 90 percent of the time during peak hours and generate funding without significantly altering the performance of nearby facilities". As stated in ESSB 6392, tolls are to be implemented on the floating bridge and rates are to be set with a variable schedule to maintain travel speeds and reliability while also generating revenue for the bridge replacement project.

The Transportation Commission is the toll setting authority for the state and they are currently in the process of establishing the initial toll rates schedule. Per ESSB 6392, the commission will, at least annually, review the performance of the corridor with tolls as well as the revenue generated and adjust toll rates as necessary to meet the legislative requirements. At this time, the commission's rate setting action is for tolls on the floating bridge only; implementation of tolls elsewhere on the SR 520 corridor would require additional legislative action.

With the start of tolling in 2011, WSDOT will be monitoring traffic flows on SR 520 and other freeways and local roads, transit travel times and ridership, user feedback, etc., to understand how the system is performing and whether any adjustments are appropriate. WSDOT will be reporting frequently to the legislature, the Transportation Commission, interested local jurisdictions, and the public about system performance. In addition, USDOT will be conducting its own study of before and after conditions as part of the Urban Partnership Agreement.

HOV lane performance standards. WSDOT has an established HOV lane performance standard to ensure the freeway HOV system helps provide reliable travel time and dependability for transit users, vanpoolers, and carpoolers. The established performance standard is that a driver in an HOV lane should be able to maintain an average speed of 45 mph or greater at least 90% of the time during the morning and afternoon peak hours. WSDOT monitors speed and reliability of the HOV system, by corridor, throughout the year and reports on it at least annually in WSDOT's Gray Notebook of performance reporting (see http://www.wsdot.wa.gov/Accountability/GrayNotebook).

The Seattle City Council recommended a performance standard of 45 mph at least 95% of the time, which is higher than the currently established standard and the standard referenced in ESSB 6392. WSDOT recommends continuing with the current performance standard of 45 mph at least 90% of the time as it is the one used for all other corridors in the state and matches federal policy.

The Seattle City Council also recommended that mandatory triggers be established by the Legislature to (a) raise the occupancy requirement or (b) convert transit/HOV lanes to transit-only lanes in order to meet the performance standard. WSDOT recommends against specific mandatory triggers because any changes to the HOV lanes on SR 520 must necessarily be considered in the context of the effect on general purpose travel lanes, tolling operations, and the rest of the regional freeway system. Additionally, the cause of subpar lane performance may be temporary in nature (for example construction on a related roadway) or the best remedy may be actions other than raising the occupancy requirement (for example further increasing incident response or increasing violation enforcement).

Transportation Demand Management (TDM). WSDOT employs additional strategies that increase the carrying capacity of the corridor during its busiest times. These strategies consist of enabling greater use of carpooling and transit, shifting trips outside of rush hours, shifting trips to a non-motorized mode, or eliminating the need for a trip altogether. Examples include

RideshareOnline, public vanpool programs and Growth and Transportation Efficiency Centers (GTECs). WSDOT partners with local governments, transit agencies, and businesses throughout the region to implement these existing strategies, as well as implementing emerging strategies such as flexible carpooling (sometimes known as "slugging") that will be pilot tested on the SR 520 corridor.

Final TCT recommendation

The TCT supports WSDOT's strategies for traffic management in the new SR 520 corridor. These strategies, including continuous HOV lanes from I-5 to SR 202, variable tolling, continued use of traffic management applications such as ramp meters, variable speed limits, and lane control, as well as companion incident response services and enforcement, should result in a corridor that is well positioned to meet the established HOV lane performance standards and corridor performance expectations expressed by the legislature and Seattle City Council. Additional legislation concerning corridor management, beyond what is currently included in ESSB 6392 for HOV lane occupancy, HOV lane performance and variable toll rates, is not recommended for further action.