



**Washington State  
Department of Transportation**

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February 27, 2018

The Honorable Steve Hobbs  
Chair, Senate Transportation Committee  
PO Box 40444  
Olympia, WA 98504-0444

The Honorable Curtis King  
Ranking Member, Senate Transportation Committee  
PO Box 40414  
Olympia, WA 98504-0415

The Honorable Judy Clibborn  
Chair, House Transportation Committee  
PO Box 40600  
Olympia, WA 98504-0600

The Honorable Ed Orcutt  
Ranking Member, House Transportation Committee  
PO Box 40600  
Olympia, WA 98504-0600

RE: Progress Report on Public Rule-making for HOV Lane Access  
as Required by SSB 5018

Dear Senators Hobbs and King & Representatives Clibborn and Orcutt:

As required by SSB 5018, this letter provides a report on the Department's process to engage in a transparent, public process to reexamine the administrative rules surrounding access to high occupancy vehicle lanes, with particular attention to the benefits and impacts of allowing wheelchair accessible taxicabs to use high occupancy vehicle lanes with only a driver present in the vehicle. SSB 5837 also directed the Department to reexamine administrative rules regarding HOV lane access with special attention to vehicles delivering blood, with a report due by the end of 2018.

We presented on this topic to the House Transportation Committee on November 16, 2017 and to the Senate Transportation Committee on February 5, 2018. The Puget Sound Regional Council published the WSDOT-authored State Facilities Action Plan<sup>1</sup> that describes the current state of HOV performance and plans to conduct a collaborative policy assessment of HOV lanes with Puget Sound policymakers and stakeholders. WSDOT has also recently updated its Corridor Capacity Report<sup>2</sup> and Appendix<sup>3</sup> to include 2016 data, which include a wealth of data on HOV lane performance.

<sup>1</sup> <https://transportationplan.participate.online/Media/Default/documents/Appendix%20I%20-%20State%20Facilities%20Action%20Plan.pdf>

<sup>2</sup> <http://wsdot.wa.gov/publications/fulltext/graynotebook/corridor-capacity-report-17.pdf>

<sup>3</sup> <http://wsdot.wa.gov/publications/fulltext/graynotebook/corridor-capacity-report-17-appendix.pdf>

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These documents describe an HOV system that has been a great success increasing the person-carrying capacity of regional freeways, but as usage has increased, has seen degraded performance that reduces their effectiveness. Additionally, Puget Sound transit agencies are now fully committed to completing a regional rail system that may change transit needs in HOV lanes, and WSDOT is implementing High Occupancy Toll (HOT) lanes and express toll lanes on State Route 167 and Interstate 405.

Over the past 35 years, the Department has implemented HOV lanes and the many HOV-supportive facilities and programs that have been part of our focus on maximizing person-throughput in the Puget Sound's regional corridors. We agree a comprehensive and transparent review of HOV policies and rules is needed. The first priority for this review will be to address reduced speeds and reliability resulting from growing vehicle demand. Initiatives to open access to new classes of vehicles can only succeed if they will not exacerbate existing performance problems that, under existing policies, will only become more severe over time as the region continues to grow.

If you have questions or comments about this report, please call me directly at (360) 705-7280.

Sincerely,



John Nisbet, P.E.  
State Traffic Engineer

# **Progress Report on Public Rule-making for HOV Lane Access**

as Required by SSB 5018  
February, 2018

The 2017 Legislature passed two laws (SSB 5018 and SSB 5837) encouraging WSDOT to “engage in a transparent, public process to reexamine the administrative rules surrounding access to high occupancy vehicle (HOV) lanes.” This report describes our progress on that work and addresses both laws. WSDOT is in the planning stage for a regional policy assessment on HOV lanes that will address HOV lane performance and policy alternatives that will include an assessment of current and alternative HOV lane access rules to be carried out during 2018.

For over 35 years, the Puget Sound HOV Program has been a primary strategy among WSDOT and its regional partner agencies to increase the effectiveness of regional transit services and the person-carrying capacity of regional freeways. However, increasing vehicle usage of HOV lanes has led to congestion that erodes the speed and reliability advantage that is the basis for their effectiveness. The timing is ripe for a comprehensive policy review of HOV policies and performance, and we are conducting this assessment collaboratively with regional partner agencies, policymakers and stakeholders.

SSB 5018 directs WSDOT to consider allowing accessible taxicabs to use HOV lanes with only the driver present in the vehicle. SSB 5837 directs WSDOT to consider providing HOV access for blood collection and delivery vehicles. Also, the 2017-19 Transportation Budget included proviso language providing HOV lane access to a variety of private transportation vehicles. A comprehensive review of HOV lane access rules will address these issues. The fundamental performance and congestion issues caused by increasing vehicle volumes must be addressed first before adding access for new vehicle classes.

## **Report Contents**

- Recent Legislation Regarding HOV Lane Access
- How HOV System is Currently Used
- HOV Lane Performance Challenges
- Plan for Moving Forward

## Recent Legislation Regarding HOV Lane Access

During the 2017 session, the Legislature passed two bills encouraging the Washington State Department of Transportation (WSDOT, or “the Department”) to engage in a transparent, public process to reexamine the administrative rules surrounding access to high occupancy vehicle (HOV) lanes.

- SSB 5018 required any rule-making process to consider providing HOV lane access to wheelchair-accessible taxicabs when only the driver is present, or “private, for hire vehicles regulated under chapter [81.72](#) RCW that have been specially manufactured, designed, or modified for the transportation of a person who has a mobility disability and uses a wheelchair or other assistive device.” SSB 5018 required a report to the transportation committees of the Legislature by January 1, 2018.
- SSB 5837 required any rule-making process to consider allowing blood establishment and delivery vehicles access to HOV lanes, when only the driver is present or “vehicles that deliver or collect blood, tissue, or blood components for a blood-collecting or distributing establishment regulated under chapter [70.335](#) RCW,” with a report due by January 1, 2019.

Also, by budget proviso the Legislature has required that several classes of private transportation provider vehicles having capacity for eight or more passengers access to HOV lanes when only the driver is present, including auto transportation company vehicles (like Shuttle Express); charter carrier vehicles, except stretch limousines; private nonprofit transportation provider vehicles (social service paratransit), and private employer transportation service vehicles (like Microsoft Connector). By statute, WSDOT has authority to allow these vehicles to use HOV lanes if doing so won’t interfere with the efficiency, reliability, and safety of public transportation operations. The proviso overrides that allowance to require these vehicles be granted access regardless of their impact.

Since any vehicle up to 10,000 tons of gross vehicle weight is permitted to use HOV lanes with the required number of occupants, the proviso and any rule change regarding these vehicle types would only affect these vehicles when the driver is alone in the vehicle.

## How the HOV System is Currently Used

### HOV Program – History and Background

WSDOT implemented HOV lanes in the 1980’s to give “Blue Streak” park-and-ride express bus service faster service on the new I-5 express lanes and to avoid congestion approaching the SR 520 Evergreen Point Floating Bridge. In the 1990’s, WSDOT planned for a Core HOV program to add HOV lanes to primary limited access highways throughout the Puget Sound region. Express buses in HOV lanes have provided fast and reliable transit service to regional centers, and HOV lanes have supported carpooling and vanpooling programs resulting in the highest vanpool use in the United States.

The figure below shows HOV and similar managed lanes currently planned, under construction or operating on the Puget Sound freeway system. In addition to the freeway mainline system, approximately 75 miles of transit or HOV lanes exist on state highway arterials and freeway ramps.

HOV and Express Toll Lane System Map

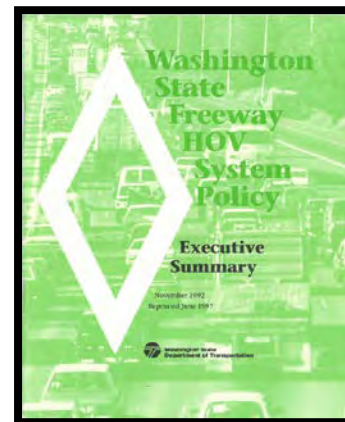




While general-purpose freeway lane volumes have been constrained by capacity, HOV lane volumes originally stayed below capacity and achieved reliable speeds. Over time, HOV volumes have continued to grow to the point they now exceed capacity. During the great recession traffic subsided, but more recent economic recovery and travel growth have brought new levels of congestion to both general purpose and HOV facilities. At the same time, the region has voted to replace many express bus routes with rail transit over the coming decades.

### **HOV speed and reliability standards**

When built, HOV lanes on I-5 and SR 520 were opened with a three-or-more (3+) person carpool definition, while I-90 and I-405 opened with a two-person (2+) carpool definition. In 1991, the Legislature added a proviso to the transportation budget directing WSDOT to reduce the carpool definition to 2+ on all facilities. Governor Gardner vetoed this proviso, but directed WSDOT to implement the intent of the Legislature wherever feasible. WSDOT lowered the carpool definition on I-5 to 2+, but left the SR 520 standard at 3+. WSDOT projected at the time that a 3+ definition would be needed in the future, and a 3+ carpool definition was reflected in regional environmental documents, policies and plans. WSDOT worked with agency partners to develop comprehensive policies for HOV lanes, including an HOV lane speed and reliability standard to gauge when a switch to 3+ carpools should be considered.



WSDOT adopted HOV policies in 1992 that included an HOV speed and reliability standard requiring HOV lanes to operate at 45 mph during 90 percent of peak hours measured over a six-month period. Subsequently, this same standard was adopted in federal law to define the conditions when HOV lanes are considered degraded.

Several factors must be considered in implementing this policy. Reducing the volume of cars in an HOV lane can restore higher speeds, but is not the only factor. If general purpose traffic in the adjacent lane is stop and go, some HOV drivers will be reticent to travel at full freeway speed. Steep hills and entering/exiting traffic can also have an impact. Credible enforcement is critical for HOV rules to be effective. If a higher carpool definition is adopted, moving the majority of carpools to general purpose lanes could exacerbate congestion at existing bottlenecks while leaving the HOV lane seemingly underutilized.

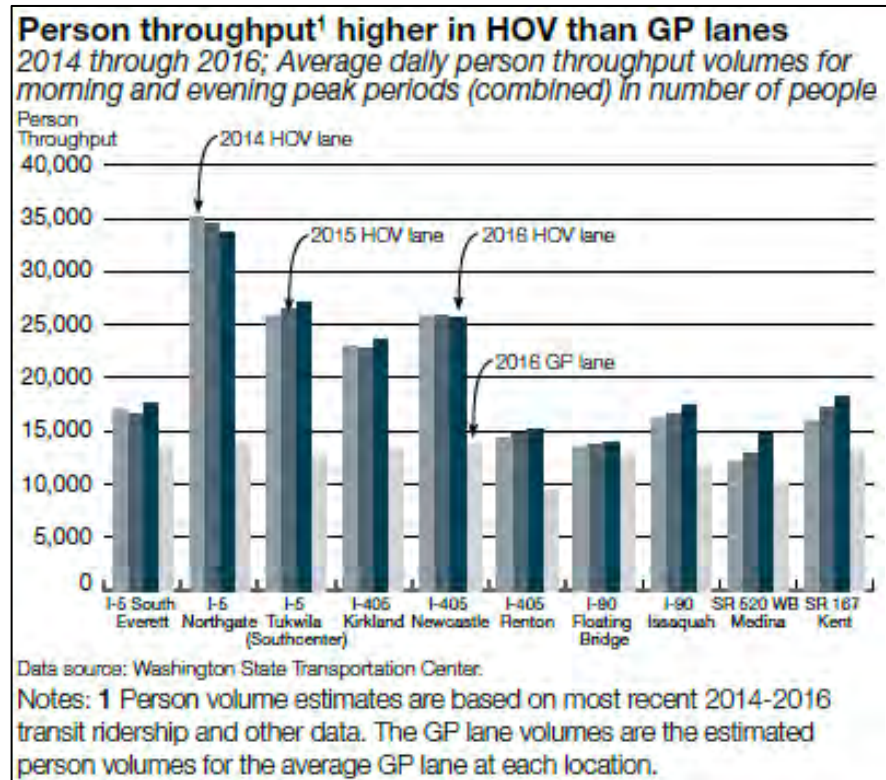
### **HOV Lane Performance**

HOV lanes continue to provide a speed and reliability advantage for transit and carpools compared with using general-purpose lanes. The 2017 WSDOT Corridor Capacity Report shows that HOV lanes are less congested than adjacent general-purpose lanes, and the duration of congestion is shorter. HOV lanes carry more people than adjacent general-purpose lanes due to higher occupancy of each vehicle. However, increasing vehicle volumes in HOV lanes has caused their performance to degrade, cutting into their person-throughput capability.

## HOV lanes outperform General Purpose lanes for person throughput

One of the key metrics for HOV lane performance is the ability of the HOV network to efficiently move more travelers. WSDOT estimates the number of vehicles and travelers at 10 locations on the major freeway corridors in the central Puget Sound region to evaluate HOV network performance.

In 2016, changes in person volume varied by location, with eight of the 10 monitored locations showing higher person throughput compared to 2014. The magnitude of HOV person volume in 2016 across the entire central Puget Sound HOV network increased by about 13% when compared to 2014, while the general purpose vehicle (adjacent to HOV network) person volume decreased by about 1%.



One factor in person-throughput is vehicle occupancy. WSDOT conducted car occupancy counts and collected transit ridership data at four locations on I-5 during peak periods this past summer. On average, about 63% of vehicles in the HOV lane were two-person carpools, accounting for 42% of person-trips. Transit vehicles made up about 3% of vehicles and carried about 26% of person-trips. Counting vans and private buses, about 17% of vehicles carried three or more passengers accounting for another 25% of person trips. About 2.5% were motorcycles and 10% were violators.

## HOV lanes continue to provide speed and reliability benefits for travelers

WSDOT monitors the benefits for HOV lane users by tracking the travel times and reliability of HOV trips compared to general purpose trips in the same corridors. On I-5, alternate HOV routes are provided in the reversible lanes.

Of the HOV trips analyzed for 2016, three quarters had average travel times more than two minutes faster than the associated GP trip (during times of peak congestion). The others showed no significant average travel time difference between the GP and HOV route options. Overall, the 2016 HOV travel time results are similar to those seen in previous years.

## Only two of 12 HOV corridors met reliability standards in 2016

The performance and reliability standard for freeway HOV lanes that was adopted by WSDOT and the Puget Sound Regional Council in 1991 states that travelers in the HOV lane should be able to maintain an average speed of at least 45 mph 90% of the time during the peak hour of travel. At this speed, the system is flowing smoothly and carrying the greatest number of vehicles at a time.

Two of the 12 monitored HOV peak-direction corridors met the state performance standard in 2016 (one in the morning and one in the evening); three corridors met the standard in 2014. In 2016, I-90 commutes between Issaquah and Seattle met the standard. The degree of compliance with the performance standard held steady or worsened for 10 of the 12 monitored locations in 2016 compared to 2015.

Even when performance is reduced during congested periods, HOV lanes still generally provide speed and reliability benefits over adjacent GP lanes. During the off-peak times of day, all HOV corridors generally meet the standard.

See the table below for a summary of the degree to which each HOV corridor met the state performance standards in recent years in the peak direction of travel.

### High occupancy vehicle lane speed and reliability performance on major central Puget Sound corridors

2012 through 2016; Goal is to maintain 45 mph for 90% of peak hour; Percent of peak hour goal was met

Commute routes	2012	2013	2014	2015	2016	Commute routes	2012	2013	2014	2015	2016
<b>Morning commutes</b>						<b>Evening commutes</b>					
I-5, Everett to Seattle SB	54%	42%	28%	<b>26%</b>	<b>19%</b>	I-5, Everett to Seattle NB	68%	66%	46%	<b>36%</b>	<b>21%</b>
I-5, Federal Way to Seattle NB	51%	43%	30%	<b>18%</b>	<b>18%</b>	I-5, Seattle to Federal Way SB	63%	53%	40%	<b>32%</b>	<b>21%</b>
I-405, Tukwila to Bellevue NB	93%	65%	35%	<b>26%</b>	<b>24%</b>	I-405, Bellevue to Tukwila SB	43%	41%	26%	<b>21%</b>	<b>18%</b>
I-90, Issaquah to Seattle WB	100%	100%	98%	<b>98%</b>	<b>97%</b>	I-90, Seattle to Issaquah EB	100%	99%	100%	<b>99%</b>	<b>97%</b>
SR 520, Redmond to Bellevue WB	51%	50%	44%	<b>63%</b>	<b>61%</b>	SR 520, Redmond to Bellevue WB	54%	52%	52%	<b>73%</b>	<b>71%</b>
SR 167, Auburn to Renton NB <sup>†</sup>	96%	94%	86%	<b>66%</b>	<b>45%</b>	SR 167, Renton to Auburn SB <sup>†</sup>	98%	98%	98%	<b>95%</b>	<b>87%</b>

Data source: Washington State Transportation Center.

<sup>†</sup>High occupancy toll lanes replaced regular HOV lanes May 3, 2008.

Notes: The above HOV reliability performance standards are based on the peak hour, when average travel time is slowest. To meet the standard, an average speed of 45 mph must be maintained for 90% of five-minute periods during the peak hour on weekdays. Numbers represent the percentage of these periods when speeds are 45 mph or faster. The Washington State Transportation Center analyzes performance data for all complete segments of HOV lanes that have a loop detector. In some cases, like southbound SR 167, data cannot be analyzed for the very beginning and ends of the lanes because there are no detectors at these locations. I-405 commutes between Lynnwood and Bellevue are no longer listed above, as they now have different legislatively mandated speed and reliability performance measures per RCW 47.56.880. For performance information, see [www.wsdot.wa.gov/tolling/405/library.htm](http://www.wsdot.wa.gov/tolling/405/library.htm).

## Strategies WSDOT has implemented to improve HOV speed and reliability

HOV lanes are one form of a broader category of highway facilities called *managed lanes*, which manage volumes into a roadway by (1) controlling where vehicles can access the roadway, (2) designating which vehicles can use specific lanes, and/or (3) using other methods, such as price, to manage demand. HOV's are managed solely through limiting access to vehicles with a specified occupancy.



HOV lanes are an effective “managed lanes” solution as long as the number of eligible cars is below the HOV lane capacity. But managing by occupancy alone does not allow for fine-tuning; there can be too many vehicles in the HOV lane (at 2+) or too few (at 3+). Overly congested HOV lanes defeat the purpose of providing speed and reliability advantages for the people in them, while higher occupancy requirements shift traffic into general purpose lanes so that the highways carry fewer people overall. When HOV lanes break down, additional demand management tools may be needed to reliably carry more people at greater speeds.

Examples of pricing as a demand management tool in Washington are the I-405 express toll lanes and the SR 167 HOT lanes where tolling has been used to successfully move more people more quickly through a congested corridor. Other examples of effective demand management strategies include expanding transit, encouraging higher-occupancy carpools and vanpools, and other commute trip reduction opportunities.

## **Plan for Moving Forward**

When the HOV lanes were planned, it was assumed that the carpool definition would be adjusted as needed over time to ensure that a reliable speed advantage would be maintained. Regional and corridor-specific plans and environmental documents made long-range projections assuming a three-person carpool definition. Implementing that policy has been more difficult than expected at the time.

After over 35 years of HOV program development and operation, it is important to conduct a comprehensive policy review to develop a more workable strategy to maintain HOV lane effectiveness, and to reflect adoption of the Sound Transit program to replace regional express bus service with rail. With I-405 express toll lanes in operation in the north end of the corridor and under development in the south, the biggest remaining issues regarding HOV lanes apply to I-5. These issues must be resolved prior to making other long-range plans for the I-5 corridor. Considering this, WSDOT will address HOV lane policy issues and congestion management strategies concurrently with regional consultation on the future of I-5.

WSDOT is at the initial stage of developing plans and scope for these efforts. The Department will consult with key regional legislators, policy-makers, technical specialists, stakeholders and partner agency staff to develop our approach to the efforts described below.

## **Proposed Work Plan for Developing a Regional Managed System Plan**

There is a clear need to develop consensus on the future of I-5, Washington’s most heavily traveled and most congested corridor. There has not been a comprehensive look at I-5 since it was first constructed in the 1960s. Bridges and pavement along the corridor need to be preserved or reconstructed. As new development occurs around the region and as the economy has improved, more cars are drawn to I-5, the only statewide major north-south connector in Western Washington, which is becoming slower and less reliable. I-5 is the state’s most important highway freight corridor, and I-5 approaching Seattle is our biggest freight bottleneck.

WSDOT will work with PSRC to convene a working group in 2018 comprised of elected officials, stakeholders and technical experts to develop a future vision for I-5. As part of this look at the I-5 corridor, this work will evaluate opportunities for improving the regional HOV system. This will include the evaluation of alternative policies to improve systemwide HOV lane speed and reliability, and other approaches to operating the state’s highway network in the Puget Sound region.

This effort is anticipated to help identify near term actions that can improve or sustain HOV facilities performance. It should also lead to additional work to develop an integrated transition plan for regional corridors to ultimately implement an overall regional managed system plan.

### Assessment of Current HOV Lane Access Rules

Based on the outcome of the process described above, WSDOT would conduct a comprehensive assessment of its HOV administrative rules in the Washington Administrative Code (WAC). This consideration would address the vehicle types described in SSB 5018, SSB 5837, and in current budget proviso, as well as other issues raised through the collaborative working group process.

### Schedule

The work items described above complement ongoing efforts to identify operational and demand-management improvements that could be implemented in the near term without significant corridor analysis. The following schedule illustrates how these activities will be implemented within the current biennium.

#### I-5 Action Plan and Working Group

