



**Washington State  
Department of Transportation**

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January 9, 2019

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 Jake Fey  
Chair, House Transportation Committee  
PO Box 40600  
Olympia, WA 98504-0600

The Honorable Andrew Barkis  
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 5837

Dear Senators Hobbs and King and Representatives Fey and Barkis:

As required by SSB 5837 passed by the 2017 Legislature, 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 vehicles collecting and delivering blood to use high occupancy vehicle lanes with only a driver present in the vehicle. SSB 5018 also directed the Department to reexamine administrative rules regarding HOV lane access with special attention to accessible taxicabs, which was delivered in February 2018.

In this report, we have updated information from the most recent Corridor Capacity Report<sup>1</sup> and Appendix<sup>2</sup> that now incorporates 2017 data which illustrates that the HOV system has been a success in increasing the person-carrying capacity of regional freeways, but as usage has continued to increase, performance is declining.

New data from 2017 continues this trend to worsening HOV lane performance system-wide. 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, and this

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<sup>1</sup> <http://wsdot.wa.gov/publications/fulltext/graynotebook/corridor-capacity-report-18.pdf>

<sup>2</sup> <http://wsdot.wa.gov/publications/fulltext/graynotebook/corridor-capacity-report-18-appendix.pdf>

strategy is undermined when HOV lanes fail to provide a reliable speed advantage to transit and ridesharing vehicles.

We agree a comprehensive and transparent review of HOV policies and strategies is needed, with a rule-making process potentially to follow. The first priority for this review will be to address reduced speeds and reliability resulting from growing 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.

WSDOT has implemented express toll on I-405 and SR 167, which has improved speeds and reliability significantly. Most of the remaining HOV lane-miles with poor performance are on I-5. The Governor's budget includes \$2.5 million to begin planning on I-5 to identify a long-range master plan that will consider, among other things, what the future of HOV lanes on I-5 should be. Much has changed since HOV lane implementation began in the 1980's, including the Puget Sound region's adoption and funding of a rail-based regional transit system. We believe a comprehensive look at the future of I-5 and the HOV lane system as a whole should precede any permanent consideration of HOV access rules.

If you have questions or comments about this report, please call me directly at (206) 464-1264.

Sincerely,



Robin Mayhew, AICP  
Management of Mobility Director

**Progress Report on Public Rule-making  
for HOV Lane Access**  
as Required by SSB 5837  
December 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 work to address both laws.

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 ideal for a comprehensive policy review of the HOV strategy and alternatives to improve HOV policies and performance.

SSB 5837 directed WSDOT to consider allowing blood collection and delivery vehicles to use HOV lanes with only the driver present in the vehicle. SSB 5018 directed WSDOT to consider providing HOV access for accessible taxicabs. Governor Inslee’s proposed budget includes proviso language providing HOV lane access to these vehicles and others over the coming biennium.

The fundamental performance and congestion issues caused by increasing vehicle volumes must be addressed first before adding access for new vehicle classes on a more permanent basis. To address the longer-term planning horizon Governor Inslee has requested \$2.5 million to begin long range planning for the future of I-5 that will also consider the future of the HOV lane system in the region and address its policies and performance issues on a system basis. Consideration of changes to the HOV strategy and how it is implemented will be conducted collaboratively with regional partner agencies, policymakers and stakeholders.

**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 (this report).

Governor Inslee’s proposed budget carries forward legislative provisos to allow these vehicles into HOV lanes, along with several classes of private transportation provider vehicles having capacity for eight or more passengers when only the driver is present. Those include 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 grant access to these vehicles regardless of their impact.

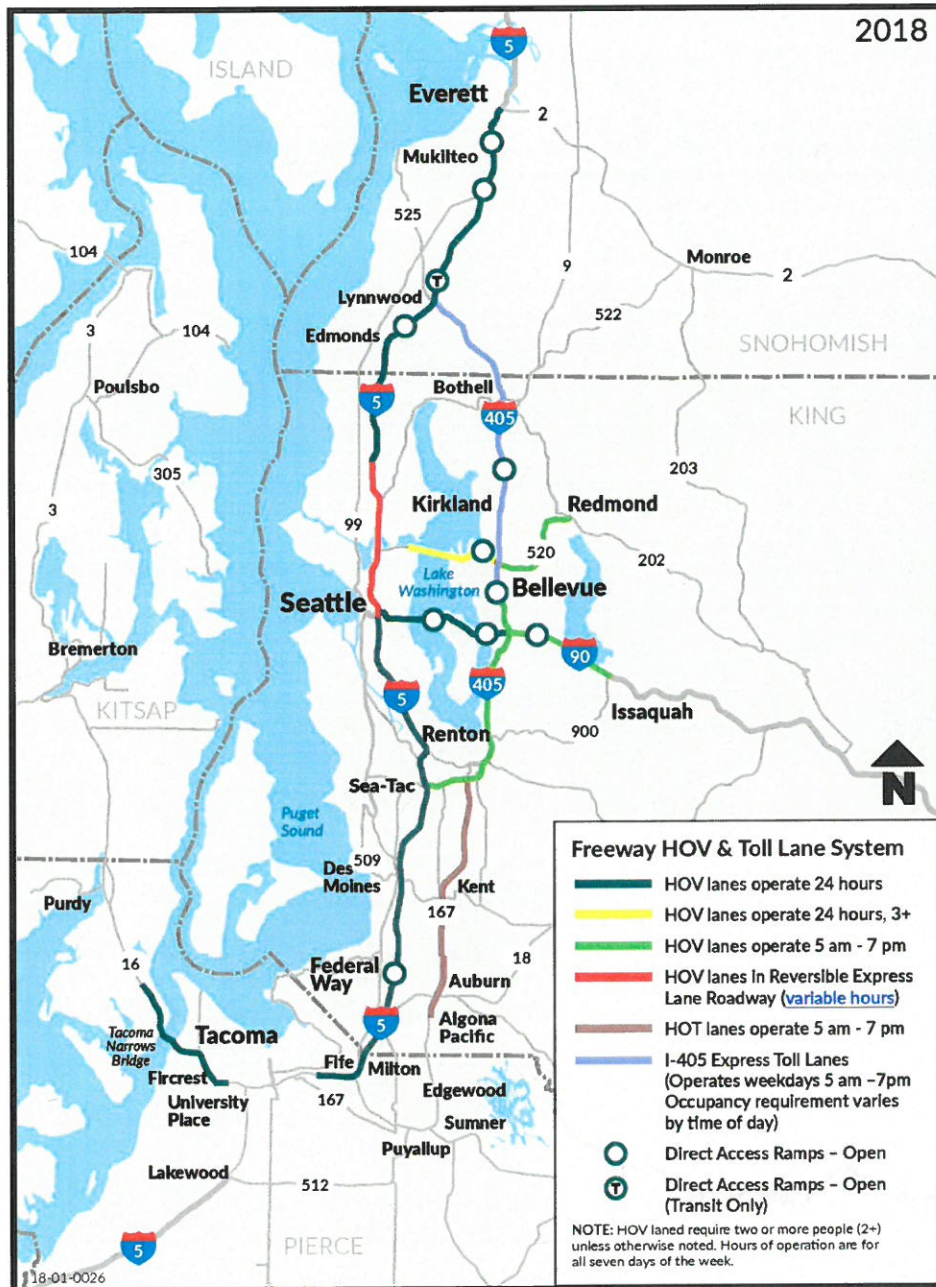
Since any vehicle up to 10,000 pounds of gross vehicle weight is permitted to use HOV lanes with the required number of occupants, the proviso and any rule change regarding these vehicle types would only affect these additional vehicle classes when the driver is alone in the vehicle.

## How the HOV System is Currently Used

### HOV Program – History and Background

WSDOT implemented HOV lanes in the 1980’s to give what was then called “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.

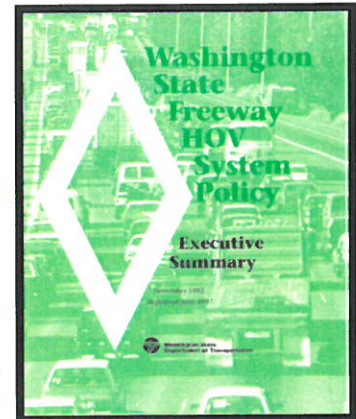
The figure below shows HOV and similar managed lanes currently planned, under construction or operating on the Puget Sound freeway system. In addition to the freeway mainline system, approximately 75 miles of transit or HOV lanes exist on state highway arterials and freeway ramps.



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 that was adopted HOV policies in 1992. Among them was an HOV lane speed and reliability standard to gauge when a switch to 3+ carpools should be considered, which requires 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 or HOT 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 hesitant 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

The 2018 WSDOT Corridor Capacity Report shows the HOV performance trends reported in February 2018 to the Legislature have continued.

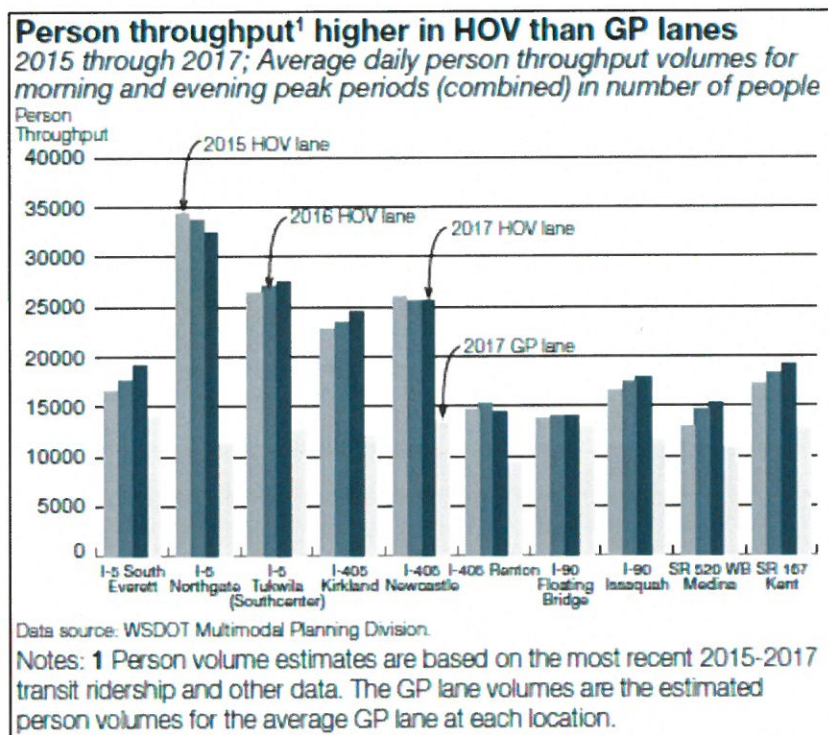
- HOV lanes provide a speed and reliability advantage for transit and carpools compared with using general-purpose lanes.
- HOV lanes are less congested than adjacent general-purpose lanes, and the duration of congestion is shorter.
- HOV lanes carry more people than adjacent general-purpose lanes due to higher occupancy of each vehicle.
- However, vehicle volumes in HOV lanes are increasing at an even faster rate, causing their performance to degrade and reducing 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 than the general-purpose lanes. 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. Growth rates of person-trips in HOV and general purpose lanes from 2015 to 2017 were higher than 2014-2016.

In 2017, changes in person volume varied by location, with seven of the 10 monitored locations showed higher person throughput compared to 2015. **HOV person volume in 2017 across the entire central Puget Sound HOV network increased by about 23% when compared to 2015, while the general purpose vehicle (adjacent to HOV network) person volume grew by about 10%.**

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 during the summer of 2017. **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 general purpose 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 one of ten HOV corridors met reliability standards in 2017

The performance and reliability standard for freeway HOV lanes that was adopted by WSDOT, the Transportation Commission 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.

Only one of the 10 monitored HOV peak-direction corridors met the state performance standard in 2017, down from two corridors previously. The degree of compliance with the performance standard held worsened for all ten monitored locations in 2017 compared to 2016. In 2017, only I-90 afternoon commutes from Seattle to Issaquah met the standard.

**Even when performance is reduced during congested periods, HOV lanes still generally provide speed and reliability benefits compared against adjacent general purpose lanes.** During the off-peak times of day, all HOV corridors generally meet the standard. See the table below for a summary of portion of days 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 2013 through 2017; Goal is to maintain 45 mph for 90% of peak hour; Percent of peak hour goal was met**

Commute routes	2013	2014	2015	2016	2017	Commute routes	2013	2014	2015	2016	2017
Morning commutes						Evening commutes					
I-5, Everett to Seattle SB	42%	28%	26%	19%	18%	I-5, Everett to Seattle NB	66%	46%	36%	21%	12%
I-5, Federal Way to Seattle NB	43%	30%	18%	18%	15%	I-5, Seattle to Federal Way SB	53%	40%	32%	21%	19%
I-405, Tukwila to Bellevue NB	65%	35%	26%	24%	22%	I-405, Bellevue to Tukwila SB	41%	26%	21%	18%	14%
I-90, Issaquah to Seattle WB	100%	98%	98%	97%	89%	I-90, Seattle to Issaquah EB	99%	100%	99%	97%	94%
SR 520, Redmond to Bellevue WB	50%	44%	63%	61%	50%	SR 520, Redmond to Bellevue WB	52%	52%	73%	71%	65%

Data source: Washington State Transportation Center.

\*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. 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 are defined as highway facilities or a set of lanes where operational strategies are proactively implemented and managed in response to changing conditions. Generally, managed lanes are separated from other lanes and use access restrictions to maintain reliable throughput and speed.

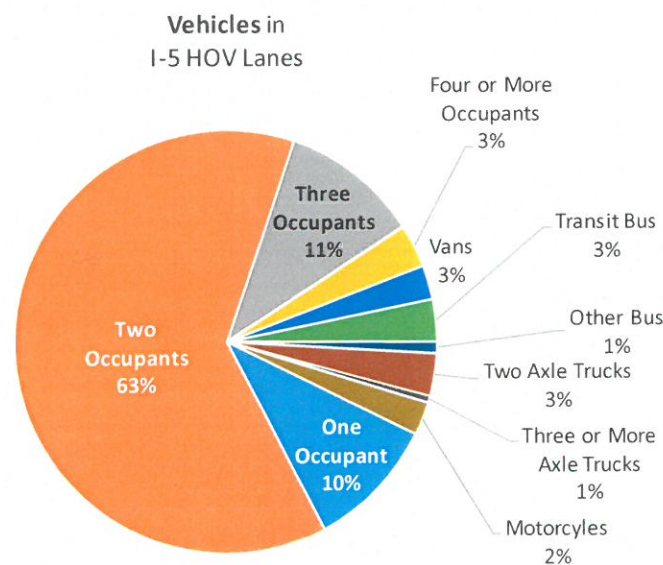
Examples of operating managed lane projects include high-occupancy vehicle (HOV) lanes, high-occupancy toll (HOT) and express toll lanes, reversible or access-restricted express lanes, or exclusive or special use lanes for a class of vehicles like buses or trucks.



Managed lanes generally apply one or more of these access control treatments:

- Pricing: Includes both traditional toll lanes and toll lanes that use congestion pricing, where price is varied during certain time periods in order to manage demand (e.g., peak-period surcharge or off-peak discount).
- Vehicle eligibility: The lanes are managed by allowing certain vehicles or restricting others; minimum occupancy is an example of an eligibility restriction.
- Access control: An example would be express lanes where all vehicles are allowed but access is limited during long stretches of the facility, minimizing turbulence in the flow of vehicles.

HOV lanes are an effective managed lanes solution as long as the number of eligible vehicles is below the lane capacity. However, managing by occupancy alone can result in too many vehicles in the HOV lane with a 2+ requirement or too few with a 3+ requirement. The chart below shows a breakdown by occupancy taken from a representative section of I-5.



This chart shows the predominance of 2 occupant carpools currently using the HOV lane, representing the challenge of simply managing by occupancy. The 63% figure associated with 2 occupant carpools represents approximately 800 vehicles per hour during peak periods that would be displaced from this lane if the occupancy requirement was simply increased to 3+. This would leave the lane underutilized unless other management strategies are deployed.

Currently, much of our managed system consists of HOV lanes where performance is managed solely through limiting access to vehicles with a specified occupancy and ramp metering operations that are constrained by available ramp storage capacity.

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, throughput is reduced, and additional demand management tools are 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. Expansion of ramp metering capabilities and limiting access in and out of HOV lanes have also been demonstrated as effective operational strategies.

## **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 3+ carpool definition. Implementing that policy has been more difficult than was expected.

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. 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. Governor Inslee's proposed budget includes \$2.5 million to begin scenario planning as a next step toward a long-range master plan for I-5 which would also address the future of the HOV system in the region. WSDOT proposes to address HOV lane policy issues and congestion management strategies concurrently with regional consultation on the future of I-5.

## **Proposed Work Plan for the Future of I-5**

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 its final segment opened in May of 1969, nearly 50 years ago. 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 using 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 its biggest freight bottleneck.

WSDOT has convened the I-5 Corridor Partnership to begin regional discussion about goals and potential strategies/concepts, the range of options to be considered, and initial thinking about the organizational framework for making decisions and engaging stakeholders, elected officials, technical staff and the public. A concept screening and scenario analysis planning study of HOV and congestion management strategies will be incorporated into this work plan. WSDOT is at the initial stage of developing plans and scope for these efforts. WSDOT plans to consult with key regional legislators, policy-makers, technical specialists, stakeholders and partner agency staff to develop an approach.

## **Enforcement**

In addition, recognizing that most of the HOV lanes are failing to meet reliability standards, WSDOT conducted some occupancy studies/counts at various locations. The results of the occupancy counts show significant violation rates. During September 2018, the Washington State Patrol did a central Puget Sound HOV emphasis patrol. During a one-week period, troopers stopped 1,758 drivers and issued 1,671 citations. Troopers contacted 17 drivers twice and one driver three times.

WSDOT is exploring automated occupancy technology as an emerging technology and has submitted a grant for federal funds for automated occupancy detection.

## **Assessment of Current HOV Lane Access Rules**

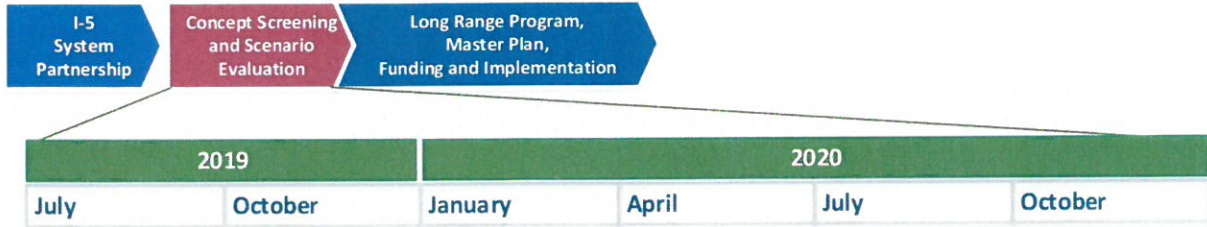
Based on the outcome of the concept screening and scenario analysis described above, WSDOT would conduct a comprehensive assessment of its HOV administrative rules in the Washington Administrative Code (WAC). This consideration would address the vehicle types described in SSB 5018, SSB 5837, and in current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

Final rule-making would not begin until direction for the future of HOV lanes is confirmed through the proposed I-5 planning work (which, as noted above, includes an examination of the region's HOV system). This direction may or may not be fully known until the scenario planning and master plan work is complete. The scenario planning study for I-5 is funded in the Governor's budget.

Once a sustainable strategy is adopted to maintain manageable HOV volumes and performance, the benefits, costs and risks of allowing HOV lane access to new vehicle classes will be relevant. A key question to be addressed at that time will be whether the proposed vehicle classes can be considered as public transit vehicles as required by federal law to use HOV lanes nationally. For blood collection and delivery vehicles, the question is whether these vehicles qualify for consideration as authorized emergency vehicles, which are generally allowed to disregard lane restrictions when equipped with lights and siren and responding to an emergency call.

## **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 next biennium. In the figure below, the concept evaluation process for managed lanes will address policy options to address HOV lane reliability issues.



**Project Management and Committees Facilitation**

