Note: Portions of brief stricken by opinion dated 9/12/2013 references to "e-zine" website, WA Policy Piece and Declaration of Jim Horn on pages 5-6, 16 & 19

No. 87267-8

SUPREME COURT
OF THE STATE OF WASHINGTON

KEMPER FREEMAN, JIM HORN, STEVE STIVALA, KEN COLLINS, MICHAEL DUNMIRE, SARAH RINLAUB, AL DEATLEY, JIM COLES, BRYAN BOEHM, EMORY BUNDY, ROGER BELL, and EASTSIDE TRANSPORTATION ASSOCIATION, a Washington nonprofit corporation, MARK ANDERSON,

Appellants,

v.

STATE OF WASHINGTON, CHRISTINE O. GREGOIRE, Governor, PAULA J. HAMMOND, Secretary, Department of Transportation; CENTRAL PUGET SOUND REGIONAL TRANSIT AUTHORITY,

Respondents,

AMICUS CURIAE BRIEF OF SAVE MI SOV

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A. IDENTITY AND INTEREST OF AMICUS CURIAE

Save MI SOV is a Washington nonprofit corporation formed in 2004 by a Mercer Island citizens group to preserve and protect rights of access to Interstate 90's two center lanes. Save MI SOV was the sponsor of a referendum petition signed by over 4,750 Mercer Island registered voters within 20 days of the Mercer Island City Council passing its Resolution #1337, wherein the city council agreed to amend the 1976 I-90 Memorandum of Agreement to permit conversion of the Interstate 90 center highway lanes to exclusive use by high capacity transit (light rail). The amendment is commonly referred to as the 2004 Amendment to the I-90 Memorandum of Agreement (hereinafter "2004 Amendment").

King County Records & Elections certified the Save MI SOV referendum for inclusion on the November 2004 general election ballot. The League of Women Voters of Washington (Seattle) and four Mercer Island proponents of light rail sued King County Records & Elections in King County Superior Court Cause No. 04-2-23547-2SEA, to prevent Mercer Island residents from being able to vote on the referendum and overturn the Mercer Island city council's decision to enter into the 2004 Amendment. By court order, Save MI SOV was allowed to intervene in the action to defend and protect the referendum. The trial court granted the League of Women Voters (Seattle) a preliminary injunction, which

effectively prevented Mercer Island residents from being able to vote on the referendum, as the court hearing was held within 4 ½ hours of the deadline for printing the ballots. The referendum was not printed on the ballot.

Save MI SOV was allowed by this Court to file its *amicus curiae* brief the prior time this matter was before it, in *Freeman v. Gregoire*, 171 Wn.2d 316, 256 P.2d 264 (2011).

Without question, elimination of highway use of the two center lanes will negatively impact Mercer Island residents' mobility and access to their homes, jobs, health care, businesses, not to mention access to area commercial, recreational, social, and cultural opportunities. It will also negatively impact Mercer Island businesses and property values, as well as negatively impact people from other communities and off-island businesses and schools for people who travel to or from Mercer Island in single occupancy vehicles, business and service vehicles.

More globally, the elimination of the two center roadway highway lanes from motor vehicle use will have negative impacts throughout the state.

B. STATEMENT OF THE CASE

Save MI SOV agrees with the statement of the case previously set forth by the Appellants.

Save MI SOV wants to reiterate and emphasize that WSDOT and Sound Transit are **not** providing **any** substitute highway lane capacity on I-90 for the thousands of single occupant vehicles (SOVs) that use the I-90's two center lanes today, and would continue to use into the foreseeable future.

All single occupant vehicles having origins and destinations on Mercer Island and using the two I-90 center lanes as highway lanes, will be kicked out of the center roadway if this court allows WSDOT to transfer the highway lanes to the non-highway purpose (light rail). WSDOT and Sound Transit are **NOT** building any additional general purpose lanes on the I-90 mainline or on the floating bridge decks as a substitute for that lost access for single occupant vehicles destined to and from Mercer Island.

Further, there is no more room on the floating bridges to accommodate another general purpose lane on the bridge decks if the planned new HOV lane is added to the bridge decks. All SOV traffic will be displaced out of the two center highway lanes for a non-highway use, if the planned transfer is allowed by this court, and without **any** accommodation for that reduced highway access and capacity.

Further, it is not just SOV access and use that will be terminated if the court allows the contemplated transfer to go forward. All highway

vehicles, including SOVs, buses, carpools, vanpools and motorcycles with destinations and origins on Mercer Island, will be forcefully removed from the two center roadway lanes as well.

There are 65,000 vehicle trips on I-90 on average each day that have origins and destinations on Mercer Island. ***See*** Final Environmental Impact Statement on I-90 Two-Way Transit and HOV Operations project dated May 21, 2004 ("2004 FEIS"), [1] page 1-6 (Appendix Exhibit 1).

As of 2001, there were approximately 12,400 motor vehicles using the I-90 center lanes on the floating bridge segment every day. *See* 2004 FEIS, page 3.2-4. WSDOT is **not** providing a substitute lane for the single occupant motor vehicles now using the two center roadway lanes. All that traffic would be displaced out into the narrowed lanes in the crowded outer bridge decks, if the non-highway use of the center roadway lanes is allowed. WSDOT is **reducing** I-90's access and capacity for single occupant vehicles by transferring the two center lanes for a non-highway use.

All that WSDOT is planning to accommodate for the elimination of two highway lanes and all the highway traffic that use it ---- the displaced SOVs destined to or from Mercer Island, the displaced buses,

[1] The 2011 FEIS upon which Sound Transit relies does not make specific reference to Mercer Island-destined traffic.

carpools, vanpools and motorcycles ---- is ONE HOV lane in each direction on the outer roadway.

On the simplest terms, that is over a 50% reduction in the existing HOV capacity on I-90 in the peak direction (changing from two HOV lanes in the peak direction to one); and a 100% reduction in terms of the elimination of the existing SOV capacity in the center roadway (changing from two lanes in the peak direction to ZERO ADDITIONAL general purpose lanes in the mainline/outer bridge decks of I-90).

Any reduction in access to, and number, of highway lanes on I-90 poses magnified impacts to the island community of Mercer Island, due to the lack of any other road access on or off the island. I-90 is the only road on and off the island.

In addition to the **reduction** of I-90 capacity for single occupant vehicles that will result from the elimination of the two center lanes for light rail, there is also the potential that the Federal Highway Authority may terminate Mercer Island single occupant vehicle access to westbound I-90 at the Island Crest Way access tunnel due to safety issues if the center roadway is eliminated from highway use, and the access ramp to the center roadway lanes is closed to traffic entering the Island Crest Way access tunnel. *See* June 22, 2011 letter from the FHWA warning of this change:

www.bettertransport.info/pitf/URFINALReportExecutiveSummary.6.22.11pdf.

The Island Crest Way tunnel access to westbound I-90 is **the** major access point for Mercer Island single occupancy vehicle access to westbound I-90, with over 800 vehicles per hour entering the Island Crest Way access tunnel to westbound I-90 during the a.m. peak period. *See* 2008 and 2010 WSDOT Ramp & Roadway reports for the Mercer Island access: http://www.wsdot.wa.gov/publications/fulltext/rampandroadway/2008full.pdf; http://www.wsdot.wa.gov/NR/rdonlyres/24EA8BFB-6A4B-406C-A606-64D74B8FE2DE/0/TrafficVolumes2010.pdf.

If the Island Crest Way tunnel access ramp to westbound I-90 is closed to single occupant vehicles, all that traffic will have to cross over the top of I-90, through three blocks of signaled intersections (which have heavy cross traffic and pedestrian crossings), to a very busy signaled intersection where traffic is exiting off of westbound I-90 at Island Crest Way (the heaviest I-90 exit ramp onto Mercer Island). The waits are long at that intersection due to the volume of traffic exiting westbound I-90. There is also heavy pedestrian and opposing traffic and conflicting bicycle traffic crossing. Further, all the Mercer Island single occupant vehicles would have to travel an additional three long blocks on city streets north

and through another signaled intersection, passing by the island's largest Park & Ride lot and the bus transit station, with its very heavy pedestrian and vehicle crossing traffic, and buses pulling in and out, to finally get to a 4-way Stop sign intersection; stop there again, and then one by one proceeding to a right-hand access ramp at 76th Avenue SE on Mercer Island, which enters the I-90 mainline under the Mercer Island Lid tunnel. That long and complicated traverse will add 15 minutes or more to Mercer Island single occupant vehicles' access to westbound I-90.

If single occupant vehicles are no longer allowed to use the Island Crest Way tunnel access to westbound I-90 due to a non-highway use in the center highway lanes, that change would severely reduce Mercer Island's access to I-90.

WSDOT and Sound Transit's plans would also eliminate the ability of the reversible center lanes to operate as an important detour route, in either direction, should an emergency, traffic accident, police action, or needed bridge maintenance or bridge repair block traffic or severely restrict it on one of the mainlines of the floating bridges. Without that detour potential of the center reversible lanes, an accident or a tunnel fire, or a fire truck/police/ambulance response, or even bridge repair/maintenance could totally shut down traffic flow in one direction across the lake.

By example, this detour function of the reversible lanes was needed fairly recently and for a prolonged period of time (two weeks) when the transition joints of the I-90 bridge had to be repaired in 2009. This detour function of the reversible lanes may be needed more often in the future when the roadway improvements of R8-A are completed. More frequent and more severe vehicle accidents are predicted by WSDOT, due to the narrowed lanes and lack of shoulder space. *See* 2004 FEIS, page 5-7 and 5-13. More blocking incidents are also expected for the same reasons. *See* 2004 FEIS, pp. 3.2-51 through 54; Table 3.2-17.

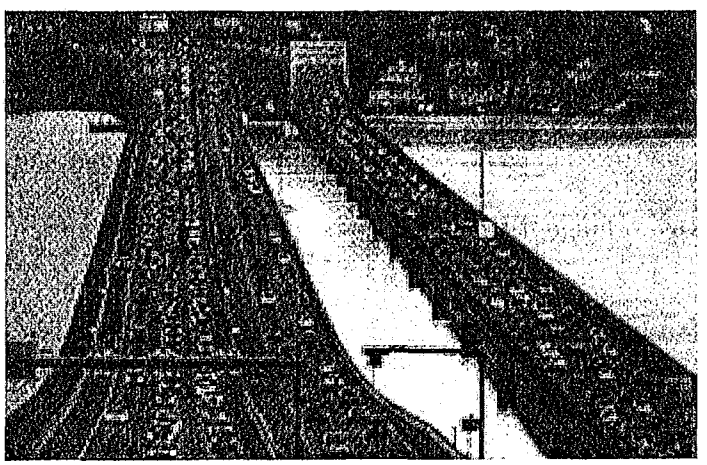
WSDOT and Sound Transit are **NOT** providing a substitute detour route in place of the two reversible center lanes, on what may be the most important highway in the state of Washington in terms of the movement of freight, agricultural and industrial commerce from central and eastern Washington, and places east; to the cities of Bellevue and Seattle (the largest cities in the state), and the Port of Seattle; and for the movement of people to jobs and activities within this state.

There is a reason why I-90 was designated a highway of state significance. A three or four car light rail train running every five minutes or so (at most during rush hours, and likely less frequently at other times) between downtown Seattle and downtown Bellevue ---- a completely local

interest and purpose ----- and an admitted non-highway use ---- should not be allowed to so interfere with the highway purposes of I-90.

According to WSDOT and Sound Transit's January 7, 2013 presentation to the City Council of Mercer Island, Sound Transit anticipates that the two center roadway lanes of I-90 **will be closed for construction for seven (7) years** (between late 2016 and 2023) before the first light rail train would cross Lake Washington. ***See*** Appendix Exhibit 2 (WSDOT/Sound Transit's "Cross-Lake Washington Transportation Projects Outlook", dated 1/7/13).

And finally, and in the spirit of brevity, a picture is worth a thousand words:



(Photo courtesy of WSDOT).

Does this look like two highway lanes no longer needed for highway purposes?

C. ISSUE PRESENTED

Save MI SOV adopts the arguments set forth by the Appellants in their briefs regarding violation of the 18th Amendment. The purpose of the 18th Amendment is to protect highway investments from being diverted to non-highway purposes. That has been the law of the State of Washington, as amply set forth by Appellants in their briefing materials. The constitutional protection extends to the Motor Vehicle funds themselves and to the facilities that were built with them, obviously. Otherwise, the funds could be spent and then the facility could be converted away from that protection to a non-highway use, depending upon the political preference of the state governor and the varying political opinion of the state legislature, when that exact problem and concern is the heart and intention of the 18th Amendment.

Save MI SOV will largely confine the issue in this brief to whether the Washington Department of Transportation can lease highway lands presently needed for highway purposes, in violation of its statutory authority.

D. ARGUMENT

(1) WSDOT Cannot Dispose of Highway Lanes Presently Needed for Highway Purposes By Lease to a Transit Agency for a Non-Highway Use.

State statute RCW 47.12.120, governing leases of highway land,

specifically states that the lands can only be leased if they are "not presently needed" for highway purposes. Unlike RCW 47.12.063, which governs the sale of surplus highway lands and includes explicit statutory language that WSDOT is authorized to make the determination whether lands are needed for a highway purpose, RCW 47.12.120 does not contain such granting language.

When a statute is clear on its face, courts must give effect to its plain meaning and should assume the legislature means exactly what it says. "The court may not add language to a clear statute, even if it believes the Legislature intended something else but failed to express it adequately." *State v. Chester*, 133 Wn.2d 15, 21, 940 P.2d 1374 (1997).

Likewise, WAC 468-30-110, which also governs leases of airspace on state highways for nonhighway use, states:

> (7) No use of such space shall be allowed which subjects the highway facility or the public to undue risk or impairs the use of the facility for highway purposes.

(emphasis added). WAC 468-30-110, like RCW 47.12.120, does not contain any language giving WSDOT the sole discretion to determine whether use of highway airspace impairs the use of the facility for highway purposes.

WSDOT does not dispute that it intends to lease the center lanes of I-90 to Sound Transit for exclusive light rail use, an admitted non-highway

purpose. Nor does it dispute that the 18th Amendment of the Washington State Constitution prohibits using needed highway facilities for non-highway purposes. See Brief of Respondent WSDOT at 28. Instead, WSDOT asserts that the lease of highway right of way is an administrative function that is authorized by the 18th Amendment and the highway sales/leasing statutes, and that it may exercise its discretion in determining whether or not the center lanes are presently needed for highway purposes. *See* Brief of Respondent WSDOT at 20-22.

That kind of opportunistic reasoning and policy determination would allow WSDOT to eviscerate the purpose of the 18th Amendment which is intended to protect and preserve road investments for highway purposes. WSDOT's flexible reasoning would allow it to convert protected road investments into non-highway uses simply by labeling lanes "not presently needed" even when in fact the highway lanes are heavily used by highway traffic, and to motor vehicle highway users are obviously needed.

The 1976 Memorandum of Agreement provided for two reversible highway lanes in the center roadway of I- 90, lanes commonly known as the "I-90 express lanes." The 1976 Memorandum of Agreement designated the lanes for shared use by buses, carpools and single occupancy vehicles traveling to or from Mercer Island. *See* Memorandum

of Agreement Section 1(e). The Agreement did not designate the center lanes for exclusive use by transit or by rail.

The Memorandum of Agreement set out priority of shared use ---- first to transit (buses), second to carpools and third to single occupancy vehicles destined to or from Mercer Island. Such sharing priority could easily be managed by ramp metering or increased carpool occupancy eligibility, if either were ever needed. Under the Memorandum of Agreement, Mercer Island single occupancy traffic had priority access.

While the Memorandum of Agreement stated that the two High Occupancy Vehicle lanes (misnamed "transit" lanes) shall be constructed so that rail is "possible", that does not mean that there was agreement that rail was "permissible." If the Memorandum of Agreement had stated that rail was "permissible," an interpretation that Sound Transit and WSDOT appear to be proposing, it would have been illegal under the 18th Amendment for the State of Washington to use state motor vehicle gas tax trust fund monies to pay for the construction of I-90 in the first place.

Rail is not a highway use under Washington law. Obviously, the word "possible" in the context of the 1976 Memorandum of Agreement's reference to rail, meant physically possible, not legally permissible. This Court may ask, then why was the roadway built so that rail use was possible if rail use was not intended?

The simple answer is that state constitutions can be changed. That change has not occurred yet. WSDOT and Sound Transit are trying to leap-frog over that impediment, and the process required before the constitutional amendment can be changed.

The power to change Washington's constitution is vested in the people of the entire state of Washington. That power is not vested in three cities' city councils (Bellevue, Seattle, Mercer Island); nor in the King County council, the Washington State Transportation Commission, WSDOT, Sound Transit, or the Governor's office. That power is not vested in the Sound Transit voting district (King County and parts of Pierce and Snohomish counties), and the voters who were allowed to vote on light rail from Seattle to Bellevue.

According to the 2004 FEIS, as of 2001 there were over 150,000 motor vehicle trips per average weekday on I-90. *See* page 3.2-4 of FEIS. Of that total, there were over 65,000 vehicle trips per day on I-90 going to and from Mercer Island. *Id.* At those volumes, Mercer Island traffic represented 18% of the total weekday traffic on the I-90 floating bridges, and about 23 percent of the total weekday traffic on the East Channel bridge. *Id.*

The Record of Decision on the I-90 Two-way Transit and HOV Operations project, issued September 2004, further evidences that the two

center lanes of I-90 are presently needed for highway purposes. The Record of Decision states that the ten (10) highway lanes of R-8A --- two more highway lanes than the existing configuration --- **"best improves regional mobility."** *See* page 10 of Record of Decision. The Record of Decision further states:

- In year 2005, Alternative R-8A would result in the lowest travel times for transit in the reverse-peak direction....[and] result in the best improvements in transit reliability in the reverse-peak direction.
- In the peak periods, transit ridership would be improved....In the off-peak periods, for the year 2025, transit ridership is predicted to be greatest with Alternative R-8A.
- HOV usage is predicted to be the highest with Alternative R-8A for both year 2005 and year 2025.

See page 11 of Record of Decision. In addition, the Record of Decision states:

> "Among the alternatives, Alternative R-8A has the **greatest** effect in minimizing impacts to other users and transportation modes and would greatly improve conditions as compared to the No Build Alternative:
>
> - For other freeway users, Alternative R-8A is predicted to result in the lowest travel times for both the AM and PM peak periods.
> - Alternative R-8A would reduce the existing approximately 8 hours of congestion to less than 2 hours (remaining at less than 2 hours by year 2025), unlike the other alternatives which maintain or increase hours of congestion as compared to the No Build Alternative.
> - Alternative R-8A would have the greatest reduction in person hours of travel of all alternatives, a reduction of 15% in year 2005 and 32% in year 2025 as compared to the No Build Alternative.
> - Alternative R-8A would reduce delay for persons traveling on transit by the greatest percentage as compared to all alternatives.

- Alternative R-8A would have the lowest delay for persons traveling in the general purpose lanes of all alternatives."

Id.; *see also* Declaration of Jim Horn and attached charts previously submitted with Appellants' briefing materials.

Sound Transit and WSDOT admit that "[t]he added capacity with Alternative R-8A [which provides for ten motor vehicle lanes across the floating bridges rather than just eight] would allow for increased flow and consequently, better travel times through the project corridor." *See* page 3.2-32 through 33 of 2004 FEIS, and Table 3.2-12 in Appendix Exhibit 1. That was Sound Transit and WSDOT's joint determination as of May 2004 and as studied through the design period of 2025 --- a determination contrary to the recent assertions of WSDOT that the center lanes are "not presently needed".

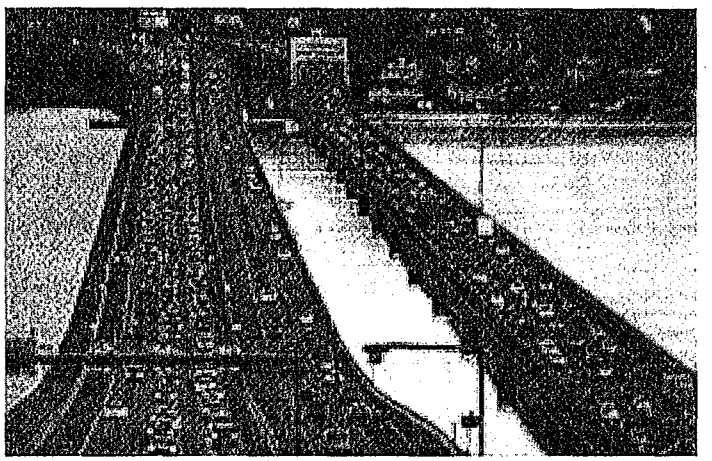
WSDOT plans to close the I-90 center lanes in 2016. *See* Appendix Exhibit 2. There can be no argument that the lease of the I-90 center lanes will not only impair, but completely eliminate the use of the center lanes for highway purposes.

(2) <u>The I-90 Center Lanes are Presently Needed for Vital Highway Purposes</u>

Clearly, there should be no argument that the center lanes of I-90 are surplus lands lying idle. They are heavily used highway lanes which provide a vital connection and mobility for the residents, schools and

businesses of Mercer Island, as well as vital highway lanes for residents of other communities who use the center lanes between Seattle and Mercer Island as single occupancy drivers, carpools, vanpools and bus riders.

Please look again at the photo of I-90's segment between Seattle and Mercer Island during an evening rush hour.



The traffic in the center roadway includes SOVs for which **no** substitute lane is being provided for traffic to and from Mercer Island. The center lane also shows HOV traffic in the peak direction, for which the HOV capacity will be reduced from two lanes to one if the non-highway use (light rail) is placed there.

WSDOT's plan to re-configure the center lanes for exclusive use by light rail will have a profound negative impact on Mercer Island

residents and on other I-90 highway users when the total lane capacity of I-90 is reduced from ten (10) lanes to eight (8), and all motor vehicle traffic is displaced out of the center roadway. Sound Transit and WSDOT admit in the 2004 FEIS that the added capacity of ten (10) motor vehicle lanes is needed. *See* 2004 FEIS, pp. S-6, 1-1 and Record of Decision.

As an operating roadway configuration, R-8A provides significantly improved travel times in the subject I-90 segment, for both bus transit, HOV and single occupant vehicles. *See* 2004 FEIS, Table 3.1-2 ("Point to Point Travel Time") on page 3.1-10; Table 3.1-7 ("Comparison of Operational Impacts on Transit and HOV"), page 3.1-30; and Record of Decision.

Under the current configuration (before the R-8A roadway project is completed), during peak commuting hours motor vehicle drivers have a total of five highway lanes in the peak direction (three general purpose lanes and two HOV lanes). Under the planned R-8A configuration, there would be six highway lanes flowing in the peak direction, with SOV traffic destined to and from Mercer Island continuing to share the two center "express" lanes.

With light rail in the center lanes (eliminating highway use of those two lanes), there would be a very significant reduction in lane capacity from the needed 10 lane configuration of R-8A. Concurrent with

loss of highway lane capacity is an increase in travel time and highway congestion. Light rail is predicted to increase vehicle delay on the I-90 bridge by 27% during the morning commute and 24% in the afternoon commute. *See* Michael Ennis, *Part IV: Light Rail and Interstate 90, (www.washingtonpolicy.org/Centers/tranportation/policynote/07_ennis_partiv.html)*(based on data from WSDOT's July 2006 I-90 Center Roadway Study); *see also* Declaration of Jim Horn submitted by Appellants.

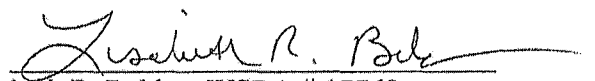
This added congestion will not only affect those who live on Mercer Island, but those who work, go to school, deliver goods and services, and do business there as well. The economic impact on property values and the desirability of Mercer Island as a location for homes and schools and businesses will be likewise negatively impacted by the elimination of highway use of the two center lanes. More globally, the elimination of two highway lanes that are obviously presently used and in the future needed for highway purposes, and the increased congestion and increased motor vehicle travel times that will result, will hurt families, workers, businesses, freight, and commerce.

E. CONCLUSION

WSDOT is not proposing here to lease an unused grassy median strip, or vacant or unused highway lands. The I-90 express lanes are existing, paved and highly used highway road lanes with important

highway use for motor vehicles. The center lanes have been heavily used since they were first built with protected 18th Amendment funds, and they would continue to be heavily used by highway vehicles for the lifetime of the floating bridges but for the contemplated illegal transfer. The Court should prohibit the transfer under the 18th Amendment, and as violating the state's lease statutes.

Dated this 18th day of January 2013.

By: 

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APPENDIX

EXHIBIT 1

I-90 Two-Way Transit and HOV Operations

Volume I - Final Environmental Impact Statement

May 21, 2004

SOUNDTRANSIT

U.S. Department of Transportation
Federal Highway Administration

Washington State
Department of Transportation

FHWA-WA-EIS-03-01-F

I-90 Two-Way Transit and HOV Operations
King County, Washington
Final Environmental Impact Statement

Submitted Pursuant to National Environmental Policy Act (NEPA) 42 U.S.C. 4332(2)(c) and 49 U.S.C. 303 and State Environmental Policy Act (SEPA) RCW 43.21C and WAC 197-11 and WAC 468-12
by the
U.S. Department of Transportation, Federal Highway Administration,
Washington State Department of Transportation, Central Puget Sound Regional Transit Authority (Sound Transit),
and in cooperation with Federal Transit Administration

4/22/04
Date of Approval

P. Weinberg
Perry Weinberg, Environmental Compliance Manager
Central Puget Sound Regional Transit Authority

4/21/04
Date of Approval

Megan White
Megan White, Director of Environmental Services
Washington State Department of Transportation

4/27/04
Date of Approval

Daniel M. Mathis, Division Administrator
Federal Highway Administration

This action complies with Executive Order 11988, Floodplain Management; Executive Order 11990, Protection of Wetlands; and Executive Order 12898, Environmental Justice.

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This document is an environmental review of the proposed I-90 Two-Way Transit and HOV Operations Project. The purpose of this Project is to provide reliable two-way transit and HOV operations on I-90 between Bellevue and Seattle while minimizing impacts to other users and transportation modes. The primary goal of Sound Transit's I-90 proposal is to improve speed, reliability and access for regional transit. There is also a strong interest by the project partners to improve travel by high occupancy vehicles (HOV, or carpools and vanpools) in the corridor. The need for the Project has been established through state, regional and local planing efforts. The document assesses the environmental impact of four project alternatives that have been designed to meet the need for the Project and also considers the impact of taking no action with respect to the Project.

S.3 PURPOSE OF THE PROJECT

The purpose of the proposed Project is to improve regional mobility by providing reliable and safe two-way transit and HOV operations on I-90 between Bellevue and Seattle, while minimizing impacts to the environment and to other users and transportation modes.

S.4 NEED FOR THE PROJECT

Transit and HOV are critical components of regional transportation. Currently during the AM peak hour, there are 34 westbound and 9 eastbound buses crossing Mercer Island. During the PM peak hour it is the opposite. Transit carries about up to 15 percent of person-trips in the peak direction (i.e., westbound to Seattle in the AM peak period and eastbound to Bellevue in the PM peak period) and about 5 percent in the reverse-peak direction. In addition, carpools and vanpools compose a large portion of the peak period travel on I-90 between Bellevue and Seattle. Carpools make up a total 15 to 22 percent of the total peak hour traffic in the peak direction (to and from Seattle) on the center and outer roadways, accounting for 24 to 34 percent of the peak direction person-trips in the corridor. In the reverse-peak direction on the outer roadways to and from Eastside communities, carpools represent 9 to 17 percent of the vehicle traffic and account for 17 to 29 percent of the overall person trips.

Volumes on the existing general-purpose lanes currently exceed 90 percent of the available capacity during both peak periods and in both directions. This volume results in ongoing delays to buses traveling in the reverse-peak direction along I-90. Currently in the reverse-peak direction, the congested and unstable flow of traffic affects transit operations and HOVs because they must operate along with general-purpose traffic. This causes a lack of predictability in meeting published transit schedules. Route 550 is illustrative of this situation. Route 550, which provides service between Bellevue and Seattle on I-90, provides reliable service in the peak direction during the AM and PM peak periods. In the reverse-peak direction, buses often start on time but travel progressively further behind schedule as the trips continue across I-90. During the PM peak period, only 35 to 40 percent of the westbound trips from Bellevue (buses traveling in the reverse-peak direction) are on schedule by the time they reach the Rainier Avenue S transit stop in Seattle. The rest of the trips range from 2 to 14 minutes late, some even as much as 20 minutes late. Most of this delay is directly related to I-90 traffic conditions.

By 2025, transit use of the I-90 corridor is expected to increase during the AM peak hour to 47 westbound and 14 eastbound buses. During the PM peak hour, the numbers are projected to be the opposite of the AM peak hour with 14 westbound and 47 eastbound buses. In 2025 transit would carry a greater percentage than today with up to 17 percent of the person trips in the peak direction and 7 percent in the reverse-peak direction. Carpools would fall to 15 to 26 percent of the person trips under the HOVs with three or more occupants (HOV 3+) rule. Transit reliability is expected to continue deteriorating as a result of the worsening levels of congestion on I-90. As congestion on I-90 worsens, all travel on the Lake Washington crossing is anticipated to become increasingly slow and less reliable. This is a special concern for regional express and local bus service, as well as carpools/vanpools operating in the reverse-peak direction. As peak-period travel demands continue to grow on I-90, extending the duration of congested periods, it will become increasingly important for transit to provide additional person-carrying capacity on this regional transportation link.

average travel speeds, a lack of passing opportunities with a single lane, and congestion in the vicinity of transit/HOV ramp merge points on Mercer Island. The latter would primarily be a factor in year 2005 conditions, when the center roadway would be open to HOV 2+ person carpools, which would result in higher traffic demand volumes than year 2025 conditions, when the center roadway would be expected to be limited to HOV 3+ carpools.

Table 3.1-2
Point to Point Travel Time
Rainier Avenue S Transit Station to East Channel Bridge
All Alternatives, Years 2005 and 2025

Roadway	Travel Time in Minutes[1]				
	R-1	R-2B	R-5R	R-5M	R-8A
Year 2005					
AM Peak Hour					
Reverse-Peak Direction					
Eastbound Outer GP Lanes	9.1	8.1	9.1	9.1	7.0
Eastbound Transit /HOV[2]	9.1	8.1	9.1	9.1	6.4
Peak Direction					
Westbound Outer GP Lanes	8.5	8.4	8.5	8.5	7.0
Westbound Outer HOV Lane	–	–	–	–	6.7
Westbound Center (Transit/HOV)	5.9	8.4	5.9	5.9	5.8
PM Peak Hour					
Peak Direction					
Eastbound Outer GP Lanes	9.1	9.5	9.1	9.1	6.9
Eastbound Outer HOV Lane	–	–	–	–	6.7
Eastbound Center (Transit/HOV)	5.9	8.6	5.9	5.9	5.8
Reverse-Peak Direction					
Westbound Outer GP Lanes	9.3	8.3	9.3	9.3	7.0
Westbound Transit /HOV[2]	9.3	8.1	9.2	8.5	6.5
Year 2025					
AM Peak Hour					
Reverse-Peak Direction					
Eastbound Outer GP Lanes	9.3	9.4	9.3	9.3	7.6
Eastbound Transit /HOV[2]	9.3	7.1	9.4	9.4	6.5
Peak Direction					
Westbound Outer GP Lanes	11.5	12.9	11.5	11.5	7.2
Westbound Outer HOV Lane	–	–	–	–	7.0
Westbound Center (Transit/HOV)	5.8	7.3	5.8	5.8	6.0
PM Peak Hour					
Peak Direction					
Eastbound Outer GP Lanes	9.5	9.5	9.5	9.5	6.9
Eastbound Outer HOV Lane	–	–	–	–	6.7
Eastbound Center (Transit/HOV)	5.8	7.9	5.8	5.8	5.9
Reverse-Peak Direction					
Westbound Outer GP Lanes	12.4	9.3	12.4	12.4	10.5
Westbound Transit/HOV[2]	12.4	7.4	9.9	9.5	7.2

Note: Travel times for buses stopping on Mercer Island would add 4 to 6 minutes to transit times.
[1] East Channel bridge to Rainier Avenue S Transit Station during peak-hour
[2] R-1 outer roadway, R-2B center roadway, R-5R & R-5M transit shoulder, R-8A HOV lane
Source: HNTB 2002

Table 3.1-7
Comparison of Operational Impacts on Transit and HOV

	R-1	R-2B Modified	R-5 Restripe and R-5 Modified	R-8A
2005				
Travel Times (between Bellevue Way SE and Rainier Ave T.S.)	6 minutes in peak direction. 9 minutes in reverse-peak direction.	8 – 9 minutes in peak direction. 8 minutes in reverse-peak direction.	6 minutes in peak direction. 9 minutes in reverse-peak direction.	6 minutes in peak direction. 6 – 7 minutes in reverse-peak direction.
Transit Reliability	Good reliability in peak direction. 55 – 60% of bus trips are off schedule (delayed) in reverse-peak direction.	Same as R-1 with HOV 3+; worse with HOV 2+ in peak direction. Improved in reverse-peak direction.	Same as R-1 in peak direction. Improved in reverse-peak direction.	Same as R-1 in peak direction. Improved in reverse-peak direction.
Transit Ridership During Peak Periods	6,200 in peak direction. 1,700 in reverse-peak direction.	6,500 in peak direction. 1,900 in reverse-peak direction.	6,500 in peak direction. 1,800 in reverse-peak direction.	6,500 in peak direction. 1,800 in reverse-peak direction.
Transit Ridership During Off-Peak Periods	1,800 in EB direction. 1,500 in WB direction.	2,000 in EB direction. 1,500 in WB direction.	1,800 in EB direction. 1,500 in WB direction.	1,800 in EB direction. 1,500 in WB direction.
HOV Usage	3,000 – 4,000 in each direction in each 3-hour peak period.	No change in AM peak period; 2% increase in westbound during PM peak period.	No change in either AM or PM peak periods.	2% increase in AM peak period; 2% increase in westbound during PM peak period.
2025				
Travel Times (between Bellevue Way SE and Rainier Ave T.S.)	6 minutes in peak direction. 12 minutes in reverse-peak direction.	7 – 8 minutes in peak direction. 7 minutes in reverse-peak direction.	6 minutes in peak direction. 9 - 10 minutes in reverse-peak direction.	6 minutes in peak direction. 7 minutes in reverse-peak direction.
Transit Reliability	Good reliability in peak direction. Continues to worsen with increased congestion in reverse-peak direction.	Same as R-1 with HOV 3+ in peak direction. Improved in reverse-peak direction.	Same as R-1 with HOV 3+ in peak direction. Improved in reverse-peak direction.	Same as R-1 but with HOV 2+ in peak direction. Improved in reverse-peak direction.
Transit Ridership During Peak Periods	10,800 in peak direction. 3,800 in reverse-peak direction.	10,900 in peak direction. 4,000 in reverse-peak direction.	10,900 in peak direction. 3,900 in reverse-peak direction.	10,900 in peak direction. 4,000 in reverse-peak direction.
Transit Ridership During Off-Peak Periods	3,800 in EB direction. 2,900 in WB direction.	3,900 in EB direction. 2,900 in WB direction.	3,800 in EB direction. 2,900 in WB direction.	4,000 in EB direction. 3,000 in WB direction.
HOV Usage	3,000 – 4,000 in each direction in each 3-hour peak period.	2% increase in westbound during AM peak period; 3% decrease in eastbound and 3% increase in westbound during PM peak hour.	No change in either AM or PM peak periods.	With HOV 3+ there would be a 10% increase in AM peak period; 2% increase in eastbound and 8% increase in westbound during PM peak period. With HOV 2+, these volumes would be much higher.

Notes: EB = eastbound, WB = westbound, T.S. = transit station

outer and center roadways. On weekdays, traffic levels increase due to added commute and business travel, as well as freight movement. The average weekday traffic (AWDT) on I-90 in 2001, including the center roadway, was 150,000 vehicles per day (vpd) across Lake Washington. The reversible center roadway accounted for 12,500 vpd of the weekday volume on the floating bridges, or about 8.3 percent of the weekday corridor volume.

During 2001, the overall directional split for traffic on the I-90 floating bridges during peak conditions, including the center roadway, was 55 percent westbound during the morning peak hour and 55 percent eastbound during the afternoon peak hour. Considering just the outer roadways, the directional distribution is nearly balanced in both directions in both peak periods. The 2001 peak-hour traffic volume on the floating bridges, including the center roadway, averaged approximately 12,500 vph during each of the AM and PM peak hours.

Mercer Island Traffic. During 2001, approximately 65,000 vehicles per day used the outer and center roadway ramps on Mercer Island. Of these vehicles, approximately 28,000 vpd, or 43 percent of the total, were oriented to and from Seattle, and 37,000 vpd, or 57 percent of the total, were oriented to and from the Eastside suburbs. At these volumes, Mercer Island traffic represents about 18 percent of the total weekday traffic on the I-90 floating bridges, and about 23 percent of the total weekday traffic on the East Channel bridge.

Figure 3.2-1 shows the pattern of changes in peak-hour traffic volumes to and from Mercer Island. In general, peak-hour traffic volumes to and from Seattle (solid lines) have remained stable during the AM peak period but have decreased by about 10 percent during the PM peak period between 1996 and 2002. Most of this PM peak period decrease has been observed in the eastbound center roadway traffic to Mercer Island. Mercer Island traffic, at approximately 850-900 vehicles per hour, makes up 45-50 percent of the total center roadway traffic on the floating bridge during the AM and PM peak hours. Peak-hour Mercer Island traffic volumes to and from the Eastside (dotted lines) have remained stable (PM peak hour) or increased slightly (AM peak hour) during the same period.

Truck Traffic. Trucks are estimated to comprise about 3 to 4 percent of the daily traffic volume in the I-90 corridor between I-5 and I-405, equating to approximately 4,500 trucks traversing the corridor each weekday. Additional detail concerning truck traffic and patterns is provided in Section 3.5, Freight Movement.

Levels of Service

The ranges of density used to define levels of service for basic freeway sections are shown in Table 3.2-1. Density is measured in terms of passenger cars per mile per lane (pc/mi/ln).

Tables 3.2-2 through 3.2-4 summarize operating measures and levels of service for the I-90 eastbound outer roadway, westbound outer roadway, and reversible roadway for existing peak hour operating conditions. The operating measures include density (pc/mi/ln), speed in miles per hour (mph), and the ratio of volume to roadway capacity (V/C).

Table 3.2-12
General Purpose Traffic – Corridor Travel Time I-5 to I-405
All Alternatives, Year 2005 and 2025

Roadway	Travel Time in Minutes[1]				
	R-1	R-2BM	R-5R	R-5M	R-8A
AM Peak Hour, 2005					
Eastbound Outer (reverse-peak direction)	11.5	10.4	11.5	11.5	9.0
Westbound Outer (peak direction)	10.1	9.9	10.1	10.1	8.4
PM Peak Hour, 2005					
Eastbound Outer (peak direction)	11.6	13.8	11.6	11.6	8.9
Westbound Outer (reverse-peak direction)	10.7	9.8	10.7	10.7	8.3
AM Peak Hour, 2025					
Eastbound Outer (reverse-peak direction)	15.4	14.7	15.4	15.4	9.6
Westbound Outer (peak direction)	13.1	14.4	13.1	13.1	8.6
PM Peak Hour, 2025					
Eastbound Outer (peak direction)	13.7	13.8	13.7	13.7	9.0
Westbound Outer (reverse-peak direction)	13.8	10.8	13.8	13.8	11.8

Note:
[1] Travel times are from I-5 to I-405 during peak-hour

Source: HNTB 2002 Alternative R-2B Modified

Travel times for general purpose traffic, with one lane of the center roadway available to HOV, would be approximately 1 minute shorter relative to Alternative R-1 in the reverse-peak directions for year 2005. The westbound AM peak travel time would be similar to that in Alternative R-1, but the eastbound PM peak travel time would degrade by approximately 2 minutes relative to Alternative R-1. Most of the travel time difference in the eastbound PM peak direction between Alternative R-2B Modified and Alternative R-1 would take place between I-5 and the Rainier Avenue S ramps. A bottleneck would occur at this location as a result of only one lane being available to traffic entering the center roadway. Similar patterns would take place in year 2025 in the reverse-peak directions. In the eastbound PM peak direction, congestion levels between I-5 and the Rainier Avenue S ramps would be similar between Alternatives R-1 and R-2B Modified. In the westbound AM peak direction, congestion levels would increase with Alternative R-2B Modified in the vicinity of the Shorewood slip ramp to the center roadway, and would account for the increase in travel time."

Alternatives R-5 Restripe and R-5 Modified

General purpose traffic would not be provided with any travel time advantage with Alternatives R-5 Restripe and R-5 Modified.

Alternative R-8A – Preferred Alternative

The HOV lanes in the outer roadways would provide the lowest travel times for general purpose traffic. Travel time savings of approximately 2 minutes relative to Alternative R-1 would be experienced in year 2005 for both the AM and PM peak hours in both the peak and reverse-peak

2005. The delay portion of total person-hours was further analyzed by mode. These results are presented in Table 3.2-16 in terms of minutes of delay per person. These figures represent the delay encountered by travelers on I-90 between 4th/5th Avenues S in Seattle and I-405 in Bellevue.

Table 3.2-16
Average Weekday Delay per Person by Transportation Mode
All Alternatives, Year 2005 and 2025

	Minutes of Delay[1] and Percent Change Relative to Alternative R-1								
	R-1	R-2B		R-5R[2]		R-5M[2]		R-8A	
Year 2005									
Transit									
Peak Direction	0.1	2.0	1900%	0.1	0	0.1	0	0.1	0
Reverse-Peak	4.5	2.1	-53%	4.0	-11%	3.4	-24%	1.3	-73%
Two-Way	**1.0**	**2.0**	**100%**	**1.0**	**0**	**0.8**	**-20%**	**0.3**	**-70%**
Carpool									
Peak Direction	1.5	2.6	73%	1.5	0	1.5	0	1.2	-20%
Reverse-Peak	1.9	1.5	-21%	1.9	0	1.9	0	1.2	-37%
Two-Way	**1.7**	**2.1**	**24%**	**1.7**	**0**	**1.7**	**0**	**1.2**	**-29%**
General Purpose									
Peak Direction	12.2	13.7	12%	12.2	0	12.2	0	12.3	1%
Reverse-Peak	6.3	4.8	-24%	6.3	0	6.7	6%	2.8	-56%
Two-Way	**9.6**	**9.7**	**1%**	**9.6**	**0**	**9.8**	**2%**	**8.0**	**-17%**
Year 2025									
Transit									
Peak Direction	0.0	1.5	NA	0.0	NA	0.0	NA	0.1	NA
Reverse-Peak	10.2	1.5	-85%	2.5	-75%	2.2	-78%	1.3	-87%
Two-Way	**2.7**	**1.5**	**-44%**	**0.7**	**-74%**	**0.6**	**-78%**	**0.4**	**-85%**
Carpool									
Peak Direction	3.3	3.2	-3%	3.3	0	3.3	0	1.0	-70%
Reverse-Peak	7.5	1.3	-83%	7.5	0	7.5	0	0.6	-92%
Two-Way	**4.8**	**2.5**	**-48%**	**4.8**	**0**	**4.8**	**0**	**0.8**	**-83%**
General Purpose									
Peak Direction	20.9	26.2	25%	20.9	0	20.9	0	7.1	-66%
Reverse-Peak	18.5	17.5	-5%	19.0	3%	20.1	9%	10.9	-41%
Two-Way	**19.8**	**22.0**	**11%**	**20.0**	**1%**	**20.5**	**4%**	**8.9**	**-55%**

Note: [1] Delay time is calculated from 4th Avenue to I-405 for mainline, ramp, and incident delay, summed over both six-hour AM and PM peak periods.
[2] Alternatives R-5 Restripe & R-5 Modified
[3] Peak direction and reverse-peak direction information has been added to the FEIS.
Source: HNTB 2003

The variability of travel time (i.e., reliability) is not included directly in these measures. In 2005, transit users would experience about 1 minute of delay in Alternative R-1, 2 minutes in Alternative R-2B Modified, and less than one minute in all other alternatives. The increase for Alternative R-2B Modified reflects deterioration of travel times in the peak direction on the center roadway. Although there would be improved travel times in the reverse-peak direction, transit ridership would be lower in these directions of travel, and thus insufficient to offset the peak-direction effects. Transit delay for Alternatives R-5 Restripe and R-5 Modified would be

Potential rates of injury crashes could range between 0.31 to 0.43 injury crashes per MVM in 2005 and 0.32 to 0.43 injury crashes per MVM in 2025. The number of potential injury crashes could increase between 5 and 25 annually, representing an increase of up to 16 percent over the estimates for Alternative R-1.

Alternative R-8A – *Preferred Alternative.* Alternative R-8A would provide for transit and carpool operations in high-occupancy vehicle (HOV) lanes that would be established on the eastbound and westbound outer roadways. This would be accomplished with a combination of minor widening and cross-section revisions, including the adoption of lanes and shoulders of non-standard width in the corridor. The HOV designation would be assigned to the inside (median) lane, extending from approximately the Mount Baker Ridge tunnel/lid to the existing Shorewood slip ramps on Mercer Island, where they would connect to the existing inside HOV lanes along I-90 eastward to Issaquah. The portion of the corridor affected by the reduced-width lanes and shoulders would extend from I-5 to the East Channel bridge. Proposed lane and shoulder widths in each corridor section are described in Chapter 2, Section 2.2.5; approximately 60 percent of the corridor would have an outside shoulder 8 feet wide or wider, which would be adequate for use as a refuge for disabled vehicles; approximately 40 percent of the corridor lanes would be the standard 12-foot width.

As described in Section 3.2.1.1 - Existing Conditions, precedent exists for the application of reduced lane and shoulder widths to implement HOV lanes on interstate highway facilities. In addition, I-90 operated for several years in an interim condition that provided a westbound lane configuration similar to that proposed with Alternative R-8A, e.g., with 11-foot wide travel lanes and shoulders 2 to 6 feet in width. Comparative crash rates for these types of facilities are shown in Figure 3.2-2.

Safety issues that arise in the context of this design approach include the lateral placement of vehicles within the non-standard lanes, inadvertent lane line crossings, and limited maneuvering area for large trucks within the traffic stream. The utility of the remaining shoulders for emergency recovery maneuvers, refuge for disabled vehicles, motorist assistance activities, emergency incident response, highway maintenance activities, and traffic law enforcement is also an issue. For these reasons, Alternative R-8A would incorporate crash reduction measures to address these concerns. Enhancements to existing delineation and signing, lighting systems, and incident management programs; design features such as shoulder rumble strips, refuge areas, and additional widening to improve sight distances; and speed management measures would be provided (see Section 3.2.3.1 for additional information). Additionally, the reduction of overall congestion levels in the I-90 corridor would provide safety benefits by reducing congestion-related crashes in the outer roadways, although some concern exists regarding the potential migration of congestion-related crashes to the vicinity of the system interchanges at I-5 and I-405.

By 2005, Alternative R-8A could result in an increase of 10 to 150 crashes compared to Alternative R-1. Potential crash rates could range between 0.81 to 1.25 crashes per MVM. By 2025, the increase in crashes relative to Alternative R-1 could be 5 to 145 crashes. Potential year 2025 crash rates are estimated to be the same as those for year 2005, as Alternative R-8A would continue to provide congestion relief similar in magnitude to that which would occur in the year 2005. Potential rates of injury crashes could range between 0.3 to 0.62 injury crashes per MVM

in 2005 and 0.3 to 0.62 injury crashes per MVM in 2025. The number of injury crashes could potentially increase up to 115 injury crashes annually, or about 76 percent, relative to Alternative R-1.

Incidents

Annual incident frequency was estimated based on combined traffic volumes during the hours that WSDOT operates the Incident Patrol. The number of potential annual incidents for all alternatives is shown in Table 3.2-17. Enhanced incident management would be provided on the sections of the corridor with restricted shoulder widths for all Build Alternatives. See Section 3.2.3.4.

Alternative R-2B Modified. Incidents in the outer roadways would increase by 1 to 2 percent compared to Alternative R-1. With the lanes reduced from 2 to 1 in the center roadway, traffic that would use the center roadways today would be diverted to the outer roadways.

The total number of incidents in the center roadway would be fewer than Alternative R-1, but the number of blocking incidents would increase. For each direction of travel through most of the corridor, the median barrier in the center roadway would create an available width of about 19 feet with a 12-foot travel lane. The Mercer Island Shorewood section would have an available width of about 24 feet. Breakdowns in the narrower section could create more frequent blocking conditions. A passenger car breakdown would not block the passage of flowing passenger cars, but could impede or block the passage of a bus. A disabled bus could allow passenger cars to pass, but a following bus would block traffic flow completely. An incident response and clearance plan would be part of Alternative R-2B Modified.

Alternatives R-5 Restripe and R-5 Modified. The total number of incidents in the outer roadways would be the same as Alternative R-1, but the number of blocking incidents would increase. For Alternative R-5 Restripe a 10 percent increase would be due to buses using the outside shoulder in the reverse-peak direction and eliminating this shoulder as a refuge for vehicles in trouble.

Blocking incidents in the outer roadways for Alternative R-5 would increase 48 to 50 percent. Although, Alternative R-5 Modified would be identical to R-5 Restripe in the eastbound direction, the transit shoulder in the westbound direction would be located on the inside. Any westbound vehicle seeking refuge in the shoulder, regardless of peak or reverse-peak direction, would have to realize that the shoulder is on the left. An incident response and clearance plan would be part of both R-5 Alternatives.

Alternative R-8A – *Preferred Alternative*. Incidents in the outer roadways would increase by 5 percent or less compared to Alternative R-1, but blocking incidents would increase from 110 to 123 percent. The increases would be due to the additional lane of traffic and corresponding additional volumes in each direction. Through much of the corridor, inside shoulder widths would be reduced to 2 feet. However, in the westbound direction on the HMH floating bridge and through the First Hill lid, the reduced shoulder width would be located on the right-hand side. Like Alternative R-5 Modified, any westbound vehicle seeking refuge in these sections would have to move to the left. An incident response and clearance plan would be part of Alternative R-8A.

In 2005, incidents in the center roadway would decrease relative to Alternative R-1. With the availability of the outer roadway HOV lane, fewer carpools would be using the center roadway. In 2025, The number of incidents would increase relative to Alternative R-1 because the volume of traffic in the center roadway for Alternative R-8A would be higher. Carpool eligibility under Alternative R-8A in 2025 would continue to be HOV 2+ while Alternative R-1 would have changed the eligibility to HOV 3+.

Table 3.2-17
Potential Annual Incidents
All Alternatives, Year 2005 and 2025

Year/Roadway	Alternative				
	R-1	R-2BM	R-5R[1]	R-5M[1]	R-8A 2+
Year 2005					
Outer Roadways					
Total Incidents	810	820	810	810	850
Change from R-1		+1%	0%	0%	+5%
Blocking Incidents	240	245	265	360	535
Change from R-1		+2%	+10%	+50%	+123%
Center Roadway					
Total Incidents	80	75	80	80	65
Change from R-1		-6%	0%	0%	-19%
Blocking Incidents	10	40	10	10	10
Change from R-1		+300%	0%	0%	0%
Year 2025					
Outer Roadways					
Total Incidents	970	1000	970	970	975
Change from R-1		+3%	0%	0%	+<1%
Blocking Incidents	290	300	320	430	610
Change from R-1		+3%	+10%	+48%	+110%
Center Roadway					
Total Incidents	60	30	60	60	90
Change from R-1		-50%	0%	0%	+50%
Blocking Incidents	10	15	10	10	15
Change from R-1		+50%	0%	0%	+50%

Note: [1] Alternatives R-5 Restripe & R-5 Modified.

Source: HNTB 2002

Maintenance and Operations

Alternative R-2B Modified. Alternative R-2B Modified would reduce the center roadway north side shoulder width on the HMH floating bridge from 12 feet to 5 feet. With this change, pontoon access could only be gained by closing the westbound center roadway, limiting access to the pontoons to off-peak periods, and increasing the cost of routine maintenance operations. Responses to alarms in the pontoons, which occur several times a month in the winter months, would require an emergency closure of the westbound center roadway. This would increase maintenance costs by requiring additional traffic control measures, and would decrease the reliability of the westbound center roadway for transit and HOV traffic, as responses to alarms cannot be deferred to off-peak period times.

In 2005, incidents in the center roadway would decrease relative to Alternative R-1. With the availability of the outer roadway HOV lane, fewer carpools would be using the center roadway. In 2025, The number of incidents would increase relative to Alternative R-1 because the volume of traffic in the center roadway for Alternative R-8A would be higher. Carpool eligibility under Alternative R-8A in 2025 would continue to be HOV 2+ while Alternative R-1 would have changed the eligibility to HOV 3+.

Table 3.2-17
Potential Annual Incidents
All Alternatives, Year 2005 and 2025

Year/Roadway	Alternative				
	R-1	R-2BM	R-5R[1]	R-5M[1]	R-8A 2+
Year 2005					
Outer Roadways					
Total Incidents	810	820	810	810	850
Change from R-1		+1%	0%	0%	+5%
Blocking Incidents	240	245	265	360	535
Change from R-1		+2%	+10%	+50%	+123%
Center Roadway					
Total Incidents	80	75	80	80	65
Change from R-1		-6%	0%	0%	-19%
Blocking Incidents	10	40	10	10	10
Change from R-1		+300%	0%	0%	0%
Year 2025					
Outer Roadways					
Total Incidents	970	1000	970	970	975
Change from R-1		+3%	0%	0%	+<1%
Blocking Incidents	290	300	320	430	610
Change from R-1		+3%	+10%	+48%	+110%
Center Roadway					
Total Incidents	60	30	60	60	90
Change from R-1		-50%	0%	0%	+50%
Blocking Incidents	10	15	10	10	15
Change from R-1		+50%	0%	0%	+50%

Note: [1] Alternatives R-5 Restripe & R-5 Modified.

Source: HNTB 2002

Maintenance and Operations

Alternative R-2B Modified. Alternative R-2B Modified would reduce the center roadway north side shoulder width on the HMH floating bridge from 12 feet to 5 feet. With this change, pontoon access could only be gained by closing the westbound center roadway, limiting access to the pontoons to off-peak periods, and increasing the cost of routine maintenance operations. Responses to alarms in the pontoons, which occur several times a month in the winter months, would require an emergency closure of the westbound center roadway. This would increase maintenance costs by requiring additional traffic control measures, and would decrease the reliability of the westbound center roadway for transit and HOV traffic, as responses to alarms cannot be deferred to off-peak period times.

With Alternative R-2B Modified, a median barrier would be used to separate opposing traffic. The barrier would become part of the center roadway facility. As with all roadway features, the barrier would have to be maintained. The likely median barrier to be placed would be pre-cast concrete. This type of barrier is placed in sections and pinned together. It resists lateral movement by a combination of inertial friction and the pins. The system is sufficient to prevent crossover vehicles from impacting opposing traffic, but usually results in some displacement of the barrier. With Alternative R-2B Modified, maintenance crews would need to reset the median barrier after crashes, which would require closure of the center roadway, possibly in both directions.

Alternatives R-5 Restripe and R-5 Modified. During the hours of transit shoulder operation, the outside shoulder would not be available for maintenance activities. When not operating as a transit shoulder, the wider outside shoulder would provide increased lateral clearance for maintenance activities.

With Alternative R-5 Modified, in the westbound Mount Baker Ridge tunnel and the First Hill lid, the outside shoulder would be reduced in width from the existing 10 feet to 4 feet. With this width reduction in the westbound direction, some routine maintenance operations such as sweeping shoulders and cleaning CCTV cameras would require closure of the adjacent travel lane.

The pontoons on the LVM floating bridge have access hatches on the north and south side of the bridge. North side hatches are accessible by boat from the lagoon between the two floating bridges. These hatches would continue to be accessible for routine maintenance. Access to the south side hatches is needed on an irregular and infrequent basis. South side hatches would continue to be accessible during the hours the transit shoulder would not be in operation. However, the hatches would need to be upgraded to accommodate transit bus wheel loads.

Drainage structures located on the outside shoulders would require replacement and/or upgrades to accommodate transit bus wheel loads. The grates and covers of these structures would need to be replaced more often with Alternative R-5 (Restripe or Modified) than with Alternative R-1.

Alternative R-8A – *Preferred Alternative*. Alternative R-8A would reduce the inside shoulders in the outer roadways, requiring a closure of the proposed HOV lane to maintain roadway features only accessible from the left side of the outer roadways. However, the existing inside shoulder is not sufficient to allow maintenance operations without closing the adjacent inside lane.

Outside shoulders in Mount Baker Ridge tunnels and the First Hill lid would be reduced in width from the existing 9-10 feet to 4 feet or less. With this width reduction in both directions, many routine maintenance operations such as sweeping shoulders and cleaning CCTV cameras would require closure of the adjacent travel lane.

The HMH floating bridge pontoons are currently reached via the center roadway. On the floating portion of the bridge, there is a 12-foot wide shoulder that is used by WSDOT maintenance forces for routine and emergency access to the pontoon access hatches. Alternative R-8A would reduce the available width of this shoulder to 10 feet, which would still

vehicles, the peak of congestion will be shorter in duration. However, given the heavily congested conditions along both floating bridge corridors, the capacity freed up by the shift to transit on I-90 is likely to replaced by traffic shifting from SR 520 or by travel demand that would otherwise be unmet across Lake Washington.

Details of the sensitivity analyses are located in Section 3.1.2 of Chapter 3 – Transportation.

5.2.7 Summary Comparison Table

Table 5-1 summarizes the operational impacts on transit and HOV for the build alternatives in comparison with Alternative R-1. The transit frequency for 2005 was estimated to be 34 westbound and 9 eastbound buses during the AM peak hour, and 9 westbound and 34 eastbound buses during the PM peak hour. For 2025, the transit frequency was estimated to be 47 westbound and 14 eastbound buses during the AM peak hour, and 14 westbound and 47 eastbound buses during the PM peak hour. Transit frequency was assumed to be the same for all alternatives (both No Build and Build).

Table 5-1
Comparison of Operational Impacts on Transit and HOV

	Alternative R-1	Alternative R-2B Modified	Alternatives R-5 Restripe and R-5 Modified	Alternative R-8A – Preferred
2005				
Travel Times (between Bellevue Way SE and Rainier Ave T.S.)	6 minutes in peak direction. 9 minutes in reverse-peak direction.	8 – 9 minutes in peak direction. 8 minutes in reverse-peak direction.	6 minutes in peak direction. 9 minutes in reverse-peak direction.	6 minutes in peak direction. 6 – 7 minutes in reverse-peak direction.
Transit Reliability	Good reliability in peak direction. 55 – 60% of bus trips are off schedule (delayed) in reverse-peak direction.	Same as R-1 with HOV 3+; worse with HOV 2+ in peak direction. Improved in reverse-peak direction.	Same as R-1 in peak direction. Improved in reverse-peak direction.	Same as R-1 in peak direction. Improved in reverse-peak direction.
Transit Ridership During Peak Periods	6,200 in peak direction. 1,700 in reverse-peak direction.	6,500 in peak direction. 1,900 in reverse-peak direction.	6,500 in peak direction. 1,800 in reverse-peak direction.	6,500 in peak direction. 1,800 in reverse-peak direction.
Transit Ridership During Off-Peak Periods	1,800 in EB direction. 1,500 in WB direction.	2,000 in EB direction. 1,500 in WB direction.	1,800 in EB direction. 1,500 in WB direction.	1,800 in EB direction. 1,500 in WB direction.
HOV Usage	3,000 – 4,000 in each direction in each 3-hour peak period.	No change in AM peak period; 2% increase in westbound during PM peak period.	No change in either AM or PM peak periods.	2% increase in AM peak period; 2% increase in westbound during PM peak period.

Table 5-3 (Continued)
Comparison of Operational Impacts on Transit and HOV

	Alternative R-1	Alternative R-2B Modified	Alternatives R-5 Restripe and R-5 Modified	Alternative R-8A – Preferred
2025				
Travel Times (between Bellevue Way SE and Rainier Ave T.S.)	6 minutes in peak direction. 12 minutes in reverse-peak direction.	7 – 8 minutes in peak direction. 7 minutes in reverse-peak direction.	6 minutes in peak direction. 9 - 10 minutes in reverse-peak direction.	6 minutes in peak direction. 7 minutes in reverse-peak direction.
Transit Reliability	Good reliability in peak direction. Continues to worsen with increased congestion in reverse-peak direction.	Same as R-1 with HOV 3+ in peak direction. Improved in reverse-peak direction.	Same as R-1 with HOV 3+ in peak direction. Improved in reverse-peak direction.	Same as R-1 with HOV 2+ in peak direction. Improved in reverse-peak direction.
Transit Ridership During Peak Periods	10,800 in peak direction. 3,800 in reverse-peak direction.	10,900 in peak direction. 4,000 in reverse-peak direction.	10,900 in peak direction. 3,900 in reverse-peak direction.	10,900 in peak direction. 4,000 in reverse-peak direction.
Transit Ridership During Off-Peak Periods	3,800 in EB direction. 2,900 in WB direction.	3,900 in EB direction. 2,900 in WB direction.	3,800 in EB direction. 2,900 in WB direction.	4,000 in EB direction. 3,000 in WB direction.
HOV Usage	3,000 – 4,000 in each direction in each 3-hour peak period.	2% increase in westbound during AM peak period; 3% decrease in eastbound and 3% increase in westbound during PM peak hour.	No change in either AM or PM peak periods	With HOV 3+ there would be a 10% increase in AM peak period; 2% increase in eastbound and 8% increase in westbound during PM peak period. With HOV 2+, these volumes would be much higher.

5.3 POTENTIAL IMPACTS TO OTHER USERS AND TRANSPORTATION MODES

5.3.1 Freeway Users

Table 5-2 summarizes the operational impacts for the Build Alternatives on I-90 (a distance of approximately 5.4 miles) in comparison with Alternative R-1.

Table 5-2
Comparison of Impacts on Freeway Users, Year 2005 and 2025

	Year	R-1	R-2B Modified	R-5 Restripe and R-5 Modified	R-8A – Preferred
Travel time - peak direction - AM	2005 2025	10.1 minutes 13.1 minutes	9.9 minutes (-2%) 14.4 minutes (+10%)	10.1 minutes (0%) 13.1 minutes (0%)	8.4 minutes (-17%) 8.6 minutes (-34%)
Travel time - peak direction - PM	2005 2025	11.6 minutes 13.7 minutes	13.8 minutes (+19%) 13.8 minutes (+1%)	11.6 minutes (0%) 13.7 minutes (0%)	8.9 minutes (-23%) 9.0 minutes (-34%)
Congestion duration - peak direction – Daily Total	2005 2025	7¾ hours 10 hours	8¾ hours (+13%) 10 hours (0%)	7¾ hours (0%) 10 hours (0%)	<2 hours (-74%) <2 hours (-80%)
Congestion duration – reverse-peak direction – Daily Total	2005 2025	8¼ hours 10¼ hours	5½ hours (-33%) 10¼ hours (0%)	8¼ hours (0%) 10¼ hours (0%)	<2 hours (-76%) 3¼ hours (-68%)
Person hours of travel	2005 2025	39,700 hours 73,000 hours	42,700 hours (+8%) 81,700 hours (+12%)	39,700 hours (<1%)(R-5R) 40,000 hours (<1%)(R-5M) 73,200 hours (<1%)(R-5R) 74,400 hours (+2%)(R-5M)	33,600 hours (-15%) 46,900 hours (-32%)
Delay/person traveling on Transit	2005 2025	1.0 minutes 2.7 minutes	2.0 minutes (100%) 1.5 minutes (-44%)	1.0 minute (0%)(R-5R) 0.8 minutes (-20%)(R-5M) 0.7 minutes (-74%)(R-5R) 0.6 minutes (-78%)(R-5M)	0.3 minutes (-70%) 0.4 minutes (-85%)
Daily Traffic Volumes (AWDT)	2005 2025	159,000 164,500	159,000 164,000	160,000 164,000	161,500 177,000
Delay/person traveling in Vanpools/Carpools	2005 2025	1.7 minutes 4.8 minutes	2.1 minutes (+24%) 2.5 minutes (-48%)	1.7 minutes (0%) 4.8 minutes (0%)	1.2 minutes (-29%) 0.8 minutes (-83%)
Delay/person traveling in GP Lanes	2005	9.6 minutes	9.7 minutes (+1%)	9.6 minutes (0%)(R-5R)	8.0 minutes (-17%)
Potential Number of Crashes per year*	2005 2025	320-365 355-410	285-365 (-11% to 0%) 325-415 (-8% to +1%)	380-465 (+15% to +27%)(R-5R) 335-460 (+5% to +26%)(R-5M) 435-535 (+17% to +30%)(R-5R) 375-510 (+6% to +24%)(R-5M)	330-515 (+3% to +41%) 360-555 (+1% to +35%)
Potential Crash Rate/MVM*	2005 2025	0.81-0.93 0.84-0.97	0.70-0.93 (-14% to 0%) 0.73-0.97 (-13% to 0%)	0.92-1.18 (+14% to +37%)(R-5R) 0.82-1.17 (+2% to +26%)(R-5M) 0.98-1.26 (+17% to +30%)(R-5R) 0.84-1.21 (0% to +25%)(R-5M)	0.81-1.25 (0% to +34%) 0.81-1.25 (-4% to +29%)

GP Lanes = general purpose lanes
MVM = Million Vehicle Miles

*Potential numbers of crashes and potential crash rates reflect a lower bound with all proposed crash reduction measures, and an upper bound without crash reduction measures. Values shown are for the I-90 outer roadways.

Hybrid Options Considered to Mitigate Congestion

Potential mitigation for impacts on freeways (I-90), transit, or other modes could include using several components of more than one of the studied alternatives and combining them into a project. The section below describes such a hybrid project option. The hybrid options are no longer under consideration with the identification of Alternative R-8A as the Preferred Alternative.

Several options that would combine the features of Alternatives R-2B Modified and R-8A were developed at a conceptual level of detail. These hybrid concepts were analyzed as a means to

incidents affecting the outer roadways were noted in the Freeway impacts. The outside right shoulders would continue to be available for breakdowns and stalls, but as trucks are more often in the outer lanes, the trucks would be impacted more and their travel times increased.

Alternatives R-5 Restripe and R-5 Modified

Even though the widths of two travel lanes and one shoulder would be reduced, truck lane distribution would be similar to Alternative R-1. Trucks transporting flammable cargoes would continue to use the I-90 corridor and tunnels. Travel speeds and the duration of congestion would be similar to Alternative R-1. Any redistribution of truck traffic to less congested hours of the day, or shifts to other corridors, would be similar to that experienced in Alternative R-1. The number of incidents and crashes would be similar to Alternative R-1. In R-5 Restripe, the outside right shoulders would be available for breakdowns. In R-5 Modified, the outside (right) shoulder of the outer roadway would be available to serve stalled vehicles and breakdowns in the eastbound direction. In the westbound direction, the inside (left) shoulder would serve breakdowns and stalls.

Alternative R-8A – Preferred Alternative

With Alternative R-8A, the width of the shoulders would be reduced in the outer roadway through the Mount Baker Ridge tunnel and the First Hill lid. As a result, trucks carrying flammable cargoes may be prohibited from the I-90 tunnels, however no decision has been made by WSDOT or FHWA at the time of preparing this EIS. If prohibited from using the I-90 tunnel and lid, trucks carrying these cargoes would be required to use other regional routes. Trucks that currently cross the lake with these cargoes would reroute to the SR 520 floating bridge (North Alternate Route) or the I-405/I-5 (South Alternate Route). These diversions would affect about 90 trucks daily in each direction of travel (a total of 180 trucks) or about 4 percent of trucks currently using the I-90 corridor in year 2005. The total is projected to increase to a total of 220 trucks, 110 in each direction, by year 2025. Currently, many of these trucks that are carrying flammable liquids obtain their loads on Seattle's Harbor Island from the Olympic Pipeline distribution points, and then use northbound I-5 or local streets in Seattle's industrial area south of downtown to access eastbound I-90. The rerouting of flammable cargo would increase the number of trucks on I-5 either south from Harbor Island to Renton or north to SR 520.

The annual number of all potential crashes could increase compared to Alternative R-1 with the non-standard lane and shoulder widths. Various design features would be implemented that would reduce this increment. Without these design features, truck involvement in crashes could rise to levels observed in other Interstate corridors with similar geometrics. Additional crash exposure would be generated on alternative routes by the additional travel associated with the flammable cargoes.

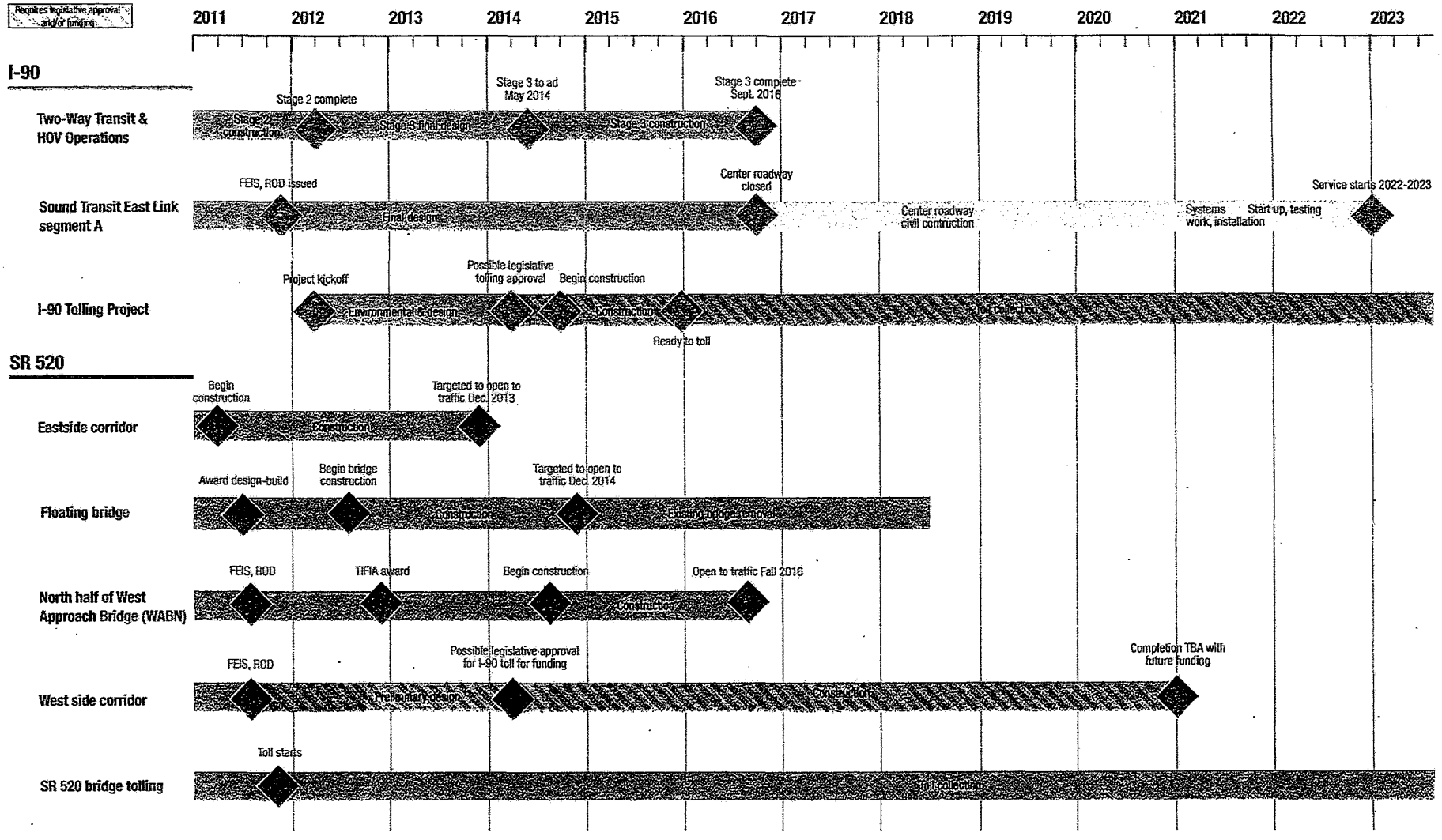
The prohibition of flammable cargoes in the I-90 tunnels and lids requires consideration of both the frequency of occurrence and the consequences of crashes resulting in fires. WSDOT is committed to further study of the issues associated with the movement of flammable liquid cargo in the I-90 tunnels, and means of managing the risks associated with the movement of flammable liquid cargo on I-90 in an attempt to allow the continued use of the I-90 tunnels and lids by trucks carrying flammable liquid cargo. If this effort results in a policy decision to prohibit these trucks in the I-90 tunnels and lids, WSDOT is committed to further studying means of managing risks associated with the movement of trucks on alternate routes. These operational decisions

EXHIBIT 2

Cross-Lake Washington Transportation Projects Outlook

Washington State Department of Transportation

Revision: 1/7/13



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Good afternoon,

Attached please find the following documents on behalf of Save MI SOV, in *Freeman et al v. State of Washington*:

Amicus Curiae Brief
Declaration of Service
Motion for Leave to File

Any questions, please advise.

Best,

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