| | |
|---|---|
| **From:** | Jim MacIsaac |
| **To:** | SR 520 DEIS Comments; |
| **CC:** | Will Knedlik; Truess, Ward; Todd Woosley; Rowan Hines; Richard Tait; Rich Harkness; Jim Horn; Kargianis, George; Dick Paylor; Dave Elliott; Bruce Nurse; Bill, Sr Popp; Bill Eager; Fred Foster; |
| **Subject:** | Comments on the SR 520 Bridge Replacement DEIS |
| **Date:** | Tuesday, October 31, 2006 5:39:47 AM |
| **Attachments:** | JWM Comments on DEIS.pdf |

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Mr. Krueger --

Attached are my comments on the subject DEIS documents. I do hope they will not only draw responses, but that they will also be instrumental guiding some revisions and additions to the Final EIS.

Sincerely,
James W. MacIsaac, P.E.

**JAMES W. MACISAAC, P.E.**

381 - 129th Place NE ** Bellevue, WA 98005 ** Phone/Fax (206) 459-4653

E-mail: jimacisaac@qwest.net

**DATE:** October 31, 2006

**TO:** Paul Krueger, Environmental Manager

**FROM:** Jim MacIsaac

**SUBJECT:** Comments on the SR 520 Bridge Replacement DEIS

**I-1050-001**

I strongly support the 6-Lane Alternative with the Pacific Interchange option. However, it is grossly under-capacity to accommodate the mid-corridor traffic demand. It offers no capacity for growth in non-HOV vehicle and commercial freight movement across the lake. How does either of the build alternatives meet the WSDOT Congestion Relief Study mandated by the 2004 Legislative by ESHB 1163 Sec.222 (3)?

**I-1050-002**

Page ES1-8 queries "What happened to the 8-Lane Alternative?" It justifies dismissal of the 8-lane Alternative by stating that I-5 and I-405 have no capacity to absorb any traffic increase in the SR-520 corridor. What the DEIS fails to disclose is that only 60 to 65 percent of the corridor traffic travels from I-5 to I-405. The other 30 to 35 percent enters and exits the corridor between Montlake Boulevard in Seattle and Bellevue Way on the Eastside. But without any added mid-corridor lanes, the bridge has become the corridor's traffic bottleneck. This mid-corridor traffic demand justifies an additional GP lane each way between the Montlake/Pacific Interchange ramps and Bellevue Way on the Eastside to balance out corridor traffic capacity.

Over one year ago the Eastside Transportation Association (ETA) discussed this 6/8-lane Hybrid alternative with project staff. It would address most of the shortcomings of the two build alternatives addressed below. WSDOT promised to give this alternative a full evaluation in the Transportation Discipline Report appendix to the DEIS. It has not done so. Nor has it properly addressed the long traffic backups at each end of the bridge due to the "bridge bottleneck" and its lack of capacity to accommodate the mid-corridor traffic demands.

As will be seen below, the project team has misinterpreted its model traffic forecasts to justify its lack of attention to the bridge bottleneck problem that is so noticeable to bridge users during 4 to 6 hours each day and often for even longer periods.

There is a growing interest in constructing the bridge pontoons and their approach structures wide and deep enough to ultimately accommodate 8 traffic and transit/HOV lanes. That would allow a later decision as to use of the extra bridge width for exclusive transit lanes or for traffic relief of the bridge bottleneck. The bridge design and the EIS need to address this option.

The analysis of the 8-lane Alternative presented in Appendix U is seriously flawed. It modeled the 8-Lane alternative for SR-520 with a two-lane expansion of I-5 that is nowhere in the planning horizon. As a result of the SR-520 bridge bottleneck relief, Northeast Seattle traffic to/from the Eastside as well as to/from I-5 south shifted from the NE 45th/50th I-5 access ramps to Mountlake Boulevard and the Portage Bay Viaduct, and the vacated traffic capacity on the Ship Canal Bridge was filled with additional latent traffic demand from North Seattle.



**I-1050-001**

**Comment Summary:**

Pacific Street Interchange Option

**Response:**

See Section 1.2 of the 2006 Draft EIS Comment Response Report.

**I-1050-002**

**Comment Summary:**

8-Lane Alternative

**Response:**

See Section 1.1 of the 2006 Draft EIS Comment Response Report.

I-1050-003

## Corridor Traffic Demand Severely Constrained

Page ES2-2 of the DEIS states that daily traffic demand crossing the lake on SR-520 will increase from 113,300 now to 127,900 in 2030. This is a gross understatement of traffic demand for the SR-520 crossing of Lake Washington.

The bridge served 115,700 vehicle trips in 2000. The June 2002 travel models estimated traffic "demand" for the SR-520 bridge at 188,100 vehicle-trips per day by 2020 – a 62% increase in traffic demand on that corridor.

Total person-trip demand for the SR 520 bridge was estimated to increase by 88% between 2000 and 2020. About 55 percent of all vehicle and person trips crossing Lake Washington on both bridge corridors desire to travel via SR-520.

The 127,900 estimate quoted on page ES2-2 for 2030, ten years further into the future than the 2002 forecasts predicted for 2020, is what the No Build alternative for SR-520 is estimated to serve. The 4-Lane and 6-Lane alternatives are predicted to serve even fewer vehicle trips per day. How does the WSDOT justify a $3.9 to $4.4 billion bridge replacement project that serves less vehicular traffic than No Build?

Not only will the two build alternatives apparently provide less capacity for non-HOV and commercial freight truck traffic, the build alternatives propose to charge tolls for these unbenefited users. The benefited users in transit and 3+occupant HOVs will have free use of the expanded bridge project.

**June 2002 Trans-lake Travel Estimates[1]**

| Corridor<br>SR-520 Lanes | 2000<br>Baseline<br>4-Lane | 2020<br>Safety &<br>Preserve | 2020<br>Add HOV<br>6-Lane | 2020<br>HOV+GP<br>8-Lane |
|---|---|---|---|---|
| **Vehicle Trips** | | | | |
| SR-520 | 115,700 | 121,300 | 131,700 | 188,100 |
| I-90 | 149,800 | 165,700 | 164,600 | 159,800 |
| **Total** | **265,500** | **287,000** | **296,300** | **347,900** |
| **Person Trips** | | | | |
| SR-520 | 156,100 | 163,200 | 215,200 | 293,600 |
| I-90 | 198,300 | 245,900 | 236,100 | 232,400 |
| **Total** | **354,400** | **429,100** | **451,300** | **526,000** |
| **Persons/Veh** | **1.33** | **1.50** | **1.52** | **1.51** |

[1] Source: *Multimodal Alternatives Evaluation Report*, June 7, 2002.

**June 2005 Trans-lake Travel Estimates[2]**

| Corridor<br>SR-520 Lanes | 2030<br>No Build<br>4-Lane | 2030<br>Safety &<br>Preserve | 2030<br>Add HOV<br>6-Lane | 2030<br>HOV+GP<br>8-Lane |
|---|---|---|---|---|
| **Vehicle Trips** | | | | |
| SR-520 | 127,900 | 105,400 | 119,700 | N.A. |
| I-90 | 204,500 | 213,500 | 211,100 | N.A. |
| **Total** | **332,400** | **318,900** | **330,800** | N.A. |
| **Person Trips** | | | | |
| SR-520 | 200,100 | 198,700 | 228,900 | N.A. |
| I-90 | 322,600 | 322,800 | 314,600 | N.A. |
| **Total** | **522,700** | **521,500** | **543,500** | N.A. |
| **Persons/Veh** | **1.57** | **1.64** | **1.64** | **N.A.** |

[2] Source: Pelliminary Draft EIS, June 2005.

Where in the DEIS documents does one now find a tabulation of existing and 2030 total daily travel forecasts by mode? The source I once somehow found seems to have now been eliminated from the DEIS and its appendices.

## Travel Model Forecasts Misinterpreted?

The impact on I-5 of adding more traffic capacity to SR-520 has been misinterpreted by the study team. The study team concluded that I-5 is over-capacity and cannot withstand any traffic increases from the SR-520 corridor. Both the 6-Lane and the 6/8-lane Hybrid would result in a reduction of SR-520 bridge traffic to/from I-5.

Below are four diagrams of the Seattle side of the corridor from the floating bridge to I-5. The upper left diagram summarizes Existing (2004) PM peak hour traffic counts. The upper right



**I-1050-003**

**Comment Summary:**

Methodology (Freeway)

**Response:**

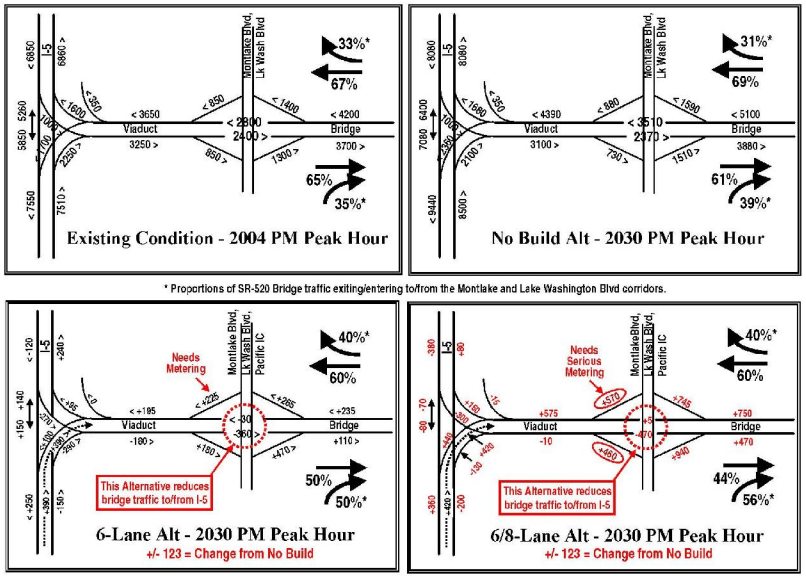
See Section 5.1 of the 2006 Draft EIS Comment Response Report.

**I-1050-003**

summarizes 2030 PM peak hour traffic forecasts from the study team models for the No Build Alternative. The 2030 No Build estimates represent a highly constrained future traffic condition for the SR-520 corridor, but appear to be a reasonable comparison to existing counts. Note how traffic inbound to Seattle during the PM peak hour, though severely capacity-constrained by the models, is considerably greater than outbound demand. In the morning traffic demand outbound from Seattle is greater than inbound traffic demand. The DEIS does not point out that corridor traffic is now and in the future dominated by Seattle-based commuters.

The bottom left and right diagrams summarize the model forecast changes with the 6-Lane and ETA 6/8-lane Hybrid alternatives, both including the new Pacific Interchange option. The Pacific Interchange option would include a widening of Montlake Boulevard to six lanes from NE 45th to NE Pacific Street to relieve the "Montlake Mess" as well as the Montlake Community bypass route. This is not very clearly pointed out in the DEIS, but is shown on page ES1-23.

Note that both the 6-Lane and 6/8-lane Hybrid alternatives reduce the amount of SR-520 bridge traffic to and from I-5 – not increase it. Unfortunately the models did not restrain the Montlake (Pacific Interchange) westbound on-ramp to the Portage Bay Viaduct. Consequently the bridge traffic reductions on the Portage Bay Viaduct and I-5 interchange ramps were more than offset by up to a 65% increase in traffic from Northeast Seattle that apparently shifts from I-5 access via its NE 45th/50th ramps to Montlake Boulevard and the short hop over to I-5 via SR-520.




Source: Traffic model data provided by the study team during May 2006.

James W. MacIsaac - 10/31/2006
\jwm\JWM Comments

**I-1050-003**

It is this huge model increase of Northeast Seattle traffic on the Portage Bay Viaduct that inappropriately led the study team to the conclusion that any traffic capacity enhancement of the SR-520 Bridge would cause traffic overloads on I-5. Both the 6-Lane alternative and even more particularly the 6/8-lane Hybrid would relieve SR-520 bridge traffic impacts on I-5.

When this modeling quirk was pointed out to the study team, it next claimed that the 6/8-lane Hybrid would overload the Pacific Interchange, Union Bay Bridge and Montlake Boulevard. The same modeling quirk creates these problems – the huge shift of Northeast Seattle traffic from the 45th/50th I-5 access to access via Montlake Boulevard and the Portage Bay Viaduct.

It is not reasonable to give one-third of the Portage Bay Viaduct capacity, and its I-5/SR-520 interchange capacity, away to this large unmetered shift of Northeast Seattle traffic while the greater regional trans-lake traffic demand remains severely capacity-constrained. Likewise, it is not reasonable to allow the capacity expansion of Montlake Boulevard to be given over to a shift of Northeast Seattle traffic access to I-5.

The FEIS must include a full evaluation of the ETA-proposed 6/8-lane Hybrid, but with severe ramp meter constraints on the SR 520 westbound on-ramp from Montlake Boulevard or the Pacific Interchange.

## Travel Time Analyses Questionable

The Transportation Discipline Report, pages 4-15 to 4-44, presents in great detail the model travel time findings between I-5 and 124th Avenue NE east of I-405. The findings are summarized in the adjacent tables to save the responders a lot of lookup time.

**Travel Time between I-5 and 124th Ave NE -- AM Peak**

| Ref: Appendix R - Fig. 4-11 | | | | Fig. 4-12 | Fig. 4-17 | | | Fig. 4-18 |
|---|---|---|---|---|---|---|---|---|
| | Westbound | | | Veh Trips: | Eastbound | | | Veh Trips: |
| | GP | HOV | | Demand/ | GP | HOV | | Demand/ |
| | Existing Conditions | | | Thruput | Existing Conditions | | | Thruput |
| 7:00 AM | 12 min | 10 min | | 3710 | 18 min | 18 min | | 3830 |
| 8:30 AM | 9 min | 9 min | | 3710 | 13 min | 13 min | | 3550 |
| | 2030 No Build Alt | | | | 2030 No Build Alt | | | |
| 7:00 AM | 27 min | 27 min | | 3900 | 22 min | 22 min | | 4360 |
| 8:30 AM | 86 min | 67 min | | 2890 | 19 min | 19 min | | 3560 |
| | 2030 4-Lane Alt | | | | 2030 4-Lane Alt | | | |
| 7:00 AM | 37 min | 37 min | | 3540 | 8 min | 8 min | | 3330 |
| 8:30 AM | 95 min | 71 min | | 2700 | 8 min | 8 min | | 2840 |
| | 2030 6-Lane Alt | | | | 2030 6-Lane Alt | | | |
| 7:00 AM | 34 min | 13 min | | 4420 | 8 min | 8 min | | 4010 |
| 8:30 AM | 101 min | 18 min | | 3080 | 8 min | 8 min | | 3380 |

**Travel Time between I-5 and 124th Ave NE -- PM Peak**

| Ref: Appendix R - Fig. 4-14 | | | | Fig. 4-15 | Fig. 4-20 | | | Fig. 4-21 |
|---|---|---|---|---|---|---|---|---|
| | Westbound | | | Veh Trips: | Eastbound | | | Veh Trips: |
| | GP | HOV | | Demand/ | GP | HOV | | Demand/ |
| | Existing Conditions | | | Thruput | Existing Conditions | | | Thruput |
| 4:30 PM | 20 min | 13 min | | 4020 | 9 min | 9 min | | 3580 |
| 6:00 PM | 17 min | 11 min | | 3930 | 9 min | 9 min | | 3530 |
| | 2030 No Build Alt | | | | 2030 No Build Alt | | | |
| 4:30 PM | 38 min | 31 min | | 4830 | 9 min | 9 min | | 3890 |
| 6:00 PM | 32 min | 26 min | | 3930 | 9 min | 9 min | | 3400 |
| | 2030 4-Lane Alt | | | | 2030 4-Lane Alt | | | |
| 4:30 PM | 10 min | 9 min | | 4320 | 8 min | 8 min | | 3090 |
| 6:00 PM | 10 min | 10 min | | 4120 | 8 min | 8 min | | 2780 |
| | 2030 6-Lane Alt | | | | 2030 6-Lane Alt | | | |
| 4:30 PM | 15 min | 14 min | | 5050 | 8 min | 8 min | | 3980 |
| 6:00 PM | 9 min | 8 min | | 4600 | 20 min | 8 min | | 3560 |

**Eastbound travel times** from I-5 to 124th NE look excellent for the 4 and 6-Lane Alts. However, no explanation is given as to why traffic throughput is reduced by 15%. Also no explanation is given as to why the No Build alternative with its poor geometric standards is predicted to carry more traffic eastbound than will the build alternatives, or why none in 2030 exceed existing condition.

Nor do the eastbound travel time studies explain how much delay and traffic backup will be experienced under the 6-Lane Alt by eastbound traffic entering from the Pacific Interchange ramp. A full lane of traffic from this on-ramp (1970 peak hour vehicles) must "smush" into the same two eastbound GP lanes feeding the bridge through Montlake.

I-1050-003

Quite certainly that eastbound on-ramp would need to be heavily metered, leading to significant traffic backups and delays not addressed in the DEIS. The unevaluated ETA 6/8-lane Hybrid would relieve that extreme ramp condition by adding a third eastbound GP lane beginning from that on-ramp. That lane addition would have no physical impact through Montlake and westward to I-5. But it would relieve what will likely be large traffic backups to Montlake Boulevard and through the Arboretum with the 6-Lane alternative.

**Westbound travel times** from 124th NE to I-5 present a real mystery outcome. During the AM peak period, travel times for non-HOVs and commercial freight vehicles by 8:30am were found to increase from 12 minutes under Existing Conditions to 86 minutes under No Build, to 95 minutes under the 4-Lane alternative, to 1 hour and 41 minutes with the 6-Lane alternative. And these findings are for less westbound traffic throughput on the bridge than the bridge is serving today. The reason for these findings was explained by the study team as the overload of westbound traffic feeding into I-5. But this root cause is invalid (see discussion above).

These findings (if they are meaningful) would mean westbound traffic on SR-520 would backup all the way into downtown Redmond and well back onto I-405 under all alternatives. These findings are hidden to view in the body of the DEIS, and even Appendix R provides no analysis of the tremendous impacts the long traffic backups will have on the Eastside freeway system.

Strangely, westbound travel time findings during the PM peak period are just the opposite from westbound conditions during the AM peak period. Although the bridge would serve much greater westbound traffic during the PM peak period as compared to the AM peak period volumes, the models show the build alternatives as reducing PM period travel time compared to Existing Conditions. Again the DEIS and even Appendix R provide no explanation as to why there are such huge westbound travel time differences between AM and higher PM peak period 2030 travel forecasts on the SR 520 bridge.

Page ES2-5 in the Executive Summary presents "A Morning in the life of a (Seattle eastbound) Commuter". That text box and the whole section on travel time needs to be revised to address each direction of travel. Using round-trip averages disguises the strange and potentially disastrous AM conditions found for eastbound travel. That condition requires mitigation.

## No Congestion Relief

Page ES1-4 of the Executive Summary states, "A second key reason for implementing this project now is the severe congestion in the SR 520 corridor. … this was the reason for initiating the original Trans-Lake Washington study in 1998."

Existing and forecasted 2030 daily and peak hour traffic throughput volumes are summarized in the adjacent table from Appendix R. In nearly all cases for the Build alternatives, the bridge will serve less traffic than it serves today.

Does this represent a reasonable approach to relief of the "severe congestion in the SR 520 corridor"?

**SR-520 Bridge Traffic Throughput**

| Vehicle Trips | 2000 Existing | 2030 No Build | 2030 4-Lane | 2030 6-Lane |
|---|---|---|---|---|
| Total Weekday | 115,700 | **127,900** | 105,400 | 119,700 |
| AM Peak Hour | | | | |
| Westbound | **3,710** | 2,890 | 2,700 | 3,080 |
| Eastbound | 3,550 | **3,560** | 2,640 | 3,380 |
| PM Peak Hour | | | | |
| Westbound | 3,930 | 3,930 | 4,120 | **4,600** |
| Eastbound | **3,530** | 3,400 | 2,790 | 3,500 |

Sources: DEIS Appendix R, Figures 4-12, 4-15, 4-18, 4-21.

James W. MacIsaac - 10/31/2006
\jwm\JWM Comments

I-1050-004

Near the conclusion of the original Trans-Lake Washington study in 2002, the total weekday person-trip "true demand" estimate for the SR 520 bridge was estimated to increase by 88% between 2000 and 2020. The vehicle trip demand was estimated to increase by 62% (see table on page 2 above). A significant part of these travel demand increases on the SR 520 corridor was associated with the need to expand SR 520 capacity to accommodate trans-lake travel preference for that route, which is 55% of trans-lake travel on both bridge corridors.

According to the DEIS information, total weekday person trips on the bridge by 2030 are now estimated to increase by 47% with the 6-Lane Alternative, and total weekday vehicle trips are estimated to increase by only 4% -- less than even the No Build daily traffic estimates. The 6-Lane alternative will only accommodate about 40% of total trans-lake travel. Quite obviously the highly capacity constrained condition of SR 520 under the 6-Lane Alternative caused the models to divert much of the trans-lake travel demand to the already overloaded I-90 corridor and cause much of the prior study travel demand growth forecasts to simply disappear.

The peak hour forecasts presented in the DEIS indicate a 60% growth in person trips on the bridge between 2000 and 2030 – better, but totally inconsistent with the total weekday estimates and the 2002 travel forecasts. The new DEIS forecasts show a 2% decrease in non-HOV and freight traffic between 2000 and 2030. This has to represent a growing level of traffic congestion on the GP lanes. Tolls could not cause no-growth in non-HOV traffic demand since there are no alternative routes with capacity to absorb trans-lake traffic growth demands.

To accommodate the travel growth that is acknowledged for the corridor, the new forecasts assigned all growth to 3+ occupant car/vanpools and to transit. Car/vanpool use is estimated to increase by as much as 170% (2.7 times 2000 use). Transit use is estimated to increase by 240% for morning peak period trips into Seattle and by 910% for trips outbound from Seattle during the morning peak period. These estimates appear to be wildly optimistic. Apparently the models had to find some way to accommodate even the greatly reduced corridor person-trip estimates since the 6-Lane alternative will only accommodate about a 10% increase in vehicle trips, and that is all assigned to car/vanpools.

I do hope that these comments will not only draw responses, but that they will cause change and improvement of the information to be provided in the FEIS.

Sincerely,

James W. MacIsaac

James W. MacIsaac, P.E.
Bellevue

James W. MacIsaac - 10/31/2006
\jwm\JWM Comments

**I-1050-004**

**Comment Summary:**

Methodology (Freeway)

**Response:**

See Section 5.1 of the 2006 Draft EIS Comment Response Report.