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Bellevue, WA. 98006
April 25, 2005

Dear Chairman Ladenburg,

Overview

A number of people including myself have noticed what appears to be systematic bias and misrepresentation in a report that was released by the Sound Transit staff to the press a couple weeks ago. This report is of particular importance since it became the subject of several articles including one on the front page of the Seattle Times local section. The title of this report was:

Sound Transit Long-Range Plan Update Issue Paper E.1: I-90/East King County High Capacity Transit Analysis

For simplicity I will refer to it simply as the “Issue Paper”.

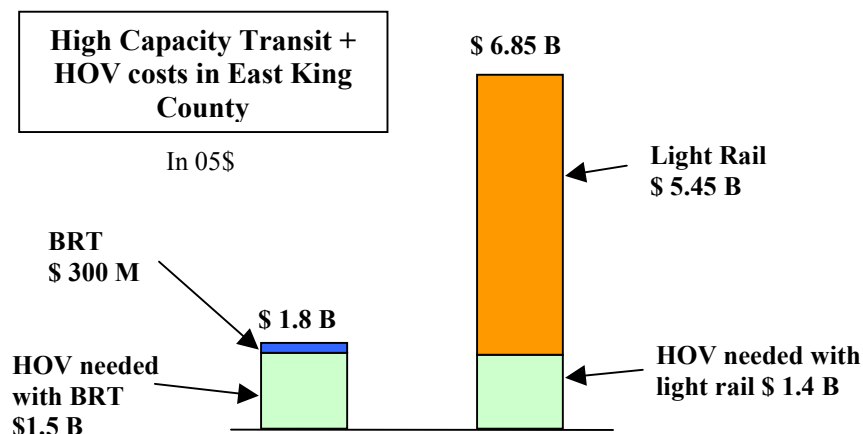
In a nutshell the Issue Paper was crafted so as to make the light rail alternative appear superior to the BRT/HOV alternative, whereas the opposite is most likely true. Unfortunately the report’s misleading conclusions were widely published and have left incorrect information in the minds of the public and probably also in the minds of numerous public officials including perhaps the Sound Transit Board itself. The record needs to be set straight, not just in private meetings, but in a manner that fully erases any misconceptions left in the minds of the public and those officials.

There are a number of concerns including the pie charts and the pro-con statements but time limits me to addressing just these five:

Concern 1) The report falsely implied that bus rapid transit would not attract as many riders as light rail. It’s not that the data presented was wrong, but rather that it was incomplete and thus misleading. In particular the report prominently featured a table showing that light rail on I-90 would have 48,000 riders while BRT-on-HOV lanes would have only 30,000. I don’t dispute these figures per se. However, due to the placement of this table, the fact that I-90 is a main trunk line for the entire HCT system, and the fact that there was no table showing overall transit ridership the net effect has been to leave the impression that light rail outperforms BRT in terms of attracting riders. This impression is wrong because the BRT network is able to use both bridges across lake Washington whereas light rail only uses I-90. Because the total cross lake ridership on BRT was split between both bridges, ridership in just the I-90 corridor was lower. What else would one expect?

The Issue Paper was therefore biased by not providing a prominent comparison of total ridership for each alternative, and by not including the 520 corridor among the corridors prominently featured in the report. Unpublished data given to the Expert Review Panel as well as the results from the I-405 Corridor Study show that the BRT-on-HOV alternative would attract about the same number of total riders as would light rail.

Concern 2) The Issue Paper almost certainly misrepresented the relative costs of light rail relative to BRT-on-HOV. The full story is a bit complex and will be described later in this letter. But for the moment simply note that the report apparently put the roughly \$4.8 billion cost of upgrading the HOV network into the cost total for the BRT-on-HOV alternative but not into the cost total for the light rail alternative. This was improper since those HOV improvements are needed to preserve and expand car and van pooling, regardless of what is done about mass transit. Thus those costs should have either been included in both alternatives, or in neither. Any fair accounting would show that BRT-on-HOV would cost only a small fraction of what light rail would cost on the eastside. Put another way, light rail in East King County would cost about \$5 billion more than BRT on HOV. Data supporting this claim appears later in this letter. The following bar chart –based on BRT and HOV costs from the I-405 Corridor Program and rail costs from the Issue Paper represents what I believe is a fair comparison.



In sum, between the misrepresentation of ridership and the misrepresentation of costs it appears the Issue Paper was deliberately designed to convince readers that light rail costs about the same as BRT-on-HOV but performs significantly better.

Concern 3) The veracity of the Issue Paper’s main conclusion, copied below, is questionable and arguably wrong.

1.6 General Findings

No single technology stands out as the best choice to serve all the major segments in the East King County Subarea. Different technologies work better in different environments.

The Issue Paper gives no substantive reason why BRT-on-HOV could not meet all the needs of the eastside, not to mention all the HCT needs of the entire Puget Sound Region. At least two studies show BRT can attract as many riders as light rail. Additionally, it has more capacity for growth, and is far less expensive. Some of these facts are documented in the paragraphs that follow. All are documented in my earlier report called “How Sound Transit Abused the Planning Process to Promote Light Rail”, which is now posted on the web at:

<http://www.bettertransport.info/pitf/harknessmessage.htm>

In short, through its distortions of the truth, the Issue Paper is apparently trying to sell the notion that a mix of modes is needed on the eastside, thus laying the groundwork for Sound Transit to formally pick light rail for use over the I-90 bridge and into Bellevue, Redmond, Issaquah, and Totem Lake, while relegating BRT to a niche role up and down I-405.

Concern 4) A major study of transit alternatives has already been done for East King County in the form of the I-405 Corridor Study. That study examined various high capacity transit alternatives including light rail and BRT running on HOV lanes. The Preferred Alternative was BRT on HOV. There was no light rail whatsoever in the I-405 Corridor Study’s Preferred Alternative. It is of concern that Sound Transit appears to have ignored the results of this study, and has expended public resources plowing the same ground all over again. It is also of concern that Sound Transit—with its clearly established light rail bias—reached a diametrically opposite conclusion as to what best serves the eastside.

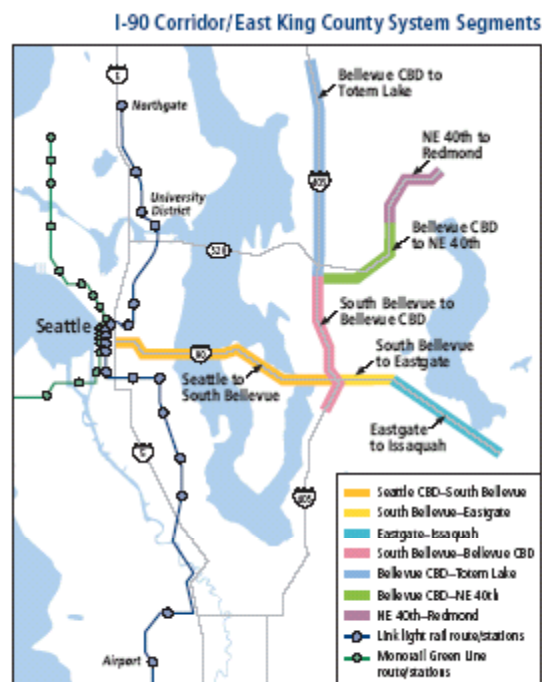
Concern 5) If these allegations of bias and misrepresentation are correct, as I think investigation will reveal, then it’s incumbent upon Sound Transit staff to set the record straight with the Sound Transit Board, the public, with the press, and with everyone else that may have been misled by this report. Providing more accurate or complete information in private meetings, with for instance the Expert Review Panel, will not remedy the harm left by having everyone else relying on incorrect information. A proactive effort on Sound Transit’s part will be needed to accomplish this.

Type of response requested to this letter: The remainder of this letter describes the above issues in more detail and asks a number of questions whose answers would be helpful in setting the record straight and making everyone smarter. I specifically request that as Chairman of the Sound Transit Board you ask staff to provide answers to these questions and send them not only to myself but also to everyone copied on this email.

The Details

Concern 1---Ridership and service quality

The following image from the Issue Paper shows the corridors, which the report chose to address. Obviously it omits the 520-bridge corridor. This is curious since more transit riders use the 520 bridge than use I-90. It is very clearly a corridor of major concern to the eastside. This omission led to a whole string of misrepresentations and caused the overall report to be very misleading.



Question 1: Since the 520 bridge is an obvious and important segment in the transit network why didn't Sound Transit highlight it on the map as they did with the other segments and why didn't Sound Transit include a table showing its cost, ridership and other attributes as they did for the other seven segments?

One of the most prominent features of the issue papers was a series of tables (see below) that compared ridership and costs for most but not all segments of the HCT network in East King County. Positioned at upper left, the very first and most attention catching table concerned transit on I-90 from downtown Seattle to South Bellevue. The next showed ridership on probably the second most important corridor from South Bellevue into downtown Bellevue.

Ridership and Cost by Segment (Refer to map on front)

Seattle CBD → South Bellevue 

Scenario	Ridership	Cost
HOV/BRT	30,000	<\$10m
Busway/BRT	29,000	\$250-340m
LRT	48,000	\$300-410m
Monorail	31,000	\$720-990m
Rail-Convertible BRT	36,000	\$300-410m *

South Bellevue → Bellevue CBD 

Scenario	Ridership	Cost
HOV/BRT	15,000	\$1.8-2.5b
Busway/BRT	16,000	\$510-700m
LRT	37,000	\$780-1.1b (tunnel) \$410-\$560m (aerial)
Monorail	26,000	\$400-540m
Rail-Convertible BRT	29,000	\$790m-1.1b (tunnel) * \$380-\$520m (aerial)

These tables showed light rail ridership to be considerably higher than BRT ridership, thus implying that LRT performed much better in two of the regions most important transportation corridors. This may have caused the Seattle Times to report on the front page that: “The study says light rail in I-90’s reversible center roadway from Seattle to Bellevue Way Southeast would attract at least 33 percent more riders than the other alternatives,...” (Seattle Times, Local News, March 31, 2005) An article in the Seattle Post Intelligencer said: “Light rail, meanwhile, would attract many more passengers -- 37,000 compared with 15,000 for bus”. (Seattle PI, April 6, 2005)

However, what the Issue Paper did not state, and what neither the Times or PI noticed or reported, was that total cross lake BRT ridership was split between that taking I-90 and that taking the 520 bridge. That explains why ridership on just the I-90 leg was lower.

The I-405 Corridor study’s Transportation Expertise Report states that current transit ridership on the SR 520 bridge is almost twice as high as transit ridership on I-90. The table below from the Translake study shows a similar result. The higher transit volumes on 520 simply indicate that the 520 corridor is actually the preferred corridor for cross-lake travel. I-90 is less direct for most transit riders.

Trans-lake Transit Passenger Estimates

	SR-520	I-90	Total
2004 Existing			
Bus Routes	20	8	28
AM Peak Hour Bus Runs	71	35	106
AM Peak Hour Bus Seats	3,550	1,700	5,250
Seats EB/WB	1000/2550	350/1350	1350/3900
AWDT Bus Passengers	14,900	9,000	23,900
% by bridge	62%	38%	100%
2020 Trans-Lake Study - AWDT Transit Passenger Estimates			
Alt 1: No Action	22,800	22,100	44,900
Alt 2: Add <u>LRT to I-90 only</u>	14,900	33,300	48,200
LRT Capital Cost Est		\$2,720m	\$2,720m
Alt 3: Add SR-520 HOV Lanes	18,000	32,100	50,100
% by bridge	36%	64%	100%
Alt 4: Plus SR-520 GP Lanes	20,300	34,100	54,400
Add LRT to SR-520, not to I-90			
LRT Capital Cost Est	\$4,710m		\$4,710m
Alt 5: Add SR-520 HOV Lanes	28,200	17,100	45,300
Alt 6: Plus SR-520 GP Lanes	32,900	18,200	51,100
Assume BRT on Both Bridges			
BRT/HOV Capital Cost Est	\$270m	\$270m	\$540m
Alt 7: Add SR-520 HOV Lanes	29,800	20,500	50,300
% by bridge	59%	41%	100%
Alt 8: Plus SR-520 GP Lanes	34,700	21,900	56,600
% by bridge	61%	39%	100%

Also note
large cost
difference

But the number of transit riders on I-90 is not what's really important. It's a red herring. What's important is the total number of transit riders that each alternative would carry across lake Washington, or better yet the total number of transit riders each would carry in East King County. For some reason the Issue Paper failed to provide that obviously needed information.

Question 2: The Issue Paper provided a comparison of total costs for each alternative. Why didn't it provide a comparison of total transit ridership?

Sound Transit's Expert Review Panel noticed this deficiency and during their last meeting asked the Sound Transit representatives in the meeting for the missing data. A staff person ran out and returned shortly later with the following table. This table clearly shows that there is no significant difference between the number of riders BRT would attract and carry versus what light rail would attract and carry.

translate

2030 Daily Transit Volumes across Lake Washington (I-90 + SR 520)		
Scenario	With 6-Lane SR 520	With 4-Lane SR 520
Future Baseline	N.A.	57,500
HOV/BRT	69,000	62,800
Busway/BRT	70,400	63,800
LRT	70,100	67,900
Monorail	64,200	59,900
Rail Convertible BRT	66,300	62,400

2-10

2030 Daily Transit Volumes on I-90 across Lake Washington		
Scenario	With 6-Lane SR 520	With 4-Lane SR 520
Future Baseline	N.A.	28,300
HOV/BRT	29,500	38,800
Busway/BRT	29,400	37,900
LRT	51,500	58,800
Monorail	35,600	43,200
Rail Convertible BRT	39,400	47,400

The following table from the I-405 Corridor Study is another source indicating that there would be little difference between light rail and BRT on HOV ridership. (Since this table was not bound with the main EIS it is preceded by the cover page of the short document that containing it.)

I-405 CORRIDOR PROGRAM

Preliminary Preferred Alternative Transit Characteristics

Service Characteristics

Total Transit System Serving I-405 Study Area

The transit system serving the I-405 study area under the Preliminary Preferred Alternative would consist of three components: Local service, express/commuter service, and a BRT express service. The total assumed annual revenue hours are shown below. The total revenue hours have been modified from previous results as follows:

System Performance

2020 Transit Trips with one or both ends in the Study Area

Alternative	2020 Average Daily Transit Person Trips	2020 Annual Transit Person Trips
Preliminary Preferred Alternative	102,700	30.8 million
Comparison with DEIS Alternatives		
No Action	85,700	25.7 million
Alternative 1	101,200	30.3 million
Alternative 2 *	102,800	30.8 million
Alternative 3 *	110,100	33.0 million
Alternative 4	99,600	30.4 million

light rail {
BRT or HOV →

* Trans Expertise Report says on page 1-9 + 1-10 that HOV Fwy & Fwy ramps are assumed complete along I-405 for these two alternatives.

June 6, 2001

3

We now have two sources indicating that BRT ridership would be roughly the same as light rail ridership in East King County. However, staff tells me that the BRT system design that produced the 110,100 riders in the I-405 Corridor study was not an optimized design and that an optimized design would have done even better. In addition, the I-405 Corridor Project was completed before it was recognized that the 520 bridge needed to be rebuilt. Therefore the 110,100 ridership estimate was based on the assumption that 520 buses would operate in mixed traffic as they do today. Now we know they will operate in a separate HOV lane. In short, there are good reasons to believe that BRT would not just match light rail's ridership, but instead would significantly exceed it.

To further clarify the results of the modeling behind the Issue Paper answers to the following would be most helpful.

Question 4: What is the total number of daily transit trips in 2030 that would have one or both trip ends in East King County with the HOV/BRT alternative, and with the light rail alternative?

Question 5: What is the total number of daily transit work trips in 2030 that would have one or both trip ends in East King County with the HOV/BRT alternative, and with the light rail alternative? (If work trips data isn't available then please provide data on peak hour trips)

I believe Mr. Matsuoka was quoted in a Mercer Island paper as follows:

"Building a light-rail system from Bellevue to Seattle would allow a Bellevue student to go to class at the University of Washington in one trip, said Paul Matsuoka, Sound Transit's policy and planning officer."

This one sided example was apparently intended to promote the idea that light rail was a superior solution for the eastside. Answers to the following would help complete a more balanced picture.

Question 6: Isn't there at least one existing bus line that would continue to operate across 520 even if there were light rail on I-90 and that already provides a single seat ride between those two points? And isn't there also one from the Eastgate park and ride lot that provides a one-seat ride to the UW?

Question 7: Light rail from downtown Seattle to the eastside would actually consist of "red" trains destined to Totem Lake, alternating with "blue" trains destined to Redmond, and "green" trains going to Issaquah. Wouldn't that mean riders going from Issaquah to Downtown Bellevue would need to travel west on the green line past I-405, transfer at the South Bellevue station and then take a red or blue line train north into downtown Bellevue? Wouldn't riders from the Eastlake Park and Ride going to Microsoft in Redmond need to make the same transfer? (one could cite other examples as well)

Question 8: How many rail-to-bus, bus-to-bus, or rail-to-rail transfers are involved in completing the trip totals asked about in question 5?

Question 9: Why didn't Mr. Matsuoka provide a balanced story by avoiding this one sided example and provide instead a comparison of the total transfers each alternative would require?

It is also useful to get some understanding of key assumptions the Issue Paper made when estimating ridership. The assumptions about HOV lane performance are especially critical.

Question 10: What did the ridership forecasting model assume for peak period HOV lane performance in 2030? Specifically what was the assumed peak period speed of the HOV lane in each of the seven segments that were described in the report, and most important what speed was assumed for the HOV lanes on SR520 from Montlake to I-405?

Concern 2—The Cost Comparison

The cost comparison between BRT/HOV and Light rail in the Issue Paper is certainly misleading and may be factually incorrect. The rationale for drawing these conclusions is explained below. Two separate but related aspects are described below.

Part A--

The Issue Paper compared apples-to-oranges instead of apples-to-apples thus misleading readers to believe HOV/BRT was roughly as expensive as light rail. That's simply not true. As explained below BRT is far less expensive than light rail.

Below is the scanned image of Table 4 from the Issue Paper. Table 4 is the only way total costs were revealed in the Issue Paper. There was no detail to help people understand what was included. In particular it would be nice to know how much of the HOV/BRT cost was for BRT per se and how much was for HOV lane improvements.

Table 4: Estimated Conceptual Capital Cost Comparisons
(in billions of year 2005 dollars)

HOV/ BRT (assumes HOV freeway-to- freeway connections)	Busway/ BRT	Fixed Guideway: Light Rail	Fixed Guideway: Monorail	Fixed Guideway: Rail- Convertible BRT
\$4.4 - \$5.8	\$3.1 - \$4.2	\$4.6 - \$6.2	\$5.0 - \$6.8	\$3.7 - \$5.0

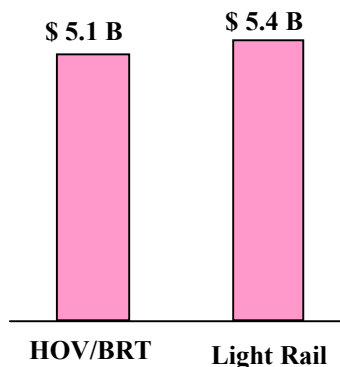
Question 11: Please provide a breakdown of the costs in Table 4. Show for instance how much of the cost of the HOV/BRT alternative was for HOV direct access ramps, how much was for additional HOV lanes or lane improvements, and how much was for freeway to freeway HOV ramps. Do same for the light rail alternative.

Question 12: How much if any of the total cost of the light rail alternative was for HOV improvements?

Question 13: Why weren't such cost breakdowns included in the Issue Paper?

To better understand this issue please consider the following sequence of bar charts.

The average cost of the HOV/BRT option in Table 4 is \$5.1 billion while the average cost of the light rail options is \$5.4 billion. In bar chart format these values plot as follows:



The clear impression the numbers in Table 4, and these bars based on those numbers, give is that there isn't much difference between the cost of BRT using HOV lanes and the cost of light rail. That was, I think, the intent.

However, to understand why this is a false and deceptive impression it is necessary to break down the total costs into their major constituents.

First, we need to break down the HOV/BRT bar. Data to do some comes from the I-405 Corridor study which estimated that implementing BRT itself (i.e.: the buses and bus stations) on the eastside would cost only about \$300 million. The \$300 million comes from the detailed spreadsheets used in the I-405 Corridor studies, but the following table from the Study's EIS is the only thing I can reproduce here. Costs in this table are in 2000\$. The \$319 M item called Transit Services includes the cost of the BRT buses and stations, plus local buses. The \$4 billion estimate for HCT was based on light rail costs.

Preliminary Costs by Mode

I-405 Corridor Program
Preliminary Alternative Costs Summarized by Mode

	ALTERNATIVES (costs in millions - year 2000)				
	1	2	3	4	0
	HCT/TDM	Mixed Mode with HCT/Transit Emphasis	Mixed Mode	General Capacity	No Action
Transportation Demand Management	\$72.8	\$72.8	\$72.8	\$72.8	
Freeway General Purpose	\$768.6	\$2,846.0	\$4,482.9	\$9,397.6	\$7.0
Freeway HOV		\$800.9	\$996.6	\$886.8	\$463.6
Arterial General Purpose		\$463.6	\$663.3	\$849.3	\$185.6
Arterial HOV	\$217.2	\$194.6	\$194.6		
High Capacity Transit ^{LR}	\$4,018.4	\$4,018.6			
Transit Services and Park and Ride	\$172.2	\$168.7	\$319.6	\$83.2	\$20.4
Pedestrian and Bicycle	\$67.4	\$67.4	\$67.4	\$42.8	
Total Cost	\$5,316.6	\$8,632.6	\$6,797.2	\$11,332.5	\$676.6

I-405
CORRIDOR PROGRAM

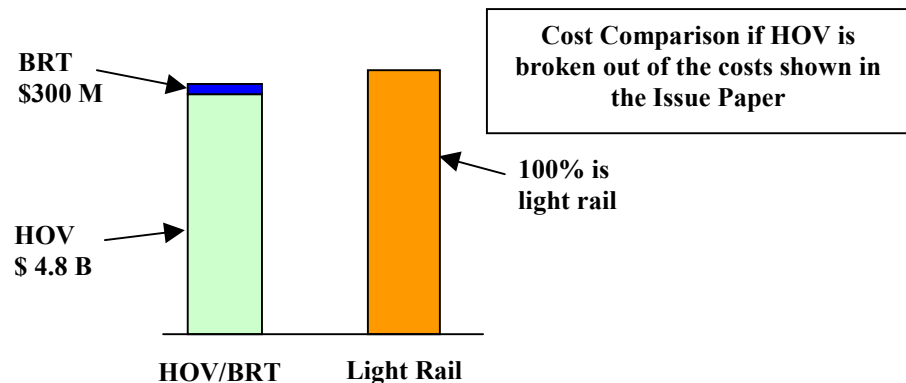
with light rail

with BRT

#3 became the preferred alternative

Subtracting \$300 million from the \$5.1 billion total for HOV/BRT means that the great majority of the cost of the HOV/BRT alternative -- namely about \$ 4.8 billion-- was for HOV lane improvements including direct access ramps and freeway-to-freeway HOV ramps. (all in 02\$) That same I-405 Corridor study found that light rail would cost \$ 4 billion in 2000\$ or about \$4.5 B in 05\$. Given the inevitable differences in estimating assumptions it appears that the entire \$5.4 billion cost of the light rail alternative was in fact just for light rail. Certainly there was no room in that \$5.4 billion total for both \$ 4.5 billion in light rail plus \$4.8 billion in HOV improvements.

Thus when the cost of HOV lane improvements are broken out the cost comparison looks like this:



It is now clear that the Issue Paper presented a deceptive apples-to-oranges comparison because the HOV lane improvements are needed regardless of whether light rail or BRT is used for high capacity transit. Either the cost of the HOV lane improvements should have been included in the total cost for each alternative in Table 4, or they should have not been included in either cost total.

Question 14: What was Sound Transit's reason for including the cost of improving the HOV lanes in the HOV/BUS alternative but not the light rail alternative?

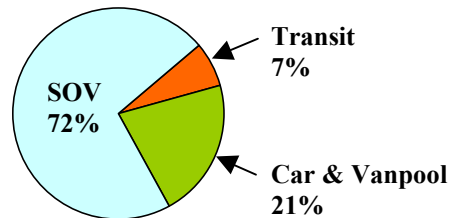
Why would I say they are needed regardless of which technology is used for high capacity transit? First, it is common sense based on the fact that car and vanpools carry more riders than does mass transit and therefore must be protected and encouraged. This means keeping the HOV lanes moving freely regardless of what technology is used for high capacity transit. The Issue Paper acknowledged as much in the following statement:

Finally, this scenario (and all other scenarios) assumes that HOV lanes will be managed so as to offer a reliable speed and travel time advantage to the vehicles within them.

The rational is simple. Car and vanpools are important. Car and vanpooling on HOV lanes should be mentally separated out from freeways and mass transit and considered a third mode of transportation in its own right. That would give it the prominence it deserves.

The figure below shows PSRC's estimate of mode share for work trips in the Puget Sound region, again emphasizing the importance of keeping the HOV lanes moving.

Puget Sound Work trips in 1998



Second, both the I-405 Corridor Study and Sound Transit's 1993 FEIS for rapid rail – which is the region's only rail versus bus alternatives analysis—both assumed HOV improvements would be needed regardless of which high capacity transit alternative was adopted.

Finally, Sound Transit is planning to begin construction soon on a direct access ramp to the HOV lanes near the Eastgate Park and Ride lot, just as they did in downtown Bellevue. Tens if not hundreds of millions will be spent on these ramps. The proposed light rail would pass directly under this new HOV ramp on its way to Issaquah. This is tacit admission on Sound Transits part that significant improvements to the HOV network are justified and needed even if light rail is operating right alongside.

In spite of this the Issue Paper also contains a curious statement that implies that Sound Transit does not believe the HOV lanes will be maintained at speeds that Wash DOT policy calls for:

1.6.7 Capacity for Growth Beyond Forecast Year

- The HOV/BRT Scenario has limited capacity for growth beyond the forecast year of 2030, simply because it relies on the existing freeway and HOV lane system, which is already congested for major portions of the day.

It is clear that BRT on HOV is only viable if HOV lane speeds are maintained at a level that gives them a significant speed advantage over the general-purpose lanes. Either all of our transportation planning must be based on the assumption this is necessary and will be accomplished, or it must assume that the HOV lanes will be neglected and will congest to the point where there is little incentive to car and vanpool. (In a more technical aside the maximum vehicle moving capacity of a freeway occurs when traffic is kept moving in the 35 to 40 MPH range. Therefore if we let HOV speeds deteriorate we

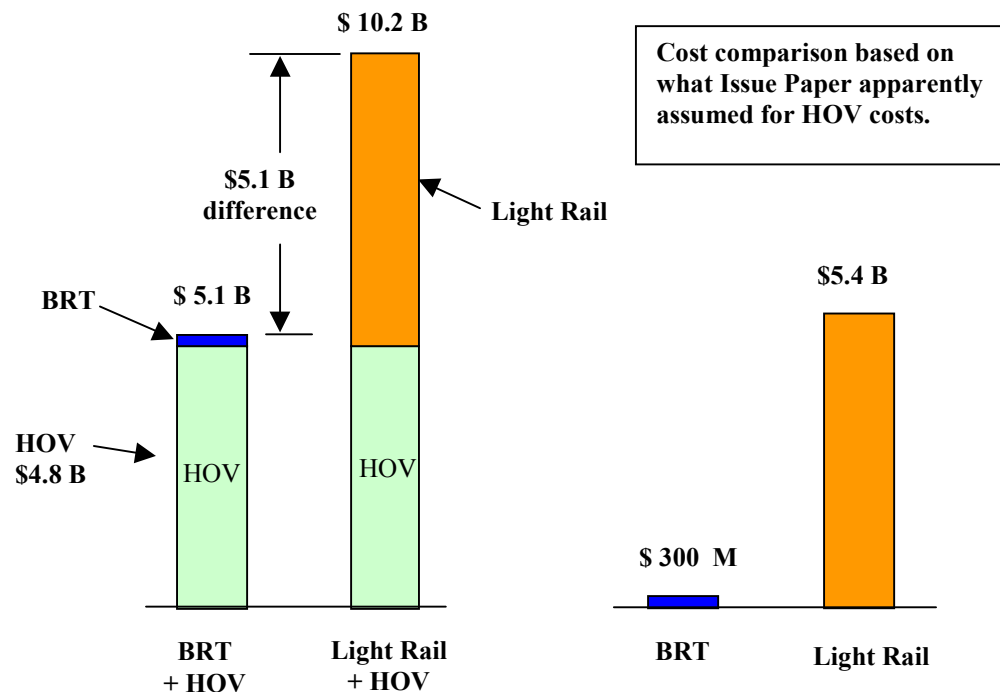
not only discourage car and vanpooling but also get less people moving capacity from our freeways.)

In a nutshell the question of how of HOV lanes will be managed and maintained is critical and needs to be a centerpiece in our current discussions and planning efforts. Sound Transit's position on this issue should be known. Therefore:

Question 15: Does the Sound Transit Board feel it is essential to keep the HOV lanes moving at a speed that continues to make car and van pooling attractive?

Question 16: Are Sound Transit's plans based on the assumption that HOV lane speeds will be maintained at the 45 MPH minimum called for in Wash DOT policy, or do they assume that the HOV lanes will be congested to the point that they are not suitable for car pools, van pools, or BRT?

In sum, it seems deceptive and unfair for the Issue Paper to have included the cost of HOV lane improvements in the BRT alternative and not the light rail alternative if they would be needed in either case. What the Issue Paper should have done is include those costs in all the alternatives, or in none. The following bar charts show what the results would have been if Issue Paper were designed to inform rather than deceive.



Either way one plots the data it is clear that light rail is far more expensive than BRT. In fact light rail would cost about \$5.1 Billion more on the eastside than would BRT. This is a far different message than what the Issue Paper was designed to convey.

Question 17: Does Sound Transit agree that the two bar charts above provide accurate and fair comparisons of the alternatives? If not, please say what needs to be changed.

Part B--

The cost of the HOV improvements used to construct Table 4 in the Issue Paper seems excessively high. They may be based on incorrect or inappropriate assumptions.

Unfortunately the Issue Paper provided so little detail on how the cost totals were derived that it is not possible to “prove” they are incorrect. However, the cost of the HOV improvements included in the HOV/BRT alternative (an estimated \$4.8 Billion) are far higher than what the I-405 Corridor study estimated (about \$1.5 Billion). This raises a red flag.

There are several possible explanations for the huge difference.

The Issue Paper did assume freeway to freeway ramps were needed in all four quadrants of both exchanges, AND seems to have assumed it was necessary to rebuild the entire interchange including the GP lanes in order to create those freeway to freeway HOV ramps, AND seems to have assigned the total cost for all this to the HOV/BRT alternative.

It appears the I-495 Corridor Program made a different set of assumptions.

I am not able to judge which agency made the most reasonable assumptions. However it looks like the Issue Paper answered each question in a way that inflated the cost of the HOV/BRT alternative as much as possible. The issues are as follows:

Is it necessary to have HOV to HOV ramps in all quadrants of the major freeway interchanges?: Sound Transit inflated the cost estimate for the HOV/BRT alternative by including freeway-to-freeway HOV ramps in all four quadrants of the I-90/I-405 and SR520/I-405 interchanges. They may be needed for car and vanpools but the need for BRT to have all these ramps seems highly questionable since today Sound Transit operates buses in only two of those eight quadrants. Just one route (#555) actually uses the SR520/I-405 interchange (on its way from the Bellevue transit center to the university district). It has one bus every 30 minutes and runs during rush hours only. Similarly only one route (# 560) actually uses the I-90/I-405 interchange (as jogs from 405 over to Bellevue Way). This bus runs every 30 minutes all day.

Having just one bus running every 30 minutes in just one quadrant of each interchange indicates that there isn’t much transit demand in those quadrants today, and its hard to see why that would dramatically change in the future. And the other six quadrants don’t have

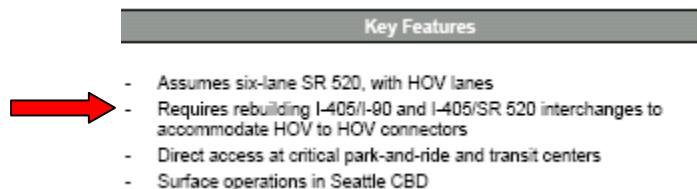
enough demand to justify even one bus route. Therefore it's hard to understand why Sound Transit assumed BRT needed interconnects in all eight quadrants. Unless of course it was done to artificially inflate the cost of the HOV/BRT alternative.

It is also worth noting that the proposed light rail system would not offer service in all eight quadrants. In fact light rail would only offer service in two of the eight quadrants, namely the NW quadrant of I-90/I-405 and SW quadrant of SR520/I-405. Thus a rail rider following one of the most heavily used freeway routes, from Issaquah/Eastgate going into downtown Bellevue, would be forced to travel past I-405 to the South Bellevue station and then transfer to another train into downtown Bellevue.

Question 18: What was Sound Transit's specific reason for including each of the eight freeway-to-freeway HOV ramps included in the HOV/BRT alternative?

Question 19 : If Sound Transit deemed it necessary to include HOV ramps in each of those eight quadrants to make BRT network work well why didn't Sound Transit include rail-to-rail interconnects in each of those same eight quadrants so rail could work equally well?

Is it necessary to completely rebuild both major eastside interchanges in order to add HOV to HOV ramps?: The Issue Paper assumed it would be necessary to rebuild both major eastside freeway exchanges:



However, another detailed report for Wash DOT, called the Puget Sound HOV Pre-Design Studies, showed how HOV to HOV ramps could be added without reconstructing both entire interchanges. (That study recommended adding ramps in three quadrants of the I-90/I-405 interchange at an estimated cost of \$138 million. It also recommended adding ramps in two quadrants of the SR520/I-405 interchange at a cost of \$157 million.)

Question 20: Why did Sound Transit assume that both interchanges would need to be completely or almost completely rebuilt in order to add the freeway-to-freeway HOV ramps? How did your assumptions differ from those of the Puget Sound HOV Pre-Design Study, which found that a complete rebuild was not necessary?

Should the entire cost of a complete interchange rebuild be charged to the HOV/BRT alternative? : As noted above it seems likely that the entire cost of rebuilding both interchanges was charged to the HOV/BRT alternative. A fairer approach might be to charge some pro-rated portion to the HOV ramps and the rest to the GP ramps, at least to the extent GP traffic would benefit from that rebuild.

Question 21: Was the entire cost of rebuilding both the I-90/I-405 and SR520/I-405 interchanges included in the total cost of the HOV/BRT alternative?

Should the entire cost of the HOV to HOV ramps be charged to the HOV/BRT alternative? : As noted above this appears to be what the Issue Paper did. A fairer approach might be to charge some pro-rated portion of the HOV ramps to BRT and the remainder to car and van pools that would share those ramps and benefit by their existence. BRT buses would use a very small fraction of the capacity of those ramps and perhaps they should be charged accordingly.

Question 22: Did the Issue Paper charge or assign the total cost of the HOV to HOV ramps to the HOV/BRT alternative or was some assigned to car and van pooling? If so, how were the costs pro-rated?

Question 23: What fraction of the peak hour capacity --on each of the 16 directional freeway to freeway HOV ramps included in the HOV/BRT alternative-- would BRT buses be using assuming one bus took the room of two car or vanpool vehicles?

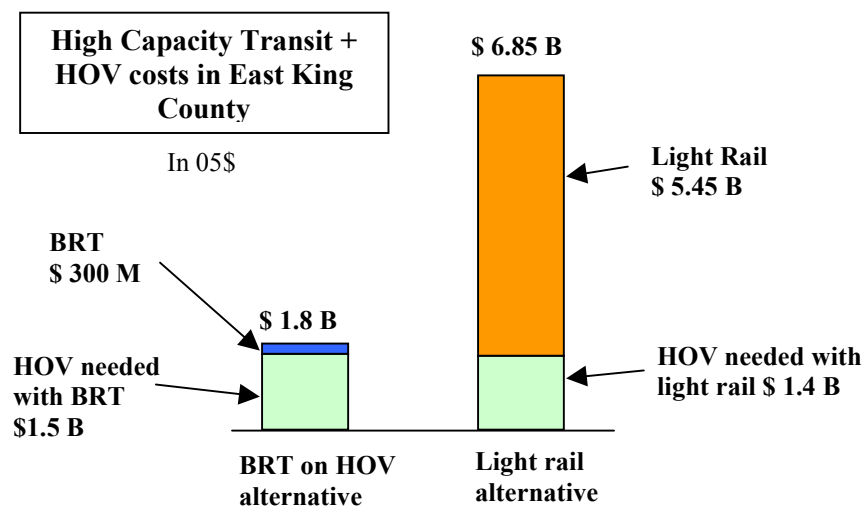
Should ANY of the cost of the HOV to HOV ramps be charged to the HOV/BRT alternative? : Again, if the ramps need to be built anyway to handle car and vanpools one could say they are pre-existing facilities in terms of any cost comparison between BRT and Light rail, and therefore should not be charged to any of the mass transit alternatives. That way we get a clear comparison of the marginal cost of adding BRT, or light rail, to what needs to happen anyway.

Question 24: In case the above questions have not covered it clearly enough would Sound Transit simply explain what assumptions were made about freeway to freeway HOV ramps in estimating the cost of the HOV/BRT alternative?

Until the above questions are answered we won't know for certain how Sound Transit arrived at the cost totals for the different alternatives. However since the HOV/BRT cost estimate was so large one thing appears clear. Sound Transit apparently tilted every assumption in a direction that inflated the cost of the HOV/BRT alternative. And once

again, whatever the proper cost for HOV improvements is (that is however big those green bars are) that cost must be added to both the BRT and light rail alternatives, or to neither, in order to ensure an apples-to-apples comparison.

The above may have gotten a bit confusing so the following bar chart shows how the cost comparison would look if we simply accept the I-405 Corridor Program's estimate for HOV and BRT costs, and we also accept Sound Transits latest estimate of light rail costs as reported in the Issue Paper. This is not meant to be the final answer because one could still argue with the assumptions that the Corridor Program made about HOV costs, but the Corridor Program's assumptions seem more reasonable than the Issue Paper's assumptions. In short, I suggest the bar chart below is the best cost comparison between BRT and light rail that we have at this time.



Concern 3—The Issue Papers statement that no single technology will meet all the needs on the eastside.

The veracity of the Issue Paper's main conclusion, copied below, is questionable and arguably wrong.

1.6 General Findings

No single technology stands out as the best choice to serve all the major segments in the East King County Subarea. Different technologies work better in different environments.

Sound Transits two page brochure dated March 2005 repeated this in slightly different words as shown here:

Principal findings

- No one scenario fits the needs of all the segments.
- A combination of technology scenarios may best serve the needs of the I-90 Corridor/East King County subarea.

The Issue Paper gives no substantive reason why BRT-on-HOV could not meet all the needs of the eastside, not to mention all the HCT needs of the entire Puget Sound Region. At least two studies show BRT can attract as many riders as light rail. Additionally, it has more capacity for growth, and is far less expensive. Some of these facts are documented in the paragraphs that follow. All are documented in my earlier report called “How Sound Transit Abused the Planning Process to Promote Light Rail”, which is now posted on the web at: <http://www.bettertransport.info/pitf/harknessmessage.htm>

In addition, the I-405 Corridor Program examined essentially the same alternatives evaluated in the Issue Paper and concluded that a 100% BRT-on-HOV alternative (in other words not a mix of technologies) was the Preferred Alternative for East King County. Having spent hundreds of hours analyzing this issue over the last 9 months I just can’t think of any eastside requirement that a 100% BRT-on-HOV alternative could not meet.

I therefore must conclude that the Issue Paper is trying to sell -- through its distortions of the truth-- the notion that a mix of modes is needed on the eastside, thus laying the groundwork for Sound Transit to formally pick light rail for use over the I-90 bridge and into Bellevue, Redmond, Issaquah, and Totem Lake, while relegating BRT to a niche role up and down I-405.

Question 25: Given that HOV/BRT would attract as many riders and be less costly than light rail what specific reasons does Sound Transit have for asserting that “No single technology stands out as the best choice to serve all the major segments...”? Please enumerate in some detail.

Question 26: What specific requirements would HOV/BRT not meet?

Concern 4-- The conflict between the Issue Paper and the I-405 Corridor Study

A major study of transit alternatives has already been done for East King County in the form of the I-405 Corridor Program study. That study examined various high capacity transit alternatives including light rail and BRT running on HOV lanes. The Preferred Alternative was BRT on HOV. There was no light rail whatsoever in the I-405 Corridor Study's Preferred Alternative as the image below makes clear.

Preferred Alternative

The Preferred Alternative would provide expansion of I-405 by up to two lanes in each direction, along with improving major interchanges and connecting arterial/freeway capacity. In addition, collector-distributor lanes would be added along I-405 at locations where they are warranted. Similar to Alternative 3, the I-405/SR 167 interchange would be improved; SR 167 would be widened by up to two lanes in each direction south of I-405 to S 180th Street in Kent. The expanded list of arterial capacity and continuity improvements included in Alternative 4 would be implemented, together with arterial improvements planned by local jurisdictions. A bus rapid transit system would be developed throughout the I-405 corridor with east-west connections to Redmond and Issaquah, as described for Alternative 3. Local bus transit service within the study area would be increased by up to 75 percent based on demand. HOV direct access ramps on I-405, arterial HOV priority for transit, additional park-and-ride capacity, additional transit center capacity, and pedestrian and bicycle improvements would be provided.

The freeway design includes an added 4-foot buffer between the general purpose lanes and the HOV lane on I-405. The 4-foot buffer separation will allow for HOV safety and operations, and will also allow for future consideration of an expanded managed lanes operation along I-405.

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The more detailed description of the Preferred Alternative explains that BRT would be used not only up and down I-90 but also on SR520 to Redmond and on I-90 to Issaquah. It does not call for BRT just up and down I-405 as I believe Sound Transit is trying to imply. Unfortunately the terminology "I-405 Corridor Program" was misleading. The Program did not just study options up and down I-405. Instead it evaluated transit options for the entire eastside including the east west routes along SR520 and I-90.

It is of concern that Sound Transit appears to have ignored the results of this study, and has expended public resources plowing the same ground all over again. It is also of concern that Sound Transit --with its clearly established light rail bias-- reached a diametrically opposite conclusion as to what best serves the eastside.

Question 27: What caused the Issue Paper to conclude that HOV/BRT could not satisfy the needs of the eastside when the I-405 Corridor Program selected it as the Preferred Alternative?

Concern 5—Correcting the misimpressions left by the Issue Paper

If these allegations of bias and misrepresentation are correct, as I think investigation will reveal, then it's incumbent upon Sound Transit staff to set the record straight with the

Sound Transit Board, the public, with the press, and with everyone else that may have been misled by this report.

A serious problem is that results of the Issue Paper have appeared prominently in the local papers and in Sound Transit brochures such as the one published in March. Thus literally hundreds of thousands of local voters and taxpayers have been exposed to misleading information. It is simply not ethical to allow this misleading information to remain uncorrected. Whatever vehicles are used to set the record straight must have at least as much and probably more public exposure than these previous articles and brochures so as to erase the prior misconceptions in people's minds.

Providing more accurate or complete information in private meetings, with for instance the Expert Review Panel, will not remedy the harm left by having everyone else relying on incorrect information. A proactive effort on Sound Transit's part will be needed to accomplish this.

Question 28: Will Sound Transit issue a new version of the Issue Paper that corrects the above mentioned deficiencies by, for instance, prominently including: total ridership for each alternative, the SR520 bridge as one of the featured segments with its own table, breakdowns of total costs, detailed rationale for the reports main conclusion, and so forth?

Question 29: Will Sound Transit buy newspaper ads or otherwise ensure that the correct information about total ridership and costs is as widely publicized as the misleading information was earlier?

I'm sorry that this has been such a long letter but I thank you for your attention to these important concerns.

Respectfully,

Richard C. Harkness, PhD Urban Systems Planning
(member of CETA and ETA technical committees)