

A Surface Transportation Future for the Metropolitan Puget Sound

There are four components to this future.* The first largely solves regional transit mobility. The second makes steps to enhance freight mobility. The third enhances personal mobility. And the fourth looks to a future technological revolution in transportation. These components are meant to be applied sequentially, with the first implemented, then the second, etc.

One. The first component largely solves regional transit mobility. It consists of repurposing the region's freeway HOV lanes into Transit Express lanes as a roadbed for Bus Rapid Transit (BRT). By Transit Express (TE) lanes we mean HOT (high occupancy / toll) lanes where "the bar" in terms of who-travels-free is raised to "vanpools or better". So officially constituted vanpools and transit buses travel free. The balance of the capacity of the TE lane is "auctioned off" with the price changing every few minutes based upon demand. The objective is to keep these lanes in free-flow, even at the height of rush hours. Thus the TE lanes, in conjunction with bus-only lanes on major arterials, provide a never-congested right of way for North American Style (freeway-based) BRT. In addition the TE lanes provide uncongested mobility for police and emergency vehicles, as well as gotta-get-to-the-emergency-room (or your daughter's violin recital) mobility for all travelers.

Two. The second component makes steps to enhance freight mobility. This consists of adding truck-only lanes to the inside (median side) of some regional freeway segments. So there would be a truck lane, then a TE lane as above, then the General Purpose (GP) lanes, and the shoulder. At this time it is envisioned that these lanes would be added to highways SR167 and I-405, connecting to I-5 at each end. These lanes would be limited to combination trucks and tolled so as to keep them in free-flow.

Three. The third component enhances personal mobility. This component envisions implementing general mobility pricing (aka congestion pricing) on all roads in the region, with some or all of the net revenues distributed to the electorate, per capita, on a periodic basis such as twice a year. Road segments that are in heavy demand, such as the TE lanes above, would have a higher price on them. Segments that are in lower demand, would have a lower price (which could be zero). The price would accrue via an on-board computer in the vehicle. At the end of the period, the net revenue from all accruals would be distributed, per capita. Thus if one uses "less than their share" of rush hours roads space, he or she would receive a credit. If one uses "more than their share", he or she would be charged for the excess usage. And if one uses "their share", he she would neither be charged nor credited. This system could be set up to be revenue neutral as above. Or a part of the net revenue could be used for road maintenance and improvement. A test of this system (set up to be revenue neutral) was run by the Puget

Sound Council of Governments, and it was found to be both technologically and sociologically feasible: ie people mostly liked it.

This third component would be implemented subsequent to, or in conjunction with, state-of-the-art traffic signal timing such as Bellevue has recently put in place. By itself traffic signal timing meaningfully enhances traffic flow. Also, it is assumed that freeway lane capacity will be selectively enhanced via additional lanes on, eg, I-405.

Four. The fourth component looks to a future technological revolution in transportation, namely self-driving vehicles. This future seems to be coming at us faster than anyone anticipated a few years ago. One aspect of a fleet of self-driving vehicles is that the capacity of the roads system is substantially enhanced, perhaps by a factor of 3X. (At this point, obviously, such a system has only been simulated.) City areas which suffer negligible rush hours congestion (as least compared to the metro Puget Sound region), such as Kansas City, have about 3 times our freeway capacity. Thus via technological development, we may attain the relatively benign congestion condition of such cities. This is particularly true if component Three above (mobility pricing) is put in place prior to deployment of the self-driving vehicle fleet. Of course such a self-driving fleet is also helpful in enhancing the objectives of components One (transit mobility) and Two (freight mobility) above. So, for instance, freight on trucks will obviously move more smoothly if all traffic moves more smoothly.

The above four components constitute a transportation future for the metropolitan Puget Sound. If all were implemented, we believe that they would largely solve all the major surface transportation challenges which currently face the region.

** Note: The above should be seen as 'in addition' to whatever passenger rail systems (light, heavy, commuter, high-speed) the region might implement. It is also 'in addition' to pedestrian and bicycle enhancements. Finally, the above is a surface transportation future, and thus does not deal with movement of people and goods via air or ship.*

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