Transportation Vision for Hayden Island

A Research report by Sam Churchill

Executive Summary: This paper reviews Portland transportation issues with a focus on Hayden Island. The original CRC proposal would have replaced the current I-5 bridge with a 17-lane behemoth, 45-feet high and 450-feet-wide. This paper advocates a tunnel from Vancouver to Portland. It would bypass the freeway. The last mile can be served by small shuttles or electric bikes. Faster, cheaper, more convenient.

About this paper: This paper surveys existing solutions to congestion and offers possible alternatives to those offered by O-DOT, P-DOT, and others. This paper is solely the work of Sam Churchill and does not reflect the opinion of any organization or group.

Table of Contents

1. Introduction

This paper address the problem of congestion on the I-5 corridor, particularly around Hayden Island. The main problem is too many cars. More lanes ultimately leads to MORE traffic. Mass transit can be faster, cheaper, and more convenient than autos.

The basic premise is that neighborhood shuttles, tunneling, bike and pedestrian bridges are key elements in a 21st century transportation solution that has NOT been addressed by O-DOT, so far.

Let's look at the facts.

➢ The overall economic impact of congestion in the U.S is estimated at $2.8 trillion by 2030 – the same amount Americans collectively paid in U.S. taxes last year.
➢ Portland is tied with Chicago and Washington, D.C., for the eighth most congested region.
➢ Congestion costs Portland commuters $1.76 billion in time and fuel in 2014, according to a 2015 analysis.
➢ Portland-Vancouver drivers can anticipate almost 10 hours of congested travel a day by 2020, compared to a total of four hours of congested travel today.
➢ Vehicle use is increasing.

Public transit costs an average of $7.83 per passenger who pay an average of only $1.26 in fares. Everything else is subsidy. A "farebox recovery ratio" can average about 15% per passenger, while the cost of collecting and managing that revenue costs nearly as much.

Meanwhile, autonomous transit is getting cheaper and more convenient.
➢ Autonomous, rubber tired pods are now used daily in several cities.
➢ They go the last mile and provide intercity links.
➢ Autonomous shuttles can connect Vancouver to Portland.
➢ Self driving vehicles will arrive before a new bridge.
➢ Commuter tunnels can off-load the congested I-5.

A solution to congestion?
The region needs to replace the existing Interstate Bridge, which is over 100 years old and structurally deficient. But traffic engineers say more lanes = more traffic. We advocate making mass transit more convenient, cheaper and faster. How? We advocate bypassing the existing freeway with a tunnel and making last mile transit free.

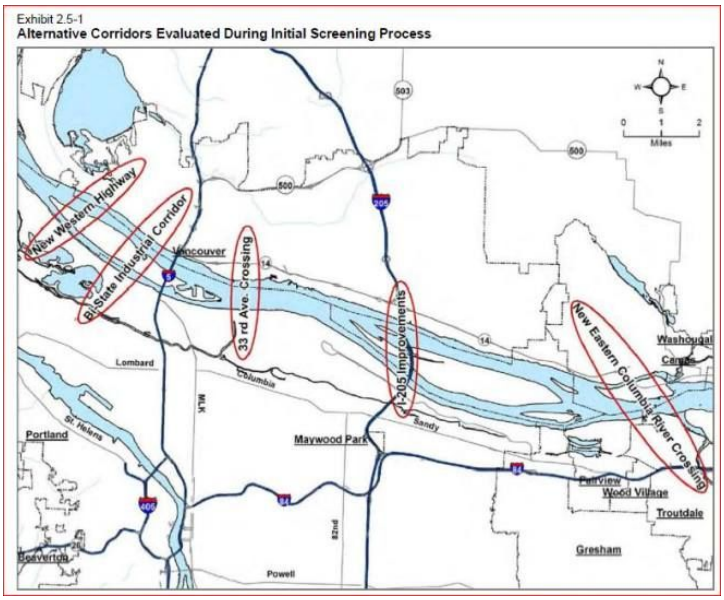
Regional Transportation Plan

The Oregon Transportation Plan is the long-range transportation system plan for the state. The Oregon Transportation Commission guides the Portland Value Pricing Policy Advisory (Congestion Pricing) as part of the Keep Oregon Moving legislation (HB 2017).

Oregon's Regional Transportation Plan

Oregon's Regional Transportation Plan outlines transportation priorities for the next 25 years. The RTP includes over $42 billion of investment in the regional transportation system over the next 25 years split between $27billion for maintenance/operations and $15 billion for capital projects.

➤ The I-5, I-205, and OR 217 freeway expansions
➤ The Division Transit project
➤ I-5 Bridge replacement to Vancouver (formerly known as the Columbia River Crossing), estimated to cost $3+ billion
➤ Streetcar extension on Broadway to Hollywood Transit Center
➤ SW Corridor Light Rail
➤ NE 42nd Ave Bridge Replacement including bike facilities



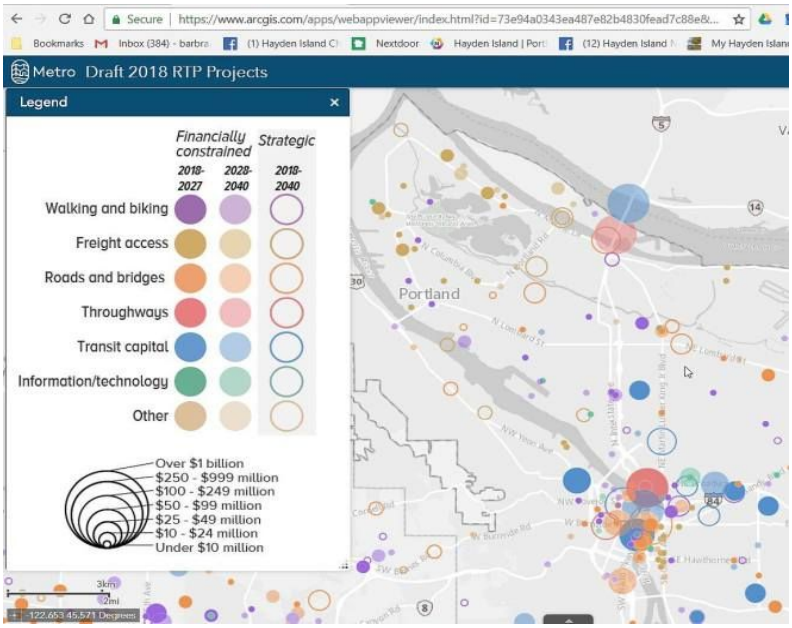
For the past three years Metro and their partners have been working to update the Regional Transportation Plan. The Regional Transportation Plan is a blueprint to guide investments for all forms of travel– motor vehicle, transit, bicycle and walking – and the movement of freight throughout the greater Portland region.

The bridge is the first issue discussed in the "Tough Topics" section of the draft Washington Transportation Plan — 2040 and Beyond, a long-term transportation plan created by the Washington State Transportation Commission.

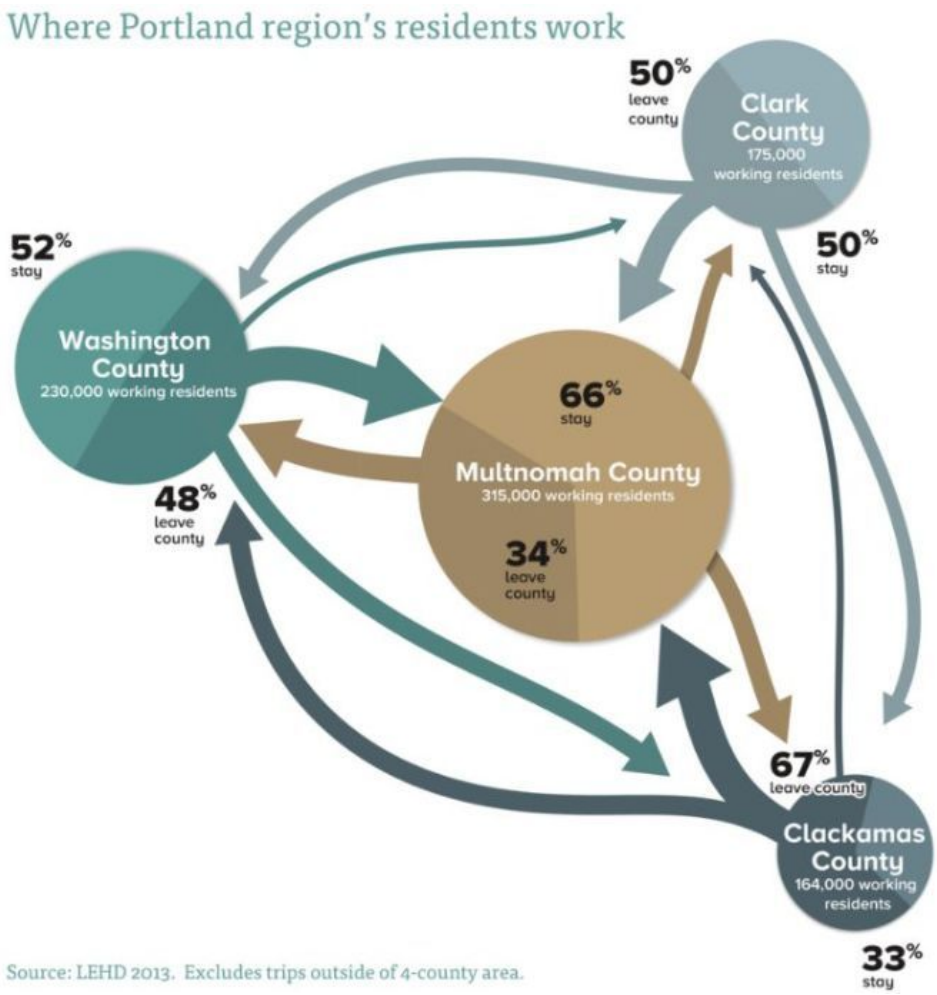
The Southwest Washington Regional Transportation Council supports the replacement of the Interstate 5 Bridge with high-capacity transit with a dedicated guideway.

The 2014 RTP for Clark County is their long-range, regional transportation plan.

Oregon House Speaker Tina Kotek wants to sit down with Washington lawmakers before the end of 2018 to discuss replacing the Interstate Bridge. But consensus on what's needed or how to pay for it is tricky. Then there's the problem of more lanes equals more traffic.



Congestion costs Portland commuters $1.76 billion in time and fuel in 2014, according to a 2015 analysis by the Transportation Institute, Gas for a car costs about $.12 per mile while electricity costs about $.04 per mile.



2015 Urban Mobility Scorecard

Table 2. What Congestion Means to Your Town, 2014, Continued

Urban Area	Travel Delay (1,000 Hours)	Rank	Excess Fuel Consumed (1,000 Gallons)	Rank	Truck Congestion Cost ($ million)	Rank	Total Congestion Cost ($ million)	Rank
Large Average (31 areas)	**55,390**		**25,690**		**$235**		**$1,280**	
San Jose CA	104,559	15	43,972	16	240	28	2,230	15
Minneapolis-St. Paul MN	99,710	16	38,542	19	327	20	2,196	17
Riverside-San Bernardino CA	99,058	17	30,732	23	361	17	2,201	16
Denver-Aurora CO	91,479	18	44,922	15	319	21	2,061	19
Baltimore MD	87,620	19	38,661	18	427	14	2,075	18
Portland OR-WA	72,341	21	39,611	17	375	16	1,763	20
Tampa-St. Petersburg FL	71,628	22	31,654	22	237	30	1,589	24
St. Louis MO-IL	69,350	23	32,991	21	328	19	1,637	22
San Antonio TX	64,328	24	28,809	25	251	27	1,462	25
Las Vegas-Henderson NV	63,693	25	30,001	24	158	45	1,375	26

Transportation Trends

1. Electric transportation
2. Self-driving vehicles
3. Tunneling
4. Car/Scooter Sharing
5. High speed rail
6. Hyperloop
7. Short-hop Sky taxis

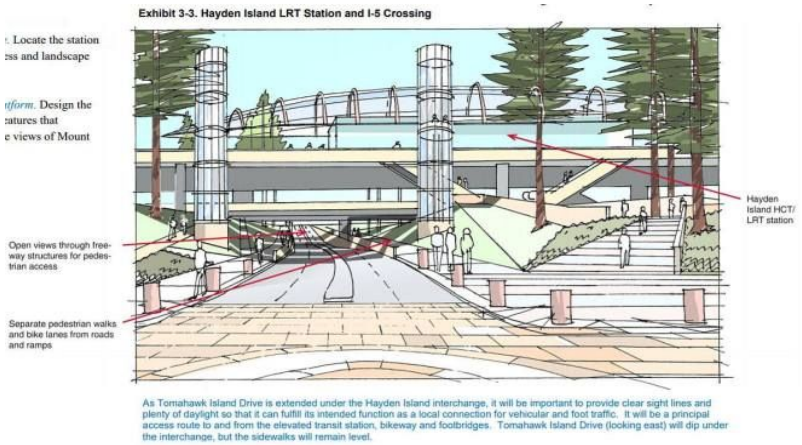
Some studies predict that by 2030, 95% of U.S. passenger miles will be delivered by autonomous electric vehicles. By 2030 you probably won't own a car – instead on-demand electric autonomous vehicles will be used.

Using these trends, let's extrapolate a vision:

A. No New Bridge.

The Interstate Bridge carries some 135,000 vehicles daily. The earlier proposed bridge had NO lift section, requiring the bridge on-ramps to tower 45 ft above Hayden Island.

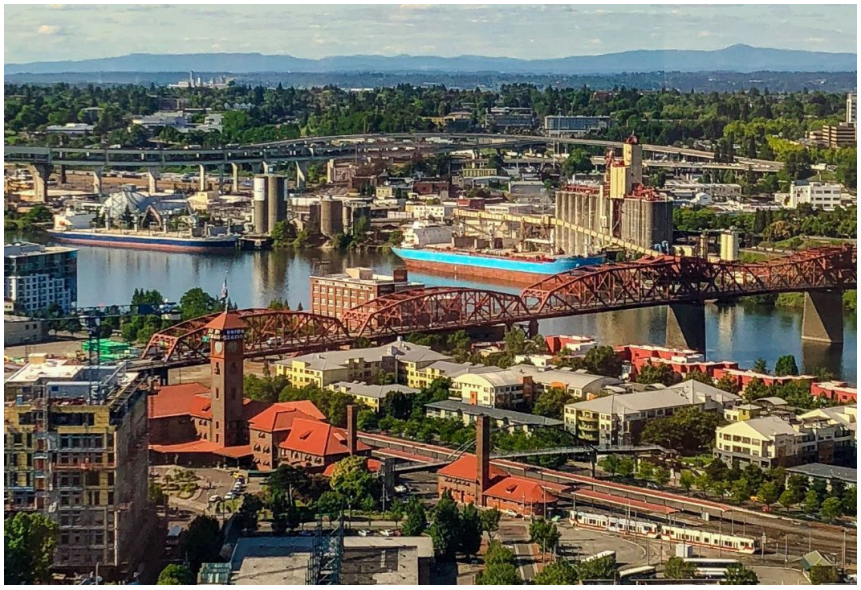
The 15% maximum grade required elevating the bridge ramp, creating a dark cloud of diesel particulates, noise and pollution, 3-4 stories high. Architectural renderings DON'T show the overhead power, noise, or pollution of light rail, not to mention the diesel and noise pollution from traffic.



In a few years, small, driverless people movers may connect Vancouver to the Expo Yellow Line. They can use a cheaper, lighter bridge. No trucks. No heavy rail. No huge bridge.

Small, electric transit bridge, using 8-12 passenger, rubber-tired, battery operated people movers could connect Vancouver to the Expo Center. Faster and cheaper. A smaller, lighter, cheaper bridge. Bechtel's Airport Max line might be a business model — at NO cost to taxpayers. It would go down better with commuters than congestion pricing on existing freeways.

B. Tunnel Bypass.



A tunnel connecting Vancouver to Portland (6-8 miles) may be cheaper than a wider highway and huge new bridge. Lower real estate costs and no bridges. Autonomous transit could deliver you directly to the transit stop.

A tunnel connecting Vancouver to Memorial Coliseum (7-8 miles) may be cheaper than a new highway or Max Line ($55 M/per mile vs $100M/per mile and $200M/per mile). Lower real estate acquisition costs. No bridges. No trucks. No rail. Tunnels dedicated for shuttles and cars.

Musk promised the Chicago “loop” to O’Hare will be about $55 million per mile. The Orange Line cost $200 million a mile. His Boring Company promises ciity-scale, subway-style “Loops”, using “skates” that carry ordinary cars through tunnels.

The tunnel bypasses the I-5 corridor. Electric shuttles and ordinary cars could go from Vancouver to downtown Portland in 5-10 minutes.

C. Free Bike Share.

Electric bikes and scooters, next to light rail, are free for the first 20 minutes. They deliver commuters directly to their destination. Free electric shuttles, with revenue derived from location-based advertising, are coming soon.

Summary:
Congestion on the I-5 corridor will get worse. In this vision we are moving towards free mass transit and last mile connections. Tunnels bypass most of the I-5 congestion. Autonomous shuttles connect commuters to mass transit stations.

It's already happening in dozens of cities. It reduces congestion by making mass transit faster, cheaper, and more appealing.

Electric scooters, bikes and shuttles deliver commuters directly to their destination. Electric shuttles, holding 8-12 people, use the tunnel. They can also use existing streets. No trucks. No rail. No overhead power. Shuttle to the Max.

More Information:

Here are links to more information:

- Oregon Transportation Plan
- Value Pricing Feasibility Analysis.
- 2014 RTP for Clark County
- Congestion costs Portland commuters $1.76 billion
- 2018 Metro Regional Transportation Plan
- The Interstate Bridge
- High Speed Rail
- I-5 Tunnel Plan
- North Portland Harbor Tube
- Autonomous Vehicles
- Free Mall Shuttles
- Bike and Car Sharing
- CRC History
- Water Taxi