

Washington Transportation Plan Update

New Directions to Address the Demand/Capacity Imbalance

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October 6, 2004



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Aspirations for the 2005 Plan Update

- Data driven, analytically grounded and organized by major issue areas
- Program and investment proposals advanced for the state for each major issue area
- Investment and programs proposals prioritized into high, medium, and low priority categories
- Scale of proposed investment constrained by financial realities

What we're hearing...

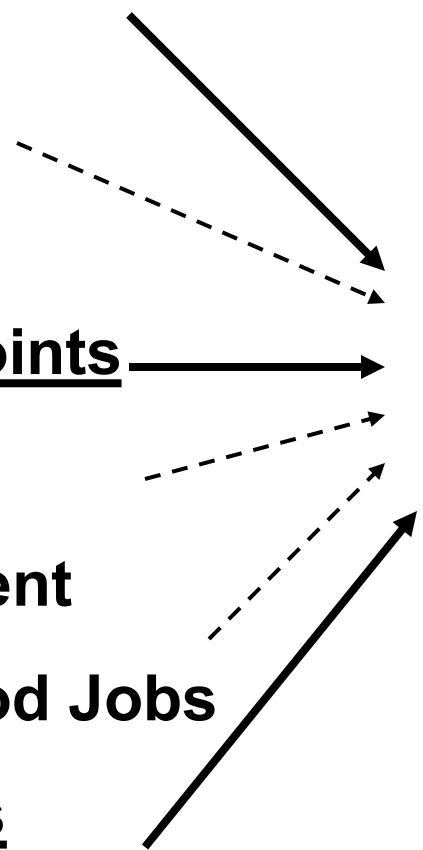
"The WTP should be a collection of information and data from which decision makers can make choices."

"DOT's analytic capability must be strengthened so that we have better information on which to take the long view...The key word everyone has to keep in mind is prioritization..."

"We must prioritize and make choices. The debate is not about how to keep doing just about what we are already doing. It's about how to choose to spend the money we have on what we really want."

Strategic Issues for this Update

- System Preservation
- System Efficiencies
- Safety
- Transportation Access
- Bottlenecks & Chokepoints
- Moving Freight
- Health & the Environment
- Strong Economy & Good Jobs
- Building Future Visions

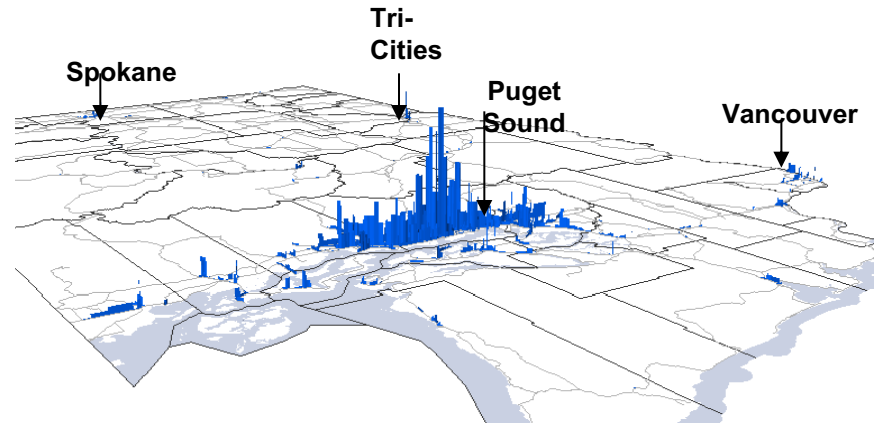


Most related to
congestion

The diagram consists of eight arrows pointing from the list of strategic issues on the left towards the text 'Most related to congestion' on the right. The arrows originate from the following items in the list: 'System Efficiencies', 'Bottlenecks & Chokepoints', 'Moving Freight', 'Health & the Environment', and 'Building Future Visions'. The arrows from 'System Efficiencies' and 'Building Future Visions' are solid black lines. The arrows from 'Bottlenecks & Chokepoints', 'Moving Freight', and 'Health & the Environment' are dashed black lines. The arrow from 'System Preservation' is a solid black line that points downwards and to the right, ending near the 'Most related to congestion' text.

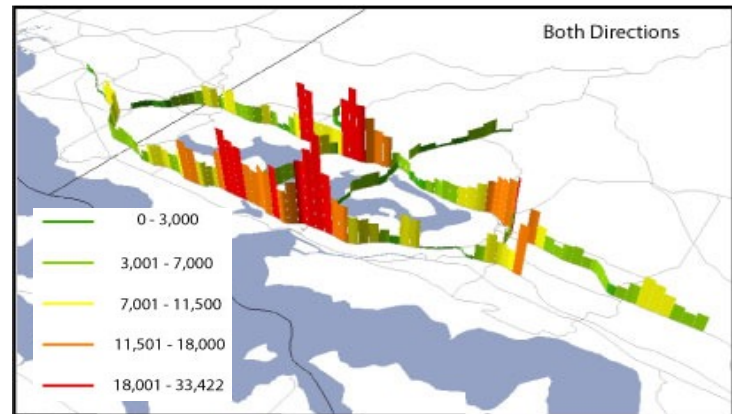
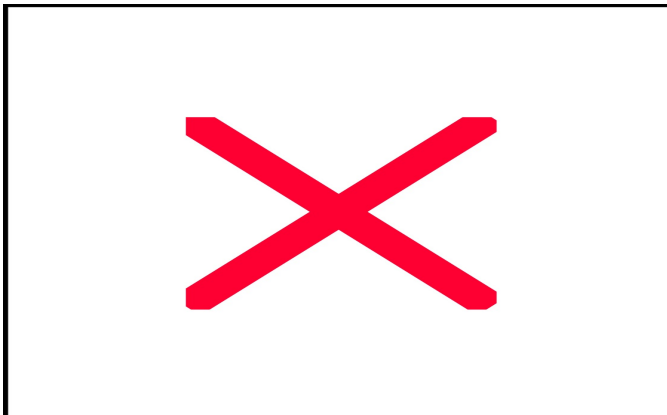
What are we finding related to congestion?

- Demand is growing, and the demand/capacity imbalance will continue to grow in the future.
- Congestion occurs mostly in the urban areas, especially Puget Sound, Vancouver and Spokane. (92% of all delay on highways occurs in these areas.)



2002 Daily Vehicle Hours of Delay Per Lane Mile

- Congestion causes lost productivity: Maximum freeway throughput of about 2000 vehicles per hour occurs at speeds of 45-50 mph. Throughput drops dramatically when traffic volumes force speeds to drop below 50 mph. The capacity of the roadway actually decreases (as much as half) with congestion-induced reduction in speed.



Efficiency Loss: Vehicle Throughput Reduction
Major Seattle Area Freeways

Emerging Directions

Operational Programs:

- Improvements such as ramp metering, incident response, HOV lanes, and others have been successful at improving flow on the system.
- Strategies such as commute trip reduction programs and transit oriented development hold promise for reducing peak period demand on roadways.

Bottleneck and Chokepoint Improvements:

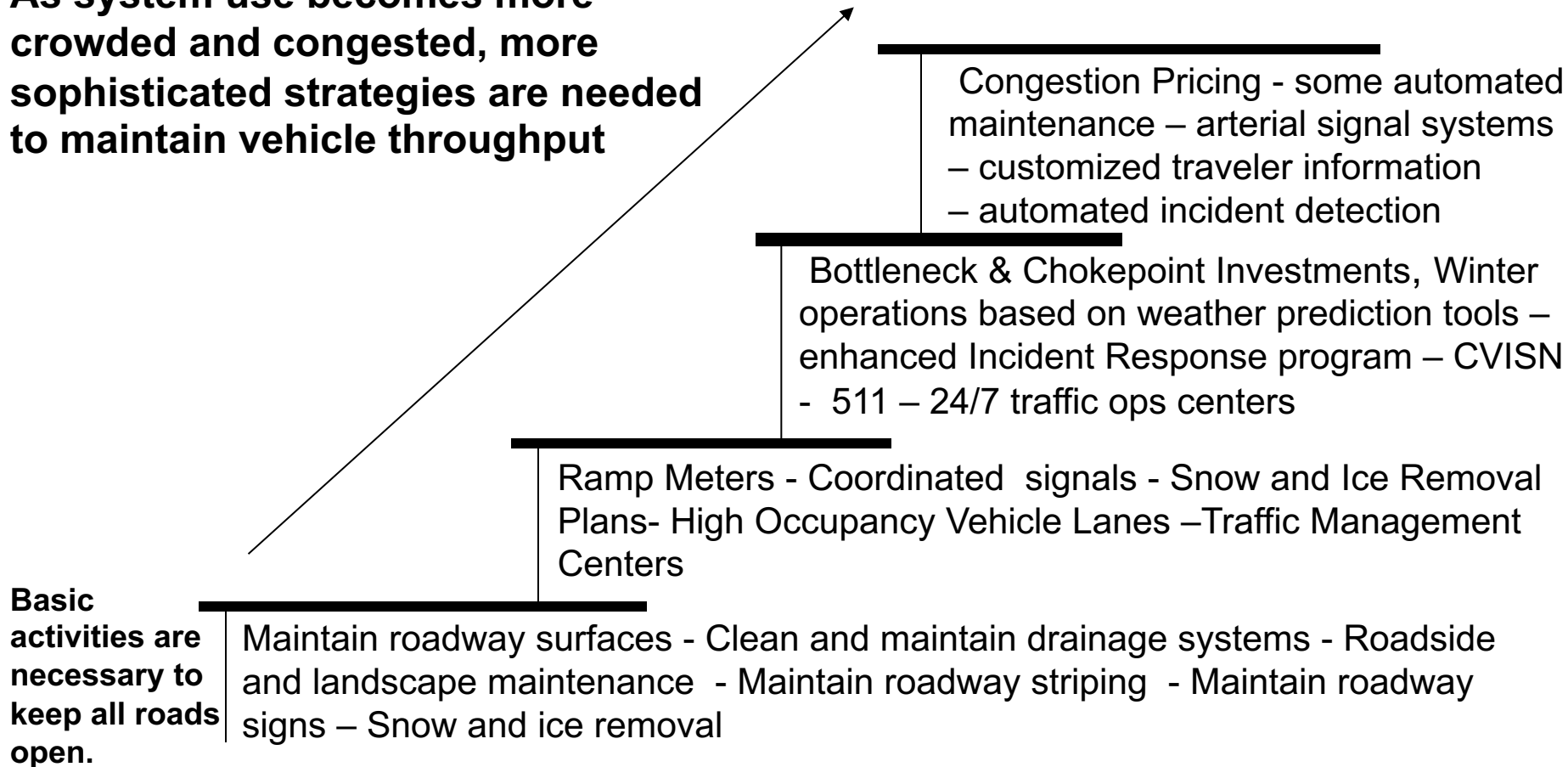
- There are locations on the system where system geometry and traffic patterns contribute to congestion and the reduction of throughput capacity. These locations, known as bottlenecks and chokepoints, provide an opportunity to restore lost capacity to the system.
- Targeted capital investments at these locations would be less expensive than full corridor build-outs, but could deliver significant delay savings and restored productivity.

Major Corridor Capacity Investments:

- These are important long term visions, but they are largely unfunded. Significant regional funding would be needed to augment state funding to get these built.

The Continuum of System Efficiency: Maintaining Throughput

As system use becomes more crowded and congested, more sophisticated strategies are needed to maintain vehicle throughput

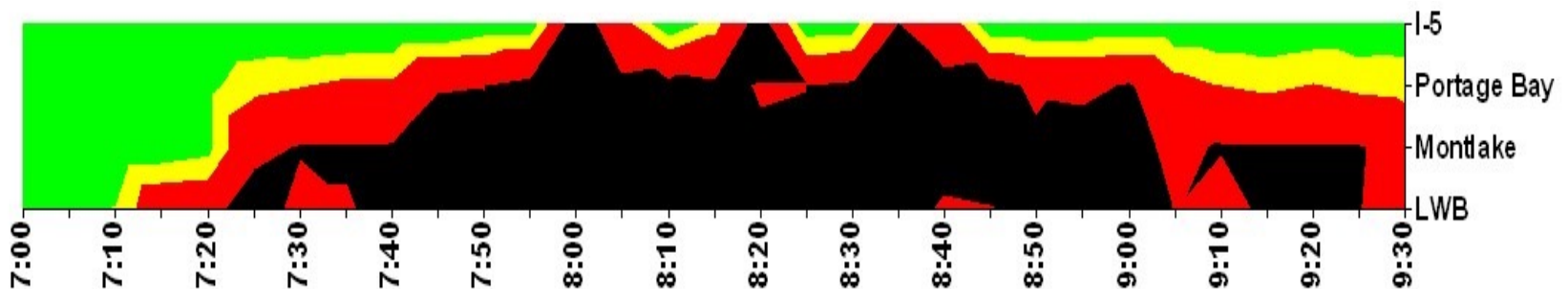


Highway Maintenance and Operations Activities

Ramp Metering

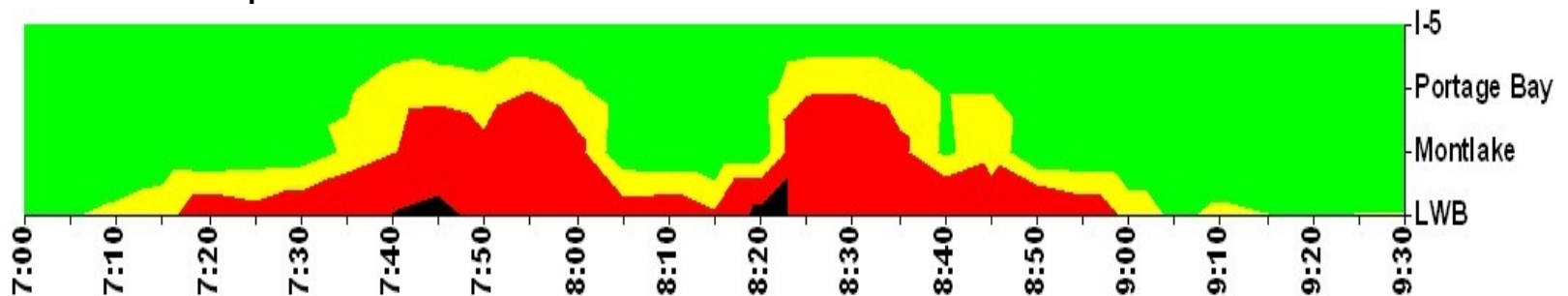
SR 520 Westbound Ramp Meter Effects

BEFORE a series of ramp meters were activated: EB morning congestion, I-5 to Lake Washington Blvd:



Wednesday July 25, 2001

AFTER ramp meter activation:



Thursday September 6, 2001

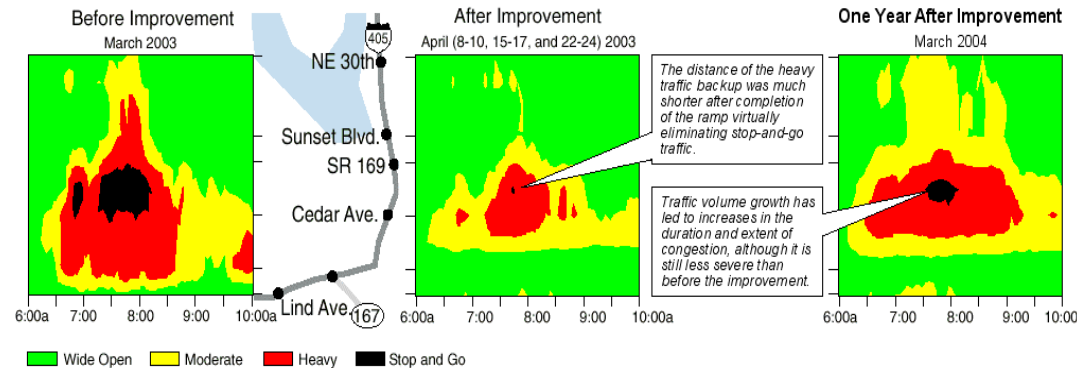
Wide Open ■ Moderate ■ Heavy ■ Stop and Go ■

Approaches: Capital Investment to Address Bottlenecks and Chokepoints

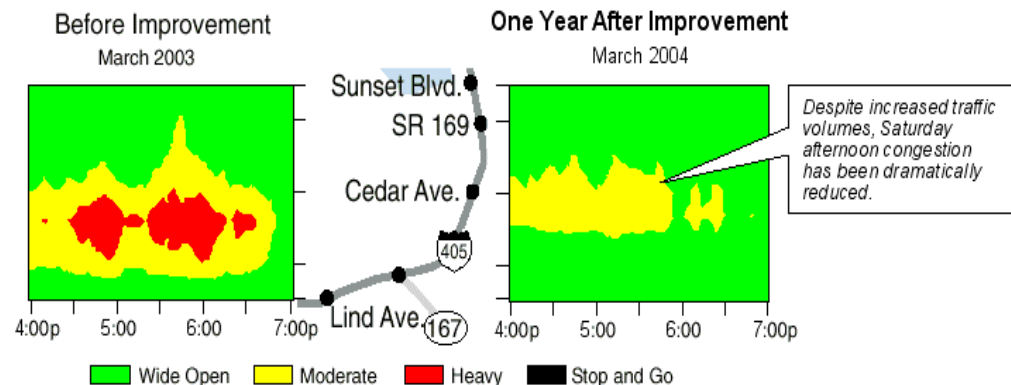
Bottlenecks and chokepoints

- The recently completed I-405 / SR 167 Flyover ramp is a good example of one such targeted investment to increase efficiency of an existing facility.
- The ramp cost \$10 million, was completed in two years, and has reduced delay on weekdays, and virtually eliminated delay on weekends.
- Accounting for delay savings and safety benefits, this project will recoup the building cost for the users of the system within less than 3 years.

Average Weekday Congestion
I-405 Southbound




Average Weekend Congestion
I-405 Southbound



Changing Transportation Economics

Congestion Pricing

System-Wide Tolling

- Charges accrue over all roads, from driveway to highway. Fee based on actual use of the road.
 - “Dynamic Pricing” (variable pricing based on demand) may be applied in this form of congestion pricing.
 - Minnesota and Oregon are studying and testing systems.
 - PSRC will study a GPS incentive based system testing pricing as a driving behavior modifier.
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- Germany's truck toll system has had numerous delays due to technical difficulties.

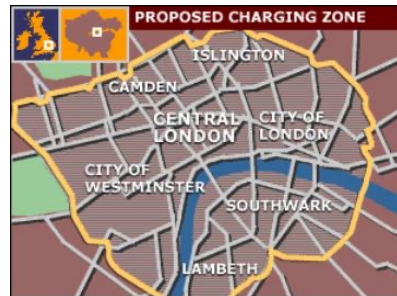
Segment Tolling

- Limited access facilities. Dynamically priced based on traffic volumes and delay.
- Until late 1980's federal policies discouraged tolls roads or imposing tolls on existing highways.
- Diminished road funding, advances in tolling technology, and more liberal federal policies have led to a resurgent interest in pricing roads.
- Advances in electronic toll collection now provide for “at speed” (no tollbooth) collection of tolls.



Cordon Tolling

- All drivers are charged a toll when entering an area, such as a downtown district.
- Singapore (1975 – electronic since 1998)
 - Central Business District and ring roads
 - Reduced number of solo drivers.
- London (2003)
 - Central Business District (8 sq. miles)
 - Photo tolling (688 cameras / 203 sites)
 - Congestion reduced 17%



High-Occupancy-Toll (HOT) Lanes

- SOVs can buy into HOV lanes (1 or 2 lanes) when there is available capacity.
- Almost 20 different projects using or studying HOT lane applications in US.
- Operational or Under Const.**
 - I-10 & US 290 (Houston, TX)
 - I-15 (San Diego, CA)
 - SR 91 (Orange County, CA)
 - I-394 (Minneapolis, MN)
 - I-25 / US 36 (Denver, CO)
- System-Wide Studies**
 - Minneapolis, MN
 - Atlanta, GA
 - Washington, DC Beltway (VA)
- Proposed**
 - SR 167 (King County, WA)
 - I-95 (Miami, FL)