Washington Transportation Plan Update

Sharing What We've Learned

Washington State Building & Trades Council

Executive Board Meeting

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Washington State Department of Transportation

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Aspiration 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 program 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."

How is the Process Taking Shape?

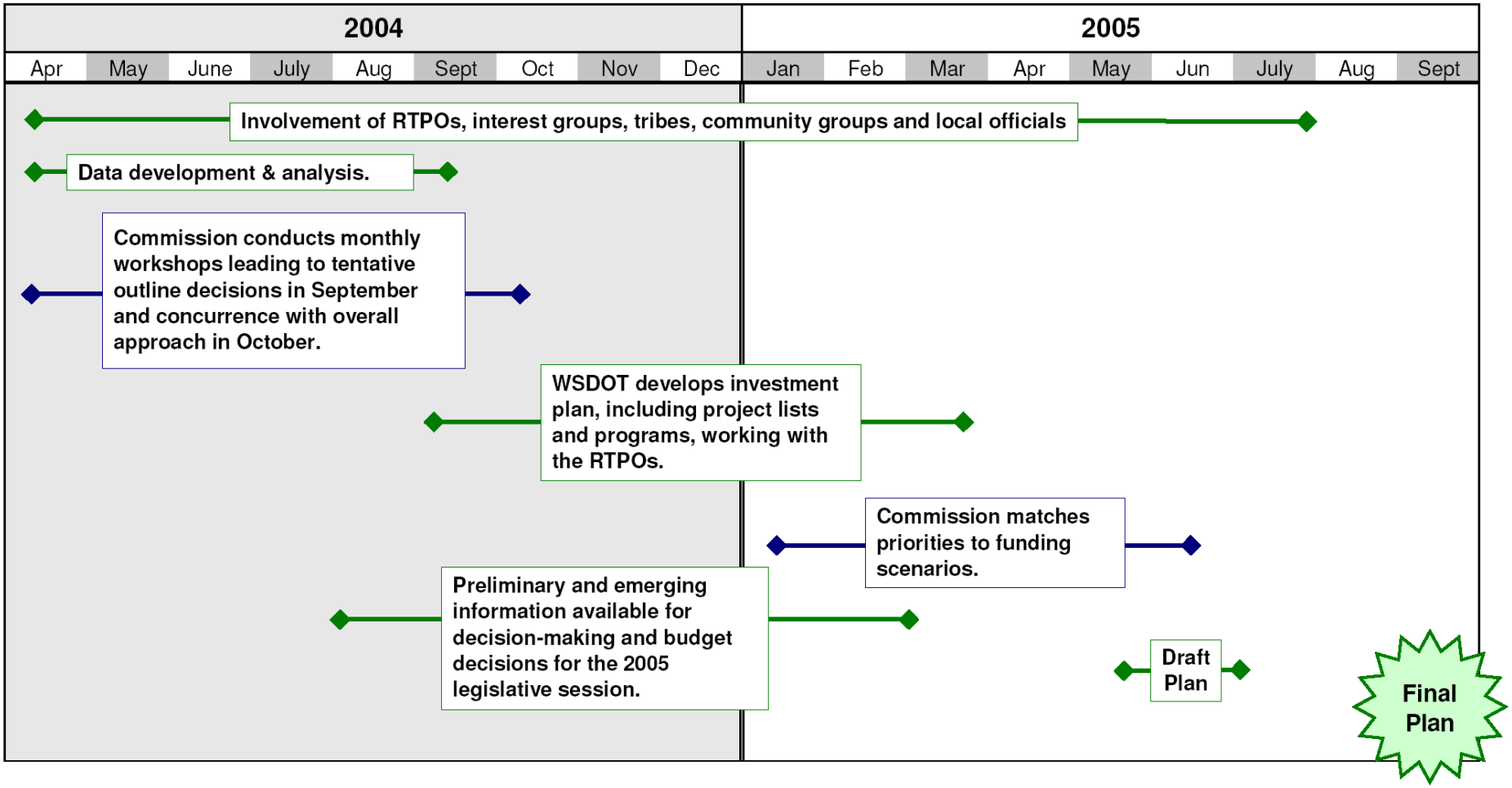
Phase 1: Data and Approach Development

- Build statewide transportation “data library.”
- Analyze statewide trends and system conditions.
- Identify key issues and choices.
- Share the learning and analysis with others.

Phase 2: Developing the Plan Update

- Commission guides tentative judgments on scale and direction of investment programs.
- WSDOT works with RTPOs and others to develop proposals for investment plans and funding scenarios.
- Commission matches priorities to funding scenarios
- Commission adopts the plan.

What's the Schedule?



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Washington Transportation Plan Update

What you will hear over and over. . .

- **Demands on our state's transportation systems are up, and have not been adequately addressed for years.**
- **Funds for transportation are not there to do what needs to be done.**
- **Aging and deterioration of our state's transportation system will require spending more and more to "stay in place."**

How do we talk about and settle on our real priorities in light of these paramount realities?

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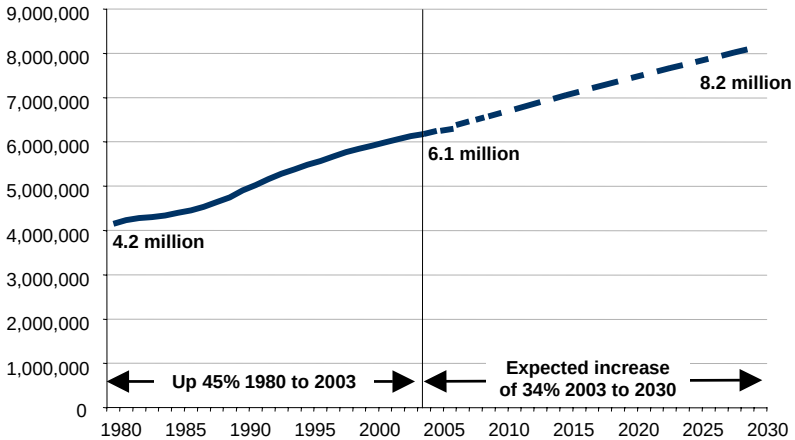
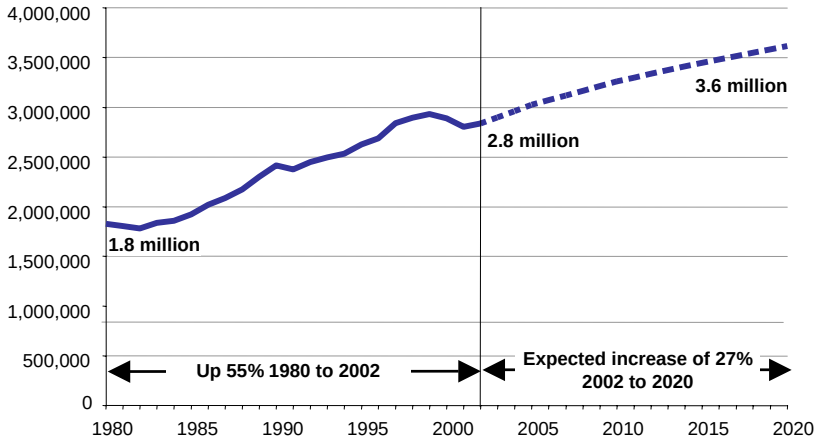
Demand is up…

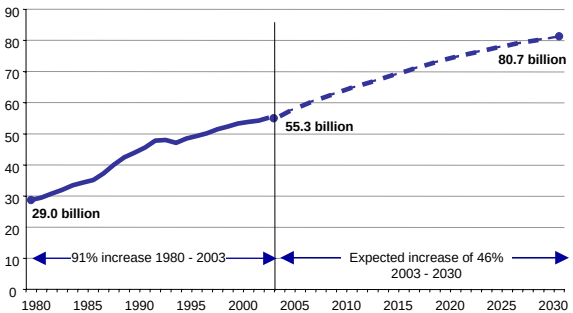
Population Will Continue to Grow



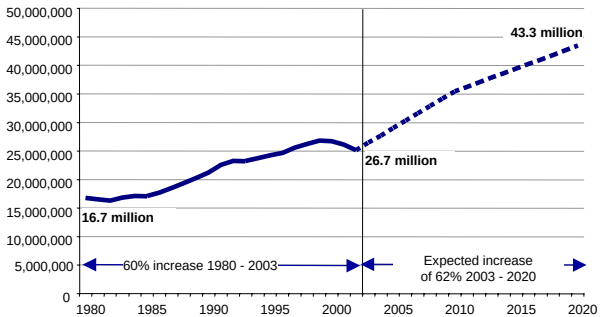
Employment Will Continue to Grow



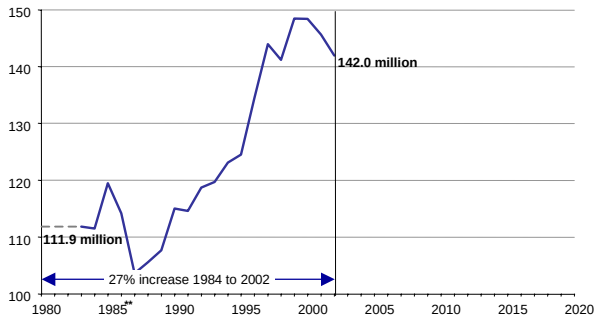
Vehicle Miles Traveled Will Continue to Grow (Miles in billions)



Ferry Ridership Will Continue to Grow



Transit Ridership Will Continue to Grow
(Fixed Urban Passenger Trips displayed)



**In the 1980 US Census, some suburban population areas were reclassified as urban areas. As a result, the transit systems serving these areas were then required to begin submitting yearly operating data to the National Transit Database - many of these beginning reporting in 1983. Data before 1983 is not compatible

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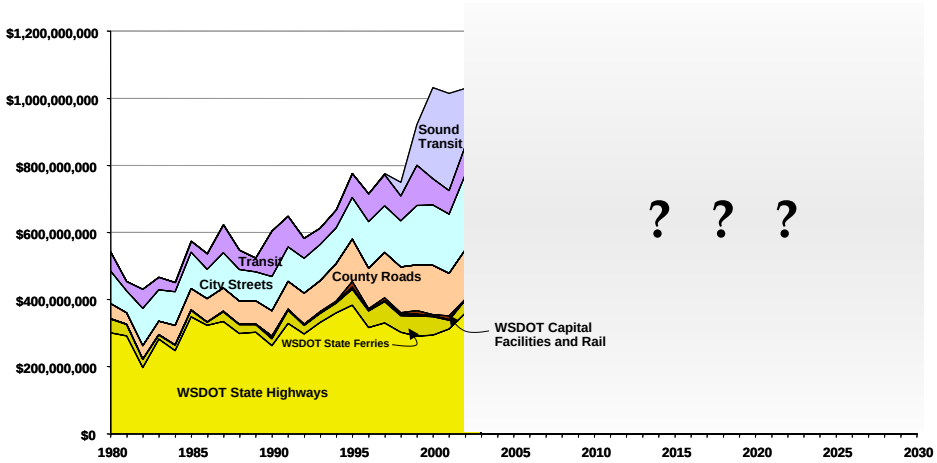
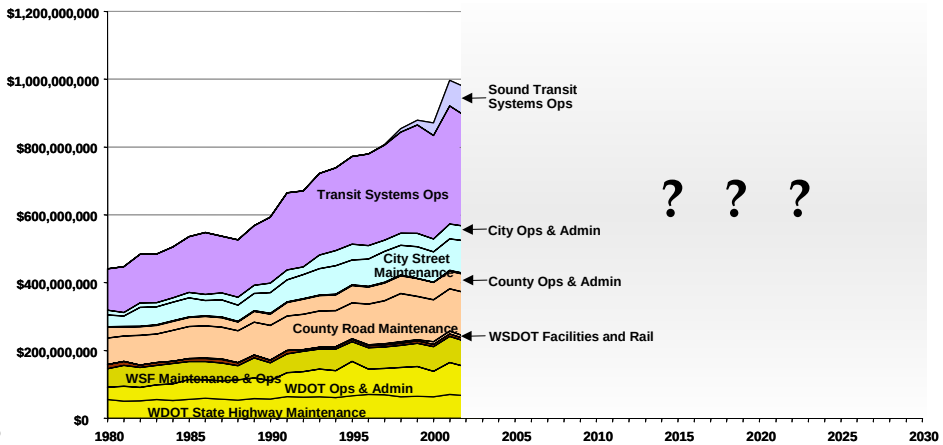
Funding: Down or flat…more or less….???

Capital Investment for Transportation by WSDOT, Counties, Cities, & Transit Agencies 1980 – 2002 Historical Data - (1980 dollars)

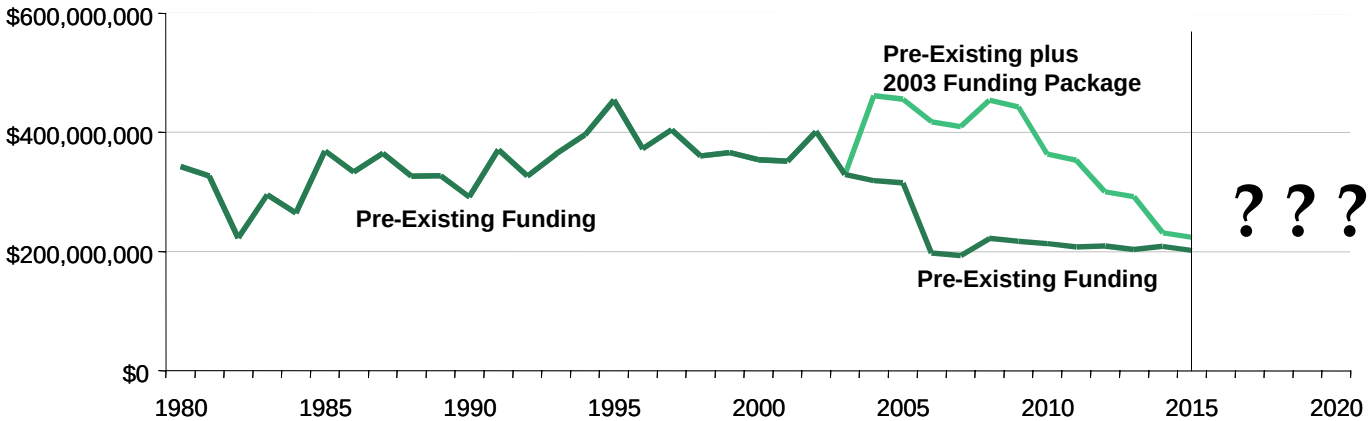


Operating Expenditures for Transportation by WSDOT, Counties, Cities, & Transit Agencies 1980 – 2002 Historical Data - (1980 dollars)



For WSDOT

Over the Next Decade WSDOT Capital Funding is Declining Even With the Last Funding Package (in 1980 constant dollars)



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The System is Aging and Deteriorating…

These problems are best recognized by the public as:

- Alaskan Way Viaduct
- SR 520 (Evergreen Point Floating Bridge)
- Interstate Pavements

On inspection, this is the problem of "preservation"investment. It is statewide and multimodal. It affects bridges, pavement and other facilities that the public assumes it can "take for granted."

But preservation cannot be taken for granted and needs to be funded.

The Discussion Involves:

- Even with RTID, more will be needed from the state for the Alaskan Way Viaduct, SR 520 (Evergreen Point Floating Bridge), interstate pavements, and other preservation needs.
- Maintenance and other operating and capital programs were not augmented by Transportation 2003 Funding Package. Safety programs need more funding.
- Only the very worthiest “new works” (i.e., capacity enhancement) projects can be funded at the likely levels of future investment capacity. How should they be prioritized?
- Multimodal funding will continue to present a challenge—other sources besides the gas tax and vehicle fees will need to be tapped.
- Increased state funding will need to be shared with cities, counties and transit.
- Equity amongst areas of the state will continue to be an issue: the “donor areas” are very restless.

Strategic Issues for this Update

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

System Preservation—What are we finding?

We've made progress. State pavements have improved; bridge rehabilitation has advanced; and inventories for most assets have been developed.

There are still large unfunded preservation needs:

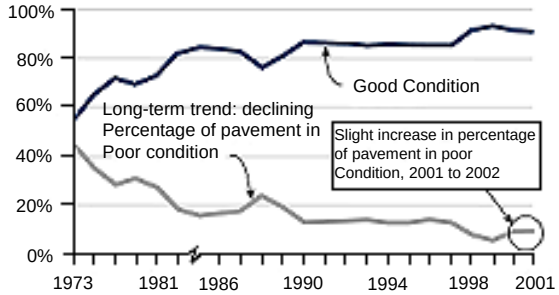
- **State Highways: Alaskan Way Viaduct, SR 520 Evergreen Point Floating Bridge, state highway concrete pavements**
- **Local Roadways: pavements and bridges**
- **General aviation airport pavements, and protection from land use encroachment**
- **Shortline railroads: Who's role?**
- **Park and ride lots**

Potential new preservation needs:

- **Drainage systems and stormwater treatment facilities**
- **Narrow state highway bridges**

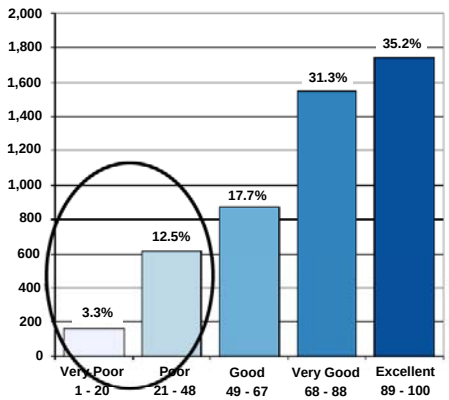
Pavement Condition Trends

Percent of pavements



Concrete Pavement in Poor Condition on Washington State Highways

City Roadway Conditions (Lane Miles)



Safety—What are we finding?

Fatalities are down but still too high – 600 people died in motor vehicle collisions in Washington in 2003. Motor vehicle collisions cost Washington $5.6 billion per year.

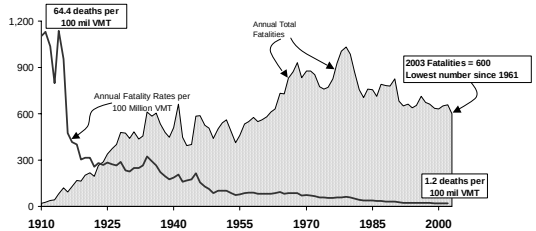
The main contributing factors are:

- **Behavior:**
  - **Speed – Excessive speed is a factor in 25 percent of fatal collisions**
  - **Alcohol – 40 percent of fatalities involve impaired driving**
  - **Age – Younger drivers have the highest fatality rate**
    Seatbelt use – Only 5 percent of drivers don't use seatbelts, but they account for almost half of all fatalities
- **Roadway:**
  - **Rural Two-Lane Roads – While urban and rural roads have about the same number of fatalities, the fatality rate on rural roadways is almost twice that in urban areas. On rural two-lane roadways, the rate is even higher.**
  - **Cross-over protection – Head-on collisions continue to be an issue, especially in rural areas**

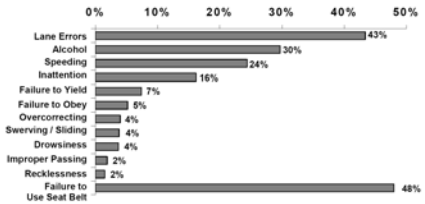
Behavioral programs will be controversial.

- **How do we get the last 5% of people to use their seatbelts, and how do we further reduce aggressive and drunk driving?**

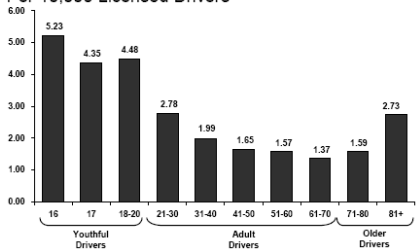
Washington Motor Vehicle Total Fatalities and Fatality Rates *
1910 - 2002



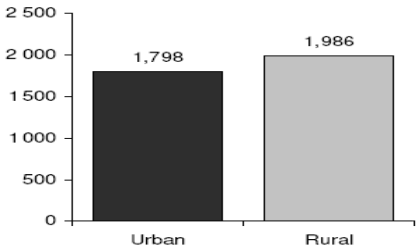
Driver Errors and Behaviors Associated With Fatal Collisions in Washington State
1993 - 2001



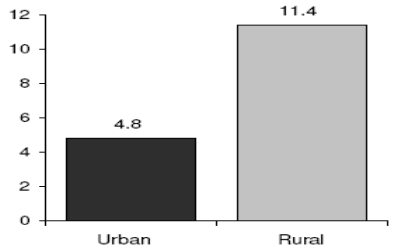
Rate of Fatal Collisions by Driver Age Group:
Washington State 8-Year Average 1993 – 2000
Per 10,000 Licensed Drivers



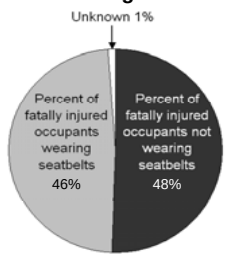
Number of Fatalities and Disabling Injury Collisions
By Urban and Rural Roadways
2002



Rate of Fatalities and Disabling Injury Collisions
By Urban and Rural Roadways
Rate Per 100 Million VMT
2002



Fatalities of Users and Non-Users of Seatbelts in Washington State
2002



Note: The other 5% occurred in other types of vehicles such as motorcycles and large trucks.

Transportation Access—What are we finding?

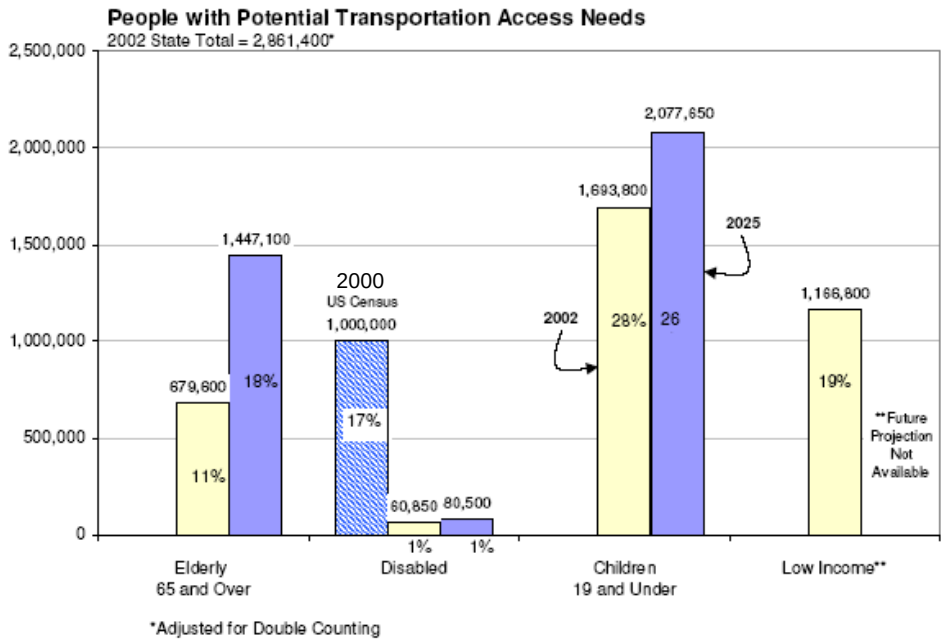
The growing elderly population:

- **Driving longer**
- **More are living past the driving age**
- **Growing suburban presence**

The demand for demand-response service is up:

- **Expensive to provide**
- **Less availability in rural and some suburban areas**

Coordination among service providers is started but more is needed.



Strong Economy & Good Jobs—What are we finding?

Washington's economy is shifting to become more services based, but manufacturing is still important.

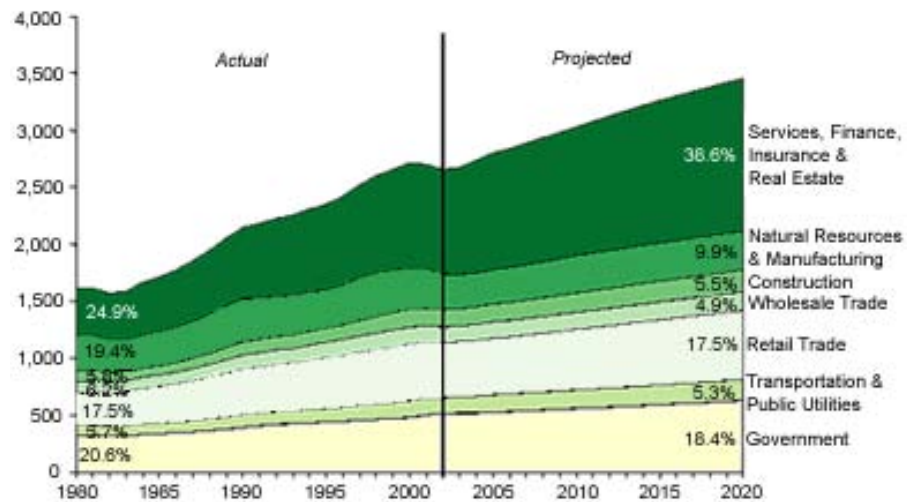
Research shows a strong link between transportation and economic development. Benefits of transportation investment include:

- **User Benefits (delay savings, safety, operating costs, etc.)**
- **Jobs from project construction, and multiplier**
- **Economic productivity increases that expand the state economy**
- **Development in local areas (improved access/land development/tourism)**

Transportation is necessary for economic development, but not sufficient to ensure economic development at specific locations. We should be cautious about speculative investments.

What are the transportation needs of economic clusters?

Washington Non-Agricultural Employment by Industry
1980 to 2020, thousands of jobs



Washington's Economic Clusters

Ranked by Gross Business Income 2000		Ranked by Employment 2000	
Aerospace	**$37.81 billion**	**Tourism**	**261,625**
Health Care	**$13.2 billion**	**Health Care**	**216,618**
Tourism	**$10.2 billion**	**Aerospace**	**88,079**
Food Processing	$7.6 billion	Software	70,167
Metal Working	$7.3 billion	International Trade	50,065
Software	$6.6 billion	Food Processing	49,757
Wood Products	$6.4 billion	Metal Working	44,692
International Trade	$3.8 billion	Electronics/Computers	34,081
Electronics/Computers	$3.7 billion	Wood Products	26,085
Biotechnology	$2.0 billion	Biotechnology	14,534
Aluminum	$1.9 billion	Aluminum	6,193
Concrete/Cement/Brick	$300 million	Concrete/Cement/Brick	3,535
Non-Ferrous Metals	$200 million	Non-Ferrous Metals	1,402

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Moving Freight—What are we finding?

Focus on three areas:

Global gateways:

- East/West: Port access and rail capacity
- North/South: Border crossings and trucking growth

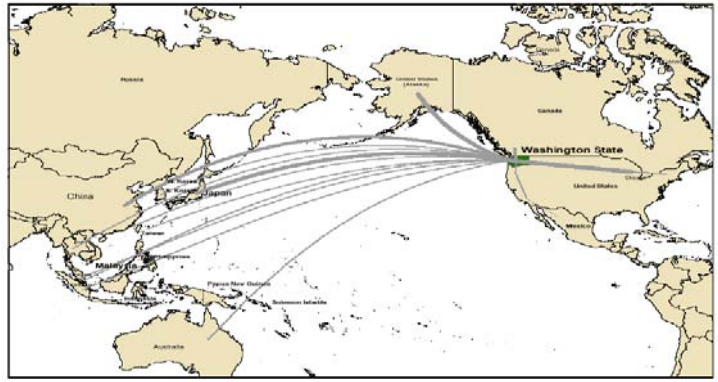
Washington's manufacturers and producers

- Regional economies and their transportation needs vary
  - Southeast Washington: getting grain to seaports for export
  - Columbia Basin and North-Central Washington: repositioning refrigerated equipment and I- 90 reliability
  - Central Puget Sound: roadway congestion
  - Spokane Region: I- 90 reliability
  - Vancouver: I-5 congestion
  - Northwest Washington: I-5 congestion and border crossings
  - Coastal counties: access to the I-5 corridor

Distribution of goods

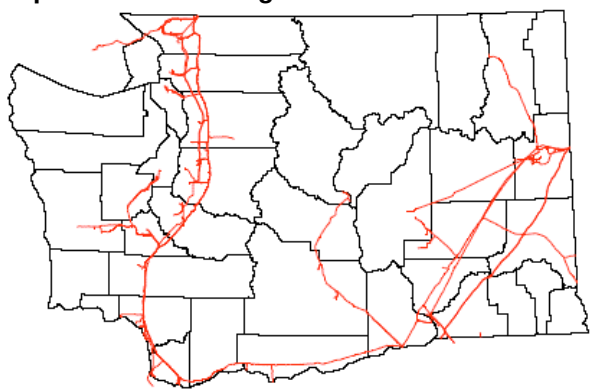
- Represents 80% of urban area truck movement
- Delivering the daily necessities of Washington citizens: food, fuel, medical supplies, retail stock, office supplies, and removing garbage

Washington Astride a Global Network



Economic Regions of Washington State

Pipelines in Washington State



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Health & The Environment—What are we finding?

We've made progress on air quality. New concerns are emerging:

- **Air toxics**
- **Diesel emissions**
- **Carbon dioxide**

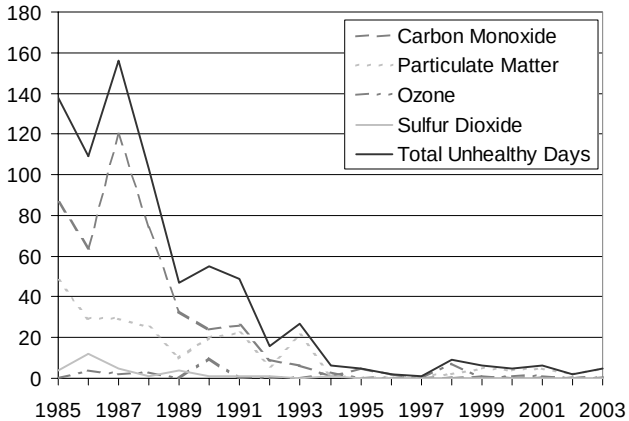
Health is a "growing" concern.

Getting a bigger return on our mitigation buck: watershed approaches promise better outcomes for the environment.

Stormwater and habitat connectivity are both emerging emphases.

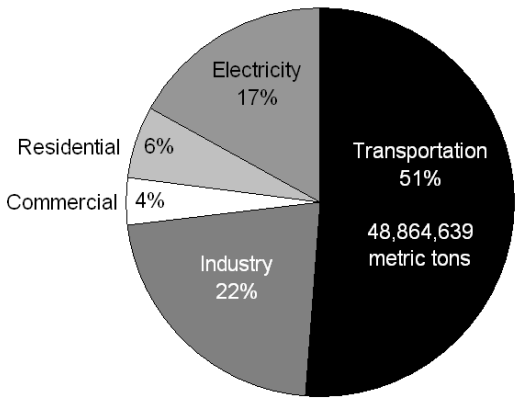
Days with Unhealthy Air Quality in Washington

1985 - 2003



Source: Department of Ecology Air Quality Program

Carbon Dioxide Emissions in Washington State by Source
Source: WSU Energy Program



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System Efficiencies—What are we finding?

Basic maintenance and operations is the cornerstone of keeping the system moving.

As congestion grows, more sophisticated technologies are needed to maintain flow:

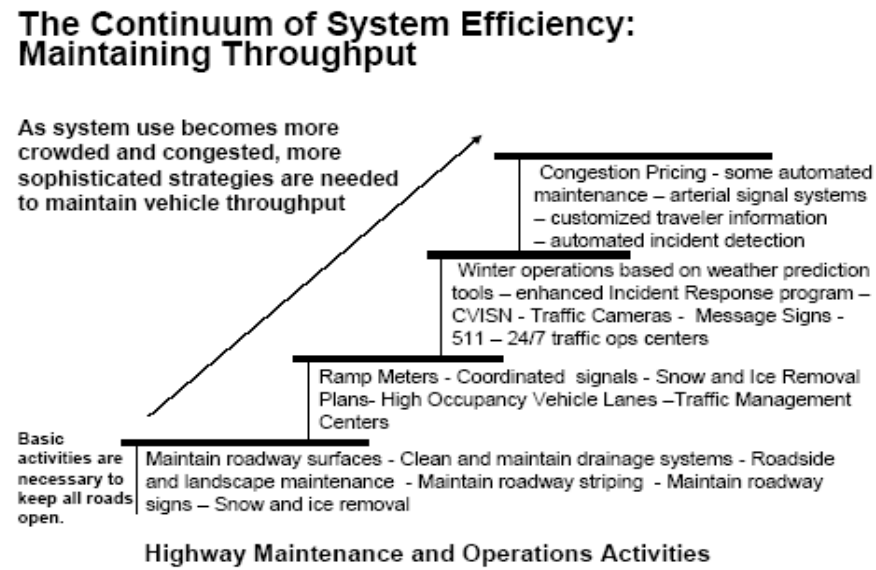
- **Intelligent transportation system (ITS) technologies**
- **Incident response**
- **Signal optimization**
- **Truck operations**
- **Managed lanes**
- **Pricing**

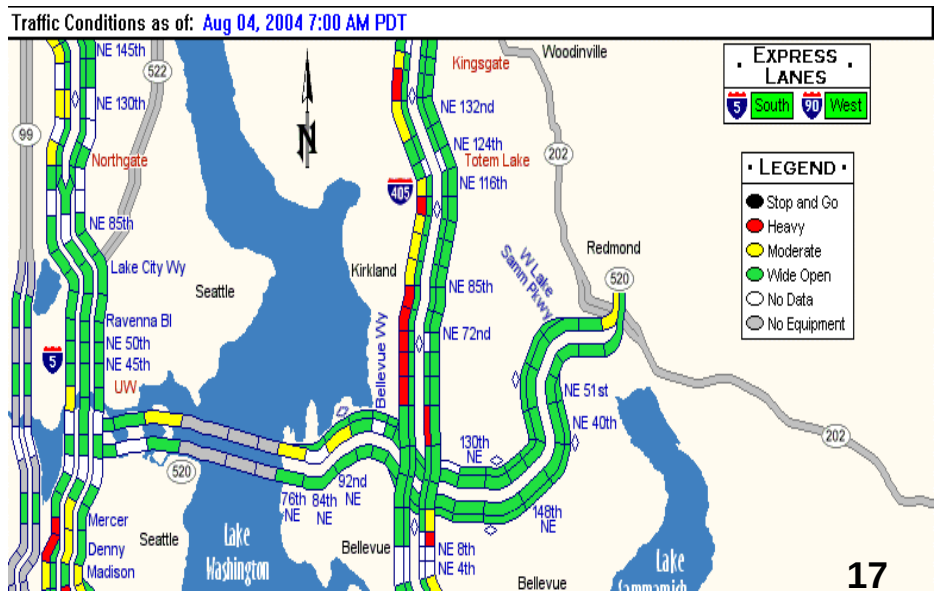
Improving public transit operations

- **System operating configuration**
- **Communications to manage the fleet and inform customers**
- **HOV lane strategies**
- **Park and ride lots**
- **Travel Conservation: Reducing or Redirecting Demand**
- **Transit-supportive**
- **Land use strategies**

Issues facing Washington State Ferries operations

- **Congestion and peaking in the system**
- **Trip reliability**
- **Intermodal connections**





Three related issues address the demand/capacity imbalance:

System Preservation

Safety

System Efficiencies

Transportation Access

Bottlenecks & Chokepoints

Moving Freight

Health & the Environment

Strong Economy & Good Jobs

Building Future Visions

- Maintaining flow
- Maximizing throughput
- Improving productivity

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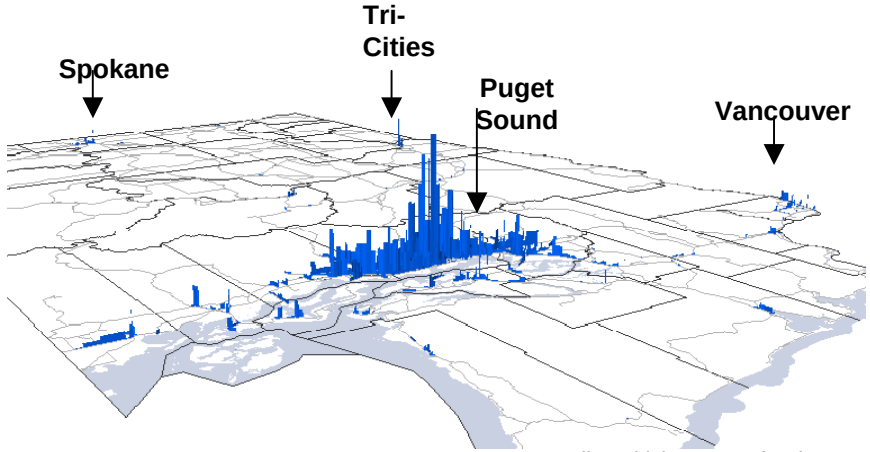
What are we finding related to demand/capacity?

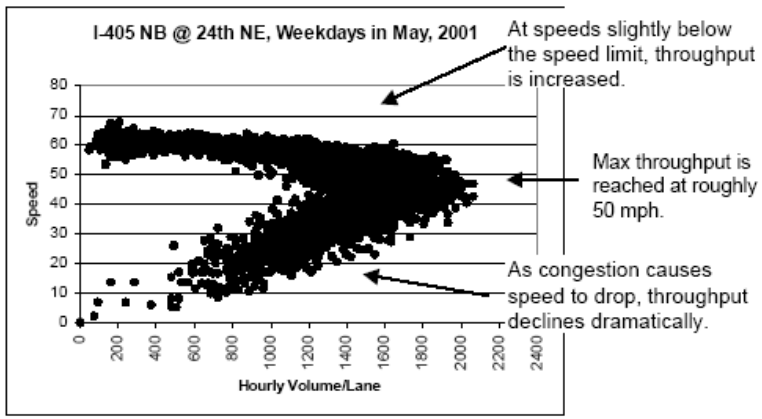
- Demand is growing, and the demand/capacity imbalance will continue to grow in the future, leading to more congestion.
- Congestion occurs mostly in the urban areas, especially Puget Sound, Vancouver and Spokane. (92% of all delay on highways occurs in these areas.)

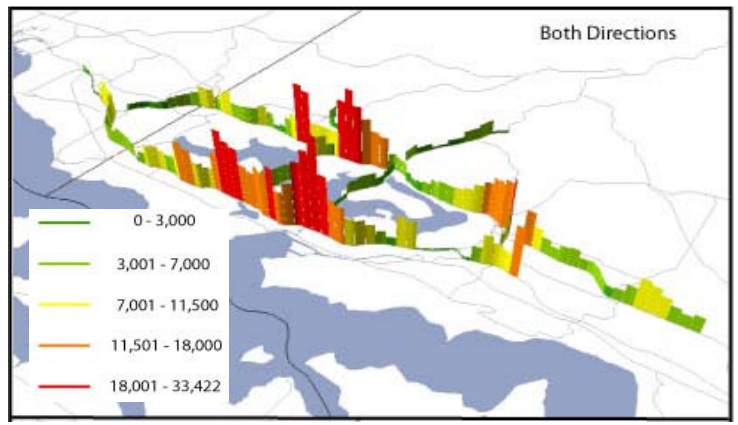


2002 Daily Vehicle Hours of Delay Per Lane Mile

- 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.

System Efficiency Example





Efficiency Loss: Vehicle Throughput Reduction
Major Seattle Area Freeways

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Throughput & Productivity—Emerging Directions

Operational Programs:

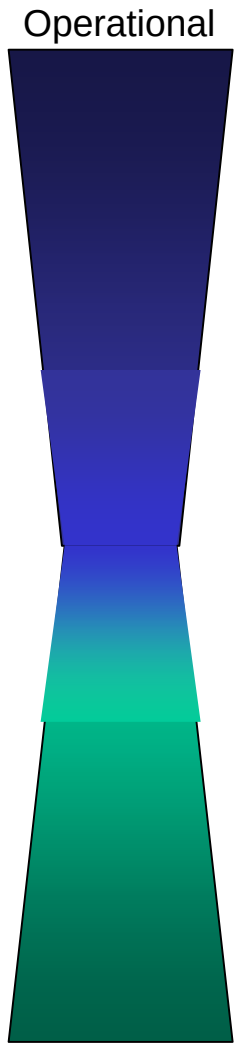
- Improvements such as ramp metering, incident response, HOV lanes, and others have been successful at improving flow on the system.
- Strategies such as commute trip reduction programs and transit oriented development hold promise for reducing peak period demand on roadways.

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.



Building Future Visions—What are we finding?

Rapidly evolving technology holds some nearer term promise:

- **Smart vehicles and roads – interactive systems for variable cruise control and collision avoidance, among others, improve efficiency and safety.**

Pricing strategies to manage flow and increase traditional transportation funding, especially in congested corridors. Technology is now available to allow electronic toll collection – no toll booths.

New fuels from non-petroleum energy sources, such as biodiesel and hydrogen, should improve air quality. Funding issues need to be resolved.

Prototype fuel cell vehicle

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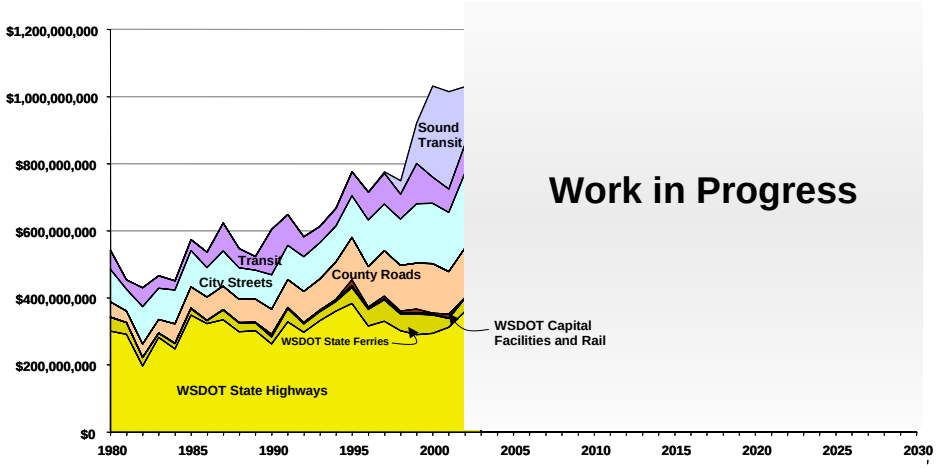
What's Next?

- We want to hear what people think about our conclusions on emerging directions – do we interpret what the data means in the same way?
- Phase 2 is where we translate these data-driven conclusions and perspectives into an investment plan
  - Data point to needs for which we recommend state projects, statewide programs, and statewide policies
  - Clearly show the benefits and attributes of those proposed actions.
- The Commission then prioritizes the proposal:
  - High-Medium-Low priorities

Funding: What does the Future Look Like?

Capital Investment for Transportation by WSDOT, Counties, Cities, & Transit Agencies 1980 – 2002 Historical Data - (1980 dollars)



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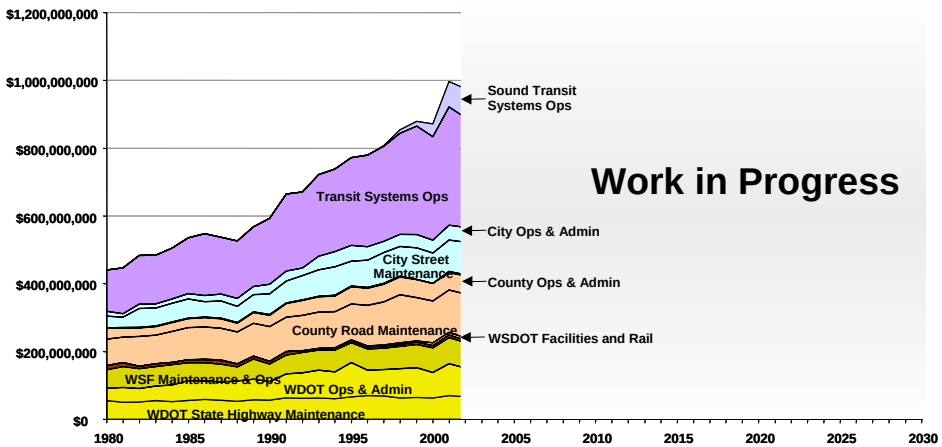

Note:Transportation funds include associated bond proceeds but are net of debt service expenditures.
These charts also do not include policing revenues or expenditures.

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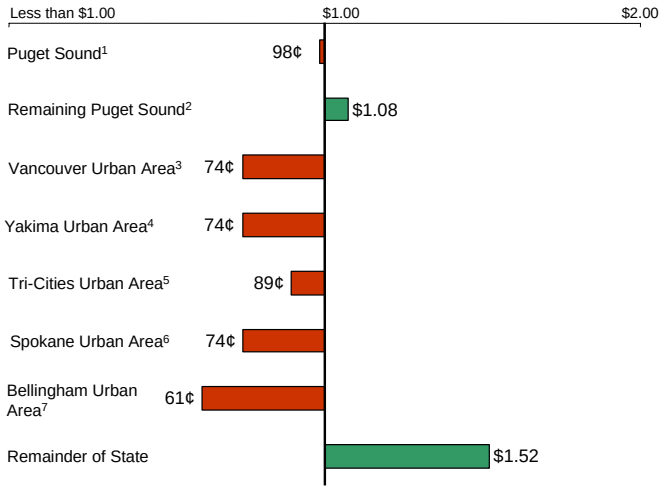
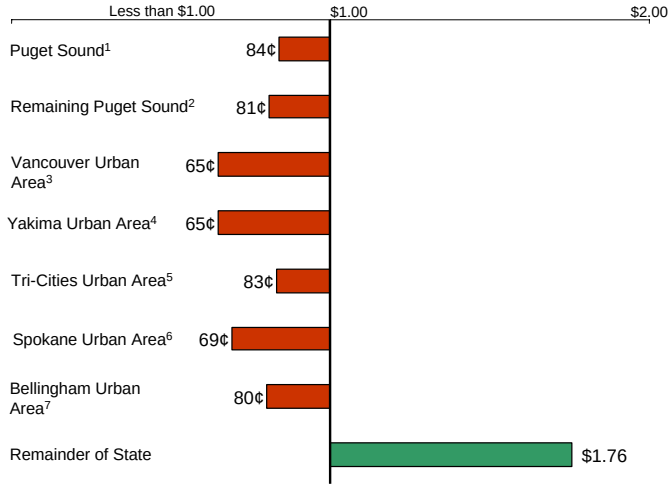
Return Per Dollar Contributed by Citizens Within Each Region

Total Historical State & Federal Transportation Funding 1984-2003



Urban Area	Funding Contributed for Transportation	Funding Distributions & Expenditures	Return per Dollar Contributed
Puget Sound[1]	13,375,363,000	13,173,740,000	0.98
Remaining Puget Sound[2]	2,232,262,000	2,400,784,000	1.08
Vancouver Urban Area[3]	1,278,312,000	948,129,000	0.74
Yakima Urban Area[4]	850,069,000	628,581,000	0.74
Tri-Cities Urban Area[5]	862,338,000	769,619,000	0.89
Spokane Urban Area[6]	1,726,267,000	1,276,224,000	0.74
Bellingham Urban Area[7]	798,811,000	487,586,000	0.61
Remainder of State	4,990,332,000	7,596,154,000	1.52
Total State	**$26,113,754,000**	**$27,280,817,000**	**$1.04**

Total Future State & Federal Transportation Funding 2004-2013



Urban Area	Funding Contributed for Transportation	Funding Distributions & Expenditures	Return per Dollar Contributed
Puget Sound[1]	11,564,996,537	9,718,574,899	0.84
Remaining Puget Sound[2]	2,108,260,399	1,708,373,213	0.81
Vancouver Urban Area[3]	1,327,255,878	862,738,058	0.65
Yakima Urban Area[4]	748,849,318	485,480,787	0.65
Tri-Cities Urban Area[5]	688,245,459	572,645,212	0.83
Spokane Urban Area[6]	1,490,233,777	1,034,799,536	0.69
Bellingham Urban Area[7]	610,729,196	489,552,631	0.80
Remainder of State	4,166,901,436	7,335,896,664	1.76
Total State	**$22,705,472,000**	**$22,208,061,000**	**$0.98**

[1]Puget Sound consists of King, Pierce and Snohomish Counties.
[2]Remaining Puget Sound consists of Kitsap and Thurston Counties.
[3]Vancouver Urban Area consists of Clark County.
[4]Yakima Urban Area consists of Yakima County.
[5]Tri-Cities Urban Area Consists of Benton and Franklin Counties.
[6]Spokane Urban Area consists of Spokane County.
[7]Bellingham Urban Area consists of Whatcom County.

Note:Transportation funds include associated bond proceeds but are net of debt service expenditures.
This chart does not include locally imposed taxes by counties, cities, or transit agencies for transportation purposes.

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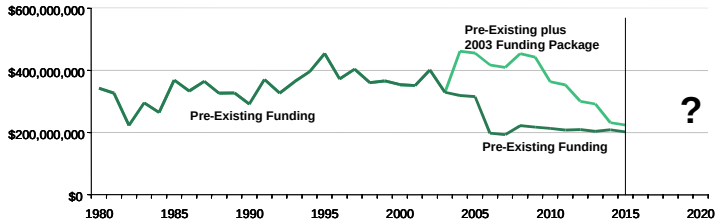
Reality Intrudes

To put the funding potential in perspective, several scenarios were developed. The bottom line: even with an aggressive state funding scenario, priorities will have to be set.

Over the Next Decade WSDOT Funding is Declining Even With the Last Funding Package (in 1980 constant dollars)



How much additional funding could be raised over the next decade?

Dollars in millions

Three scenarios, 2 options each.	Option A				Option B			
	Local Share	State Share		Total	Local Share	State Share		Total
	50%	*50%*			*25%*	*75%*		
		20% Maintenance	80% WSDOT Capital*			20% Maintenance	80% WSDOT Capital*	
Scenario 1: **1¢ gas tax increase each year for the next 10 years**	$993	$199	$1,835	$3,027	$497	$298	$2,722	$3,517
Scenario 2: **10¢ gas tax increase beginning July 1, 2005**	$1,781	$356	$2,526	$4,663	$890	$534	$3,790	$5,214
Scenario 3: **10¢ gas tax increase beginning July 1, 2005, plus another 10¢ increase July 1, 2011**	$2,675	$535	$4,344	$7,554	$1,337	$802	$6,577	$8,716

**Amounts shown for WSDOT Capital Investment include assumptions for the sale of bonds using the available revenue stream. The funding level can vary depending on the timing of expenditures and the resulting bond sales needed, as well as from financing assumpitons including interest rates and debt service coverage requirements.*

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