



# **WSDOT's Three Dimensional Congestion Strategy**

# Congestion Requires a Balanced Management Approach

## What are we doing about congestion? “Moving Washington”

The multiple causes of congestion require a balanced approach that uses several strategies. Building more roads alone will not address the problem. Instead, a balanced corridor-based approach is needed that includes operations, safety, and preserving the existing system.

### Operating Roadways Efficiently\*

WSDOT can make the existing system operate more efficiently by using tools such as:

- Ramp meters,
- Synchronized traffic signals,
- HOV lanes.
- Incident response trucks to clear traffic incidents
- Construction traffic management
- Continue to explore emerging practices and technologies such as Active Traffic Management

### Managing Demand

Providing people choices—WSDOT can reduce demand on the transportation system:

- Commute Trip Reduction programs
- Transit
- Vanpools and Carpool programs
- Roadway pricing
- Travel information
- Telecommuting and flexible work schedules

### Adding Capacity Strategically

Building is part of the solution—capital projects improve congestion and safety by increasing highway capacity to relieve chokepoints that are caused by excess demand.

### *Benefits of Moving Washington*

- ✓ Maximized use of existing infrastructure
- ✓ Reduced collisions
- ✓ Smoothed traffic flow
- ✓ Better roadway productivity (vehicle throughput)
- ✓ Improved travel reliability
- ✓ More travel options to reduce traffic demand and reduced greenhouse gas emissions

\* Also see backup slide #20, “WSDOT’s goal is to maximize throughput and system efficiency.”



# Operate Efficiently: Signal Retiming and Ramp Meter Strategies

Just over half of WSDOT's signals met the agency's performance target in 2007

### Benefits:

- Studies have shown return on investments as high as 40:1 on signal retiming. Our experience supports this.
- A retimed signal in Bothell demonstrated reduced average vehicle travel times between 16 seconds and 2 minutes 27 seconds, improving travel times as much as 41%.

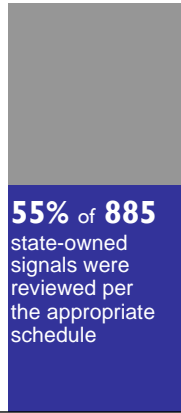
### Goal:

Traffic signal reviews provide real-time data to more effectively use the system of state-owned and operated traffic signals. WSDOT's goal is to:

- Review coordinated and high volume signals at least every 2.5 years
- Review low volume signals (2-lane roads with volumes below 10,000 vehicles or multi-lane roads with volumes less than 15,000) every 4 years.

### Actions:

- Currently, \$3.4 million and 19 FTEs are planned for Signal Operations work this biennium.
- WSDOT is collaborating with Puget Sound Regional Coordination to improve coordination of traffic operations, investments and practices, with one emphasis being signal operations.



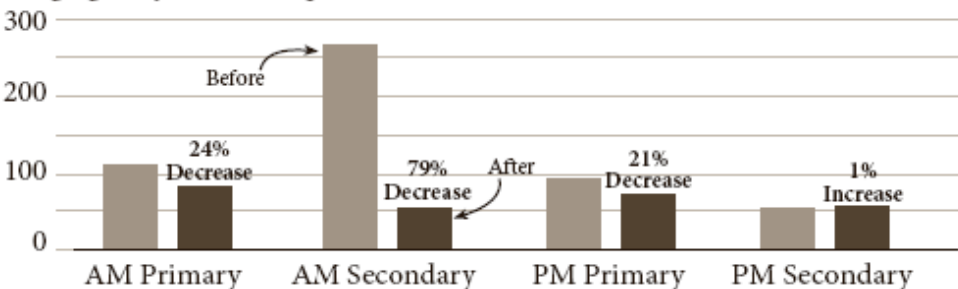
Q4, 2007

Total State- and Locally-Owned Signals: 6400

## Ramp Meters Improve Traffic Flow

### Tally of Observed Braking Actions

Merging Conflicts at Ramp to SR 167



### Benefits:

- Studies show that ramp meters reduce accidents by 30%. Since 1981, WSDOT has increased ramp meters in the Puget Sound from 22 to 135 meters.
- This Seattle case study showed decreases in braking actions and resulted in 24% decrease in the morning peak.

### Goal:

Improve traffic flow.

### Actions:

- Updating freeway management software by 2008 to assure that the Puget Sound freeway system will be operated with compatible systems which is expected to increase overall efficiency.
- The congestion audit recommended that WSDOT expand its ramp metering system. Estimated long-range need for additional state ramp metering in King, Snohomish and Pierce counties is about 140 ramp meters at a cost of \$180 million. WSDOT will work with OFM to identify system needs in anticipation of the 2009-11 budget submittal.



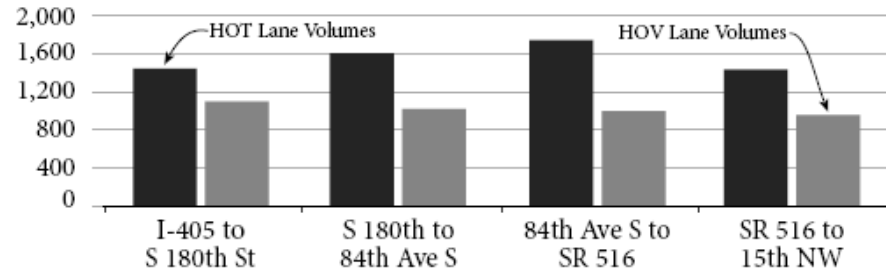
# Operate Efficiently: New Initiatives and Innovative Approaches

In April 2008, WSDOT will convert HOV lanes on SR 167 to high occupancy toll (HOT) lanes.

## High Occupancy Toll Lane Pilot

### SR 167 HOT Lanes - Forecasted Performance

Number of Vehicles per Hour per Lane



#### Benefits:

- Preliminary data from other states (CA, TX, MN and CO) show that traffic flow could improve for all drivers and preserve speeds of at least 45 mph for transit, carpools and vanpools.

#### Goals:

To maintain speed and reliability for vanpools, carpools transit and paying HOT lane users.

#### Actions:

- WSDOT will report on the preliminary results from the HOT lane pilot project in the Gray Notebook congestion report.
- WSDOT is evaluating the option of implementing HOT lanes on I-405 between Bellevue and Lynnwood.

## Active Traffic Management

Active Traffic Management (ATM) integrates multiple strategies to provide “real-time” lane management to regulate vehicle flow and maximize throughput. Based on similar, successful strategies employed in Denmark, England, Germany, and the Netherlands.

#### Benefits:

- Preliminary modeling of ATM techniques projects the potential to decrease injury collisions by 30% and other collisions by 16%.
- WSDOT is examining the appropriate application of ATM techniques and where they would be most beneficial to implement.

#### Goals:

Respond to changing conditions to enhance traffic flow, maximize throughput and enhance safety.

#### Actions:

Washington State received two grants from the federal government for major roadways that include money for additional Intelligent Transportation System programs that may provide opportunities to implement ATM.

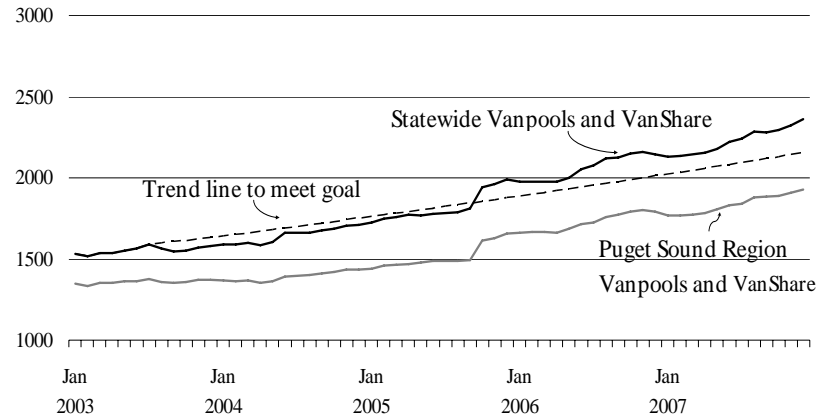
- SR 520
- I-5 Columbia River Bridge Crossing





# Managing Demand: Providing Commute Options

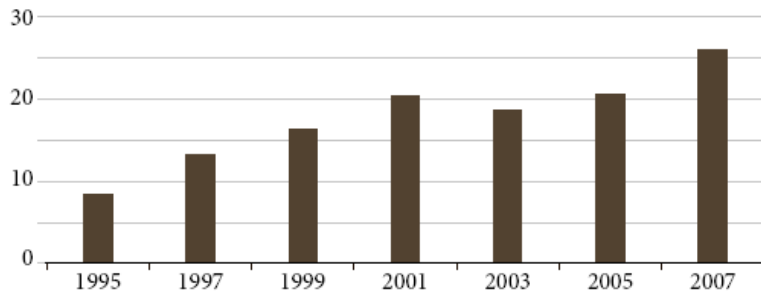
Number of Public Vanpools Operating in Washington State  
2003 - 2007



Data Source: WSDOT Vanpool

## Commuter Trip Reduction Program Benefits Average Number of Morning Trips Reduced per Day From Sites with Measurement Surveys, Fiscal Years 1995-2007

Number in Thousands



Data Source: WSDOT Commute Options Program

WSDOT partners with local governments, transit agencies, regional transportation planning organizations, employers, and others to provide commute options. Nearly 1,200 worksites in Washington State participate in the Commute Trip Reduction (CTR) program.

Vanpool Program, the largest in the nation, increased 50% since 2003 with more than 2,360 vanpools and nearly 19,200 riders daily. Of those, 1,724 vans and 12,689 riders are located in the Central Puget Sound. The 07-09 Vanpool Program budget is \$8.6 million.

Park and Ride: Statewide, 357 lots with more than 45,000 parking stalls. In the central Puget Sound region, 225 lots with about 38,600 stalls. Many of the park and ride lots in congested corridors are at or over capacity.

### Benefit:

In 2007, the CTR Program eliminated 26,000 drive-alone trips each weekday morning. If these trips were back on the system, delay could increase in the central Puget Sound by as much as 18 percent.

The Trip Reduction Performance Program eliminates an additional 4,379 drive-alone trips in the 2005-2007 biennium in addition to the 26,000 mentioned above.

### Goal:

Statewide, reduce approximately 27,800 additional drive-alone trips to CTR worksites each weekday morning by 2011. (Of the statewide total, approximately 21,900 trips are in the central Puget Sound.)

Grow the vanpool program to 3,180 vans by July 2013.

### Action:

- Implement new statewide ride-matching system as part of enhanced traveler information
- Implement and evaluate new Growth and Transportation Efficiency Center program
- Develop new park and ride program
- Enhance Construction Traffic Management

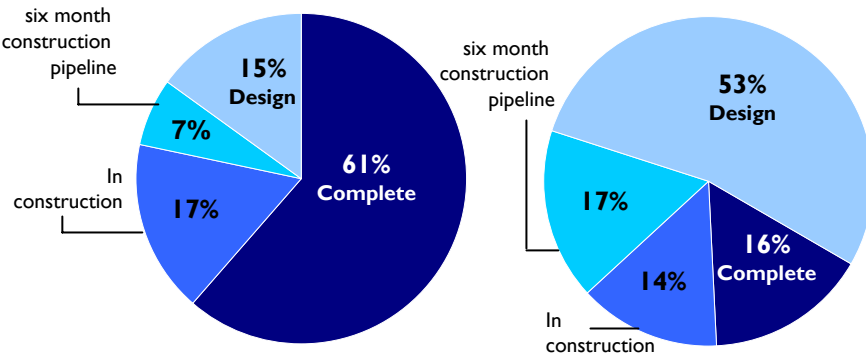


# Add Capacity Strategically

## Delivering Nickel and TPA Projects

Status of 153 Nickel Projects

Status of 238 TPA Projects



WSDOT continues to deliver Nickel and TPA projects. Combined, the two packages provide over \$5.2 billion in funding for congestion relief projects.

By March 31, 2008, WSDOT will have completed or started more than half of the 391 capital highway projects that were funded through the Nickel and TPA funding packages.

Capital projects also improve safety by increasing highway capacity to relieve chokepoints that are caused by excess demand.

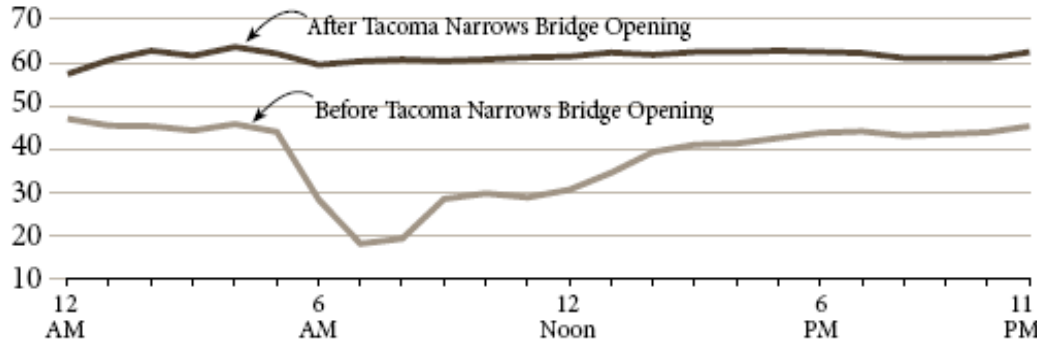
**Action:**

- Continue to deliver Nickel and TPA projects as planned.
- Continue to expand before and after benefit analysis on improvement projects.

## Tacoma Narrows Bridge: Adding Capacity – Improving Travel Time

### Eastbound SR 16 and 36th Street Interchange Average Speed Before and After Tacoma Narrows Bridge Opening

Miles per Hour



When the new span opened in July 2007, average speeds at 7 am (peak period) rose from 20 mph to 60 mph, greatly reducing drivers' commuting time.

New tolling operations did not affect the volume of traffic using the bridge. The added capacity made it possible to travel close to the posted speed limit at all times of the day.

Data Source: WSDOT Tolling Office.