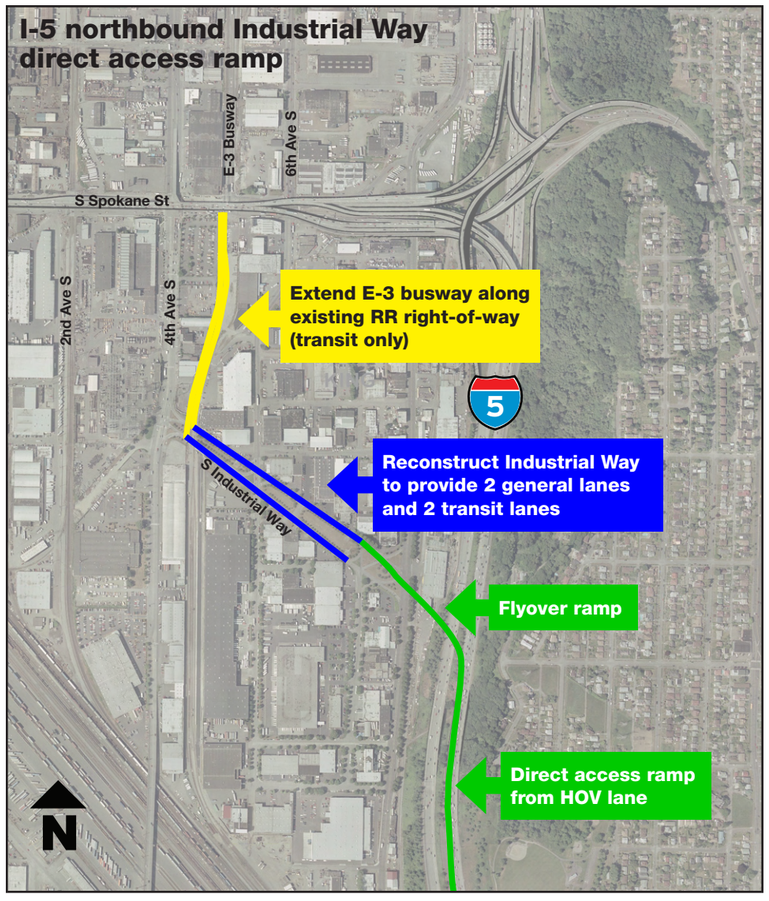
MANAGE DEMAND

Direct access ramp

A new direct access ramp on northbound I-5 at Industrial Way will ease access for 125 buses each morning rush hour from the interstate to the SoDo busway. About 355 buses now use the Spokane Street exit on their way through Seattle. To exit there, however, buses must weave through several lanes on the interstate.

Direct access ramps reduce the weaving by providing buses and carpools direct access to and from the high occupancy vehicle (HOV) lanes in the center of the interstate. A northbound direct access ramp in the Industrial Way area could save buses about 2.5 minutes each trip and allow for an additional 15,000 passenger trips a day.



Cost & schedule

The December 2008 cost estimate for each component

Active Traffic Management	$ 136M
I-5 northbound Industrial Way direct access ramp	$ 73M
Ramp meters	$ 14M
Southbound I-5 lane conversion	$ 78M
Cherry St. to SR 520 managed lane	$ 324M
Update express lanes switchover	$ 12M

Cost estimates are preliminary, and project engineers are investigating ways to reduce costs. WSDOT is continuing to analyze these improvements to I-5, and design is underway. A construction schedule could be set as soon as funding is available.

For more information

Visit the project Web site
www.wsdot.wa.gov/Projects/i5/Rehab

Moving Washington Web site
www.wsdot.wa.gov/MovingWashington

Contact

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Washington State Department of Transportation

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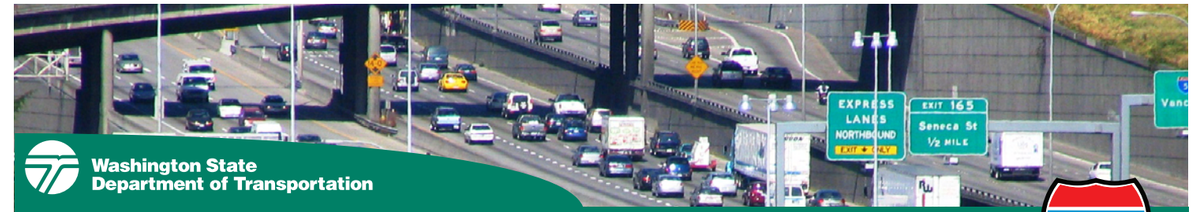


Washington State Department of Transportation

I-5 Reconstruction Projects – Modernizing a critical artery

December 2008

Moving Washington

The new tools and technologies included in these I-5 reconstruction projects are part WSDOT's *Moving Washington* program, an innovative approach to reducing congestion that focuses on three key strategies:

- Strategically adding capacity
- Managing demand with more commute choices
- Operating our roadways as efficiently as possible

A vital freeway

Seven out of 10 Washington residents live within 15 miles of the I-5 corridor, and many drive the freeway each day to and from work, school and other activities. The interstate feeds our economy and allows us to travel in reasonable time between the state's largest cities.

Despite its importance, I-5 is constrained by chokepoints, outdated design and aging pavement. Backups are common along the entire freeway, but traffic congestion is worst in and around downtown Seattle, the economic engine of this state. That's why WSDOT is taking a multifaceted approach to make I-5 more efficient, able to move more vehicles and more effective for express bus and carpool commuting.

WSDOT already has started rehabilitating I-5's aging pavement through the Seattle area between Boeing Access Road and the King/Snohomish county line. The 2009 pavement repair project will provide a quieter and safer surface.

With more than 3 million people living in this part of the state and 1 million more expected by 2025, demands placed on this critical roadway will continue to increase.

Interstate 5 connects the most populous portion of Washington State with British Columbia to the north and Oregon to the south, all the way to Mexico. Built in the 1960s, I-5 is a lifeline for our state and its citizens, moving 250,000 freight and passenger vehicles through Seattle every day.

The freeway links the ports of Tacoma and Seattle to the state's largest rail yards, industrial facilities and retail centers. Average daily freight trips on I-5 have risen steadily from about 8,000 in 1994 to nearly 22,000 in 2007, and they are projected to increase to more than 35,000 daily freight trips by 2020.

The Washington State Department of Transportation is focusing on I-5 for its most innovative approaches to easing congestion and making the interstate safer, more efficient and more responsive to changes in traffic. We'll begin with the busiest stretch of I-5 in our state – Boeing Access Road in south Seattle through the heart of downtown Seattle – to launch a package of new technology and traffic improvements, including:

- A carpool lane that opens to all traffic when necessary
- An updated reversible express lane
- A freeway shoulder that becomes an extra lane
- Variable speed limit signs for improved safety and flow
- Electronic message signs with traffic information
- A new direct-access ramp for buses and carpools

By beginning these projects as soon as funding is available, I-5 will be better prepared for traffic increases expected during reconstruction of the Alaskan Way Viaduct in Seattle. The viaduct on SR 99 is a major alternate route through Seattle that is aging and must be replaced. The work could close portions of SR 99 through Seattle for two years, making a safer, more efficient I-5 more vital than ever.

Photo by Chris Picard

A smarter I-5

Commuters, travelers and truck drivers on I-5 soon could experience safer and smoother traffic conditions on a roadway that detects changing traffic flows and automatically adapts to traffic congestion by adjusting the speed limit and providing drivers with useful traffic information.

From new ramp meters to a reversible express lane that changes directions in half the time of the current system, I-5 will react automatically and simultaneously with changes in traffic. It will be the freeway of the future, functioning more efficiently than it has in decades. These and other innovative tools and ideas are known in the transportation world as active traffic management, the future of traffic technology that runs on information.

OPERATE EFFICIENTLY

Ramp meters

New ramp meters will help smooth interstate traffic and ease congestion during the heavy-traffic hours. Ramp meters are stop-and-go traffic lights at onramps used to improve traffic flow by staggering vehicles as they merge onto the freeway when it's congested.

Ramp meters help traffic flow smoothly.

Southbound I-5 lane conversion

When traffic congestion increases in the southbound lanes of I-5 from Mercer Street to Corson Avenue, WSDOT traffic controllers will electronically open the existing carpool lane to all traffic, making the freeway more responsive to changing conditions.

New technology could adjust southbound lane use.

Boeing Field to Shoreline active traffic management

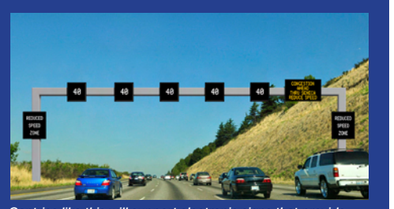
A full spectrum of ATM tools will help manage traffic, ease congestion and make the freeway safer in both directions of I-5 between Boeing Access Road in south Seattle and N. 145th Street in Shoreline. Electronic signs mounted over each lane on sign bridges – or gantries – will provide drivers with unprecedented traffic information, from blocking incidents and lane closures to variable speed limits that reduce collisions and improve traffic flow. Traffic collisions account for more than 25 percent of the backups on I-5. By adjusting lane speed between 40 and 60 mph with traffic conditions ahead, there will be less stop-and-go traffic and fewer rear-end collisions caused by sudden braking.

Active traffic management

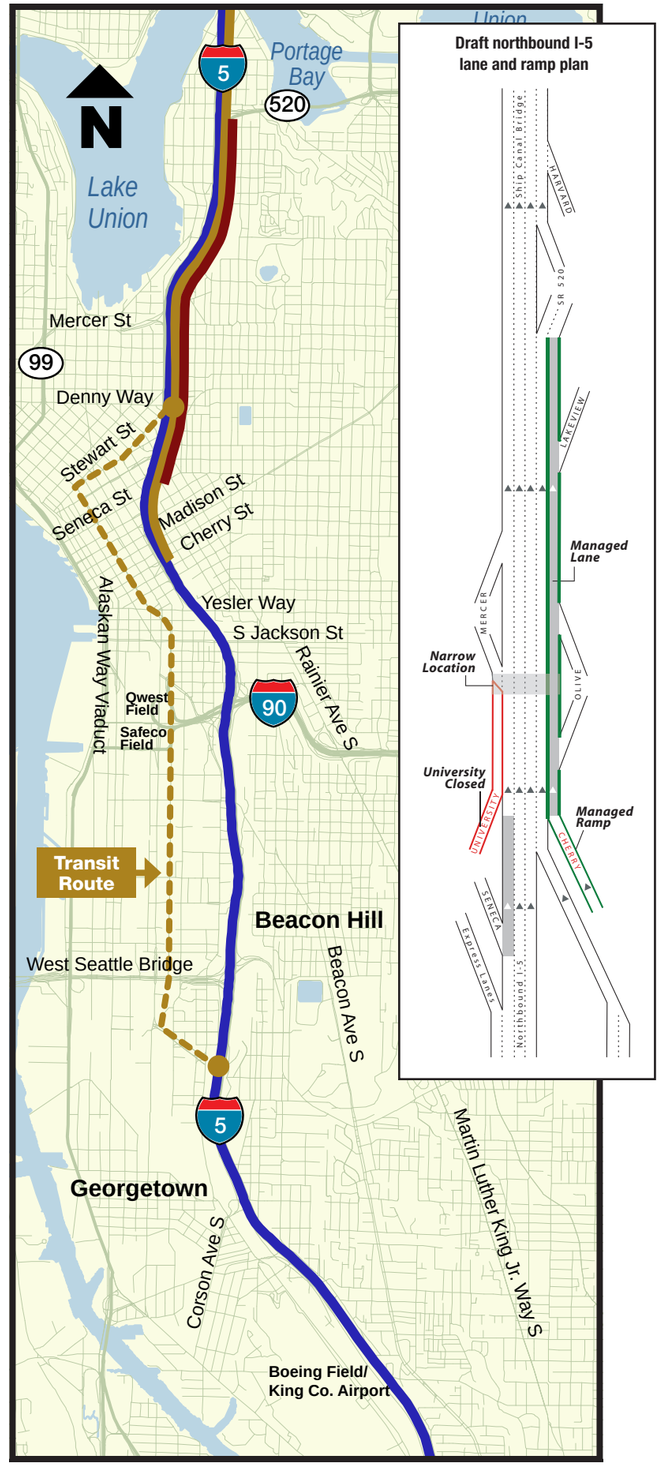
The new tools and technology that will make I-5 more responsive to changing traffic demands are included in WSDOT's smart-highways approach, internationally known as active traffic management (ATM). These congestion-fighting tools use information technology to make our roadways more efficient.

ATM tools include:

- Variable speed limits and traffic management signs over each lane
- Electronic real-time traffic information
- Peak time use of freeway shoulders as an extra lane



Gantries like this will support electronic signs that provide traffic information and display variable speed limits on I-5.



ADD CAPACITY STRATEGICALLY

Cherry Street to SR 520 managed lane

An additional northbound lane on I-5 will help ease backups through the state's worst bottleneck. By adding a left lane for general-purpose traffic from Seneca Street to University Street, we'll widen the freeway by 50 percent, from two lanes to three lanes.

We will slightly narrow the existing lanes and use the shoulder area to create a new managed northbound lane. Vehicles will be able to use this lane when traffic volumes are high. The managed lane will be closed when volumes are low or when there is a disabled vehicle. Drivers will be informed of the lane operation through variable message signing.

The northbound lanes on I-5 from Cherry Street to SR 520 could be revised to use the right shoulder as an extra lane. New lane space on the freeway is limited by a wall that supports the hillside of Capitol Hill.

MANAGE DEMAND

Updated express lanes switchover

The I-5 center express lanes between downtown Seattle and Northgate Mall serve the highest transit ridership in the region. King County Metro, Sound Transit and Community Transit together provide 780 bus trips which carry about 50,000 riders in the express lanes each day. The express lanes already reverse direction daily to help ease congestion in the busiest direction of I-5. The manual process usually takes about 45 minutes. New technology will cut the switchover time in half, making transit and the freeway more efficient.

Dedicated express lanes for transit and carpools help keep buses on time.

Stewart Street express access ramp

The off ramp at Stewart Street on southbound I-5 currently is open to all traffic. By converting the ramp to a reversible express lane access ramp for transit and carpools, we could further ease traffic flows through Seattle. As part of this conversion, Cherry/Columbia Street ramp will provide access to all vehicles.

Travel time savings

(Five-hour morning and evening rush hours on I-5 Interurban Ave. S to NE 205th St.)

Cumulative traffic time saved	5,000 – 12,000 hours per day

Year 2030 Number of vehicles that pass Olive Way on northbound I-5 (3:30-6:30 p.m.)

Without these improvements	6,240 vehicles per hour
With these improvements	7,053 vehicles per hour

2030 rush hour travel time comparison

I-5 Seneca St. to SR 520 (three miles)

AM commute	without these improvements	3.6 minutes
	with these improvements	2.6 minutes
PM commute	without these improvements	4.6 minutes
	with these improvements	3.5 – 4.4 minutes

What does the data say about these I-5 improvements?

- Morning congestion south of I-90 could be significantly reduced.
- Afternoon congestion between I-90 and SR 520 could be eased.
- Travel times could be reduced before and after the busiest hours.
- There could be significantly fewer traffic collisions on I-5.
- Communities could benefit from related investments, such as sidewalk widening.