Highway 217 Corridor Study

Phase I Overview Report

November 3, 2004

BACKGROUND AND OVERVIEW

Study purpose

The Highway 217 Corridor Study is developing multi-modal transportation solutions for traffic problems on Highway 217 and the rest of the corridor.

Highway 217 is the major north-south transportation route for the urbanized portion of eastern Washington County. Today, it is generally a four-lane highway with auxiliary (noncontinuous) lanes between interchanges. Traffic volumes have grown significantly as Washington County has grown from a primarily agricultural area to a booming high-tech and retail center. From 1989 to 1998, the average daily traffic volume on Highway 217 increased by nearly 20%. At rush hour, the highway operates near capacity.

Nearly every transportation planning effort that has looked at this part of the region has identified the need for additional capacity on Highway 217. ODOT's Western Bypass Study, Metro's 2000 Regional Transportation Plan, and the Oregon Highway 217 Initial Improvement Concepts Technical Memorandum, all recognize the need for at least one additional through lane in each direction on Highway 217.

In 2001, Metro prioritized corridors throughout the region that required additional study. Highway 217 was recognized as one of the most crucial corridors for improvement. During the summer of 2003, Metro began work on the Highway 217 Corridor Study with funds from Metro and local jurisdictions. The study was also partially funded through a grant from the Federal Highway Administration (FHWA) to study value-pricing options in this corridor.

Study goals and objectives

Develop transportation improvements that will be implemented in the next 20 years to provide for efficient movement of people and goods through and within the Highway 217 corridor over the next twenty years while supporting economically dynamic and attractive regional and town centers and respecting the livability of nearby communities.

Objective 1: Provide a proactive, thorough and engaging public involvement effort

Objective 2: Enhance effectiveness of the transportation system

Objective 3: Provide a feasibility assessment of each alternative

Objective 4: Support neighborhoods, businesses and the natural environment

Objective 5: Ensure that benefits and impacts associated with selected strategies are equitable to minority and low-income communities in the corridor.

Objective 6: Conduct a conclusive and thorough study with results that can be implemented.

Existing traffic conditions

ODOT's Highway 217 Initial Concepts Memorandum (2000) analyzed existing conditions and found a number of deficiencies in the corridor. Key findings were the:

- Short distances between interchanges creates conflicts between traffic entering and exiting the facility. This results in slow traffic and unsafe conditions in many locations.
- Bottlenecks at I-5 and US 26 freeways and other ramp junctions cause slow speeds. These bottlenecks can create back ups affecting large sections of the corridor.
- High traffic volumes during the evening peak period result in long recovery times from traffic accidents or weather conditions that can impact traffic operations for several hours.

Future traffic conditions

The corridor is expected to grow substantially over the next twenty years. The number of households is expected to increase by 33 percent and employment is expected to grow by 56 percent during this time. This growth will result in changed traffic patterns with more travel to and from areas to the north of Highway 26 in the Barnes Road, Sunset and Cedar Mill Town Centers and the St. Vincent Hospital areas. Similarly, growth to the south of the study area is expected to increase trips destined to and originating from Kruse Way, Tualatin and Wilsonville.

As a result of anticipated growth, peak corridor travel is expected o increase by 30 percent over the next 20 years. Unless improvements are made, congestion on Highway 217 is expected to be severe throughout the entire corridor by 2025. At rush-hour, traffic volumes will be at or exceeding capacity in most locations.

Freight traffic

The Highway 217 Policy Advisory Committee recognizes the importance of freight movement in the economic development and that accomodating freight is a growing issue in the corridor. Freight traffic has doubled in the past ten years to comprise 8 percent of total traffic. The Highway 217 Corridor Study is measuring the impacts and benefits to trucks for each option.

Study approach

The Highway 217 Corridor Study is being completed in two phases. The first phase developed and analyzed a wide range of multi-modal alternatives. Based on this evaluation, the alternatives will be refined to a smaller set that can be studied in more detail in the second phase. Options will be evaluated based on how well they address the study objectives in terms of travel performance, environmental and neighborhood effects, financial feasibility, and cost effectiveness. The study's future year planning horizon is 2025. The findings included in this report generally compare each option to the base case. The base case is a forecast of what traffic conditions in the corridor would look like in 2025 if no improvements, other than those included in the region's adopted financially constrained system, were made.

The bottom-line

Option 1: arterial, transit and interchange improvements

- No new lane on highway
- Arterial improvements
- Interchange improvements
- Significantly increased transit service

Key findings:
- does not improve overall drive times or congestion on Highway 217
- has by far the most environmental and neighborhood impacts due to the number of surface street (arterial) improvements that are included
- provides the most congestion relief on surface streets
- is the most expensive option

Option 2: Six lane without interchange improvements

- New lane on highway in each direction

Key findings:
- does not resolve the merge/weave problems on Highway 217
- is the least expensive option
- has the fewest environmental impacts

Option 3: Six lane plus interchange improvements

- New lane on highway in each direction
- Interchange improvements

Key findings:
- provides the most congestion relief and the fastest trip (on average) for all drivers on Highway 217

Option 4: Six lane with carpool lanes

- New lane on highway in each direction for carpools
- Interchange improvements
- Increased transit service

Key findings:
- does not relieve congestion on general-purpose (non-carpool) lanes
- drivers in carpool lane have the fastest trip on Highway 217
- does not increase carpooling

Option 5: Six lane with rush-hour toll lanes

- New tolled lane on highway in each direction
- Interchange improvements
- Increased transit service

Key findings:
- drivers in the toll lane have the fastest trip on Highway 217
- reduces overall congestion on Highway 217
- has the smallest funding gap and could potentially be built sooner than other options
- provides most benefits to trucks in corridor

Option 6: Six lane with tolled ramp meter bypasses

- New lane on highway in each direction
- Interchange improvements
- Increased transit service
- New tolled lane on entrance ramps to bypass meters

Key findings:
- provides similar improvements as option 3, but has a smaller funding gap
- provides most benefits to trucks in corridor

Overall study findings

- All six lane options improve regional access to centers while the arterial, transit and interchange option improves local access to centers.
- All six lane options, which improve congestion on Highway 217, exacerbate the bottleneck on I-5 south.
- All options with braided ramps include expensive structures and retaining walls to minimize environmental impacts.
- All options have significant funding gaps given expected funding levels, but the rush-hour toll lane option has a smallest funding gap.
- Work during the second study phase will determine implementation timelines, but a project with a smaller funding gap could possibly be built earlier.

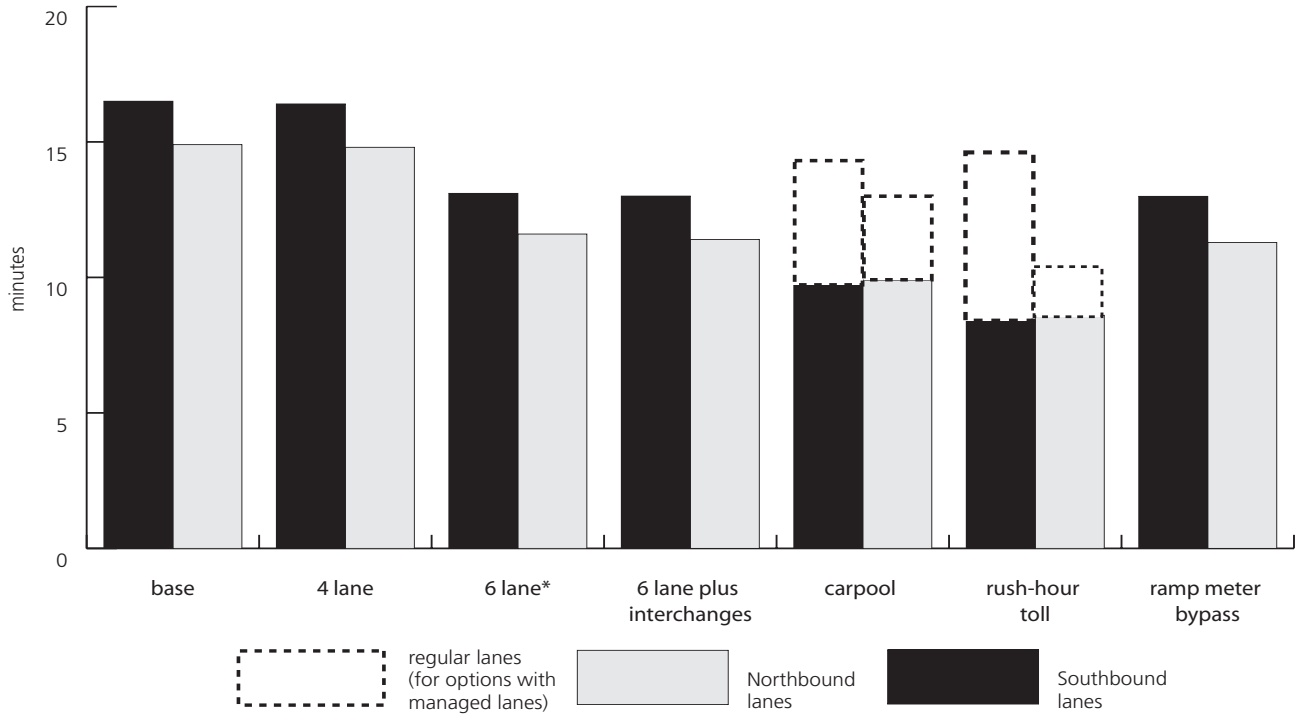
Summary of key findings for objectives with significant differences between options

best
better
no improvement/worst

	Option 1: arterial, transit and interchange improvements	Option 2: six lane without interchange improvements	Option 3: six lane plus interchange improvements	Option 4: six lane with carpool lanes	Option 5: six lane with rush-hour toll lanes	Option 6: six lane with tolled ramp meter bypasses
Reduces congestion on Highway 217 (all lanes)						
Reduces drive time on Highway 217 (all lanes)						
Provides opportunity for express trip						
Reduces congestion on surface streets						
Provides region-wide time savings						
Provides benefits for trucks in the corridor						
Increases trips using transit						
Minimizes funding gap						
Avoids environmental and neighborhood impacts						

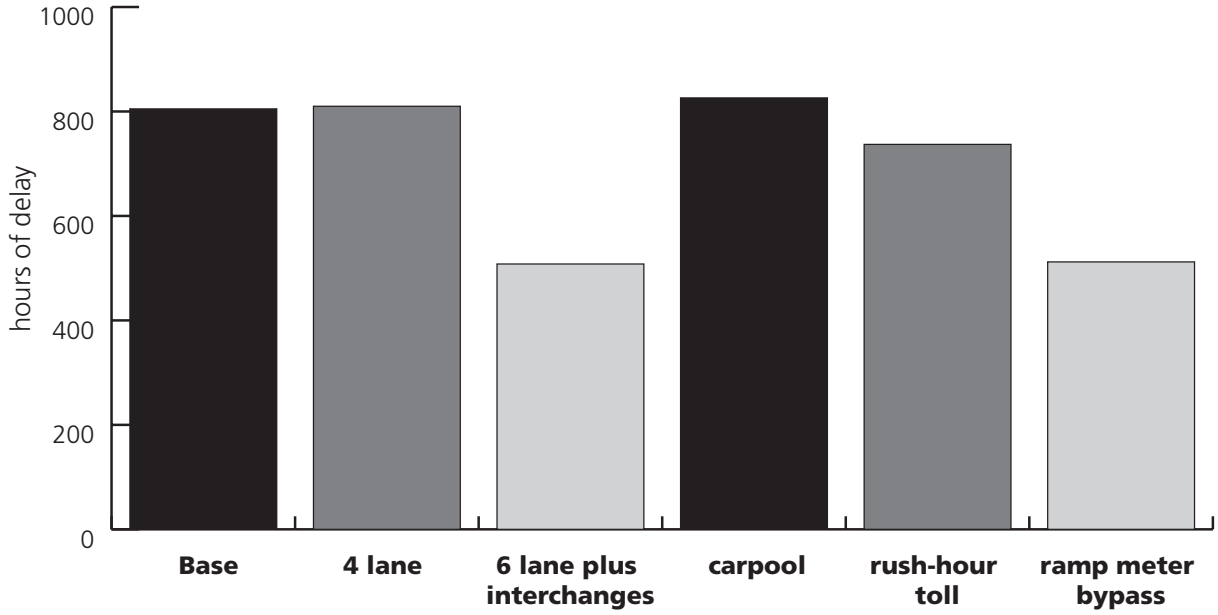
Key transportation measures for all options

Drive time from I-5 to US 26 in p.m. rush-hour in 2025



*Merge/weave problems are not accounted for in this measure, so drive-times are likely to be slower than in other six-lane options.

Congestion on Highway 217 in p.m. peak in 2025



Note on the study options

Interchange improvements

All the study options, except the six lane without interchange improvement option, include braided ramps or consolidated interchanges as a way to reduce merge/weave problems on the highway. **Braided ramps** separate traffic that is trying to exit from entering traffic by creating a bridge for traffic entering the freeway that does not descend to the freeway until it has crossed over traffic exiting the freeway. In this way, traffic engineers "braid" ramps with some traffic crossing over and some crossing under to prevent accidents.

Another way to address the merge/weave conflicts is to **consolidate interchanges** and connect them with frontage roads. This solution has been applied at the Canyon Road and the Beaverton-Hillsdale Highway on Highway 217 where access to two streets has been combined into one interchange. Drivers entering Highway 217 going north from Beaverton-Hillsdale Highway use a frontage road to enter at the Canyon Road entrance. Frontage roads are less expensive to construct than braided ramps but require more right of way. They also remove local trips from the freeway by providing a parallel off-freeway connection between streets.

Forecast year and time period

All projections and numbers refer to the two-hour afternoon rush-hour, generally from 4-6 p.m., in 2025.

Bike improvements

During the first phase of the Highway 217 Corridor Study, a group of bike advocates and staff from local jurisdictions met to review potential bike options in the Highway 217 Corridor. There are many planned bike routes in the corridor that are assumed as part of the base case, so the bike working group focused on identifying gaps in the planned network. The bike working group solicited input from people who bike in the Highway 217 Corridor at a workshop. After reviewing input, the bike working group developed a recommended set of bike improvements. The Phase I Bike Improvement Recommendation includes:

- Bike crossing of Highway 217 for the Fanno Creek Trail north of Denney Road. This bike crossing could be located under or over Highway 217 or could be located on a rebuilt Denney overpass.
- Bike lanes on the Hall Boulevard overpass (north crossing near Washington Square) if the overpass is significantly altered or rebuilt and safety improvements at the intersection of Hall and Scholls Ferry Road. Design issues such as access to businesses, turn movements and high speeds should be considered during redesign.
- Examine the location of a proposed multi-use path from I-5 to 72nd Avenue. If appropriate, design this multi-use path as part of the Highway 217 Corridor alternatives.

The bike recommendation will be integrated into options carried forward for further study.

OPTION 1: TRANSIT, ARTERIAL AND INTERCHANGE IMPROVEMENTS

Overview

This option attempts to meet transportation demand in the corridor by improving ramps, increasing transit service and constructing improvements to other streets that are in the region's preferred transportation plan.

The four-lane option does not include new lanes on Highway 217 except a new northbound lane from Canyon Road to US 26 that has already been funded. The street improvements included in this option are part of the region's preferred transportation plan, however the projects are not expected to be constructed unless new funding sources are identified.

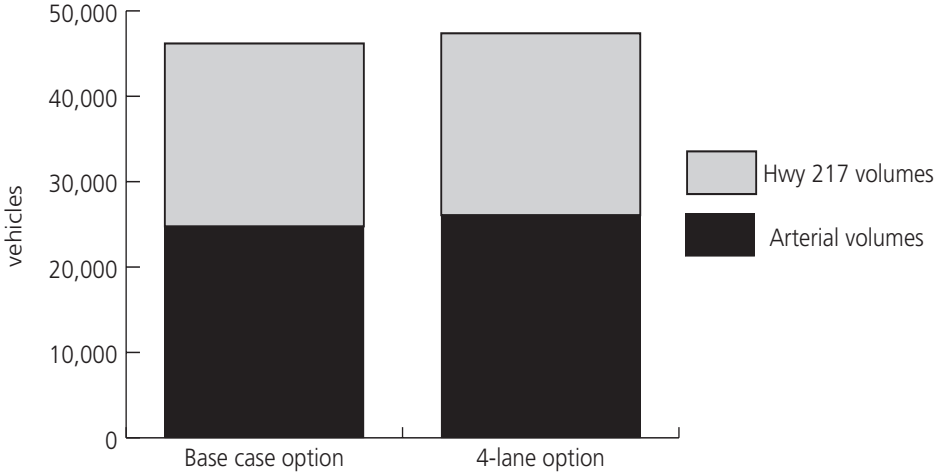
This option would include:

- four through lanes from Canyon Road to I-5 on Highway 217 (no additional through lanes)
- six through lanes north of Canyon Road to US 26 (constructed southbound and funded northbound)
- improvements to streets that cross or parallel Highway 217 that are included in the region's preferred transportation system
- either braided ramps or consolidated interchanges at some locations on the highway
- additional bus service such as new commuter rail feeder routes, new routes between centers and other improvements to make transit a more attractive option
- more frequent and longer hours of operation for commuter rail between Wilsonville and Beaverton.

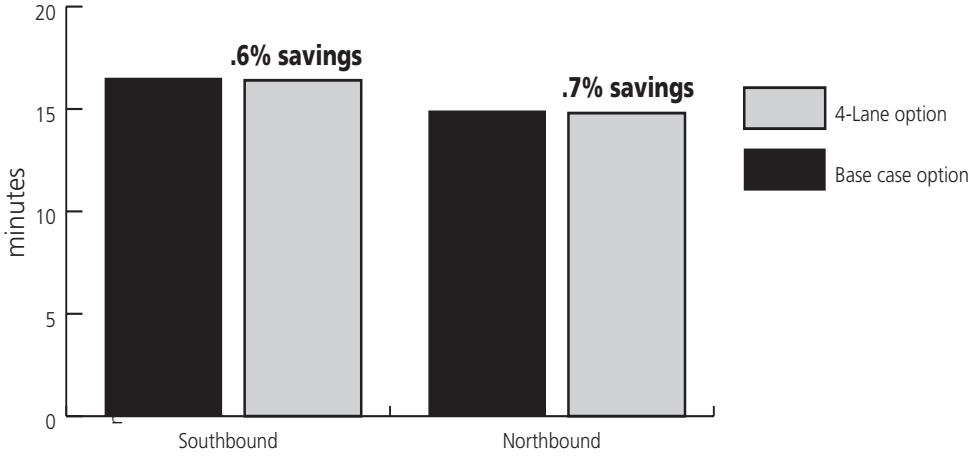
Highlights

Compared to the base case in 2025, this option would:

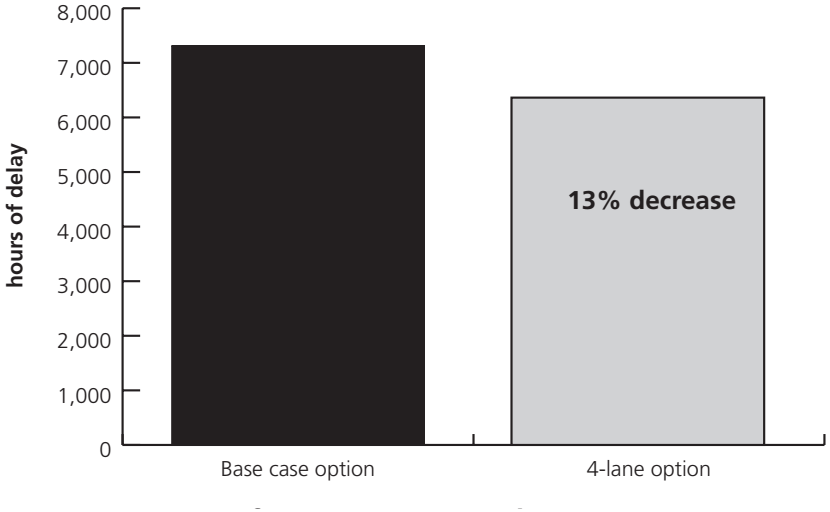
- provide a faster auto trip for households in or near the corridor to nearby regional and town centers.
- increase pedestrian and bike connectivity across Highway 217.
- increase transit ridership in the corridor.
- result in a high level of environmental and community impacts due to the large number of arterial improvements that are included in the option that would impact various areas. Potential effects include significant impacts to wetlands and parks and displacement of many residences and businesses.
- not provide region-wide benefits in terms of time savings.
- not provide significant benefits for trucks.
- cost about $544 million (in 2004 dollars) with a $505 million gap given expected funding levels.
- increase commuter rail capital and operating costs.



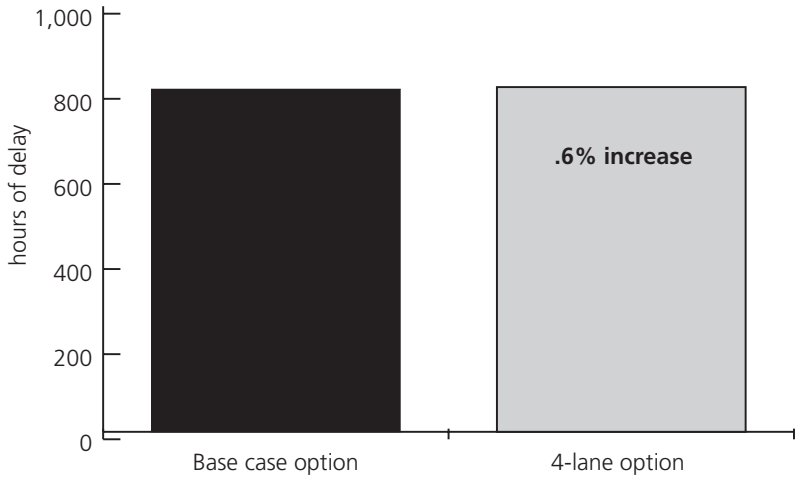
North-south volumes in corridor



Drive time from I-5 to US 26
would not significantly decrease drive time between I-5 and US 26



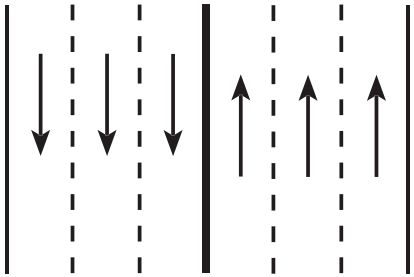
Congestion on surface streets in corridor
would significantly improve traffic on surface streets



Congestion on Highway 217
would not significantly improve traffic congestion on Highway 217

OPTION 2: SIX LANE WITHOUT INTERCHANGE IMPROVEMENTS

Overview



This option attempts to meet transportation demand in the corridor by adding a new lane in each direction on Highway 217. It does not address the merge/weave problem in the corridor.

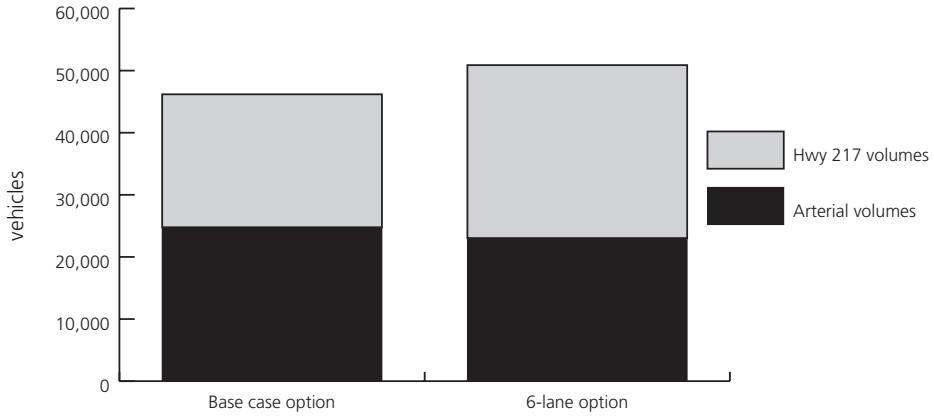
This would include:

- six through lanes (three in each direction) on Highway 217 from US 26 to I-5
- existing on and off ramp system with auxiliary lanes
- improvements included in the base case option.

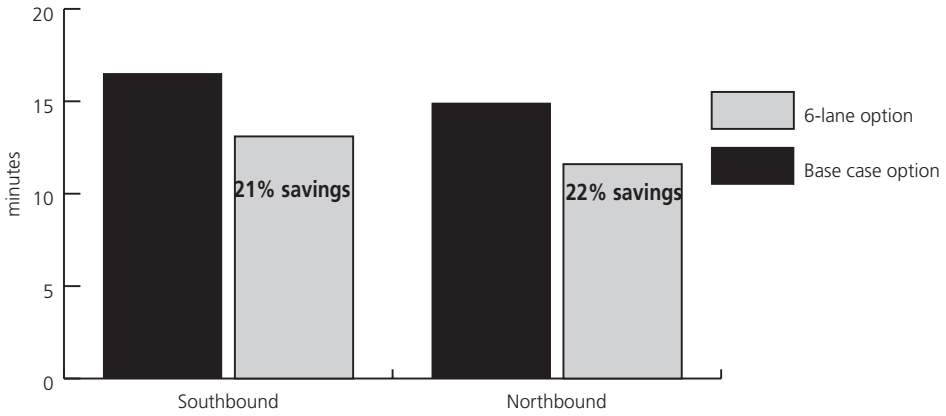
Highlights

Compared to the base case in 2025, this option would:

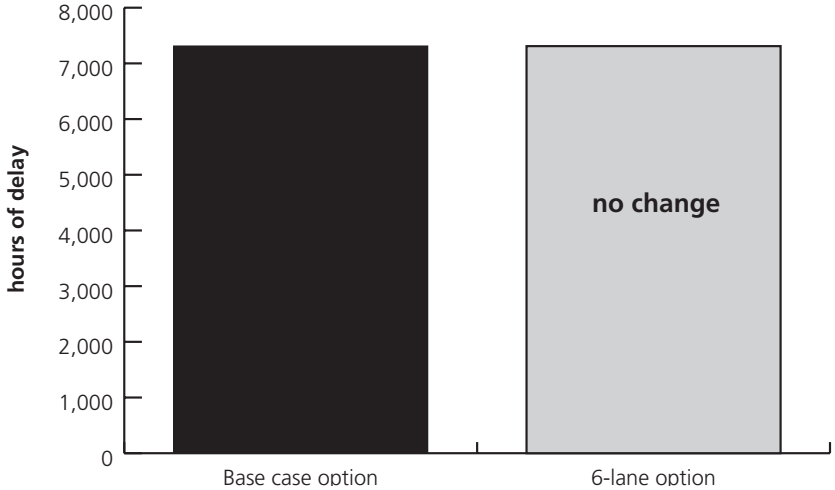
- not resolve merge/weave problems that lead to backups on Highway 217.
- have less congestion relief on Highway 217 than option 3 because of continued backups from drivers merging in and out of traffic without braided ramps.
- not result in any park impacts but could impact some properties.
- impact zero to two acres of wetlands.
- not increase trips using transit.
- not provide region-wide benefits in terms of time savings.
- not provide benefits for trucks.
- improves regional access to centers.
- cost about $405 million (in 2004 dollars) with a $366 million gap given expected funding levels.



North-south corridor volumes



Drive time from I-5 to US 26
would improve drive time from I-5 to US 26 by more than 20 percent

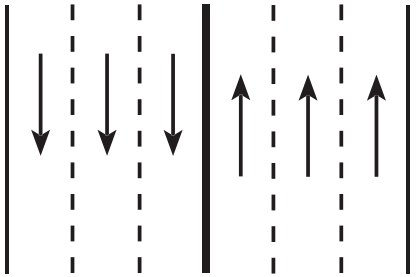


Congestion on surface streets in corridor
would not significantly change the level of congestion on surface streets

OPTION 3: SIX LANE PLUS INTERCHANGE IMPROVEMENTS

Overview

This option attempts to address transportation needs in the corridor by adding a new lane in each direction to Highway 217 and minimizing merge/weave problems by building braided ramps or consolidating interchanges by connecting them with frontage roads.



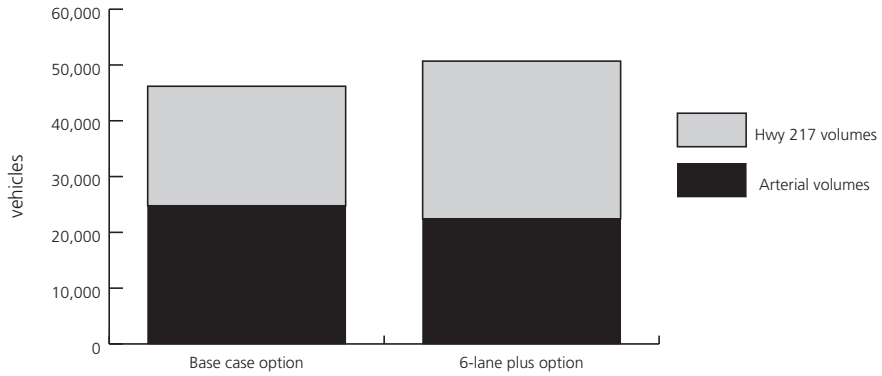
This option would include:

- six lanes (three in each direction) on Highway 217 from US 26 to I-5
- braided ramps or consolidated interchanges
- improvements included in the base case option.

Highlights

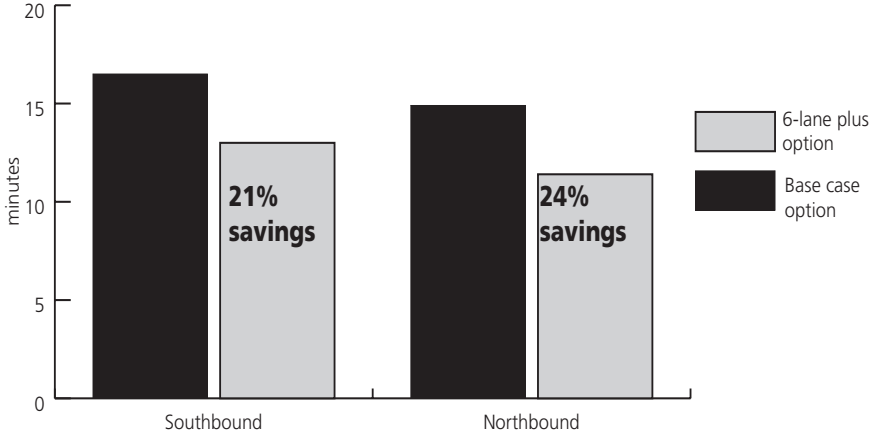
Compared to the base case in 2025, this option would:

- provide a faster trip for households in or near the corridor to Beaverton and Washington Square regional centers and Tigard Town Center.
- resolve merge/weave problems that lead to backups on Highway 217.
- impact two to five acres of wetlands.
- possibly impact some properties.
- not increase trips using transit.
- provide region-wide benefits in terms of time savings.
- improve regional access to centers.
- provide some benefits for trucks.
- cost about $496 million (in 2004 dollars) with a $457 million gap given expected funding levels.



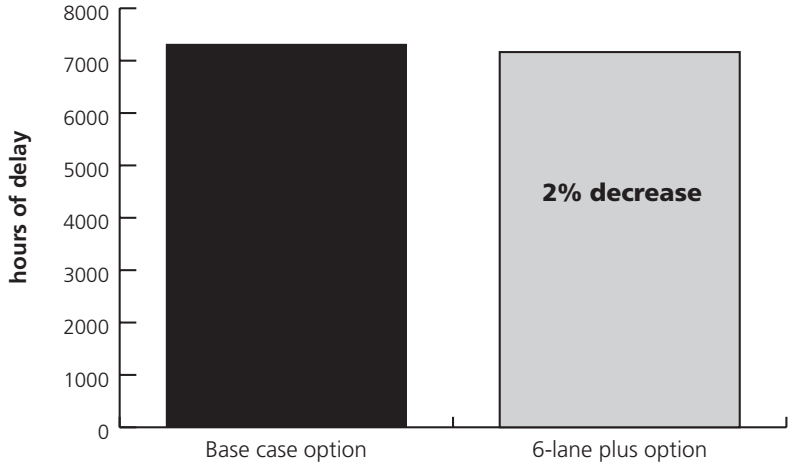
North-south corridor volumes

would increase the volume on Highway 217 and decreases the number volume on surface streets



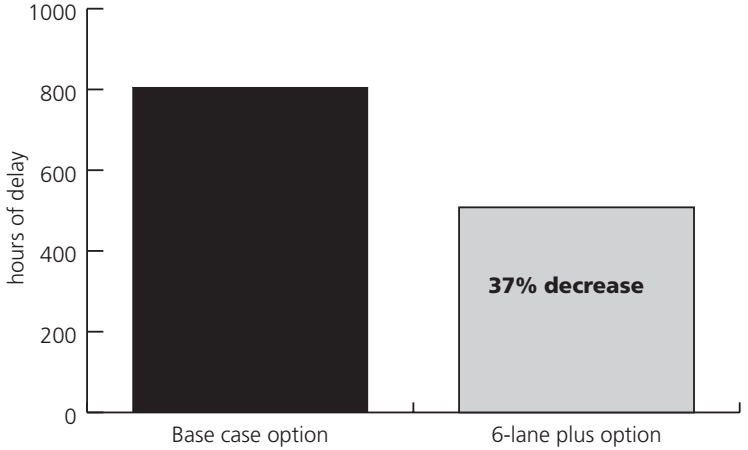
Drive time from I-5 to US 26

would reduce drive time by more than 20 percent



Congestion on surface streets in corridor

would slightly decrease congestion on surface streets

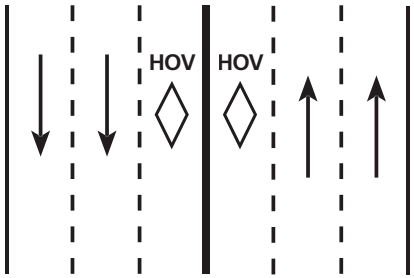


Congestion on Highway 217

would significantly reduce delay for cars on Highway 217

OPTION 4: SIX LANE WITH CARPOOL LANES OPTION

Overview



Carpool lanes, like those on I-5 between 405 and the Interstate Bridge, are lanes restricted to automobiles carrying two or more people and buses during rush hours. Carpool lanes are an incentive to carpool or take transit. A bypass lane on ramps for carpools could be constructed to further reduce delay for carpools. Carpool lanes are sometimes referred to as high-occupancy vehicle (HOV) lanes.

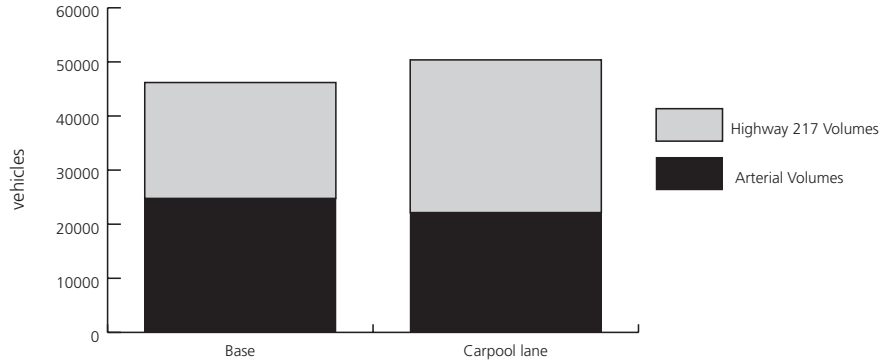
This option would include:

- six lanes (three in each direction) on Highway 217 from US 26 to I-5 with one lane in each direction reserved for carpools during rush hour
- express bus routes that would use the carpool lanes to connect Tualatin and Lake Oswego with Washington Square and the Sunset Transit Center
- braided ramps or consolidated interchanges
- improvements included in the base case option.

Highlights

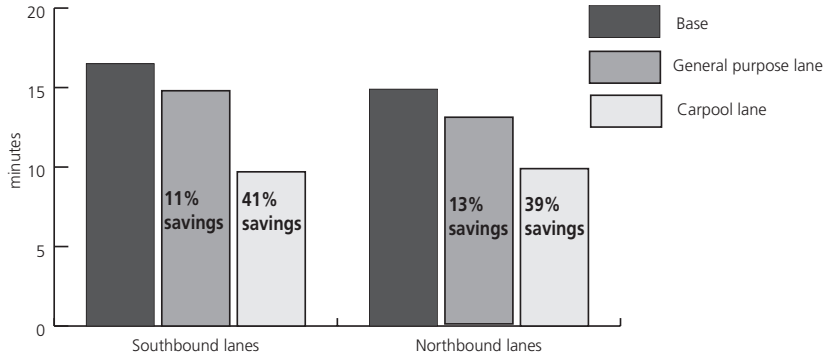
Compared to the base case in 2025, this option would:

- resolve merge/weave problems that lead to backups on Highway 217.
- impact two to five acres of wetlands.
- possibly impact some properties.
- increase trips using transit.
- not increase carpooling.
- provide region-wide benefits in terms of time savings.
- improve regional access to centers.
- not provide significant benefits for trucks.
- cost about $522 million (in 2004 dollars) with a $481 million gap given expected funding levels.



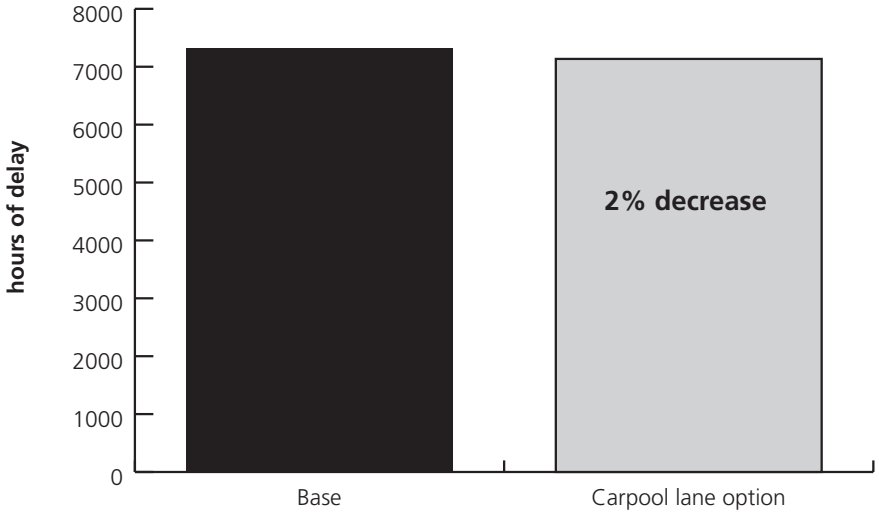
North-south corridor volumes

would increase the volume on Highway 217 and slightly decrease the volume on surface streets



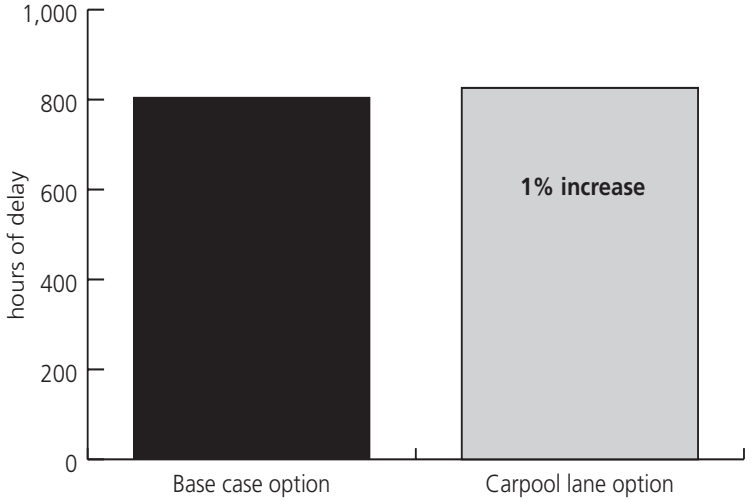
Drive time from I-5 to US 26

would reduce drive time between I-5 and US 26 by about 40% for drivers in the carpool lanes



Congestion on surface streets in corridor

would slightly decrease congestion on surface streets



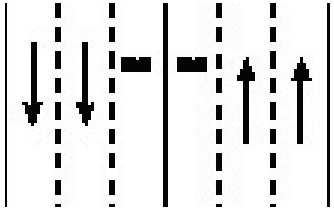
Congestion on Highway 217

would slightly increase delay for cars on Highway 217

OPTION 5: SIX LANES WITH RUSH-HOUR TOLL LANES OPTION

Overview

In other cities, a concept called rush-hour tolling, or value pricing, has been successfully implemented to give drivers another option



to sitting in traffic and to help fund construction of new lanes. In this case, rush-hour tolling would include building a new lane on Highway 217 that drivers would pay a fee to use during the peak hours. The toll would only be applied to the new lane and would be assessed electronically without requiring drivers to stop at a tollbooth. The toll would vary so that it would cost more to use the lane when the highway is most congested, providing a reliable choice for drivers.

This option would include:

- six lanes on Highway 217 from US 26 to I-5
- one lane in each direction would be a rush-hour toll lane
- express bus routes that would use the toll lanes to connect Tualatin and Lake Oswego with Washington Square and the Sunset Transit Center
- braided ramps or consolidated interchanges
- improvements included in the base case option.

In this option, drivers would access the toll lane by merging across traffic and entering where there are gaps in the painted line separating toll traffic from regular traffic. Going north, drivers could enter the toll lane after the Highway 99W and Scholls Ferry Road entrances and leave before the Canyon Road and Walker Road exits. Going south, drivers could enter after the Canyon Road and Denney Road entrances and leave before the Scholls Ferry Road and Highway 99W exits.

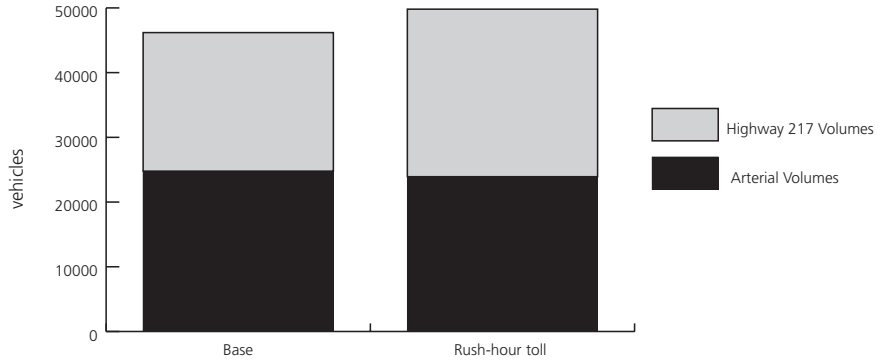
The rush-hour toll lane could include an extra lane on entrances at Barnes Road, Walker Road and Beaverton-Hillsdale Highway going south and at 72nd Avenue, Highway 99W and Greenburg Road going north to allow drivers using the toll lane to bypass ramp meter queues.

This option would likely have similar social equity impacts as other toll projects where the lane is used and liked by people from all income groups, but it is used by wealthier people more often. The toll wouild be charged to people who use the new lane which could be considered more fair than a gas tax increase that charges everyone the same amount regardless of where or when a person drives.

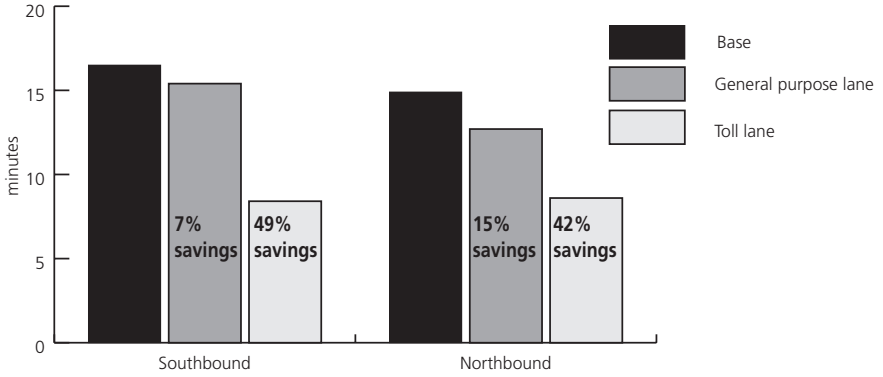
Highlights

Compared to the base case in 2025, this option would:

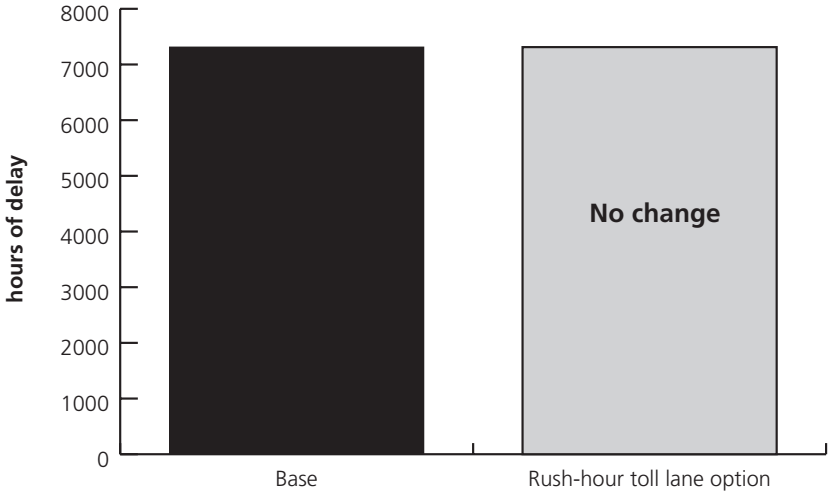
- resolve merge/weave problems that lead to backups.
- impact two to five acres of wetlands.
- possibly impact some properties.
- increase trips using transit.
- provide region-wide benefits in terms of time savings.
- provide significant benefits for trucks.
- improve regional access to centers.
- cost about $564 million (in 2004 dollars) with a $124 million gap given expected funding levels and toll revenues.



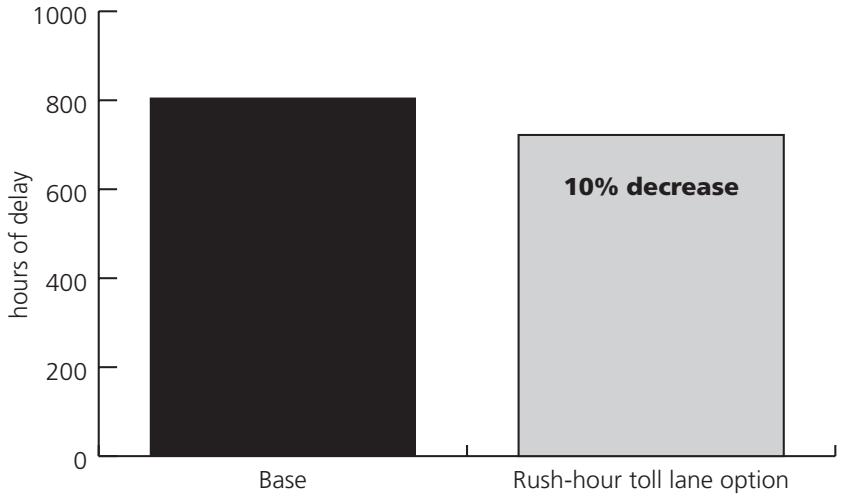
North-south corridor volumes



Drive time from I-5 to US 26
would significantly reduce drive times in priced lane and provide a reliable trip for all drivers



Congestion on surface streets in corridor

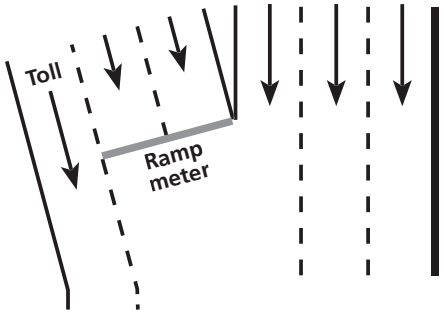


Congestion on Highway 217
would relieve overall congestion on Highway 217

OPTION 6: RAMP METER BYPASS OPTION

Overview

Another way to apply the rush-hour tolling concept would be to offer drivers a choice to wait at ramp meters as they do today or pay a toll to avoid waiting on the ramp. This option would include a new lane on the freeway that would be open to all traffic. Like rush-hour tolling, tolls would be assessed electronically without requiring drivers to stop at a tollbooth and would vary based on the level of congestion.



This option would include:

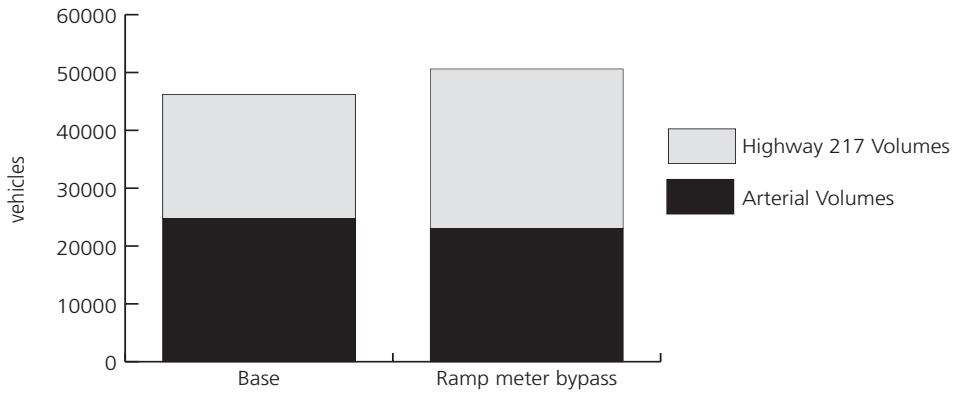
- six lanes (three in each direction) on Highway 217 from US 26 to I-5 with all freeway lanes would be open to all drivers
- an extra tolled lane on some entrance ramps
- two new express bus routes that would use the ramp meter bypass and provide service between key corridor destinations
- braided ramps or consolidated interchanges
- improvements included in the base case option.

The ramp meter bypass would be added to entrances at Barnes Road, Walker Road, Beaverton-Hillsdale Highway, Allen Boulevard, Scholls Ferry Road, Greenburg Road and Highway 99W going south. Going north, ramp meter bypasses would be added to entrances at 72nd Avenue, Highway 99W, Greenburg Road, Scholls Ferry Road, Allen Boulevard and Canyon Road.

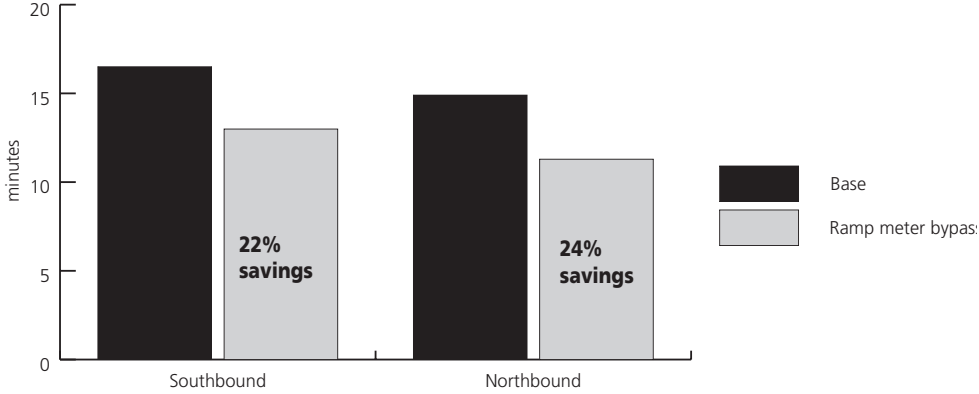
Highlights

Compared to the base case in 2025, this option would:

- resolve merge/weave problems that lead to backups on Highway 217.
- impact two to five acres of wetlands.
- possibly impact some properties.
- increase trips using transit.
- provide region-wide benefits in terms of time savings.
- improve regional access to centers.
- provide significant benefits for trucks.
- cost about $510 million (in 2004 dollars) with a $404 million gap given expected funding levels and tolling revenues.

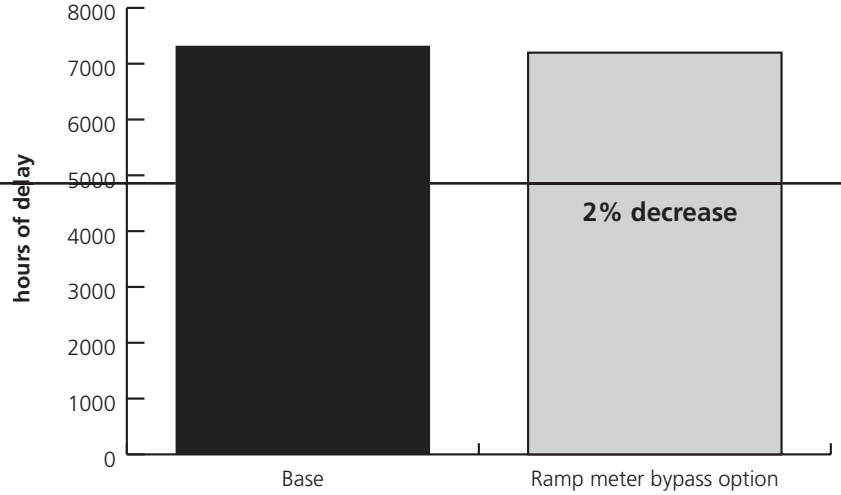


North-south corridor volumes



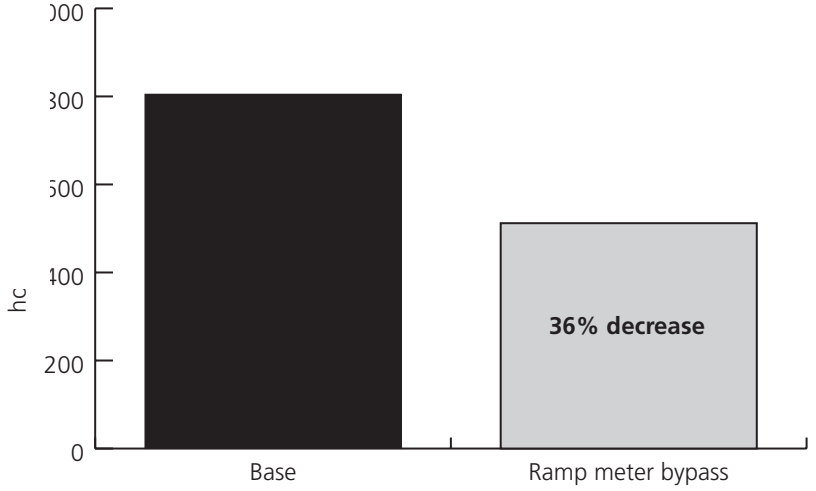
Drive time from I-5 to US 26

would significantly reduce drive time on Highway 217



Congestion on surface streets in corridor

would slightly reduce delay on surface streets



Congestion on Highway 217

would significantly reduce delay on Highway 217