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## 5.1 Traffic and Transportation

The I-405 Corridor serves as an important transportation thoroughfare for the region. Increased traffic is a result of growth of the state and regional economies and associated changes in employment and population. Understanding how existing traffic and transportation conditions will change over time is important to many people within the region. WSDOT has assessed the data for both the proposed project and the No Build Alternative to provide an accurate depiction of how traffic conditions along I-405 will look in the future with or without the project.

### **How did we evaluate traffic and transportation data for the Renton to Bellevue Project?**

WSDOT used a travel demand forecasting model, consistent with the Puget Sound Regional Council's (PSRC) forecasts, to provide information about future year traffic volumes on I-405. WSDOT reviewed the results of these forecasts for consistency with the cities of Kirkland, Bellevue, and Renton, King County Metro, Sound Transit, and the PSRC. Then, we used a microsimulation model to analyze freeway operations.

### **What is traffic like now along the freeway and what will happen in the future?**

On a typical weekday, 135,000 vehicles currently travel along the I-405 Corridor in the study area. Half of them travel northbound and half travel southbound. After the project is constructed, our traffic models predict that 188,000 vehicles will travel along this section of the I-405 Corridor in 2014; 212,000 vehicles will travel this section in 2030. If the project is not built, the flow of traffic would become so constrained that not all drivers wishing to travel on I-405 will be able to do so. Delays would force 40,000 drivers to seek alternative routes on local and regional roadways, choose to travel by different means, or forego their desired trips altogether. Exhibit 5.1-1 shows existing traffic volumes and projected volumes for 2014 and 2030 for the project and the No Build Alternative during peak hours.



**Traffic on I-405 in the project area**

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*Please refer to the Renton to Bellevue Project Transportation Discipline Report in Appendix G (on CD) for a complete discussion of the traffic analysis.*

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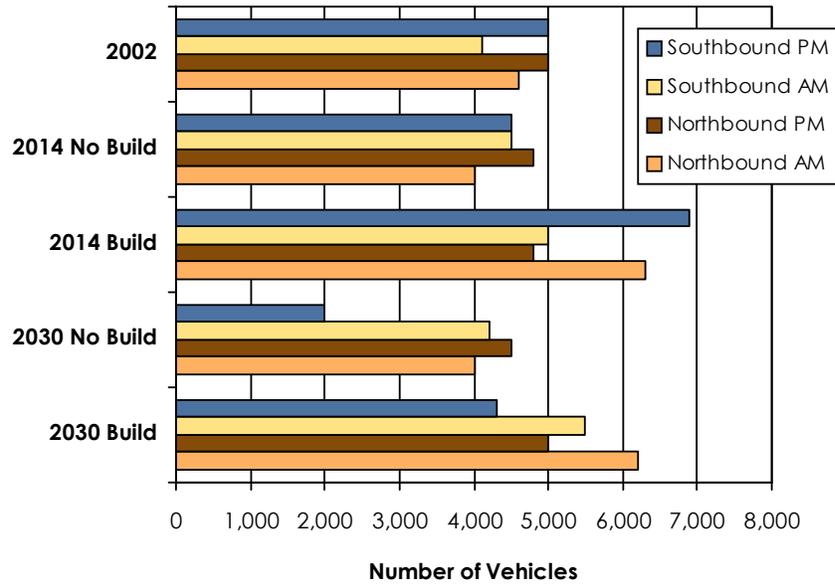
### **What is the Puget Sound Regional Council?**

The Puget Sound Regional Council is the regional transportation, economic and growth planning agency for the central Puget Sound region. It serves as a forum for cities, counties, ports, transit agencies, tribes, and state agencies to coordinate on important regional issues.

**Exhibit 5.1-1: Vehicles traveling I-405 through the project area during the peak hours (modeled at the NE 44th Street Interchange)**



**Typical traffic congestion on southbound I-405 (I-90 to I-405 south on-ramp)**



During the peak period, the Renton to Bellevue section of I-405 commonly experiences bumper-to-bumper and stop-and-go traffic with more rear-end collisions than during non-peak periods. The usual morning peak hour traffic congestion occurs around 7:00 AM to 8:00 AM; in the evening the greatest congestion occurs from 4:00 PM to 5:00 PM. Congestion is typically the worst for northbound morning commuters and southbound evening commuters. As congestion has increased in the region, it has extended these peak periods to the point that congestion commonly lasts for several hours in both the morning and evening.

Exhibit 5.1-2 presents a general overview of southbound and northbound traffic conditions during the morning and evening peak periods, while Exhibits 5.1-3 and 5.1-4 provide visual comparisons between the Build and No Build alternatives in 2014. In the analysis of future traffic conditions, we assume a change in HOV lane eligibility by 2014 from two or more persons per vehicle (HOV 2+) to three or more persons per vehicle (HOV 3+). WSDOT expects to implement this change once the HOV average speed drops below 45 mph.

The Corridor EIS identified possibilities to better manage the corridor through tolling. WSDOT could achieve this through the use of High Occupancy Toll (HOT) lanes so that HOVs and transit could use the lane for free and other vehicles would pay a toll to use the lane. HOT lanes could be created through

Exhibit 5.1-2: Traffic conditions today

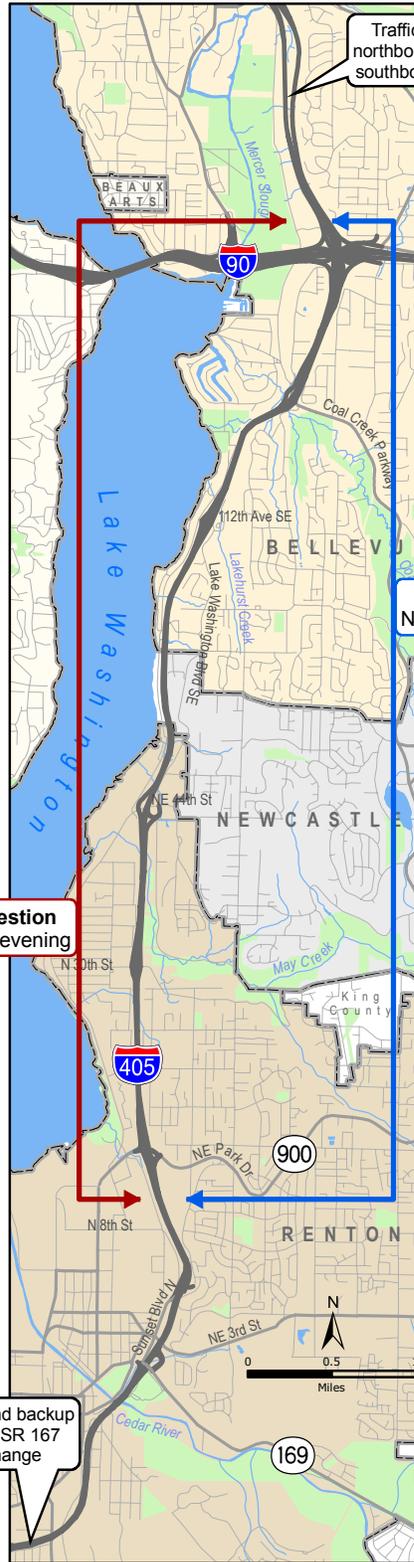
**Southbound Lanes  
Afternoon Conditions**

Traffic volumes  
are highest between  
3:00 PM and 6:00 PM.



**Recurring Congestion  
Southbound in the evening**

Southbound backup  
from the SR 167  
interchange



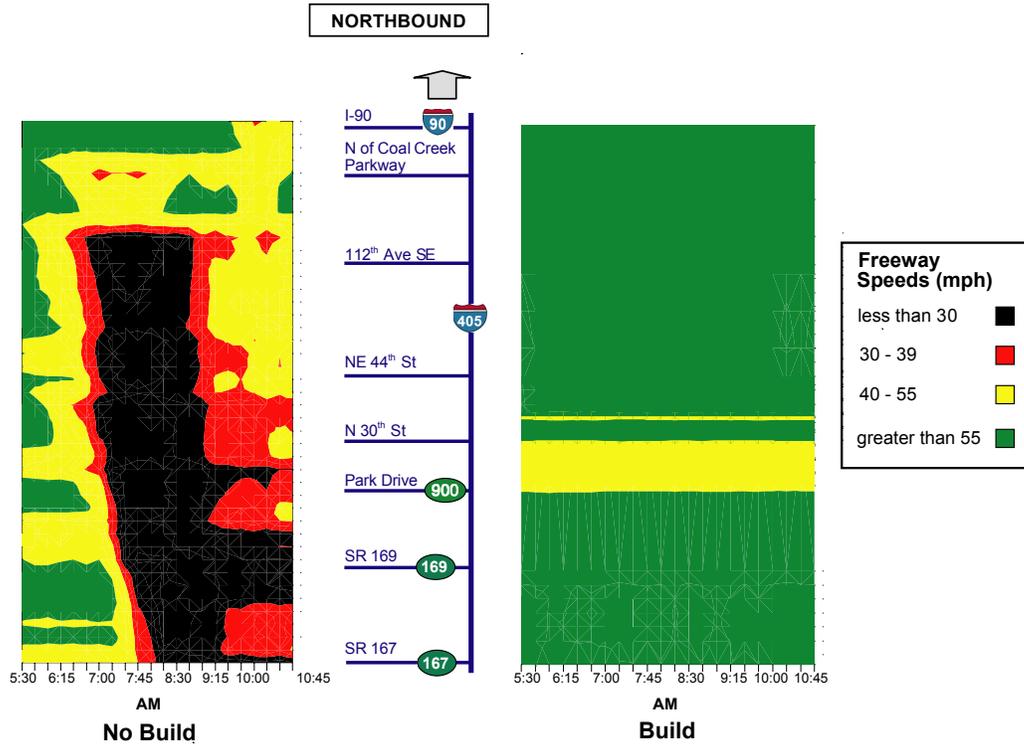
Traffic congestion occurs  
northbound approaching and  
southbound leaving Bellevue

**Recurring Congestion  
Northbound in the morning**

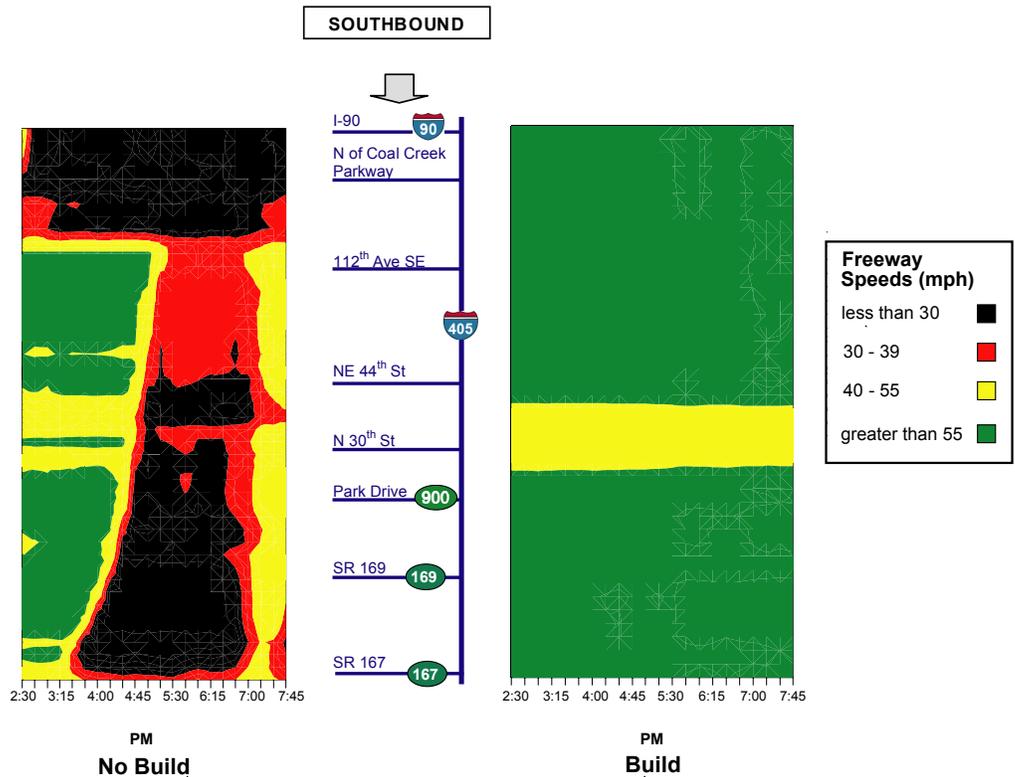
Traffic volumes  
are highest between  
6:00 AM and 9:00 AM.  
**Northbound Lanes  
Morning Conditions**



**Exhibit 5.1-3: Northbound morning freeway speeds in 2014, compared with the No Build Alternative**



**Exhibit 5.1-4: Southbound evening freeway speeds in 2014, compared with the No Build Alternative**



the conversion of the existing HOV lane or by using one of the new lanes proposed by this project. The footprint identified in this document would not preclude implementation of HOT lanes. The freeway system would, however, operate differently if HOT lanes are used. If HOT lanes are to be implemented in the future, additional operational analysis and any necessary environmental documentation would be prepared. An operational change to HOT lanes would be a future decision.

The following paragraphs give a snapshot of traffic conditions today and how they will look in the future on this section of I-405.

### **Northbound in the Morning**

#### *Today*

The typical northbound morning peak hour has between 4,100 and 5,500 vehicles; 15 to 20 percent of these are in the HOV lane. General-purpose traffic is so congested that average speeds are much less than 45 mph (often less than 25 mph) with frequent stop-and-go conditions. Typically, this means it can take up to 19 minutes to travel 7 miles from SR 169 to the Coal Creek Parkway interchange<sup>1</sup>. Traffic in the HOV lane tends to move at the posted speed limit and makes the same trip in over 6 minutes.

#### *No Build Alternative in 2014*

If WSDOT does not build the project, the freeway would carry 3,000 to 5,000 vehicles during the peak hour by 2014. This represents a decrease of 500 to 1,000 vehicles compared with existing conditions. The decrease in traffic flow would result from growing congestion within the corridor, restricting the amount of traffic that could move along the freeway. Another contributing factor is the assumed change in HOV lane eligibility by 2014 from two or more persons per vehicle (HOV 2+) to three or more persons per vehicle (HOV 3+). A change to HOV 3+ would create additional congestion within the general-purpose traffic lanes. A trip from SR 169 to Coal Creek Parkway would increase by 1 to 2 minutes compared with existing conditions. HOV 3+ vehicles would travel at the posted speed limit.

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<sup>1</sup> In the I-405, SR 169 to I-90, Renton to Bellevue Transportation Discipline Report, this trip is also referred to as Renton to Factoria.

### *Build Alternative in 2014*

The proposed project will add capacity to I-405 and improve traffic conditions. Most of the congestion that currently exists along this section of freeway will be relieved. For example, with improvements, the northbound freeway will be able to carry 5,100 to 7,200 vehicles per hour and travel times will drop from 19 minutes to less than 7 minutes for the 7-mile trip from SR 169 to Coal Creek Parkway. The HOV lane traffic volumes and average speeds will be similar to 2014 No Build conditions.

### *No Build Alternative in 2030*

In 2030, the northbound commute would be similar to that in 2014. However, northbound congestion on I-5 in Tukwila and on SR 167 approaching Renton would worsen and constrain the traffic volumes from reaching the project area. Traffic congestion would also spread throughout the morning period.

### *Build Alternative in 2030*

In 2030, most of the congestion will still be relieved despite carrying between 4,300 and 7,200 vehicles in the morning peak hour. The travel times will remain in the 6- to 7-minute range at speeds near 60 mph, the posted speed limit.

## **Southbound in the Evening**

### *Today*

Currently, the southbound evening traffic congestion is better than the morning northbound peak period. However, conditions vary widely from day to day. The freeway carries up to 5,000 vehicles per hour during this period. Typically, general-purpose traffic takes between 7 to 8 minutes to travel from Coal Creek Parkway to SR 169<sup>2</sup>. Traffic in the HOV lane tends to move at the posted speed limit.

### *No Build Alternative in 2014*

If WSDOT does not build the project, then congestion would increase along I-405 during the evening commute. Traffic volumes in the southbound direction would be in the range of 2,900 to 4,800 in the evening peak hour, which would be 500 to 800 vehicles less than today. The decrease in traffic flows would mostly be the result of growing congestion within the

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<sup>2</sup> In the I-405, SR 169 to I-90, Renton to Bellevue Transportation Discipline Report, this trip is also referred to as Factoria to Renton.

corridor and backups that would lengthen from the worsening bottleneck at the SR 167 interchange. In 2014, a trip from Coal Creek Parkway to SR 169 would increase to nearly 13 minutes compared with existing conditions of over 7 minutes. HOV speeds would be near the posted speed limit.

***Build Alternative in 2014***

The proposed project will add much greater capacity to I-405 and improve traffic conditions. The southbound freeway will be able to carry 50 percent more traffic (5,200 to 7,200 vehicles per hour), and travel times will drop from 12 to 13 minutes in the 2014 No Build to about 7 minutes for the 7-mile trip from Coal Creek Parkway to SR 169. The HOV lane traffic volumes and average speeds will be similar to 2014 No Build conditions, near the posted speed limit.

***No Build Alternative in 2030***

In 2030, the southbound traffic volumes would drop to between 1,000 and 2,200 vehicles in the evening peak hour. Severe backups would develop with vehicles trying to access I-5 in Tukwila and SR 167 in Renton. These backups would likely substantially reduce the volumes of traffic that could pass through the project area. Speeds would drop to less than 15 mph, making the length of a trip 33 minutes from Coal Creek Parkway to SR 169. HOV traffic would remain near the posted speed limit.

***Build Alternative in 2030***

With the proposed improvements to I-405, the freeway will carry between 2,600 and 6,600 vehicles in the evening peak hour. These southbound volumes will be more than double the traffic that could be handled if nothing is built. Many of the major bottlenecks will be removed and traffic will flow better. However, since backups from I-5 and SR 167 are assumed to still exist, persistent congestion will remain in the southbound direction in both the morning and the evening, and travel times will average around 28 minutes. These backups will be addressed in WSDOT's Master Plan improvements for I-405.

***What about the reverse commute?***

The morning *reverse commute* (southbound) is substantially better than the northbound commute (see Exhibit 5.1-2). While the northbound morning commute from SR 169 to Coal

**What is the reverse commute?**  
The reverse commute is commuter trips made in the opposite direction of the main flow of traffic.

Creek Parkway takes almost 19 minutes, the southbound trip through the same area takes less than 7 minutes. However, traffic backups frequently occur on the section immediately to the south at the I-405 and SR 167 interchange. The congestion at the interchange often creates problems for southbound traffic further north. The traffic forecasting model indicates that the southbound morning traffic will continue to increase and congestion will worsen by 2014.

Similarly, in the evening, the northbound traffic flows are variable, depending on traffic conditions at I-90 and downtown Bellevue at the north end. By 2014, extensive congestion is forecasted throughout the evening commute period, resulting in travel times increasing from 7 minutes in 2002 to over 13 minutes in 2014.

The proposed project will greatly relieve the reverse commute traffic problems within the corridor. Relatively free-flow speeds can be expected southbound in the morning and northbound in the afternoon.

#### ***How will the project affect freight movements?***

This section of I-405 is the most heavily-traveled freight corridor along the east side of Lake Washington. The additional lanes on I-405 will provide more capacity for freight movement throughout the day. Without the improvements, congestion would increase on I-405 and further affect the off-peak times when truck movements are heaviest. The *I-405 Corridor Program EIS* analysis indicated that improvements to the south section of I-405 will encourage trucks to use I-405 as the route of choice traveling to and from I-90.

#### ***What safety improvements will be included in the project?***

In the Renton to Bellevue section of I-405, the overall accident rate for 2002 was 1.65 accidents per million vehicle miles, which is slightly higher than the average of 1.48 for the whole I-405 Corridor. The statewide average accident rate for urban freeways is 1.37. Most accidents on the mainline are rear-end-collisions. Additional roadway capacity northbound and southbound will improve safety by reducing stop-and-go traffic. Five on- and off-ramps to I-405 in this section are included in WSDOT's 2004 High Accident Location (HAL) Review. Accidents at these locations predominately occur at the intersection of the ramps with the cross arterials. Based on

WSDOT's accident review of the HALs, these accidents occur primarily because of high turning volumes to and from the ramps. Improvements to all eight interchanges in this section will be constructed to current standards to accommodate future demand volumes. These interchange improvements will have a positive effect on safety.

***How will the project affect transit?***

As part of this project, WSDOT is building infrastructure that will allow Sound Transit and/or King County Metro to implement bus rapid transit (BRT) within the I-405 Corridor. A new in-line transit station, HOV bypasses at general-purpose ramps, and HOV direct access on- and off-ramps will improve bus reliability by offering easier access to and from the HOV lanes. More buses, along with larger park-and-ride facilities, will contribute to higher ridership.

***What measures are proposed to avoid or minimize effects on traffic during construction?***

- WSDOT will prepare a traffic management plan before making any changes to the traffic flow. We will advise the public, school districts, and emergency service providers of the changes ahead of time through a public information process.
- Prior to and during construction, WSDOT will implement strategies to manage the demand on transportation infrastructure. These transportation demand management (TDM) strategies, such as support for the use of carpools, vanpools, and public transportation programs, will form an important part of the construction management program and will be aimed at increasing public awareness of their travel options in the corridor.

