

# SR 167 Corridor Plan

## Technical Memorandum 4: Existing Traffic Operations



Washington State  
Department of Transportation

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## Introduction

The Washington State Department of Transportation (WSDOT) and the cities and counties between Renton and Puyallup are developing strategies to ease traffic congestion along the State Route (SR) 167 corridor. They are developing the SR 167 Corridor Plan, which will identify a series of traffic improvement projects to increase safety and travel efficiency for all users of the highway.

A corridor plan is a study that identifies the existing and future transportation-related problems in an area, and proposes solutions to those problems. These proposed solutions are then analyzed to determine their potential effects on the highway and nearby communities.

The SR 167 Corridor Plan will identify a long-term vision for the corridor. It will also identify projects that can be completed in the short-term to improve the route's capacity and safety. The final projects selected for the corridor will:

- Provide an efficient set of transportation solutions within the SR 167 corridor;
- Make many communities within the corridor more livable;
- Maintain or improve air quality, protect and enhance fish-bearing streams, and continue to protect the integrity of the local natural environment;
- Contribute to a vigorous state and regional economy by satisfying existing and future travel needs; and
- Accommodate planned regional growth.

This technical memorandum is a component of the SR 167 Corridor Plan, which analyzes potential projects that will improve long-term safety, traffic mobility and freight needs on the SR 167 corridor.

Existing traffic conditions will be used to help identify design alternatives needed to implement highway improvements along the corridor. By reviewing the existing conditions on SR 167

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### Did you know?

In 1970 about 12,000 vehicles traveled on SR 167 every day.

Today more than 12,000 vehicles travel on SR 167 during just an hour and a half of the evening commute period.

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and parallel routes, WSDOT can contemplate the effects of design options.

**Why is the SR 167 corridor important to transportation in the region?**

The SR 167 corridor serves a growing residential community due to affordable housing and rental costs and is emerging as a regional and interstate freight distribution corridor because of increased development of retail and warehouse facilities.

SR 167 is the primary north-south highway for the Green River Valley cities including Renton, Kent, Auburn, Pacific, Sumner, and Puyallup. The Green River Valley cities are not only thriving economic centers, they also are rapidly growing residential areas. This growth is in part due to the average housing costs in the Green River Valley being lower and more affordable than the regional housing values in the greater Seattle and Bellevue areas.

One-third of the region’s trucking, storage, and distribution facilities are located along the corridor. SR 167 is considered a key link in the daily transport of goods and commodities from the major regional ports of Seattle and Tacoma due to its connections to major regional ports and distribution centers via I-5, I-405, I-90, SR 18, SR 410 and SR 161. The SR 167/I-405 route is also a viable alternative to I-5 for north-south interstate truck traffic

**How have development patterns changed in the Green River Valley?**

Over the past several decades, traffic volumes on SR 167 increased significantly as development in the valley changed from the predominantly agricultural uses to warehouse and distribution centers with increased residential, business and retail uses on the surrounding hills.

**Changing Land Use along SR 167:  
Photos of Lake Meridian area in Kent**



1936 – Agricultural land use is predominant



1970 – Residential development increasing



1996 – Residential land use is predominant

The population of the Green River cities and the valley areas of unincorporated Pierce and King Counties in the SR 167 corridor has increased by nearly 70 percent from less than 175,000 residents in 1980 to over 290,000 residents in 2000 as shown on Exhibit 4-1. Employment has nearly doubled over the same period from fewer than 95,000 jobs to more than 180,000 jobs as shown in Exhibit 4-2.

Nearly half of the residential and employment growth has occurred in the north end of the corridor in Renton and Kent.

4-4 State Route 167 Corridor Plan

Exhibit 4-1  
Population Growth in SR 167 Corridor from 1980-2000

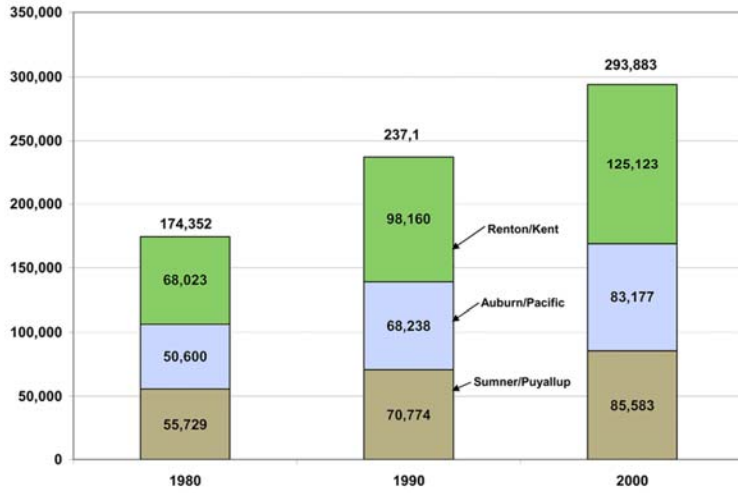
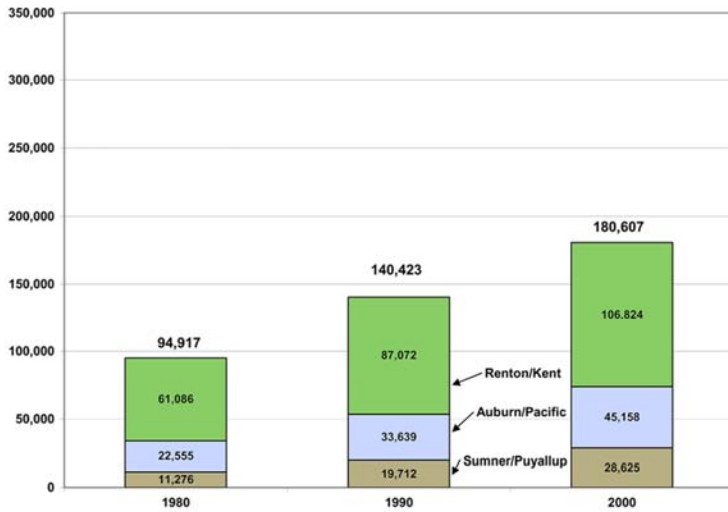


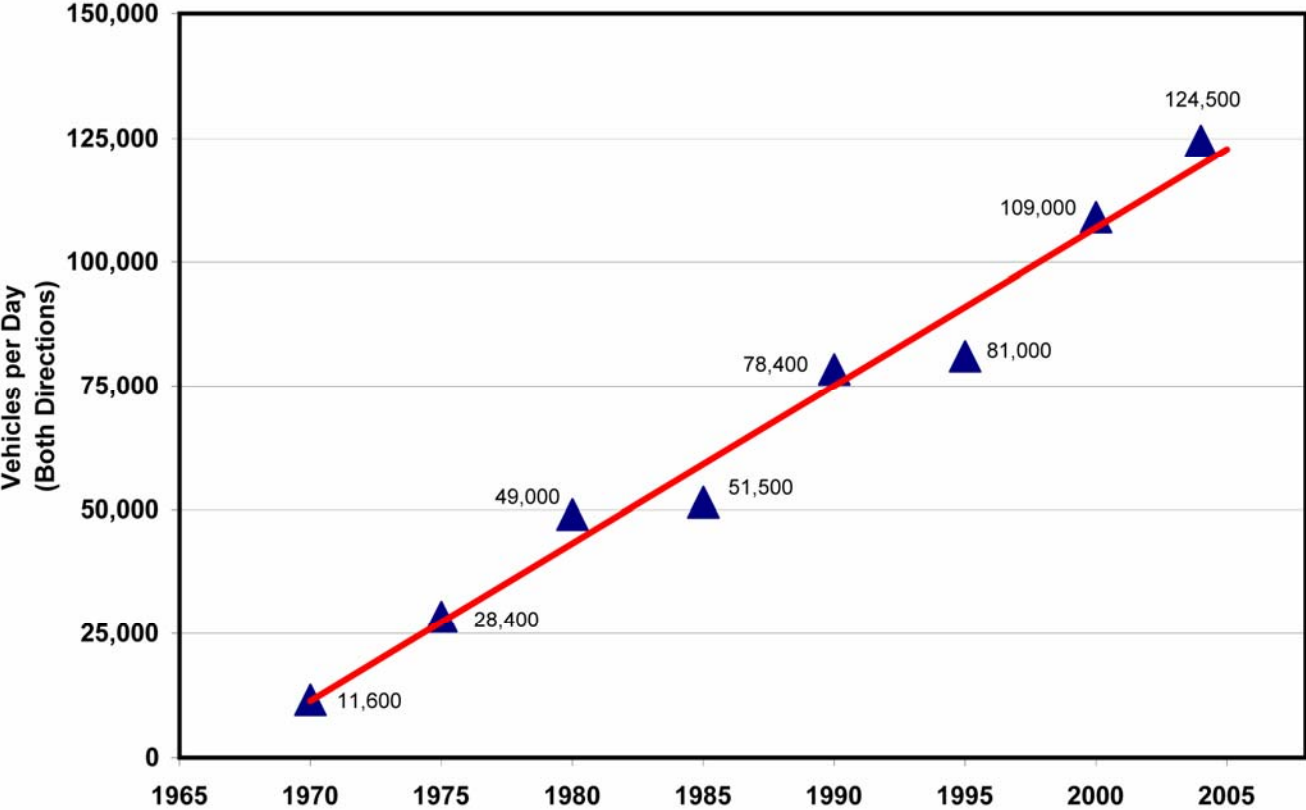
Exhibit 4-2  
Employment Growth in SR 167 Corridor from 1980-2000



Over the past 35 years, traffic volumes on SR 167 have increased nearly ten-fold. In 1970, the traffic volume on SR 167 was less than 12,000 vehicles per day. Today traffic exceeds 120,000 vehicles per day.

Between 1980 and 2000, population and employment in the Green River Valley grew 69 percent and 90 percent respectively, while traffic grew by more than 120 percent, from about 49,000 vehicles per day to about 109,000 vehicles per day.

**Exhibit 4-2  
Traffic Growth in SR 167 Corridor (1965-2005)**



**What conditions have been investigated on SR 167 in this and other studies?**

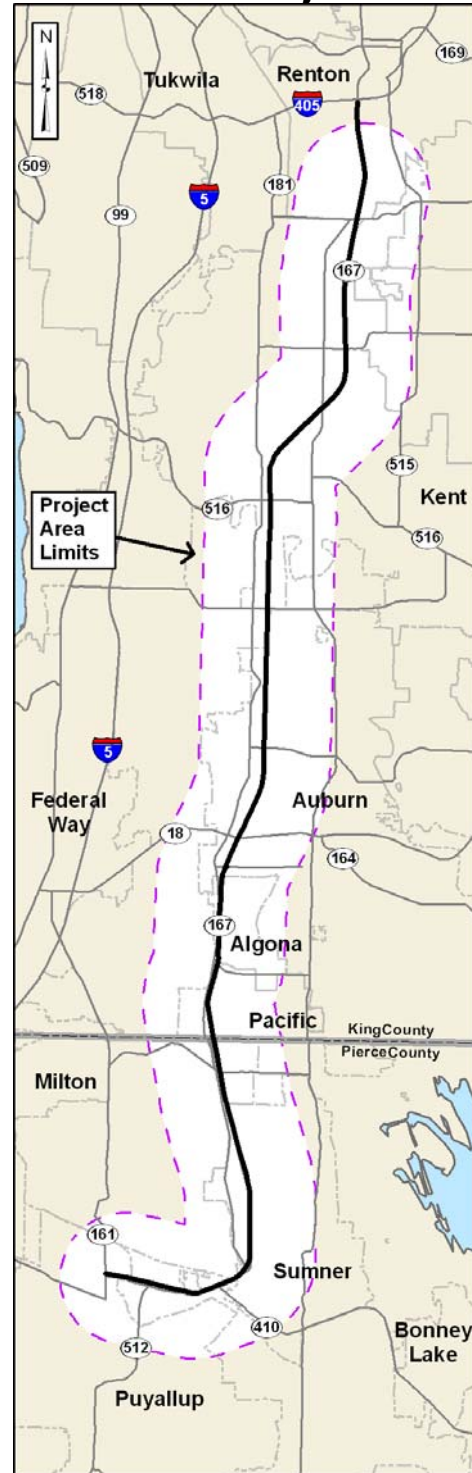
Several projects within the SR 167 corridor have been conducted, or are underway, including:

- SR 167 Valley Freeway Study
- SR 167 High Occupancy Toll (HOT)Lanes Pilot Project
- SR 167 High Occupancy Vehicle (HOV) Stage 3 Design and Construction
- SR 167 HOV Stage 4 and 5 Environmental Assessment
- SR 167 Extension from SR 161 to SR 509

This SR 167 Corridor Plan study area includes SR 167 from I-405 in Renton to SR 161 in Puyallup. The study area also includes arterial streets within one mile of the freeway. This Existing Conditions technical memorandum answers the following questions:

- How many people and what freight goods are moved along the SR 167 corridor today?
- How much traffic uses the SR 167 corridor and parallel arterial routes?
- What are the bottlenecks on SR 167 and how does this affect vehicle travel today?
- How many traffic collisions are experienced along the corridor?
- What other travel services, such as bus and commuter rail, are operated along the corridor?
- How do bicyclists and pedestrians cross the corridor?

**Exhibit 4-3  
SR 167 Corridor Project Area**



- What are the current development plans in the corridor and what improvement projects are planned for the SR 167 corridor and its adjacent streets and highways?

### **Existing Travel Demand Patterns**

Up to 145,000 people travel on SR 167 during any weekday with about 9 percent traveling during the afternoon peak hour. The SR 167 corridor also carries over 10,000,000 tons of goods annually or about 27,000 tons per day.

### **Why do people use the SR 167 Corridor?**

The SR 167 corridor accommodates a wide range of travelers including people who are traveling for business, recreation, and other typical daily activities. The majority of people using SR 167 in the peak commute periods are for trips to and from work, and for the delivery of freight.

### **How does freight travel in the corridor?**

Freight is handled by truck and by rail. More than 12,000 tractor trailers and smaller trucks operate on the corridor every day with the peak activity occurring in the morning after the commuter period.

### **Existing Traffic Operations**

The SR 167 corridor is an access-controlled highway north of SR 161, like I-5 or I-405, where drivers access the highway on free-flow ramps.

More than 120,000 vehicles per day travel SR 167 with up to 8,000 vehicles per hour at the north end of the corridor. In this area, SR 167 has two general purpose (GP) lanes in each direction which are open to all traffic. These lanes are provided from SR 161 to I-405. A third travel lane is provided in each direction for high-occupancy vehicles (HOV) only north of SR 18 in Auburn. This lane carries carpools, vanpools and buses.

**Are traffic volumes the same throughout the corridor?**

Traffic volumes are considerably higher on the north end of the SR 167 corridor.

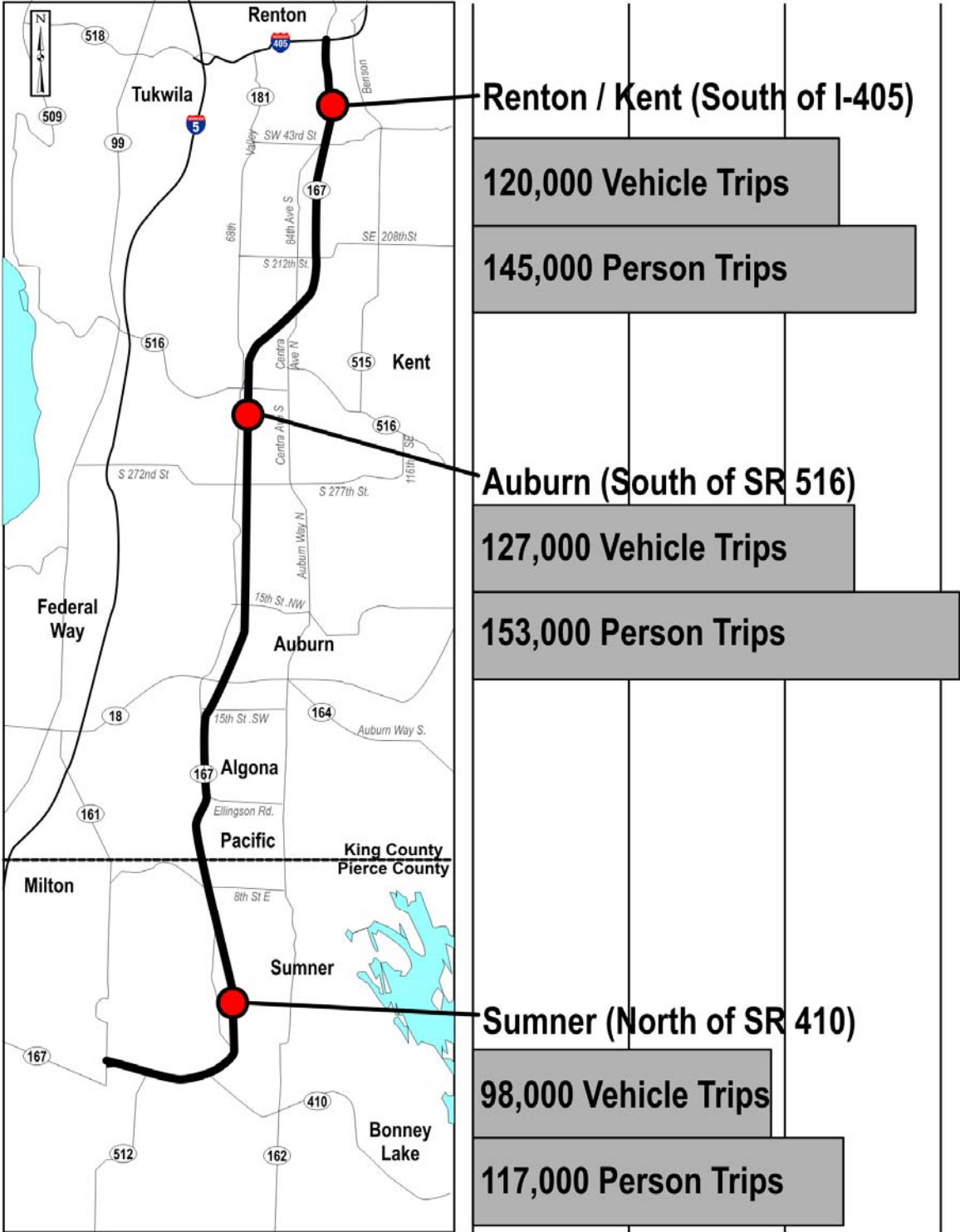
On a typical weekday more than 120,000 vehicles use the six existing traffic lanes on SR 167 north of SR 18. South of SR 18 more than 90,000 vehicles per day use the four existing traffic lanes and increases to about 115,000 vehicles per day between SR 410 and SR 512. West of SR 512, to the intersection at SR 161, the traffic volume decreases to about 50,000 vehicles per day.

Exhibit 4-4 depicts daily traffic volumes and the number of people that are carried on the northern, central, and southern sections of SR 167.

Traffic volumes on weekends are 15 percent lower than weekdays.

Exhibit 4-4  
Traffic Volumes in the SR 167 Corridor by Section (2005)

0      50,000      100,000      150,000

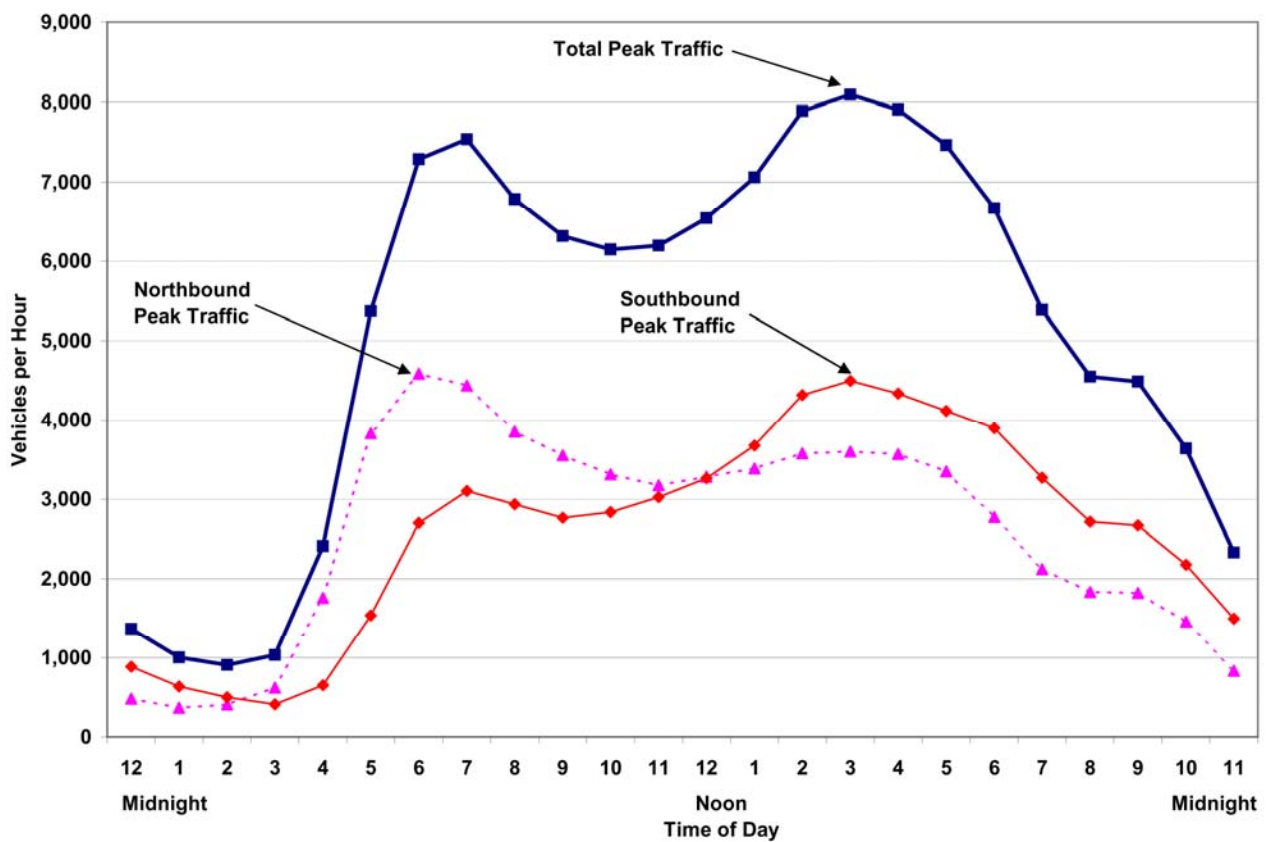


**How do traffic volumes vary throughout the day?**

Traffic volumes range from less than 1,000 vehicles per hour in the very early morning hours to more than 8,000 vehicles per hour in the afternoon peak commute period at the north end of the SR 167 corridor.

Exhibit 4-5 shows the distribution of traffic over the 24 hour period of a typical weekday.

**Exhibit 4-5  
Daily Traffic Volumes on SR 167 at South 212<sup>th</sup> Street (2005 Volumes)**



On weekdays, the morning peak commute period lasts for about two hours, from 6:00 am to 8:00 am. Traffic in the northbound travel direction is higher than in the southbound travel direction in the morning.

The afternoon peak commute period lasts for about four hours, from 2:00 pm to 6:00 pm. Traffic in the southbound travel direction is higher than in the northbound travel direction in the afternoon.

The combined northbound and southbound traffic is higher in the afternoon peak commute period and lasts for a longer time.

Weekend traffic volumes typically peak from about noon to 6:00 pm with less peak directional flow.

### **How does traffic on SR 167 compare with traffic on parallel arterial routes?**

SR 167 has the largest north-south traffic capacity in the Green River Valley, but significant traffic volumes use parallel routes, such as the East Valley Highway (SR 161), the West Valley Highway (SR 181), and Benson Road. The afternoon peak commute traffic on the adjacent arterial routes ranges from 40 to 60 percent of the traffic on SR 167.

**Exhibit 4-6**

### **Afternoon Peak Commute Traffic on SR 167 and Adjacent Routes (2005)**

	SR 167	Parallel Routes				
		Total	SR 161, Military	SR 181, West Valley	E Valley	Benson
Renton (SR 516 to I-405)	8,380	4,560	NA	2,360	690	1,510
Auburn (SR 18 to SR 516)	9,110	3,030	NA	1,250	1,780	NA
Puyallup (SR 410 to SR 18)	6,920	2,740	1,420	540	780	NA

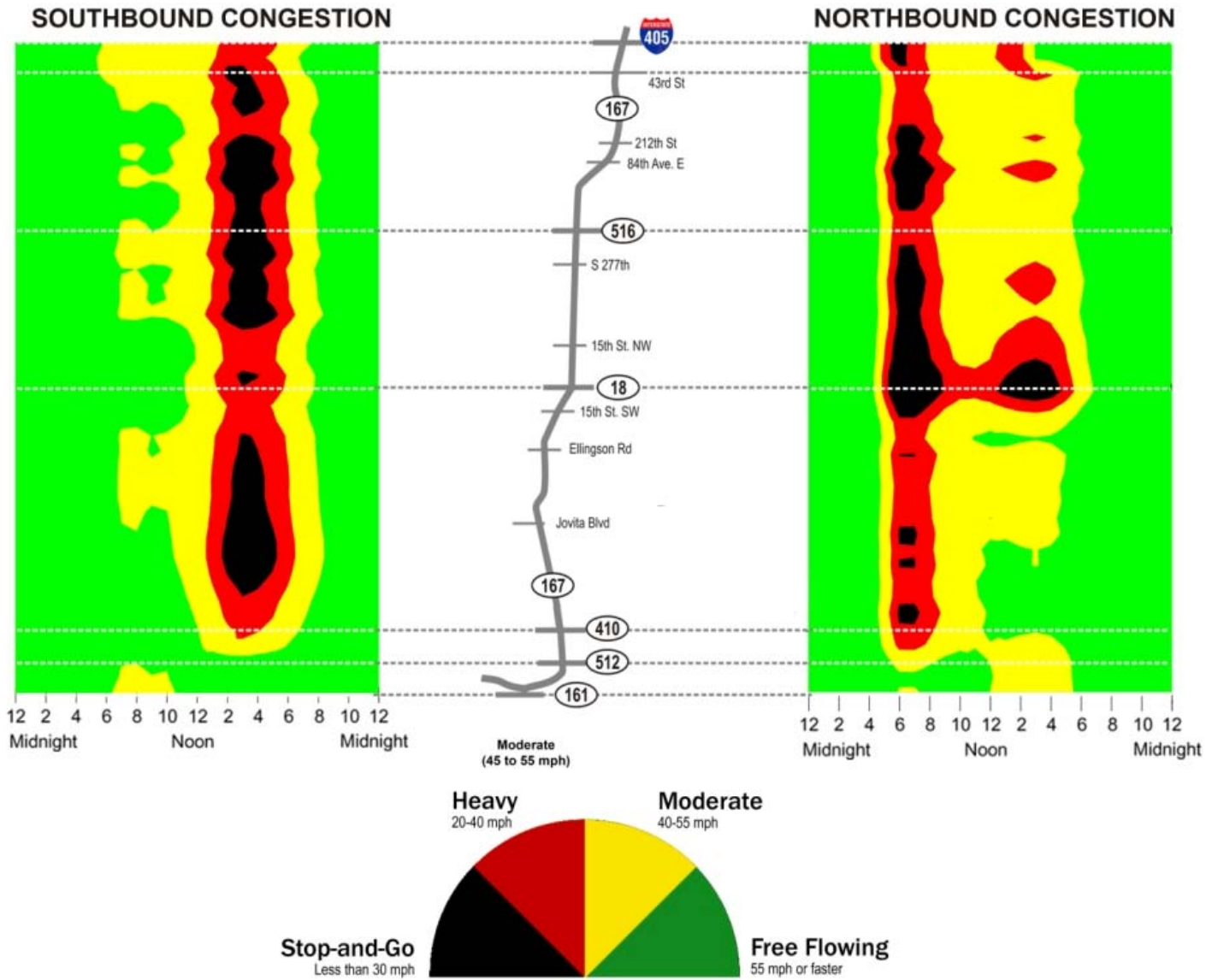
### **What are the key traffic congestion problems on SR 167?**

On typical weekdays, major traffic congestion occurs throughout the morning commute in the northbound direction with speeds dropping to stop and go conditions. Traffic congestion in the afternoon commute occurs primarily in the southbound direction, also with speeds dropping below 10 mph for some sections. There are a few locations where traffic

congestion in the afternoon commute is also experienced in the northbound direction.

Exhibit 4-7 illustrates the typical congestion of the general purpose lanes over a weekday - southbound traffic congestion is shown on the left and northbound traffic congestion is shown on the right. Traffic speeds at or near the posted speed limit of 60 mph are illustrated in green. Yellow indicates moderate congestion with traffic flow at 40 to 55 mph. Red indicates heavy congestion with traffic flows at 30 to 40 mph and black indicates “stop-and-go” traffic flow below 30 mph.

Exhibit 4-7  
Traffic Congestion on SR 167 (2005)



SR 167 is posted at 60 mph. Travel speeds on SR 167 are significantly below the posted speeds in many sections of the corridor during peak travel periods.

### **Where are the southbound congestion, or bottleneck, areas along SR 167?**

While congestion rarely occurs in the morning commute period in the southbound direction, there are more severe areas of traffic congestion in the afternoon than anytime in the northbound direction. These areas are listed below:

#### **I-405 Interchange and 180th Street**

Immediately south of I-405 there are only two general purpose southbound lanes. These act as a bottleneck with traffic queues forming on I-405. Shortly south of the interchange area, the southbound HOV lane starts providing some minor relief. However, significant southbound traffic volumes from the 41st Street access overwhelm the capacity on SR 167 again.

#### **212th Street**

Congestion occurs as the 212th Street on-ramp merges onto SR 167.

#### **15th Street NW to SR 18**

The southbound HOV lane ends near 15th Street NW and one southbound lane is terminated at SR 18. The combined weaving of HOV traffic destined to exits at SR 18 and the reduced capacity for other traffic continuing south overwhelms the existing two lane capacity on SR 167.

#### **SR 18 to 15th Street SW**

Traffic entering from SR 18 weaves across traffic exiting to 15th Street SW, which results in congestion through this area.

#### **SR 410 to SR 512**

About 1,700 vehicles per hour southbound from SR 410 join about 2,900 vehicles per hour southbound from SR 161 and weave between SR 512 and the continuation of SR 167 west to SR 161. While this traffic does not exceed the actual capacity of the four lane weave section, the short distance, curvature of the road and some driver confusion on the continuity of SR 167 or SR 512 seems to create severe traffic backups.

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#### **Terms Defined:**

**Traffic Queues:** are simply long lines of waiting cars.

**Weaving:** is a situation in which traffic veering right and traffic veering left must cross paths within a limited distance, to merge with traffic on the through lane.

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## Ellingson Road

Though Ellingson Road traffic volumes are low, traffic exiting and entering the mainline SR 167 makes for congestion throughout the interchange. Nearly 4,000 vehicles are traveling on SR 167 through the Ellingson Road Interchange.

### **Where are the northbound congestion areas along SR 167?**

There are several key areas of traffic congestion in the northbound direction:

#### SR 512 to SR 410 Interchange

In the morning, the SR 512 to SR 410 interchange on northbound SR 167 has similar issues to southbound in the evening. About 3,300 vehicles per hour enter at SR 512 and exit at SR 410. This volume causes congestion throughout the interchange.

#### SR 18 Interchange

About 2,300 vehicles per hour northbound from SR 18 join about 2,800 vehicles per hour from SR 167 in the morning commute. This traffic overwhelms the existing two lane capacity on SR 167 until the HOV lane starts north of 15<sup>th</sup> Street NW. Similar impacts are experienced in the afternoon.

#### I-405 Interchange

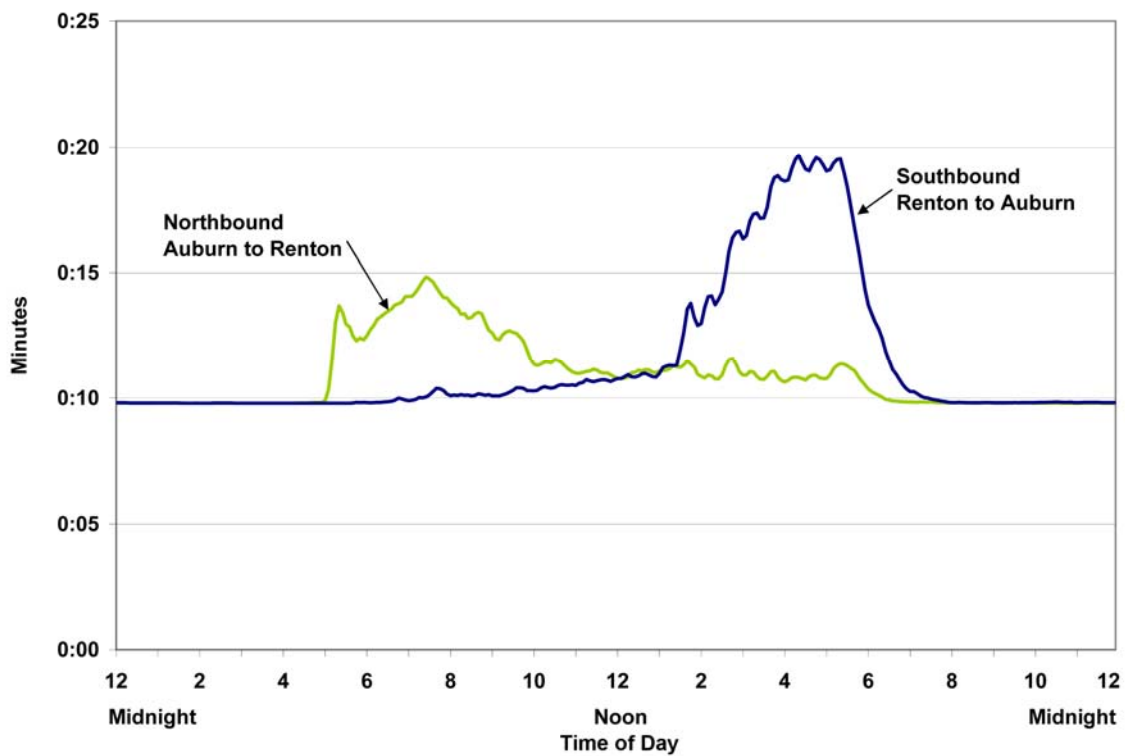
About half of the northbound traffic on SR 167 is destined to northbound I-405 toward Bellevue. There are two general purpose lanes and a single HOV lane northbound on SR 167 at 180th Street. Traffic from the HOV lane must weave across traffic from the general purpose lanes to access the exit ramp to northbound I-405. In addition, while there is a short HOV bypass lane on the ramp to I-405, it quickly converges to one lane. This single lane ramp is operating at full capacity, nearly 2,000 vehicles per hour during the morning peak. Congestion occurs in the morning peak period and in the evening peak period.

### How does the congestion affect travel times along SR 167?

The problem areas identified reduce operating speeds and increase travel time. Travel times are greatest during the morning and evening commutes.

Exhibit 4-8 depicts travel time fluctuations during the day for a trip between SR 18 in Auburn and I-405 in Renton.

**Exhibit 4-8  
Travel Times (2005) on SR 167 Between Auburn (SR 18) and Renton (I-405)**

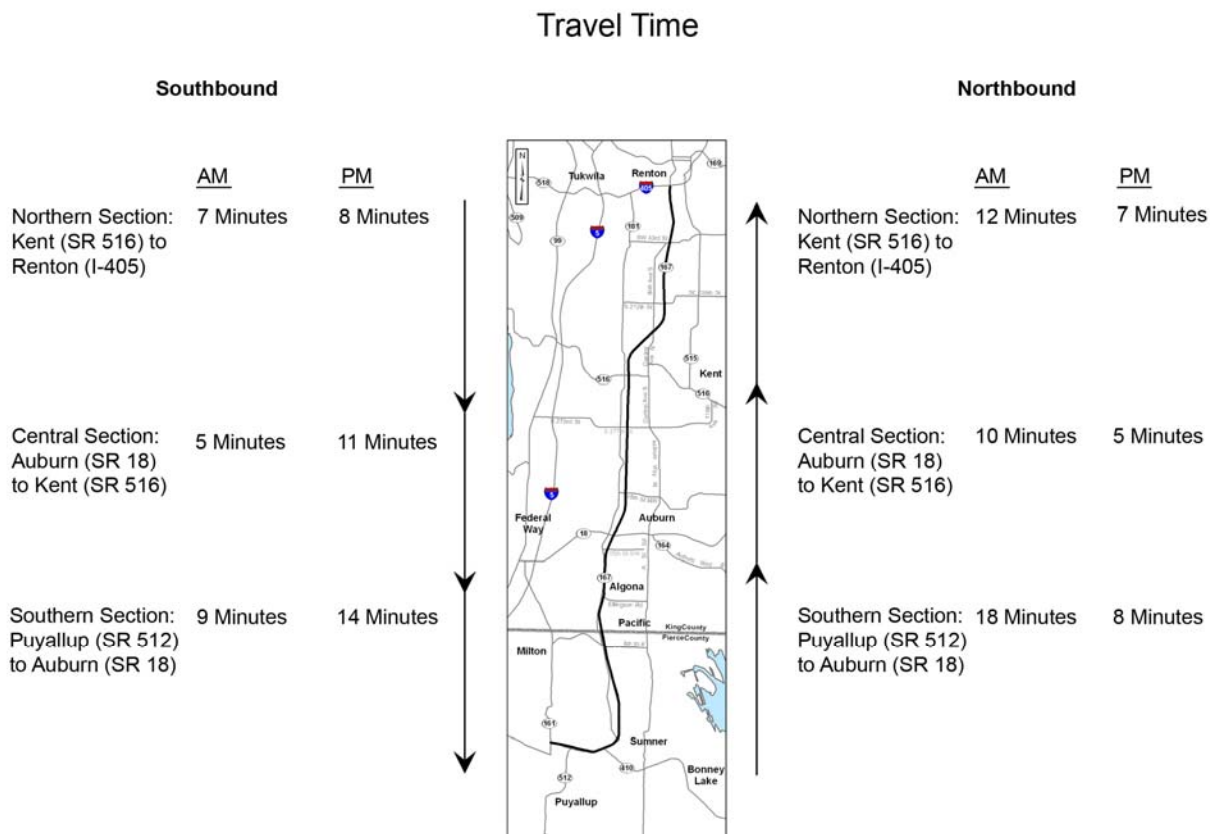


The travel time for this section is typically 10 minutes when there is no congestion. In the morning commute period, the

northbound travel time for this section in the general purpose lanes can frequently be 15 minutes or greater – an increase of about 50 percent. In the afternoon commute period, the southbound travel time will frequently take nearly 20 minutes in the general purpose lanes, or twice as long as free-flow conditions.

Similar travel time differentials have been observed for other trips in the corridor as shown on Exhibit 4-9.

**Exhibit 4-9  
Travel Times (2005) in the SR 167 Corridor**



### How well do the access points to SR 167 operate?

Access to SR 167 is provided at eleven interchange ramps with arterial streets, in addition to the freeway ramp connections at SR 512, SR 410 and SR 18. The arterial interchanges are generally spaced a mile or more apart. Some, such as 15th Street SW, are within a half mile of a freeway connection

Ramps from the freeway terminate at intersections on the arterial streets mostly controlled by traffic signals. Congested intersections at ramp terminals can limit traffic access to SR 167, or result in queues backing up onto the highway.

Intersection operations can be analyzed to calculate the average delay per vehicle or to calculate the volume over capacity ratio. Intersections are also graded based on delay and assigned a level of service (LOS) letter grade from “A” to “F”, where LOS “A” represents minimal vehicular delay and LOS “F” represents maximum delay or congestion. For intersections that are controlled by stop signs, LOS is reported for the worst case approach direction, while for intersections that are controlled by traffic signals the LOS reported is for all approaches.

The level of service for 2020 at 41 intersections, with the ramps to and from SR 167, was evaluated using the Synchro traffic analysis software. Most of the ramp intersections operate at LOS D or better during evening peak commute periods as shown in Exhibit 4-10. See Appendix B for more details.

Twelve intersections operate poorly, at LOS E or F, during the morning peak hours and nine intersections operate at poor levels during the afternoon peak hour.

Both the northbound and southbound off ramps at 8th Street E. and the southbound off ramp at Ellingson Road operate poorly during peak hours. This causes traffic to queue back onto SR 167. Stop signs control the off-ramps at the intersections of Ellingson Road and 8<sup>th</sup> Street East.

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#### Terms Defined:

Access points: are freeway exits – a point in which drivers can access local amenities.

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#### Level of Service (LOS) Breakdown and Approximate Times to Get Through an Intersection:

**A** = Free flow (at or less than 10 seconds)

**B** = Reasonably free flow

**C** = Stable flow (between 20 and 35 seconds)

**D** = Approaching unstable flow (between 35 and 55 seconds)

**E** = Unstable flow (between 55 and 80 seconds)

**F** = Forced or breakdown flow (more than 80 seconds)

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## Movement of Freight and Goods

The SR 167 corridor is a vital link for the state's freight system, and supports all three components of the Washington Transportation Plan (WTP), including:

- Global Gateways which promote international and national trade flows through Washington.
- Made in Washington to support regional economies with the freight system.
- Delivering Goods to You to support retail and wholesale distribution systems.

The ability to move freight by truck through the Puget Sound region is important to the economic well-being of the state. Businesses that manufacture, distribute, and ultimately sell goods to customers all rely on trucks to move the goods from the plant to the warehouse to the store. Even goods that arrive or depart the Puget Sound by ship, train, or plane are moved by truck to the dock, rail terminal or airport. See Appendix A for further information.

There are four primary concerns of truck freight movement on the roadway network. They are:

**Reliability** – Consistency in travel time to allow businesses to assure delivery schedules.

**Cost of Freight Movement** – Costs attributable to factors such as the time needed to move the freight (labor and operational costs), the cost of equipment (including wear-and-tear caused by inadequate roads), and fuel consumption.

**Safety** – Crashes involving trucks or trains can result in greater damage to drivers and to the freight involved. In addition, crashes or other freeway incidents delay other freight movements which can affect reliability.

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### Did you know?

More than 10 million tons of goods are carried down *each* SR 167, I-5, and SR 99 annually. There are 12,000 trucks on SR 167 alone each day.

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### Terms Defined:

Washington Transportation Plan (WTP):

The Washington Transportation Plan was adopted by the Washington Transportation Commission in February of 2002. The WTP is WSDOT's long range (20-year) plan for transportation project development.

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**Capacity** – The capacity of the freight system (or the amount of goods able to be moved) is dependent on the cost and travel time reliability.

For businesses, reliability and cost are important factors. An unreliable transportation system can interrupt production schedules; create a need to increase inventory which in turn increases the cost and loss; increase spoilage and damage to goods, and reduce overall competitiveness of the Puget Sound region.

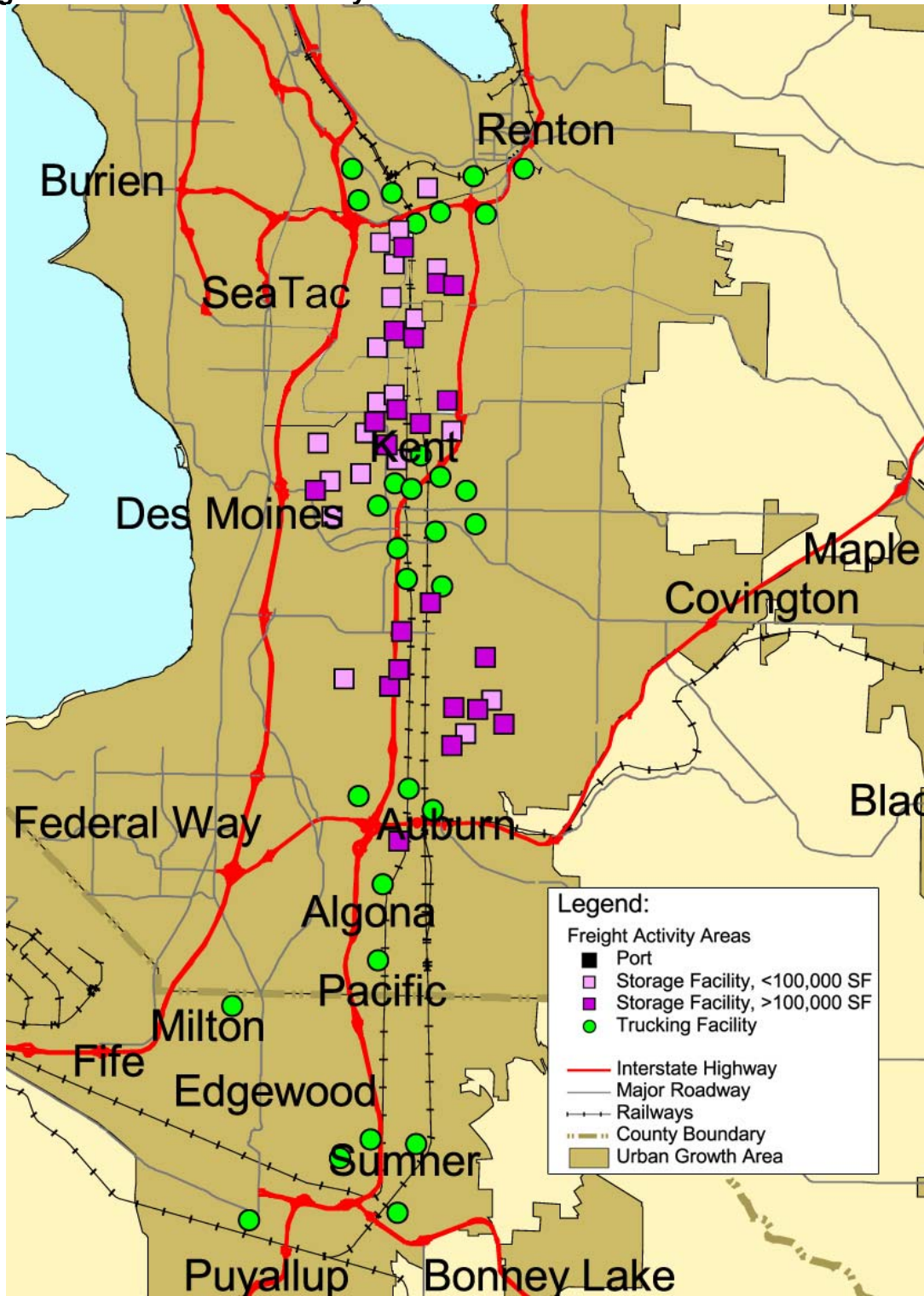
**What are the primary origins and destinations of freight traffic on SR 167?**

One-third of the region’s trucking and storage facilities are located in the Green River Valley as shown in Exhibit 4-11.<sup>1</sup> SR 167 is a critical connection between the manufacturing and distribution centers in the Green River Valley and the places to which freight trucks deliver including the greater Seattle area.

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<sup>1</sup> King County, Trans-Valley Study, March 2002.

Exhibit 4-11  
Freight in the Green River Valley



Long-haul trucks, which travel more than 250 miles, come from areas outside the region with materials used for manufacturing processes or goods for the distribution centers. Goods are also delivered to the manufacturing and distribution centers from other local sources with short-haul trips, which are less than 250 miles. However, 80 percent of all truck trips in the region are less than 50 miles in length, which are considered local truck trips. Long haul, short haul, and through-truck trips account for the remaining 20 percent of the trips in the region.

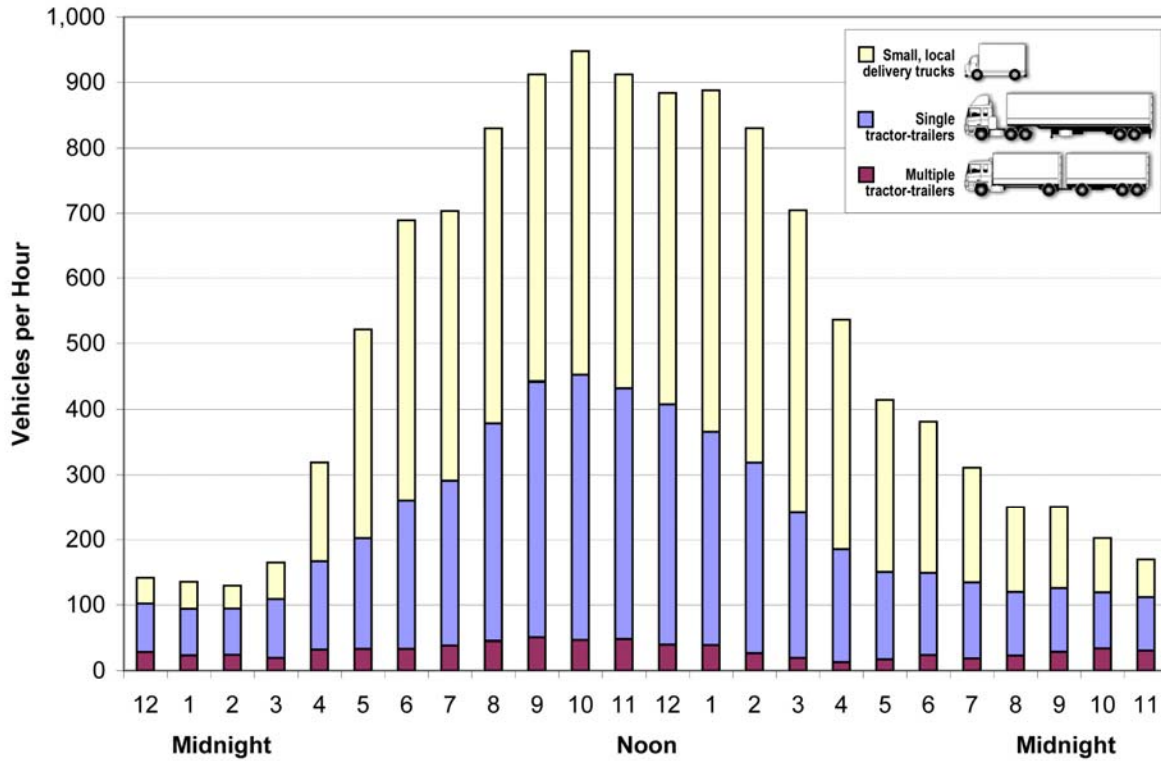
#### **How much freight is moved on SR 167?**

More than 12,000 trucks use SR 167 every week day with freight representing 10 percent of the total traffic. In comparison, trucks on I-5 at SR 516 represented less than 6 percent of the total traffic volume in 1998.

#### **When does freight move on the SR 167 Corridor?**

The peak truck volumes on SR 167 actually occur in the mid-day periods avoiding the morning and afternoon peak travel periods. Nearly 1,000 trucks per hour travel on SR 167 in the mid-day period representing 15 percent of the total traffic, as shown on Exhibit 4-12.

**Exhibit 4-12**  
**Weekday Truck Traffic on SR 167**



The types of trucks that use the SR 167 corridor include single-unit delivery trucks, single-trailer trucks, and multiple trailer trucks. A single-unit truck is frequently a small delivery truck or a five-ton box van and they tend to make local trips. Single and multiple tractor-trailers tend to make long-haul trips.

Over 10,000 of these types of trucks operate on SR 167 each weekday as follows:

- 6,800 small local delivery trucks
- 4,700 single tractor-trailers
- 700 multiple tractor-trailers

### **How does congestion on SR 167 affect freight movement and what alternate routes are used?**

Increasing congestion reduces the ability to support the economy of Washington State. Congestion increases delay and makes freight deliveries and services unpredictable, adding costs and making the region less competitive in the global and national markets. Freight movement relies on “just in time” delivery, which is difficult when a freeway is over capacity and travel time along the corridor is unreliable.

When SR 167 is congested, alternate routes may be used. Truck surveys indicate that I-5 is the primary alternate route, followed by the West Valley Highway and East Valley Highways.

### **What are the trucking industry’s mobility needs?**

WSDOT met with representatives of the Washington Truckers Association (WTA) in April 2005 to discuss transportation problems on SR 167. Based on that meeting, WSDOT also surveyed truck-dependent businesses along the SR 167 corridor. The following summarizes the types of improvements recommended:

- Improve ramp merges at spot locations by lengthening the merge ramps and creating sight distance.
- Increase turning radius and reduce steep grades at spot locations.
- Evaluate safety issues along the corridor.

## Public Transportation

Tens of thousands of people use public transportation services along the SR 167 Corridor every day. This provides significant relief to the congestion levels, particularly during the peak commute periods.

The following highlights the impact of the public transportation services available shown in Exhibit 4-13:

- 3,600 people travel along the SR 167 corridor daily on the Sounder Commuter rail train.
- 800 people take a bus on the SR 167 corridor each day.
- 1,800 drivers use the park and ride facilities along the SR 167 corridor each day.

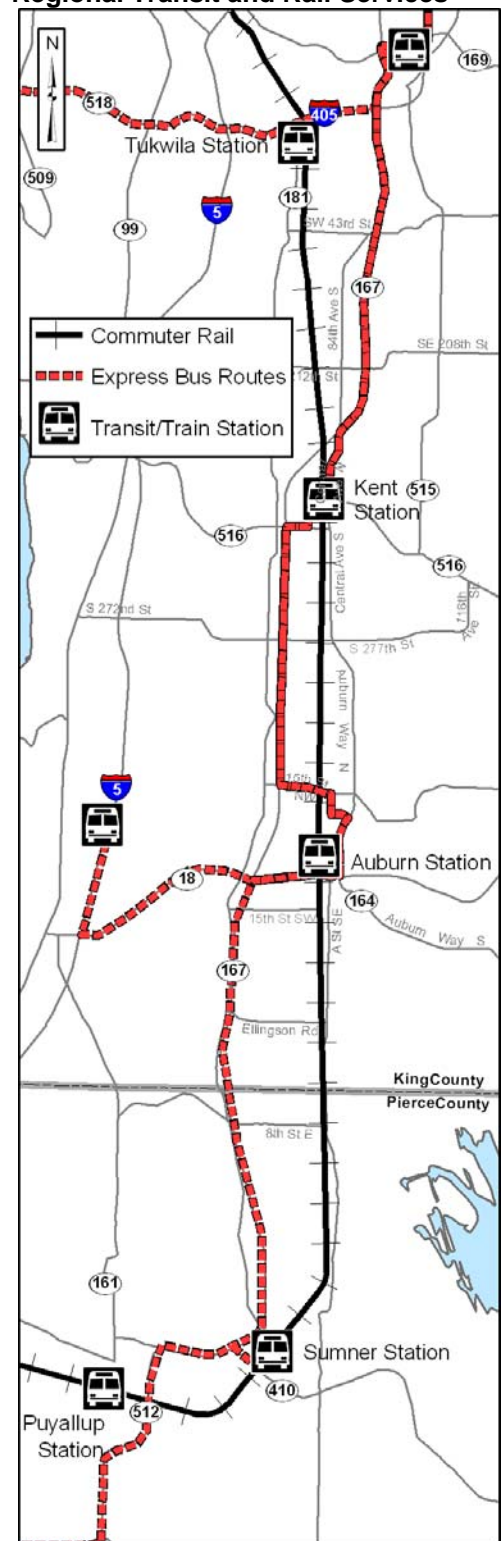
Public transportation services can offer very competitive travel times in the SR 167 Corridor. Commuter train travel times to downtown Seattle are competitive and reliable. Exhibit 4-14 summarizes travel times between the rail stations for differing modes including SOV, commuter rail, or express bus. There are no direct Express Bus routes to downtown Seattle from the Green River Valley communities. Travel times to downtown Seattle in the commute periods are consistently faster via commuter rail than by automobile or by express bus.

### How does the Sounder Commuter Rail service operate in the SR 167 Corridor?

Sound Transit operates its Sounder commuter rail service between Tacoma and downtown Seattle along the BNSF tracks parallel to SR 167. The trains stop at stations in Tukwila, Kent, Auburn, Sumner and Puyallup.

The commuter trains only operate in the peak commute periods and only in the peak travel direction, but they carry 1,800 commuters in each direction on weekdays. Four trains operate northbound on weekday mornings, leaving Puyallup between 6:00 and 7:30 am and four trains operate southbound in the afternoon leaving the Seattle between 4:30 and 6:00 pm.

Exhibit 4-13  
Regional Transit and Rail Services



Special runs are also often available for major events such as Mariner and Seahawk games.

<b>Exhibit 4-14 Comparative Travel Times (Minutes) to Downtown Seattle</b>			
<b>From</b>	<b>Auto</b>	<b>Commuter Rail</b>	<b>Express Bus</b>
<b>Tukwila Station</b>	21	21	30
<b>Kent Station</b>	30	28	41
<b>Auburn Station</b>	40	35	52
<b>Sumner Station</b>	49	43	n/a
<b>Puyallup Station</b>	52	48	n/a

A majority of people who ride the Sounder commuter rail drive, carpool, bicycle or walk to a Sounder station. A much smaller number transfer from a bus, which is likely due to inconvenient bus schedules.

#### **How do regional express buses operate in the SR 167 Corridor?**

Regional express bus services are provided in the SR 167 corridor to major destinations in east King County and in Pierce County by Sound Transit and King County Metro. There are fourteen separate routes. Of these express services, four operate directly on sections of SR 167 and carry about 1200 passengers on weekdays in each direction.

There are three other regional routes on roads parallel to SR 167. Service to Seattle and east King County is provided on the West Valley Highway and Central Avenue in Kent and Talbot Road and Benson Road in Renton. These routes carry up to 4,000 passengers in each direction on weekdays. There are twenty other regional and local bus routes that cross the SR 167 corridor providing service to communities along I-5 or that provide local feeder service to stations along SR 167. Transit

stations in Renton, Kent and Auburn serve as major hubs for many of these bus transit routes.

### **How do local transit routes provide service in the SR 167 Corridor?**

Seventeen local bus routes operate within the SR 167 corridor. Fifteen of these routes are operated by King County Metro, with two routes operated in the southern end of the corridor by Pierce Transit. About 11,400 people board local buses each day within the study area. Some of these bus routes service the primary train stations or make other connections with express bus routes. The bus routes also reduce the number of short-hop trips that might otherwise occur on SR 167.

King County Metro Transit also operates four routes in a flexible route and/or demand response mode within the SR 167 corridor. These routes are typically operated with vehicles smaller than the fixed route service vehicles and generally provide service to low-density areas that cannot support regular fixed route services.

### **How do local transit routes and regional transit routes connect?**

Several transit centers are located in the SR 167 Corridor to provide transfers between local and regional bus routes as well as the Sounder Commuter Rail. WSDOT, transit agencies, and the communities in the SR 167 corridor are examining ways to better integrate bus schedules with rail service in the area to allow more commuters to leave their cars at home.

**Renton** - Located between Burnett Avenue South and Logan Avenue West between South 2nd and 3rd Street, the Renton Transit Center provides regional bus service connections for 15 Metro routes and two Sound Transit routes.

**Kent** - Located at Central Avenue and Smith Street in downtown Kent, the Kent Transit Center provides connections between 15 Metro routes and two Sound Transit routes.

**Auburn** - Located adjacent to the Auburn Sounder Station, the Auburn Transit Center provides regional bus service connections between nine Metro routes and three Sound Transit routes.

### **What other public transportation facilities exist in the SR 167 Corridor?**

King County Metro Transit and Pierce Transit manage eleven different major park and ride facilities in the SR 167 corridor. The number of parking spots in these lots totals approximately 3,100 spaces. Utilization of the park and ride lots typically varies between 30 and 100 percent Overall utilization of park and ride lots in the SR 167 corridor averages 50 percent

About three-quarters of the park and ride spaces are provided at five key stations in the corridor as shown on Exhibit 4-15.

<b>Exhibit 4-15 Major Transit Park and Ride Facility Capacity in the SR 167 Corridor</b>			
<b>Facility Name</b>	<b>Parking Capacity</b>	<b>Parking Occupancy</b>	<b>Utilization</b>
<b>Tukwila Station</b>	219	70	32%
<b>Kent Station and James at Lincoln</b>	1,619	671	41%
<b>Auburn Station</b>	676	483	71%
<b>Puyallup Station</b>	286	230	89%
<b>Sumner Station</b>	300	347	116%
<b>Totals</b>	<b>3,100</b>	<b>1,801</b>	<b>58%</b>

**What other public transportation services are available in the SR 167 Corridor?**

Vanpools, carpools, and the Flexcar program are public transportation services that can reduce vehicular traffic, particularly during commute periods.

A vanpool is a group of up to 15 people sharing a ride in a van. King County Metro Transit and Pierce Transit manage a fleet of vans that are assigned to pre-approved groups and driven by volunteers who share the commute trip. There are about 2,300 people using vanpools each day on the SR 167 corridor.

King County Metro Transit and Pierce Transit also offer ride matching services to help commuters form carpools. The matching services are provided both on-line and through rideshare coordinators. Carpool participants can use public park-and-ride lots to assemble for their trips. About 1,160 people form carpools each day through the ride match service in the corridor.

Flexcar operates a car sharing service. The car sharing program makes vehicles available to people on a per-use basis. Flexcar currently has vehicles available to use in Renton and is looking to expand their services along the SR 167 corridor. Subscribing to Flexcar allows commuters to use transit services for commute trips while having a low-cost access to a private automobile for other trips.

## Traffic Safety in the SR 167 Corridor

Over a three year period from 2002 to 2005, 1,600 collisions occurred on the SR 167 mainline and ramps. This represents an average of 535 collisions per year, or more than one per day.

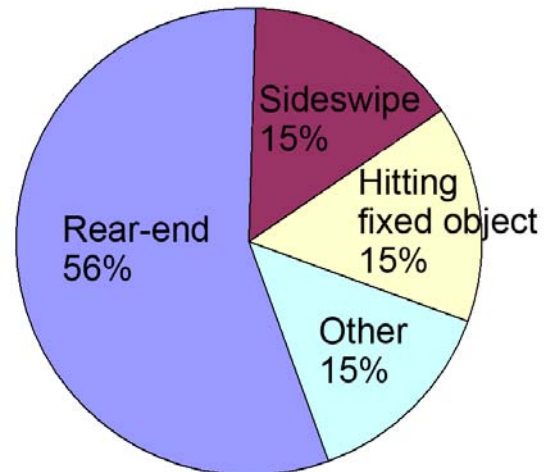
Exhibit 4-16 summarizes the collision types. Most of the accidents were rear-end collisions, sideswipes, and hitting a fixed object. Collisions occur for a number of reasons including driver error, wet or icy pavements, poor visibility, excessive driver speed, and driver distraction.

### Where do most collisions occur?

Exhibit 4-17 depicts collision frequency along the corridor. Higher collision frequencies are found in locations where congestion was previously noted, including the interchange areas of SR 167 at I-405, SR 516, SR 18, and SR 410.

High frequencies of collisions occur during the morning and afternoon commuter travel times. Accident rates for Northbound SR 167 are highest between 6 and 8 am and between 3 and 5 pm. Accident rates for Southbound SR 167 are highest between 2 pm and 6 pm. These tendencies correlate well with the existing congestion periods. The number of accidents occurring during these periods is notably higher than periods when congestion is lower.

Exhibit 4-16  
Types of Collisions on SR 167




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#### Did you know?

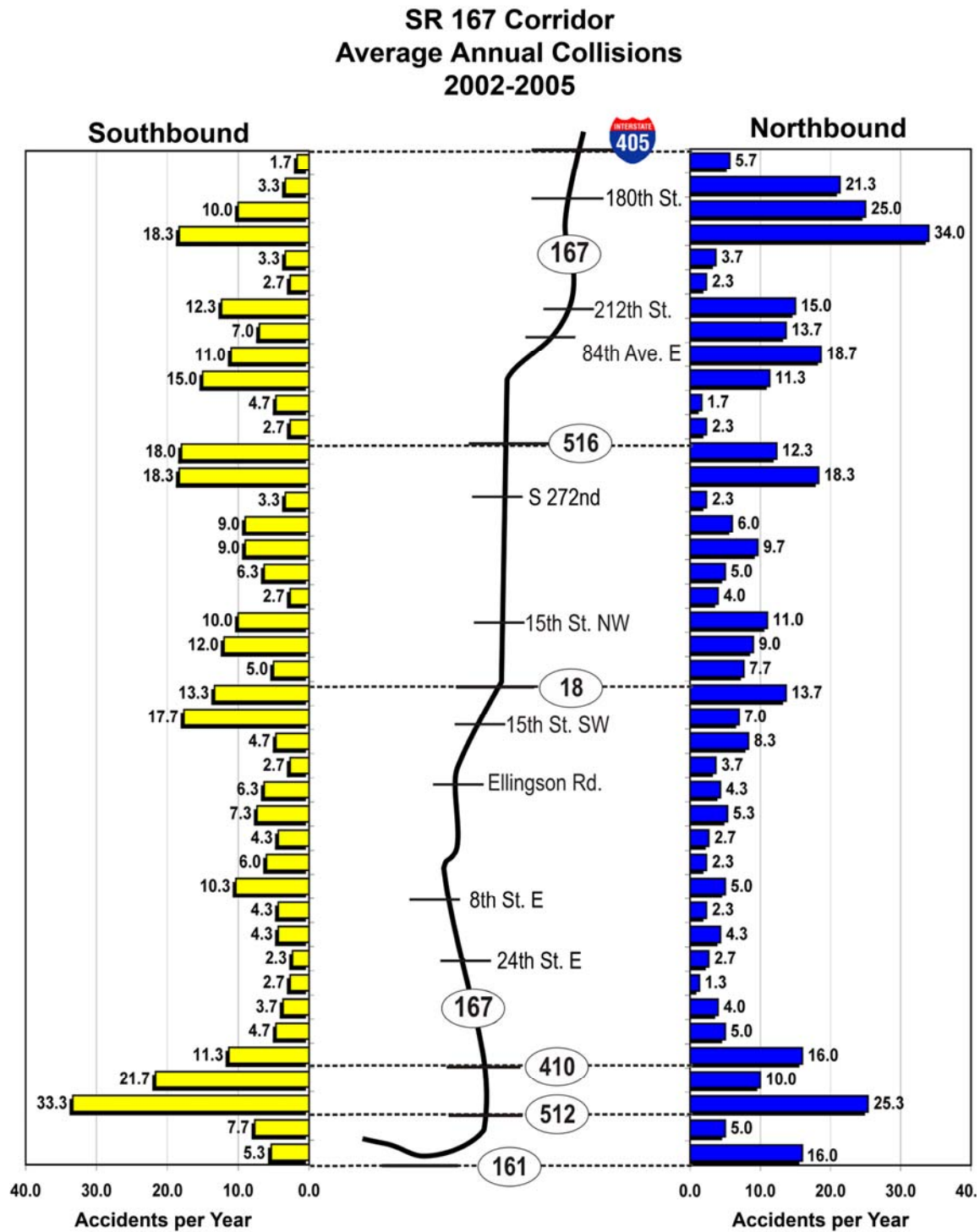
A strong relationship exists between collision frequency and traffic congestion. Many collisions are the result of driver frustration with congested road conditions. Some travel speeds are significantly below the posted speeds in many sections of the corridor at this time and frustrated drivers can make poor decisions.

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"Under 23 U.S. Code, Section 409, this data cannot be used in discovery or as evidence at trial in any action for damages against State, Tribal or Local Government that involves the locations mentioned in this data."

Exhibit 4-17

**SR 167 Corridor Average Annual Collision Rate by Location (2002-2005)**



"Under 23 U.S. Code, Section 409, this data cannot be used in discovery or as evidence at trial in any action for damages against State, Tribal or Local Government that involves the locations mentioned in this data."

**Where in the corridor are collisions most frequent?**

The highest number of collisions on SR 167 occurs near the corridor end at SR 512 to the south and at I-405 to the north.

WSDOT has identified 13 High Accident Locations (HALs) in the corridor. A HAL is a stretch of road less than a mile long that has a collision rate higher than the state average for a similar route. Exhibit 4-18 depicts the HAL locations.

**How severe are the collisions?**

Collisions on SR 167 primarily involve two vehicles with 14 percent of all collisions involving three or more vehicles. Eight percent of all collisions resulted in injuries. Collisions involving freight were similar in rate of occurrence and severity as the total traffic.

Exhibit 4-18

**SR 167 High Accident Locations**



	<b>Description of High Accident Location</b>
1	SR 167 north of I-405
2	S 180th Street on ramp to northbound SR 167
3	Northbound SR 167 through S 180th Street
4	S 212 Street on ramp to northbound SR 167
5	S 212 Street at SR 167 interchange
6	15th Street SW at SR 167 interchange
7	Ramp from SR 410 to northbound SR 167
8	Meridian north of SR 167
9	Meridian through SR 167 interchange
10	Meridian south of SR 167

"Under 23 U.S. Code, Section 409, this data cannot be used in discovery or as evidence at trial in any action for damages against State, Tribal or Local Government that involves the locations mentioned in this data."

## **Bicycle and Pedestrian Travel**

Many vehicular trips can be eliminated by providing good opportunities for bicycle and pedestrian access along the SR 167. Providing trails and bike lanes along the corridor can encourage some commuters to use these modes rather than automobiles.

However, bicycle and pedestrian access across the SR 167 corridor is equally important. This is particularly true in urbanized centers where good access to bus and train stations can encourage many commuters to use these modes. It is also useful that the highway does not divide communities and that students can use bicycles or walk to schools and community facilities on the other side of SR 167.

Bicycle and pedestrian crossings near downtown Kent provide reasonably good service spacing. However in other parts of the corridor, pedestrians must walk considerable distances to find safe crossings.

### **What bicycle and pedestrian facilities are available along the SR 167 Corridor?**

Pedestrians and bicycle riders can use two regional trails in the SR 167 corridor - the Green River Trail and the Interurban Trail. Both trails are paved surfaces with gravel shoulders. The trails intersect the SR 167 corridor right-of-way at under crossings of the highway.

The Green River Trail is 30 miles long and runs from King County's Auburn Narrows Park along the Green River, then crosses under SR 167 near SR 516, and continues north to Alki Point in Seattle. The trail primarily serves communities of Kent and Tukwila west of SR 167 and the communities of south Kent and Auburn east of SR 167.

The Interurban Trail is 14 miles long from 3rd Avenue SW just south of Pacific to I-405 in Tukwila. The trail parallels the BNSF and UPRR rail tracks and connects to the Green River

Trail. The Interurban Trail intersects SR 167 just north of the SR 516 interchange in Kent.

### **What pedestrian and bicycle facilities cross SR 167?**

Bike lanes are provided at the crossing of S 277th Street in Kent and at 24th Street E. in Sumner.

Most pedestrian and bicycle crossings along SR 167 are spaced one mile apart, which is acceptable for bicyclists but considered too far apart for most pedestrians. Crossings of SR 167 in the downtown area of Kent are at about one-quarter mile, which is considered preferable for pedestrians.

### **Where could crossings of the SR 167 Corridor be improved?**

Most of the crossings north of 24th Street E. include sidewalks, but all of the crossings south of 24th Street E. only have shoulders. Examples of locations with minimal pedestrian capacity include SW 43rd Street and James Street in Kent and 24th Avenue and West Valley Freeway in Auburn. Locations with minimal pedestrian crossings tend to be outside urban centers.

There are currently few opportunities to cross SR 167 north and south of the S. 180th Street interchange. Residential and regional land uses on either side of SR 167 in the Tukwila and Renton areas have the potential to generate the demand for pedestrian and bicycle traffic.

### **Current Growth Plans in the SR 167 Corridor**

As population and employment continue to grow, traffic volumes will continue to increase on the SR 167 Corridor. Local jurisdictions have adopted land-use plans for long-range planning that can be used to predict future travel demands. Local jurisdictions have also developed plans for infrastructure improvements to accommodate the land use growth. These improvements will affect the flow of traffic and access to SR 167 and other regional corridors.

**What are the current plans for residential and employment growth in the corridor?**

Exhibit 4-19 depicts the historical growth of population and employment and the forecasts of population and employment represented by land-uses in adopted comprehensive plans

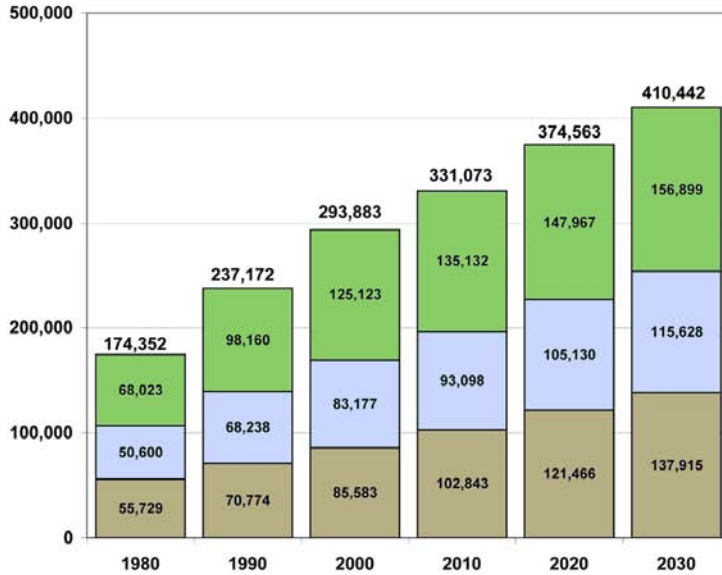
It is currently predicted that the population in the corridor will grow to over 415,000 by 2030. While the historical growth has been in the north end of the corridor, future residential growth is predicted to be equally strong in the central and southern ends of the corridor.

Similarly, employment that has doubled in the past 20 years is predicted to grow from about 180,000 jobs to more than 275,000 by 2030. Although a significant amount of commercial activity is predicted along the corridor, the significant growth in jobs is predicted to occur mainly in the north end. This may be because of the fact that freight related land uses in the central and south ends of the corridor have lower employment rates.

Some of the key residential, mixed-use, industrial and commercial developments planned by Green River Valley cities are shown on Exhibit 4-20.

**Exhibit 4-19  
Population and Employment in the SR 167 Corridor**

Population Growth in SR 167 Corridor from 1980-2030



Employment Growth in SR 167 Corridor from 1980-2030

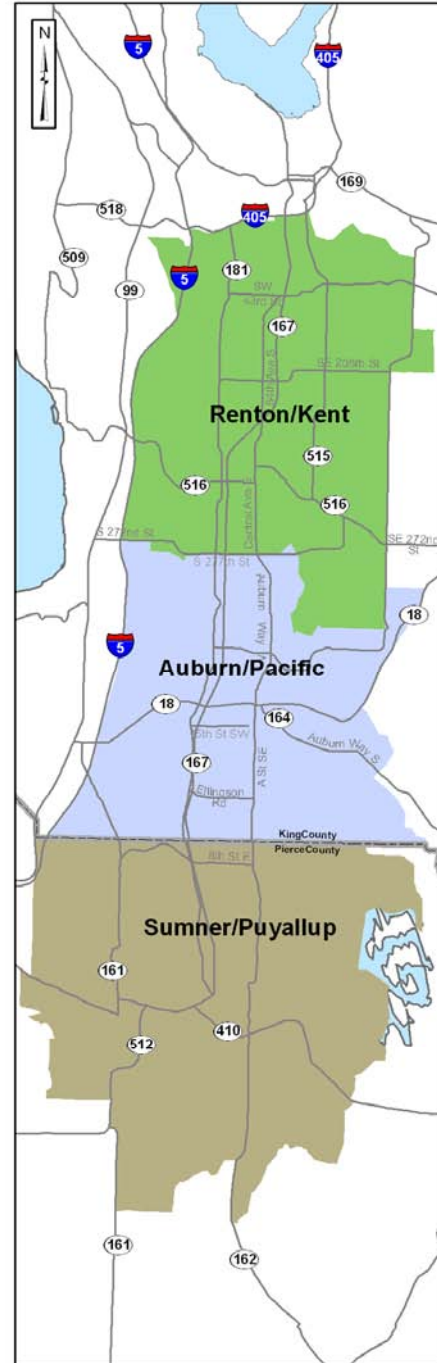
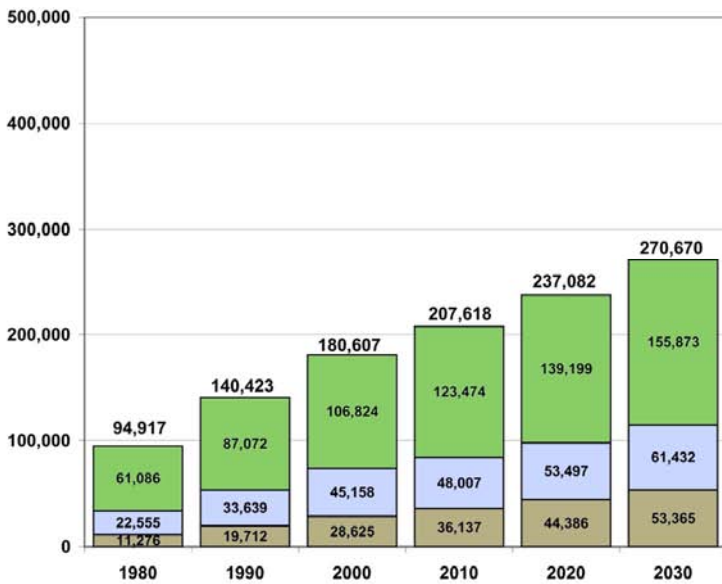
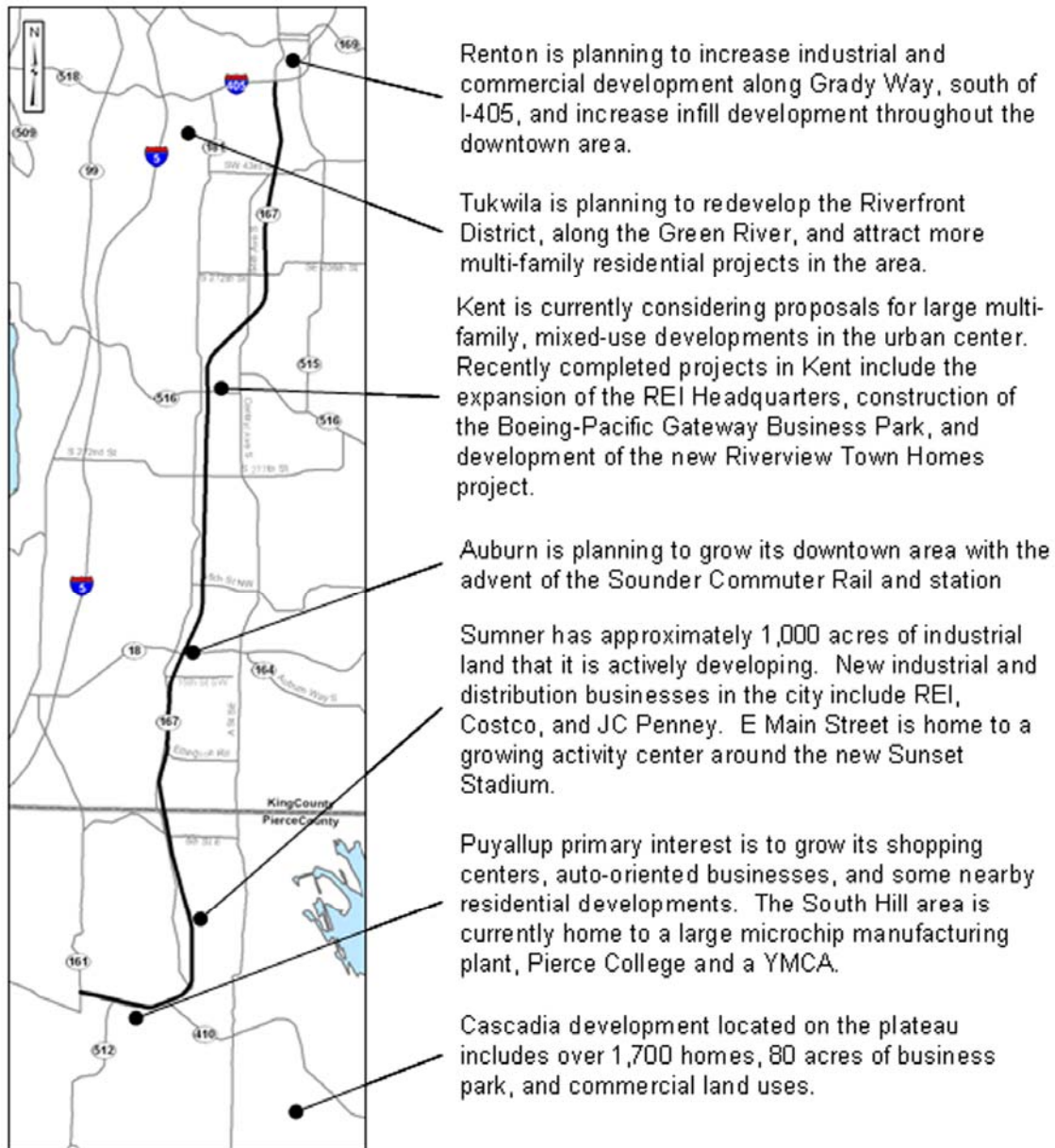


Exhibit 4-20  
**Development Plans for the SR 167 Corridor Area**



### What are the transportation improvement projects?

The key transportation improvement projects in the vicinity of the SR 167 corridor that are currently under construction or in the planning stages are listed in Exhibit 4-21. These projects will be considered in the transportation models used for predicting future travel demand.

Exhibit 4-21

#### Transportation Improvement Project List

Facility	Project Title and Description
SR 167	HOT Lane Pilot Project - The project implements a HOT lane pilot by converting the existing HOV lane within the SR 167 corridor.
SR 167	SR 167 / I-405 to SE 180th Street - Constructs a southbound lane to SR 167 beginning at I-405 and extending to the Interchange at SW 41st Street. This project will reduce congestion southbound on SR 167 from the Interchange with I-405 in Renton.
SR 167	HOV Stage 3 – Adds a northbound HOV lane from 15 <sup>th</sup> Street SW to 15 <sup>th</sup> Street NW.
I-405	I-405 / I-5 to SR 181 - Adding one lane northbound and southbound to I-405 between SR 181 and I-5 Interchanges. The project will reduce congestion in Tukwila in the vicinity of the I-5 Interchange.
I-405	I-405 / SR 167 to SR 169 - Adding a northbound lane on I-405 beginning at the SR 167 Interchange and extending to the SR 169 Interchange. The project will reduce congestion and improves efficiency of SR 167 Interchange in Renton.
I-405	I-405 / SR 515 Interchange Improvements - Constructing a new half diamond Interchange to I-405 at SR 515 (Talbot Road) to reduce congestion and improve efficiency of the I-405/SR 167 Interchange.
SW 27 <sup>th</sup> Street	Add EB and WB HOV lane between Oaksdale Ave SW and SR 167 with an HOV Direct Access Ramp at SR 167.
SR 181 (Washington Ave)	Add NB and SB HOV lane from Meeker Street to SR 516.
SR 18	Add WB truck climbing lane from SR 167 to I-5.
SR 410	Add GP lane in each direction between SR 167 and Bonney Lake city limits.
SR 167 Extension	Four lane extension of SR 167 built between SR 161 and I-5.