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## Chapter 2:

# Roadway Inventory, Safety, and Investments

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This chapter contains information about the physical characteristics and functional classifications of the study corridor, transit service, safety conditions, and preservation and maintenance activities along the study corridor.

## Functional Characteristics of SR 520

Federal functional classification is one of the determining factors of eligibility for federal transportation funding. The classification reflects the residential, commercial and industrial uses served by the route, municipal boundaries, and the urbanized area designations of the U.S. Census Bureau.

State functional classifications seek to group highways, roads and streets by the character of service they provide. The system was developed for transportation planning purposes and recognizes the various roles that individual routes play in the transportation network. Functional classification at this level is used to identify how to direct travel through the transportation network in the most logical and efficient manner. State functional classifications in Washington are divided in two major divisions: rural and urban. All of SR 520 is defined as urban.

### Exhibit 2.1: Functional Characteristics – SR 520 Multi-Modal Study Corridor

Classification System	
Federal and State Functional Class	12 – Other Freeway Expressway
Highways of Statewide Significance (HSS)	Included in HSS
National Highway System	Included in NHS
Freight and Goods Transportation System	T-2 (4,000,000 to 10,000,000 tons/year)
Scenic/Recreational	No official designation
Terrain	MP 6.61 to MP 8.88 Level
	MP 8.88 to MP 11.79 Rolling
	MP 11.79 to MP 12.82 Level
Access Classification	Limited Access, Full control

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## Roadway Inventory

### Highway Configuration and Speed Limit

The mainline lane configuration for the study section of SR 520 is two general purpose lanes and one HOV lane in each direction. The lane widths are 12 feet, with 10 foot shoulders. Total roadway width varies between 72 feet and 150 feet. Median widths are typically 20 feet, with a Jersey type concrete barrier separating the opposing traffic lanes. In the area around 124th Avenue NE the median width is as great as 157 feet. The HOV lanes are located outside (to the right of the general purpose travel lanes) along the corridor.

After the replacement of the SR 520 bridge, the HOV lanes are expected to be moved from the outside to the inside along the entire corridor. This re-location of the HOV lanes to the inside of the freeway will make the SR 520 HOV lane system consistent with the placement of other HOV lanes in the Central Puget Sound Region.

The posted speed limit for the length of the study corridor is 60 miles per hour.

### Interchanges

There are seven interchanges on SR 520 within the study area. Six are full interchanges (I-405, 148th Ave NE, NE 40th St, NE 51st St, West Lake Sammamish Parkway, and SR 202/Avondale Way) and one interchange (124th Avenue NE) is a partial interchange, with an on ramp westbound and an off ramp eastbound.

The re-configuration of the northbound I-405 to eastbound SR 520 ramp was completed in 2012 as part of the I-405/NE 8th Street to SR 520 braided ramps project.

An analysis of traffic operations at the I-405/SR 520 interchange was not conducted for this study. Improvements to this interchange are already identified in the I-405 Master Plan. Construction phases will be determined through the I-405 program and coordinated with the recommendations of the SR 520/124th Avenue NE interchange justification report.

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## **Bridges**

There are 30 bridge structures along the study corridor, of which four are designated as pedestrian only. The bridges are inspected every two years. Sufficiency ratings are a qualitative value ranging from 0 to 100 that measures the bridges relative capability to serve its intended purpose. The condition rating is based on the structural sufficiency standards established in the FHWA “Recording and Coding Guide for the Structural Inventory and Appraisal of the Nation’s Bridges” (NBIS). When looking at replacement or rehabilitation, bridges generally have a sufficiency rating of 50 or less (compared to a rating of 100 when new) and be classified as structurally deficient or functionally obsolete in order to qualify for federal bridge replacement funds. None of the bridges within the study corridor is listed as needing repair or replacement. Three of the structures are listed as functionally obsolete. This indicates the bridge does not have adequate approach alignment, geometry or clearance to meet the intended traffic needs and is below accepted design standards. It does not imply the structure is unsafe or unsound.

See Exhibit 2.2 for bridge locations and sufficiency ratings.

**Exhibit 2.2: SR 520 Bridges within the Study Corridor**

<b>Bridge #</b>	<b>Mile Post</b>	<b>Cross road/Feature</b>	<b>Sufficiency Rating</b>
520/21N	7.03	SR 520 OVER 116TH AVE NE	94.42
520/21S	7.03	SR 520 OVER 116TH AVE NE	92.42
520/22N	7.09	SR 520 OVER RAILROAD	95.17
520/22S	7.09	SR 520 OVER RAILROAD	94.42
520/22.5S	7.13	HALF BRIDGE	95.47
520/25N	7.25	SR 520 OVER NORTHUP WAY	92.02
520/25S	7.27	SR 520 OVER NORTHUP WAY	89.87
520/27N	7.49	SR 520 OVER N-W RAMP	88.76
520/27S	7.54	SR 520 OVER N-W RAMP	90.74
520/30S	7.92	SR 520 OVER 130TH AVE NE	88.08
520/30N	7.92	SR 520 OVER 130TH AVE NE	88.08
520/30BP	7.92	BIKE/PED OVER 130TH AVE	N/A
520/32S	8.55	SR 520 OVER 140TH AVE NE	70.51 FO*
520/32N	8.55	SR 520 OVER 140TH AVE NE	70.51 FO*
520/32BP	8.55	BIKE/PED OVER 140TH AVE	N/A
520/34N	8.83	SR 520 OVER NE 24TH ST	94.21
520/34BP	8.83	BIKE/PED OVER NE 24TH ST	N/A
520/34S	8.83	SR 520 OVER NE 24TH ST	93.39
520/36.5	9.60	NE 36TH ST OVER SR 520	96.67
520/36	9.60	148TH AVE NE OVER SR 520	75.48
520/37	10.14	NE 40TH ST OVER SR 520	75.00 FO*
520/38	10.75	NE 51ST ST OVER SR 520	96.00
520/39	11.19	NE 60TH ST OVER SR 520	98.61
520/39P	11.19	NE 60TH ST EQUESTRIAN BR	N/A
520/42N	11.80	W LAKE SAMMAMISH PKWY OC	94.08
520/42S	11.80	SR 520 OVER W.L.S. PKWY	94.08
520/42W-N	11.80	SR 520 W TO SAMMAM. PKWY	95.45
520/42N-E	11.80	SAMMAM PKWY TO EB SR 520	97.37
520/46	12.73	SR 520 OVER SR 202	91.34
520/46.5	12.73	SR 520 RAMP OVER SR 202	82.38

a - If the value in this column is < 50, the structure needs repair or replacement

\* Functionally Obsolete

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## Traffic Management Center

At the Traffic Management Center (TMC) in Shoreline, traffic engineers and other staff monitor freeway operations 24 hours a day, 7 days a week. The TMC utilizes traffic cameras for real time information to:

- monitor traffic and identify problems
- use data from traffic detectors on the highways to get a real-time picture of traffic conditions.
- coordinate response with the Washington State Patrol and other law enforcement and emergency response crews when responding to incidents on the highway
- coordinate activities of our WSDOT incident response teams who help stranded drivers, move disabled vehicles, and also help keep traffic moving safely while emergency responders help people involved in collisions
- operate reversible lane control systems and ramp meters to help manage traffic flow and reduce congestion
- provide up-to-the-minute information about what is happening on the roadway and mountain passes, including weather, incidents, construction, and some travel times, to drivers through our highway advisory radios, electronic signs, the web, and the 511 traveler information phone system
- provide up-to-the-minute information to news reporters, particularly radio and television reporters.

There are nine traffic cameras along the SR 520 study corridor located at:

- I-405
- 124th Ave NE
- 130th Ave NE
- 140th Ave NE
- 148th Ave NE
- NE 51st St
- NE 40th St
- West Lake Sammamish Pkwy
- Redmond Way

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## Ramp Meters

WSDOT uses ramp meters to reduce collisions and decrease travel times for commuters. All ramp meters are located at the on-ramps of a facility. Most ramp meters allow only one vehicle through each green light, creating a four to 15 second delay between cars entering the highway. This delay helps reduce disruptions to freeway traffic and reduces collisions that occur when vehicles merge onto the highway.

There are 10 ramp meters along the SR 520 study corridor located at:

- 124th Avenue NE westbound
- 148th Avenue NE westbound
- 148th Avenue NE eastbound
- NE 40th Street westbound
- NE 40th Street eastbound
- NE 51st Street westbound
- NE 51st Street eastbound
- West Lake Sammamish Parkway westbound
- Redmond Way westbound
- Redmond Way eastbound

See Exhibit 2.4 (following) for a graphic representation of the locations of the ramp meters and traffic cameras along the study corridor.



**Exhibit 2.3:**  
Traffic Management Center



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## **Variable Message Signs**

There are currently two westbound locations on the SR 520 study corridor that have Variable Message Signs. The signs are used to post real-time messages to drivers. The messages cover safety, roadway closures, traffic and AMBER Alerts. The signs are located at 130th Ave NE (MP 7.8) and 124th Ave NE (MP 7.6).

## **Transit Resources**

There are multiple opportunities to utilize transit or transit related services along the study corridor. These services include King County Metro and Sound Transit bus service, The (Microsoft) Connector, vanpools, carpools, and park and ride lots.

### **King County Metro**

Route 232 – Weekday peak period service between Duvall, Redmond, and Bellevue. Between Duvall and Redmond service is one-way and two-way service is provided between Redmond and Bellevue.

Route 268 – Weekdays only from 185th Ave NE and Redmond Fall City Road to the Bear Creek Park and Ride and downtown Seattle. This route also provides westbound travel in the AM peak (6:00 AM to 7:30 AM) and eastbound travel in the PM peak (3:30 PM to 6:00 PM).

Route 269 – Two-way peak period only weekday service between Overlake Park and Ride (Redmond) and Issaquah. AM and PM peak service only, 6:00 to 9:00 AM and 3:30 to 7:30 PM.

### **Sound Transit**

Route 542 is an AM/PM peak hour service between Green Lake in Seattle and Renton Transit Center in Redmond. Service is provided at about 15 minutes intervals from 6:30 to 10:00 AM and about 2:30 to 6:00 PM weekdays only.

Route 545 is an all-day (5:00 AM to Midnight weekdays, 6:00 AM to 11:00 PM weekends) between Redmond's Bear Creek Park and Ride to downtown Seattle. Headways range from under 10 minutes to an hour, depending on the time of day.

### **The Connector**

The Connector is a bus service available to all full-time Microsoft employees, business partners, joint venture partners, and interns. Microsoft's Transportation Services launched The Connector on September 24, 2007 with five routes. Today, employees enjoy access to 22 routes served by 74

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buses (6,384 seats). Each of the 22 routes runs several times per day providing flexibility for employee's schedules. In addition to The Connector, Microsoft provides free on-campus shuttles, ORCA bus passes, vanpools, carpools and subsidized bike tune-ups. There are 3,023 average passenger trips per day with 13,585 registered employees.

### **Vanpool/Carpool**

Data supplied by Metro show there are approximately 186 metro vanpools using the SR 520 study corridor in 2012, based on existing vanpool registration locations. Current carpool usage data on this corridor is not known.

### **Park and Rides**

Based on information supplied by the WSDOT Public Transportation Office, within the study corridor there are five permanent park and ride lots with 1,431 parking spaces and an average utilization rate of 89 percent.

- Bear Creek Park and Ride (Redmond)  
283 spaces  
Utilization: 105 percent
- Overlake (Park and Ride (Redmond)  
203 spaces  
Utilization: 41 percent
- Redmond Park and Ride (Redmond)  
377 spaces  
Utilization: 91 percent
- Overlake Transit Center (Redmond)  
222 spaces  
Utilization: 103 percent
- South Kirkland (Kirkland)  
465 spaces  
Utilization: 104 percent

South Kirkland Park-and-Ride TOD/Expansion Project – The Transit Oriented Development (TOD) project includes adding 250 parking spaces that will increase the park and ride capacity to 850 spaces. In addition, the project will include a new loop roadway through the property with improved transit access and bus zones, a signal at 108th Avenue NE and NE 38th Place, and a private mixed-use housing project on a portion of the current park-and-ride site. Construction began on August 20, 2012 and is scheduled to last for two years.

**Exhibit 2.5: Park and Ride Lots along Study Corridor - December 2012**



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## **Non-Motorized**

### **Bicycle and Pedestrian Facilities Network**

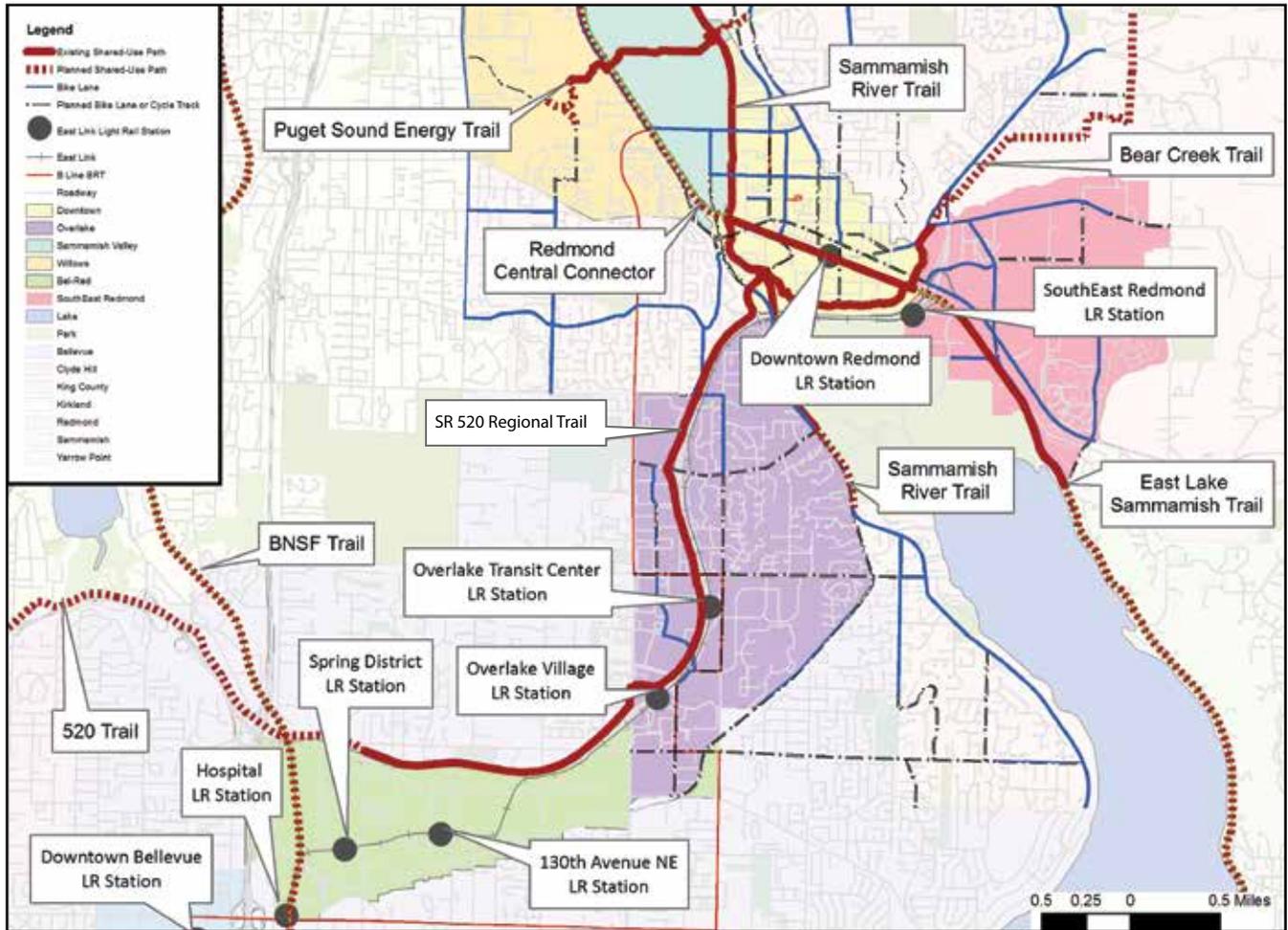
A comprehensive bicycle and pedestrian network has been established in the analysis area, and is shown in Exhibit 2.6. When built out, this regional network will connect key destinations that generate significant bicycle and pedestrian trips, particularly dense, mixed-use centers and high capacity transit to one another and to neighboring residents and businesses. As shown on Exhibit 2.6, the cities along the SR 520 corridor have made significant investments and improvements in the non-motorized network. Future investments will also include higher rider comfort facilities such as cycle tracks. In terms of pedestrian facilities, all Redmond roadways will have sidewalks on both sides of the roadway, with sufficient widths and amenities to support both pedestrian movement and form a cultural draw that generates pedestrian movement.

Walking and bicycling will become increasingly important modes of transportation in the vicinity of SR 520 east of I-405 due to the growth envisioned in numerous mixed-use land use developments planned along the corridor and Sound Transit's East Link Light Rail. This increase in non-motorized uses will necessitate improvements that facilitate the safe, efficient movement of bicycles and pedestrians, both within and to access the mixed-use land use developments and light rail stations.

To reach build out, bicycle and pedestrian improvements are required, such as grade separations for improved operations for vehicles, bicycles, and pedestrians, and bicycle/pedestrian bridges connecting directly to light rail stations. Mixed-use centers and light rail stations are particularly well suited for bicycle and pedestrian trips due to appropriate trip length and smaller facility and parking size needs.

Not only are the mixed-use centers and light rail stations particularly well suited to bicycle and pedestrian trips, but both destinations envision a greater alternative transportation mode split. Due to the cost and scale of parking facilities, light rail stations, for example, will not have enough vehicle parking stalls built to meet anticipated demand. Instead, users will have access to light rail service from walking, bicycling, and local transit.

**Exhibit 2.6: SR 520 Multi-modal Corridor Study Non-Motorized Network and Destinations**



**Bicycle and Pedestrian Facility Descriptions**

The following descriptions note the destinations and connecting facilities for each non-motorized link.

All of the facilities shown on the map as paved, shared-use paths are existing or planned facilities designed for pedestrians and bicycles with widths between 10 and 14 feet.

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## **SR 520 Regional Trail**

The SR 520 Regional Trail runs along the north side of SR 520, connecting Bellevue in the vicinity of I-405 to the Overlake area and downtown Redmond. The terminus in Redmond connects directly to two other paved, shared-use paths (Sammamish River Trail and Bear Creek Trail) that link with another two paved, shared-use paths (Redmond Central Connector and East Lake Sammamish Trail) less than 1 mile from the 520 Trail terminus. This network of existing shared-use paths and bicycle lanes provides strong access to a large number of residents and employees, notably including the Microsoft world headquarters. Once completed, the 520 Trail will provide critical access to a number of East Link Light Rail stations.

### **Destinations Directly Served**

- Existing
  - Downtown Redmond
  - Overlake
  - Bel-Red Corridor
- Future
  - Yarrow Point (across I-405)
  - Clyde Hill (across I-405)
  - Seattle (across I-405)
  - Overlake Village Station
  - Overlake Transit Center Station

### **Direct Paved, Shared-Use Path Connections**

- Existing
  - Sammamish River Trail
  - Bear Creek Trail
- Future
  - BNSF Trail

### **Gaps**

- SR 520 floating bridge (This gap will be filled with the completion of the new SR 520 bridge, scheduled for completion in 2015)
- I-405 (Plans are currently underway to provide an on-street non-motorized lane between 124th Ave NE and 108th Ave NE along Northup Way under I-405)
- SR 520 Regional Trail Grade Separation - 148th Ave NE
- SR 520 Regional Trail Grade Separation - NE 40th Street
- Overlake Village Station Ped/Bike Bridge (SR 520/152nd Ave NE)
- Overlake Transit Center Ped/Bike Bridge (SR 520/NE 40th Street/156th Ave NE)
- SR 520 Regional Trail Grade Separation - NE 51st Street

### **Ownership**

- Washington State Department of Transportation

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### **Sammamish River Trail**

This facility has two names – Burke Gilman Trail (west) and Sammamish River Trail (east). It connects Ballard in Seattle all the way to downtown Redmond and serves destinations along the way like the University of Washington and Bothell. Redmond is extending the facility south into its Idylwood neighborhood.

#### **Destinations Directly Served (in analysis area)**

- Existing
  - Downtown Redmond
- Future
  - Downtown Redmond Light Rail Station

#### **Direct Paved, Shared-Use Path Connections**

- Existing
  - SR 520 Regional Trail
  - Redmond Central Connector
  - Bear Creek Trail
  - Puget Sound Energy Trail

#### **Gaps**

- 51st Street NE to Bel-Red Road

#### **Ownership**

- King County

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## **Redmond Central Connector**

This paved, shared-use path in the heart of downtown Redmond is located and designed to serve high volumes of pedestrians and bicycles. Unlike the majority of regional shared-use paths, this facility ties directly to land use through direct linkages to each building, providing an extremely high level of access to the downtown Redmond Regional Growth Center and the future Downtown Redmond Light Rail Station and South East Redmond Light Rail Station. This facility is also being designed to a high aesthetic quality and will have plazas at regular intervals that will support the walking and bicycling culture in Redmond. Future phases will also focus on providing strong access to land use, tying downtown Redmond to medium density office parks in the Sammamish Valley and Willows districts in Redmond. The ultimate goal for this facility is to be completed to downtown Woodinville.

### **Destinations Directly Served**

- Existing (construction complete 2013)
  - Downtown Redmond
- Future
  - Sammamish Valley, Redmond (Completion of all Phases)
  - Willows, Redmond (Completion of all Phases)
  - Downtown Woodinville (Completion of all Phases)

### **Direct Paved, Shared-Use Path Connections**

- Existing
  - Sammamish River Trail
  - Bear Creek Trail
- Future
  - East Lake Sammamish Trail (East Lake Sammamish Parkway Regional Trail Connection)
  - SouthEast Redmond (East Lake Sammamish Parkway Regional Trail Connection)
  - SouthEast Redmond Light Rail Station (East Lake Sammamish Parkway Regional Trail Connection)
  - Downtown Redmond Light Rail Station
  - Puget Sound Energy Trail (Phase 2 (Sammamish River Trail to 100th Street NE))

### **Gaps**

- East Lake Sammamish Parkway Regional Trail Connection
- Phase 2 (Sammamish River Trail to 100th Street NE)
- Phase 3 (100th Street NE to 124th Street NE)
- Completion to Downtown Woodinville

### **Ownership**

- City of Redmond

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### **East Lake Sammamish Trail**

The East Lake Sammamish Trail connects downtown Redmond to downtown Issaquah, running through the City of Sammamish near the east bank of Lake Sammamish. While the facility has been paved within the Redmond City Limits and in downtown Issaquah, the current gravel surface section is planned to be paved sometime in the future. This facility will connect to the Southeast Redmond Light Rail station when the future extension of East Link to downtown Redmond is funded.

### **Destinations Directly Served**

- Existing
  - South East Redmond
- Future
  - Downtown Redmond (East Lake Sammamish Parkway Regional Trail Connection)
  - Downtown Redmond Light Rail Station (East Lake Sammamish Parkway Regional Trail Connection)
  - South East Redmond Light Rail Station
  - Sammamish (Phased completion from Redmond through Sammamish to Issaquah)
  - Issaquah (Phased completion from Redmond through Sammamish to Issaquah)

### **Direct Paved, Shared-Use Path Connections**

- Future
  - Bear Creek Trail (East Lake Sammamish Parkway Regional Trail Connection)
  - Redmond Central Connector (East Lake Sammamish Parkway Regional Trail Connection)

### **Gaps**

- East Lake Sammamish Parkway Regional Trail Connection
- Phased completion from Redmond through Sammamish to Issaquah

### **Ownership**

- King County

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### **Bear Creek Trail**

This paved, shared-use path connects Redmond Town Center (the mall in Downtown Redmond) to the 520 Trail, Sammamish River Trail, Redmond Central Connector, and the East Lake Sammamish River Trail. When built out, this facility will connect north to a medium density residential area with apartments and condominiums as well as to numerous recreation facilities.

### **Destinations Directly Served**

- Existing
  - Downtown Redmond
- Future
  - Downtown Redmond Light Rail Station
  - Direct Paved, Shared-Use Path Connections
- Existing
  - SR 520 Regional Trail
  - Sammamish River Trail
  - Redmond Central Connector
- Future
  - East Lake Sammamish Trail (East Lake Sammamish Parkway Regional Trail Connection)

### **Gaps**

- SR 520/Avondale Rd/Union Hill Rd Intersection Improvements
- Phased completion north through Avondale neighborhood

### **Ownership**

- City of Redmond

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## **PSE Trail**

The Puget Sound Energy Trail follows the Puget Sound Energy utility lines and is largely a gravel surface. A short portion paved portion connects the Sammamish River Trail to land uses in the Sammamish Valley and Willows areas in Redmond. The long term goal is to connect into Kirkland and over I-405 via the pedestrian/bicycle overpass at NE 100th Street.

### **Destinations Directly Served**

- Existing
  - Sammamish Valley
  - Willows
- Future
  - Kirkland

### **Direct Paved, Shared-Use Path Connections**

- Existing
  - Sammamish River Trail
- Future
- Redmond Central Connector (Phase 2 (Sammamish River Trail to 100th Street NE))

### **Gaps**

- Future
  - Connection to 132nd Avenue NE and NE 100th Street
  - Connection to State Route 202

### **Ownership**

- Puget Sound Energy
- City of Redmond (through easement)

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### **BNSF Trail [Kirkland-Bellevue]**

The former BNSF line , also called the Eastside Rail Corridor, runs north south through the cities of Renton, Bellevue, and Kirkland. The city of Kirkland owns the majority of the former railway corridor throughout Kirkland’s corporate limits, a 5.75 mile segment. The northernmost portion, from 108th Avenue NE to 132nd Avenue NE is owned by the port of Seattle. The city of Kirkland has plans to convert the grade to a non-motorized trail, with the first project being to remove all rails, which is planned to occur in 2013. On Dec. 10, 2012, the King County Council adopted legislation to purchase the remaining portion of the Eastside Rail Corridor. The action brings the corridor into public ownership.

The legislation authorizes King County to purchase a 15.6-mile portion of the corridor and obtain an easement over an additional 3.6 miles. The ERC Advisory Council will oversee the corridor planning process, including implementing and coordinating rail, trail and utility uses in the corridor.

For more information please access;  
[www.kirklandwa.gov/Community/Cross\\_Kirkland\\_Corridor.htm](http://www.kirklandwa.gov/Community/Cross_Kirkland_Corridor.htm);  
or; [www.kingcounty.gov/council/issues/corridor.aspx](http://www.kingcounty.gov/council/issues/corridor.aspx)

#### **Destinations Directly Served**

- Future
  - Kirkland
  - Bel-Red Corridor
  - Hospital Light Rail Station
  - Woodinville

#### **Direct Paved, Shared-Use Path Connections**

- Future
  - SR 520 Regional Trail

#### **Gaps**

- No facility exists

#### **Ownership**

- Ownership shared between Kirkland, Sound Transit, and King County.

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## **Significant Generators of Bicycle and Pedestrian Volumes**

### **Land Use Destinations**

- Downtown Redmond, Bellevue, and Kirkland
  - Mixed-Use Urban Center
  - PSRC designated Regional Growth Centers
- South East Redmond
  - Medium Density Office and Industrial
- Overlake
  - Mixed-Use Urban Center
- Downtown Bellevue
  - Mixed-Use Urban Center
  - PSRC designated Regional Growth Center
- Downtown Kirkland
  - Mixed-use development
  - PSRC designated Core City

### **East Link Light Rail Transit Station Destinations**

- Downtown Redmond
- South East Redmond
- Overlake Transit Center
- Overlake Village
- 130th Avenue NE
- Spring District
- Hospital

See Exhibit 2.6 for location of each station listed above.

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## Safety

WSDOT is committed to improving highway safety, reducing collisions, and preventing risk to Washington's drivers. The commitment requires effort and vigilance, and the effort is paying off: the number of fatal collisions on Washington highways has been going steadily down since 2002, and the state highway fatality rate is now among the lowest in the nation.

WSDOT, along with partners in law enforcement and education, helped to write *Target Zero*, the Statewide Strategic Plan for Highway Safety. It was signed by Governor Gregoire in 2007 and updated in 2010. It directs WSDOT and other transportation partners to focus on fatal and serious injury collisions in order to attain the goal of zero by year 2030.

*Target Zero* was written to comply with a federal requirement under the previous surface transportation authorization, *SAFETEA-LU*,<sup>1</sup> which was replaced in 2012 by the *MAP-21* reauthorization. *Target Zero* follows the *Strategic Highway Safety Plan*, developed by the American Association of State Highway & Transportation Officials.

*Target Zero* strategies were developed using national research, existing pilot programs, and input from many statewide stakeholders. These strategies focus on the Four "E's," as follows:

- **Education.** Give drivers the information to make good choices, such as not driving while impaired, wearing a seatbelt, and avoiding distraction while in their vehicles.
- **Enforcement.** Use data-driven analysis to help law enforcement officers pinpoint locations with a high number of fatal and serious injury collisions related to driver behaviors, such as speeding and impairment.
- **Engineering.** Design roads and roadsides using best practices to reduce collisions, or reduce the severity of collisions if they do occur.
- **Emergency Medical Services.** Provide high quality and rapid medical and emergency response to injury collisions.

<sup>1</sup> *The Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users* was signed into law in 2005. *SAFETEA-LU* is superseded by *MAP-21*.

### MAP-21

Moving Ahead for Progress was signed into law by President Obama on July 6, 2012. MAP-21 is a streamlined, performance-based policy and programmatic framework for investments in the nation's surface transportation program. It funds surface transportation programs at over \$105B for fiscal years 2013 and 2014, and builds on many of the highway, transit, bike, and pedestrian programs and policies already in place. MAP-21 topics include safety, traffic congestion, freight movement, environment, infrastructure maintenance, efficiency, and reduction of project delays.

[www.fhwa.dot.gov/Map21](http://www.fhwa.dot.gov/Map21)

### AASHTO

The American Association of State Highway & Transportation Officials represents transportation departments in all 50 states, the District of Columbia, and Puerto Rico. The primary goal is development, operation, and maintenance of an integrated national transportation system including air, highways, public transportation, rail, and water.

[www.transportation.org](http://www.transportation.org)

*Target Zero* directs WSDOT and other transportation safety partners to focus on fatal and serious injury collisions. To accomplish this goal, WSDOT re-evaluated all of its safety related project selection and prioritization criteria. The revised WSDOT procedure starts with the setting of a performance improvement target. Needs are identified via a statewide screening for locations which show the highest possibility for reduction of collision frequency and severity. These locations are entered into safety priority array lists for intersections and corridor segments. Any locations on these lists which fall into a study corridor are then analyzed in more detail by looking at five years of collision data, identifying sites with potential for improvement, and analyzing them for potential cost effective Four-E solutions. The analysis is coordinated with the State Patrol and the Washington State Traffic Commission.

In keeping with the approach outlined above, this chapter is divided into these subsections:

- Review of collision data for the past five years.
- Identification of programmed safety projects.
- Identification of study area locations on safety priority array lists.
- Identification of behavior-related factors that are contributing to collisions.
- Conclusion
- Additional summary of non-motorized collisions

## **Injury Categories**

*When the Washington State Patrol responds to a collision on a state highway, the responding officer will classify the severity of the injury as one of the following:*

- 1. No Injury:** *Applies when the officer at the scene has no reason to believe that, at the time of the collision, the person received any bodily harm due to the collision.*
- 2. Dead at Scene:** *Pronounced dead at the collision scene.*
- 3. Dead on Arrival:** *Pronounced dead upon arrival at hospital or medical facility.*
- 4. Died at Hospital:** *Died in hospital after arrival.*
- 5. Serious Injury:** *Any injury which prevents the injured person from walking, driving, or continuing normal activities at the time of the collision. Includes: severe lacerations, broken or distorted limbs, skull or chest injuries, abdominal injuries, etc. Excludes: momentary unconsciousness, etc.*
- 6. Evident Injury:** *Any injury other than fatal or serious at the scene. Includes: broken fingers or toes, abrasions, etc. Excludes: limping, complaint of pain, nausea, momentary unconsciousness, etc.*
- 7. Possible injury:** *Any injury reported to the officer or claimed by the individual such as momentary unconsciousness, limping, complaint of pain, nausea, hysteria, or claim of other non- evident injuries.*

See PTCR Manual at

[www.wsp.wa.gov/publications/collision.htm](http://www.wsp.wa.gov/publications/collision.htm).

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WSDOT is proactive in programming improvements that reduce fatal and serious injury collisions, and continues to find innovative programs which improve the safety and security of transportation customers and the transportation system. *Target Zero* is used to inform WSDOT investment decisions; detailed before and after collision data for highway safety improvement projects are available in the Gray Notebook at [www.wsdot.wa.gov/Accountability](http://www.wsdot.wa.gov/Accountability). For more information on the WSDOT safety program, visit the WSDOT safety website at [www.wsdot.wa.gov/safety](http://www.wsdot.wa.gov/safety).

Please note that for general liability and disclosure reasons, none of the collision or safety data presented in this report may be used in discovery or as evidence at trial in any action for damages against State, Tribal, or Local Governments.<sup>2</sup>

## Collision Data Review

A review of collision history was performed on collisions along the SR 520 mainline and ramps from milepost 6.5 to the end of the SR 520 roadway at milepost 12.83.<sup>3</sup> This encompasses the corridor from just west of I-405 in Bellevue to its eastern terminus in Redmond. Collision data were examined for the period of January 2007 through December 2011.<sup>4</sup> The influence area for interchange-related collisions is considered to be one-half mile before and after each interchange, measured from the merge or diverge point of the last ramp in each direction at each interchange.<sup>5</sup>

For the purpose of presenting a complete study area picture, the first section below, *Summary of All Collisions*, briefly discusses all collisions which occurred on the corridor within the above highway segment parameters. The following section, *Fatal & Serious Injury Collisions*, provides a more in-depth analysis of those two types of collisions. The in-depth analysis is limited to fatal and serious injury collisions in order to align with *Target Zero* directives.

<sup>2</sup> *US Code 23, Section 409: Highways - Discovery and admission as evidence of certain reports and surveys, Chapter 4: Highway Safety, p 434.*

<sup>3</sup> *The exact milepost location for the safety analysis at the western end of the corridor was based on the location of the western-most point of the I-405/SR 520 ramps in each direction: at 6.51 in the eastbound direction, and 6.59 in the westbound direction. These locations mark the half-way point between the I-405 interchange ramps and the 108th Avenue NE interchange ramps.*

<sup>4</sup> *Citizen reports are not included in this safety analysis. The only exceptions are the statewide “collision rates” presented in Exhibit 2.7 and Exhibit 2.15, which include citizen reports for certain years as noted. Citizen reports were part of the 2007 and 2008 statewide collision databases but have not been included since then.*

<sup>5</sup> *If the distance between interchanges is less than 1/2 mile, the influence area is defined as ending at the half-way point between the two closest ramps in each direction.*

---

## Summary of All Collisions, 2007–2011

### Number of Collisions

A total of 1,614 collisions occurred on SR 520 within the milepost parameters given above during the five year analysis period. Compared to the entire state, the overall collision rate on the above-defined segment of SR 520 ranged from 54% to 70% of that of other state facilities with the same functional class (urban principal arterial) between 2007 and 2011.

Exhibit 2.7 compares the collision rate on the study corridor to that of urban principal arterials statewide. The collision rate on SR 520 was calculated from east of the I-405 interchange to its eastern terminus at SR 202. The high number of collisions within the I-405 interchange was excluded in order to avoid skewing the corridor-wide average.

### Exhibit 2.7: Study Corridor Collision Rate

	2007 <sup>2</sup>	2008 <sup>2</sup>	2009	2010	2011
Total Number of Collisions on SR 520 <sup>1</sup>	247	237	259	255	217
SR 520 Weighted Annual Average Daily Traffic	88,000	86,000	86,000	87,000	87,000
SR 520 Collision Rate	1.37	1.35	1.41	1.45	1.23
Statewide Collision Rate on Urban Principal Arterials	2.55	2.42	2.05	2.06	2.07

Source: WSDOT Statewide Travel & Collision Data Office, January 2013.

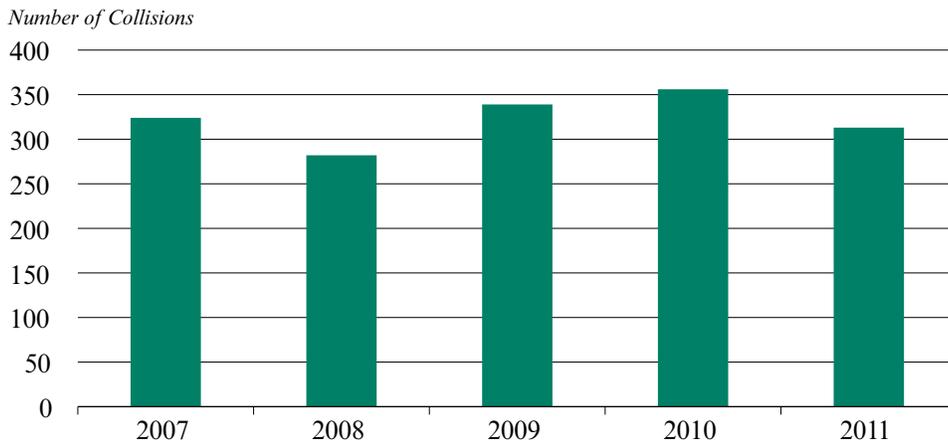
<sup>1</sup> Totals exclude collisions west of milepost 7.22.

<sup>2</sup> Citizen reports are included in the 2007 and 2008 data.

Under U.S. Code 23 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.

The incidence of collisions over the whole analysis corridor (which extends further west than the collision rate calculation above) increased during the years 2008 through 2010, but dropped in 2011. Data over the next few years will show whether this is a continuing trend. Exhibit 2.8 shows the number of collisions on the study corridor by year.

## Exhibit 2.8: Incidence of SR 520 Collisions by Year



Source: WSDOT Statewide Travel & Collision Data Office, November 2012

Under U.S. Code 23 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.

## Collision Locations

The highest number of study corridor collisions occurred at or within the I-405 interchange influence area, followed by the 148th and 124th Avenue NE interchange influence areas. Together, these three interchange areas accounted for 61% of the corridor collisions.

Exhibit 2.9 presents the total number of corridor collisions by interchange influence area. Exhibit 2.10 presents similar information in a format which makes it easy to compare the number of collisions at different points along the study corridor.

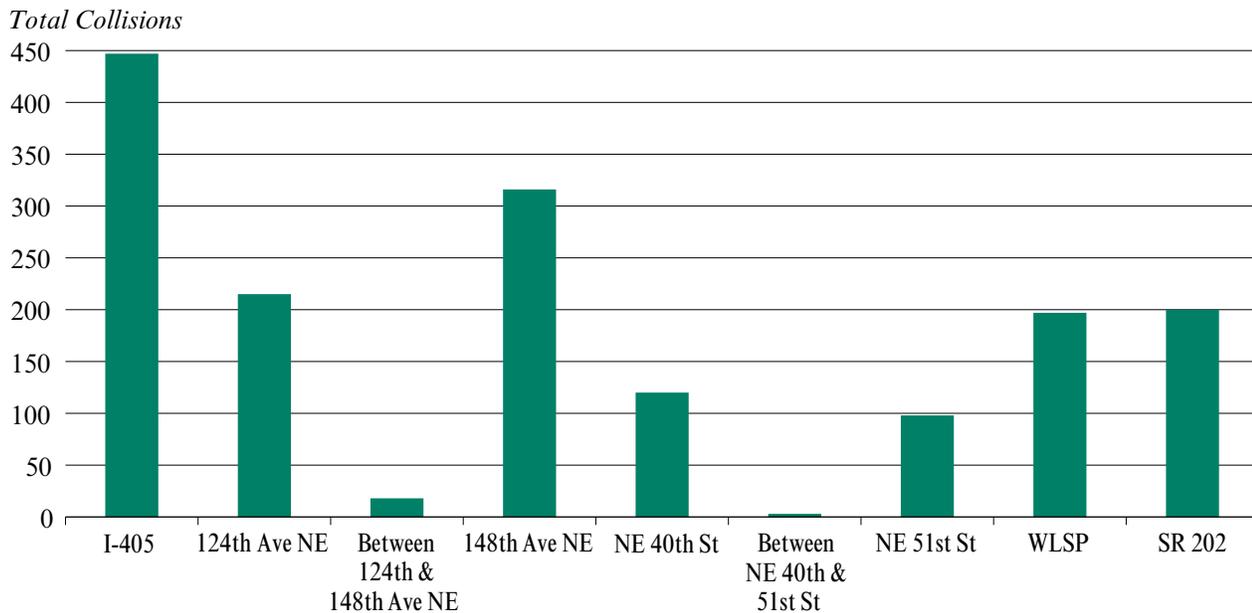
## Exhibit 2.9: SR 520 Collisions by Interchange Influence Area - Table

Interchange Influence Area	Total Collisions	
I-405	447	28%
124th Ave NE	215	13%
Between 124th & 148th Ave NE	18	1%
148th Ave NE	316	20%
NE 40th St	120	7%
Between NE 40th & 51st St	3	0.2%
NE 51st St	98	6%
WLSP	197	12%
SR 202	200	12%
<b>Total</b>	<b>1614</b>	<b>100%</b>

Source: WSDOT Statewide Travel & Collision Data Office, November 2012

Under U.S. Code 23 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 2.10: SR 520 Collisions by Interchange Influence Area - Barchart



Source: WSDOT Statewide Travel & Collision Data Office, November 2012

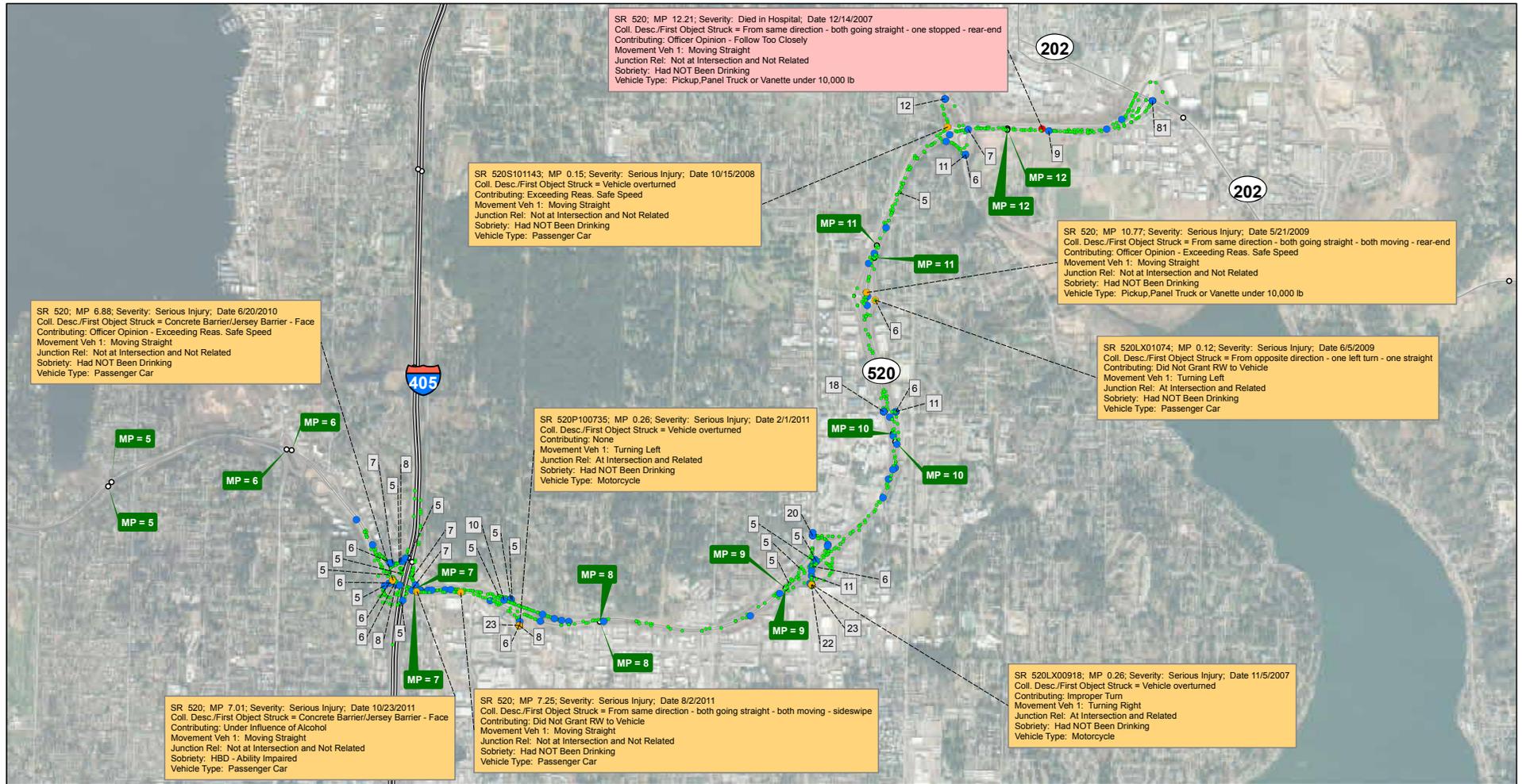
Under U.S. Code 23 Section 409, this data cannot be used in discovery or as evidence at trial in any action for damages against State, Tribal, or Local Government that involves the locations mentioned in this data.

As can be seen from the above two exhibits, almost all of the collisions in the study corridor occurred at interchanges (on the mainline, shoulders, ramps, or over/underpasses) or within interchange influence areas. Less than two percent of the collisions occurred on the facility mainline or shoulders outside of these interchange areas; this is a typical pattern for freeway and highway collisions. Other noticeable collision location patterns include:

- The collisions were split fairly evenly between the eastbound and westbound directions.
- The majority (57%) of study corridor collisions occurred on the ramps, largely at or near the ramp termini and their intersection with over/under passes.
- Lane 1 (the right-most lane) of onramps had the highest percentage (24%) of specific collision locations, followed by lane 1 of the mainline (13%) and lane 1 on offramps (11%).

Exhibit 2.11 presents a GIS-based map showing the precise location of collisions along the SR 520 mainline. As can be seen, large numbers of collisions occurred in the I-405 and 148th Avenue NE interchange areas.

# Exhibit 2.11: Map of SR 520 Collision Locations



- Milepost
- 6 Collision Count

Collision counts shown are those 5 and greater for purposes of clarity

### Collisions

#### Most Severe Injury Type

- Fatal
- Serious Injury
- Evident Injury
- All Others



"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."

Source: WSDOT Statewide Travel & Collision Data Office, November 2012



## SR 520 Collisions

Milepost Limits: SR 520 - 6.50 to 12.83

Date: 1/1/2007 through 12/31/2011

## Collision Severity

The most prevalent collision severity type on the study corridor was “no injury,” which means collisions where there was property damage only. The “no injury” collisions accounted for 71% of all corridor collisions. “Possible injury” collisions accounted for 23%, and “evident injury” collisions accounted for five percent of total collisions. Fatal and serious injury collisions accounted for 0.06% and 0.50% of total collisions, respectively. A breakdown of collision severity by interchange influence area is presented in Exhibit 2.12.

**Exhibit 2.12: SR 520 Collisions by Severity**

Interchange Influence Area	Most Severe Injury Type at Each Collision						Total
	Fatality	Serious Injury	Evident Injury	Possible Injury	No Injury	Unknown	
I-405	0	3	19	104	319	2	<b>447</b>
124th Ave NE	0	1	12	58	144	0	<b>215</b>
Between 124th & 148th Ave NE	0	0	1	2	15	0	<b>18</b>
148th Ave NE	0	1	18	66	228	3	<b>316</b>
NE 40th St	0	0	16	20	81	3	<b>120</b>
Between NE 40th & 51st St	0	0	0	2	1	0	<b>3</b>
NE 51st St	0	2	5	17	74	0	<b>98</b>
WLSP	1	1	8	45	139	3	<b>197</b>
SR 202	0	0	6	56	138	0	<b>200</b>
<b>Total</b>	<b>1</b>	<b>8</b>	<b>85</b>	<b>370</b>	<b>1139</b>	<b>11</b>	<b>1614</b>
	<b>0.06%</b>	<b>0.50%</b>	<b>5%</b>	<b>23%</b>	<b>71%</b>	<b>0.68%</b>	<b>100%</b>

Source: WSDOT Statewide Travel & Collision Data Office, November 2012.

Under U.S. Code 23 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.

## Major Contributing Factors of Collisions

The major contributing factor of study corridor collisions was speeding (43%), followed by tailgating (19%), not yielding proper right-of-way (14%), and driver inattention (10%). Three percent of collisions were caused by alcohol or drug-related impaired driving. The category of “Other” (12%) includes improper backing, passing, turning, driving over the centerline, defective equipment, and causes listed by the responding officer as none, other, or left blank. Collisions are shown by major contributing factor and interchange influence area in Exhibit 2.13.

**Exhibit 2.13: SR 520 Collisions by Major Contributing Factor**

Interchange Influence Area	Major Contributing Factor						Total
	Speeding	Tailgating	Did Not Yield ROW	Driver Inattention	Impaired Driving	Other	
I-405	265	62	46	17	19	38	<b>447</b>
124th Ave NE	102	40	35	10	3	25	<b>215</b>
Between 124th & 148th Ave NE	7	5	2	1	0	3	<b>18</b>
148th Ave NE	114	58	50	45	8	41	<b>316</b>
NE 40th St	25	8	39	19	2	27	<b>120</b>
Between NE 40th & 51st St	2	0	0	0	0	1	<b>3</b>
NE 51st St	52	11	18	4	3	10	<b>98</b>
WLSP	56	41	29	29	8	34	<b>197</b>
SR 202	63	79	9	32	3	14	<b>200</b>
<b>Total</b>	<b>686</b>	<b>304</b>	<b>228</b>	<b>157</b>	<b>46</b>	<b>193</b>	<b>1614</b>
	<b>43%</b>	<b>19%</b>	<b>14%</b>	<b>10%</b>	<b>3%</b>	<b>12%</b>	<b>100%</b>

Source: WSDOT Statewide Travel & Collision Data Office, November 2012

Under U.S. Code 23 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.

## Collision Types

The majority of collisions on the study corridor were rear-end collision types (48%), followed by hitting an object (27%), and sideswipe (12%). Four collision types each comprised 3% of the collisions, including entering at an angle, overturns, turning movements, and “Other.” The category of “Other” includes fire in the vehicle, operating defective equipment, vehicle hitting an animal, and types listed by the responding officer as none, other, not stated, or left blank.

Collisions with pedestrians or cyclists comprised 1% of all collisions. More detail on vehicle collisions with pedestrians and cyclists is presented in the *Non-Motorized Collision Summary* section below, and in Appendix A.

Collisions are shown by type and interchange area in Exhibit 2.14.

### Exhibit 2.14: SR 520 Collisions by Type

Interchange Influence Area	Collision Type								Total
	Rear End	Hit Object	Sideswipe	Entering at Angle*	Overturn	Turning	Hit Ped/Cyclist	Other	
I-405	175	194	50	0	12	0	0	16	<b>447</b>
124th Ave NE	104	47	37	5	12	6	0	4	<b>215</b>
Between 124th & 148th Ave NE	10	5	2	0	0	0	0	1	<b>18</b>
148th Ave NE	150	70	38	19	13	8	10	8	<b>316</b>
NE 40th St	32	24	22	23	2	10	2	5	<b>120</b>
Between NE 40th & 51st St	2	1	0	0	0	0	0	0	<b>3</b>
NE 51st St	40	30	10	0	2	8	0	8	<b>98</b>
WLSP	100	39	24	4	8	9	5	8	<b>197</b>
SR 202	161	20	12	0	2	0	1	4	<b>200</b>
<b>Total</b>	<b>774</b>	<b>430</b>	<b>195</b>	<b>51</b>	<b>51</b>	<b>41</b>	<b>18</b>	<b>54</b>	<b>1614</b>
	<b>48%</b>	<b>27%</b>	<b>12%</b>	<b>3%</b>	<b>3%</b>	<b>3%</b>	<b>1%</b>	<b>3%</b>	<b>100%</b>

Source: WSDOT Statewide Travel & Collision Data Office, November 2012

\* Entering at Angle collisions include merging movements from on-ramps and parked positions.

Under U.S. Code 23 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.

The next section will focus on analysis of fatal and serious injury collisions on the study corridor.

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## Fatal & Serious Injury Collisions, 2007–2011

In keeping with the directives of *Target Zero*, this section will provide a more in-depth look at the fatal and serious injury collisions on SR 520 in the study area.

### Number of Fatal & Serious Injury Collisions

One fatal and eight serious injury collisions occurred on the study corridor during the five year analysis period. This represents less than one percent of the total number of collisions. Compared to the entire state, the fatal collision rate on the study corridor was almost identical to that of facilities of the same functional class (urban principal arterial) in 2007. There have been no fatal collisions on this segment of SR 520 since the end of 2007<sup>6</sup>, which brought the fatal collision rate well under the statewide rate.

The fatal collision rate on SR 520, calculated from east of the I-405 interchange to its eastern terminus at SR 202, is shown alongside the collision rate of urban principal arterials statewide in Exhibit 2.15.<sup>7</sup>

### Exhibit 2.15: Fatal Collision Rate for SR 520

	2007 <sup>2</sup>	2008 <sup>2</sup>	2009	2010	2011
Number of Fatal Collisions on SR 520 <sup>1</sup>	1	0	0	0	0
SR 520 Weighted Annual Average Daily Traffic	88,000	86,000	86,000	87,000	87,000
SR 520 Fatal Collision Rate	0.55	0.00	0.00	0.00	0.00
Statewide Fatal Collision Rate on Urban Principal Arterials	0.54	0.60	0.54	0.58	0.51

Source: WSDOT Statewide Travel & Collision Data Office, January 2013.

<sup>1</sup> Totals exclude collisions west of milepost 7.22.

<sup>2</sup> Citizen reports are included in the 2007 and 2008 data.

Under U.S. Code 23 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.

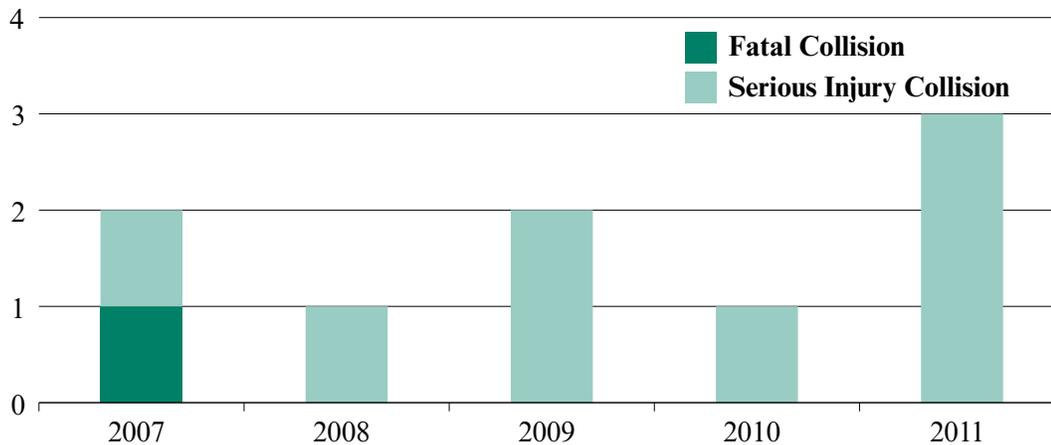
<sup>6</sup> Per data available as of February 4, 2013.

<sup>7</sup> The high number of collisions within the I-405 interchange was excluded in order to avoid skewing the corridor-wide average collision rate of all collisions, as discussed in the Summary of All Collisions section. The fatal collision rate was calculated with the same methodology; however, the single fatal collision occurred at the West Lake Sammamish Parkway interchange and was therefore not affected by the exclusion of the interchange at I-405.

The incidence of fatal and serious injury collisions showed no clear trend during the analysis period, going up and down year by year. 2011 had the largest number of serious injury collisions of the five year analysis period; however, there have been no fatalities on the study area segment of SR 520 since December 2007.<sup>8</sup> Exhibit 2.16 shows the number of fatal and serious injury collisions by year for the five year analysis period of 2007 through 2011.

**Exhibit 2.16: Incidence of Fatal & Serious Injury Collisions by Year**

*Number of Collisions*



Source: WSDOT Statewide Travel & Collision Data Office, November 2012

Under U.S. Code 23 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.

**Fatal & Serious Injury Collision Locations**

All of the fatal and serious injury collisions occurred within interchange influence areas. The single fatal collision occurred at the West Lake Sammamish Parkway interchange on the westbound mainline, and a serious injury collision also occurred on the westbound onramp at that interchange. Serious injury collisions occurred within each of the interchange areas except for NE 40th Street and SR 202; three of them occurred at the I-405 interchange on the SR 520 eastbound mainline. There were two serious injury collisions at the NE 51st Street interchange, on the eastbound mainline and on the overpass, and one each at the 124th and 148th Avenue NE interchange ramps.

Exhibit 2.17 presents fatal and serious injury collisions by interchange influence area. Exhibit 2.18 presents similar information in a format which makes it easy to compare the relative number of fatal and serious injury collisions at the different interchange areas along the study corridor.

<sup>8</sup> Although the analysis period for this study ends in December 2011, fatality data were pulled in January 2013. There were no fatal collisions on this segment of SR 520 in 2012 or in 2013 up through February 4, 2013. Source: WSDOT Statewide Travel & Collision Data Office, 2/4/13.

**Exhibit 2.17: SR 520 Fatal & Serious Injury Collisions by Interchange Influence Area - Table**

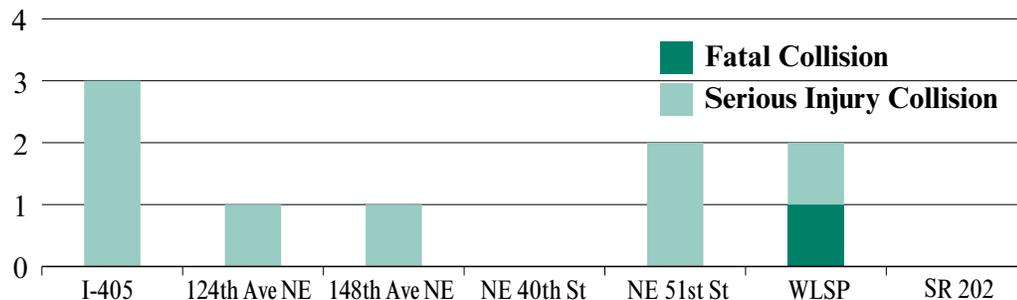
Interchange Influence Area	Most Severe Injury Type			Total
	Fatal Collisions	Serious Injury Collisions		
I-405	0	3	3	33%
124th Ave NE	0	1	1	11%
148th Ave NE	0	1	1	11%
NE 51st St	0	2	2	22%
WLSP	1	1	2	22%
<b>Total</b>	<b>1</b>	<b>8</b>	<b>9</b>	<b>100%</b>

Source: WSDOT Statewide Travel & Collision Data Office, November 2012

Under U.S. Code 23 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 2.18: SR 520 Fatal & Serious Injury Collisions by Interchange Influence Area - Barchart**

*Fatal & Serious Injury Collisions*



Source: WSDOT Statewide Travel & Collision Data Office, November 2012

Under U.S. Code 23 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.

As can be seen from the above two exhibits, five of the seven study corridor interchanges had serious injury and/or fatal collisions. Other noticeable fatal/serious injury collision location patterns include:

- Five of the fatal/serious injury collisions occurred on eastbound facilities. Two occurred on westbound facilities and two on overpasses.
- Five of the fatal and serious injury collisions occurred on the mainline, and four occurred on ramps.

Exhibit 2.19 presents a GIS-based map showing the precise location of fatal and serious injury collisions along the SR 520 mainline.

# Exhibit 2.19: Map of SR 520 Fatal & Serious Injury Collision Locations



Collision counts shown are those 5 and greater for purposes of clarity

○ Milepost

## Collisions

### Most Severe Injury Type

- Fatal
- Serious Injury



"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."

Source: WSDOT Statewide Travel & Collision Data Office, November 2012



## SR 520 Fatal & Serious Injury Collisions

Milepost Limits: SR 520 - 6.50 to 12.83

Date: 1/1/2007 through 12/31/2011

## Major Contributing Factors of Fatal & Serious Injury Collisions

The major contributing factor of the fatal collision at the West Lake Sammamish Parkway interchange was tailgating. For the serious injury collisions, three involved speeding and two involved lack of granting proper right-of-way. One each was attributed to impaired driving, avoidance of another vehicle, and improper turning. The major contributing factor of fatal and serious injury collisions on the study corridor are shown by interchange influence area in Exhibit 2.20.

### Exhibit 2.20: SR 520 Fatal & Serious Injury Collisions by Major Contributing Factor

Interchange Influence Area	Major Contributing Factor						Total
	Speeding	Did Not Yield ROW	Impaired Driving	Tailgating	Avoiding Another Vehicle	Improper Turning	
I-405	1	1	1	0	0	0	<b>3</b>
124th Ave NE	0	0	0	0	1	0	<b>1</b>
148th Ave NE	0	0	0	0	0	1	<b>1</b>
NE 51st St	1	1	0	0	0	0	<b>2</b>
WLSP	1	0	0	1	0	0	<b>2</b>
<b>Total</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>9</b>
	<b>33%</b>	<b>22%</b>	<b>11%</b>	<b>11%</b>	<b>11%</b>	<b>11%</b>	<b>100%</b>

Source: WSDOT Statewide Travel & Collision Data Office, November 2012

Under U.S. Code 23 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.

## Fatal & Serious Injury Collision Types

The single fatal collision was a rear-end collision type. The serious injury collision types included three overturns, one rear end, two hit objects, and one each sideswipe and left turn. Fatal and serious injury collision types are shown by interchange influence area in Exhibit 2.21.

## Exhibit 2.21: SR 520 Fatal & Serious Injury Collisions by Type

Interchange Influence Area	Collision Type					
	Overtake	Rear End	Hit Object	Sideswipe	Left Turn	Total
I-405	0	0	2	1	0	3
124th Ave NE	1	0	0	0	0	1
148th Ave NE	1	0	0	0	0	1
NE 51st St	0	1	0	0	1	2
WLSP	1	1	0	0	0	2
<b>Total</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>9</b>
	<b>33%</b>	<b>22%</b>	<b>22%</b>	<b>11%</b>	<b>11%</b>	<b>100%</b>

Source: WSDOT Statewide Travel & Collision Data Office, November 2012

Under U.S. Code 23 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.

### Detailed Description of Fatal & Serious Injury Collisions<sup>9</sup>

The single fatal collision which occurred during the five year analysis period on SR 520 in the study area happened in December of 2007; a fatal collision has not occurred on the study corridor since.<sup>10</sup> Of the eight serious injury collisions, four involved motorcycles, and four of the drivers responsible for the collision were in their teens or 20's.

Summaries of the fatal and serious injury collisions are provided below.

- **I-405 Interchange**

- Two serious injury collisions at this interchange involved hitting fixed objects. Both of them occurred on the eastbound mainline, in the left shoulder, within 0.12 mile of one another. The object which was hit was a concrete barrier on the inside (left side) lane. The two collisions are described below:
  - > Collision occurred on the eastbound mainline left shoulder, at milepost 6.88, right before the on-ramp loop from southbound I-405. It occurred in June 2010 at 10:20 am with wet roadway conditions. A speeding passenger car hit the median concrete barrier. The driver was a 17 year old male.



<sup>9</sup> Please note that information is limited to data that were provided by the responding officer.

<sup>10</sup> Per data available as of February 4, 2013.

> Collision occurred on the eastbound mainline left shoulder at milepost 7.00 in October 2011, shortly after midnight. A passenger car hit the concrete median barrier during wet dark conditions with lighting. The driver was a 23 year old female.



- Collision occurred on the eastbound mainline, lane 2, at milepost 7.24 in August 2011 just before noon. A passenger car was changing lanes to the left and sideswiped a motorcycle during dry roadway conditions. The driver of the passenger vehicle was a 41 year old male.

• **124th Avenue NE Interchange**

- Collision occurred on the eastbound offramp to 124th Avenue NE, left turn lane, at milepost 0.26 in February 2011 just after noon. A motorcycle was making a left onto NE 20th Street, swerved to avoid another vehicle, and overturned during dry roadway conditions. Motorcycle driver was a 38 year old male.

• **148th Avenue NE Interchange**

- Collision occurred in the intersection of the eastbound offramp and overpass, at milepost 0.26 of the overpass structure, in November 2007 at 8:10 pm. A motorcycle was making a right turn from the offramp onto the southbound outside lane of the overpass, was speeding, and overturned during dry dark conditions with lighting. Motorcycle driver was a 31 year old male.

• **NE 51st Street Interchange**

- Collision occurred in the eastbound mainline, lane 3 (left-most lane), at milepost 10.76, just east of the NE 51st Street overpass, in May 2009 at 5:40 pm. A speeding SUV rear-ended another SUV, which subsequently hit a passenger car and a motorcycle during dry daylight conditions within a work zone. The SUV was driven by a 19 year old female.

- Collision occurred in the intersection of the overpass and the eastbound onramp, at milepost 0.12 of the overpass structure in lane 2, during June 2009 at 5:05 pm. A passenger car traveling south on the overpass turned left into an oncoming passenger car during dry daylight conditions while trying to enter the eastbound onramp. Southbound driver was a 55 year old male.

- 
- **West Lake Sammamish Parkway NE Interchange**
    - The single fatality during this five-year period occurred in lane 1 of the westbound mainline at milepost 12.20. The collision was within the WLSP interchange influence area, close to the half-way point between the WLSP and SR 202 interchange areas. It occurred in December 2007 during the afternoon peak in dry dark roadway conditions with lighting. The driver of a small van was tailgating and rear-ended another small van which had legally stopped in front of him. There were two more stopped vehicles at the location that were also involved. The driver of the tailgating van was a 63 year old male.
    - Collision occurred on the westbound onramp from WLSP/Leary Way, beyond the left shoulder, at milepost 0.15, in October 2008 just after noon. A passenger car was speeding and overturned near the ramp meter during dry daylight conditions. The vehicle was driven by a 27 year old male.

## Existing and Programmed Safety Projects

Another step of WSDOT corridor safety analysis is the identification of programmed safety-specific projects on the study corridor. A “programmed” project means the project has been put on an agency list or into an agency plan to be considered for future funding by the state legislature.

A search was performed to identify recently completed and current safety projects and studies, along with programmed safety projects which are included in regional transportation plans. Projects which are not specifically identified and funded as safety projects, including maintenance, preservation, and mobility projects, also often have safety benefits; those projects are included at the end of this chapter.

### Recently Completed Projects

There were no safety-specific projects recently completed on the study corridor.

### Current & Upcoming Projects

There are no current or upcoming safety-specific projects on the study corridor.

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## Proposed Projects

### Capital Improvement and Preservation Program (CIPP)

WSDOT addresses identified safety needs on an on-going basis as part of the Capital Improvement and Preservation Program and biennial program development process. The CIPP constitutes WSDOT's annual request to the Governor for funding of transportation projects. It includes all preservation and improvement projects.

There were no safety-specific projects on the study corridor in the 2012 CIPP.

### Regional Transportation Plans

There are no safety-specific projects on the study corridor listed in the state *Highway System Plan* or *Transportation 2040*, the regional transportation plan.

## WSDOT Safety Priority Array Lists

Lists of highway segments and intersections are prioritized by WSDOT for potential safety improvements on state highways. These lists are composed of collision analysis segments (CASs) and intersection analysis locations (IALs). The two lists provide candidate segments for inclusion in the WSDOT safety program each biennium. WSDOT updates criteria for both priority lists on a biennial basis to ensure that emerging safety needs are being met.

Inclusion on the safety priority array lists means that a location has been identified for potential improvements. These locations are then further analyzed to determine which one of the *Target Zero* "4-E" strategies could reduce fatal and serious injury collisions.

Once a capital project is identified, it must still compete statewide with other safety projects for limited funding.

### Collision Analysis Segments

WSDOT formally adopted the *AASHTO Highway Safety Manual* (HSM) for statewide implementation in 2011. The HSM introduces a science-based technical approach to help identify sites with the highest potential for reduction of collision severity or frequency. The resulting CASs are composed of the top 221 statewide locations with the highest expected average crash frequency of fatal and serious injury collisions. The procedure also helps to identify potential countermeasures for addressing factors contributing to collisions. Note that the analysis does not include city streets or state highways in cities with a population over 25,000. This restriction is based on the Revised Code of Washington (RCW) 47.24.020.

There are no CASs on the study corridor.

## Intersection Analysis Locations

The intersection analysis location array is composed of intersections that have experienced more than eight at-angle, left-turn opposite direction, or rear-end crashes between 2006 and 2010, where the total societal cost is greater than or equal to \$900,000. Total societal cost is calculated based on collision type and posted speed limits of the intersection on the major roadway. Note that the analysis does not include city streets or state highways in cities with a population over 25,000, per RCW cited above.

There are four locations on the current IAL array within the study area; two at the WLSP interchange and two at the SR 202 interchange:

- **West Lake Sammamish Parkway Interchange:** Eastbound off- and on-ramp intersections with the WLSP underpass. There were one at-angle, seven left-turn opposite direction, and 20 rear-end collisions during the 2006-10 period at these locations. None of these collisions involved fatalities or serious injuries. The IAL locations are shown with orange dots in Exhibit 2.22.

### RCW 47.24.020

This Revised Code of Washington states that cities and towns with a population over 25,000 have total jurisdiction over traffic movement on state highways which pass within their jurisdiction, and are therefore responsible for improving the safety of these facilities. The only exception to this is state routes with “full access control,” i.e., highways with limited locations to get on or off the facility, such as freeways.

Revised Code of Washington  
47.24.020

<http://apps.leg.wa.gov/RCW>

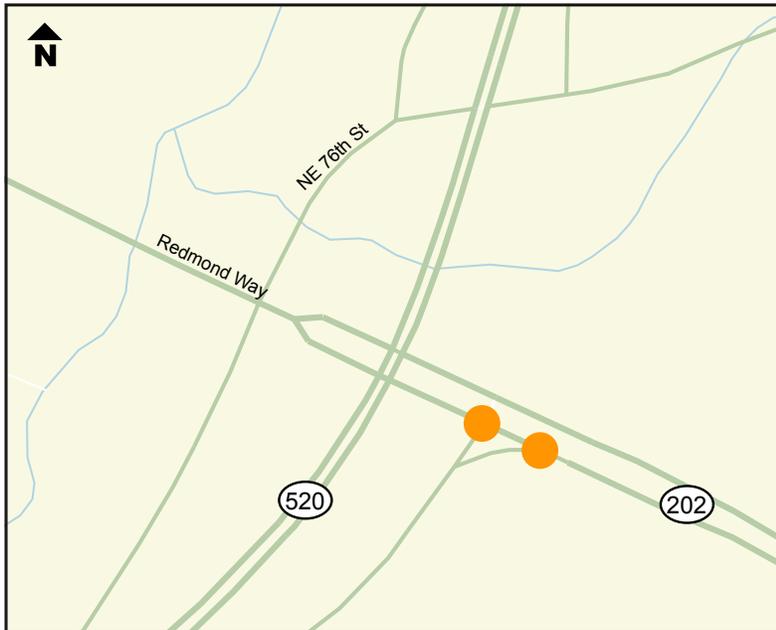
**Exhibit 2.22:** Intersection Analysis Locations at the WLSP Interchange



Under U.S. Code 23 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.

- **SR 202 Interchange:** Eastbound off-ramp to SR 202 at its intersection with the SR 202 underpass. There were no at-angle or left-turn opposite direction collisions during the 2006-10 period at these locations, but there were 83 rear-ends. None of them were fatal or serious injury collisions. The IAL locations are shown with orange dots in Exhibit 2.23.

**Exhibit 2.23:** Intersection Analysis Locations at the SR 202 Interchange



Under U.S. Code 23 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.

Inclusion on the IAL safety priority array list means that these four locations have been identified as sites with potential for improvements. They will be further analyzed to determine which one of the *Target Zero* “4-E” strategies could reduce fatal and serious injury collisions. Once a capital project is identified, it must still compete statewide with other safety projects for limited funding.

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## Behavior-Related Causes of Collisions

Collision data were also reviewed in order to identify behavior-related causes of fatal and serious injury collisions which may lend themselves to enforcement solutions.

Statewide data show behavior-related factors such as impairment, run-off-the-road, and speeding as the most common causes of fatalities.<sup>11</sup> Young drivers (aged 16-25) account for 39% of all fatal collisions.<sup>12</sup> The single fatal collision and seven of the eight serious injury collisions that occurred in the study corridor during the analysis period can all be considered behavior-related: three speeding, two failures to grant right-of-way, and one each impaired driving, tailgating, and improper turning. Three of the nine collisions involved drivers between the ages of 17-23; an additional two involved drivers ages 27 and 31.

Locations of the fatal and serious injury collisions were presented in Exhibit 2.17 through Exhibit 2.19. The collisions are spread fairly evenly along the entire study corridor, with between one and three collisions within each interchange area except the NE 40th and SR 202 interchanges. Because the study corridor length is relatively short – a little over six miles – the study corridor as a whole could potentially lend itself to a targeted enforcement effort or attention from a community task force.

Target Zero Community Traffic Safety Task Forces bring local police, health department, and transportation departments into alignment with the goals of *Target Zero*. They help to implement state and national mobilizations, lead local traffic safety projects, and utilize proven strategies to address the priorities of *Target Zero*. The task forces work together with the state Traffic Safety Commission to identify the highest need areas, and then target those areas for education and enforcement. Preliminary countywide data show traffic death reductions at twice the rate of counties without *Target Zero* teams (28% compared to 13%) over the last five years.<sup>13</sup>

### Does enforcement make a difference?

The Washington State Patrol saw an increase in speed-related fatalities in 2005 in King, Pierce and Snohomish Counties. Chief John Batiste ordered troopers to emphasize speed enforcement in appropriate areas. Deaths have dropped each year since.

[www.wsp.wa.gov/targetzero](http://www.wsp.wa.gov/targetzero)

<sup>11</sup> *Target Zero, Washington State's Strategic Highway Safety Plan, 2010, p 11.*

<sup>12</sup> *Ibid.*

<sup>13</sup> *Washington State Highway Safety Performance Plan 2012, Washington Traffic Safety Commission, p 1.*

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## SR 520 Safety Analysis Conclusion

There have been no fatal collisions on the study corridor since the end of 2007<sup>14</sup>, putting the fatal collision rate well below the statewide average for similar facilities.

There are two safety priority array lists which WSDOT maintains to help program safety projects: Collision Analysis Segments (CASs) and Intersection Analysis Locations (IALs). The study corridor does not currently contain any CASs. It does contain four IALs:

- Two at the eastbound ramps intersection with West Lake Sammamish Parkway NE
- Two at the eastbound offramp intersection with SR 202

Improvement recommendations to address these four IAL locations will depend on further analysis. There were no fatal or serious injury collisions at these four locations, but there were a number of less severe collisions that met other safety array criteria. Once a capital project is identified, it must still compete statewide with other safety projects for limited funding.

All of the fatal and serious injury collisions, and the vast majority of the less severe collisions, entailed driver behavior as a major contributing factor. Enhanced enforcement and education of the public on behavior-related topics (such as speeding, tailgating, failure to grant proper right-of-way, awareness of non-motorized modes of travel, and driver inattention and impairment) should therefore be undertaken to further improve safety on the study corridor.

Enhanced enforcement and public education has been shown to be most effective when undertaken through *Target Zero* community task forces. WSDOT analysis indicates that increased aggressive and persistent enforcement of driving infractions and *Target Zero* community task force activities can address the major factors contributing to fatal and serious injury collisions in the study corridor. If these actions are taken, capital improvements to reduce fatal and serious injury collisions will not be necessary.

There are no formally designated WSDOT safety projects which are currently identified for the study corridor. However, many of the planned projects have safety benefits. Both the state and the cities should continue to monitor collisions on the study corridor and, if warranted, determine if a specific physical fix would be effective.

<sup>14</sup> Per data available as of February 4, 2013.

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## Non-Motorized Collision Summary

A separate analysis was performed on collisions involving pedestrians and cyclists. This analysis differs from the rest of the safety analysis in that it focuses on all collisions, not just fatal and serious injury collisions. It also includes non-motorized collisions which occurred on city-owned surface streets within 1/4 mile of the SR 520 eastern terminus, including Avondale Way, Avondale Road, and Union Hill Road.

During the 2007 – 2011 analysis period, there were seven pedestrian/vehicle and 19 cyclist/vehicle collisions. Of these 26 collisions, one resulted in a serious injury; the rest of the vehicle/non-motorized collisions resulted in evident (62%), possible (27%), or no injuries (8%). There were no fatal collisions involving pedestrians or cyclists.

Sixty-nine percent of the vehicle/non-motorized collisions occurred on SR 520 facilities, and 31% of them occurred on the surface streets defined above. Of the SR 520 collisions, all but one occurred at ramp termini.

<b>Location</b>	<b>No. of Collisions</b>
SR 520 Mainline:	1
SR 520 Ramp Termini:	17
Avondale (within 1/4 mile of SR 520)	8
<b>Total:</b>	<b>26</b>

<b>Severity</b>	<b>No. of Collisions</b>
Fatal Collisions:	0
Serious Injury Collisions:	1
Evident Injury Collisions:	16
Possible Injury Collisions:	7
No-Injury Collisions:	2
<b>Total:</b>	<b>26</b>

The single serious injury collision involved a vehicle and cyclist at the intersection of Avondale Way and NE 80th Street/Union Hill Road. The vehicle was going straight ahead but the record does not indicate in which direction. The cyclist failed to grant proper right-of-way to the vehicle, turning into the vehicle's path from the opposite direction. The collision occurred in June 2008 at 9 am, it was raining, and the driver was female, 49.

Fifty-six percent of the non-motorized collisions occurring on SR 520 facilities were at the **148th Avenue NE ramp termini intersections (both diamond ramps)**, where six cyclists and three pedestrians have been hit in the past five years. The 520 Bike Trail intersects the north half of this location.

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Twenty-eight percent of the non-motorized collisions occurring on SR 520 facilities were at the westbound ramps intersection with **W. Lake Sammamish Parkway NE and Leary Way**, where four cyclists and one pedestrian have been hit in the past five years. The 520 Bike Trail intersects this location as well.

A detailed description of the 26 non-motorized collisions is presented in Appendix A.

## Investments

This section highlights investments that have been already been put into place within the corridor. These investments include maintenance work, preservation projects, and capacity improvements. This section also discusses the various plans the state and region have developed and what other improvements within the study corridor are under consideration.

### Maintenance

In short, maintenance is involved with maintaining the highway infrastructure to keep it in good working order, keep people safe, and keep goods moving 24-hours-a-day, 365-days-a-year.

Based on data collected over 2005 through 2011<sup>12</sup>, WSDOT has been spending approximately \$330,000 per year in maintenance operations along the segment of SR 520 from I-405 to its terminus at Avondale Road. The work has been broken down into the following functions and approximate shares of the yearly costs:

- Roadway Maintenance and Operations 17%
- Traffic Services\* 31%
- Drainage Maintenance and Slope Repair 9%
- Roadside and Landscape Maintenance 9%
- Bridge Maintenance 6%
- Snow and Ice control 12%
- 3rd Party Damages 13%

\* Traffic Services include pavement striping and marking, maintenance of signs, guardrails, signals, luminaires, and ITS equipment.

This work is expected to continue into the future, and duties/costs may expand in upcoming years due to the expected conversion of HOV lanes to HOT lanes and the subsequent additional infrastructure and upkeep.

<sup>12</sup> Towards the end of the 09-11 biennium the SR 520 mega project started to take over some of the maintenance responsibilities for portions of the study segment so the data for that biennium was not totally representative of normal conditions.

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## Preservation

The Preservation program includes projects that maintain the structural integrity of the existing highway system including roadway pavements, safety features, bridges, and other structures/facilities. In short, this work eventually is needed when maintenance fixes are no longer cost efficient to keep the facility operating.

During the 2011 Pavement Review, several segments between MP 6.3 and MP 11.9, (within the SR 520 study corridor) were identified in need of resurfacing. These identified segments include three mainline segments and nine ramps. The SR 520 program has a funded project to restripe SR 520 HOV lanes between I-405 and SR 202, currently scheduled for construction in 2013. In the interest of minimizing transportation impacts and costs, WSDOT will combine the paving work with that contract. The segments to be repaved include the following:

SR 520 EB mainline from MP 6.31 to 7.58

SR 520 WB mainline from MP 6.44 to 7.06

SR 520 WB mainline from MP 10.74 to 11.88

I-405 SB to SR 520 EB (Ramp 405 R5 01594) - partial

I-405 SB to SR 520 WB (Ramp 405 R1 01594) - partial

I-405 NB to SR 520 WB (Ramp 405 P2 01435)

SR 520 WB to I-405 SB (Ramp 405 S5 01488)

SR 520 EB to I-405 SB (Ramp 405 S1 01453) – partial

SR 520 EB to I-405 NB (Ramp 405 Q2 01548)

SR 520 WB to I-405 NB (Ramp 405 Q1 01548)

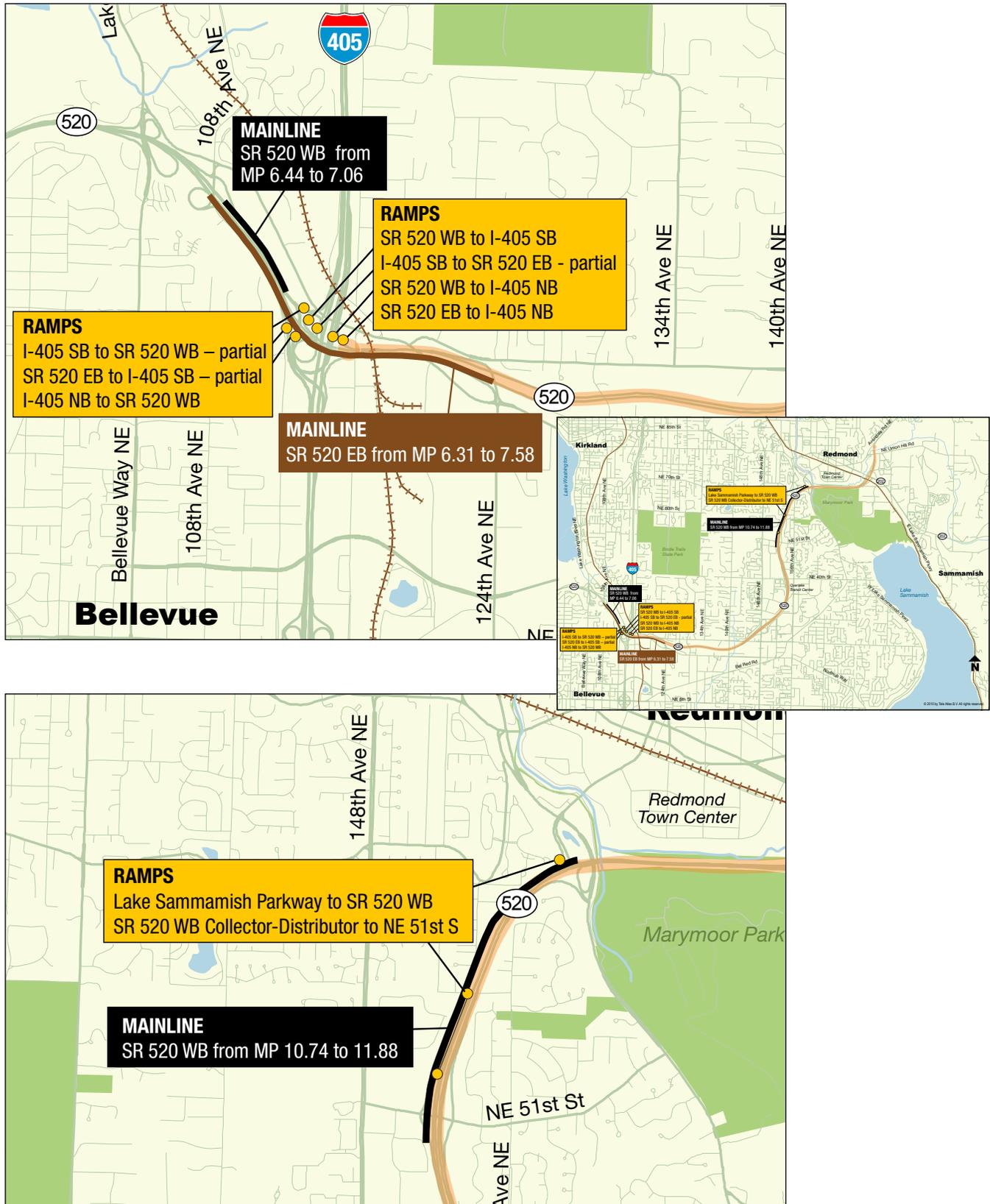
Lake Sammamish Parkway to SR 520 WB (Ramp 520 S1 01143)

SR 520 WB Collector-Distributor to NE 51st St (Ramp 520 CD 01122) – partial

The work will consist of resurfacing the listed segments and ramps. The repaving project is scheduled for operational completion by October 2014 at a cost of \$3.7 million.

See the map in Exhibit 2.24 for the locations of the above referenced maintenance and preservation projects.

**Exhibit 2.24 : Paving Preservation Work locations**



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## Recently Completed Projects

- **I-405 to West Lake Sammamish Parkway Paving.** This project repaved SR 520 between I-405 in Bellevue and West Lake Sammamish Parkway in Redmond. It also constructed new, stronger, smoother concrete slabs at the ends of five bridges. The new paving eliminated problems with wheel ruts, where water pooled on the road. There is expected to be less tire spray and less chance of hydroplaning for drivers. The project was completed in August 2009.
- **West Lake Sammamish Parkway to SR 202.** This project widened the SR 520 mainline in Redmond from two to four lanes in each direction between West Lake Sammamish Parkway NE and SR 202, a chronic chokepoint. One of the new lanes is an HOV lane, and the other is an outside (right side) general purpose lane that will help with merging. Adding merge lanes helps reduce sideswipe collisions, and eliminating traffic bottlenecks helps reduce backups that can lead to rear-end collisions. This project was completed in December 2010.
- **NE 36th Street - Bridge.** This project built a new bridge over SR 520 between NE 31st Street and NE 36th Street to accommodate a two-lane roadway with bike lanes, sidewalks, lighting landscaping and a roundabout at the east end. This project was completed in December 2010.
- **I-405 Vicinity - Seismic Retrofit.** Eight bridges between I-405 and 148th Avenue NE, and one bridge on I-90 at Richards Road, were retrofitted to better withstand earthquakes. Strengthening bridge columns and crossbeams is expected to reduce the risk of catastrophic failure during an earthquake. This project was completed in November 2011.

## Intelligent Transportation Systems

ITS includes improvements such as radio, microwave, and fiber optics for communications; closed-circuit television to help detect congestion and accidents and be aware of traffic and road conditions; variable message signs used to provide motorists with important information; highway advisory radio to provide alerts and general information regarding traffic and travel; road/weather information systems to provide weather and road surface conditions; ramp meters to control the flow of vehicles entering the freeway mainline; traffic detectors to monitor operations and provide traffic conditions to the web and the WSDOT 511 traffic information hotline; and regional Traffic Management Centers, which are the nerve centers for WSDOT's operations activities.

[www.wsdot.wa.gov/operations/its](http://www.wsdot.wa.gov/operations/its)

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- **I-405 – NE 8th St to SR 520 Braided Ramps: Interchange Improvements.**

This project built new multi-level “braided” ramps to separate vehicles entering and exiting northbound I-405, between NE 8th Street and SR 520. The project has added a bypass lane for I-405 traffic headed eastbound to SR 520. A new ramp from the NE 10th Street overpass gives drivers direct access to SR 520 from downtown Bellevue. This project eliminates traffic weaves for motorists on northbound I-405 and eastbound SR 520. It is also expected to reduce congestion-related collisions and enhance local pedestrian and bicycle access with a longer, wider NE 12th Street bridge. Construction was completed in May 2012.

Other recently completed improvements include:

- flyover ramp from westbound SR 202 to SR 520 (Spring 2008)
- quieter pavement test section was paved between Bellevue Way and bridge (August 2007)
- ramps connecting the end of SR 520 from SR 202 to Avondale Road (1996)

## Current Projects

- **Medina to SR 202: Eastside Transit and HOV Project.** This project will complete and improve the 8.8 mile HOV system from Evergreen Point Road to the SR 202 interchange. The improved six-lane corridor will include two general-purpose lanes and one transit/HOV lane in each direction, adding eastbound lanes where none currently exist. The project will provide transit service (including new direct HOV access ramps at 108th Avenue extending the transit flyer stop at NE 40th Street/Microsoft) and mobility improvements along with environmental and community enhancements. Construction will be coordinated with the SR 520 bridge replacement project.

Other current projects directly affecting the study corridor include:

- Replacement of the Evergreen Point Floating Bridge and freeway expansion to 6 lanes (2 general-purpose/1 HOV per side) between Interstate 5 and Interstate 405.
- Sound Transit 2 will add a Bus Rapid Transit (BRT) line to the entire SR 520 corridor
- Sound Transit will extend light rail from Seattle to Bellevue and Redmond, terminating at the Overlake Transit Center on the Microsoft campus; with a future extension to Downtown Redmond.

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## Programmed Projects

### Capital Improvement and Preservation Program (CIPP)

WSDOT addresses identified needs on an on-going basis as part of the Capital Improvement and Preservation Program and biennial program development process. The CIPP constitutes WSDOT's annual request to the Governor for funding of transportation projects. It includes all preservation and improvement projects, and is composed of four subprograms: mobility, safety, economic initiatives, and environmental retrofit.

### Regional Transportation Plans

Mobility projects that may also reduce the frequency and/or severity of collisions are listed in two long-range transportation planning documents: The state Highway System Plan and Transportation 2040, the regional transportation plan. Although these documents do not list safety projects per se, many of the mobility projects may have safety benefits. Inclusion in these two planning documents is the first step toward funding allocation.

**The HSP** is the state's overall transportation plan for highways. It includes an analysis of facilities the state owns and those in which the state has an interest. The HSP is updated every two years and serves as the basis for the six-year highway program and the two-year biennial budget request to the State Legislature. The HSP lists mobility recommendations that are categorized into three tiers, as follows:

- **Tier I: System Operation.** These projects consist of lower cost projects, shorter delivery schedules, and system-wide implementation applications. Examples include "intelligent transportation systems" (ITS), access management projects, ramp modifications, turn lanes, and intersection improvements.
- **Tier II: System Efficiency.** These projects build upon Tier I improvements and promote optimization of traffic operation systems. They include operational improvements such as ramp metering, turn lanes, adjusting the timing of signals, adding auxiliary lanes, improving a parallel corridor, or ITS applications.

### Washington's Growth Management Act

The Washington Legislature enacted the Growth Management Act in 1990 to guide planning for growth and development in the state. One of the key features of the act is for regional transportation planning organizations (RTPOs) to develop a regional transportation plan. The RTPO for King, Kitsap, Pierce, and Snohomish counties is the Puget Sound Regional Council.

<http://apps.leg.wa.gov/RCW/default.aspx?cite=36.70A&full=true>

### Puget Sound Regional Council

The Puget Sound Regional Council (PSRC) is the regional and metropolitan and transportation planning organization for Snohomish, King, Pierce, and Kitsap counties.

[www.psrc.org](http://www.psrc.org)

- Tier III: System Expansion. These projects build upon the previous two tiers and tend to be higher cost projects with corridor-wide benefits. They may include adding general purpose or high occupancy vehicle or toll (HOV or HOT) lanes, passenger rail, transit, multi-modal facilities, or major interchange modifications. Such projects are considered after all lower cost alternatives have been exhausted.

Tier I projects are typically smaller and involve limited construction activities. The quick implementation and lower cost increase their likelihood of being funded. Tier III projects are categorized as such primarily due to their anticipated higher cost, degree of construction difficulty, and time required to design and build. These projects require state or federal highway funding because their expense is above what local jurisdictions and agencies can afford. The legislature is the funding authority for all Tier III projects. The HSP was last updated in 2007 and is currently being revised.

**The RTP** (Transportation 2040) is the regional transportation plan for the central Puget Sound region over the next 30 years. It outlines how this region should invest in transportation through implementation of VISION 2040, the long range environmental, growth management, economic development, and transportation strategy for the central Puget Sound region. The RTP responds to Washington's Growth Management Act and conforms to federal transportation planning requirements. RTP projects are categorized as either constrained or unprogrammed. Constrained projects are part of the overall work program and were coordinated with a specific anticipated funding level. They therefore have a higher potential to be funded by the legislature than unprogrammed projects. Unprogrammed projects lack a specific funding strategy and are considered more illustrative or aspirational in nature. Unprogrammed projects are nevertheless sometimes funded because funding authority rests with the state legislature. The Transportation 2040 was adopted in May 2010 by the General Assembly of the Puget Sound Regional Council.

### **What are Variable Speed Limits?**

Overhead signs which post variable speed limits help to warn drivers of backups ahead and to smooth out traffic as it approaches a blocking incident. The signs can also quickly close entire lanes and provide warning information to drivers before they reach slower traffic. This type of advance notification can help reduce collisions that cause backups and stop-and-go traffic.

Active Traffic Management  
[www.wsdot.wa.gov/Congestion/technology.htm](http://www.wsdot.wa.gov/Congestion/technology.htm)

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State projects in the SR 520 study area corridor that are listed in the HSP and/or the RTP include:

- **SR 520/I-405 to SR 202 - Convert HOV Lanes to HOT Lanes:**  
Convert the HOV lanes on SR 520 to high occupancy/toll (HOT) lanes. HSP Tier I, RTP constrained, completion year 2020.
- **SR 520 Active Traffic Management (I-405 to SR202):** Active Traffic Management, Level 3, including variable speed limits, lane control, and queue warning. HSP Tier I, RTP constrained, completion year 2010-2020.
- **SR 520/124th Avenue NE Interchange - Interchange Improvements:**  
Provide new ramp connections to and from the east to create a full access interchange. HSP Tier III, RTP unprogrammed, completion year 2020.
- **SR 520/148th Ave NE Interchange - Interchange Improvements:**  
Provide grade-separated ramp access to the east of 148th Ave NE, and improve interchange pedestrian and bike facilities along 148th Ave NE. HSP Tier III.
- **SR 520/SR 202 Interchange - Interchange Improvements:** Construct a new SR 520/SR 202 interchange. RTP constrained, completion year 2020.
- **I-405/Tukwilla to Bellevue - Widening and Express Toll Lanes project:**  
Add one additional lane between SR 169 and NE 6th Street in Bellevue. Between I-90 and NE 6th there will be a total of five basic lanes in each direction, plus auxillary lanes as needed. The current intention is to build the new lane as an express toll lane, resulting in a dual express toll lane system in this area. The project will also build HOV direct connector ramps at the I-4056/SR 167 interchange and replace the Main Street bridge in downtown Bellevue. The I-405 Bellevue to Lynwood Widening and Express Toll Lanes project is currently under construction, building a new lane from NE 6th Street to SR 522 in each direction. For both of these projects, the new lanes along with the existing HOV lanes will be operated as a dual-lane express toll lane system..

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## Chapter 3:

# Population, Employment, and Land Use

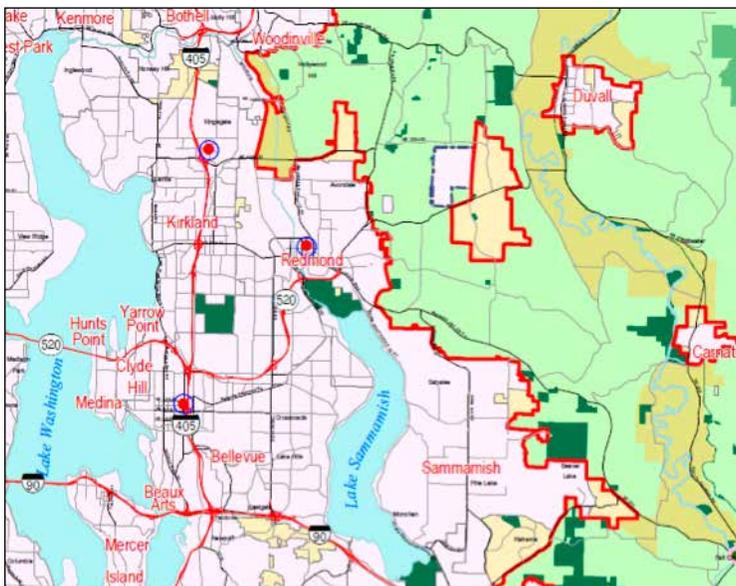
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This chapter provides an overview of growth management policies in the central Puget Sound Region; and descriptions of population and employment growth and land use development in the four jurisdictions (Bellevue, Kirkland, Redmond, and Sammamish) along or immediately adjacent to the study corridor.

## Growth Management Act

In 1990 the Washington State Legislature adopted the Growth Management Act (GMA) as the framework for managing growth in a coordinated and comprehensive manner. This act required local governments to enact regulations to protect valued resource lands and critical areas and called for establishing urban growth areas to curb sprawl. The GMA directed planning agencies at the countywide, regional, and local levels of government to coordinate their planning efforts. The urban growth boundary near the study corridor is shown in Exhibit 3.1.

**Exhibit 3.1:** Urban Growth Boundary



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The enabling legislation, RWC 36.70A, requires that cities and counties produce long-range comprehensive plans that are reviewed and, if necessary, updated every seven years. Population and employment growth targets, based on the state's official growth projections and then allocated at the county level, determine the number of residents and jobs that a jurisdiction is expected to accommodate in the future. Targets represent a commitment by the jurisdiction to accommodate growth; Countywide Planning Policies require jurisdictions to plan for their targeted growth and to adopt a regulatory framework and the necessary infrastructure funding to achieve the targeted growth.

Multi-county planning policies (MPP) are required by the Growth Management Act for large counties with adjacent urban areas. They are meant to provide an integrated strategy to take on regional issues that cannot be comprehensively addressed within a single jurisdiction or county. The Puget Sound Regional Council (PSRC,) with the extensive collaboration of Snohomish, King, Pierce, and Kitsap counties, developed and adopted VISION 2040 in 2008 which contains updated MPPs for the four counties, outlines the regional growth strategy, and specifies policies to help achieve that strategy. The policies provide guidance on such topics as setting priorities for transportation investment, stimulating economic development, planning for open space, making city and town centers more suitable for transit and walking, and improving transportation safety and mobility.

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VISION 2040 is the PSRC's long range planning document that provides environmental, growth management, economic development, and transportation strategies for the central Puget Sound four-county region. Its goal is to provide clear direction for a sustainable, vibrant urban region with protected rural and resource lands and to serve as an integrated, long-range vision for maintaining a healthy region, promoting economic vitality, a healthy environment, and well-being for people and communities.

The regional growth strategy in VISION 2040 provides guidance for planning for the roughly 1.7 million additional people and 1.2 million additional jobs expected in the region between 2000 and 2040. The strategy retains much of the discretion that counties and cities have in setting local targets, while calling for broad shifts in where growth locates within the region. In comparison to current targets and plans, the strategy calls for:<sup>1</sup>

- increasing the amount of growth targeted to cities that contain regionally designated urban centers (to include both metropolitan cities and core cities)
- increasing the amount of growth targeted to other larger cities
- decreasing the amount of growth targeted to urban unincorporated areas, rural designated unincorporated areas, and to many small cities
- achieving a greater jobs-housing balance within the region by shifting projected population growth into King County and shifting forecasted employment growth out of King County

<sup>1</sup> *Vision 2040 classifies cities into categories. Cities near the corridor study include:*  
- *Metropolitan Cities: Seattle and Bellevue*  
- *Core Suburban Cities: Bothell, Kirkland, Redmond, Renton*  
- *Larger Suburban Cities: Kenmore, Sammamish, Woodinville*  
- *Small Cities: Hunts Point, Medina, Newcastle, Yarrow Point*

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## Growth Targets and Regional Forecasting

Growth targets and land use assumptions are incorporated into the Puget Sound Regional Council's (PSRC) regional travel demand model to forecast future mobility and traffic trends. The PSRC serves as the metropolitan regional transportation planning organization for the Central Puget Sound region and its travel forecast model is based on the Office of Financial Management (OFM) population and employment projections.<sup>2</sup> Regional growth is described in their 2008 growth management document, VISION 2040. This document uses the OFM forecasts and divvies them up among the four counties within the PSRC planning area: Kitsap, Pierce, King, and Snohomish. The four counties then work with their municipalities to allocate population and employment growth targets within incorporated and planned annexation areas. PSRC population and employment forecasts and allocations are based on 2008 data.<sup>3</sup>

In compliance with VISION 2040, these new targets direct most growth (74 percent of housing and 85 percent of jobs) into two metropolitan cities and ten core suburban cities, each with a major urban center. Most of the new housing unit growth targets are accommodated within designated Urban Growth Areas (UGAs). As unincorporated urban areas are annexed to cities, the associated targets will shift to the city, so that by the end of the planning period, the unincorporated urban target will dwindle to near zero.

Within a UGA, growth is targeted to go first to the full service planning areas where urban services are currently available, and secondly to the service planning areas in which one or more urban services are not currently available. The King County UGA contains sufficient buildable land to accommodate forecasted residential growth through 2031, requiring no change to the current UGA.<sup>4</sup>

See Chapter 4: *Travel Demand Modeling and Traffic Analysis* for further discussion of the traffic modeling analysis that was conducted for this corridor study.

<sup>2</sup> To determine the best improvement options to address future travel needs in the corridor study area, the PSRC model was adjusted with local jurisdictional data at the traffic analysis zone (TAZ) level for areas adjacent to the corridor. Modeling methodology is described in detail Chapter 4: *Current and Future Travel Demand*.

<sup>3</sup> PSRC employment data represent the number of jobs during March of the given year. The data include firms, organizations and individuals whose employees are covered by the Washington Unemployment Insurance Act. Covered employment excludes self-employed workers, proprietors, CEOs, etc., and other non-insured workers. Covered employment typically represents 85-90 percent of total employment. This includes part-time and temporary employment. If a worker holds more than one job, each job would appear in the database. PSRC data for both population and employment are scheduled to be updated in the summer of 2012.

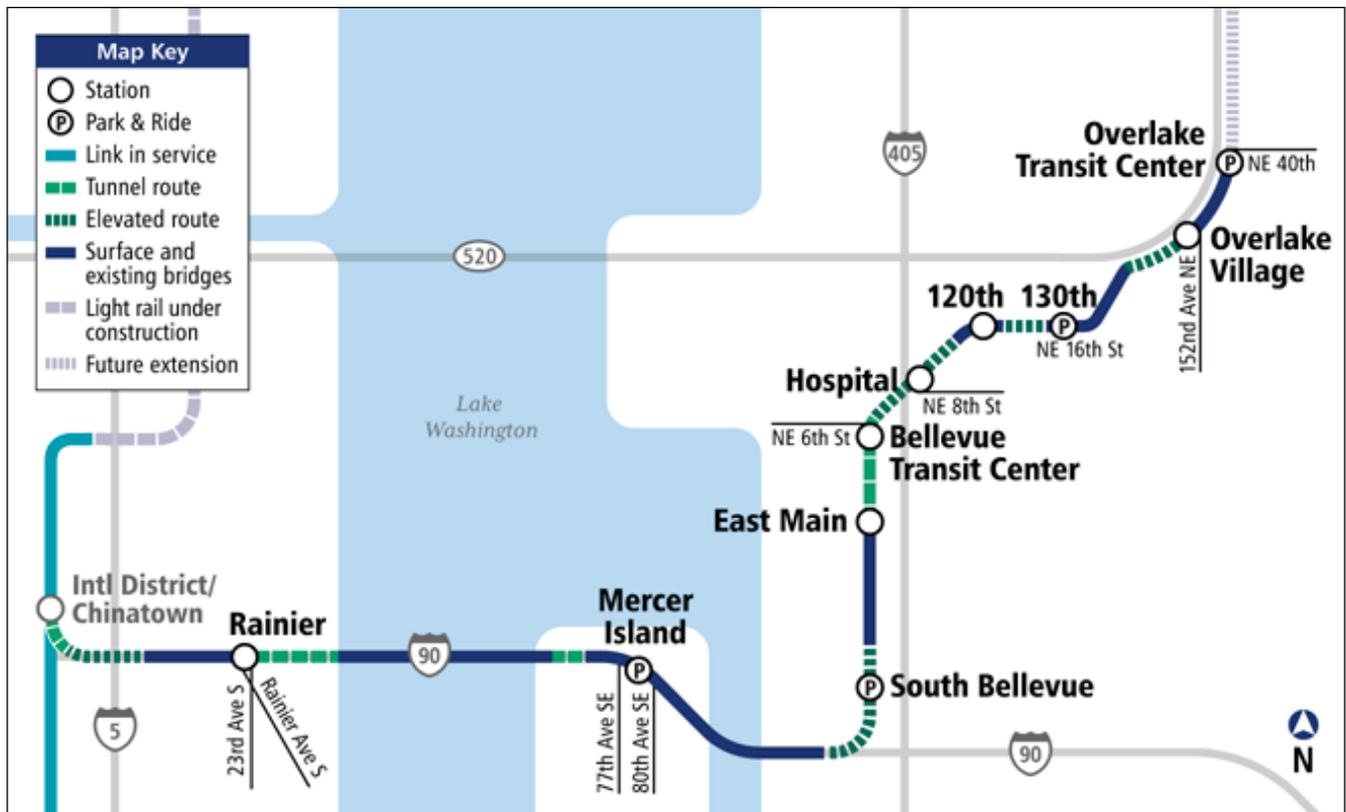
<sup>4</sup> *Buildable Lands Evaluation Report, King County, September 2007.*



## East Link Light Rail

Sound Transit is expected to establish light rail service between Seattle and the Overlake area by 2023. Exhibit 3.3, provided by Sound Transit, indicates the project to be built. Should future funding become available, East Link will be extended to downtown Redmond.

**Exhibit 3.3:** East Link Light Rail - Anticipated Routing and Stations



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# Growth and Land Use Development in Bellevue, Kirkland, Redmond, and Sammamish

## Bellevue

Centrally located on the Eastside, Bellevue is served by three major freeways: I-90, I-405, and SR 520. Bellevue is within the urban growth boundary defined by the countywide planning policies, and is bordered by other cities, Lake Washington, Lake Sammamish, and Cougar Mountain Regional Park. The city covers 33.9 square miles between Lake Washington and Lake Sammamish.

Turning 50 years old in 2003, Bellevue's vision for itself is "A Dynamic and Maturing City." It is working to re-vitalize its older commercial centers, nearing completion of annexing all remaining lands within its potential annexation area, working on critical area protection, and continuing to acquire park and open space land throughout the city.

Three areas south of I-90 were annexed in June 2012: Eastgate, Horizon View, and Tamara Hills. The Hilltop area was annexed in July 2012.

Downtown Bellevue was designated a Regional Growth Center by PSRC and is a growth and transportation efficiency center under the Commute Trip Reduction Act.<sup>5</sup>

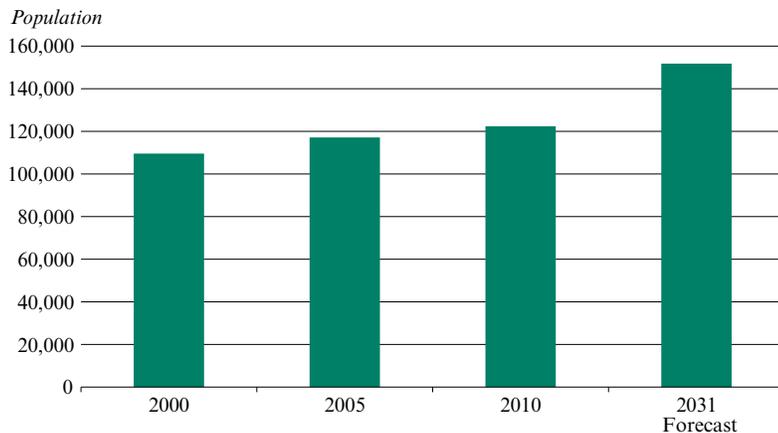
<sup>5</sup> *Growth and transportation efficiency centers tailor commute trip reduction to communities with unique characteristics by helping them develop programs for smaller employers, workers, and residents to encourage people to ride transit, vanpool, carpool, walk, bike, or work from home in order to help ease traffic and reduce greenhouse gas emissions. WSDOT works with GTECs and employers to set trip reduction incentive programs, educate workers about commute choices, and help enhance local policy. For more information see the WSDOT Growth and Transportation Efficiency Centers website: <http://www.wsdot.wa.gov/transit/CTR/GTEC.htm>*

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## Population

Bellevue is the fifth largest city in Washington, with a population of approximately 125,000 residents. Based on growth assumptions, it is anticipated that the population will grow 24 percent between now and 2031, for a total of 152,000 residents. The forecasted growth in Bellevue's population is shown in Exhibit 3.4.

**Exhibit 3.4:** Population Growth and Forecasts for Bellevue



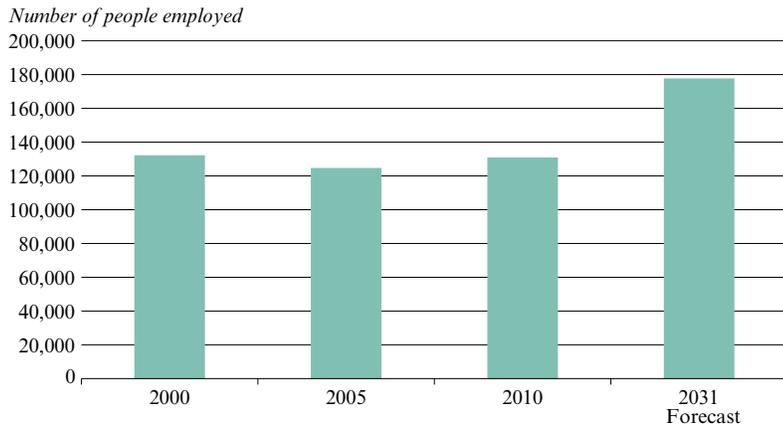
## Employment

In the last few decades, Bellevue has transformed from a bedroom community with a small employment base into a major business and retail center. It is now the high-tech and retail center of the Eastside, with more than 130,000 jobs and the second largest employment center in King County. Several of the 25 largest public companies in Washington are in Bellevue, including Microsoft, Expedia, Puget Sound Energy, and PACCAR, a manufacturer of trucks and other heavy equipment. Newer companies in the city make up many of the top 50 fastest-growing public companies in Washington.<sup>6</sup> The city's regional shopping centers and large commercial areas – including downtown, Eastgate, Overlake, and the SR 520/Bel-Red Corridor – provide jobs for workers from throughout the region.

<sup>6</sup> *City of Bellevue website, July 23, 2012*

Based on growth assumptions, it is anticipated that employment within the city of Bellevue will grow 36 percent between 2010 and 2031, for a total of 178,000 workers. Most of the new employment is expected to be located in downtown Bellevue and in the Bel-Red Road subarea. The forecasted growth in Bellevue's employment is shown Exhibit 3.5.

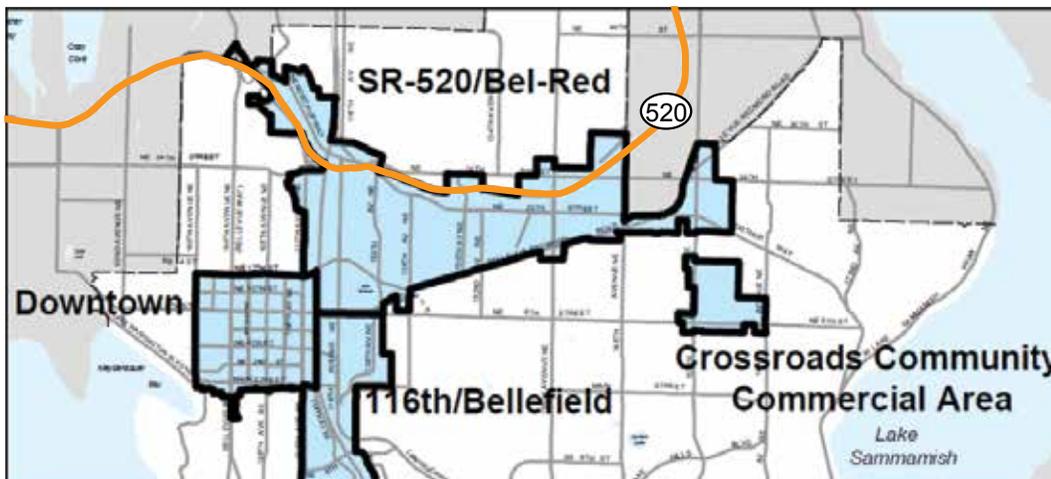
**Exhibit 3.5: Employment Growth and Forecasts for Bellevue**



**Land Use**

Land use surrounding the SR 520 study corridor is largely commercial, with general, professional, and medical uses. There are also limited areas of single and multi-family residential areas. Community uses include Fire Station #6, the Bellevue Golf Course, Highland Middle School, Little School Elementary, Bellevue Montessori School, Viewpoint Nature Park, Highland Park and Community Center, Commissioner's Waterway, Hidden Valley Sports Park, and the North Bellevue Community & Senior Center either adjacent to or near the highway. The portion of SR 520 running through Bellevue is closely surrounded by major employment centers, as shown by the blue areas in Exhibit 3.6.

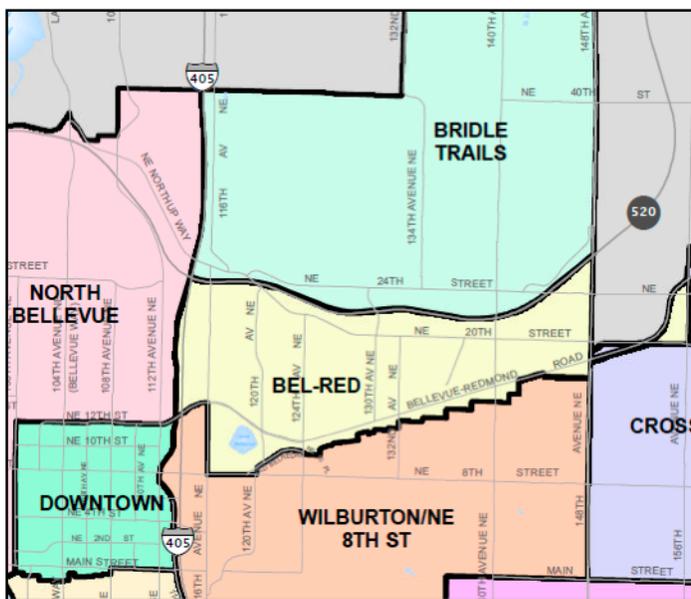
**Exhibit 3.6: Employment Centers in Bellevue Near the SR 520 Study Corridor**



Land use planning is also reflecting the desire for walkable, sustainable communities served by expanded transit services. Examples of this expanded transit network include King County’s Metro RapidRide B Line bus rapid line that operates between the Bellevue Transit Center and the downtown Redmond Transit Center via Crossroads and Overlake. Additionally, Sound Transit’s East Link Light Rail Project, scheduled to be completed by 2023, will travel across I-90 from Seattle, underneath downtown Bellevue, at grade through the Bel-Red subarea to downtown Redmond.

Bellevue has a number of sub-areas surrounding the study corridor, including Bridle trails, North Bellevue, and Bel-Red. These subareas are shown in Exhibit 3.7 and briefly described below.

**Exhibit 3.7: Bellevue Subareas Surrounding the Study Corridor**



Source: City of Bellevue Comprehensive Plan, Subareas Map, 2010 update.

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## **Bel-Red Subarea**

The Bel-Red subarea encompasses a larger geographic area than Downtown, and also has more jobs than the Downtown subarea. The Bel-Red area has historically served as the city's warehouse and manufacturing district, but has become an area in transition with the departure of many of these traditional uses and the introduction of more retail shops and office developments.

An important anchor for this area is Overlake Hospital, one of the major hospitals on the Eastside. The presence of the hospital has encouraged additional medical offices and clinics and other medical support services to locate in the area. The Bel-Red area also offers close proximity to Microsoft's main campus in Redmond.

The Bel-Red subarea is envisioned as a home to major employers, walkable neighborhoods, and connected parks with light rail stations. The new light rail stations planned for this area will be centralized nodes around which smaller neighborhoods and mixed use development will occur.

The Bel-Red subarea is about 900 acres in size. In 2007, a project steering committee developed a long-range plan for future land use and transportation in the corridor to determine the area's role in the city's overall growth and economic development. In September 2007, the Bel-Red Steering Committee approved a final preferred alternative, in anticipation of Link light rail service and stations at Overlake Hospital, 120th Avenue SE, and 130th Avenue NE being in place by 2023, which would have the potential to support changes to the land-use patterns in the area by providing additional transportation capacity. In 2009, the Bellevue city council adopted a new zoning and code ordinance (#5874) for the Bel-Red area.

The preferred alternative envisions the Bel-Red subarea as a place where businesses will be adjacent to, and mixed with, livable neighborhoods, all served by a multi-modal transportation system that connects the area to the greater city and region. Bel-Red's transportation system will take advantage of its proximity to downtown Bellevue and Overlake by providing convenient access and short travel times within and outside the corridor for drivers, transit riders, vanpools and access vans, bicyclists, and pedestrians. Traffic impacts on adjoining neighborhoods will be minimized with specific measures to address traffic volume and speed.

To support the development program envisioned in the preferred alternative, additional transportation system infrastructure will need to be built for all transportation modes – cars, transit, and non-motorized. Transportation capacity improvements would be needed mostly in the western part of the study area, where much of the potential employment and residential growth will be directed.

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An example of the growth anticipated in the Bel-Red subarea is the “Spring District,” a development in the vicinity of Bel-Red Road and 124th Avenue NE, approximately 0.7 mile south of the SR 520/NE 124th interchange. Phase one is estimated to include 900 residential units, 3.7 million square feet of office; 166,000 square feet of retail and 199,000 square feet of hotel space. More information on both the Bel-Red corridor project and the Spring District development can be found at the following websites:

[www.bellevuewa.gov/bel-red\\_background.htm](http://www.bellevuewa.gov/bel-red_background.htm)

[www.thespringdistrict.com/](http://www.thespringdistrict.com/)

### **Bridle Trails Subarea**

Bridle Trails is approximately three square miles in size bounded on the south by SR 520; on the west by I-405; on the north by the Bellevue City limits; and on the east by 148th Avenue N.E. Bridle Trails is primarily residential in use and character. Other than the apartments and condominiums along 148th N.E., BridleTrails housing is single-family on lots ranging from 10,000 square feet to several acres. There is also some commercial and office use along the southern edge of the subarea, along with a golf course. Approximately two-thirds of the area is covered with second growth timber.

Bridle Trails includes approximately 4,000 residential units and 160 acres of open space. The subarea plan calls for “preserving the rural equestrian character of the area, improving mobility for pedestrians and equestrians, reducing non-local traffic from residential streets, protecting remaining residential land from changing use, and cooperating with surrounding jurisdictions on land use and transportation issues.”

### **North Bellevue Subarea**

The North Bellevue subarea is primarily a residential neighborhood, with sizable areas of both multi- and single-family residences and some high-density residential area. There are small areas of professional and office use scattered throughout the area. The goal of the subarea is “to protect the predominantly single-family character of North Bellevue from encroachment by other uses,” protect natural and scenic resources, encourage an expanded supply of housing, provide for recreational needs, and promote a walkable community with non-residential traffic minimized to the extent possible.

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## Kirkland

Kirkland is located on the east side of Lake Washington, north and west of the study corridor. It became the first city on the Eastside in 1888 and was incorporated in 1905. Like Bellevue and Redmond, Kirkland has grown beyond a bedroom community to become a commercial and employment center in its own right. Since 1980, major retail, office and mixed-use developments have been built in many areas of the city. Today, Kirkland is the sixth largest city in King County, with a community of approximately 50,000 people and the region's only downtown on the waterfront. It currently has an area of 11.0 square miles.

Kirkland has several large ongoing projects, including transit-oriented development around the South Kirkland Park-and-Ride, renovations to Big Finn Hill Park, Potala Village mixed-use development, and Touchstone/Park Place, a master-planned commercial development in the downtown area. The Totem Lake Mall redevelopment project is currently on hold.

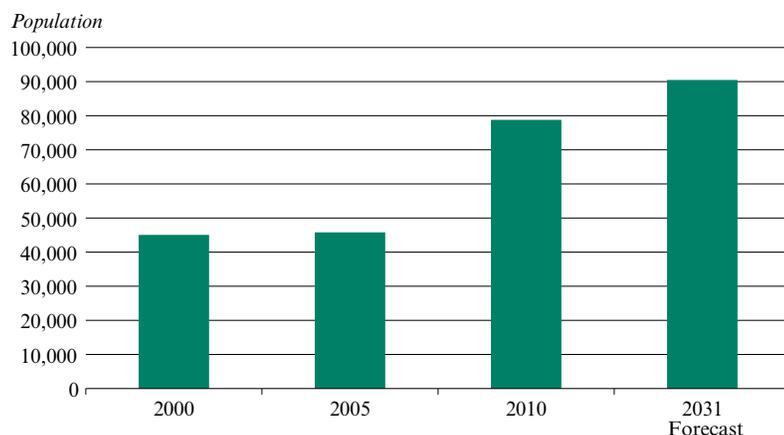
The vision statement for Kirkland includes being a sustainable, pedestrian-friendly, attractive, vibrant, and inviting place to live, work and visit, with a small town feel, a diverse population made up of various income and age groups from various ethnic and educational backgrounds, a strong and diverse economy, and preserved natural systems.

The Finn Hill, North Juanita, and Kingsgate/Evergreen Hill areas were annexed onto the north end of the jurisdiction in 2011, adding 30,000 new residents to the population.

## Population

Based on growth assumptions, it is anticipated that the Kirkland's population will grow 15 percent between 2010 and 2031, for a total of 90,500 residents. The forecasted growth in Kirkland's population is shown in Exhibit 3.8.

**Exhibit 3.8:** Population Growth and Forecasts for Kirkland

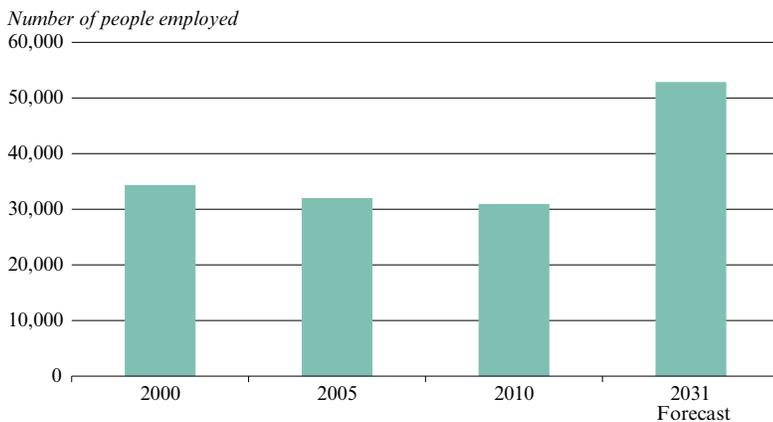


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## Employment

Employment in Kirkland is largely in the finance, insurance, real estate, trade, services, and retail industries. Evergreen Health Care has expanded, giving Kirkland a strong array of medical services. Lake Washington Institute of Technology and Northwest University also have expanded, giving Kirkland a strong educational presence as well. There are currently close to 31,000 people employed within Kirkland. Based on growth assumptions, it is anticipated that employment within the city of Kirkland will grow 71 percent between 2010 and 2031, for a total of 53,000 workers. The forecasted growth in Kirkland's employment is shown in Exhibit 3.9.

### Exhibit 3.9: Employment Growth and Forecasts for Kirkland

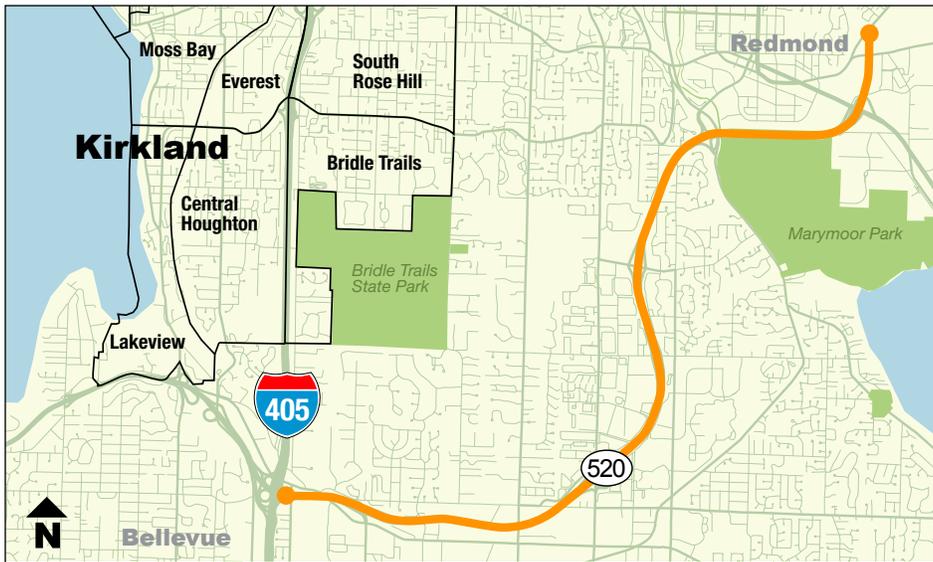


## Land Use

Totem Lake is a designated urban center serving as a community and regional center for destination retailing, health care, automobile sales, high technology, light industrial, professional offices, and housing. The downtown's role is an activity area that serves as a community and regional center for professional and government services, specialty retail, tourism, arts and entertainment, neighborhood services, and housing. The Yarrow Bay and Carillon Point business districts, to the north of SR 520, provide corporate headquarters, professional offices, professional services, restaurants and housing. Both are slated as commercial development areas. Prominent business clusters are in the areas of automobile sales and services, art galleries, health care, restaurants, high technology, and furniture sales; the city is planning how to more highly diversify its businesses. Many businesses and professional services involved in the medical field have located near the Evergreen Medical Center.

Kirkland has a number of defined neighborhoods near the study corridor, including Lakeview, Central Houghton, and Bridle Trails (separate from the Bridle Trails subarea of Bellevue.) These neighborhoods are shown in Exhibit 3.10 and described below.

**Exhibit 3.10: Kirkland Neighborhoods Surrounding the Study Corridor**



### **Lakeview**

The Lakeview neighborhood is bounded on the west by Lake Washington and on the east by railroad tracks. This area is comprised of primarily low-density residential uses. However, between Lakeview Drive and Lake Washington Boulevard, medium-density residential will be permitted, along with limited office use.

Offices and limited freeway commercial will also be allowed at the southern end of the neighborhood near Yarrow Bay. Policy direction for the waterfront has already been developed in the shoreline master program, which basically maintains existing residential and water uses, permits water-dependent commercial uses where commercial uses presently exist, and places a high priority on public access to the water either through park acquisition or easements.

Three tracts of land have been designated as planned areas including a medium residential density area, a large wetland conservancy with multifamily, hotel/motel, and limited marina use, and an area that serves as both the entrance to the city and connection to Lake Washington Boulevard, Points Drive, and SR 520 which may be developed for mixed use. In addition, King County has identified the area around the South Kirkland Park and Ride as a potential location for transit-oriented development with affordable housing and possibly some office use. Carillon Point has also been designed as a mixed use and water-oriented master planned development.

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Much of the northeast quadrant of the SR520/Lake Washington Boulevard interchange has already been committed to certain economic activities including large and small office structures, restaurants, and a motel. The city intends to continue acquiring waterfront property for recreation purposes wherever possible, Yarrow Bay in particular.

Lake Washington Boulevard is designated as a major arterial and provides the major north-south route through Kirkland south of the Central Business District and west of I-405. The city plans to improve the Boulevard for more access and safety for non-motorized uses. The neighborhood plan also calls for improved ingress/egress to I-405 at several points and unspecified improvements to the I-405/SR 520 interchange. The northeast quadrant of the SR 520/SR 908 Interchange has developed into an activity node with offices, restaurants, a motel, and service station.

### **Central Houghton**

The Central Houghton Neighborhood, lying between the Burlington Northern railroad tracks and I-405, is a predominantly new single-family residential area. Other land use includes Northwest University, the Lake Washington School District facilities, the Houghton Shopping Center, and multifamily developments along NE 68th Street. The primary policy direction is to maintain the low-density residential character and to buffer the single-family areas from economic, institutional, and multifamily uses. Emphasis is also placed on identifying lands for future parks.

The area east and west of the Houghton Shopping Center and fronting along NE 68th Street and between the railroad tracks and I-405 is to be considered for medium-density residential development. Land in the southeast quadrant of the intersection of NE 68th Street and 108th Avenue NE is designated for professional offices or multiple-residential use. Limited commercial uses and medium-density multifamily uses will also be permitted.

The Northwest University has been designated as a “planned area” due to the size of the facility and the magnitude of potential impacts on the surrounding residential areas. Facilities associated with the College include dormitories, offices, and classroom buildings. The master plan includes addition of a headquarters and practice facility for the Seattle Seahawks.

The Houghton shopping area is the primary retail commercial center for the neighborhood, containing several convenience stores and a bank. Future development or redevelopment of this commercial land should continue to meet these localized needs.

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## **Bridle Trails**

The Bridle Trails Neighborhood can be characterized as a predominantly single-family area with large open spaces. The primary policy direction for this neighborhood is to maintain the low-density residential character with some areas containing large lots capable of keeping horses.

Central Park, east of Bridlewood Circle and south of NE 60th Street, contains a mix of commercial equestrian stables and an indoor arena, very low residential density development with associated equestrian stables and pastures, and a commercial tennis club facility with indoor and outdoor courts and a clubhouse. The master plan for Central Park includes a slightly higher residential density and an expansion of the Central Park Tennis Club.

The primary site of economic activity in the Bridle Trails Neighborhood is at the southwest corner of NE 70th Street and 132nd Avenue NE where there are over 12 acres of commercially-zoned land. The Bridle Trails commercial center serves as an activity node serving daily local commercial needs. Land to the west and south will be allowed to develop with medium density residential, with some commercial expansion for businesses oriented towards the adjacent neighborhoods. More intensive commercial activities are to be located in the Central Business District, on NE 85th Street, and in the Totem Lake commercial center.

Property on the west side of 116th Avenue NE, across from the park-and-ride lot, is suitable for office and/or medium-density residential development. The other major economic activity in the Bridle Trails Neighborhood is commercial recreation, such as equestrian stables and tennis courts. These facilities are permitted to expand.

Bridle Trails State Park comprises a 480-acre facility that provides regional equestrian recreational as well as traditional park uses. There is also a King County transfer station for solid waste with baseball and soccer fields located to the north of the transfer station. These uses will remain.

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## Redmond

The city of Redmond is the seventh most populous city in King County and a major employment center, ranking fifth in the Central Puget Sound Region. The city covers 17 square miles between the cities of Bellevue and Sammamish, and is situated at the north end of Lake Sammamish, with unincorporated King County lying to the north and east.

The city, which celebrated its centennial in 2012, started with largely agricultural industries but now hosts businesses such as high-tech, medical, package delivery, and seafood processing. While predominantly suburban in character, Redmond is also known as the home of Microsoft and Nintendo of America. It sports an annual bike race on city streets and the state's only velodrome, and is known as "the bicycle capital of the Northwest."

Redmond has a picturesque natural setting with the Downtown subarea located in the Sammamish Valley surrounded by forested hills and flanked by mountain views. Portions of the city border Lake Sammamish and the lake outlets to the Sammamish River which winds up the valley.

The community has stated they would like to see protection of the natural environment, protection of Redmond's heritage and character, a greater number of transportation choices, a wide range of places for socializing and recreation, a healthy economy, a more diverse set of housing choices, as well as a park and open space system that provides community gathering places and natural areas or recreational opportunities within walking distance of every resident.

There are several potential annexation areas in Redmond: a large area to the north of NE 124/128th Streets, two small areas along the western edge of the jurisdiction above NE 80th Street, and a portion of the north end of Lake Sammamish. The city's policy is to promote expeditious annexation of unincorporated land in its PAA areas, focusing on the larger northern area first.

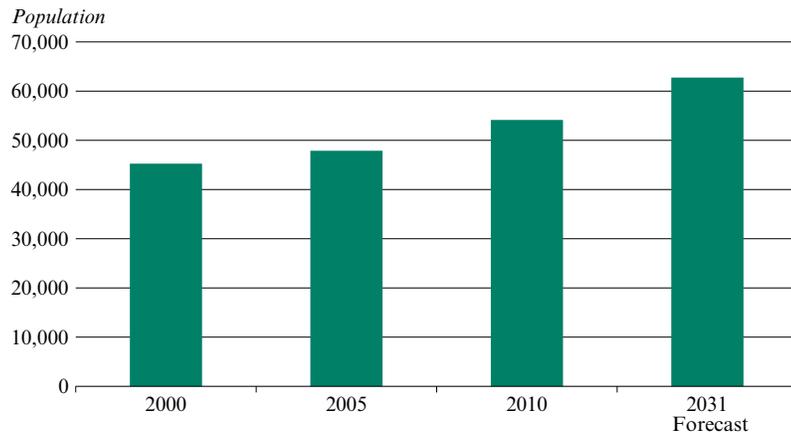
Portions of the Downtown and Overlake Neighborhoods are designated as Urban Centers by the King County Countywide Planning Policies (CPPs) and as Regional Growth Centers by PSRC.<sup>7</sup> The Overlake subarea is also a designated GTEC under the Commute Trip Reduction Act.

<sup>7</sup> Center designations are a strategy employed in the central Puget Sound region for purposes of growth management and transportation planning, and for programming of regional transportation funds to areas of concentrated growth. Urban Centers within the county and Regional Growth Centers within the region are envisioned as higher-density focal points within communities, attracting people and businesses to a multimodal transportation system and mixed use area with diverse economic opportunities, living opportunities, and proximity to shopping, recreation and other amenities. Urban Centers are also intended to support more sustainable land use by accommodating growth in urban locations and reducing sprawl.

## Population

Redmond currently has a population of approximately 55,000 residents. Based on growth assumptions, it is anticipated that the population will grow 16 percent between 2010 and 2031, for a total of 63,000 residents. The forecasted growth in Redmond's population is shown in Exhibit 3.11.

**Exhibit 3.11: Population Growth and Forecasts for Redmond**

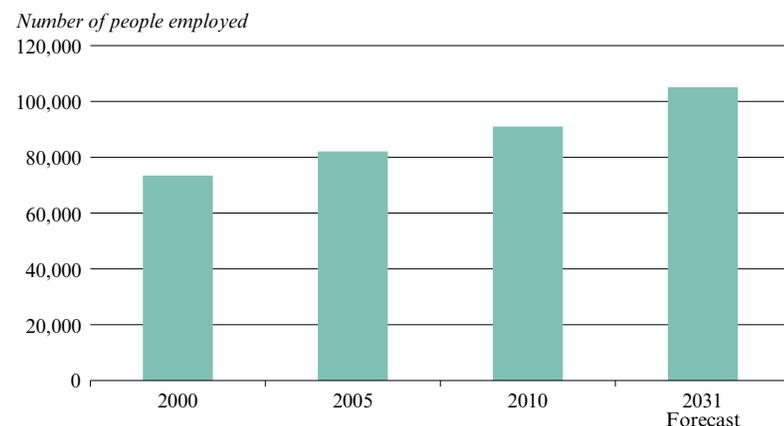


## Employment

Redmond is the home to many small, medium-sized, and locally owned businesses and services, as well as nationally and internationally recognized corporations. Its top employers include Microsoft, AT&T, Nintendo, Honeywell, UPS, and Physio-Control.

There are currently 91,000 people employed within the city limits. Based on growth assumptions, it is anticipated that the employment will grow 16 percent between 2010 and 2031, for a total of 105,000. Most of the new employment is expected to be located in the Downtown and Overlake subareas. The forecasted growth in Redmond's population is shown in Exhibit 3.12.

**Exhibit 3.12: Population Growth and Forecasts for Redmond**



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## Land Use

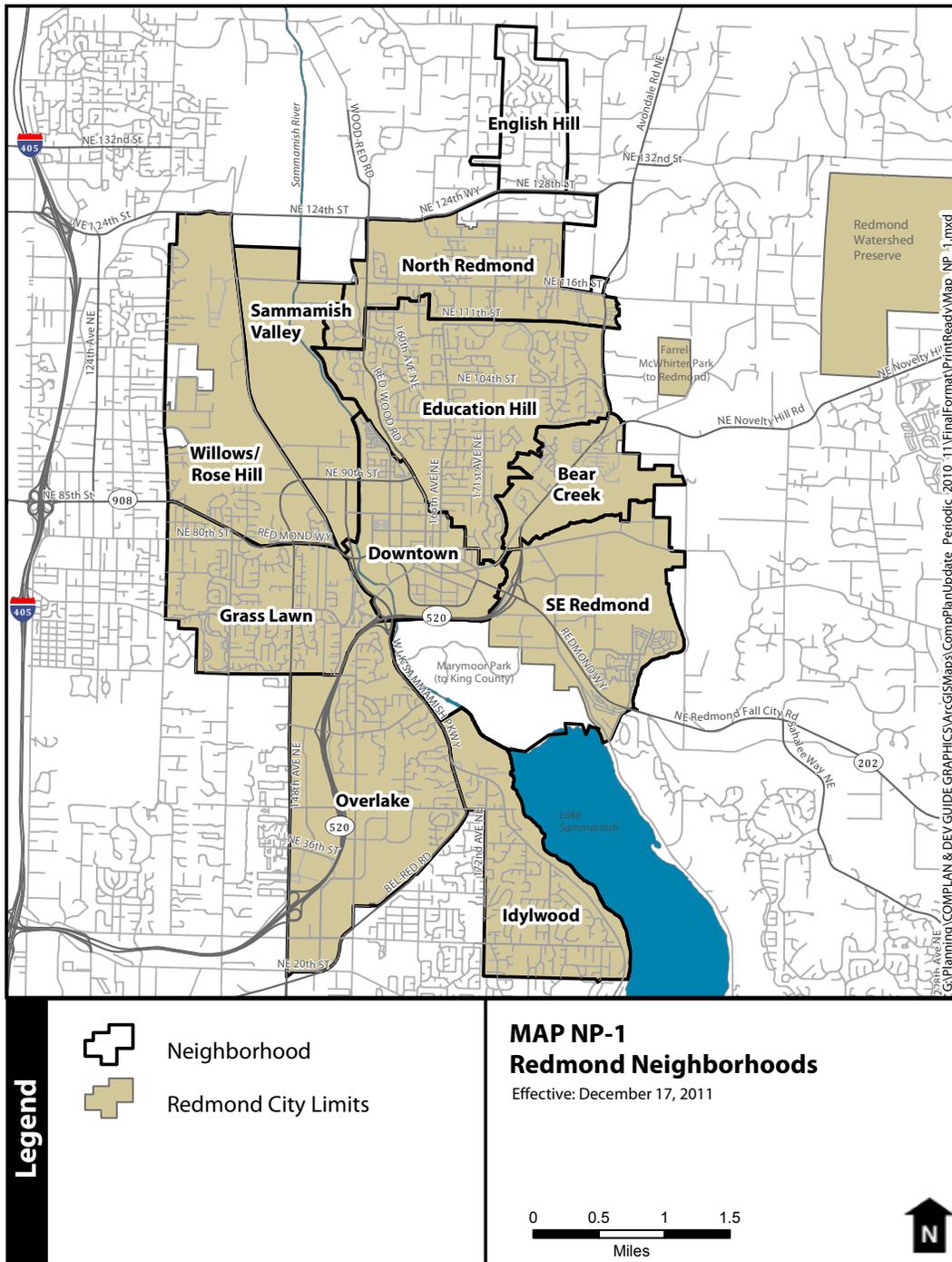
Redmond has two mixed-use urban centers, both major activity and employment centers: Downtown and Overlake. The city's comprehensive plan continues to direct the majority employment and housing growth to these two areas. Redmond anticipates a total growth of 11 million square feet of commercial space over the next 20 years. A minimum of 10 percent of units in all new housing developments of ten units or greater are to be affordable.

Several large recreational areas are adjacent to the study corridor, including the Bear Creek Parkway and Marymoor Park. The area surrounding the corridor also includes several fire stations, and Redmond and Rush Elementary Schools.

Land use planning is being informed by the desire for walkable, sustainable communities. King County Metro's RapidRide B line operates between the Bellevue Transit Center and the downtown Redmond Transit Center via Crossroads and Overlake. Sound Transit's East Link Light Rail Project is expected to be completed by 2023, will connect the Downtown subarea, the SE Redmond Park-and-Ride, and the Overlake subarea to Bellevue and Seattle via I-90.

Redmond neighborhoods surrounding the study corridor are shown in Exhibit 3.13. The Downtown, Grass Lawn, Overlake, and SE Redmond neighborhoods are described in more detail below.

**Exhibit 3.13: Redmond Neighborhoods Surrounding the Study Corridor**



Source: City of Redmond Comprehensive Plan, 2011 update.

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## **Downtown**

Downtown is transitioning to a mixed use center which includes more residences and a walkable community. It has become a place to work, shop, and live and is a destination for people in Redmond and in the region. Offices, stores, services and residential developments have contributed to vibrancy, while retaining a local feel. More people are choosing to live in Downtown and housing choices include a wide range of pricing options.

The vision for Downtown Redmond is a place which meets employment, shopping, recreational, civic, and cultural and night life needs; provides attractive and safe places to live close to amenities, is pedestrian and cyclist-oriented with easy access to transit; maintains its rich natural setting; is a place where people want to be, and promotes the city's identity as a major economic center.

Adopted policies include encouraging growth in the advanced technology sector; improving the Redmond Central Connector; encouraging transit-oriented development; reinforcing Downtown as Redmond's primary location for civic activities and places; fostering the arts; promoting walkability; streetscape treatments; restoring Redmond Way and Cleveland Street to two-way operations and creating a Main Street environment along Cleveland; improving access between the Town Center and Marymoor Park for pedestrians and bicyclists by developing a "convenient, direct and attractive connection across SR 520 and light rail facilities"; possibly allowing additional building height up to four stories and additional residential densities for redevelopment of retail centers into urban village forms; and promoting the development of residential zones.

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## **Grass Lawn**

The Grass Lawn Neighborhood consists of several smaller neighborhoods. The majority of the area is zoned for residential uses, with two small commercially zoned areas. Most of the homes are low to moderate density, with apartment and condominium developments in the eastern part of the neighborhood near access to transit. Grass Lawn is a mature neighborhood with established character and includes Grass Lawn Park, a facility highly valued by the neighborhood as a community gathering place.

The neighborhood vision for Grass Lawn includes retaining its namesake of greenness, protecting forested slopes, maintaining the small neighborhood commercial zones/gathering places, enhancing the system of parks, trails and pathways that connect it to other neighborhoods and to the downtown area, having more alternative modes of transportation, and improvements along 132nd Avenue NE. Adopted housing policy for the area is to encourage cottages, duplexes, tri- and four-plexes, investigate additional neighborhood commercial zones, and implement pedestrian safety and mobility improvements.

## **Overlake**

Overlake has become a regional urban center that is the location of internationally known companies, corporate headquarters, high technology research and development companies, and other multi-faceted businesses. The subarea has also become more diverse, featuring small neighborhoods with a variety of housing choices, small-scale shopping, services for employees and residents, and connections to a network of parks, sidewalks, trails and transit. It is now an urban, mixed-use neighborhood with a sense of place and activity.

Overlake is poised for significant growth and investment for a variety of public facilities and light rail service starting in 2023. Overlake Village, in the southern part of Overlake, is a local and regional retail destination. Over time, thousands of new residents are anticipated to move into Overlake Village as the area transforms to mid-rise apartments and condominiums, urban parks and plazas, and a transportation network that supports mobility by transit, cars, bicycle and foot.

The former Group Health site will be a significant redevelopment of the Overlake sub-area. The site will become a mixed use development of 1,400 residential units and 1.2 million square feet of office, retail and hotels.

More information on the Overlake Village plan and redevelopment of the former Group Health site can be found at the following websites:

[www.redmond.gov/cms/one.aspx?objectId=540](http://www.redmond.gov/cms/one.aspx?objectId=540)

[www.redmond.gov/PlansProjects/Transportation/OverlakeVillage152AveNE/](http://www.redmond.gov/PlansProjects/Transportation/OverlakeVillage152AveNE/)

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## **SE Redmond**

The vision for this neighborhood is to promote the area's role as an employment center: in the west with intensive retail uses and industry, and to the east and south where moderate-density housing is developed but does not threaten the rural character at the subarea's eastern border. The vision also includes commercial and office park uses around the SR 520/202 intersection; manufacturing parks and research and development uses west of Redmond-Fall City Road and east of the commercial areas; moderate-density housing on the east edge of the city along Redmond-Fall City Road; maintaining the high-density residential areas along the south edge of the city. Development of moderate-density, family-oriented housing with supporting uses is a strong priority to provide housing near Redmond's three major employment centers.

Adopted policies include allowance of existing industrial uses of land east of 188th Avenue NE and north of NE 76th Street to continue, including the mineral resource manufacturing operations; promotion of light industrial uses in the central portion and manufacturing uses in the north portion; and reservation of land for manufacturing firms to locate in the central portion of the planning subarea. The community will also be working with Sound Transit to incorporate a light rail station plan and maintenance facility, along with the development of complimentary retail and services supportive of transit ridership. A Neighborhood Commercial Center, three to four acres in size, within the subarea is also planned, as well as a 60-foot-wide right-of-way for future construction of an east-west commercial/industrial local access street between 185th and 188th Avenues NE.

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## Sammamish

The city of Sammamish is located on the shores and hilly terrain of the Sammamish Plateau, east of Lake Sammamish, pressed up against the eastern urban growth boundary. The plateau remained a mostly rural area until suburban homes, shopping centers, and schools were built in the 1970s and 1980s. Sammamish was incorporated in 1999 and now has an area of 18.3 square miles.

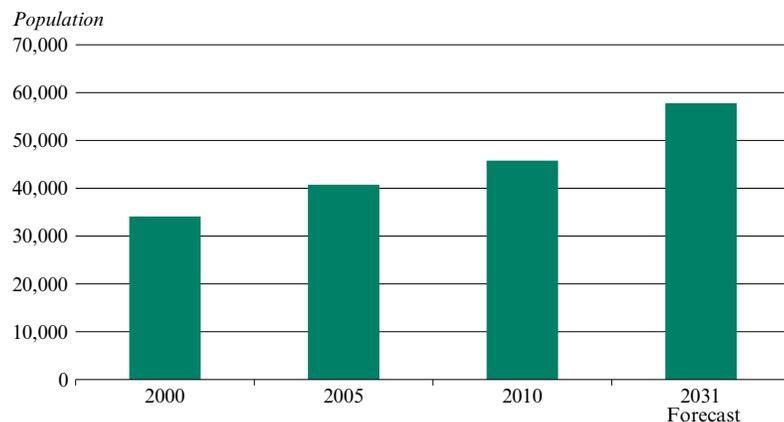
The city’s vision is “a community of families,” including a small-town atmosphere and suburban character with quality neighborhoods, vibrant and protected natural features, outstanding recreational opportunities, a variety of community gathering places, and an active involved citizenry.

Sammamish planned annexation areas are located along its northeast border and include the Camden Park/244th Avenue N Area, Rosemont, Ravenhill, and Aldarra-Montaine, totaling more than 700 acres. Sammamish also has three designated community centers: the existing center at Inglewood Center and at Pine Lake Village, and the planned City Hall/Park at the Sammamish Commons.

### Population

The city currently has a population of approximately 46,000 residents. Based on growth assumptions, it is anticipated that the population will grow 26 percent between 2010 and 2031, for a total of 58,000 residents. The forecasted growth in Sammamish’s population is shown in Exhibit 3.14.

**Exhibit 3.14:** Population Growth and Forecasts for Sammamish

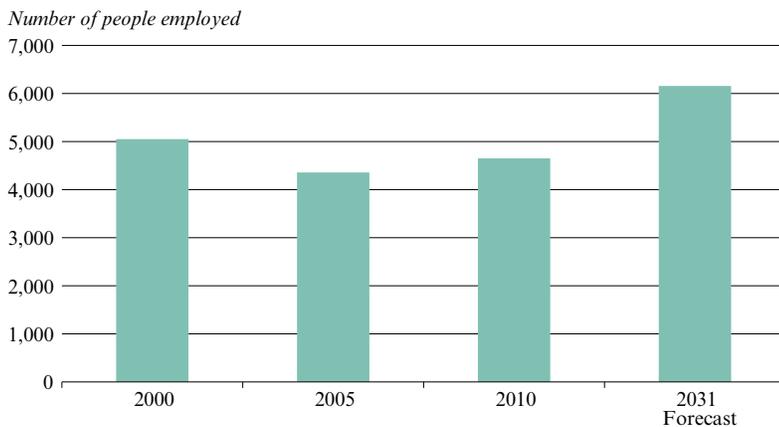


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## Employment

Based on growth assumptions, it is anticipated that employment within the city of Sammamish will grow 32 percent between 2010 and 2031, from 4,650 workers to 6,150 workers. The forecasted growth in Sammamish employment is shown in Exhibit 3.15

### Exhibit 3.15: Employment Growth and Forecasts for Sammamish



## Land Use

Single family development represents the most predominant existing land use, with vacant land and roads the second and third most predominant. The land use plan provides for uses reflective of the city's vision statement for a small town character and suburban residential style development, but with acknowledgement of community gathering areas in centers and attention to environmental characteristics. It strives to protect existing residential single family areas and develop new opportunities for housing diversity and affordability. The city also envisions establishment of a park and recreation system that creates a network of trails and preserves trees and greenways. An analysis done in 2003 estimated a total development capacity of 2200 acres within the city limits.

The comprehensive plan targets future commercial growth and mixed use development to three designated community centers: the Inglewood and Pine Lake Centers and the Sammamish Commons.<sup>2</sup> Commercial and economic policies are to maintain the current business base and allow for additional businesses consistent with the adopted land use pattern. Non-residential uses are to be sized appropriately to accommodate community business and services needs. The plan also encourages land use patterns that promote walkability, diversity, and creativity.

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The Inglewood and Pine Lake Centers are envisioned as promoting Civic uses and community gathering, recreation, pedestrian and transit-oriented development, specialty retail stores, restaurants, professional offices, community services, and diverse housing opportunities. Multi-family housing may be located above ground floor non-residential uses, along with innovative mixed use development.

The Sammamish Commons project encompasses the development of approximately 30 acres of land, envisioned to consist of a City Hall and City Park project as a designated Community Center and library in accordance with an approved master plan. Limited commercial activities supportive of the public functions in the commons may be permitted. A civic plaza is proposed adjacent to the new building, as well as a youth activity area with sport court, skate park, and climbing wall. Development of an adjacent lower site will be primarily for passive use, preserving existing wetlands and buffers.

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